



**CELL MARQUE IMMUNOHISTOCHEMISTRY**

Reference Guide, vol. 11

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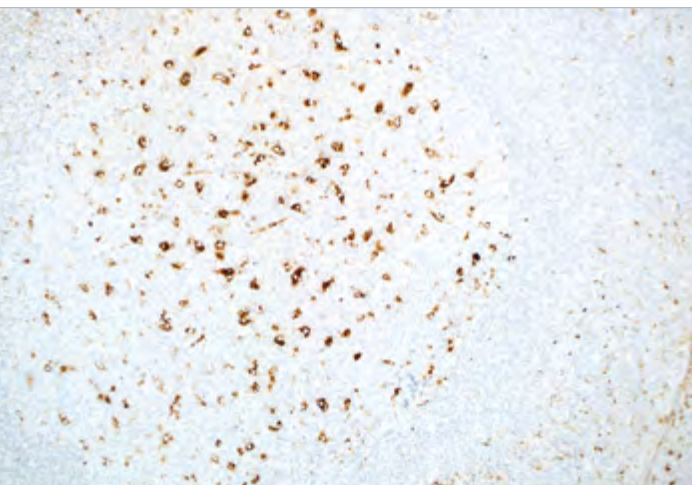
# Antibodies

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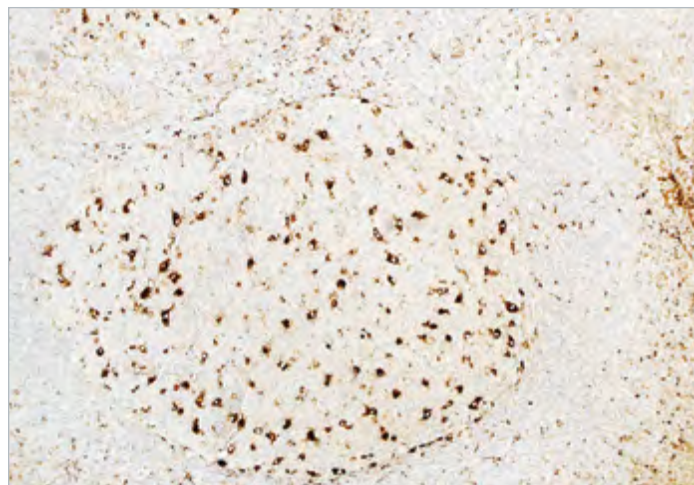




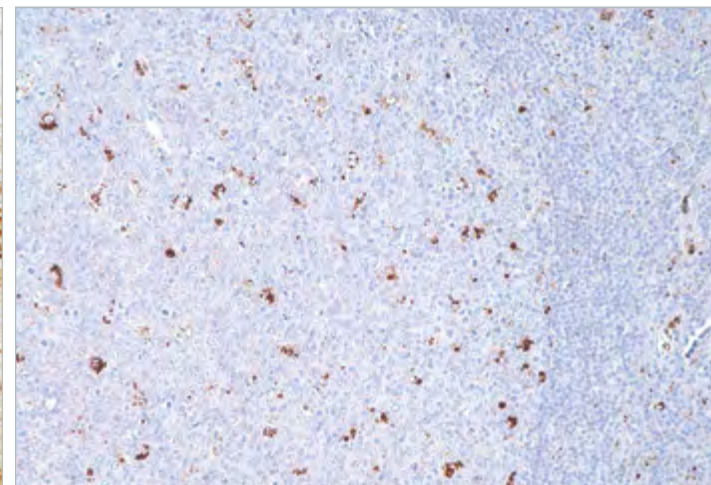
# A-1-Antichymotrypsin



A-1-Antichymotrypsin (polyclonal) on tonsil, germinal center.



A-1-Antichymotrypsin (polyclonal) on tonsil, germinal center.



Germinal center macrophages show strong chymotrypsin expression in the cytoplasm. Lymphoid cells are negative for antichymotrypsin.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

A1ACT

## Associated Specialties

● Hematopathology

## Associated Panels

● Liver: Malignant vs. Benign... 288

## Reference

1. Isaacson P, et al. Lancet. 1979; 2:964-965.
2. Palmer PE, et al. Am J Clin Pathol. 1974; 62:350-354.
3. Palmer PE, et al. Cancer. 1980; 45:1424-1431.
4. Kindblom LG, et al. Hum Pathol. 1982; 13:834-840.
5. Raintoft I, et al. Hum Pathol. 1979; 10:419-424.
6. Fabre A, et al. Virchows Arch. 2001; 438:312-5.

## Product Description

Alpha-1-antichymotrypsin primary antibody reacts with histiocytes and histiocytic neoplasms. Its major application is defining the presence of alpha-1-antichymotrypsin in histiocytes and tumors derived from them. In eosinophilic granuloma and malignant histiocytosis, the reaction for this marker is heterogeneous in intensity and distribution. In fibrous histiocytomas on the other hand, a diffuse homogeneous reaction may be observed. Acinar tumors of the pancreas and salivary gland may also exhibit alpha-1-antichymotrypsin positivity.

## Panel Quick View

Liver: Malignant vs. Benign									
	A1ACT	AFP	CD34	mCEA	pCEA	GPC-3	Hep Par-1	p53	TTF-1
Hepatocellular Carcinoma	-/+	-/+	+	-	+	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+	-	-	+	+	+	+	-
Benign Liver Nodules	+/-	-	-	-	-	-	+	-	+ (cytoplasmic)

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate . . . . . 222A-14  
 0.5 ml, concentrate . . . . . 222A-15  
 1 ml, concentrate . . . . . 222A-16  
 1 ml, predilute . . . . . 222A-17  
 7 ml, predilute . . . . . 222A-18

## Designations



IVD



IVD

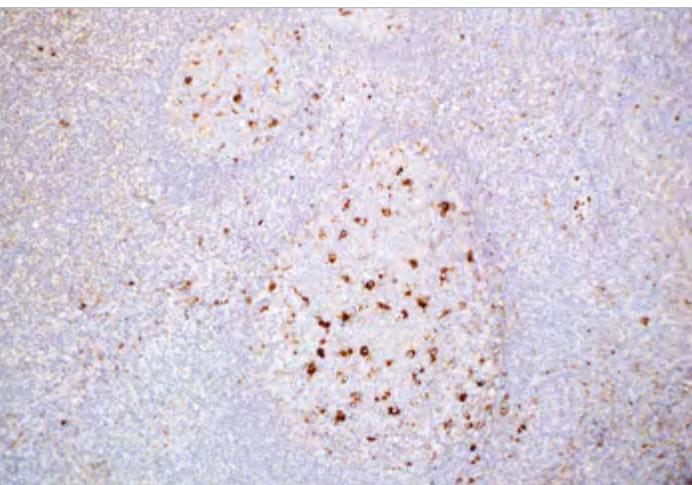


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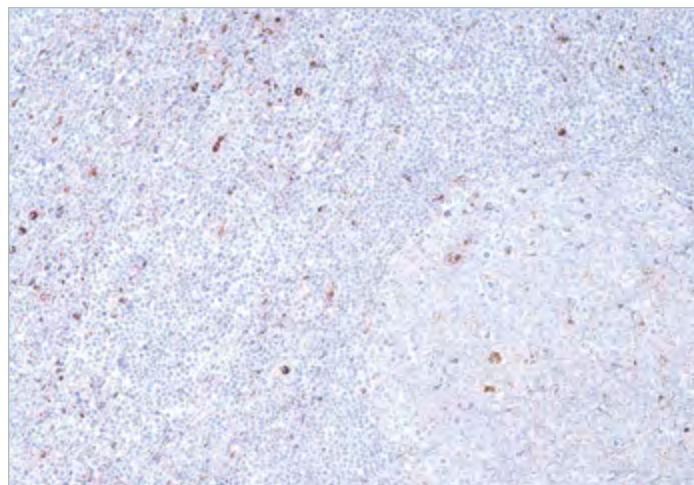


RUO

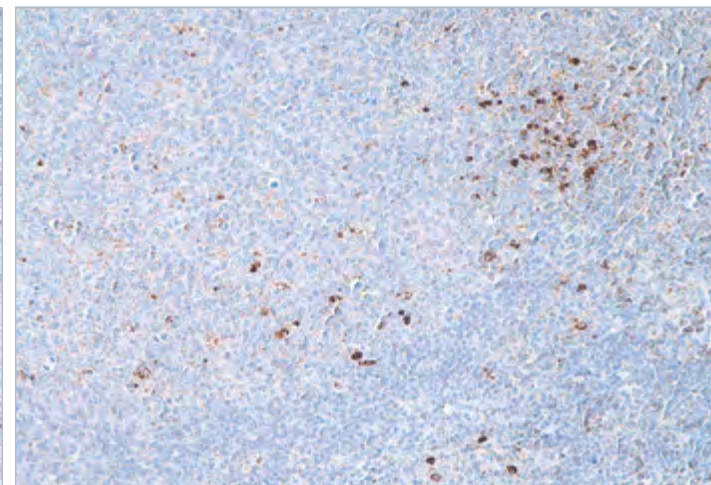
# A-1-Antitrypsin



The germinal center macrophages and intravascular neutrophils demonstrate a strong cytoplasmic reaction by alpha-1-antitrypsin (polyclonal).



A-1-antitrypsin (polyclonal) on tonsil.



A-1-antitrypsin (polyclonal) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

A1AT

## Associated Specialties

● Hematopathology

## Associated Panels

● Liver: Malignant vs. Benign... 288

## Reference

1. Isaacson P, et al. Lancet. 1979; 2:964-965.
2. Palmer PE, et al. Am J Clin Pathol. 1974; 62:350-354.
3. Palmer PE, et al. Cancer. 1980; 45:1424-1431.
4. Kindblom LG, et al. Hum Pathol. 1982; 13:834-840.
5. Raintoft I, et al. Hum Pathol. 1979; 10:419-424.
6. Aozasa K, et al. J Surg Oncol. 1991; 47:215-20.
7. Takahashi H, et al. Acta Pathol Jpn. Sept; 40:655-64.
8. Lindmark B, et al. Histopathology. 1990; 16:221-5.
9. Nishio J, et al. Hum Pathol. 2003; 34:246-52.

## Product Description

The immunohistochemical staining of alpha-1-antitrypsin is considered to be very useful in the study of inherited AAT deficiency, benign and malignant hepatic tumors and yolk sac carcinomas. Positive staining for a-1-antitrypsin may also be used in detection of benign and malignant lesions of an histiocytic nature. Sensitivity and specificity of the results have made this antibody a useful tool in the screening of patients with cryptogenic cirrhosis or other forms of liver disease with portal fibrosis of uncertain etiology.

## Panel Quick View

Liver: Malignant vs. Benign									
	A1AT	AFP	CD34	mCEA	pCEA	GPC-3	Hep Par-1	p53	TTF-1
Hepatocellular Carcinoma	-/+	-/+	+	-	+	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+	-	-	+	+	+	+	-
Benign Liver Nodules	+/-	-	-	-	-	-	+	-	+ (cytoplasmic)

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 223A-14

0.5 ml, concentrate . . . . . 223A-15

1 ml, concentrate . . . . . 223A-16

1 ml, predilute . . . . . 223A-17

7 ml, predilute . . . . . 223A-18

### Designations



IVD



IVD



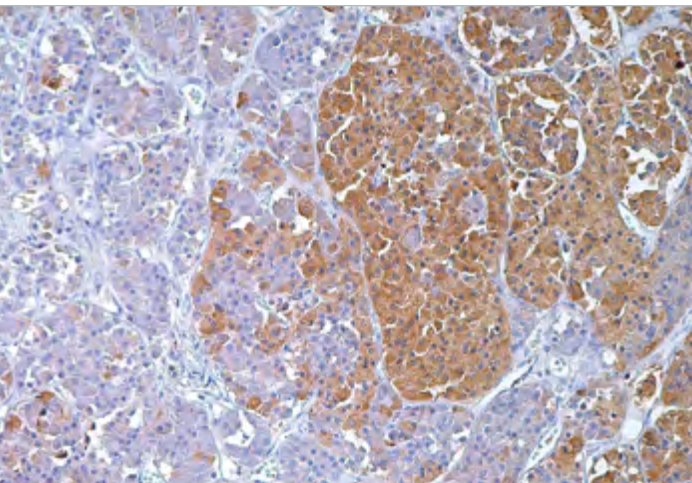
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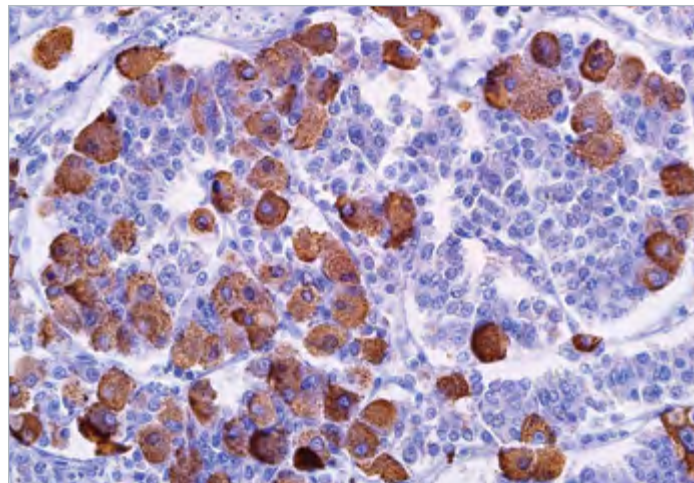
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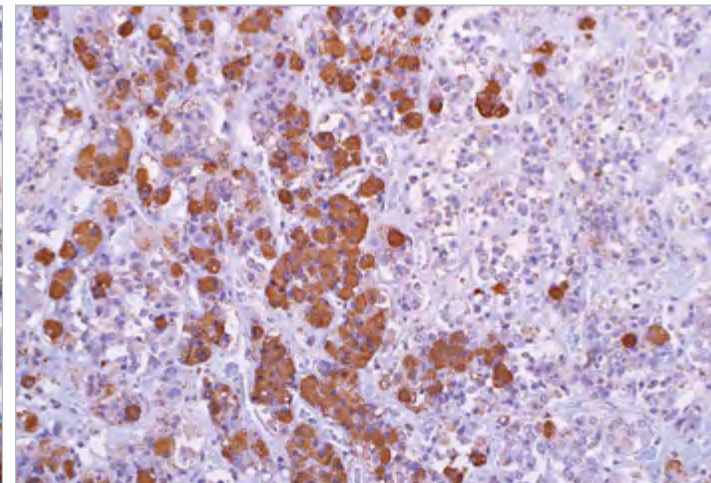
# ACTH



Pituitary cells express ACTH in the cytoplasm.



ACTH (polyclonal) on pituitary lesion.



ACTH (polyclonal) on pituitary lesion.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pituitary

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Anatomic/Surgical Pathology
- Neuropathology

## Reference

1. Pizarro CB, et al. Braz J Med Biol Res. 2004; 37:235-43.
2. Viacava P, et al. J Endocrinol Invest. 2003; 26:23-8.
3. Kageyama K, et al. Am J Med Sci. 2002; 324:326-30.
4. Fan X, et al. J Histochem Cytochem. 2002; 50:1509-16.
5. Japon MA, et al. J Clin Endocrinol Metab. 2002; 87:1879-84.

## Product Description

ACTH is synthesized from pre-pro-opiomelanocortin (pre-POMC). The removal of the single peptide during translation produces the 267 amino acid polypeptide POMC, which undergoes a series of post-translational modifications such as phosphorylation and glycosylation before it is proteolytically cleaved by endopeptidases to yield various polypeptide fragments with varying physiological activity. These fragments include ACTH,  $\beta$ -lipotropin,  $\gamma$ -lipotropin, melanocyte stimulating hormone (MSH), and  $\beta$ -endorphin. POMC, ACTH, and  $\beta$ -lipotropin are secreted from corticotropes in the anterior lobe (or adenohypophysis) of the pituitary gland in response to the hormone corticotropin-releasing hormone (CRH) released by the hypothalamus. ACTH is also produced by cells of immune system (T-cells, B-cells, and macrophages) in response to stimuli associated with stress.

Anti-ACTH is a useful marker in classification of pituitary tumors and the study of pituitary disease. It reacts with ACTH-producing cells (corticotrophs). It also may react with other tumors (e.g. some small cell carcinomas of the lung) causing paraneoplastic syndromes by secreting ACTH.

## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

Volume	Part No.
0.1 ml, concentrate	206A-74
0.5 ml, concentrate	206A-75
1 ml, concentrate	206A-76
1 ml, predilute	206A-77
7 ml, predilute	206A-78

## Designations



IVD



IVD



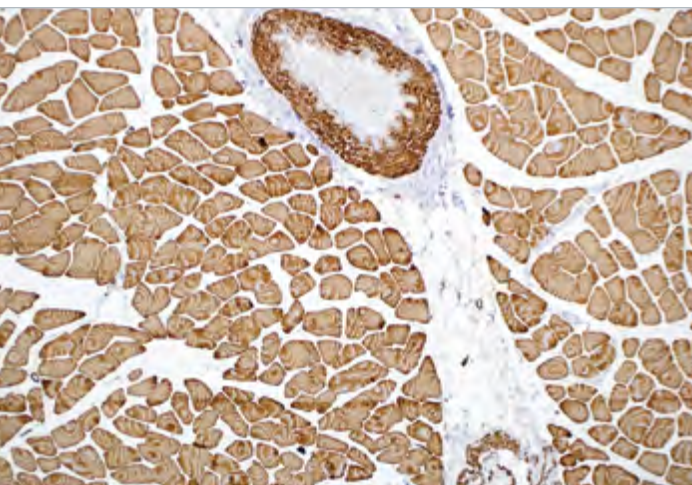
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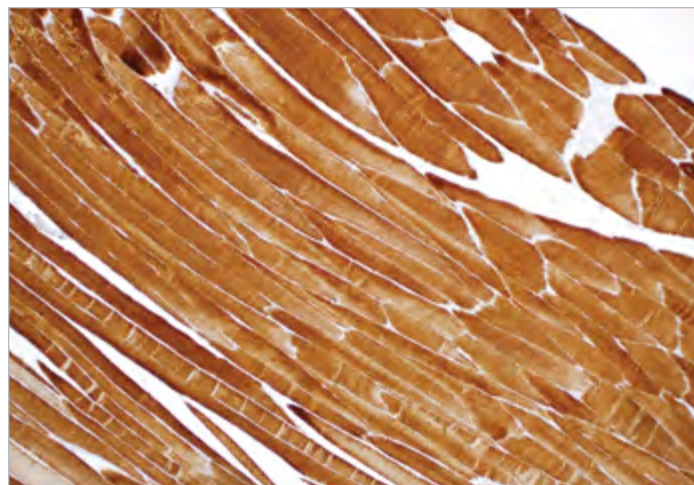
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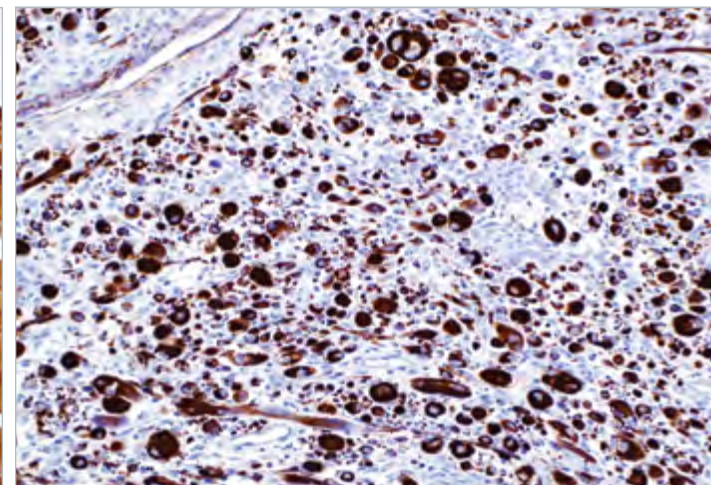
# Actin, Muscle Specific



Actin, Muscle Specific (HHF35) on skeletal muscle.



Actin, Muscle Specific (HHF35) on skeletal muscle.



Anti-muscle specific actin detects strong expression of muscle specific actin in the cytoplasm of rhabdomyosarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** skeletal muscle

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology
- Soft Tissue Pathology

## Associated Panels

- Epithelioid Cell Neoplasms. . . . . 288
- Spindle Cell Tumors. . . . . 290
- Skin: Spindle Cell Tumors . . . . . 294
- Bladder: Dysplasia vs. Reactive. 295
- Muscle Malignant Tumors. . . . . 302
- Small Blue Round Cell Tumors. 302
- Soft Tissue Neoplasms . . . . . 302
- Soft Tissue Sarcoma . . . . . 303
- Soft Tissue Tumor. . . . . 303

## Reference

1. Gown AM, et al. A. J. P. 1986; 125:191.
2. Schmidt R, et al. A. J. P. 1988; 131:199.
3. Azumi N, et al. Modern Pathology. 1988; 1:469-474.
4. Rangdaeng L, et al. Am J Clin Pathology. 1991; 96:32-45.
5. Tsukada T, et al. Am J Pathology. 1987; 127:389-402.

## Product Description

Actin is a major component of the cytoskeleton. This antibody recognizes actin of skeletal, cardiac, and smooth muscle cells. It is not reactive with other mesenchymal cells except for myoepithelium. Actin can be resolved on the basis of its isoelectric points into three distinctive components: alpha, beta, and gamma in order of increasing isoelectric point. Anti-muscle specific actin recognizes alpha and gamma isotypes of all muscle groups. Non-muscle cells such as vascular endothelial cells and connective tissues are non-reactive. Also, neoplastic cells of non-muscle-derived tissue such as carcinomas, melanomas, and lymphomas are negative. This antibody is useful in the identification of rhabdoid cellular elements.

## Panel Quick View

Soft Tissue Sarcoma									
	MS Actin	SM Actin	CD34	CD56	CK Cocktail	Desmin	EMA	Myogenin	TFE3
Alveolar Soft Part Sarcoma	+	+	-	-	-	-	-	-	+
Epithelioid Sarcoma	-/+	-	+	-	+	-	+	-	-
Leiomyosarcoma	+	+	-/+	+	-/+	+	-/+	-	-
Rhabdomyosarcoma	-/+	-/+	-	+	-	+	-	+	-

## Ordering Information

**Clone: HHF35**

Mouse Monoclonal

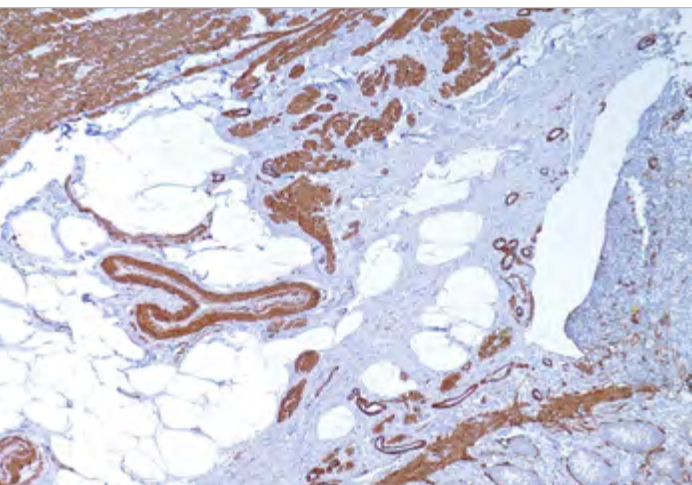
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	201M-94
0.5 ml, concentrate . . . . .	201M-95
1 ml, concentrate . . . . .	201M-96
1 ml, predilute . . . . .	201M-97
7 ml, predilute . . . . .	201M-98

## Designations

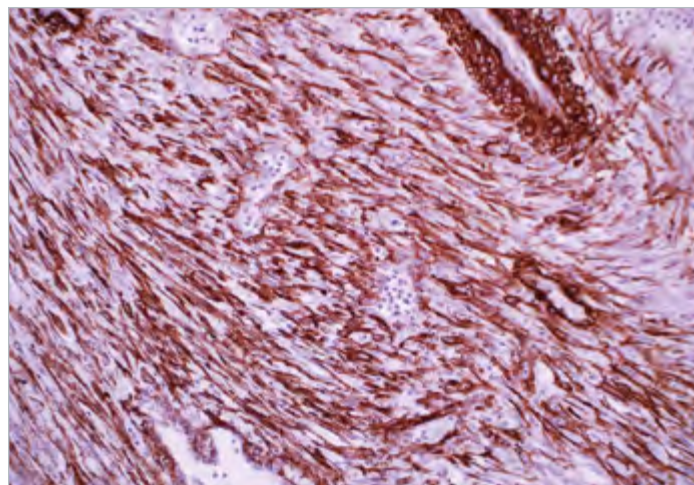
			
IVD	IVD	IVD	RUO



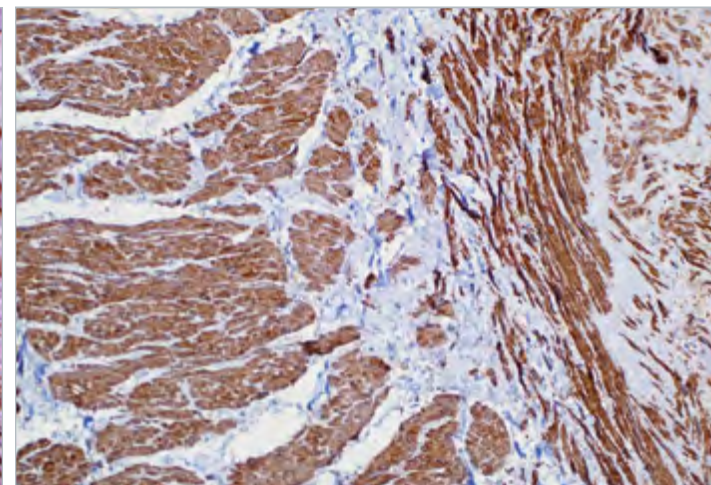
# Actin, Smooth Muscle



Smooth muscle actin (1A4) detects actin expression in the cytoplasm.



Actin, Smooth Muscle (1A4) on soft tissue.



Actin, Smooth Muscle (1A4) on colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** appendix, uterus, vessel wall

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG/k

## Associated Specialties

- Anatomic/Surgical Pathology
- Soft Tissue Pathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- PEComa... 290
- Spindle Cell Lesions... 290
- Spindle Cell Tumors... 290
- Skin: Spindle Cell Tumors... 294
- Muscle Malignant Tumors... 302
- Small Blue Round Cell Tumors... 302
- Soft Tissue Neoplasms... 302
- Soft Tissue Sarcoma... 303
- Soft Tissue Tumor... 303

## Reference

1. Cooke PH. J Cell Biol. 1976; 68:539-556.
2. Skalli O, et al. J Cell Biol. 1986; 103:2787-2796.
3. Gown AM, et al. J Cell Biol. 1985; 100:807-813.
4. Kuroda M. Biochem Biophys Acta. 1985; 843:20-213.
5. Lazarides E. J Histochem Cytochem. 1975; 223:507-528.

## Product Description

Actin is a major component of the cytoskeleton and is present in every cell type. Actin can be resolved on the basis of its isoelectric points into three distinctive components: alpha, beta, and gamma in order of increasing isoelectric point. Anti-smooth muscle actin antibody does not stain cardiac or skeletal muscle; however, it will stain myofibroblasts and myoepithelial cells. This antibody could be used together with muscle specific actin to distinguish leiomyosarcoma from rhabdomyosarcoma. In most cases of rhabdomyosarcoma, this antibody gives negative results whereas muscle specific actin is positive in the rhabdomyoblasts. Leiomyosarcomas are positive with both muscle specific actin and smooth muscle actin antibodies.<sup>1-5</sup>

## Panel Quick View

Spindle Cell Tumors										
	SM Actin	MS Actin	ALK	β-Catenin	Cal-ponin	CD56	CK Cocktail	Desmin	EMA	PGP 9.5
Myofibroblastic Tumor	+	+	+	-	+	+	-	+	-	-
Endometrial Stromal Tumor	+	+	-	+/-	+	-	-	-	-	+
Smooth Muscle	+	+	-	-	+	-	-	+	-	-
Fibromatosis	+	-	-	+	-	-	-	-	-	+
Leiomyosarcoma	+	+	-	-	+	+	-/+	+	+/-	-

Muscle Malignant Tumors									
	SM Actin	MS Actin	Myogenin	PGP 9.5	Caldesmon	Myoglobin	Cal-ponin	Vimentin	INI-1
Leiomyosarcoma	+	+	-	-	+	-	+	+	
Rhabdomyosarcoma	-/+	-/+	+	+	-	+	-	+	+

Soft Tissue Neoplasms										
	SM Actin	MS Actin	Cal-retinin	CD34	CD56	CK Cocktail	Desmin	HMB-45	S-100	TFE3
Alveolar Soft Part Sarcoma	+	+	-	-	-	-	-	-	-	+
Clear Cell Sarcoma	-	-	-	-	-	-	-	+	+	-
Leiomyosarcoma	+	+	-	-/+	+	-/+	+	-	-	-
PEComa	+	-	+	-	+	-	-	+	+	-

## Ordering Information

### Clone: 1A4

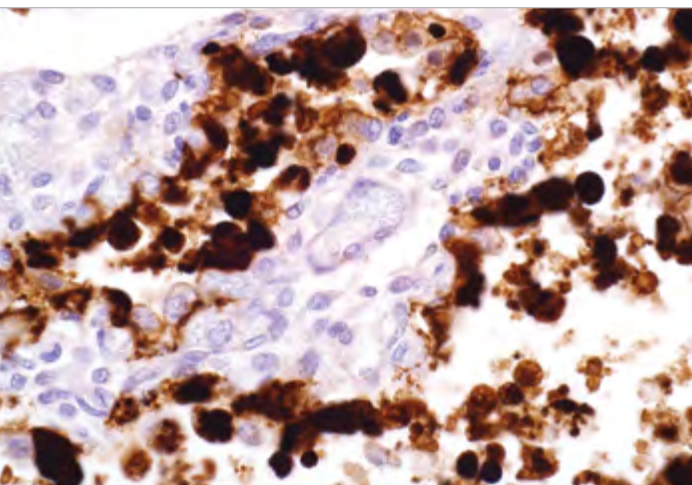
### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	202M-94
0.5 ml, concentrate.....	202M-95
1 ml, concentrate .....	202M-96
1 ml, predilute .....	202M-97
7 ml, predilute .....	202M-98
25 ml, predilute .....	202M-90

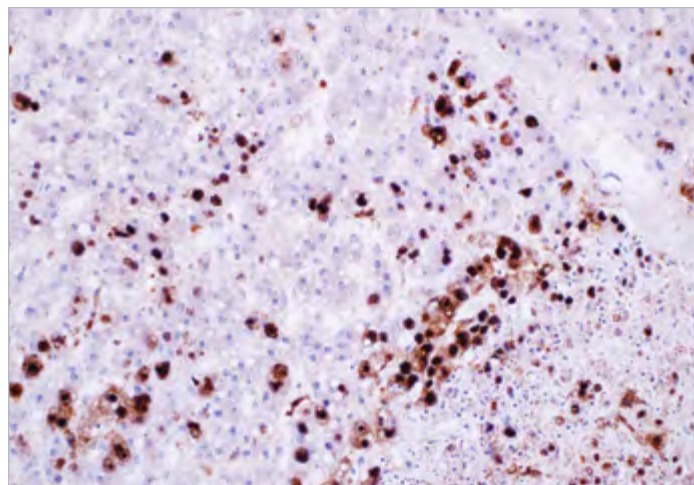
### Designations



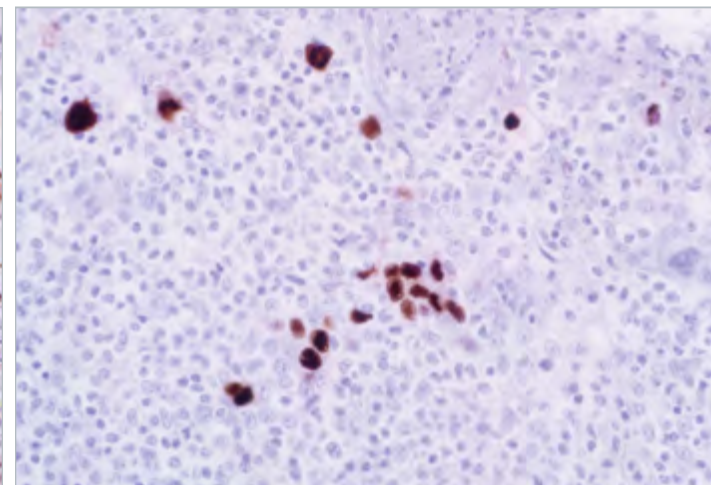
# Adenovirus



Adenovirus (20/11 & 2/6)



Adenovirus (20/11 & 2/6)



Adenovirus (20/11 & 2/6)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** adenovirus infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: 20/11 & 2/6

Mouse Monoclonal

#### Volume ..... Part No.

0.1 ml, concentrate . . . . . 212M-14 (ASR)

0.5 ml, concentrate . . . . . 212M-15 (ASR)

1 ml, concentrate . . . . . 212M-16 (ASR)

1 ml, predilute . . . . . 212M-17 (ASR)

7 ml, predilute . . . . . 212M-18 (ASR)

#### Designations



ASR<sup>†</sup>



IVD



IVD



RUO

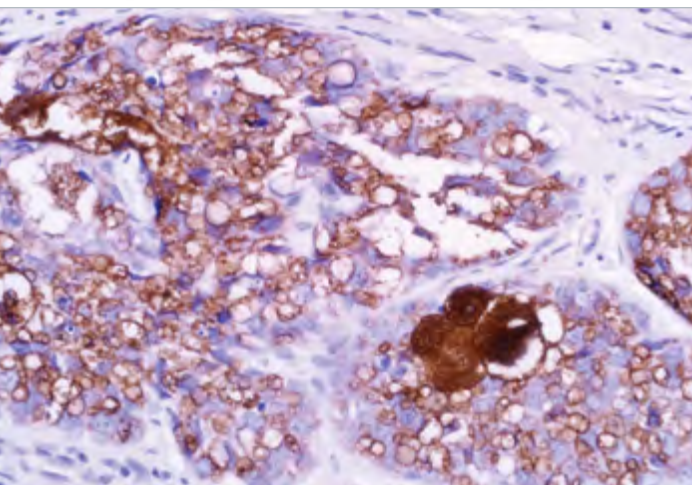
*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

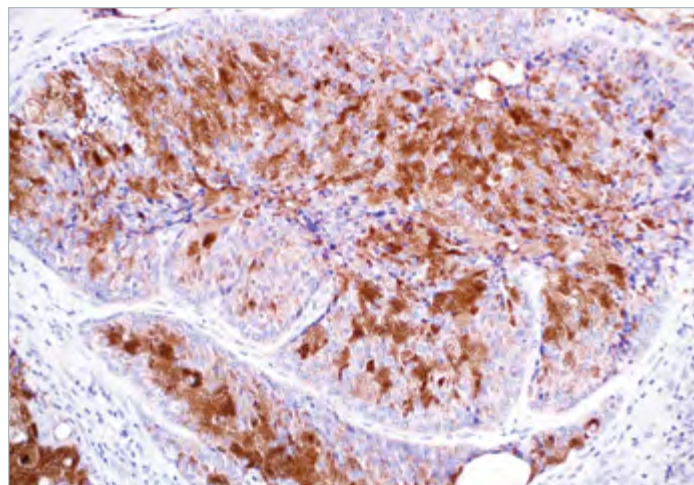
*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*



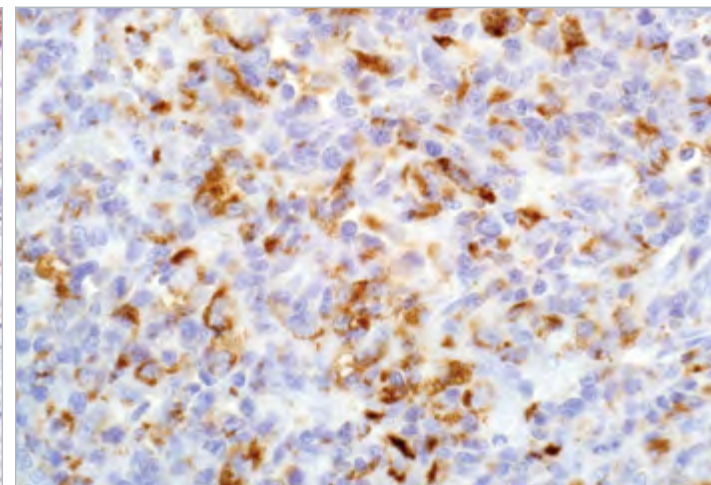
# Adipophilin



Adipophilin (polyclonal) stains cutaneous sebaceous carcinoma.



Adipophilin (polyclonal) on skin, sebaceous adenoma.



Adipophilin (polyclonal) on lymph node, Burkitt lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** sebaceous neoplasms

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

● Dermatopathology

## Associated Panels

● Lesions.....293

## Reference

- Lai TF, et al. Dermatol Surg. 2004; 30:222-5.
- Ostler DA, et al. Mod Pathol. 2010; 23: 567-73.

## Product Description

Sebaceous carcinoma is a relatively uncommon cutaneous malignancy and mimics other malignant neoplasms, such as basal and squamous cell carcinomas, and benign processes, such as chalazions and blepharitis, sometimes resulting in delayed diagnosis and suboptimal treatment.<sup>1</sup> Adipophilin is present in milk fat globule membranes and on the surface of lipid droplets in various normal cell types. Recently, it has been reported that adipophilin was expressed in 16 of 16 (100%) sebaceous adenomas with a specific pattern: membranous with strong uptake at the periphery of intracytoplasmic lipid vacuoles.<sup>2</sup> Of 25 sebaceous carcinomas, 23 (92%) were also labeled with a similar pattern. Additionally, in cases of poorly differentiated sebaceous carcinoma (n=11), in which sebaceous differentiation could not have been reliably interpreted in H&E sections, adipophilin highlighted the sebocytes with a strong membranous labeling of intracytoplasmic lipid droplets in 9 of 11 cases (82%). Moreover, 10 of 10 (100%) xanthelasma, 9 of 10 (90%) xanthogranulomas, 6 of 6 (100%) xanthomas, and 9 of 13 (63%) metastatic renal cell carcinomas were also weakly-to-moderately positive for adipophilin.<sup>2</sup> Expression of adipophilin with a membranous pattern of staining was not seen in any of the other clear cell lesions of the skin, including basal and squamous cell carcinomas, trichilemmomas, clear cell hidradenomas, or balloon cell nevi. Interestingly, a nonspecific granular uptake of anti-adipophilin was seen in adjacent macrophages, keratohyalin granules of epithelial squamous cells, and some tumor cells. Therefore, this anti-adipophilin is suitable for immunostaining formalin-fixed, paraffin-embedded tissue and is helpful in the identification of intracytoplasmic lipids, as seen in sebaceous lesions. It is especially helpful in identifying intracytoplasmic lipid vesicles in poorly differentiated sebaceous carcinomas in challenging cases such as small periocular biopsy specimens.

## Panel Quick View

Lesions	Adipophilin	CK Cocktail	CK5&14	EMA	Ber-EP4
Sebaceous Adenoma	+	+	+	+	+
Sebaceous Carcinoma	+	+	+	+	+
Basal Cell Carcinoma	-	+	-	-	+
Squamous Cell Carcinoma	-	+	+	+	-

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

Volume .....	Part No.
0.1 ml, concentrate.....	393A-14
0.5 ml, concentrate.....	393A-15
1 ml, concentrate .....	393A-16
1 ml, predilute .....	393A-17
7 ml, predilute .....	393A-18

## Designations



IVD



IVD



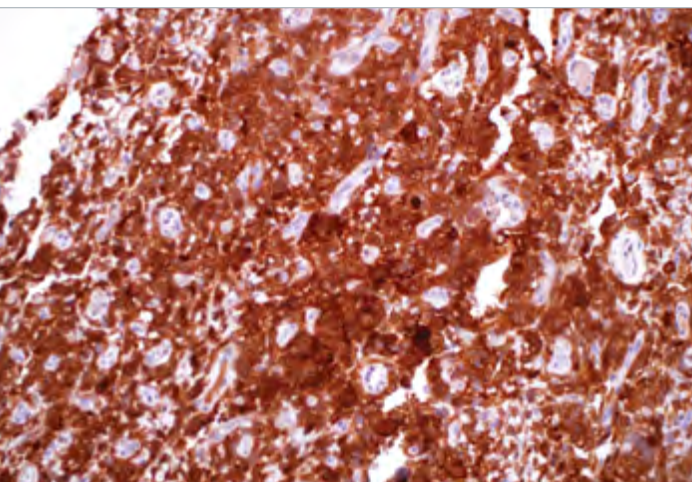
IVD



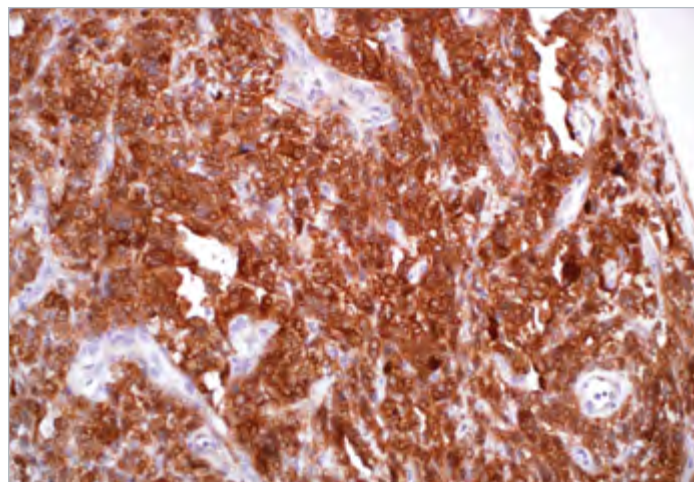
RUO



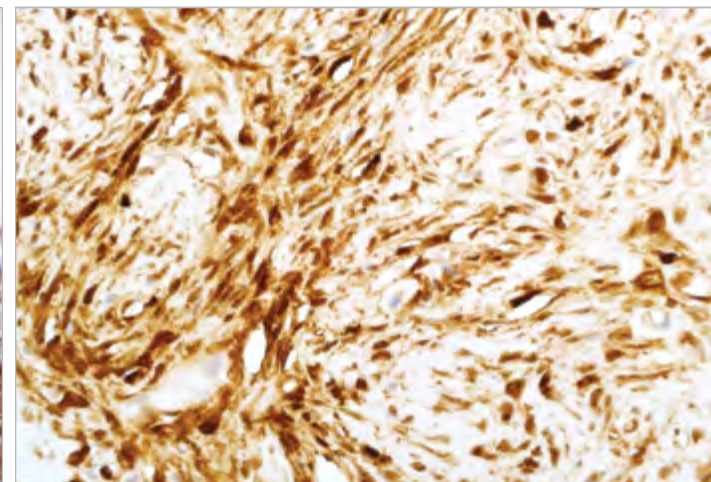
# ALDH1A1



ALDH1A1 (44) on soft tissue.



The neoplastic cells show a strong cytoplasmic staining reaction.  
Note the endothelial cells are negative for ALDH1A1 (44).



ALDH1A1 (44) on solitary fibrous tumor.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** solitary fibrous tumor

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Soft Tissue Pathology

## Associated Panels

● Skin: Spindle Cell Tumors . . . . .294

## Reference

- Marcato P, et al. Cell Cycle. 2011; 10:1378-1384.
- Chute JP, et al. Proc Natl Acad Sci USA. 2006; 103:11707-11712.
- Bouvier C, et al. Acta Neuropathologica Communications. 2013; 1:1-10.

## Product Description

ALDH1A1 belongs to the ALDH enzymes, a family of evolutionarily conserved enzymes comprised of 19 isoforms that are localized in the cytoplasm, mitochondria or nucleus.<sup>1</sup> ALDH1A1 is predominantly expressed in the epithelium of testis, brain, eye, liver, kidney, as well as neural and hematopoietic stem cells.<sup>2</sup> Recently, it has been reported that high ALDH1A1 mRNA expression was seen in solitary fibrous tumor (SFT) and hemangiopericytoma (HPC), compared to meningiomas and synovial sarcomas.<sup>3</sup> An immunohistochemical study with ALDH1A1 antibody in 243 meningeal tumors (tissue microarray), including 25 central nervous system SFTs, 13 extrameningeal SFTs, 55 central nervous system HPCs, 163 meningiomas, and 98 synovial sarcomas<sup>3</sup> found that 21 of 25 meningeal SFTs (84%), 11 of 13 extrameningeal SFTs (84.6%), and 18 of 24 (85.4%) meningeal HPCs were positive with anti-ALDH1A1 antibody. Anti-ALDH1A1 can be combined with anti-CD34 to aid in the differentiation between SFT, HPC, meningioma, and synovial sarcoma.<sup>3</sup> 24/25 (96%) meningeal SFTs and 54/55 (98%) meningeal HPCs were positive for ALDH1A1 and/or CD34 whereas only 10/163 (6%) meningiomas and 7/98 (7%) synovial sarcomas were positive for ALDH1A1 and/or CD34.<sup>3</sup> Anti-ALDH1A1 IHC has been recommended for routine use in association with anti-CD34 for the differentiation among SFT, HPC, meningioma, and synovial sarcoma.<sup>3</sup>

## Panel Quick View

Neoplasms with Hemangiopericytomic Features vs. Other Tumors					
	ALDH1A1	CD34	CK 8&18	CK 19	EMA
Solitary Fibrous Tumor	+	+	-	-	-
Hemangiopericytoma	+	+	-	-	-
Meningioma	-	-/+	-	-	+
Synovial Sarcoma	-	-	+	+	+

## Ordering Information

### Clone: 44

### Mouse Monoclonal

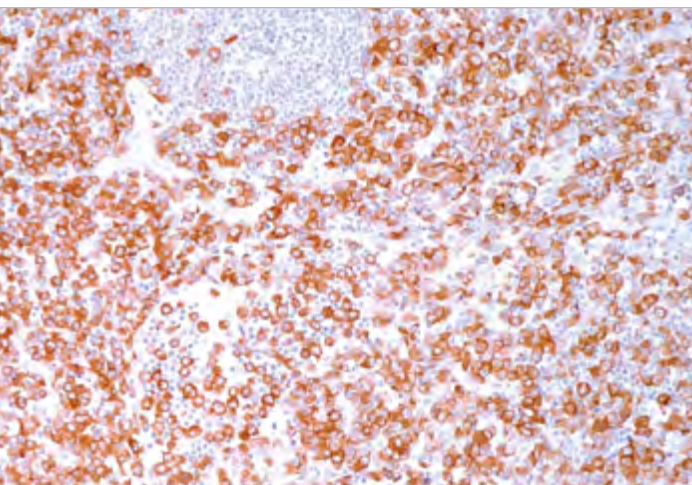
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	400M-14
0.5 ml, concentrate . . . . .	400M-15
1 ml, concentrate . . . . .	400M-16
1 ml, predilute . . . . .	400M-17
7 ml, predilute . . . . .	400M-18

### Designations

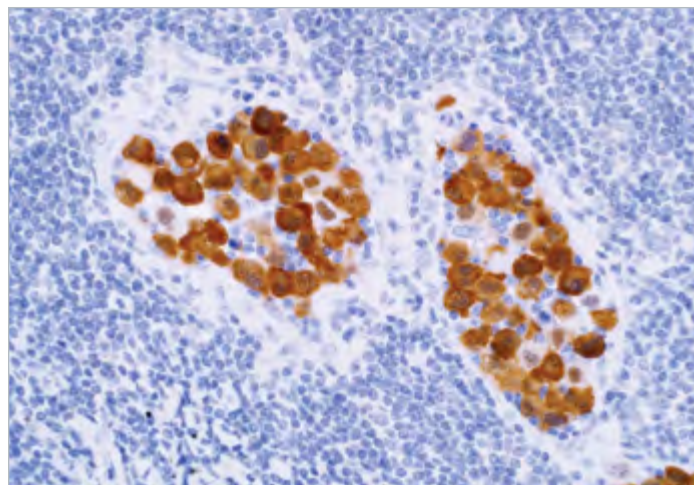
 IVD	 IVD	 IVD	 RUO
-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------



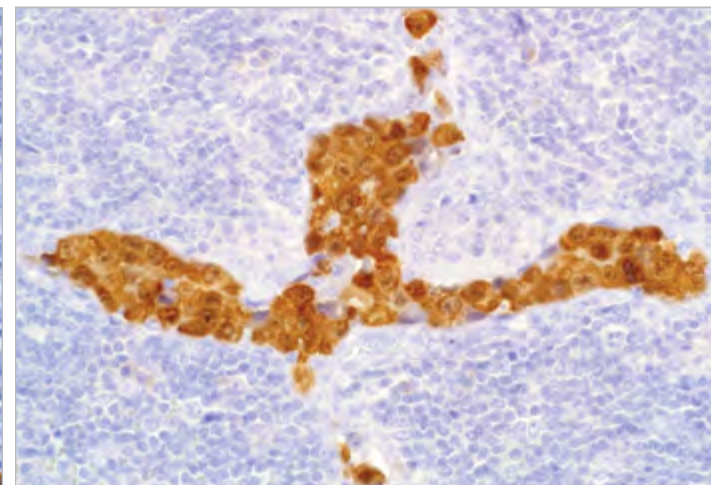
# ALK Protein



ALK Protein (ALK-1) on ALCL.



ALK Protein (ALK-1) on ALCL.



ALK Protein (ALK-1) illustrates a strong cytoplasmic reaction in ALCL with a sinusoidal distribution.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** anaplastic large cell lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>3</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

● Spindle Cell Tumors.....290

● Hodgkin vs. Non-Hodgkin Lymphomas.....297

● Soft Tissue Tumor.....303

## Reference

1. Cataldo KA, et al. Am J Surg Pathol. 1999; 32:1386-1392.
2. Nakamura S, et al. Am J Surg Pathol. 1997; 21:1420-1432.
3. Falini B, et al. Am J Pathol. 1998; 153:875-886.

## Product Description

ALK-1 is a fusion protein which is detected in 50%-85% of ALK+, anaplastic large cell lymphomas (ALCL) and has been shown to indicate improved prognosis in the ALK-1 (+) ALCL. Studies have demonstrated approximately 5%-10% of non-small cell lung carcinoma can express ALK protein recognized by this antibody producing a cytoplasmic staining pattern.

## Panel Quick View

Hodgkin vs. Non-Hodgkin Lymphomas										
	ALK	BCL6	CD15	CD30	CD79a	EMA	Fascin	Gran-zyme B	MUM1	PU.1
Anaplastic Large Cell Lymphoma	+	+/-	-	+	-	+	-	+	-	-
Hodgkin Lymphoma, Classic	-	-	+	+	-	-	+	-	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-	+	-	-	+	+	-	-	-/+	+
T-cell Rich LBCL	-	+	-	-	+	-	-	-	+	-

Soft Tissue Tumor								
	ALK	MS Actin	SM Actin	CD99	CK Cocktail	S-100	TFE3	TLE1
Alveolar Soft Part Sarcoma	-	+	+	-	-	-	+	-
Clear Cell Sarcoma	-	-	-	-	-	+	-	-
Desmoplastic Small Round Cell	-	-	-	-	+	-	-	-
Epithelioid Sarcoma	-	-/+	-	-	+	-	-	-
Fibrous Histiocytoma	-	-	+	-	-	-	-	-
Inflammatory Myofibroblastic Tumor	+	+	+	-	-	-	-	-
Myxoid Chondrosarcoma	-	-	-	-	-	+/-	-	-
PEComa	-	-	+	-	-	-	-	-
PNET/ES	-	-	-	+	-/+	+	-	-
Synovial Sarcoma	-	-	-	+	+	-	-	+

## Ordering Information

### Clone: ALK-1

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	204M-14
0.5 ml, concentrate.....	204M-15
1 ml, concentrate .....	204M-16
1 ml, predilute .....	204M-17
7 ml, predilute .....	204M-18

### Designations



IVD



IVD



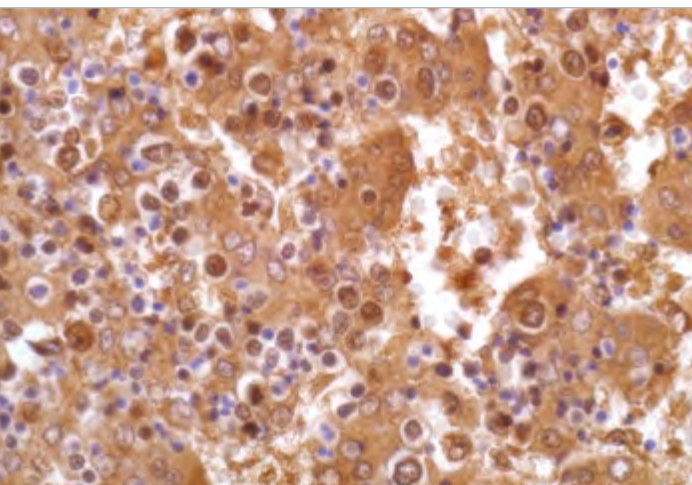
IVD



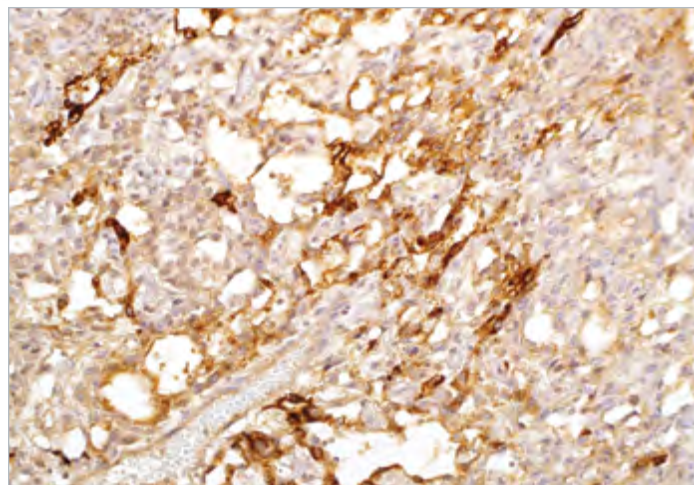
RUO



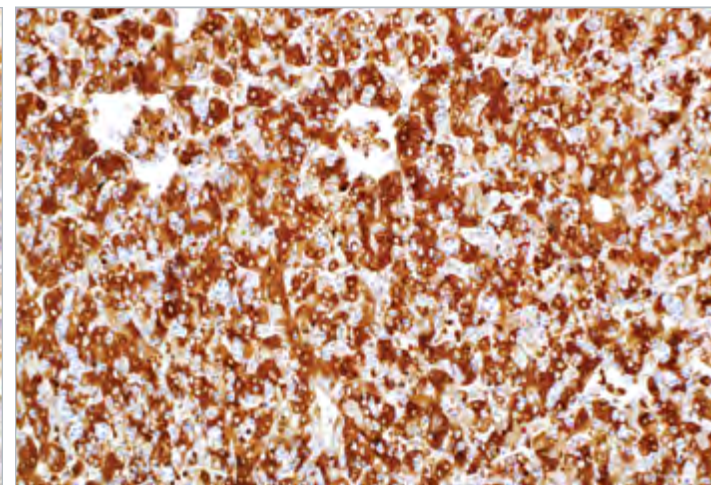
# Alpha-Fetoprotein



Alpha-Fetoprotein (EP209) on fetal liver.



Alpha-Fetoprotein (polyclonal) on ovarian yolk sac tumor.



Alpha-Fetoprotein (polyclonal) picks up fetal liver cells in a strong cytoplasmic staining reaction.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** fetal liver  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

AFP

## Associated Specialties

- Anatomic/Surgical Pathology
- Genitourinary (GU) Pathology

## Associated Panels

- Liver: Malignant vs. Benign... 288
- Germ Cell Tumors... 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma... 295

## Reference

1. Leong ASY, et al. Manual of diagnostic antibodies for immunohistology. London: Oxford UP, 1999. Print p. 9-10.
2. Peyrol S, et al. Digestion. 1978; 18:351-70.
3. Tsung SH. Arch Pathol Lab Med. 1977; 101:572-4.
4. Goodman ZD, et al. Cancer. 1985; 55:124-35.
5. Roth LM, et al. Cancer. 1976; 37:812-20.
6. Jacobsen GK, et al. Am J Surg Pathol. 1981; 5:257-66.

## Product Description

Positive staining with anti-alpha-fetoprotein (AFP) is seen in hepatocytes of fetal liver and hepatoma.<sup>1,2</sup> Since only traces of AFP are found in adult serum, elevated levels suggest either a benign or malignant lesion of the liver, a yolk sac carcinoma, or one of a few other tumors. Correspondingly, in conjunction with elevated serum levels, AFP has been immunohistochemically demonstrated in yolk sac tumor of gonadal and extragonadal sites, in hepatic malignancies, and a few other neoplasms.<sup>2-6</sup>

## Panel Quick View

Liver: Malignant vs. Benign									
	AFP	A1AT	CD34	mCEA	pCEA	GPC-3	Hep Par-1	p53	TTF-1
Hepatocellular Carcinoma	-/+	-/+	+	-	+	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+	-	-	+	+	+	+	-
Benign Liver Nodules	-	+/-	-	-	-	-	+	-	+ (cytoplasmic)

Germ Cell Tumors										
	AFP	CD30	CD117	EMA	GPC-3	hPL	Inhibin	Oct-4	PLAP	Vimentin
Seminoma (Seminoma/Dysgerminoma)	-	-	+	-	-	-	-	+	+	+
Embryonal Carcinoma	-	+	-	-	-	-	-	+	+	-
Choriocarcinoma	-	-	-	+	+	+	-	-	+	-/+
Yolk Sac Tumor	+	-	-/+	-	+	-	-	-	-/+	-
Granulosa Cell Tumor	-	-	-	-	-	-	+	-	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	+	-	-	-	-	-	-
Mature Teratoma	+/-	-	-	+	-	-/+	-	-	+/-	+
Immature Teratoma	-	-	+/-	+	-	-/+	-	-	-	+
Carcinoid	-	-	-	-	-	-	-	-	-	+

## Ordering Information

**Clone: EP209**  
 Rabbit Monoclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate . . . . . 203R-14  
 0.5 ml, concentrate . . . . . 203R-15  
 1 ml, concentrate . . . . . 203R-16  
 1 ml, predilute . . . . . 203R-17  
 7 ml, predilute . . . . . 203R-18

## Alternate Clones Available

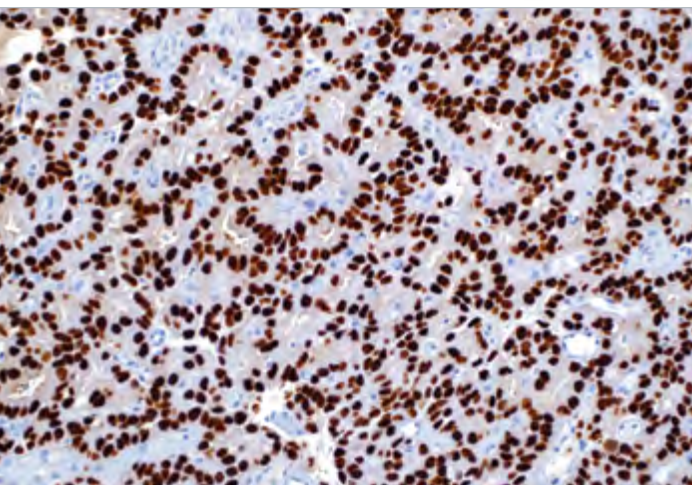
• Rabbit Polyclonal  
 Contact us for more information.

## Designations

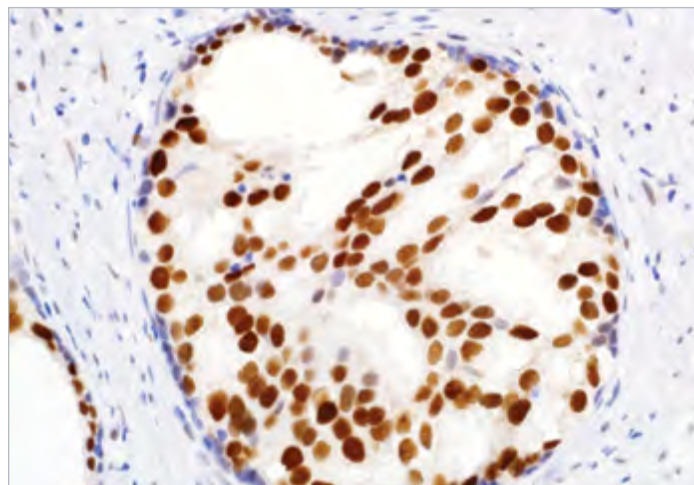




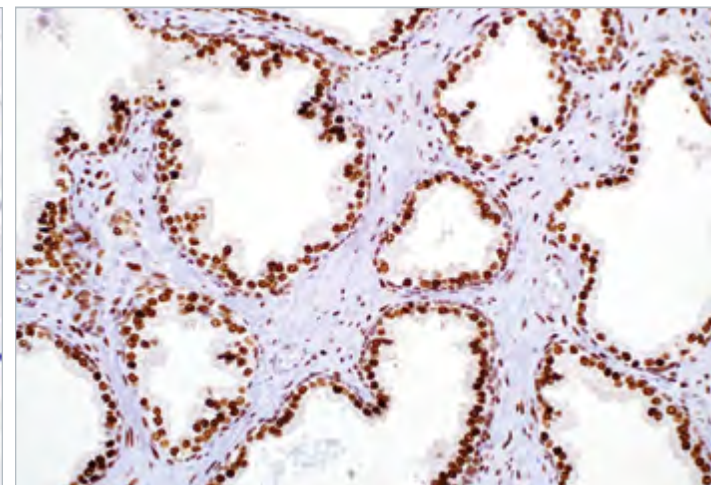
# Androgen Receptor



Androgen Receptor (SP107) strongly labels the nuclei of prostatic adenocarcinoma.



Androgen Receptor (SP107) on prostate adenocarcinoma.



Androgen Receptor (SP107) on prostate hyperplasia.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** prostate carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

AR

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Colon vs. Prostate Adenocarcinoma ..... 287
- Cutaneous Neoplasm ..... 292
- Prostate: Malignant vs. Benign . 296

## Reference

1. Bléchet C, et al. Virchows Arch. 2007; 450:433-9.
2. Carroll RS, et al. Journal Neurosurgery. 1995; 82:453-60.
3. Cordon-Cardo C, et al. J Clin Invest. 2007; 117:1876-83.
4. Gonzalez LO, et al. Histopathology. 2007; 50:866-74.
5. Hakimi JM, et al. World Journal of Urology. 1996; 14:329-37.

## Product Description

Qualitative and quantitative alterations of androgen receptor expression in prostatic carcinomas and their possible implications for tumor progression and treatment are therefore of diagnostic and research interest. Findings in prostatic tumor cell lines of rat and human origin suggest that reduction of androgen receptor protein expression is accompanied by an increase in tumor aggressiveness. However, immunohistochemical analysis and binding assays have demonstrated the presence of androgen receptors in all histological types of prostatic carcinoma and in both therapy-responsive as well as therapy-unresponsive tumors.

Most of the immunohistochemical studies of androgen receptors have been related to prostatic carcinoma and experimental animals. Patients with 48% or more androgen receptor-positive cells had statistically significant better outcome in terms of both progression-free and cause-specific survival. Another study suggested that prior to therapy, androgen receptor expression alone is not related to prognosis of hormonally treated prostate cancer; however, when combined with BCL2 expression, it acts as an independent prognostic factor for clinical progression.

The variability of androgen receptor protein content per unit nuclear area has been shown to increase with increasing histological grade, suggesting that this variability might account for the response to endocrine therapy in high grade tumors. The extent of heterogeneity of androgen receptor expression may be a useful indicator of response to hormonal therapy.<sup>1-5</sup>

## Panel Quick View

Carcinoma: Differential Diagnosis							
	AR	BCA-225	ER/PR	BRST-2	Mamma-globin	NKX3.1	PSA/PSAP
Salivary Duct Carcinoma	+	+	-	+	-	-	-
Breast Carcinoma	+	+	+/+	+	+	-	-
Prostate Carcinoma	+	-	-	-	-	+	+

Cutaneous Neoplasm							
	AR	BCL2	CD10	CD34	CK 19	CK 20	Ber-EP4
Basal Cell Carcinoma	+	+	+	-	+	-	+
Trichoepithelioma	-	+	-	+	+	+	+
Merkel Cell Carcinoma	-	+	-	-	+	+	+
Microcystic Adnexal Carcinoma	-	+	+/-	-	+	-	+/-
Sebaceous Carcinoma	+	+/-	+/-	-	-	-	+

Prostate: Malignant vs. Benign							
	AR	CK 34βE12	CK 5&6	CK 14	p63	P504s	PSA/PSAP
Prostate Carcinoma	+	-	-	-	-	+	+
Benign Prostate	+	+	+	+	+	+/-	+

## Ordering Information

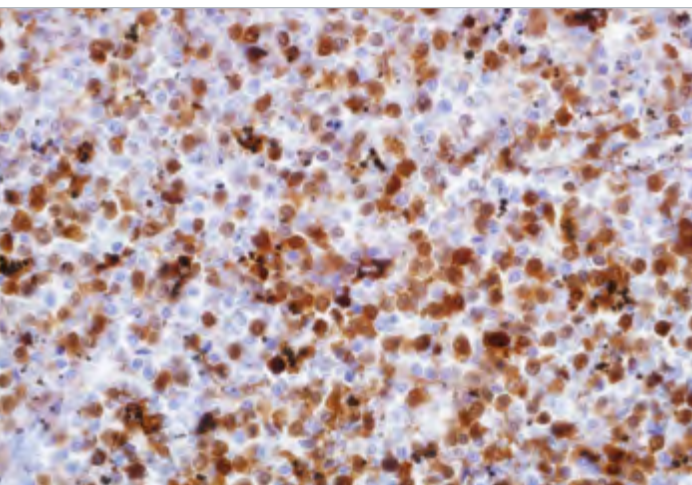
**Clone: SP107**  
 Rabbit Monoclonal

**Volume** ..... **Part No.**  
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 0.5 ml, concentrate ..... 200R-15  
 1 ml, concentrate ..... 200R-16  
 1 ml, predilute ..... 200R-17  
 7 ml, predilute ..... 200R-18

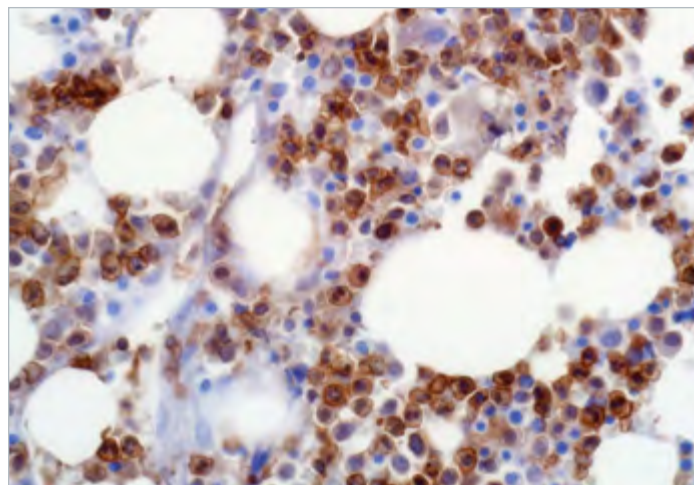
## Designations

 IVD     IVD     IVD     RUO

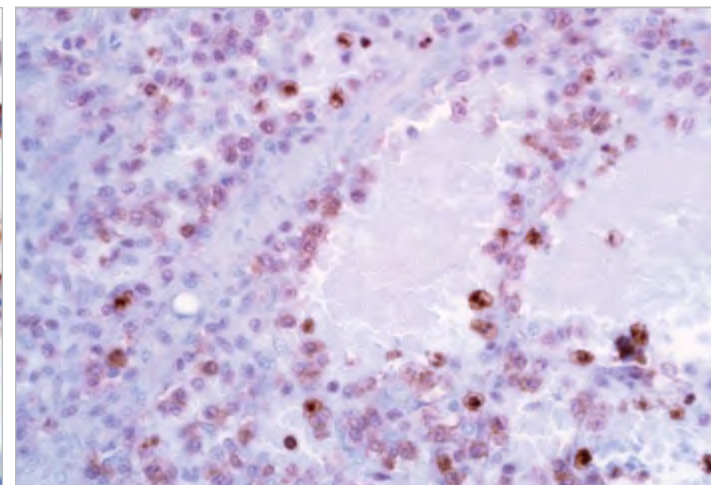
# Annexin A1



Hairy cell leukemia cells are strongly stained in cytoplasmic staining pattern.



Annexin A1 (MRQ-3) on bone marrow.



Annexin A1 (MRQ-3) on spleen.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** hairy cell leukemia

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

ANXA1

## Associated Specialties

● Hematopathology

## Associated Panels

- B-cell Lymphomas . . . . . 296
- Mature B-cell Lymphomas . . . . 299
- Mature B-cell Neoplasms. . . . . 299

## Reference

1. Falini B, et al. Lancet. 2004; 363:1869-70, 2194.
2. Wang KL, et al. Clin Cancer Res. 2006; 12:4598-604.
3. Xia SH, et al. Oncogene. 2002; 21:6641-8.
4. Dreier R, et al. Histochem Cell Biol. 1998; 110:137-48.

## Product Description

Annexin A1 (ANXA1) is strongly expressed on the cell membrane and occasionally in the cytoplasm of tumor cells in 97% of samples from patients with hairy cell leukemia. By contrast, B-cell lymphomas other than hairy cell leukemia, including typical splenic lymphoma with villous lymphocytes and patients with variant hairy cell leukemia-as defined by current morphologic, phenotypic, and clinical criteria-are ANXA1-negative. In a study by Falini et al. ANXA1 immunodetection was 100% sensitive and specific for hairy cell leukemia. Normal B-cells from different lympho-hemopoietic tissues were ANXA1-negative. In this study the expression of ANXA1 in myeloid cells, macrophages, or T-cell subset served as positive control. These findings validated the results of gene expression profiling in hairy cell leukemia at the protein level by showing that ANXA1 is consistently expressed in this type of leukemic disease, but not in other B-cell lymphomas. Of note is that negativity for ANXA1 was also present in patients with splenic lymphoma with villous lymphocytes, variant hairy cell leukemia, prolymphocytic leukemia, marginal zone and lymphoplasmacytoid lymphomas. Thus, ANXA1 is a molecule specific to hairy cell leukemia that can be used to differentiate this disease from other B-cell lymphomas. Wang et al. showed that high ANXA1 expression is frequent in esophageal and esophagogastric junction adenocarcinomas, is associated with more advanced pathologic T-stage and the presence of distant metastasis, and is an independent prognostic factor for patient survival.

## Panel Quick View

B-cell Lymphomas										
	ANXA1	BCL6	CD5	CD10	CD11c	CD23	CD79a	Cyclin D1	MUM1	TRAcP
Burkitt Lymphoma	-	+	-	+		-	+	-	-	-
CLL/SLL	-	-	+	-	-/+	+	+	-	+	-
Diffuse Large Cell Lymphoma	-	+/-	-/+	-/+		-	+	-	+/-	-
Follicular	-	+	-	+		-	+	-	-	-
Hairy Cell Leukemia	+	-	-	-	+	-	+	+(weak) /-		+
Lymphoplasmacytic	-	-	-	-	-	-	+	-	+	-
Mantle Cell	-	-	+	-	-	-	+	+	-	-
Marginal Zone	-	-	-	-	+	-	+	-	+	+/-

## Ordering Information

**Clone: MRQ-3**  
Mouse Monoclonal

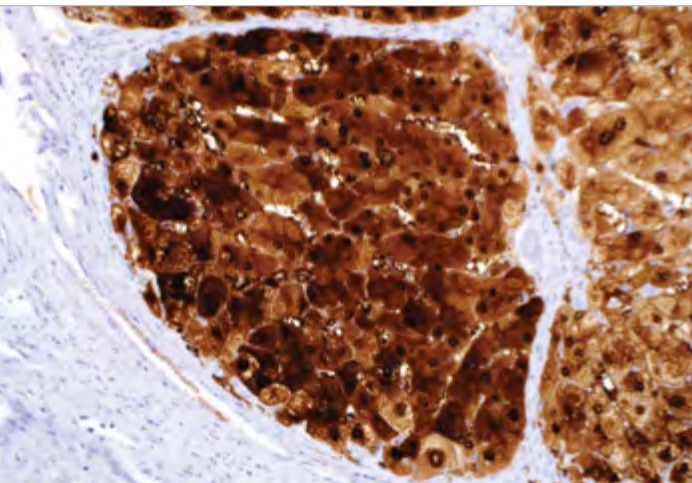
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	221M-14
0.5 ml, concentrate . . . . .	221M-15
1 ml, concentrate . . . . .	221M-16
1 ml, predilute . . . . .	221M-17
7 ml, predilute . . . . .	221M-18

## Designations

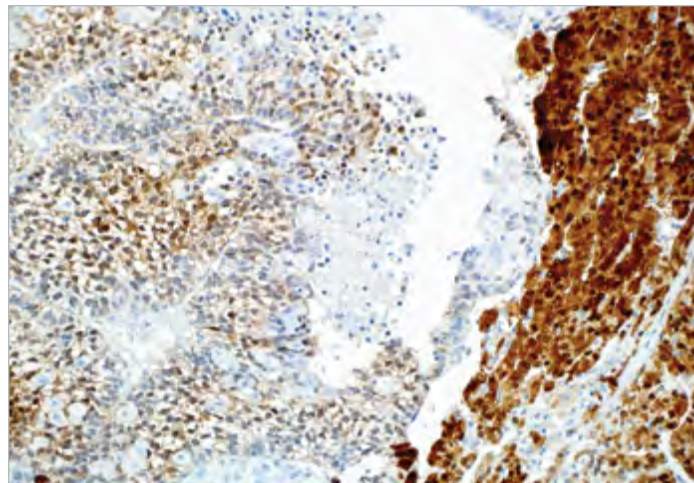
			
IVD	IVD	IVD	RUO



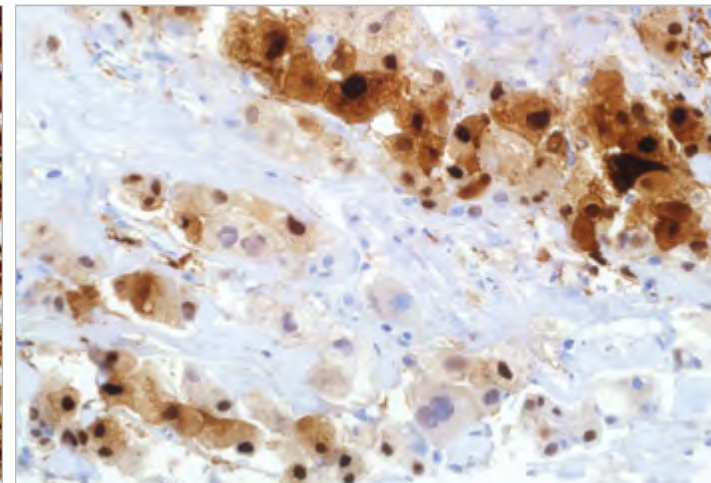
# Arginase-1



Arginase-1 (SP156) on liver, cirrhosis.



Arginase-1 is expressed strongly in well-differentiated HCC (right) and weakly in moderately differentiated HCC (left).



Arginase-1 (SP156) on liver, hepatocellular carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** normal liver, hepatocellular carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Gastrointestinal (GI) Pathology

## Associated Panels

- Carcinomas. . . . . 287
- Liver: Malignant vs. Benign. . . . . 288
- Liver Neoplasm. . . . . 288

## Reference

1. Jemal A, et al. CA Cancer J Clin. 2011; 61:69- 90.
2. Linda DF. Philadelphia, PA: W.B. Saunders. 2009; 1291-325.
3. El-Serag HB. Clin Liver Dis. 2001; 5:87-107.
4. Wee A. Cytojournal. 2005; 2:7.
5. Wee A. Cytopathology. 2011; 22:287-305.
6. Niemann TH, et al. Cancer. 1999; 87:295-298.
7. Onofre AS, et al. Cancer. 2007; 111:259-268.
8. Nassar A, et al. Diagnostic Cytopathology. 2009; 37:629-635.
9. Zimmerman RL, et al. Cancer. 2001; 93:288-291.
10. Zhu ZW, et al. Gut. 2001; 48:558-564.

## Product Description

Hepatocellular carcinoma (HCC) is the most common primary malignant tumor of the liver accounting for an estimated 70%-85% of total liver cancers worldwide.<sup>1,2</sup> While the highest liver cancer rates are found in East and Southeast Asia and sub-Saharan Africa, the incidence is increasing in the West due to the burden of chronic hepatitis C infection and steatohepatitis attributed to the obesity epidemic.<sup>1,3</sup> Although advancements in diagnostic imaging modalities and refined methods of clinical investigation have obviated the need for tissue diagnosis in some cases<sup>4,5</sup>, fine needle aspiration (FNA) biopsy remains the procedure of choice in the assessment and diagnosis of focal liver nodules and masses.<sup>2</sup> Unfortunately, diagnostic pitfalls exist in the morphologic distinction of HCC from other hepatocellular and non-hepatocellular mass lesions. Of note, the morphologic distinction of regenerative cirrhotic nodules, hepatic adenoma, and focal nodular hyperplasia from well-differentiated HCC presents a diagnostic challenge, particularly in small biopsies with limited sampling. Similarly, cases of metastatic carcinoma and other benign and malignant non-hepatocellular mimics are well documented and can be problematic.<sup>4-7</sup>

In difficult or equivocal cases, the application of immunohistochemical (IHC) panels has been shown to aid in the distinction of benign and malignant liver lesions.<sup>4,9</sup> In particular, the application of CD10, polyclonal carcinoembryonic antigen, alpha-fetoprotein, Hep Par-1, and glypican-3 (GPC-3) IHC has proven valuable in liver biopsy and FNA cytology specimens.<sup>5-10</sup> IHC staining for Hep Par-1, a mitochondrial urea cycle antigen, has demonstrated high sensitivity and specificity in the distinction between metastatic carcinoma and HCC but is also expressed in benign hepatocellular lesions.<sup>8,9</sup> In contrast, GPC-3, a heparin sulphate proteoglycan expressed at high levels in HCC, has shown high specificity with suboptimal sensitivity in the diagnosis of HCC when used in isolation. Arginase-1 is a key urea cycle metalloenzyme that has demonstrated expression in normal human liver with a high degree of specificity.<sup>11,12</sup> In sections of normal liver, anti-arginase-1 produced strong, diffuse cytoplasmic reactivity in all hepatocytes throughout the lobule. In a small percentage of cases, patchy nuclear reactivity is also evident in hepatocytes along with the strong cytoplasmic reactivity. There is no reactivity in bile duct epithelial cells, sinusoidal endothelial cells, Kupffer cells, or vascular endothelial cells. In sections of HCC, anti-arginase-1 produces either cytoplasmic or cytoplasmic plus nuclear reactivity.

## Panel Quick View

Liver Neoplasms	Arginase-1	CD10	pCEA	GPC-3	Hep Par-1
Hepatic Adenoma	+	+	+	-	+
Hepatocellular Carcinoma	+	+	+	+	+
Metastatic Adenocarcinoma	-	-/+	-/+	-	-

## Ordering Information

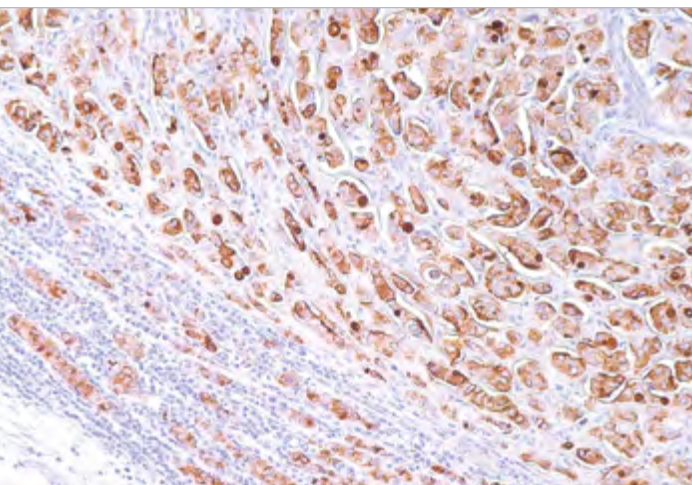
**Clone: SP156**  
Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	380R-14
0.5 ml, concentrate. . . . .	380R-15
1 ml, concentrate . . . . .	380R-16
1 ml, predilute . . . . .	380R-17
7 ml, predilute . . . . .	380R-18
25 ml, predilute . . . . .	380R-10

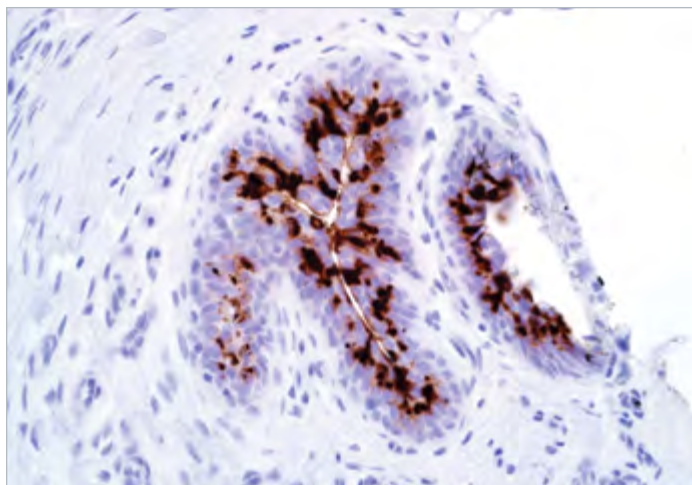
## Designations

			
IVD	IVD	IVD	RUO

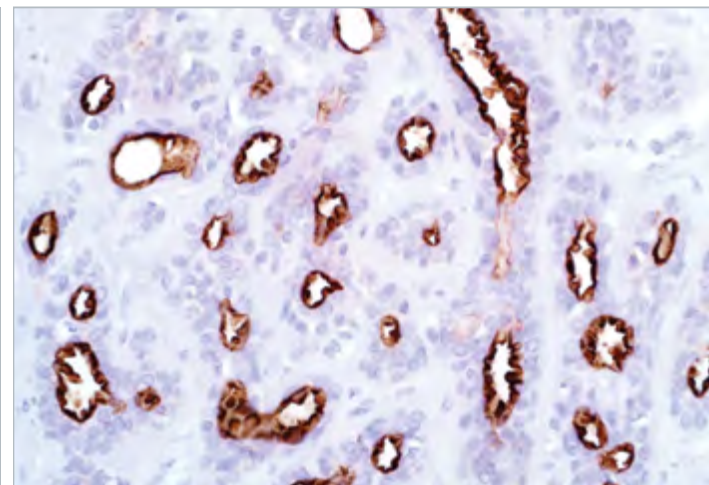
# BCA-225



BCA-225 (Cu-18) shows a moderate to strong cytoplasmic staining reaction for breast invasive ductal carcinoma, metastatic to lymph node.



BCA-225 (Cu-18) on breast.



BCA-225 (Cu-18) on breast.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

BRST-1

## Associated Specialties

- Anatomic/Surgical Pathology
- Breast/Gynecological Pathology
- Cytopathology

## Associated Panels

- Carcinoma: Differential Diagnosis  
..... 286

## Reference

1. Ceriani RL. Boston, Martinus, Nijhoff. 1985.
2. Mesa-Tejada R, et al. Am J Pathol. 1988; 130:305-314.
3. Loy TS, et al. Am J Clin Pathol. 1991; 96:326-9.
4. Ma CK, et al. Am J Clin Pathol. 1993; 99:551-7.

## Product Description

Anti-BCA-225 antibody recognizes a human breast carcinoma associated glycoprotein BCA-225 (220-225kD). This protein differs in size and distribution from other breast carcinoma antigens. Unlike other antibodies against breast carcinoma antigens, this antibody does not react with benign or malignant colonic, stomach, prostate, liver, pancreas, thyroid, or parotid tissues. Adenocarcinomas of the lung, ovary and endometrium also stain with this antibody.

## Panel Quick View

Carcinoma: Differential Diagnosis							
	BCA-225	AR	ER/PR	BRST-2	Mamma-globin	NKX3.1	PSA/PSAP
Salivary Duct Carcinoma	+	+	-	+	-	-	-
Breast Carcinoma	+	+(apocrine)	+/+	+	+	-	-
Prostate Carcinoma	-	+	-	-	-	+	+
Lung Carcinoma	+/-	-	+/-	-	-	-	-

## Ordering Information

### Clone: Cu-18

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	225M-14
0.5 ml, concentrate.....	225M-15
1 ml, concentrate .....	225M-16
1 ml, predilute .....	225M-17
7 ml, predilute .....	225M-18

### Designations



IVD



IVD

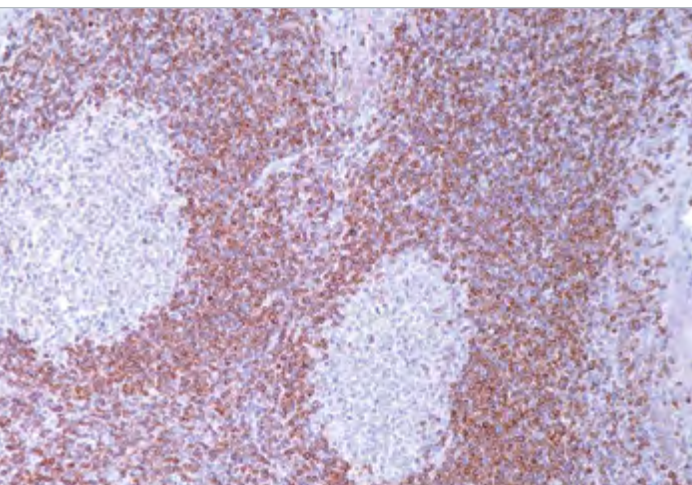


IVD

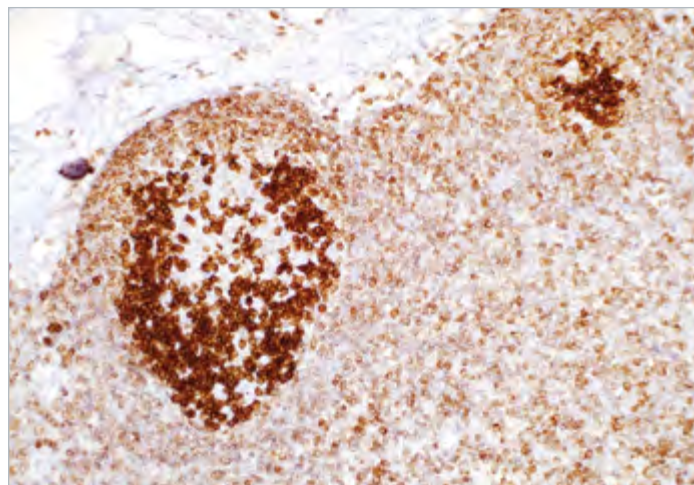


RUO

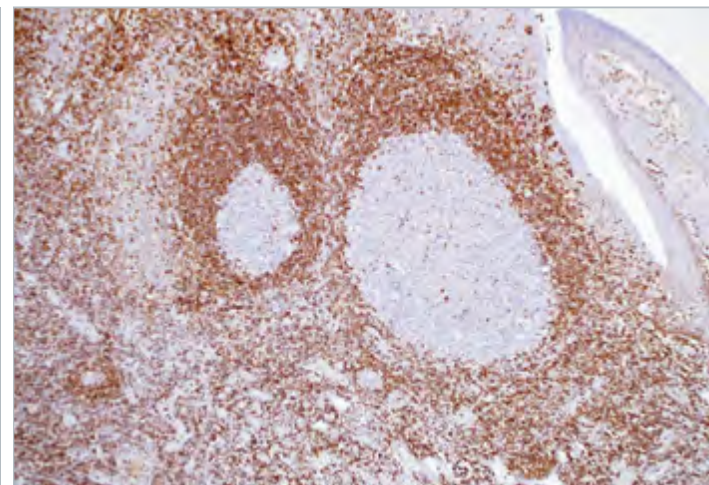




BCL2 (124) on tonsil.



BCL2 (SP66) on in situ follicular lymphoma.



BCL2 (SP66) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

• 124: IgG<sub>1</sub>/k

• SP66: IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

- Spindle Cell Tumors.....290
- Cervix.....291
- Cutaneous Neoplasm.....292
- Skin: Basal vs. Squamous Cell Carcinoma.....293
- B-cell Lymphomas.....296
- c-Myc in DLBCL.....297
- Lymphomas.....299
- Mature B-cell Lymphomas...299

## Reference

1. AS-Y Leong, et al. 2003; 2:25-27.
2. Cooper K, et al. Journal of Pathology. 1997; 182:307-10.
3. Chetty R, et al. J Clin Pathol. 1995; 48:1035- 1038.

## Product Description

BCL2 is a protein associated with apoptosis regulation produced by the BCL2 gene, located on chromosome 14q32.<sup>1</sup> BCL2 is comprised of an alpha (239 amino acids) and beta chain. BCL2 (and thus BCL2 alpha chain) is found in mitochondrial and nuclear membranes and in the cytosol rather than the cell surface. In normal lymphoid tissue, BCL2 (and BCL2 alpha) antibody reacts with small B-lymphocytes in the mantle zone and many cells within the T-cell areas. Anti-BCL2 alpha has shown consistent negative reaction on reactive germinal centers and positive staining of neoplastic follicles in follicular lymphoma.<sup>2</sup> This difference in staining pattern is not due to down regulation or decreased BCL2 mRNA, but largely to a post-translational mechanism with resultant decrease in protein levels. Consequently, this antibody is valuable when distinguishing between reactive and neoplastic follicular proliferation in lymphoid lesions. Anti-BCL2 has been used as an indicator of minimal residual disease in the bone marrow of follicular lymphoma patients when staining is strong and uniform.<sup>3</sup>

## Panel Quick View

Cutaneous Neoplasm							
	BCL2	AR	CD10	CD34	CK 19	CK 20	Ber-EP4
Basal Cell Carcinoma	+	+	+	-	+	-	+
Trichoepithelioma	+	-	-	+	+	+	+
Merkel Cell Carcinoma	+	-	-	-	+	+	+
Microcystic Adnexal Carcinoma	+	-	+/-	-	+	-	-/+
Sebaceous Carcinoma	+/-	+	+/-	-	-	-	+
Sebaceous Adenoma	+	+	-	-	-	-	+

B-cell Lymphomas									
	BCL2	ANXA1	BCL6	CD10	CD23	Cyclin D1	IgD	MUM1	PAX-5
Burkitt Lymphoma	-	-	+	+	-	-	-	-	+
CLL/SLL	+	-	-	-	+	-	+	+	+
Diffuse Large Cell Lymphoma	+	-	+/-	-/+	-	-	-	+/-	+
Follicular	+	-	+	+	-	-	+	-	+
Hairy Cell Leukemia	+	+	-	-	-	+ (weak) /-	-	-	+
Lymphoplasmacytic	+	-	-	-	-	-	-	+	-
Mantle Cell	+	-	-	-	-	+	+	-	+
Marginal Zone	+	-	-	-	-	-	+	+	+

## Ordering Information

### Clone: 124

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	226M-94
0.5 ml, concentrate.....	226M-95
1 ml, concentrate .....	226M-96
1 ml, predilute .....	226M-97
7 ml, predilute .....	226M-98
25 ml, predilute .....	226M-90

### Clone: SP66

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	226R-24
0.5 ml, concentrate.....	226R-25
1 ml, concentrate .....	226R-26
1 ml, predilute .....	226R-27
7 ml, predilute .....	226R-28

### Alternate Clones Available

- Rabbit Monoclonal, E17
- Contact us for more information.

### Designations



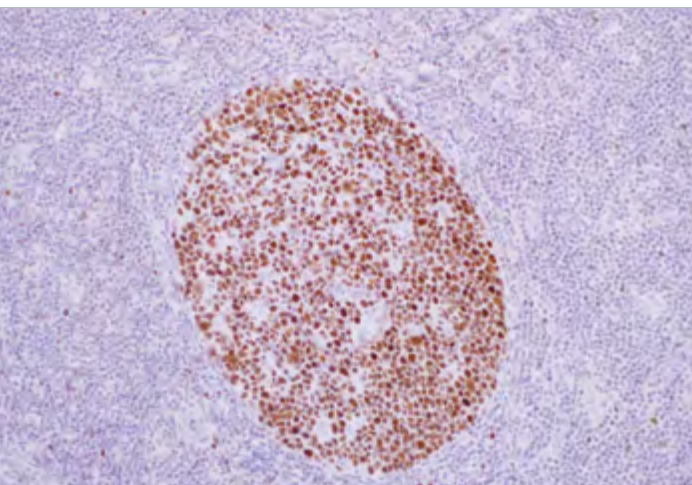
IVD

IVD

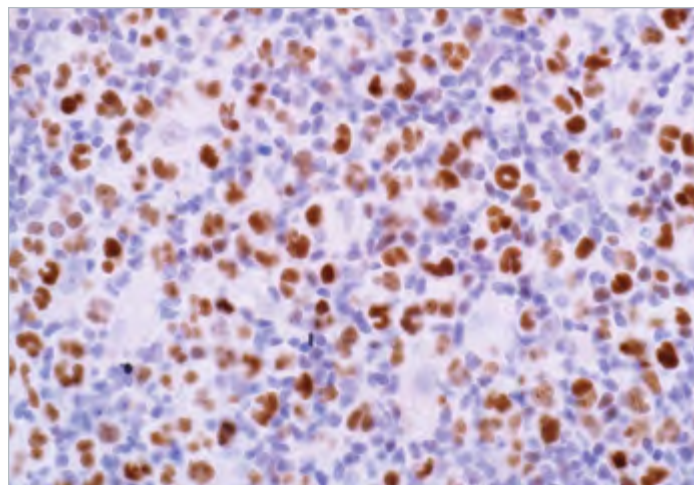
IVD

RUO

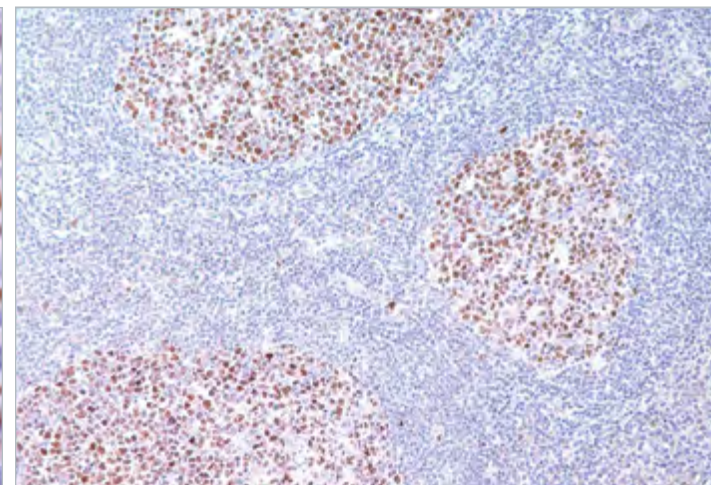




BCL6 (EP278) on tonsil, germinal center.



BCL6 (EP278) shows nuclear positivity in the neoplastic cells of nodular lymphocyte predominant Hodgkin lymphoma.



BCL6 (GI19E/A8) on tonsil, germinal centers.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP278: IgG
- GI191E/A8: IgG<sub>1</sub>

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Hodgkin vs. Non-Hodgkin Lymphomas ..... 297
- Lymphomas ..... 299

## Reference

1. García JF, et al. J Histochem Cytochem. 2006; 54:31-8.
2. Dogan A, et al. Am J Surg Pathol. 2000; 24:846-852.
3. Kraus MD, et al. AM J Surg Pathol. 2000; 24:1068-78.
4. Carbone A, et al. Blood. 1997; 90:2445-2450.
5. Carbone A, et al. Blood. 1998; 91:747-55.

## Product Description

BCL6 is a transcriptional regulator gene which codes for a 706-amino-acid nuclear zinc finger protein. Antibodies to this protein stain the germinal center cells (benign and malignant) in lymphoid follicles, and interfollicular malignant cells in follicular lymphoma, diffuse large B-cell lymphomas, and Burkitt lymphoma, as well as the majority of tumor cells in nodular lymphocyte predominant Hodgkin lymphoma.<sup>1-3</sup> Anti-BCL6 rarely stains mantle cell lymphoma and mucosa associated lymphoid tissue (MALT) lymphoma.<sup>2</sup> BCL6 expression is seen in approximately 68% of ALK+ anaplastic large cell lymphomas (ALCL) and 28% of ALK- ALCL, NK/T-cell lymphoma (27%), peripheral T-cell lymphoma, NOS (8.6%), and T-lymphoblastic lymphoma (9.1%).<sup>4</sup> BCL6 expression can also be observed in angioimmunoblastic T-cell lymphoma (66%-96%).<sup>5</sup>

## Panel Quick View

B-cell Lymphomas									
	BCL6	ANXA1	BCL2	CD10	CD23	CD79a	Cyclin D1	MUM1	TRAcP
Burkitt Lymphoma	+	-	-	+	-	+	-	-	-
CLL/SLL	-	-	+	-	+	+	-	+	-
Diffuse Large Cell Lymphoma	+/-	-	+	-/+	-	+	-	+/-	-
Follicular	+	-	+	+	-	+	-	-	-
Hairy Cell Leukemia	-	+	+	-	-	+	+(weak) /-		+
Lymphoplasmacytic	-	-	+	-	-	+	-	+	-
Mantle Cell	-	-	+	-	-	+	+	-	-
Marginal Zone	-	-	+	-	-	+	-	+	+/-

Hodgkin vs. Non-Hodgkin Lymphomas										
	BCL6	ALK	CD15	CD30	CD79a	EMA	Fascin	Gran-zyme B	MUM1	PU.1
Anaplastic Large Cell Lymphoma	+/-	+	-	+	-	+	-	+	-	-
Angioimmunoblastic T-cell Lymphoma	+	-	-	-	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	-	-	+	+	-	-	+	-	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	+	-	-	-	+	+	-	-	-/+	+
T-cell Rich LBCL	+	-	-	-	+	-	-	-	+	-

## Ordering Information

### Clone: EP278

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	227R-24
0.5 ml, concentrate	227R-25
1 ml, concentrate	227R-26
1 ml, predilute	227R-27
7 ml, predilute	227R-28

### Clone: GI191E/A8

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	227M-94
0.5 ml, concentrate	227M-95
1 ml, concentrate	227M-96
1 ml, predilute	227M-97
7 ml, predilute	227M-98
25 ml, predilute	227M-90

## Designations



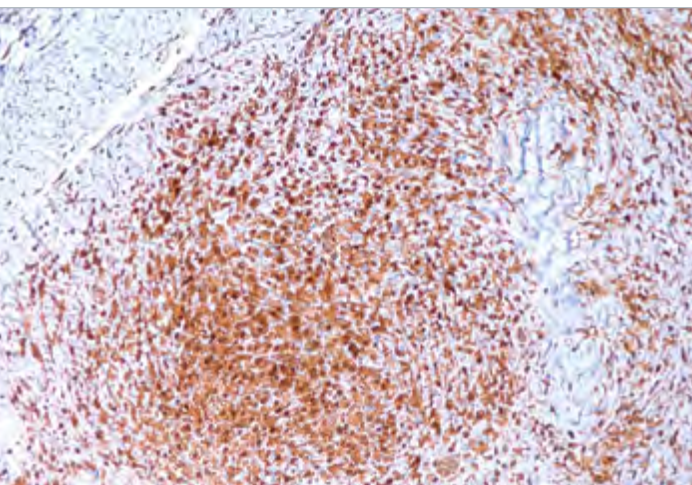
BCL6 is protected by U.S. patents 6,174,997 and 6,783,94 (Cancer Genetics, Inc.)

**CELL MARQUE**

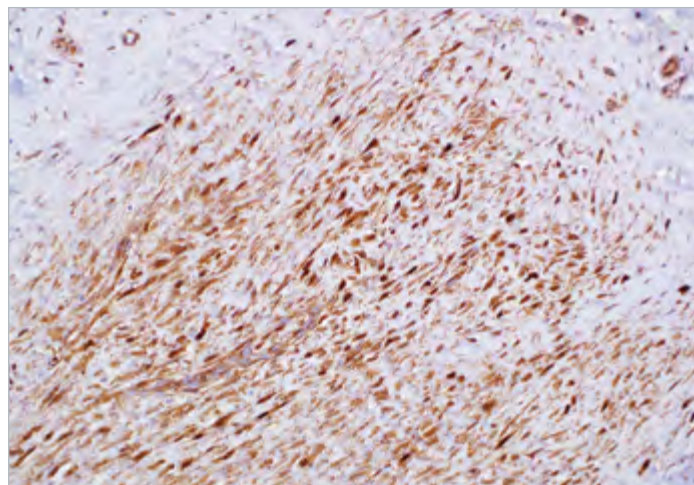
**RabMAb®**  
Technology from Abcam



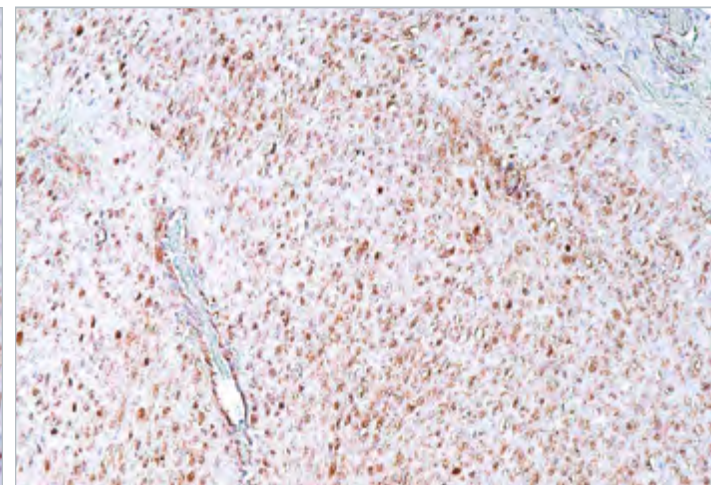
# Beta-Catenin



Beta-Catenin (14) reveals a strong nuclear staining reaction in fibromatosis neoplastic cells.



Beta-Catenin (14) on fibromatosis, breast.



Beta-Catenin (14) on fibromatosis, soft tissue.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous, nuclear

**Control** fibromatosis of breast

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas. . . . . 286

● Spindle Cell Tumors. . . . . 290

● Pancreas / Pancreatic Tumors . 294

## Reference

1. Alman BA, et al. Am J Pathol. 1997; 151:329-34.
2. Li C, et al. Am J Pathol. 1998; 153:709-14.
3. Abraham SC, et al. Hum Pathol. 2002; 33:39-46.
4. Montgomery E, et al. Am J Surg Pathol. 2002; 26:1296-301.

## Product Description

Beta-catenin is a 92 kD protein normally found in the cytoplasm of the cell in the submembranous location. Mutations in the beta-catenin gene result in nuclear accumulation of this protein. Nuclear accumulation of this protein has been demonstrated in fibromatosis (desmoid tumors) of the breast and abdomen and, therefore, is useful in differentiating from other spindle cell neoplasms that may occur in these locations.<sup>1-4</sup>

## Panel Quick View

Spindle Cell Tumors							
	β-Catenin	MS Actin	SM Actin	Calponin	CK Cocktail	EMA	PGP 9.5
Spindle Cell Carcinoma	+/-	-	-	-	+	+/-	+
Endometrial Stromal Tumor	+/-	+	+	+	-	-	+
Fibromatosis	+	-	+	-	-	-	+

Pancreas / Pancreatic Tumors										
	β-Catenin	CA 19-9	CD10	CD56	Chromogranin A	CK 19	E-cadherin	MUC4	PGP 9.5	Synaptophysin
Ductal Adenocarcinoma / Ductal Carcinoma	+/-	+	+/-	-	-	-	+/-	+		-
Pancreatic Adenocarcinoma	-	+	+/-	-	-	+	-	+		-
Pancreatoblastoma	+	-	-	+	+	-	-	-	-	-
Neuroendocrine Tumor	+	+/-	-	+	+	+/-	-	-	+	+
Solid Pseudopapillary Tumor	+	-	+	+	-	-	+	(nuclear)		+
Pancreatic Ducts	-	-	-	-	-	-	-			-

## Ordering Information

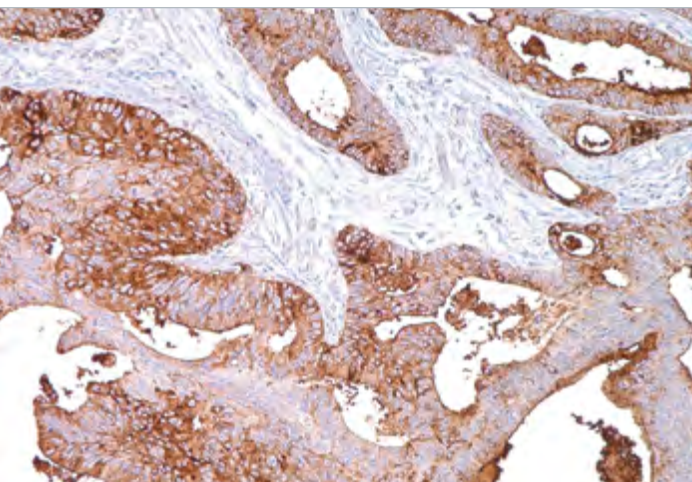
**Clone: 14**  
Mouse Monoclonal

**Volume . . . . . Part No.**  
0.1 ml, concentrate. . . . . 224M-14  
0.5 ml, concentrate. . . . . 224M-15  
1 ml, concentrate . . . . . 224M-16  
1 ml, predilute . . . . . 224M-17  
7 ml, predilute . . . . . 224M-18

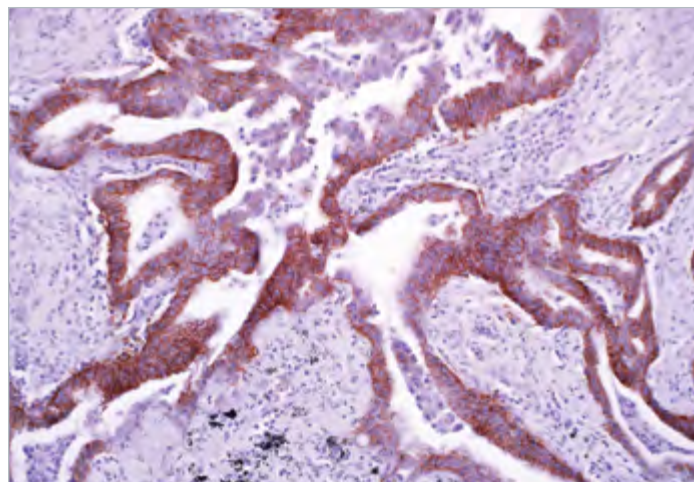
## Designations

 IVD     IVD     IVD     RUO

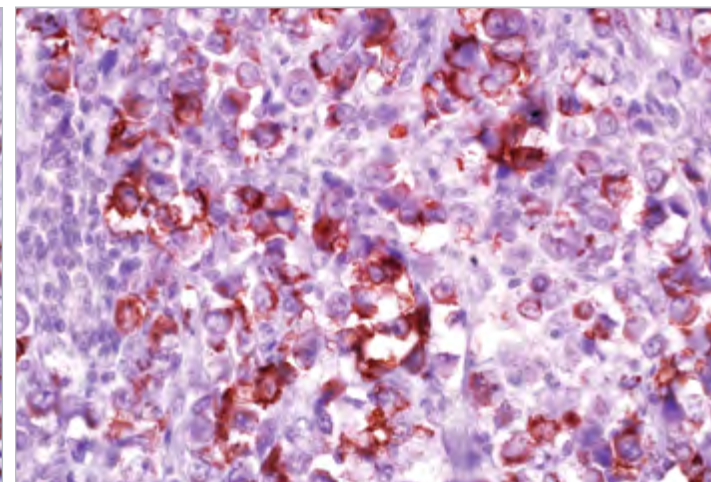




BG8, Lewis<sup>y</sup> (F3) on colon adenocarcinoma.



BG8, Lewis<sup>y</sup> (F3) demonstrates a positive cytoplasmic staining for lung adenocarcinoma.



BG8, Lewis<sup>y</sup> (F3) on breast carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** lung adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM

## Associated Specialties

- Anatomic/Surgical Pathology
- Cytopathology

## Associated Panels

- Thymus ..... 290
- Skin: Spindle Cell Tumors ..... 294
- Lung Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Davidson B, et al. Virchows Arch. 1999; 435:43-9.
2. King JE, et al. Histopathology. 2006; 48:223-32.
3. Marchevsky AM, et al. Appl Immunohistochem Mol Morphol. 2007; 15:140-4.
4. Ordonez NG. Am J Surg Pathol. 2003; 27:1031-51.
5. Ordonez NG. Am J Surg Pathol. 2000; 24; 598-606.

## Product Description

Blood group antigens have been examined as potential discriminators between pulmonary adenocarcinoma (PACA) and epithelioid mesothelioma (EM). Lewis<sup>y</sup> is the only one of these that appears to have some merit. BG8 is raised from the SK-LU-3 lung cancer line and its ability to distinguish between PACA and EM was first reported by Jordon and colleagues in 1989. Three groups have since reported their results. These studies included 231 cases of PACA and 197 cases of EM. Sensitivity and specificity for PACA were both 93%. Yaziji H et al. reported a sensitivity of nonmesothelial antigens for adenocarcinoma as organ dependent, with BG8 performing at 98% in the breast cancer group, and 100% in the lung cancer group. The specificity of the nonmesothelial (non-EM) antigens for adenocarcinoma was 98% for BG8. They concluded using logical regression analysis that a three-antibody immunohistochemical panel including calretinin, BG8, and MOC-31 would provide 96% sensitivity and specificity for distinguishing EM from adenocarcinoma from a variety of sources (lung, ovary, breast, and stomach).

## Panel Quick View

Thymus								
	BG8	CD1a	CD5	CK 14	CD57	CD117	GLUT1	MUC1
Thymic Carcinoma	+	-	+	+	-	+	+	+
Thymoma	-	+	-	-	+	-	-/+	-/+

Skin: Spindle Cell Tumors										
	BG8	SM Actin	CD10	CD34	CK 8&18	Factor VIII	FLI-1	HHV-8	NGFR	S-100
Angiosarcoma	-	-	-	+	-	+	+	-	-	-
Atypical Fibroxanthomas	-	+	+	-	-	-	-	-	-	-
DF-SP	-	-	+/-	+	-	-	-	-	+	-
Hemangioma	+	+	-	+	-	+	+	-	-	-
Kaposi's Sarcoma	-	+	-	+	-	+	+	+	-	-
Peripheral Nerve Sheath	-	-	-	-	-	-	-	-	+	+/-
Spindle Cell Melanoma	-	-	-	-	-	-	+	-	+	+
Spindle Squamous Cell Carcinoma	-	-	-	-	+	-	-	-	-	-

Lung Adenocarcinoma vs. Mesothelioma										
	BG8	Caldesmon	Calretinin	CEA	CK 5&6	Ber-EP4	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	+	-	-	+	-	+	-	-	+	+
Mesothelioma	-	+	+	-	+	-	+	+	-	-

## Ordering Information

### Clone: F3

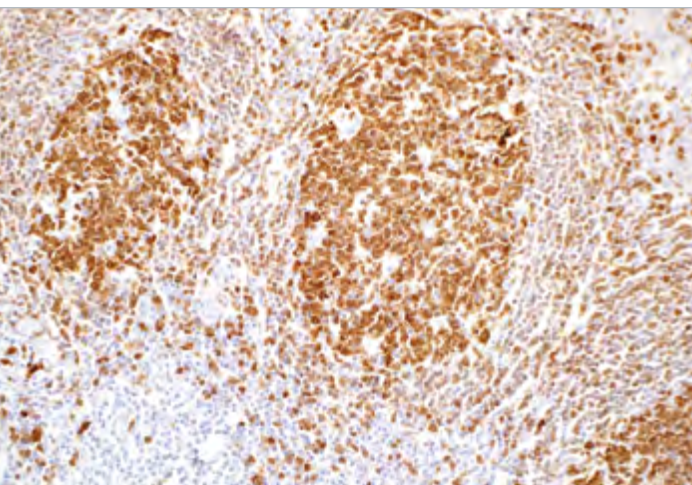
### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	228M-14
0.5 ml, concentrate	228M-15
1 ml, concentrate	228M-16
1 ml, predilute	228M-17
7 ml, predilute	228M-18

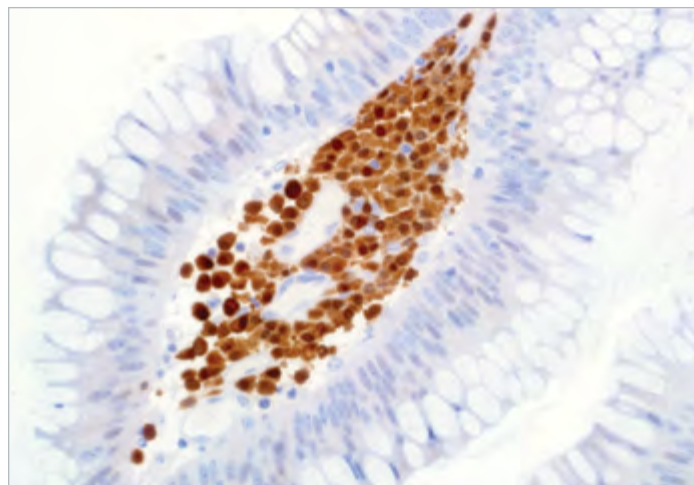
### Designations

			
IVD	IVD	IVD	RUO

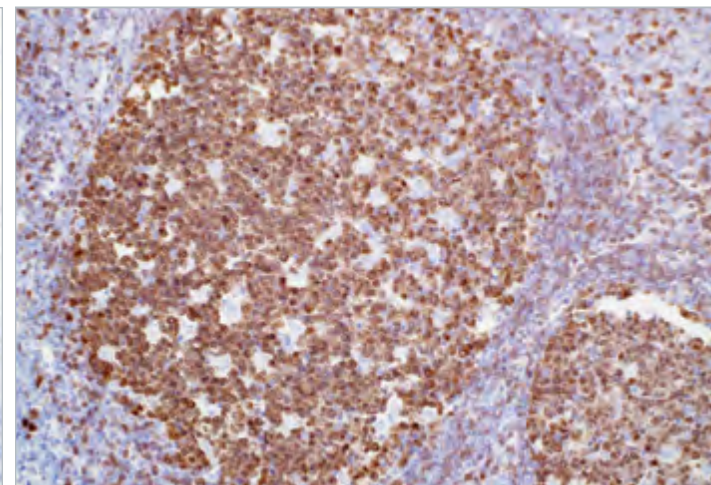




Germinal center cells and interfollicular B-cells are labeled strongly by rabbit monoclonal BOB.1 (SP92).



BOB.1 (SP92) on colonic mucosa.



BOB.1 (SP92) on tonsil.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic, nuclear  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296  
 ● Hodgkin vs. Non-Hodgkin Lymphomas ..... 297

## Reference

- Dabbs DJ, Saunders. 2006.
- Steimle-Grauer SA, et al. Virchows Arch. 2003; 442:284-293.
- Valsami S, et al. Haematologica. 2007; 92:1343-50.
- Stein H, et al. Blood. 2001; 97:496-501.
- Hertel CB, et al. Oncogene. 2002; 21:4908-4920.
- Pileri SA, et al. Am J Pathology. 2003; 162:243- 253.
- Hoefnagel JJ, et al. Moder Pathology. 2006; 19:1270-1276.
- Greiner A, et al. Am J Pathol. 2000; 156:501-507.
- Kuroda H, et al. Breast Cancer. 2007; 14:317-22.
- Saez A-I, et al. Mod Pathol. 2002; 15:21-220.
- Loddenkemper C, et al. J Pathol. 2004; 202:60-69.

## Product Description

Expression of BOB.1/OBF.1 is restricted largely to mature B-cells. Germinal center B-cells normally demonstrate strong staining for BOB.1, as do mantle-zone B-cells, and plasma cells.<sup>1,2</sup> Analyses of BOB.1/OBF.1 expression in a variety of established B-cell lines representing different stages of B-cell development has suggested a constitutive, B-cell-specific expression pattern. Because they are germinal center derived, L&H cells in nodular lymphocyte predominant Hodgkin lymphoma are consistently immunoreactive for BOB.1. Conversely, the Hodgkin/Reed-Sternberg cells in classical Hodgkin lymphoma either do not express both (80%) or express only one (20%) of the two proteins.<sup>2-6</sup> In B-cell lymphomas, the highest expression levels for BOB.1/OBF.1 are reported in follicular center lymphomas<sup>7,8</sup>, diffuse large B-cell lymphomas<sup>9,10</sup>, and Burkitt lymphomas.<sup>10</sup> B-CLL, MALT-type, and mantle cell lymphomas score negative or display a heterogenous/weaker reactivity.<sup>10-11</sup> Studies have suggested that anti-BOB.1 has a high predictive value in discriminating primary mediastinal B-cell lymphoma from classical Hodgkin disease.<sup>12,13</sup> Approximately 50% of acute myeloid leukemias express BOB.1.<sup>14</sup>

## Panel Quick View

B-cell Lymphomas										
	BOB.1	BCL6	CD10	CD23	CD79a	Cyclin D1	IgD	MUM1	p27	PU.1
CLL/SLL	-/+	-	-	+	+	-	+	+	+	+
Diffuse Large Cell Lymphoma	+	+/-	-/+	-	+	-	-	+/-	-	+
Follicular	+	+	+	-	+	-	+	-	+	+
Lymphoplasmacytic	+	-	-	-	+	-	-	+	+	
Mantle Cell	-/+	-	-	-	+	+	+	-	+	+
Marginal Zone BCL	-/+	-	-	-	+	-	-/+	+	+	+

Hodgkin vs. Non-Hodgkin Lymphomas										
	BOB.1	BCL6	CD15	CD30	CD45	EMA	Fascin	MUM1	Oct-2	PU.1
Hodgkin Lymphoma, Classic	-	-	+	+	-	-	+	+	-	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	+	+	-	-	+	+	-	-/+	+	+
T-cell Rich LBCL	+	+	-	-	+	-	-	+	+	-

## Ordering Information

**Clone: SP92**  
 Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 294R-14  
 0.5 ml, concentrate ..... 294R-15  
 1 ml, concentrate ..... 294R-16  
 1 ml, predilute ..... 294R-17  
 7 ml, predilute ..... 294R-18

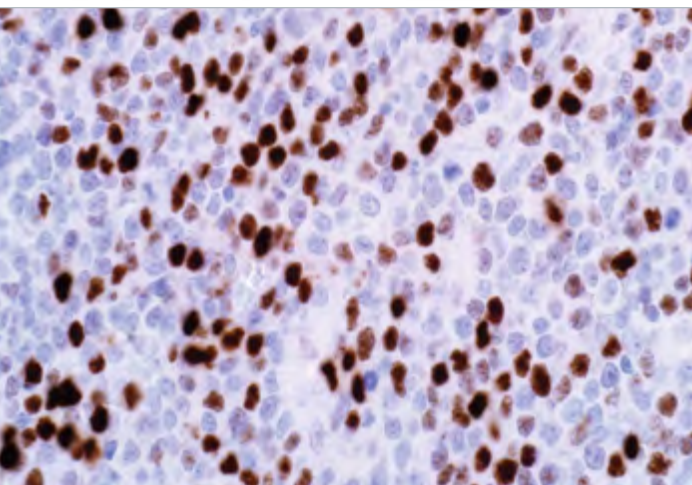
## Alternate Clones Available

• Mouse Monoclonal, MRQ-35  
 Contact us for more information.

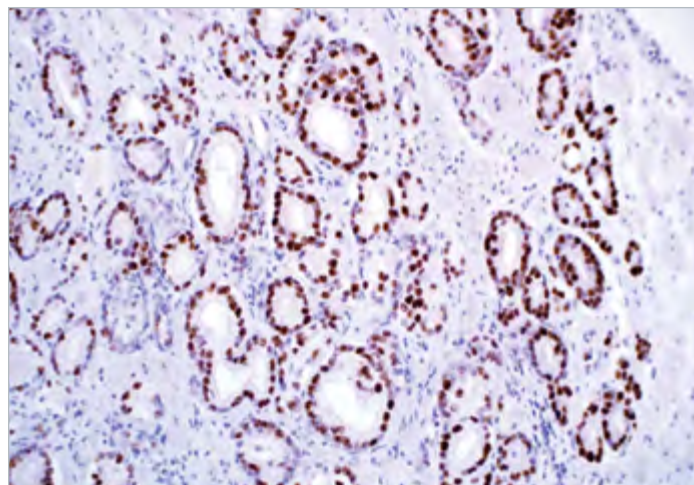
## Designations

 IVD     IVD     IVD     RUO

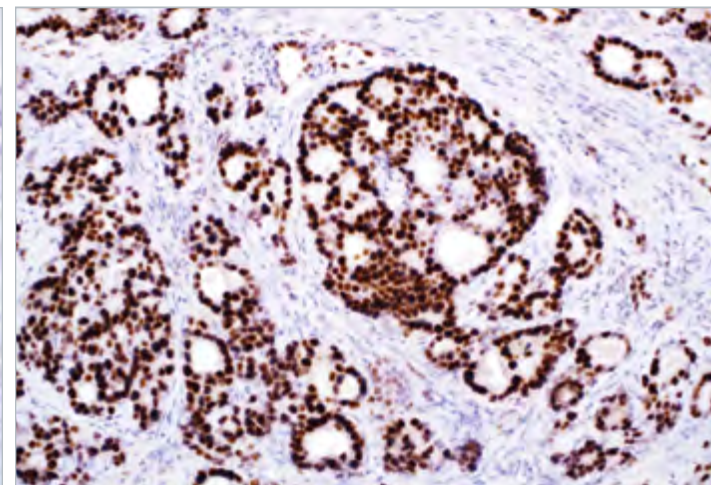




Burkitt lymphoma is positive for c-Myc.



c-Myc (EP121) on prostate.



c-Myc (EP121) on prostate carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** Burkitt lymphoma, prostate carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Reference

1. Green TM, et al. AM J Surg Pathol. 2012; 36:612-619.
2. Aukema SM, et al. Blood. 2011; 117:2319-2331.
3. Gurel B, et al. Mod Pathol. 2008; 21:1156-1167.

## Product Description

Burkitt lymphoma (BL) can be morphologically indistinguishable from diffuse large B-cell lymphoma (DLBCL).<sup>1</sup> The 2008 WHO classification includes a subcategory of aggressive lymphomas characterized by features intermediate between DLBCL and BL in order to accommodate cases in the gray zone between BL and DLBCL. Rearrangement of the MYC gene is found in 3% to 16% of DLBCLs and in nearly 100% of BL.<sup>2</sup> Identifying MYC status is important in establishing final diagnosis of DLBCL, BL, or B-cell lymphoma, with features intermediate between DLBCL and BL as well as in differential diagnoses of the lymphomas. Results from one study have shown immunohistochemical (IHC) expression of MYC protein by c-Myc antibody in 219 cases of aggressive DLBCL and 7 cases of BL.<sup>1</sup> Nuclear MYC protein expression detected by IHC has shown high sensitivity and specificity in identifying a MYC rearrangement in aggressive DLBCL and BL when at least 70% of lymphoma cells show nuclear positivity.

The IHC c-Myc assay, combined with other antibodies, such as those against CD10, BCL2, and Ki-67, is very useful in identifying cases for which MYC FISH analysis is warranted or can be omitted.<sup>1</sup> There are reports that nuclear overexpression of MYC protein occur frequently in luminal cells of prostate intraepithelial neoplasia as well as in most primary carcinomas and metastatic disease. However, MYC protein overexpression has yet to be correlated with gain of MYC gene (8q24), suggesting alternative mechanisms for MYC protein overexpression.<sup>3</sup>

## Panel Quick View

Lymphomas and Myeloid Sarcoma										
	c-Myc	BCL2	CD3	CD7	CD10	CD20	CD43	CD79a	PAX-5	TdT
Burkitt Lymphoma	+	-	-	-	+	+	-	+	+	-
Diffuse Large B-Cell Lymphoma	+/-	+/-	-	-	+/-	+	-	+	+	-
B-Cell Lymphoma, Unclassifiable, Intermediate between Large B-Cell Lymphoma and Burkitt Lymphoma	+/-	+/-	-	-	+/-	+	-	+	+	-
Blastoid Mantle Cell Lymphoma	-	-	-	-	-	+	-	+	+	-
T-cell Lymphoblastic Lymphoma	-	-	+	+	+/-	-	+/-	-/+	-	+
B-cell Lymphoblastic Lymphoma	-	-	-	-	+/-	-/+	+/-	+	-	+
Myeloid Sarcoma	-	-	-	-	-	-	+	-	-	-/+

## Ordering Information

### Clone: EP121

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	395R-14
0.5 ml, concentrate	395R-15
1 ml, concentrate	395R-16
1 ml, predilute	395R-17
7 ml, predilute	395R-18

### Designations



IVD



IVD



IVD

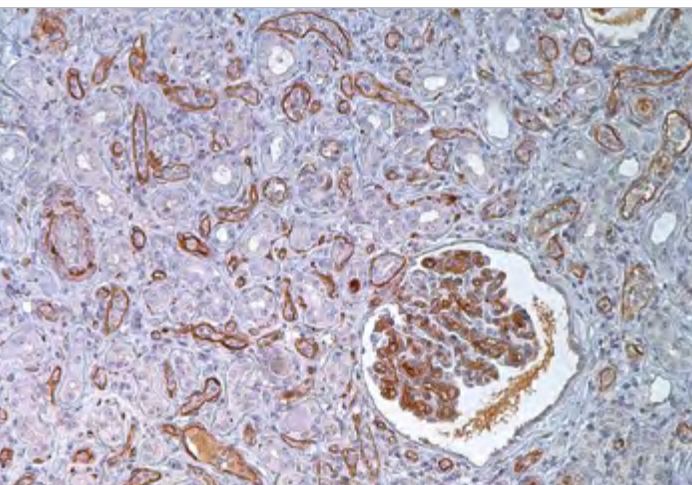


RUO

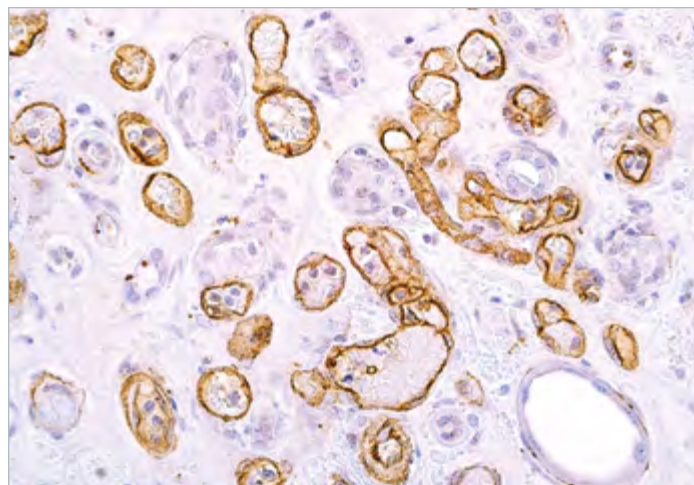
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

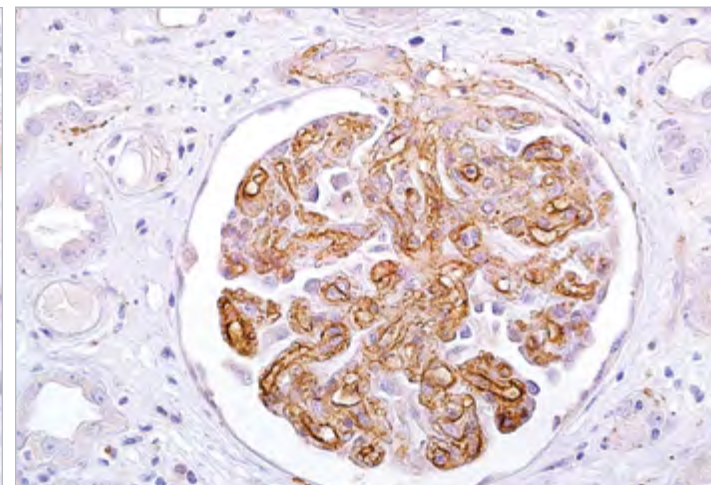




*C3d (polyclonal) shows moderate cytoplasmic labelling of peritubular capillary endothelial cells on the acute rejection kidney.*



*C3d (polyclonal) on kidney.*



*C3d (polyclonal) on kidney.*

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** acute rejected kidney transplant

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Anatomic/Surgical Pathology

## Reference

- Bickerstaff A, et al. Am J Pathol. 2008; 173:347-57.
- Kuypers DR, et al. Transplantation. 2003; 76:102-8.
- Eggertsen G, et al. APMIS. 2001; 109:825-34.
- Pfaltz K, et al. J Cutan Pathol. 2009.

## Product Description

Complement component C3 plays a central role in the activation of the complement system. Its activation is required for both classical and alternative complement activation pathways. C3d deposition in the renal transplant peritubular capillaries (PTC) is indicative of acute rejection (AR) with subsequent high probability of graft loss. Anti-C3d, combined with anti-C4d, can be utilized as a tool for diagnosis of AR and to warrant prompt and aggressive anti-rejection treatment.<sup>1,2,3</sup>

In another study, Pfaltz et al. have shown that anti-C3d labeled the epidermal basement membrane in 97% (31/32) cases of bullous pemphigoid (BP), with none of the normal controls demonstrating such findings. In the same study 27% (3/11) cases of pemphigus vulgaris (PV) demonstrated intercellular C3d deposition.<sup>4</sup> Anti-C3d immunohistochemistry is a helpful adjunct in the diagnosis of BP (and perhaps PV), especially in cases where only formalin-fixed, paraffin-embedded tissue is available for analysis.

## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

Volume	Part No.
0.1 ml, concentrate	403A-74
0.5 ml, concentrate	403A-75
1 ml, concentrate	403A-76
1 ml, predilute	403A-77
7 ml, predilute	403A-78

## Designations



IVD



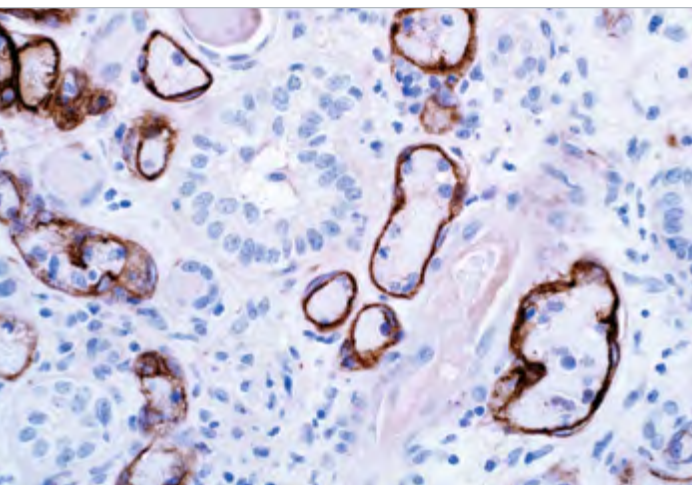
IVD



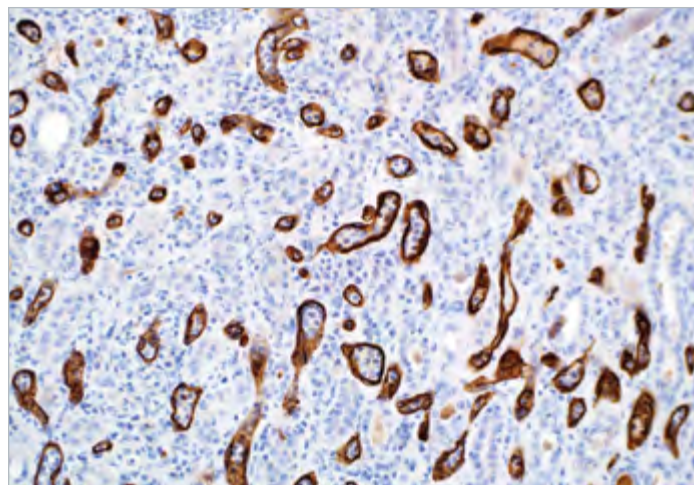
IVD



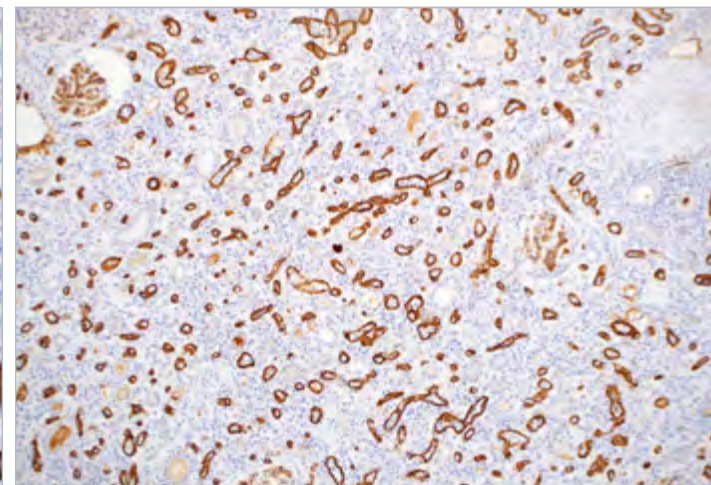
RUO



C4d (SP91) on acute rejected kidney.



Rabbit monoclonal C4d (SP91) strongly highlights peritubular capillary endothelial cells.



C4d (SP91) on acute rejected kidney.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** lymph node, tonsil, acute rejected kidney transplant

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Jianghua C, et al. Clin Transplant. 2005; 19:785-91.
2. Kayler LK, et al. Transplantation. 2008; 85:813-20.
3. Ranjan P, et al. Nephrol Dial Transplant. 2008; 23:1735-41.
4. Nadasdy GM, et al. Hum Pathol. 2005; 36:1178-85.
5. Seemayer CA, et al. Nephrol Dial Transplant. 2007; 22:568-76.
6. Bouron-Dal Soglio D, et al. Hum Pathol. 2008; 39:1103-10.

## Product Description

C4d is a stable split product remnant of classical complement activation which becomes covalently bound to endothelium and basement membrane after induction of the classical antibody-induced pathway. As an established marker of antibody-mediated acute renal allograft rejection (AR) and its proclivity for endothelium, this component can be detected in peritubular capillaries in chronic renal allograft rejection as well as hyperacute rejection, acute vascular rejection, acute cellular rejection, and borderline rejection. It has been shown to be closely correlated with transplant kidney graft survival.<sup>1-3</sup> Anti-C4d, combined with anti-C3d, can be utilized as a tool for diagnosis of AR that may serve to warrant prompt and aggressive anti-rejection treatment<sup>1-6</sup>.

## Ordering Information

### Clone: SP91

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	404R-14
0.5 ml, concentrate	404R-15
1 ml, concentrate	404R-16
1 ml, predilute	404R-17
7 ml, predilute	404R-18
25 ml, predilute	404R-10

### Alternate Clones Available

• Rabbit Polyclonal

Contact us for more information.

### Designations



IVD



IVD



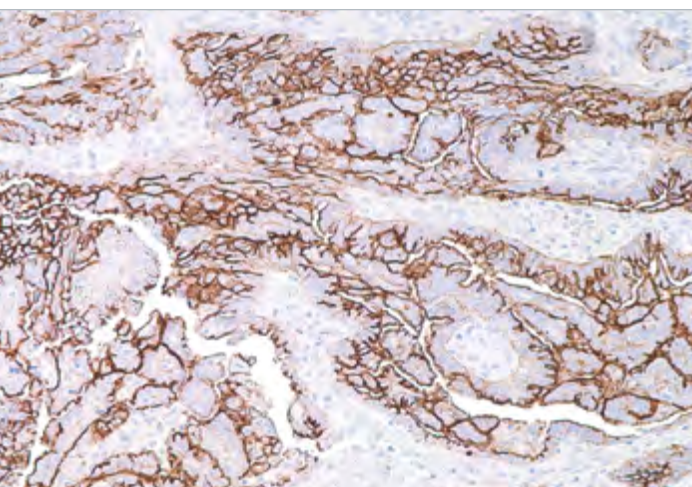
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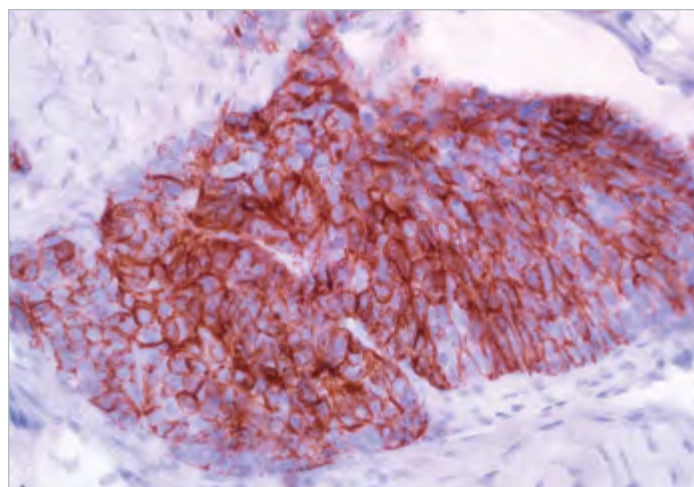
RUO



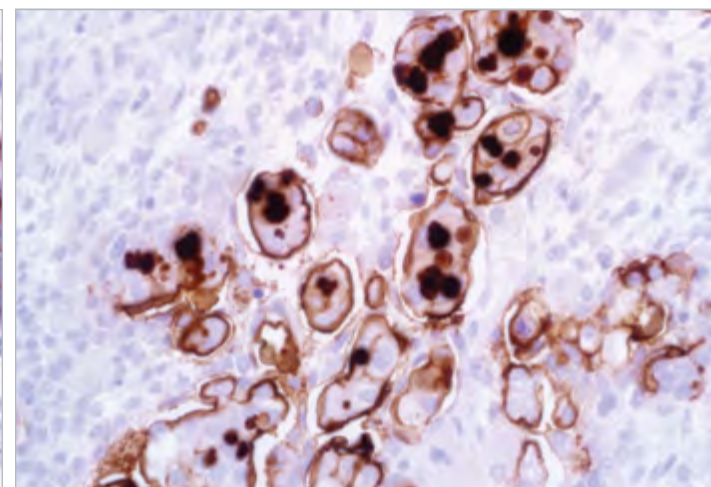
# CA-125



CA-125 (OC125) on serous carcinoma of the ovary.



Endometrioid carcinoma strongly expresses CA-125 protein in the cytoplasm.



CA-125 (OC125) on serous ovarian carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** ovarian serous carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/κ

## Associated Specialties

- Anatomic/Surgical Pathology
- Breast/Gynecological Pathology

## Associated Panels

- Colon vs. Ovarian Carcinoma... 287
- Ovarian Carcinomas... 292

## Reference

1. Kabawat S, et al. Int J Gynecol Pathol. 1983; 2:275-285.
2. Davis H, et al. Cancer Res. 1986; 46:6143-6148.
3. Zhou C, et al. Am J Surg Pathol. 1998; 22:113-20.
4. Mylonas I, et al. Anticancer Res. 2003; 23:1075-80.
5. Fukazawa I, et al. Arch Gynecol Obstet. 1988; 243:41-50.

## Product Description

Anti-CA-125 antibody reacts with epithelioid malignancies of the ovary, papillary serous carcinoma of the cervix, adenocarcinoma of the endometrium, clear cell adenocarcinoma of the bladder, and epithelioid mesothelioma.<sup>1-4</sup> The antigen is formalin resistant, permitting the detection of ovarian cancer by immunohistochemistry, although serum assays for this protein are widely used to monitor ovarian cancer.<sup>5</sup>

## Panel Quick View

Colon vs. Ovarian Carcinoma	CA-125	Cadherin-17	CDX-2	CEA	CK 7	CK 20	SATB2	WT1
Ovarian Carcinoma, Serous	+	-	-	+	+	-	-	+
Ovarian Carcinoma, Mucinous	-	-	+	-	+	-	-	-
Ovarian Carcinoma, Endometrioid	+	-	-	-	+	-	-	+
Colorectal Carcinoma / Colon Carcinoma	-	+	+	+	-	+	+	-

## Ordering Information

### Clone: OC125

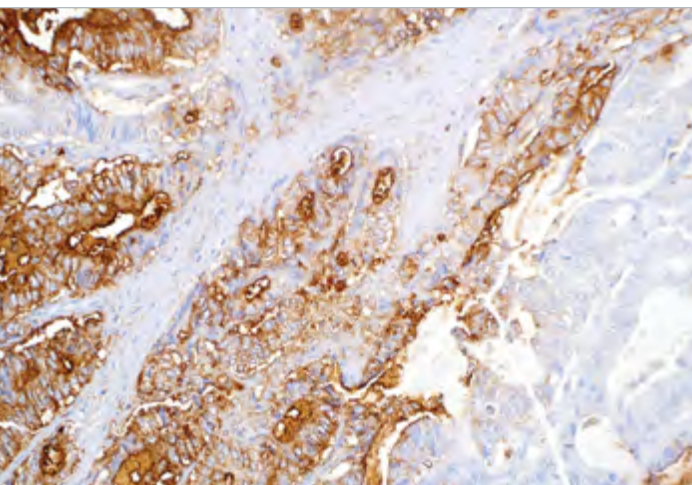
### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	325M-14
0.5 ml, concentrate.....	325M-15
1 ml, concentrate .....	325M-16
1 ml, predilute .....	325M-17
7 ml, predilute .....	325M-18

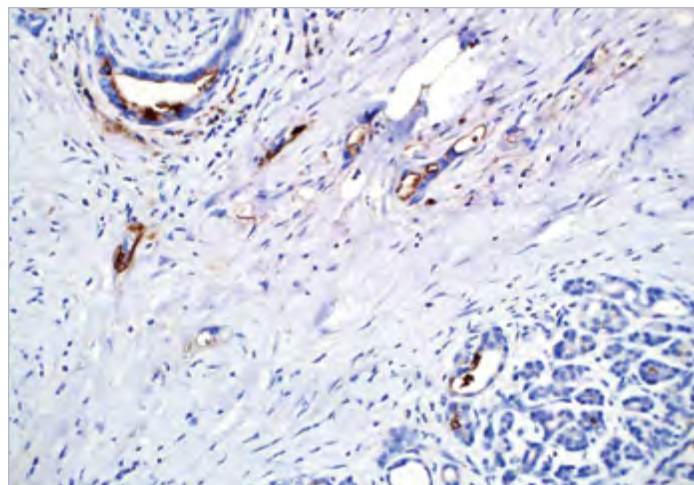
### Designations



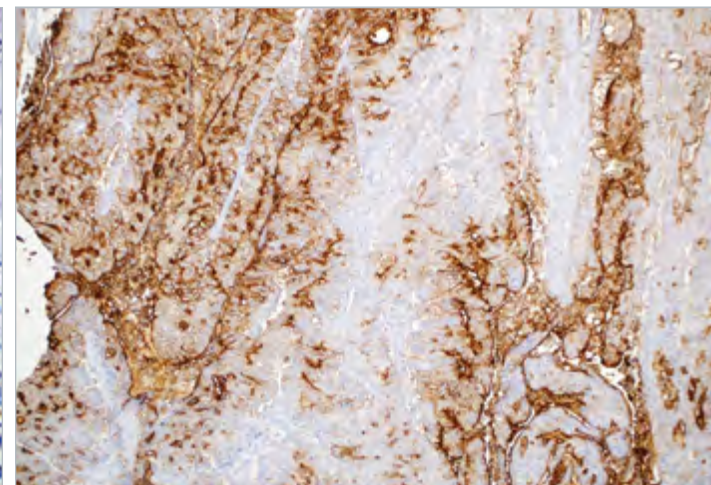
IVD IVD IVD RUO



Colon adenocarcinoma cells show a strong cytoplasmic reaction to the CA 19-9 protein.



CA 19-9 (121SLE) on pancreas.



CA 19-9 (121SLE) on colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** colon

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM

## Associated Specialties

- Anatomic/Surgical Pathology
- Gastrointestinal (GI) Pathology

## Associated Panels

- Colon vs. Prostate Adenocarcinoma ..... 287
- Breast Carcinoma ..... 291
- Pancreas / Pancreatic Tumors . 294

## Reference

1. Gatalica Z, et al. Applied IHC. 1994; 2:205-211.
2. Encabo G, et al. Bull Cancer. 1986; 73:256-9.
3. Basso D, et al. Med Sci Res. 1989; 17:13-4.
4. Tabuchi Y, et al. Cancer. 1990; 66:1529-33.

## Product Description

CA 19-9 antigen is highly expressed in gastrointestinal (gastric, pancreatic, and colonic) adenocarcinomas and salivary gland mucoepidermoid carcinomas. Anti-CA 19-9 is usually not reactive with breast, kidney, and prostate carcinomas.

## Panel Quick View

Colon vs. Prostate Adenocarcinoma							
	CA 19-9	CDX-2	CEA	CK 20	NKX3.1	P504s	PSA
Colon Adenocarcinoma	+	+	+	+	-	+	-
Prostate Adenocarcinoma	-	-	-	-	+	+	+

Breast Carcinoma								
	CA 19-9	CA 15-3	CK 5	CK 7	CK 20	ER/PR	p63	CD117
Infiltrating Ductal Carcinoma	-	+	-	+	-	+	-	-
Adenoid Cystic Carcinoma	+	+	+	+	-	-	+	+

Pancreas / Pancreatic Tumors									
	CA 19-9	β-Catenin	CD10	CD56	Chromogranin A	CK 19	E-cadherin	MUC4	Synaptophysin
Ductal Adenocarcinoma / Ductal Carcinoma	+	+/-	+/-	-	-	-	+/-	+	-
Acinar Cell Carcinoma	-/+	+	+/-	-	-	+	+	-	-
Pancreatoblastoma	-	+	-	+	+	-	-	-	-
Neuroendocrine Tumor	+/-	+	-	+	+	+/-	-	-	+
Solid Pseudopapillary Tumor	-	+	+	+	-	-	+(nuclear)		+

## Ordering Information

**Clone: 121SLE**

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	399M-14
0.5 ml, concentrate	399M-15
1 ml, concentrate	399M-16
1 ml, predilute	399M-17
7 ml, predilute	399M-18

## Designations



IVD



IVD



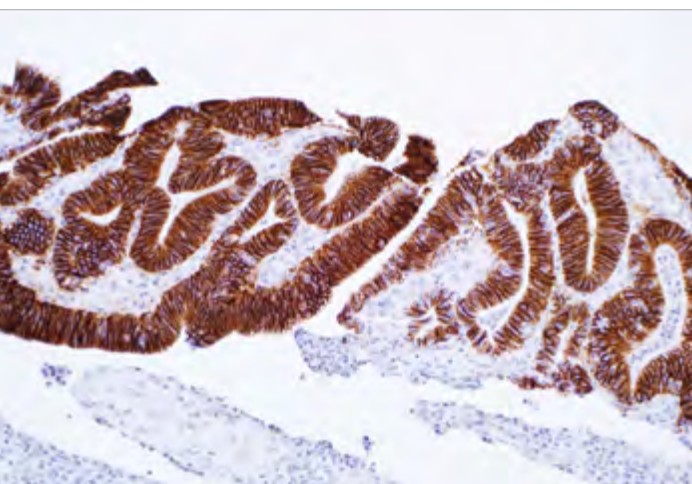
IVD



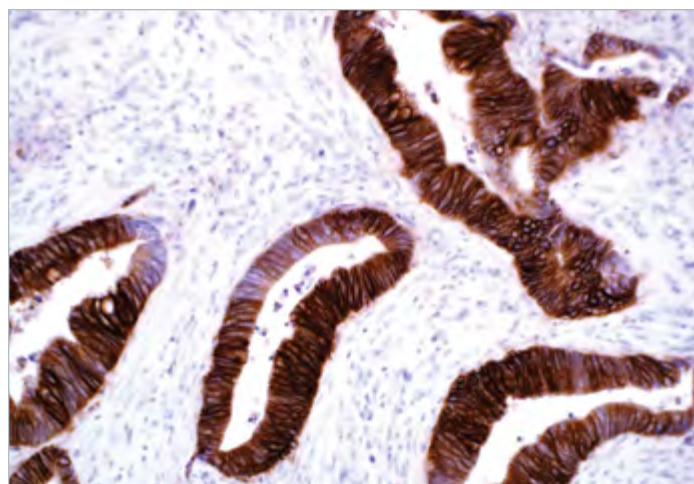
RUO



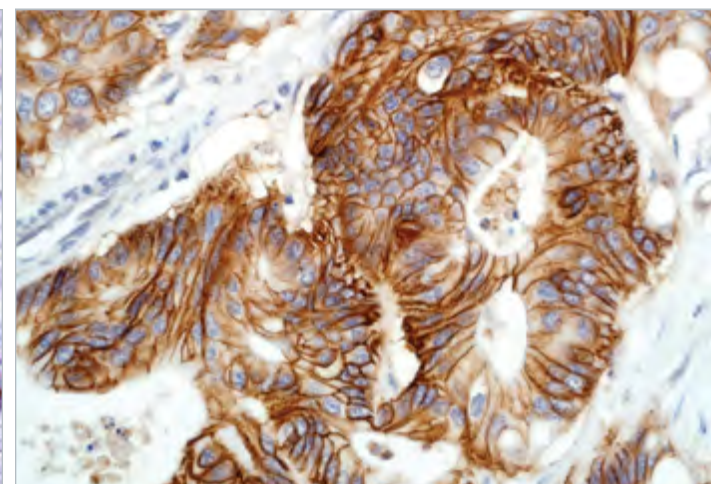
# Cadherin-17



Colon carcinoma cells show strong cadherin-17 expression in a membranous staining pattern.



Cadherin-17 (SP183) on colon.



Cadherin-17 (SP183) on colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** colorectal carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

LI-cadherin

Human peptide transporter-1

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Associated Panels

● Carcinomas . . . . . 287

● Colon vs. Ovarian Carcinoma . . 287

## Reference

1. Su MC, et al. Mod Pathol. 2008; 21:1379-1386.
2. Gessner R, et al. Ann NY Acad Sci. 2000; 915:136-143.

## Product Description

Cadherin-17, also called liver-intestinal (LI) cadherin or human peptide transporter-1, is a member of the cadherin superfamily. Unlike some classic cadherins, such as E-, N-, and P-cadherins, cadherin-17 has seven cadherin repeats instead of five within the extracellular domain and only 20 amino-acid residues in the cytoplasmic domain.<sup>1,2</sup> The markedly short cytoplasmic domain lacks homology with other cadherins and the adhesive function of cadherin-17 is not dependent on association with other cytoplasmic proteins. The subcellular distribution of cadherin-17 is also different from classic cadherins. In intestinal epithelial cells, E-cadherin is concentrated in adherens junctions whereas cadherin-17 is evenly distributed along the lateral contact area. Human normal tissues that are strongly stained with cadherin-17 include appendicular epithelium, colonic epithelium, and small intestinal epithelium.<sup>1</sup> Other normal human tissues are not stained with cadherin-17.<sup>1</sup> The results above indicate cadherin-17 can be used as a marker for identification of primary sites of tumors. In-house studies have shown that cadherin-17 expression is usually diffuse and strong in colorectal adenocarcinomas, whereas it is usually focal or scattered in adenocarcinomas of the stomach, pancreas and bile duct, and is virtually absent in tumors of other anatomic sites.

## Panel Quick View

Adenocarcinomas						
	Cadherin-17	CDX-2	GATA3	Napsin A	S100P	TTF-1
Colorectal Adenocarcinoma	+	+	-	-	-	-
Gastric Adenocarcinoma	+	+	-	-	-	-
Esophageal Adenocarcinoma	+	+	-	-	-	-
Pancreatic Ductal Adenocarcinoma	-/+	+/-	-	-	+	-
Hepatocellular Carcinoma	-	-	-	-	-	-
Lung Adenocarcinoma	-	-	-	+	-	+
Breast Carcinoma	-	-	+	-	-	-
Ovarian Carcinoma	-	-	-	-	-	-

## Ordering Information

### Clone: SP183

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	378R-14
0.5 ml, concentrate . . . . .	378R-15
1 ml, concentrate . . . . .	378R-16
1 ml, predilute . . . . .	378R-17
7 ml, predilute . . . . .	378R-18

### Designations



IVD



IVD

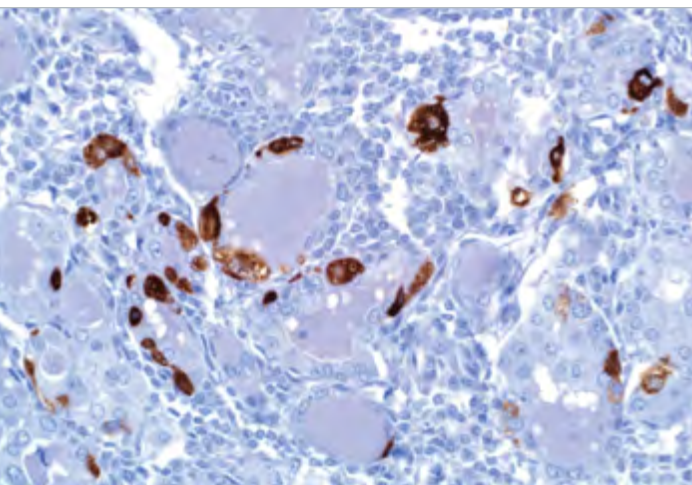


IVD

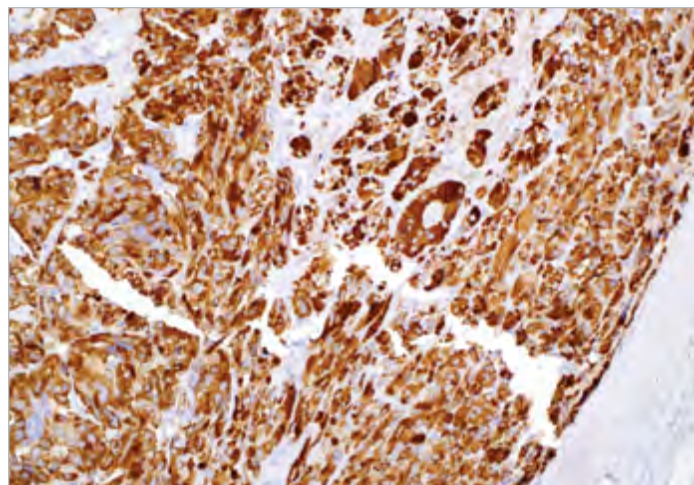


RUO

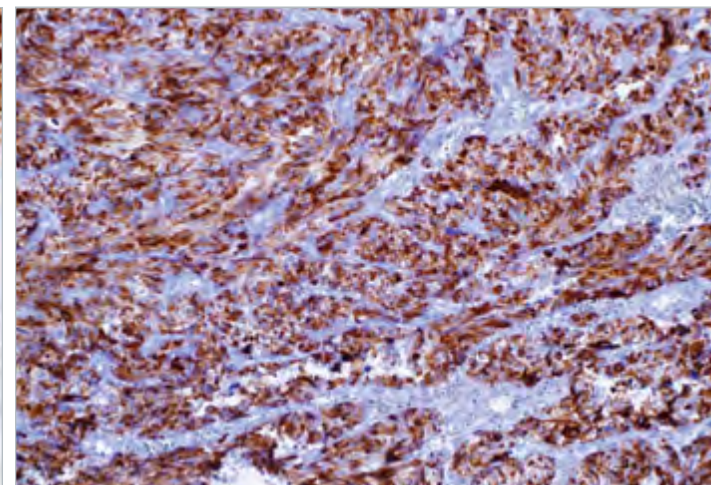
# Calcitonin



Rabbit monoclonal Calcitonin (SP17) labels C-cells in this normal-appearing thyroid.



Calcitonin (SP17) on thyroid, medullary thyroid carcinoma.



Calcitonin (SP17) on thyroid, medullary thyroid carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** thyroid, thyroid medullary carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Head/Neck Pathology
- Cytopathology

## Associated Panels

- Differential Diagnosis of Parathyroid Tumors . . . . . 288
- Thyroid: Malignant vs. Benign . 291
- Differential Diagnosis of Parathyroid vs. Thyroid Tumors. 296

## Reference

1. Copp DH, et al. Endocrinology. 1962; 70:638- 649.
2. Kameda Y, et al. Cell Tissue Res. 1980; 206:403-415.
3. Coombes RC, et al. Lancet. 1974; 1:1080-1083.
4. Dayal Y, et al. Cancer. 1979; 43:1331-13385.
5. DeLellis RA, et al. Am J ClinPathol. 1978; 7:587-29.

## Product Description

Immunohistochemical staining with anti-calcitonin antibody has proven to be an effective way of demonstrating calcitonin-producing cells in the thyroid. C-cell hyperplasia and medullary thyroid carcinomas stain positive for calcitonin. Studies of calcitonin have resulted in the identification of a wide spectrum of C-cell proliferative abnormalities.<sup>1-5</sup>

## Panel Quick View

Thyroid: Malignant vs. Benign							
	Calcitonin	CK 19	Galectin-3	HBME-1	p27	Thyro-globulin	TTF-1
Papillary Carcinoma	-	+	+	+	-/+	+	+
Follicular Carcinoma	-	-	+	+/-	-	+	+
Medullary Carcinoma	+	+	-	+	+/-	-	+
Benign Thyroid	-	-	-	-	+	+	+

Differential Diagnosis of Parathyroid vs. Thyroid Tumors								
	Calci-tonin	Chromo-granin A	Galec-tin-3	PTH	PAX-8	S-100	Synap-to-physin	TTF-1
Parathyroid Tumors	-	+	-	+	+	-	+	-
Follicular Thyroid Tumors	-	-	+	-	+	+/-	-	+
Medullary Thyroid Cacinoma	+	+	-	-	+	-	+	+

## Ordering Information

### Clone: SP17

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	229R-14
0.5 ml, concentrate . . . . .	229R-15
1 ml, concentrate . . . . .	229R-16
1 ml, predilute . . . . .	229R-17
7 ml, predilute . . . . .	229R-18

### Alternate Clones Available

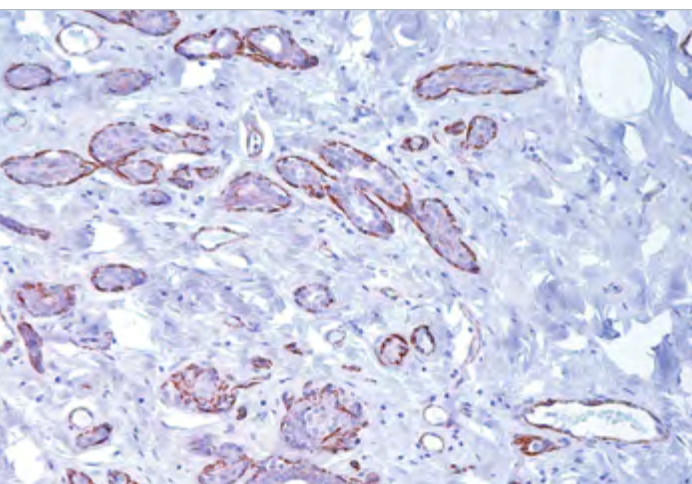
- Rabbit Polyclonal
- Contact us for more information.

### Designations

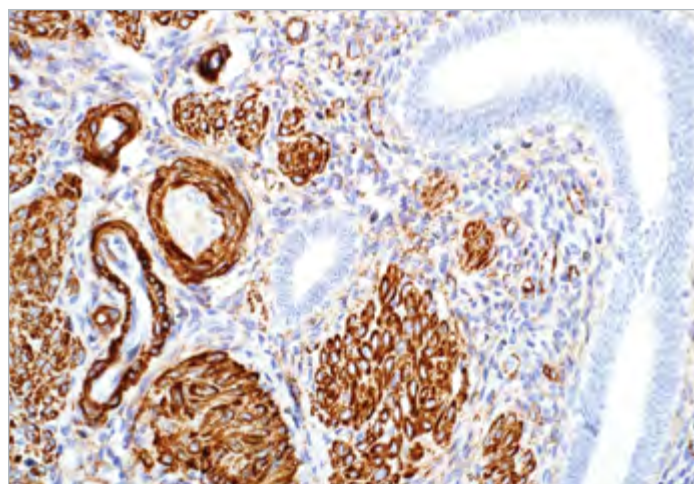




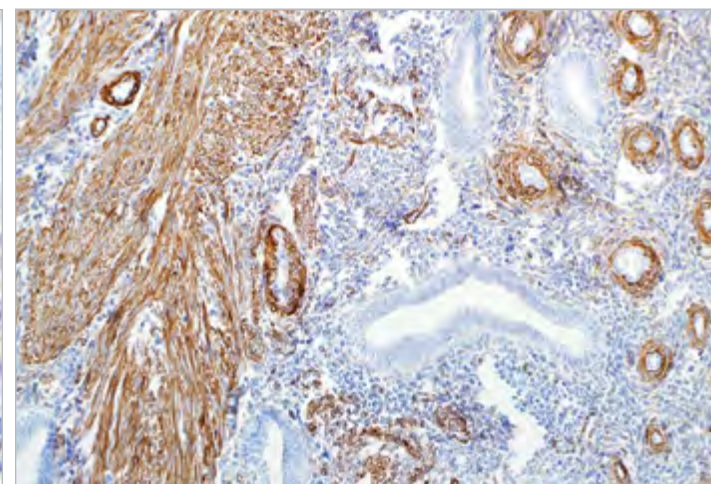
# Caldesmon



Caldesmon (E89) labels myoepithelial cells of sclerosing adenosis of the breast in a cytoplasmic staining pattern.



Caldesmon (E89) on uterus.



Caldesmon (E89) on uterus.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** appendix, breast

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Soft Tissue Pathology

## Associated Panels

- PEComa ..... 290
- Spindle Cell Tumors..... 290
- Lung Adenocarcinoma vs. Mesothelioma ..... 302
- Pleura: Adenocarcinoma vs. Mesothelioma ..... 302
- Muscle Malignant Tumors..... 302
- Small Blue Round Cell Tumors. 302

## Reference

1. Miettinen M, et al. Arch Pathol Lab Med. 2006; 130:1466-78.
2. Watanabe K, et al. Hum Pathol. 1999; 30:392-6.
3. McCluggage WC. Adv Anat Pathol. 2004; 11:162-71.
4. Comin CE, et al. Am J Surg Pathol. 2006; 30:463-9.
5. Comin CE, et al. Am J Surg Pathol. 2007; 31:1139-48.

## Product Description

Caldesmon is a regulatory protein found in smooth muscle and other tissues which interacts with actin, myosin, tropomyosin, and calmodulin. Anti-caldesmon labels smooth muscle and tumors of smooth muscle, myofibroblastic, and myoepithelial differentiation.<sup>1-3</sup> Anti-caldesmon has also been used to differentiate epithelioid mesothelioma from serous papillary carcinoma of the ovary.<sup>4,5</sup>

## Panel Quick View

PEComa										
	Caldesmon	SM Actin	Calponin	CD63	CD68	Desmin	HMB-45	MART-1	S-100	
Angiomyolipoma	+	+	+	+	+	-	+	+	-	
Lymphangiomyomatosis	+	+	+	+	-	-	+	+	-	
Extrapulmonary Clear Cell Tumor	-	+	-	+	-	-	+	+	+	
Primary Cutaneous PEComa	-	-/+	-	+	+/-	-	+	+	-	
Pulmonary Clear Cell Sugar Tumor	-	-	-	+	+/-	-	+	+	+/-	

Spindle Cell Tumors										
	Caldesmon	MS Actin	SM Actin	ALK	Calponin	CK Cocktail	Desmin	EMA	Myogenin	S-100
Myofibroblastic Tumor	+	+	+	+	+	-	+	-	-	-
Spindle Cell Carcinoma	-	-	-	-	-	+	-	+/-	-	-
Neurofibroma	-	-	-	-	-	-	-	-	-	+
Rhabdomyosarcoma	-	+	-	-	-	-	+	+/-	+	-
Endometrial Stromal Tumor	-	+	+	-	+	-	-	-	-	-
Smooth Muscle	+	+	+	-	+	-	+	-	-	-

Small Blue Round Cell Tumors										
	Caldesmon	MS Actin	SM Actin	Calponin	CD57	INI-1	Myogenin	Myoglobin	PGP 9.5	Vimentin
Leiomyosarcoma	+	+	+	+	+/-	-	-	-	-	+
Rhabdomyosarcoma	-	+	-	-	-	+	+	+	+	+

## Ordering Information

### Clone: E89

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	230R-14
0.5 ml, concentrate.....	230R-15
1 ml, concentrate .....	230R-16
1 ml, predilute .....	230R-17
7 ml, predilute .....	230R-18

### Designations



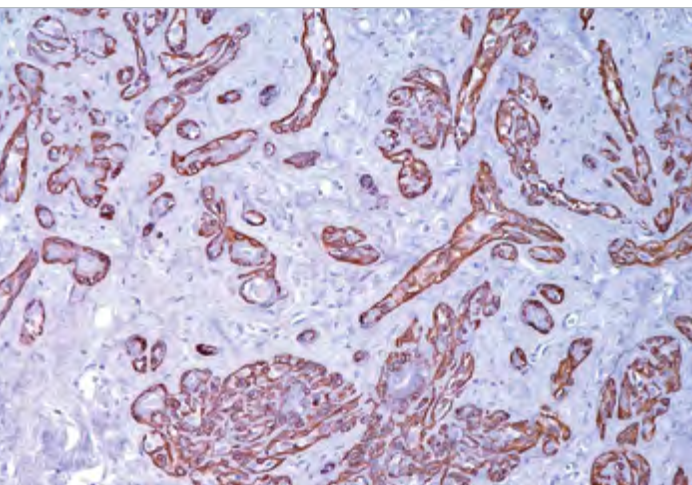
IVD IVD IVD RUO

**CELL MARQUE**

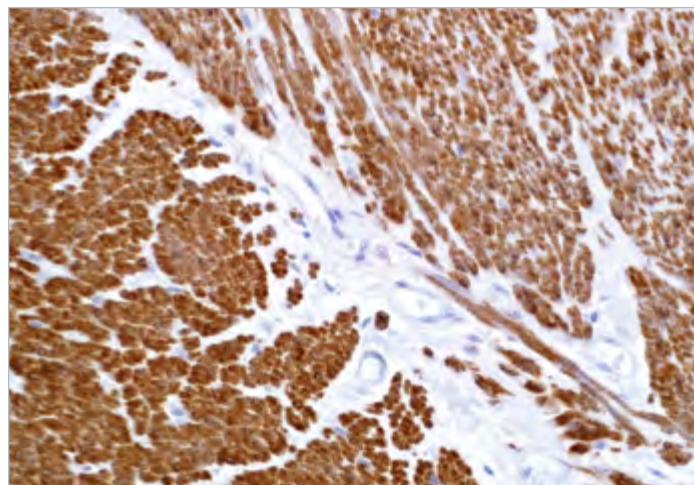
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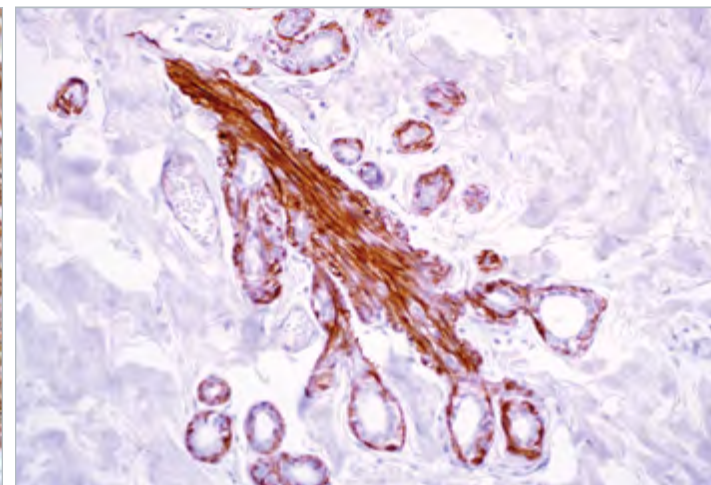
# Calponin-1



Myoepithelial cells of breast sclerosing adenosis are stained positive in a cytoplasmic pattern by Calponin-1 (EP798Y).



Calponin-1 (EP798Y) on colon.



Calponin-1 (EP798Y) on breast.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** appendix  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Soft Tissue Pathology

## Associated Panels

- Spindle Cell Tumors. . . . . 290
- Non-invasive Breast Lesions vs. Invasive Ductal Carcinoma . . . 291
- Muscle Malignant Tumors. . . . 302
- Small Blue Round Cell Tumors. 302
- Soft Tissue Sarcoma . . . . . 303
- Soft Tissue Tumor. . . . . 303

## Reference

1. Wang NP, et al. Appl Immunohistochem. 1997; 5:141-151.
2. Nagao T, et al. Cancer. 1998; 83:1292-9.
3. Savara AT, et al. Mod Pathol. 1997; 10:1093-1100.
4. Fanburg-Smith JC, et al. Hum Pathol. 1999; 30:1336-43.
5. Hornick JL, et al. Am J Surg Pathol. 2003; 27: 1183-96.

## Product Description

Calponin is a 34 kD polypeptide that interacts with actin, tropomyosin, and calmodulin. It is involved in smooth muscle contraction mechanism and is restricted exclusively to smooth muscle tissue. Anti-calponin has been found to be useful in staining myoepithelium and is, therefore, useful for differentiating benign sclerosing adenosis of the breast from infiltrating ductal carcinoma.<sup>1</sup> Calponin positivity has also been noted in malignant myoepithelioma<sup>2,5</sup> and pleomorphic adenoma<sup>3</sup> of salivary gland origin, as well as angiomatoid malignant fibrous histiocytoma.<sup>4</sup>

## Panel Quick View

Spindle Cell Tumors										
	Calponin	ALK	β-Catenin	Caldesmon	CD56	CK Cocktail	Desmin	Myogenin	SM Myosin	PGP 9.5
Myofibroblastic Tumor	+	+	-	+	+	-	+	-	-	-
Endometrial Stromal Tumor	+	-	+/-	-	-	-	-	-	-	+
Smooth Muscle	+	-	-	+	-	-	+	-	-	-
Leiomyosarcoma	+	-	-	+	+	-/+	+	-	+	-

Non-invasive Breast Lesions vs. Invasive Ductal Carcinoma				
	Calponin	SM Myosin	CK 5&6	p63
Sclerosing Adenosis	+	+	+	+
Breast Carcinoma <i>in-situ</i> (Myoepithelial Cells)	+	+	+	+
Infiltrating Breast Carcinoma	-	-	-	-

Soft Tissue Tumor									
	Calponin	MS Actin	SM Actin	CD99	CK Cocktail	FLI-1	INI-1	Myogenin	PGP 9.5
Leiomyosarcoma	+	+	+	-	-/+	-	-	-	-
PNET/ES	-	-	-	+	-/+	+	+	-	+
Rhabdomyosarcoma	-	-/+	-/+	-	-	-	+	+	+

## Ordering Information

### Clone: EP798Y

Rabbit Monoclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate. . . . . 231R-14  
 0.5 ml, concentrate. . . . . 231R-15  
 1 ml, concentrate . . . . . 231R-16  
 1 ml, predilute . . . . . 231R-17  
 7 ml, predilute . . . . . 231R-18

### Alternate Clones Available

• Mouse Monoclonal, CALP  
 Contact us for more information.

### Designations

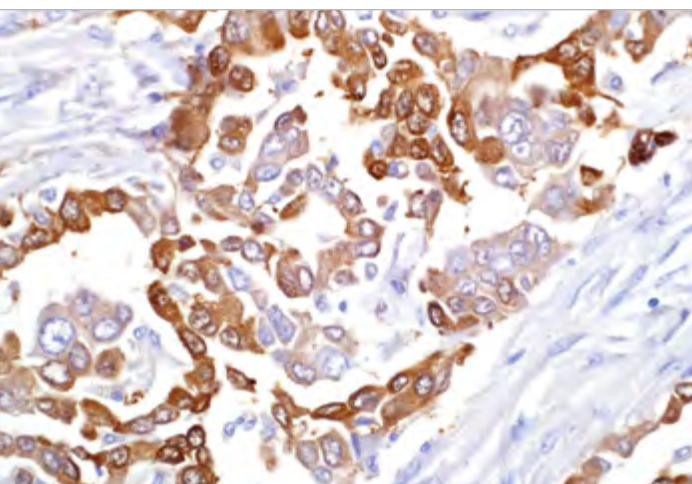


**CELL MARQUE**

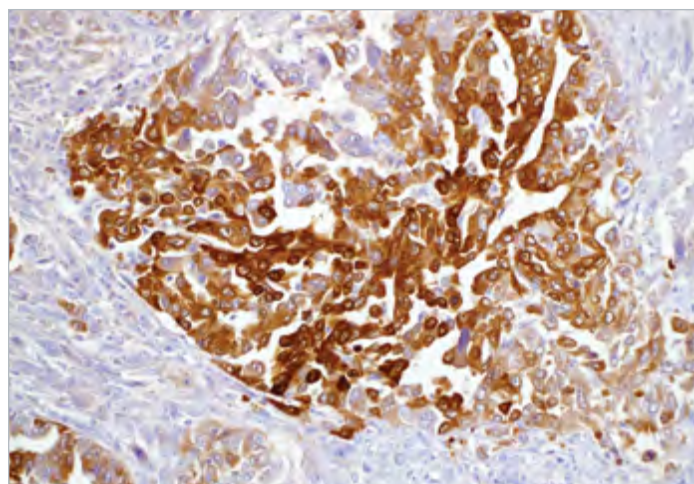
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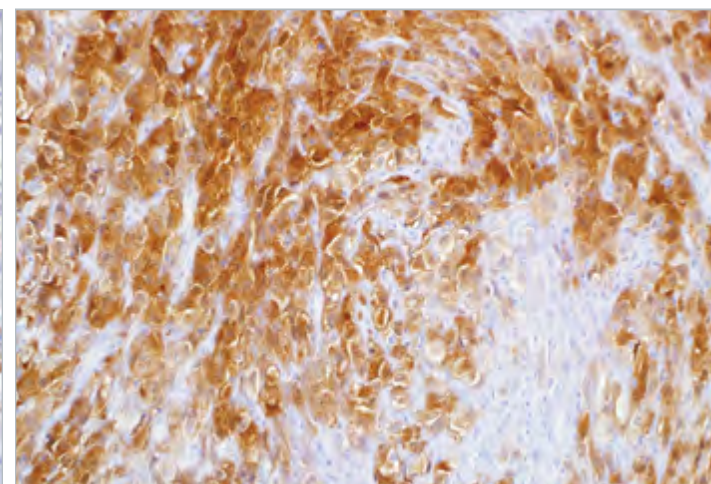
# Calretinin



Rabbit monoclonal anti-calretinin stains mesothelioma cells in predominantly cytoplasmic pattern.



Calretinin (SP13) on pleura.



Calretinin (SP13) on pleura.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic, nuclear  
**Control** mesothelioma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Cytopathology
- Pulmonary Pathology

## Associated Panels

- Adrenal Tumors. . . . . 286
- Sex Cord Stromal Tumors . . . . . 292
- Renal Cell Carcinoma vs. Hemangioblastoma. . . . . 296
- Lung Adenocarcinoma vs. Mesothelioma . . . . . 302
- Pleura: Adenocarcinoma vs. Mesothelioma . . . . . 302
- Soft Tissue Neoplasms . . . . . 302
- Soft Tissue Sarcoma . . . . . 303

## Reference

1. Dabbs DJ, Saunders. 2006.
2. Doglioni C, et al. Am J Surg Pathol. 1996; 20:1037-1046.
3. Zhang PJ, et al. Mod Pathol. 2003; 16:591-597.
4. Jorda M, et al. Appl Immunohistochem Mol Morphol. 2002; 10:67-70.
5. Zheng W, et al. Adv Anat Pathol. 2003; 10:27-38.
6. Rishi M, et al. Am J Surg Pathol. 1997; 21:583-589.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Calretinin is a 29 kDa calcium-binding protein thought to play a role in the cell cycle. Anti-calretinin has been shown to be useful in differentiating mesothelioma from adenocarcinomas from the lung and other sources.<sup>1</sup> The sensitivity of anti-calretinin in distinguishing reactive mesothelial cells from adenocarcinoma cells is 100%, and the specificity is up to 80%. Light, focal, cytoplasmic staining of adenocarcinoma cells may be seen in 10 to 30% of cases.<sup>2</sup> Anti-calretinin has also demonstrated utility in differentiating adrenal cortical neoplasms (+) from pheochromocytomas (-).<sup>3,4</sup> Calretinin has also been useful in diagnosing granulosa cell tumor of the ovary amongst its mimics. Other ovarian tumors that stain with calretinin are Sertoli-Leydig cell tumor, Sertoli cell tumor, Leydig cell tumor, and sex cord tumor with annular tubules, as well as steroid cell tumor.<sup>5,6-9,8</sup>

## Panel Quick View

Adrenal Tumors						
	Calretinin	CD56	Chromogranin A	Inhibin, alpha	MART-1	Synaptophysin
Pheochromocytoma	-	+	+	-	-	+
Adrenocortical Carcinoma	+	+	-	+	+	-/+
Adrenocortical Adenoma	+	+	-	+	+	-/+

Sex Cord Stromal Tumors							
	Calretinin	CD99	CK 7	EMA	Inhibin	MART-1	Vimentin
Granulosa Cell Tumors	+	+	-	-	+	+	+
Sertoli-Leydig Cell Tumors	+	+	+	-	+	+	+
Gynandroblastoma	+	-/+			+		+
Gonadoblastomas	+	+	-	-	+	-	+

Pleura: Adenocarcinoma vs. Mesothelioma										
	Calretinin	Caldesmon	CEA	CK 5&6	Ep-CAM	E-cadherin	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	-	-	+	-	+	+	-	-	+	+
Mesothelioma	+	+	-	+	-	-	+	+	-	-

## Ordering Information

### Clone: SP13

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	232R-14
0.5 ml, concentrate. . . . .	232R-15
1 ml, concentrate . . . . .	232R-16
1 ml, predilute . . . . .	232R-17
7 ml, predilute . . . . .	232R-18

### Alternate Clones Available

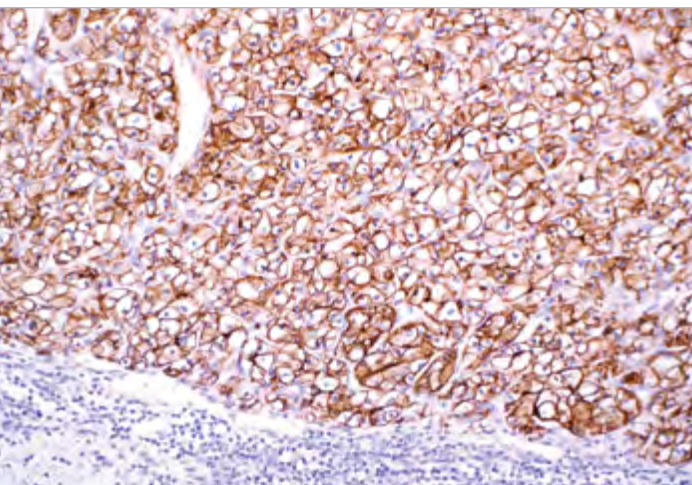
- Rabbit Polyclonal
- Contact us for more information.

### Designations

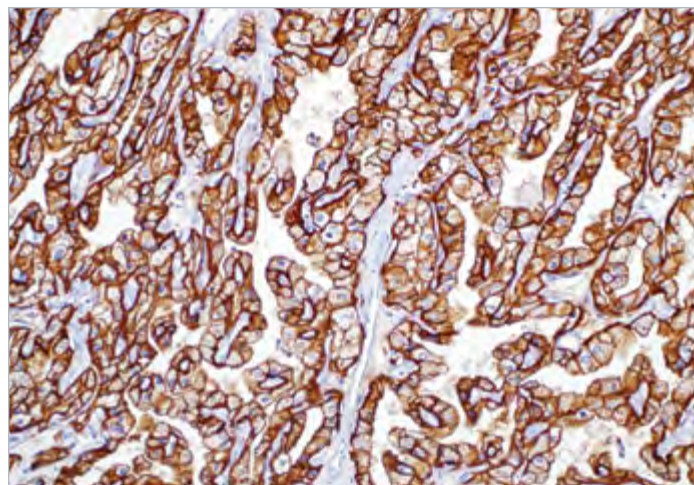




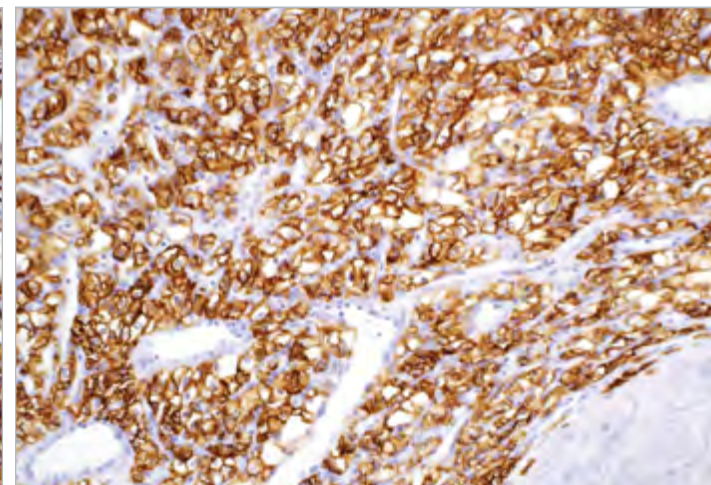
# Carbonic Anhydrase IX (CA IX)



Carbonic Anhydrase IX (CA IX) (EP161) on renal cell carcinoma.



Mouse monoclonal CA IX (MRQ-54) shows a strong membranous expression of the CA IX protein in renal cell carcinoma.



CA IX (MRQ-54) on kidney.

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** clear cell renal cell carcinoma, gall bladder epithelium  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

CA IX

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas.....287

## Reference

1. Kivela AJ, et al. Histochem Cell Biol. 2000; 114:197-204.
2. Al-Ahmadie HA, et al. Am J Surg Pathol. 2008; 32:377-382.
3. Ivanov S, et al. Am J Pathol 2001; 158:905-919.
4. Leppilampi M, et al. World J Gastroenterol. 2003; 9:1398-1403.
5. Dorai T, et al. Cancer Invest. 2006; 24:754-779.
6. Gupta R, et al. Am J Surg Pathol. 2009; 33:241-247.

## Product Description

Carbonic anhydrases are a family of zinc containing metalloproteins that catalyze the reversible hydration of CO<sub>2</sub>. Among these, carbonic anhydrase IX (CA IX) is anchored to the cell membrane and is expressed in the human gastrointestinal tract, chiefly in the stomach and gall bladder.<sup>1</sup> It is interesting to note that CA IX is overexpressed in epithelial malignancies of the uterus, cervix, lung, breast, and kidney; none of the associated normal tissues express this isozyme.<sup>1-4</sup> CA IX is said to maintain the extracellular acidic pH, thus promoting cell growth in these tumors.<sup>5</sup> Preliminary data suggest consistent immunoreactivity for anti-CA IX in clear cell renal cell carcinoma (RCC) with demonstrated sensitivity of 85% to 100%.<sup>2</sup> Anti-CA IX, together with antibodies against PAX-2, Ksp-cadherin, and CD117, contributes to a robust panel that can be used to help make this distinction. Strong diffuse-to-multifocal immunostaining for anti-CA IX is observed in the large majority of urothelial carcinomas as opposed to the extremely weak and focal immunoreactivity seen in collecting duct carcinoma (CDC). Anti-CA IX can thus aid in distinguishing between urothelial carcinoma and CDC.<sup>6</sup>

## Panel Quick View

Neoplasms	CA IX	PAX-2	PAX-8	RCC	CD10	Ksp-cadherin
cRCC	+	+	+	+	+	-/+
pRCC	+/-	+	+	+	+	-/+
chRCC	-	+/-	+	+/-	+/-	+
Oncocytoma	-	+	+	-	+/-	+
Sarcomatoid RCC		-	-/+	-/+		
Xp11 Translocation RCC	+	+/-	+	+/-	+	+

## Ordering Information

### Clone: EP161

Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate.....379R-14  
 0.5 ml, concentrate.....379R-15  
 1 ml, concentrate .....379R-16  
 1 ml, predilute .....379R-17  
 7 ml, predilute .....379R-18

### Alternate Clones Available

• Mouse Monoclonal, MRQ-54 (also known as M75)

Contact us for more information.

### Designations

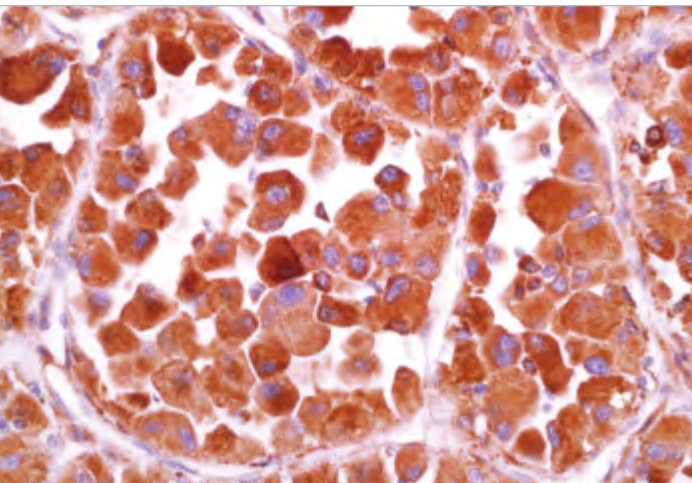
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 CELL MARQUE

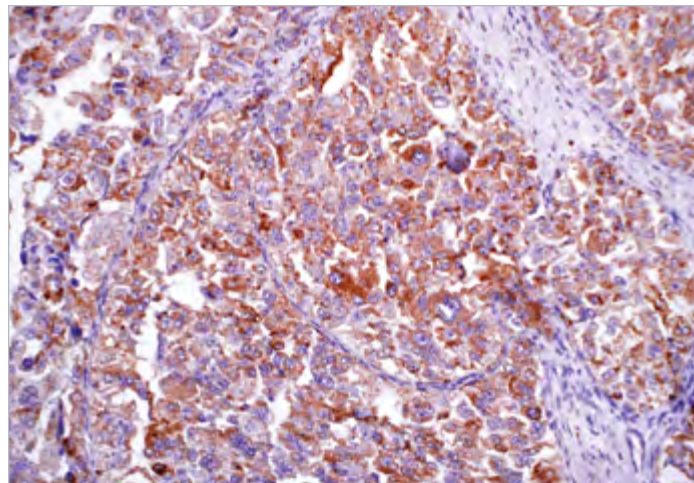
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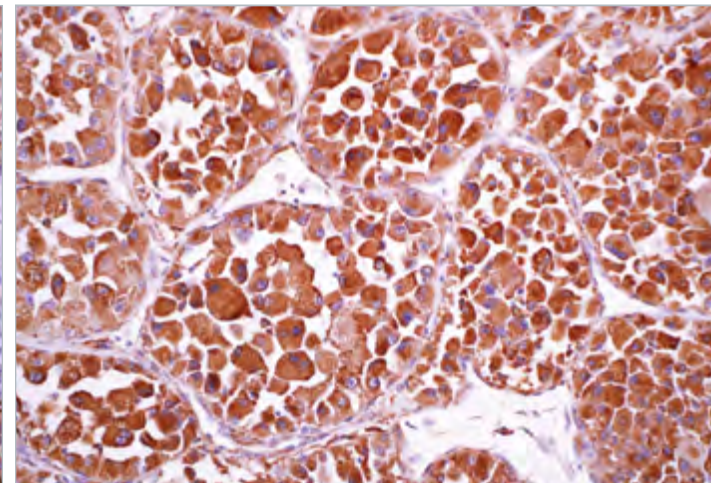
# Cathepsin K



Cathepsin K (3F9) on soft tissue.



Cathepsin K (3F9) on kidney.



Cathepsin K (3F9) expression on alveolar soft part sarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** Xp11.2 translocation RCC

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Martignoni G, et al. Mod Pathol. 2009; 22:1016-22.
2. Zheng G, et al. Am J Clin Pathol. 2013; 139:151-9.

## Product Description

Cathepsin K is a lysosomal papain-like cystine proteinase and can be expressed in normal osteoblasts, fibroblasts, and skin.<sup>1</sup> Recently, cathepsin K has been reported as useful in distinguishing translocation renal cell carcinoma (RCC) from other subtypes of RCC.<sup>1</sup> Martignoni et al. tested 17 cases of translocation RCC and found that cathepsin K stained 6 of 8 cases of translocation RCC with t(X;1), all seven cases of translocation RCC with t(6;11), but was negative for one case with t(X;3) and one with t(X;17).<sup>1</sup> Additionally, the study compared IHC detection of TFE3 antibody in the 17 cases and demonstrated that all translocation RCC with t(6;11) were completely negative for TFE3, but positive for cathepsin K; all other translocation RCC with different chromosomal translocations other than t(X;1) expressed TFE3.<sup>1</sup> Thus, it is recommended that antibodies against both TFE3 and cathepsin K should be used for evaluating translocation RCC.<sup>1</sup> None of the 305 other renal cell neoplasms representing the most common renal cell neoplasm subtypes were positive for cathepsin K.<sup>1</sup> Zheng et al. reported only 2.7% of 1,140 carcinomas from various organs exhibited cathepsin K labeling, indicating that among carcinomas cathepsin K labeling is highly specific for translocation RCC and can be used to help differentiate translocation RCC from other carcinomas.<sup>2</sup>

## Panel Quick View

Kidney, Urothelial and Soft Tissue Neoplasms						
	Cathepsin K	CD34	CD117	GATA3	RCC	TFE3
XP11 translocation renal cell carcinoma	+	-	-/+	-	+	+
Alveolar soft part sarcoma	+	-	-	-	-	-
Rhabdomyosarcoma	+	-	-	-	-	-
Leiomyosarcoma	+	-	-	-	-	-
GIST	+	+	+	-	-	-
Melanoma	+	-	-/+	-	-	-
Renal cell carcinoma	-	-	+/-	-	+	-
Oncocytoma	-	-	+/-	-	-	-
Urothelial Carcinoma	-	-	-	+	-	-

## Ordering Information

### Clone: 3F9

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	402M-14
0.5 ml, concentrate	402M-15
1 ml, concentrate	402M-16
1 ml, predilute	402M-17
7 ml, predilute	402M-18

### Designations



IVD



IVD



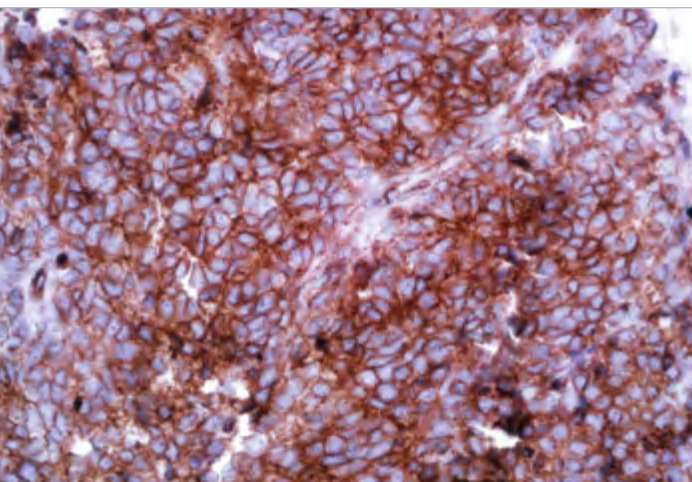
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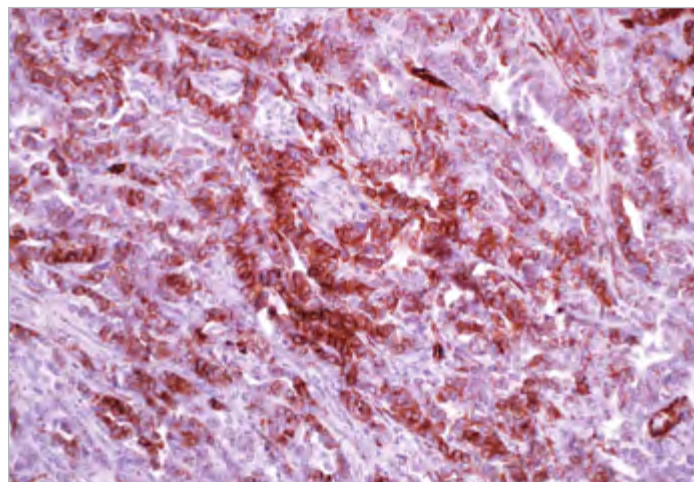
RUO



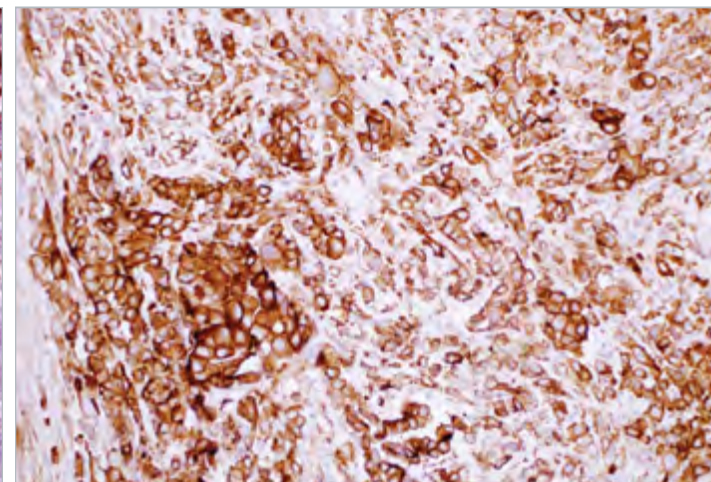
# Caveolin-1



Caveolin-1 (2297) on soft tissue.



Caveolin-1 (2297) shows strong cytoplasmic expression of caveolin-1 in mesothelioma.



Caveolin-1 (2297) on pleura.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** mesothelioma, Ewing sarcoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

CAV-1

## Associated Specialties

- Cytopathology
- Pulmonary Pathology
- Soft Tissue Pathology

## Reference

- Cohen AW, et al. *Physiol Rev.* 2004; 84:1341-1379.
- Amatya VJ, et al. *Histopathology.* 2009; 55:10-19.
- Llombart-Bosch A, et al. *Virchows Arch.* 2009; 455:397-411.

## Product Description

Caveolin-1 (CAV-1) is a cell membrane-associated structural component of flask-shaped plasma membrane invaginations termed caveolae.<sup>1</sup> CAV-1 is expressed at different levels in different tissues, with the highest in adipocytes, endothelial cells, fibroblasts, and mesothelial cells.<sup>1</sup> Anti-CAV-1 is useful in assisting in the identification of epithelioid mesothelioma. A study by Amatya et al. indicates CAV-1 expression in all 80 (100%) epithelioid mesotheliomas, whereas only 6/80 (7.5%) of the lung adenocarcinomas were positive for CAV-1.<sup>2</sup> Staining in most mesotheliomas was strong and diffuse when compared with the weak, focal staining (no more than 1% of the tumor cells) seen in the lung adenocarcinomas, anti-CAV-1 is considered a very useful marker for assisting in discriminating between these two malignancies. They also indicated that anti-CAV-1 is comparable to other mesothelioma markers such as anti-calretinin and anti-D2-40 (podoplanin) that are commonly used to assist in the differentiation between epithelioid mesotheliomas and lung adenocarcinomas.<sup>2</sup> Anti-CAV-1 is also useful in identification of Ewing sarcoma/PNET. Literature indicates CAV-1 expression in 368 (96%) of 383 cases of Ewing sarcoma/PNET.<sup>3</sup> In summary, anti-CAV-1 is very useful in the differentiation of epithelioid mesothelioma from lung adenocarcinoma and identification of Ewing sarcoma/PNET.<sup>3</sup>

## Panel Quick View

Epithelioid Mesothelioma vs. Carcinoma										
	CAV-1	CEA	CK 5&6	Ber-EP4	MOC-31	Napsin A	D2-40	TBM*/Calretinin	TTF-1	WT1
Epithelioid Mesothelioma	+	-	-	+	+	-	-	+	-	+
Lung Squamous Cell Carcinoma	+/-	-	+	+	+	+/-	+	-	-	-
Lung Adenocarcinoma	-	+	+	-	-	+	+	-	+	-
Breast Invasive Ductal Carcinoma	-	-	+	-/+	-	+	+	-	-	-
Renal Cell Carcinoma	-	+	-	-	-	-/+	-/+	-	-	-
Ovarian Serous Carcinoma	-	-	+	+/-	+	+	+	-	-	+
Hepatocellular Carcinoma	-	-	+	-	-	-/+	-	-	-	-

\*Thrombomodulin

## Ordering Information

**Clone: 2297**

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	412M-14
0.5 ml, concentrate	412M-15
1 ml, concentrate	412M-16
1 ml, predilute	412M-17
7 ml, predilute	412M-18

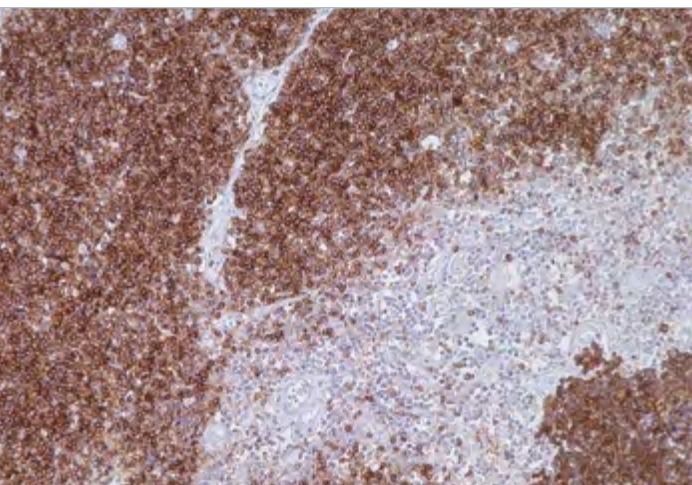
## Designations



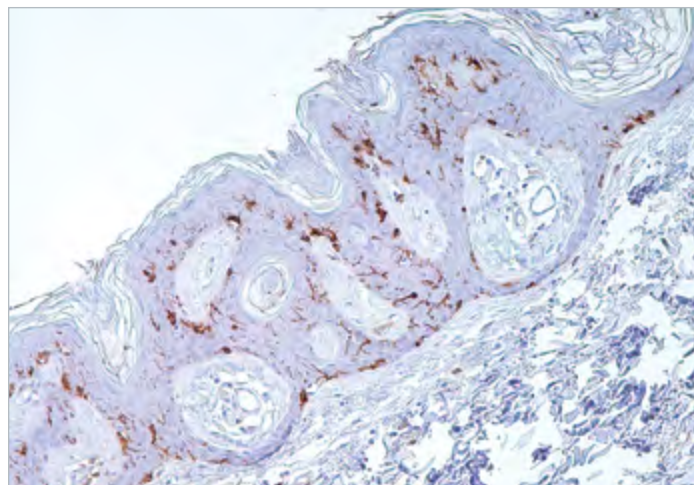
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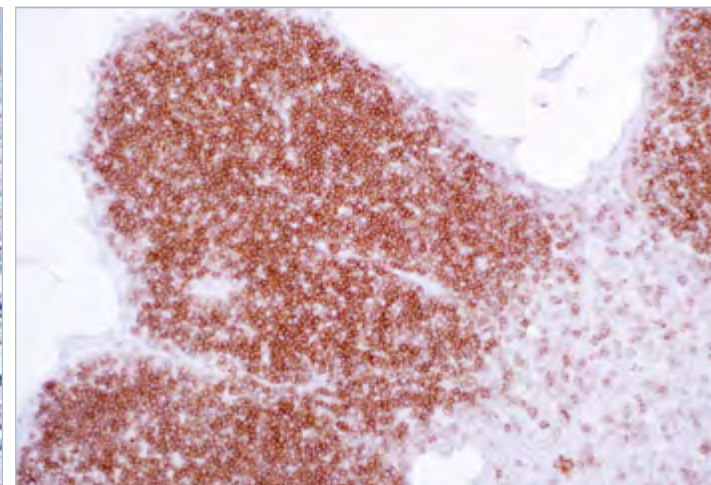
# CD1a



Rabbit monoclonal anti-CD1a shows strong cytoplasmic staining in thymic cortical lymphocytes.



CD1a (EP3622) on skin.



CD1a (EP3622) on thymus cortex medulla.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** skin, thymus

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- Lymph Node ..... 289
- Thymus ..... 290
- Histiocytic/Dendritic Cell Lesions. . . . . 297
- Histiocytic Proliferation ..... 297
- Lymph Node ..... 298
- Lymphoblastic Lymphomas, BCL vs. TCL..... 298

## Reference

1. Krenacs L, et al. J Pathol. 1993; 171:99-104.
2. Angel CE, et al. Blood. 2009; 113:1257-67.
3. Emile JF, et al. Am J Surg pathol. 1995; 19:636-41.
4. Han X, et al. Am J Clin Pathol. 2007; 127:528-44.
5. Dalia S, et al. Cancer Control. 2014; 21:322-7.

## Product Description

CD1a is a non-polymorphic major histocompatibility complex class I-related cell surface glycoprotein and is expressed in association with  $\beta$ -microglobulin. In normal tissues the CD1a antibody reacts with cortical thymocytes, Langerhans cells, interdigitating dendritic cells, and rare antigen-presenting cells of the lymph node.<sup>1-3</sup> Anti-CD1a also reacts with Langerhans cell histiocytosis,<sup>3</sup> and a subset of pre-T lymphoblastic lymphoma/leukemia (cortical T LBL/L).<sup>4,5</sup> When combined with S-100 and CD68, CD1a has been reported to be very useful in distinguishing Rosai-Dorfman disease from other histiocytic diseases.

## Panel Quick View

Lymph Node	CD1a	CD14	CD21/CD35	CD68	CD163	S-100
Reactive Histiocytosis	-	+	-	+	-	-
Langerhans Cell Histiocytosis	+	+	-	+	+	+
Sinus Histiocytosis with Massive Lymphadenopathy	-	+	-	+	+	+
Follicular Dendritic Cell Sarcoma	+/-	-	+	-	-	-
Dermatopathic Lymphadenitis	+	-	-	-	+	+

Histiocytic Proliferation	CD1a	CD68	CD163	Factor XIIIa	HAM-56	S-100	Vimentin
Juvenile Xanthogranuloma	-	+	+	+	+	-	+
Langerhans Cell Histiocytosis	+	+	+	-	+	+	+
Dermatofibroma	-	+	-	+	-	-	+

## Ordering Information

### Clone: EP3622

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	101R-14
0.5 ml, concentrate	101R-15
1 ml, concentrate	101R-16
1 ml, predilute	101R-17
7 ml, predilute	101R-18

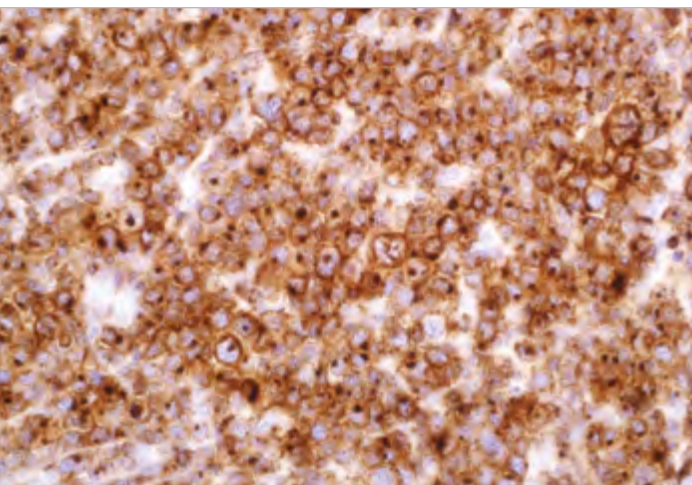
### Designations



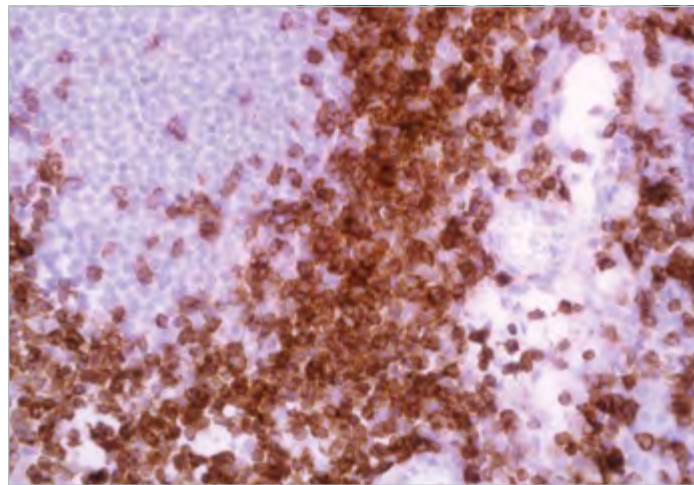
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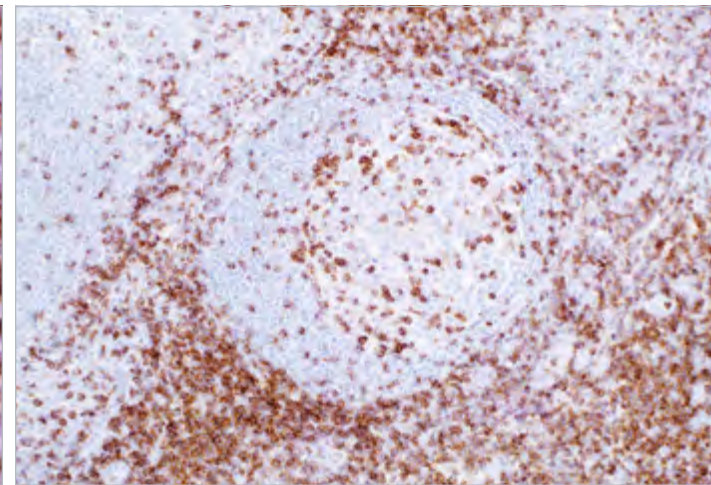
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Tumor cells of angioimmunoblastic T-cell lymphoma shows diffuse, strong staining by CD2 (EP222).



CD2 (EP222) on tonsil.



Interfollicular T-lymphocytes show CD2 (MRQ-11) expression.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- Mastocytosis ..... 299
- NK Cell Leukemia/Lymphoma . 299
- T-cell Lymphomas ..... 300

## Reference

- Aguilera NS, et al. Arch Pathol Lab Med. 2006; 130:1772-9.
- Barrionuevo C, et al. Appl Immunohistochem Mol Morphol. 2007; 15:38-44.
- Bovenschen HJ, et al. Br J Dermatol. 2005; 153:72-8.
- Foon KA, et al. Blood 1986; 68:1- 31.

## Product Description

CD2 is one of the earliest T-cell lineage restricted antigens to appear during T-cell differentiation and only rare CD2+ cells can be found in the bone marrow. Anti-CD2 is a pan-T-cell antigen marker. Anti-CD2 is therefore useful for the identification of virtually all normal T-lymphocytes. It is also very useful in the assessment of lymphoid malignancies as it is expressed in the majority of precursor and mature T-cell lymphomas and leukemias. As with other pan-T-cell antigens, CD2 may be aberrantly deleted in some neoplastic T-cell populations, especially peripheral T-cell lymphomas. When combined with anti-CD25, anti-CD2 may assist in the identification of systemic mastocytosis and mastocytic leukemia.<sup>1-4</sup>

## Panel Quick View

Mastocytosis					
	CD2	CD25	CD117	CD163	Tryptase
Mastocytosis / Systemic Mastocytosis	+	+	+	-	+
Mast Cell Leukemia	+	+	+	-	+
Reactive Mast Cells	-	-	+	+	+

T-cell Lymphomas										
	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45	CD45RO	PD-1
Angioimmunoblastic Lymphoblastic	+	+	+	+	+	-	+	+	+	+
Subcutaneous Panniculitis-Like NK/T-cell Lymphoma	+/-	+	+/-	+	+	+/-	+	+	+	-
Cutaneous	+	+	-	+	+	+/-	-	+	+	-
Peripheral, NOS	+	+	+	-	+	-	-	+	-	+/-
Mycosis Fungoides	+	+	+	-	+	-	+	+	+	-

## Ordering Information

### Clone: EP222

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	102R-14
0.5 ml, concentrate	102R-15
1 ml, concentrate	102R-16
1 ml, predilute	102R-17
7 ml, predilute	102R-18

### Alternate Clones Available

- Mouse Monoclonal, MRQ-11
- Contact us for more information.

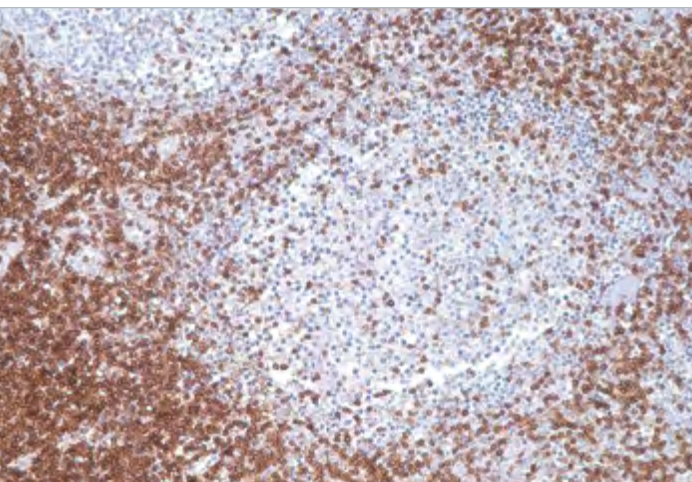
### Designations



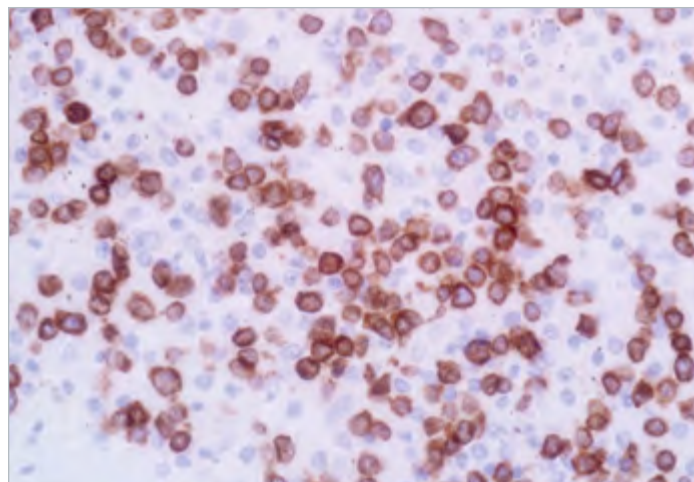
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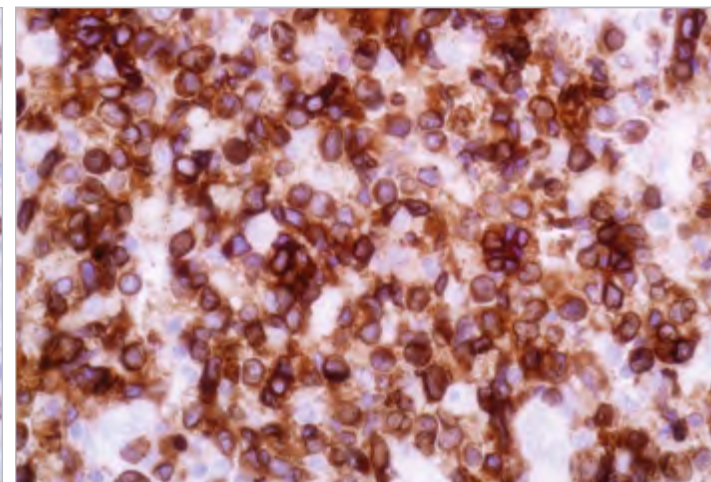




CD3 (MRQ-39) on tonsil.



CD3 (MRQ-39) on spleen.



Angioimmunoblastic T-cell lymphoma is highlighted by CD3 (MRQ-39).

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

- Histiocytic Neoplasms / Histiocytic Lesions..... 297
- Lymphoblastic Lymphomas, BCL vs. TCL..... 298
- Lymphoma..... 298
- NK Cell Leukemia/Lymphoma. 299
- T-cell Lymphomas ..... 300

## Reference

1. Denning SM, et al. Oxford Univ Press. 1987; 144-147.
2. Beverley PCL, et al. European J of Immunology. 1981; 11:329-334.
3. Clevers H, et al. European J of Immunology 1988; 18:705-710.
4. Meuer SC, et al. Immunology Today. 1989; 10:255-228.
5. Campana D, et al. J of immunology. 1987; 138:648-665.
6. Hedvat CV, et al. Hum Pathol. 2002; 33:968-74.
7. Karube K, et al. Am J Surg Pathol. 2003; 27:1366-74.
8. Dogan A, et al. Am J Surg Pathol. 2003; 27:903-11.
9. Axdorph U, et al. APMIS. 2002; 110:379-90.

## Product Description

Anti-CD3 has been considered the best all around T-cell marker. This antibody reacts with an antigen present in early thymocytes. The positive staining of this marker may represent a sign of early commitment to the T-cell lineage.

## Panel Quick View

Histiocytic Lesions	CD3	CD4	CD20	CD45	CD68	CD163	Factor XIIIa	Lysozyme
Histiocytic Neoplasms	-	+	-	+	+	+	+	+

Lymphoblastic Lymphomas, BCL vs. TCL	CD3	CD1a	CD5	CD7	CD10	CD19	CD20	CD117	PAX-5	TdT
Lymphoblastic BCL	-	-	-	-	+/-	+	+/-	-	+	+
Lymphoblastic TCL	+	+/-	+/-	+	+	-	-	-	-	+

Lymphoma	CD3	CD20	CD43	CD45R	CD45RO
Mature B-cell	-	+	-	+	-
Mature T-cell	+	-	+	-	+

T-cell Lymphomas	CD3	CD2	CD4	CD5	CD7	CD8	CD25	CD45	PD-1
Angioimmunoblastic	+	+	+	+	+	-	+	+	+
Lymphoblastic	+	+/-	+/-	+	+	+/-	+	+	-
Subcutaneous Panniculitis-Like	+	+	-	+	+	+/-	-	+	-
NK/T-cell Lymphoma	+	+	-	-	-/+	-	-	+	-
Cutaneous	+	+	+	-	+	-	-	+	-/+
Peripheral, NOS	+	+	+/-	+/-	+/-	-/+	+	+	-
Mycosis Fungoides	+	+	+	+	-	-	+	+	-

## Ordering Information

**Clone: MRQ-39**  
 Rabbit Monoclonal

**Volume ..... Part No.**  
 0.1 ml, concentrate..... 103R-94  
 0.5 ml, concentrate..... 103R-95  
 1 ml, concentrate ..... 103R-96  
 1 ml, predilute ..... 103R-97  
 7 ml, predilute ..... 103R-98

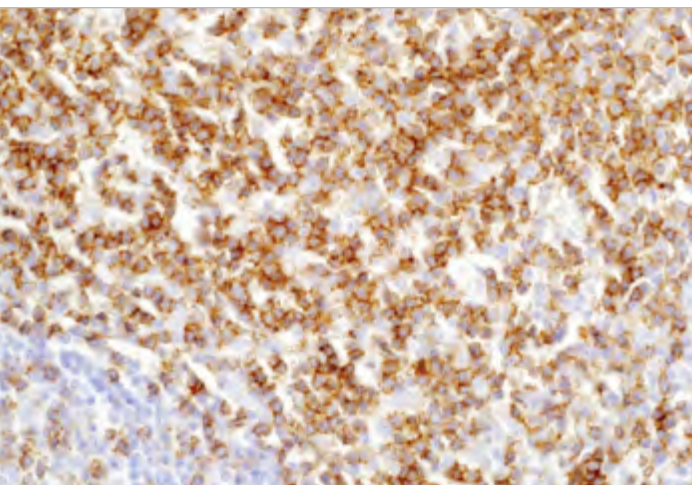
## Alternate Clones Available

• Rabbit Polyclonal  
 Contact us for more information.

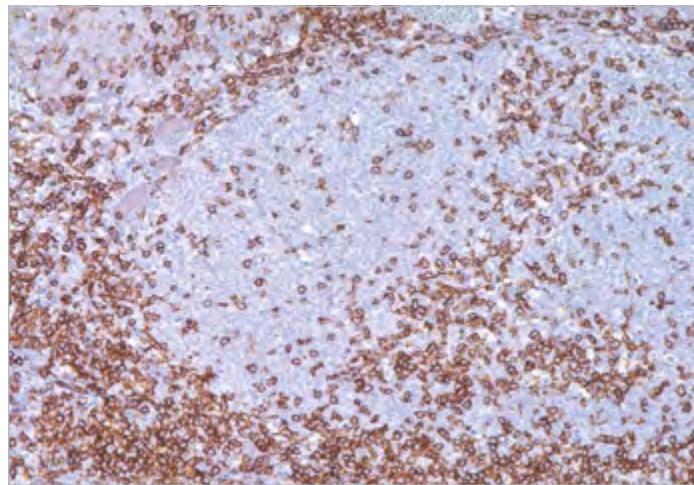
## Designations

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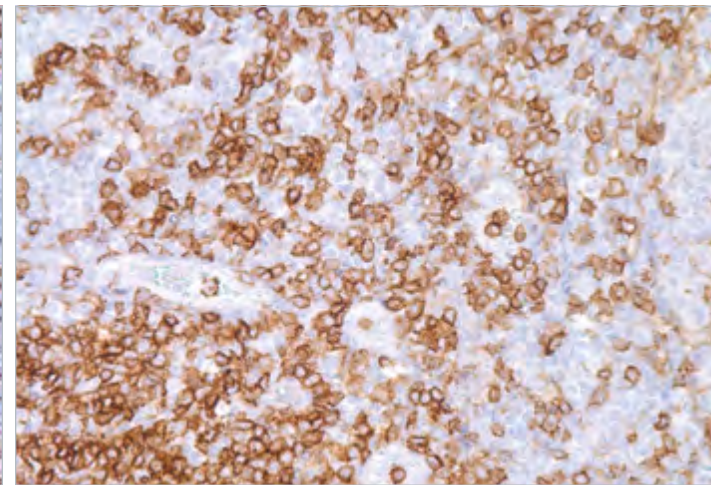




CD4 (EP204) on tonsil.



Interfollicular T-lymphocytes are highlighted by CD4 (SP53). Note scattered intrafollicular T-cells also express CD4 antigen.



CD4 (SP35) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP204: IgG
- SP35: IgG

## Associated Specialties

- Hematopathology

## Associated Panels

- Histiocytic Neoplasms / Histiocytic Lesions.....297
- T-cell Lymphomas .....300

## Reference

1. Leong AS-Y, et al. Greenwich Medical Media Ltd. 2003.
2. Akiyama T, et al. Pathol Int. 2008; 58:626-34.
3. Garcia-Herrera A, et al. J Clin Oncol. 2008; 26:3364-71.

## Product Description

CD4 is a 55 kD glycoprotein expressed on the surface of T-helper/regulatory T-cells, monocytes, macrophages, and dendritic cells. Anti-CD4 is used in the immunophenotyping of lymphoproliferative disorders.<sup>1</sup> The majority of peripheral T-cell lymphomas are derived from the T-helper/regulatory cell subset so that most mature T-cell neoplasms are CD4+ CD8-.<sup>2</sup> As with other T-cell antigens, CD4 may be aberrantly expressed in neoplastic T-cells so that the evaluation of such tumors requires the application of a panel of markers in order to identify tumors with CD4 aberrant expression.<sup>1-3</sup>

## Panel Quick View

Histiocytic Lesions									
	CD4	CD3	CD20	CD45	CD68	CD163	Factor XIIIa	Lysozyme	
Histiocytic Neoplasms	+	-	-	+	+	+	+	+	

T-cell Lymphomas										
	CD4	CD2	CD3	CD5	CD7	CD8	CD25	CD45	CD45RO	PD-1
Angioimmunoblastic	+	+	+	+	+	-	+	+	+	+
Lymphoblastic	+/-	+/-	+	+	+	+/-	+	+	+	-
Subcutaneous Panniculitis-Like	-	+	+	+	+	+/-	-	+	+	-
NK/T-cell Lymphoma	-	+	+	-	-/+	-	-	+	-/+	-
Cutaneous	+	+	+	-	+	-	-	+	-	-/+
Peripheral, NOS	+/-	+	+	+/-	+/-	-/+	+	+	+	-
Mycosis Fungoides	+	+	+	+	-	-	+	+	+	-

## Ordering Information

### Clone: EP204

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	104R-24
0.5 ml, concentrate.....	104R-25
1 ml, concentrate .....	104R-26
1 ml, predilute .....	104R-27
7 ml, predilute .....	104R-28

### Clone: SP35

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	104R-14
0.5 ml, concentrate.....	104R-15
1 ml, concentrate .....	104R-16
1 ml, predilute .....	104R-17
7 ml, predilute .....	104R-18

## Designations



IVD



IVD



IVD

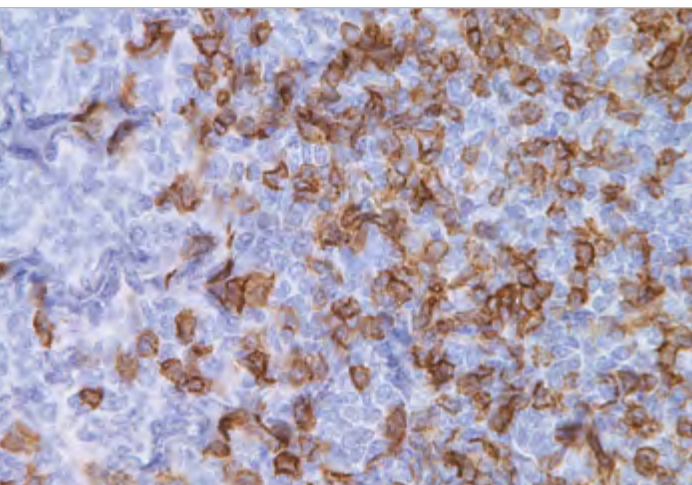


RUO

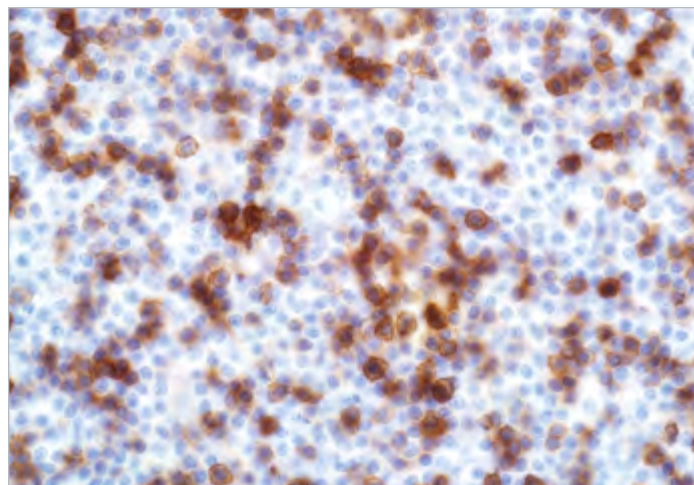
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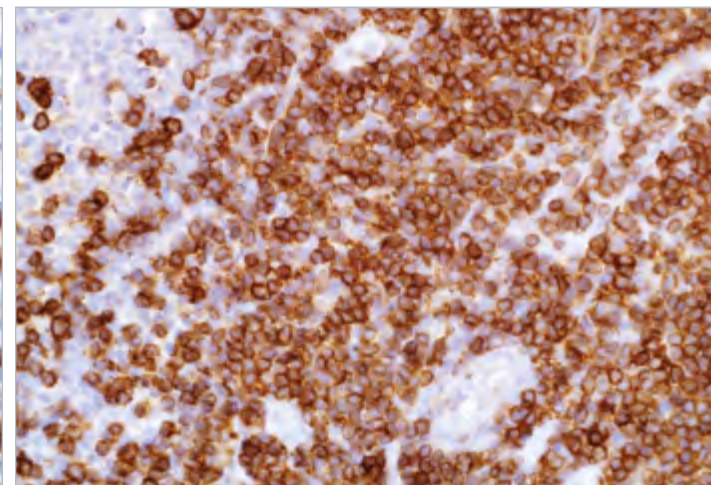




CD5 (4C7) on tonsil.



CD5 (EP77) on small lymphocytic lymphoma.



CD5 (SP19) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- 4C7: IgG/k
- SP19: IgG

## Associated Specialties

- Hematopathology

## Associated Panels

- Thymus ..... 290
- B-cell Lymphomas ..... 296
- Lymphoblastic Lymphomas, BCL vs. TCL ..... 298
- Mature B-cell Lymphomas .... 299
- Non-Hodgkin Lymphomas .... 299
- T-cell Lymphomas ..... 300

## Reference

1. Chan JKC, et al. *Histopathology*. 1994; 25:517-536.
2. Jones NH, et al. *Nature*. 1986; 323:346-349.
3. Tan SH, et al. *Br J Dermatol*. 2003; 149:542-53.
4. Chang CC, et al. *Mod Pathol*. 2002; 15:1051-7.
5. Hatano B, et al. *Pathol Int*. 2002; 52:400-5.
6. West RB, et al. *Am J Clin Pathol*. 2002; 117:636-43.

## Product Description

Anti-CD5 is a pan T-cell marker that also reacts with a range of neoplastic B-cells, e.g. chronic lymphocytic leukemia/ small lymphocytic lymphoma (CLL/SLL), mantle cell lymphoma, and a subset (~10%) of diffuse large B-cell lymphoma.<sup>1,2</sup> CD5 aberrant expression is useful in identification of mature T-cell neoplasms.<sup>3,4,5</sup> Anti-CD5 detection is diagnostic in CLL/SLL within a panel of other B-cell markers, especially one that includes anti-CD23.<sup>1,3</sup> Anti-CD5 is also very useful in differentiating among mature small lymphoid cell malignancies.<sup>1,6</sup> In addition, anti-CD5 can be used in distinguishing thymic carcinoma (+) from thymoma (-). Anti-CD5 does not react with granulocytes or monocytes.<sup>1,2</sup>

## Panel Quick View

Thymus							
	CD5	BG8	CD1a	CK 5&6	CD57	CD117	GLUT1
Thymic Carcinoma	+	+	-	+	-	+	+
Thymoma	-	-	+	-/+	+	-	-/+

B-cell Lymphomas									
	CD5	BCL2	CD20	CD23	CD45	CD79a	Cyclin D1	MUM1	ZAP-70
CLL/SLL	+	+	+	+	+	+	-	+	+/-
Mantle Cell	+	+	+	-	+	+	+	-	-

Lymphoblastic Lymphomas, BCL vs. TCL										
	CD5	CD1a	CD3	CD7	CD10	CD19	CD20	CD117	PAX-5	TdT
Lymphoblastic BCL	-	-	-	-	+/-	+	+/-	-	+	+
Lymphoblastic TCL	+/-	+/-	+	+	+	-	-	-	-	+

T-cell Lymphomas											
	CD5	CD2	CD3	CD4	CD7	CD8	CD25	CD45	CD45RO	PD-1	
Angioimmunoblastic	+	+	+	+	+	-	+	+	+	+	
Lymphoblastic	+	+/-	+	+/-	+	+/-	+	+	+	-	
Subcutaneous Panniculitis-Like	+	+	+	-	+	+/-	-	+	+	-	
NK/T-cell Lymphoma	-	+	+	-	-/+	-	-	+	-/+	-	
Cutaneous	-	+	+	+	+	-	-	+	-	-/+	
Peripheral, NOS	+/-	+	+	+/-	+/-	-/+	-	+	+	-	
Mycosis Fungoides	+	+	+	+	-	-	+	+	+	-	

## Ordering Information

### Clone: 4C7

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	205M-14
0.5 ml, concentrate	205M-15
1 ml, concentrate	205M-16
1 ml, predilute	205M-17
7 ml, predilute	205M-18

### Clone: SP19

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	205R-14
0.5 ml, concentrate	205R-15
1 ml, concentrate	205R-16
1 ml, predilute	205R-17
7 ml, predilute	205R-18

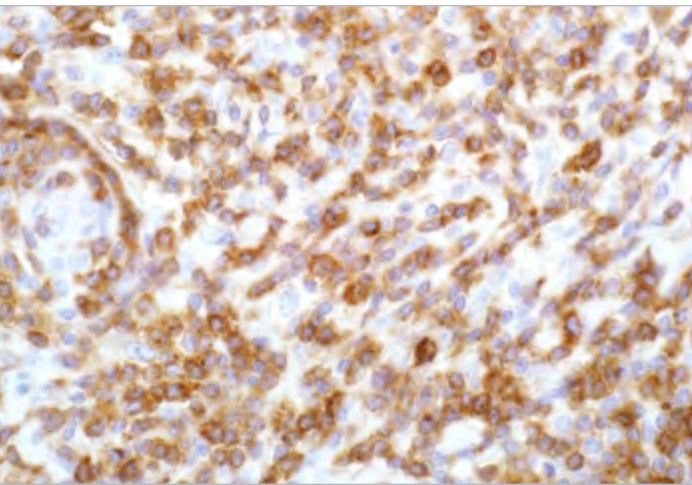
### Alternate Clones Available

- Rabbit Monoclonal, EP77
- Contact us for more information.

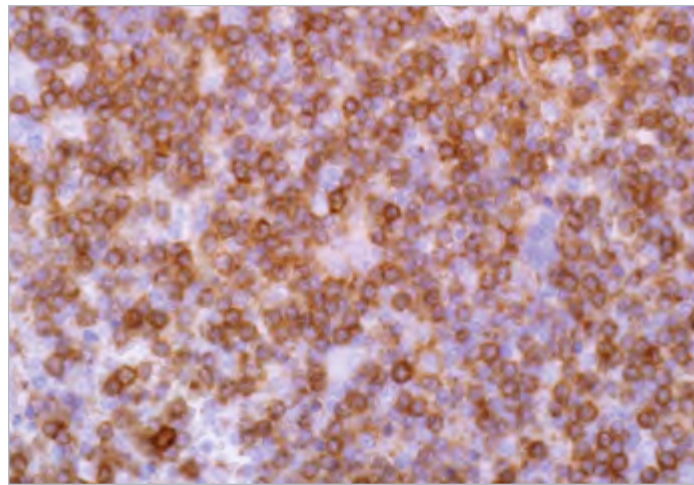
### Designations



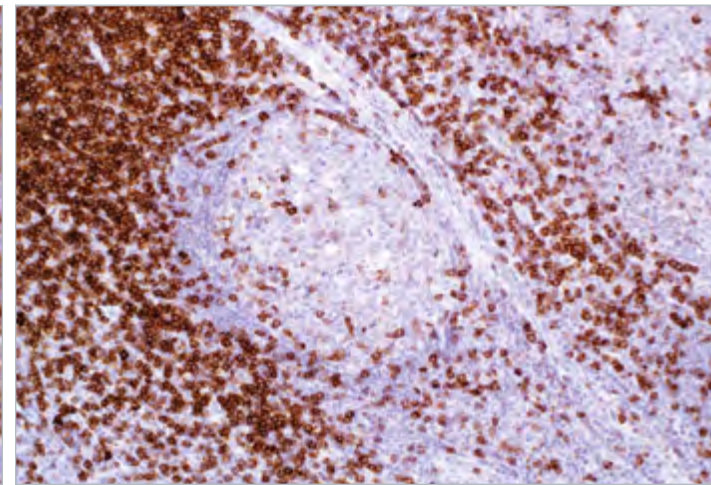




Rabbit monoclonal CD7 (EP132) stains cutaneous T-cell lymphoma.



CD7 (EP132) on lymph node.



Paracortical T-zone lymphocytes show a strong reaction with CD7 (MRQ-56).

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, peripheral T-cell lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Hematopathology
- Anatomic/Surgical Pathology

## Associated Panels

- Lymphoblastic Lymphomas, BCL vs. TCL.....298
- T-cell Lymphomas .....300

## Reference

1. Hodak, E et al. J Am Acad Dermatol 2006; 55:276-84.
2. Went, P et al. J Clin Oncol 2006; 24:2472-9.
3. Vonderheid, EC. J Cutan Pathol 2006; 33 Suppl 1:27-42.

## Product Description

CD7 antigen is a cell surface glycoprotein of 40 kD expressed on the surface of immature and mature T-cells as well as natural killer (NK) cells. It is a member of the immunoglobulin gene superfamily and is the first T-cell lineage associated antigen to appear in T-cell ontogeny, being expressed in T-cell precursors (preceding CD2 expression), and in myeloid precursors, in fetal liver and bone marrow, and persisting in circulating mature T-cells. While its precise function is not known, it is suggested that the molecule functions as an Fc receptor for IgM. CD7 is the most consistently expressed T-cell antigen in lymphoblastic lymphomas/leukemias, and is therefore anti-CD7 is a useful marker in the identification of such neoplastic proliferations. In mature post-thymic T-cell neoplasms, CD7 is the most common pan-T-antigen to be aberrantly expressed, which is a useful pointer to a neoplastic T-cell process.<sup>2,3</sup> CD7 has been shown to be immunexpressed in 85% of mature peripheral T-cells, the majority of post-thymic T-cells, NK cells, T-cell lymphoblastic leukemia/lymphoma, acute myeloid leukemia, and chronic myelogenous leukemia, CD7 is conspicuously absent in adult T-cell leukemia/lymphoma and is not expressed in mycosis fungoides.<sup>1-3</sup>

## Panel Quick View

### Lymphoblastic Lymphomas, BCL vs. TCL

	CD7	CD1a	CD3	CD5	CD10	CD19	CD20	CD117	PAX-5	TdT
Lymphoblastic BCL	-	-	-	-	+/-	+	+/-	-	+	+
Lymphoblastic TCL	+	+/-	+	+/-	+	-	-	-	-	+

### T-cell Lymphomas

	CD7	CD2	CD3	CD4	CD5	CD8	CD25	CD45	CD45RO	PD-1
Angioimmunoblastic	+	+	+	+	+	-	+	+	+	+
Lymphoblastic	+	+/-	+	+/-	+	+/-	+	+	+	-
Subcutaneous Panniculitis-Like	+	+	+	-	+	+/-	-	+	+	-
NK/T-cell Lymphoma	-/+	+	+	-	-	-	-	+	-/+	-
Cutaneous	+	+	+	+	-	-	-	+	-	-/+
Peripheral, NOS	+/-	+	+	+/-	+/-	-/+	+	+	+	-
Mycosis Fungoides	-	+	+	+	+	-	+	+	+	-

## Ordering Information

### Clone: EP132

### Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	107R-14
0.5 ml, concentrate.....	107R-15
1 ml, concentrate .....	107R-16
1 ml, predilute .....	107R-17
7 ml, predilute .....	107R-18

### Alternate Clones Available

- Mouse Monoclonal, MRQ-56
- Contact us for more information.

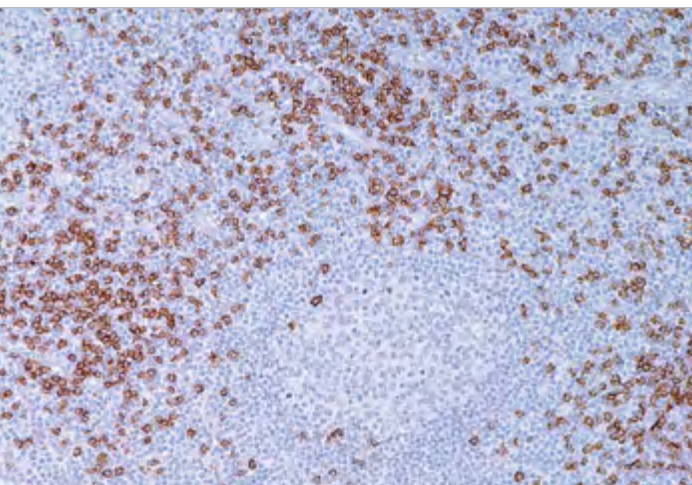
### Designations



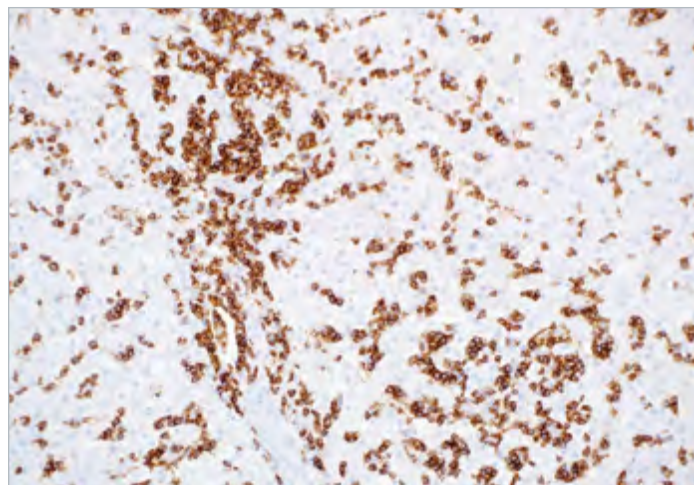
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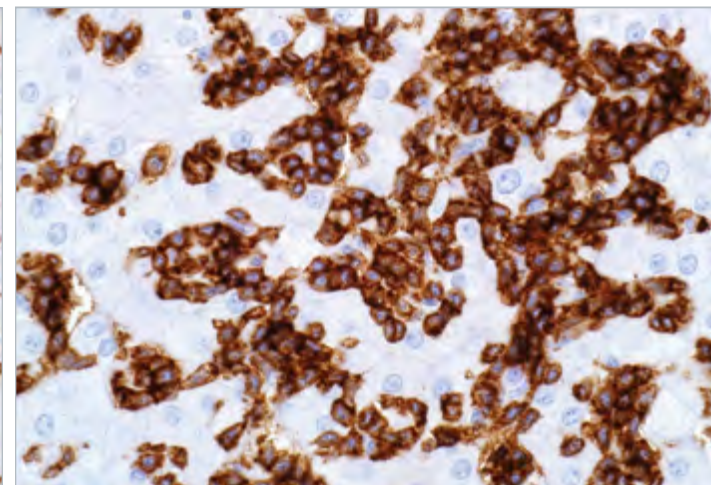




CD8 (C8/144B) on tonsil.



CD8 (SP16) on liver.



Rabbit monoclonal CD8 (SP16) shows CD8 expression. The tumor cells are located in hepatic sinusoids.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

• C8/144B: IgG<sub>1</sub>/k

• SP16: IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● T-cell Lymphomas ..... 300

## Reference

1. Dabbs DJ. Saunders. 2006.
2. Gaidano G, et al. Leukemia. 2000; 14:563-566.
3. Chan J, et al. Reactive Lymphadenopathies. In: Weiss L, ed. Pathology of Lymph Nodes. New York: Churchill Livingstone; 1996; 81-167.
4. Bakels V, et al. Am J Pathol. 1997; 150:1941-1949.
5. Chu PG, et al. Am J Clin Pathol. 2003; 120:64-70.

## Product Description

Anti-CD8 is a T-cell marker for the detection of cytotoxic/suppressor lymphocytes. CD8 is also detected on NK cells, most thymocytes, a subpopulation of null cells and bone marrow cells. This antibody, along with other markers, can be used to distinguish between reactive and neoplastic T-cells.<sup>1</sup> Expression of both CD4 (+) and CD8 (+), or lack of expression of both markers in a lymphoid population would be evidence for lymphoma.<sup>2,3</sup> Although most T-cell lymphoma/leukemias can be either CD8+ or CD8-, CD8 positivity is a factor against mycosis fungoides as this entity is negative for CD8.<sup>4</sup> Rarely does anti-CD8 label non-hematolymphoid neoplasms.<sup>5</sup>

## Panel Quick View

T-cell Lymphomas										
	CD8	CD2	CD3	CD4	CD5	CD7	CD25	CD45	CD45RO	PD-1
Angioimmunoblastic	-	+	+	+	+	+	+	+	+	+
Lymphoblastic	+/-	+/-	+	+/-	+	+	+	+	+	-
Subcutaneous Panniculitis-Like	+/-	+	+	-	+	+	-	+	+	-
NK/T-cell Lymphoma	-	+	+	-	-	-/+	-	+	-/+	-
Cutaneous	-	+	+	+	-	+	-	+	-	-/+
Peripheral, NOS	-/+	+	+	+/-	+/-	+/-	+	+	+	-
Mycosis Fungoides	-	+	+	+	+	-	+	+	+	-

## Ordering Information

### Clone: C8/144B

Mouse Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 108M-94  
 0.5 ml, concentrate ..... 108M-95  
 1 ml, concentrate ..... 108M-96  
 1 ml, predilute ..... 108M-97  
 7 ml, predilute ..... 108M-98

### Clone: SP16

Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 108R-14  
 0.5 ml, concentrate ..... 108R-15  
 1 ml, concentrate ..... 108R-16  
 1 ml, predilute ..... 108R-17  
 7 ml, predilute ..... 108R-18

## Designations



IVD



IVD

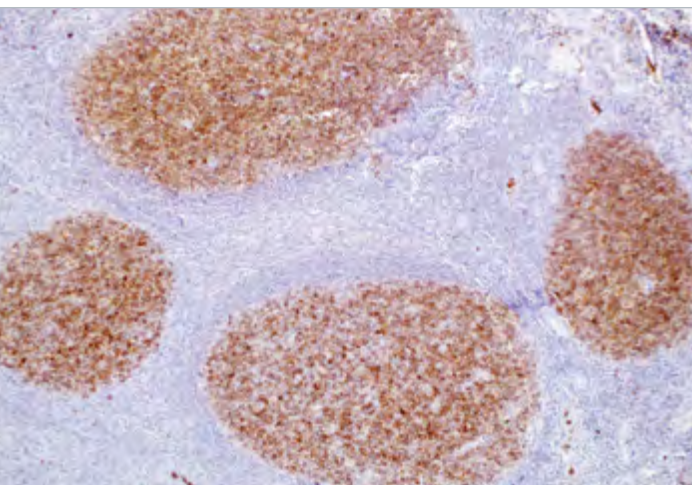


IVD

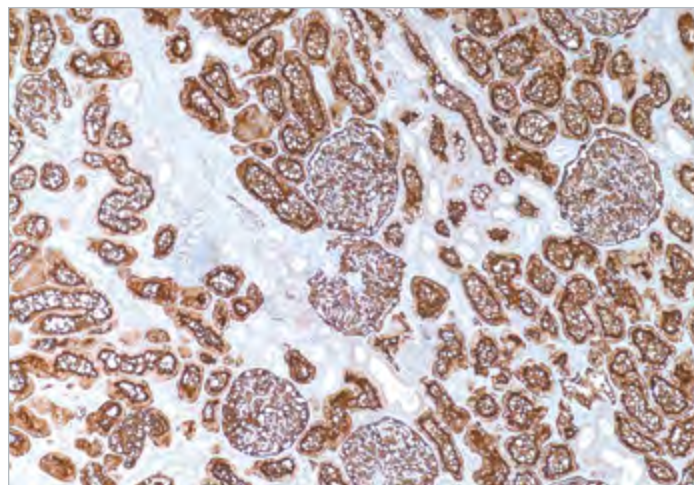


RUO

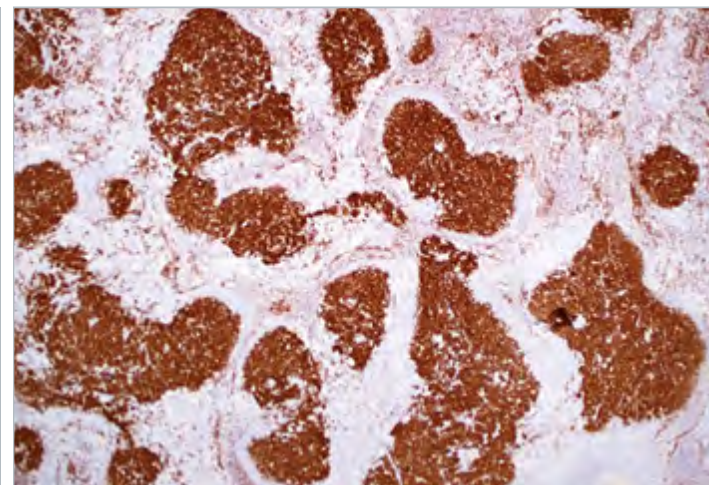




Germinal center cells demonstrate strong cytoplasmic CD10 protein expression.



CD10 (56C6) on kidney.



CD10 (56C6) on follicular lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** kidney, lymph node, tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

- Carcinomas . . . . . 286
- Liver Neoplasms . . . . . 288
- Cutaneous Neoplasm . . . . . 292
- Skin: DF-SP vs. DF-FH . . . . . 293
- Pancreas / Pancreatic Tumors . 294
- Kidney: Renal Epithelial Tumors . . . . . 295
- Renal Cell Carcinoma vs. Hemangioblastoma . . . . . 296
- B-cell Lymphomas . . . . . 296
- c-Myc in DLBCL . . . . . 297
- Lymphoblastic Lymphomas, BCL vs. TCL . . . . . 298
- Mature B-cell Lymphomas . . . . . 299
- Mature B-cell Neoplasms . . . . . 299
- Non-Hodgkin Lymphomas . . . . . 299

## Reference

1. Shipp MA, et al. PNAS USA. 1989; 86:297-301.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

CD10, common acute lymphoblastic leukemia antigen, is expressed in early lymphoid progenitors and normal germinal center cells.<sup>1</sup> The staining pattern is cytoplasmic. As with BCL6, an antibody against CD10 is used to identify B-cells of germinal center origin and their neoplastic counterparts, such as follicular lymphoma. It can be used in combination with other stains such as BCL6, MUM1, FoxP1, GCET, and LMO2 to identify diffuse large B-cell lymphoma with germinal center signature.<sup>2</sup> This antibody almost always labels precursor B lymphoblastic leukemia/lymphoma and Burkitt lymphoma, but much less frequently labels precursor T lymphoblastic leukemia/lymphoma.<sup>2</sup> CD10 is expressed by a subset of T follicular helper cells, although not by normal peripheral T-cells. CD10 expression has been found in angioimmunoblastic T-cell lymphoma (AITL).<sup>2</sup> The expression is highly specific for AITL because other nodal peripheral T-cell lymphomas only rarely express this antigen.<sup>2,3</sup> CD10 expression has been reported in a variety of non-hematolymphoid tissues and their neoplastic counterparts; in particular, renal cell carcinoma, endometrial stromal sarcoma, and hepatocellular carcinoma, among other malignant tumors.<sup>4,5</sup> The clone 56C6 shows higher staining intensity in non-hematolymphoid than hematolymphoid neoplasms.

## Panel Quick View

Carcinomas										
	CD10	β-Catenin	CDX-2	pCEA	CK 5	CK 7	CK 20	Hep Par-1	p63	Villin
Colorectal Adenocarcinoma	+	+	+	+	-	-	+	-	-	+
Hepatocellular Carcinoma	+	-	-	+	-	-	-	+	-	-
Transitional Cell Carcinoma	+	-	-	-	+	+	+	-	+	-

Kidney: Renal Epithelial Tumors										
	CD10	CD117	Ep-CAM	Ksp-cadherin	Parvalbumin	PAX-2	RCC	S100A1	Vimentin	
Clear Cell RCC	+	-	-	-	-	+	+	+	+	+
Chromophobe RCC	-/+	+	+	+	+	+	-/+	-	-	-
Papillary RCC	+	+	-	-/+	-	-	+	+	+	+
Oncocytoma	+/-	+	-	+/-	+	+	-	+	-	-

B-cell Lymphomas										
	CD10	BCL2	BCL6	CD5	CD20	CD23	Cyclin D1	MUM1	TCL1	
Burkitt Lymphoma	+	-	+	-	+	-	-	-	+	+
CLL/SLL	-	+	-	+	+	+	-	+	+	+
Diffuse Large Cell Lymphoma	-/+	+	+/-	-/+	+	-	-	+/-	+	+
Follicular	+	+	+	-	+	-	-	-	+	+
Mantle Cell	-	+	-	+	+	-	+	-	+	+
Marginal Zone	-	+	-	-	+	-	-	+	-	-

## Ordering Information

**Clone: 56C6**  
Mouse Monoclonal

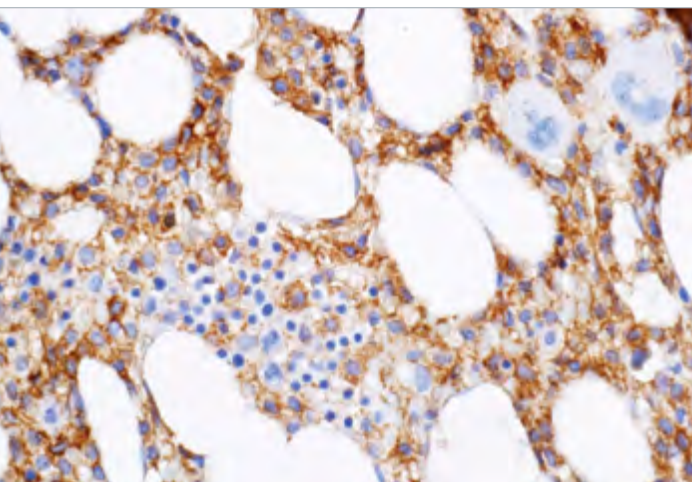
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0.5 ml, concentrate . . . . .	110M-15
1 ml, concentrate . . . . .	110M-16
1 ml, predilute . . . . .	110M-17
7 ml, predilute . . . . .	110M-18
25 ml, predilute . . . . .	110M-10

## Designations

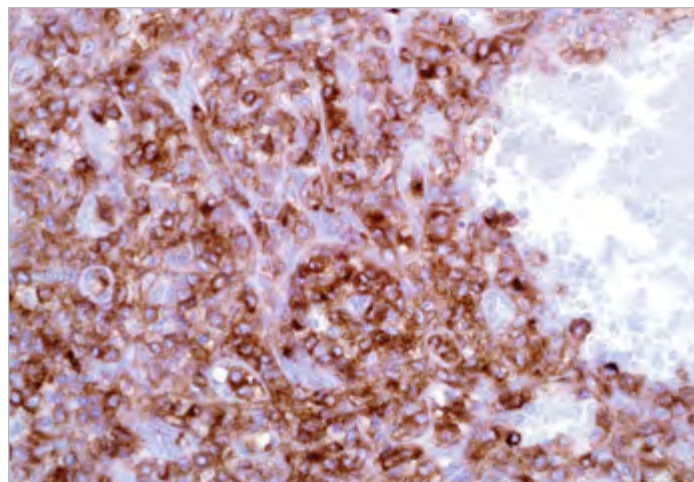
			
IVD	IVD	IVD	RUO



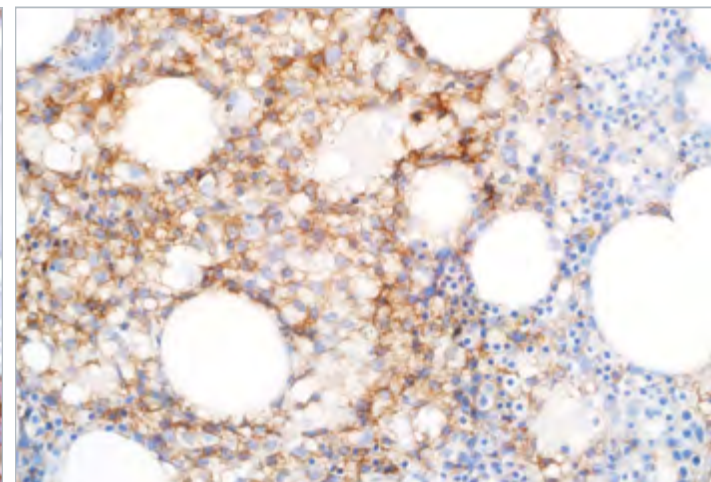
# CD11c



Hairy cell leukemia cells show a moderate staining reaction by CD11c (5D11).



CD11c (5D11) on spleen.



CD11c (5D11) on hairy cell leukemia on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** hairy cell leukemia, granulocytes, monocytes, bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas . . . . . 296  
● Mature B-cell Neoplasms. . . . . 299

## Reference

1. Korinna J, et al. Pathobiology. 2008; 75:252-256.
2. Jones G, et al. Br J Hemaetol. 2011; 156:186-195.
3. Went PT, et al. Am J Surg Pathol. 2005; 29:474-478.
4. Miranda RN, et al. Modern Pathology. 2000; 13:1308-1314.
5. Marotta G, et al. Leuk Lymphoma. 2000; 37:145-149.

## Product Description

CD11c is an adhesion receptor of the leukocyte function-associated family of molecules. This cell surface antigen is normally expressed on granulocytes, monocytes, natural killer cells, and small populations of T- and B-lymphocytes. Therefore, the control for antibody validation and verification should be bone marrow and acute inflammatory tissue blocks. Anti-CD11c, clone 5D11, detects a formalin-resistant epitope of CD11c antigen and will now provide a significant change to the way hairy cell leukemia (HCL) can be diagnosed and assessed in FFPE.<sup>1</sup> The tumor cells of the majority of other types of small B-cell lymphoma do not express this CD11c antigen.

HCL is a distinctive yet uncommon chronic B-cell lymphoproliferative disorder, predominantly involving the bone marrow and spleen. Bone marrow aspiration and trephine biopsy are necessary for making a definitive diagnosis and treatment of hairy cell leukemia (HCL)<sup>2</sup> although in exceptional cases, the diagnosis of HCL is made by histological analysis of splenic tissue after splenectomy or splenic needle core biopsy. However, aspiration is successful in only approximately 10% of patients. The marrow films obtained may demonstrate the presence of hairy cells but definitive diagnosis usually requires a bone marrow trephine biopsy due to the high frequency of a dry tap on aspiration. When there is difficulty in obtaining a good marrow aspirate, (frequent occurrence of a dry tap), examination of bone marrow trephine histology together with immunohistochemical analysis is the only available method to make a definitive diagnosis of HCL. Confirmation of the nature of the infiltrate can be obtained by immunocytochemistry performed on paraffin sections using antibodies against CD20, T bet, DBA.44 and TRAcP. However, expression of both TRAcP and DBA.44 (CD72) is not specific for HCL.<sup>3</sup> It should also be noted, when undertaking immunohistochemistry to support a diagnosis of HCL in trephine biopsy sections, that up to 50% of cases show nuclear positivity for cyclin D1<sup>4</sup> although confusion with mantle cell lymphoma (MCL) is less likely for an experienced hematopathologist as the cytology and histology of MCL are different from HCL.

Korinna et al.<sup>1</sup> in a recent study used clone (5D11) of anti-CD11c to investigate 31 bone marrow trephines with low-level HCL infiltrates and showed that the anti-CD11c was able to detect HCL to a level of 2% of tumor cells in bone marrow biopsies.<sup>1</sup> This indicates that immunohistochemical staining of formalin-fixed, decalcified bone marrow trephine biopsies with anti-CD11c can be used both for early diagnosis of HCL and for detection of residual disease following therapy. It is important to note that the CD11c-positive interstitial macrophages, which were generally more weakly stained than the hairy cells, did not interfere with the identification of the more strongly stained tumor cells. Among malignant lymphomas, CD11c is consistently expressed in HCL, although it is also rarely detected in B-CLL/small lymphocytic lymphoma, and nodal and extranodal marginal zone lymphoma.<sup>5</sup>

## Panel Quick View

Mature B-cell Neoplasms	CD11c	ANXA1	CD10	CD25	CD103	CD123	CyclinD1	DBA44	T-bet	TRAcP
Hairy Cell Leukemia	+	+	+ 20%	+	+	+	+(weak)/-	+/-	+	+/-
Hairy Cell Leukemia Variant	+	-	-	-	+/-	-	-	+/-	-	+/-
Splenic Marginal Zone Lymphoma	-/+	-	-	-	-	-	-	+/-	-	+/-

## Ordering Information

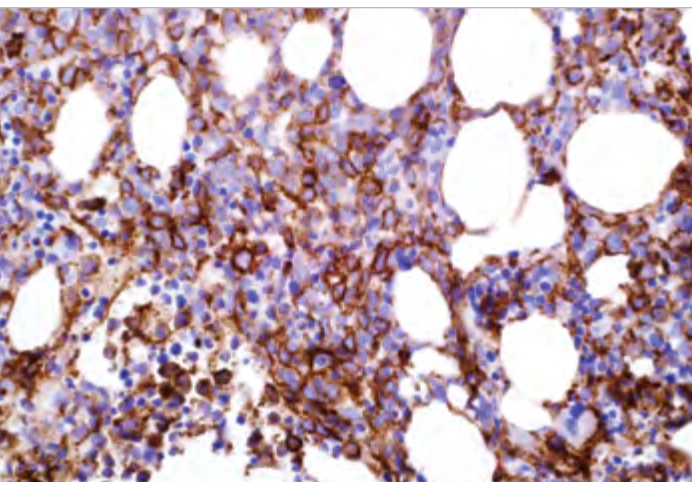
**Clone: 5D11**  
Mouse Monoclonal

**Volume . . . . . Part No.**  
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0.5 ml, concentrate . . . . . 111M-15  
1 ml, concentrate . . . . . 111M-16  
1 ml, predilute . . . . . 111M-17  
7 ml, predilute . . . . . 111M-18

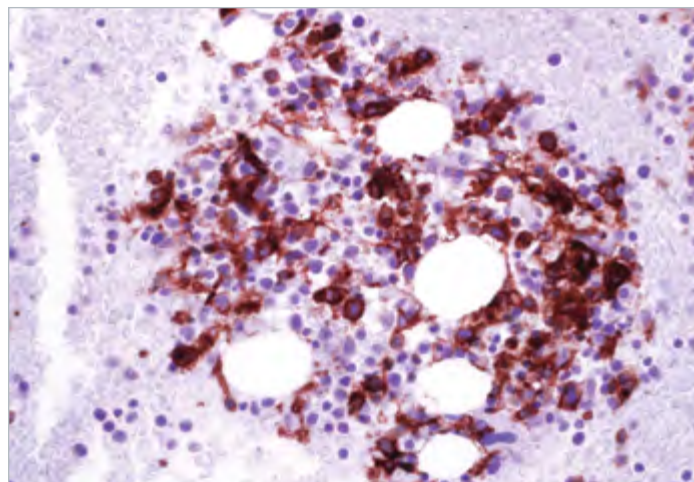
## Designations

 IVD  IVD  IVD  RUO

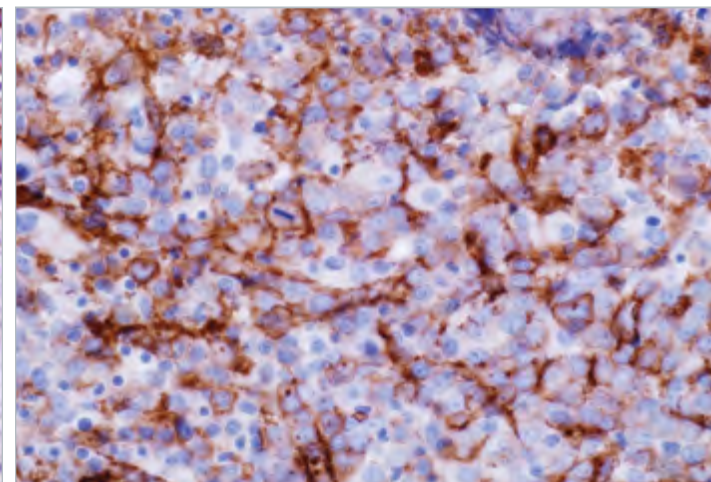




Acute myeloid leukemia cells display a strong cytoplasmic staining pattern.



CD13 (SP187) on bone marrow.



CD13 (SP187) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** liver

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● Leukemia. . . . . 298

## Reference

1. Bauvois B, et al. Med Res Rev. 2006; 26:88-130.
2. Piedfer M, et al. FASEB J. 2011; 25:2831-2842.
3. Gorczyca W. Pol J Pathol. 2012; 1:8-17.
4. Pileri SA, et al. Leukemia. 2007; 21:340-50.
5. Rocken C, et al. J Clin Pathol. 2005; 58:1069-1075.

## Product Description

CD13 (aminopeptidase-N) is a transmembrane protease present in many tissues and cell types (e.g., endothelial and epithelial cells, fibroblasts, and leukocytes).<sup>1</sup> CD13 is overexpressed in various solid and hematological malignancies in humans, including acute myeloid leukemia (AML), and is thought to influence tumor progression. Acute promyelocytic leukemia, hypogranular variant, poses difficulties in morphologic interpretation for separation from other subtypes of AML.<sup>2</sup> CD13 is overexpressed in the tumor and is useful in diagnosing this variant by using a panel including antibodies against CD13(+), CD34(+), CD117(+), CD16(-), and CD33(+).<sup>3</sup> Myeloid sarcoma (also called chloroma, extramedullary sarcoma, or granulocytic sarcoma) is essentially a solid tumor composed of myeloblasts or immature myeloid cells in an extramedullary site. It can be isolated or occur during the course of AML, chronic myeloid leukemia, myelodysplastic syndrome, or myeloproliferative neoplasias. Myeloid sarcoma should be distinguished from large cell lymphoma, lymphoblastic lymphoma, Burkitt lymphoma, undifferentiated carcinoma, malignant melanoma, extra-medullary hematopoiesis, and inflammation.<sup>4</sup> Immunochemical analyses are needed for the accurate diagnosis of myeloid sarcoma.<sup>4</sup> CD13 is overexpressed in myeloid sarcoma and anti-CD13 is very useful in diagnosing myeloid sarcoma using a panel including antibodies against CD34, CD43, CD117, MPO, lysozyme, CD163 and CD68.<sup>4</sup> It has been reported that CD13 is expressed in both normal and neoplastic liver tissue, where it exhibits a canalicular distribution pattern similar to that seen for polyclonal CEA and CD10.<sup>5</sup> Thus, anti-CD13 can be useful as an additional marker in differentiating between HCC and non-hepatocellular neoplasms.<sup>5</sup>

## Panel Quick View

Leukemia	CD13	CD14	CD16	CD33	CD34	CD38	CD71	CD117	CD163	MPO
Acute Myeloid Leukemia with Minimal Differentiation	+	+	-	+	+	+	-	+	-	-
Acute Myeloid Leukemia without Maturation	+	-	-	+	+	-	-	+	-	+
Acute Myeloid Leukemia with Maturation	+	-	-	+	+	-	-	+	-	+
Acute Myelomonocytic Leukemia	+	+	+	+	+/-	-	-	+	+	+
Acute Monoblastic and Monocytic Leukemia	+	+	+	+	-/+	-	-	+/-	+	+
Acute Erythroid Leukemia	-	-	-	-	-/+	-	+	+/-	-	-
Acute Megakryoblastic Leukemia	+/-	-	-	+/-	-	-	-	-	-	-
Acute Basophilic Leukemia	+	-	-	+	+/-	-	-	-	-	-
Acute Panmyelosis with Myelofibrosis	+	-	-	+	+	-	-	+	-	-

## Ordering Information

**Clone: SP187**

Rabbit Monoclonal

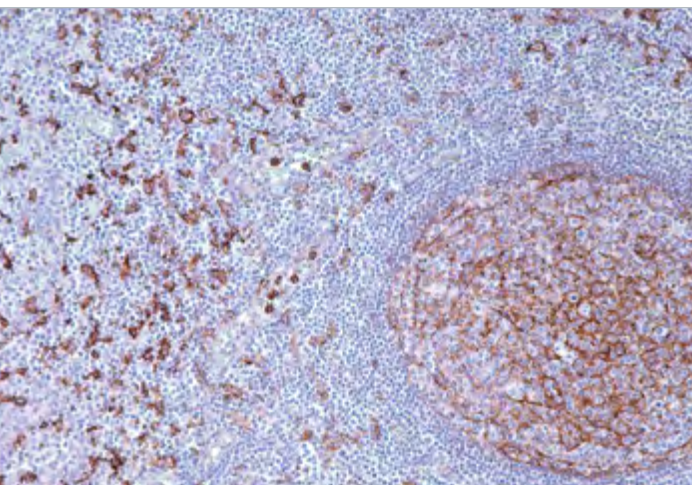
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7 ml, predilute . . . . .	113R-18

## Designations

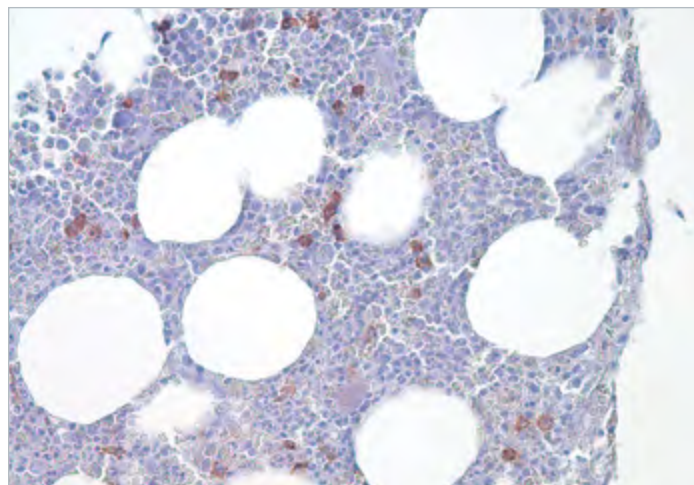
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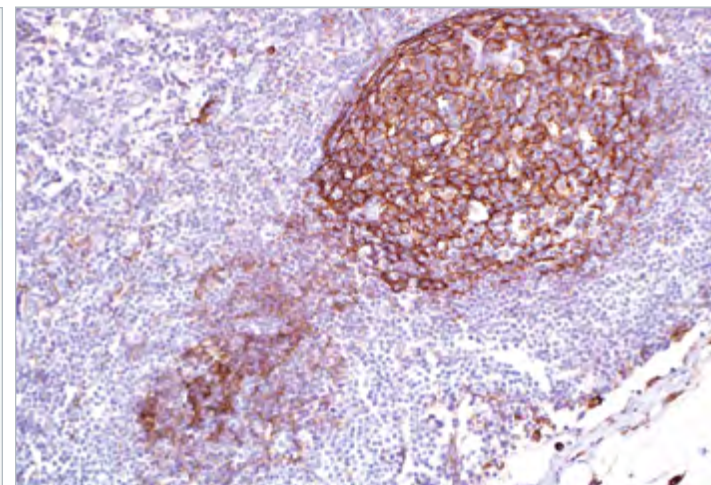
# CD14



Rabbit monoclonal anti-CD14 shows a moderate cytoplasmic staining reaction in macrophages and follicular dendritic cells.



CD14 (EPR3653) on bone marrow.



CD14 (EPR3653) on lymph node.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil, lymph node, appendix, colon, myeloid leukemia

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- Lymph Node ..... 289
- Leukemia ..... 298
- Lymph Node ..... 298

## Reference

1. Gregory CD, et al. Apoptosis. 1999; 4:11-20.
2. Larregina AT, et al. Nature Immunol. 2001; 2:1151-8.
3. Ziegler-Heitbrock HW, et al. Immunol Today. 1993; 14:121-5.
4. Steiniger B, et al. Immunology. 1997; 92:307-16.
5. Buckley PJ, et al. Am J Pathol. 1987; 128:505-20.
6. Hartnell A, et al. Blood. 2001; 97:288-96.
7. Marmey B, et al. Hum Pathol. 2006; 37:68-77.
8. Hsiao CH, et al. J Formos Med Assoc. 2006; 105:701-7.
9. Qubaja M, et al. Vichows Arch. 2009; 454:411-9.

## Product Description

Anti-CD14 labels a 55 kDa, glycosyl-phosphatidylinositol-linked membrane protein, involved in endotoxin binding and recognition of apoptotic cells.<sup>1</sup> CD14 is expressed by monocytes and dermal dendritic cells; anti-CD14 is considered to be a macrophage-derived monocyte marker.<sup>2</sup> CD14 is also present in granulocytes, endothelial, epithelial cells, and placental trophoblasts.<sup>3</sup> In the spleen, CD14 can be expressed in the red pulp and marginal zone cells, and histiocytes around sheathed capillaries. In the lymph node, true sinusoidal histiocytes, and follicular dendritic cells stain with anti-CD14.<sup>3-7</sup> However, other monocyte-derived cells in the lymph node, such as in sinusoidal histiocytosis with erythrophagocytosis, macrophages associated with anthracosis, germinal center tingible body macrophages in reactive germinal centers do not express CD14 antigen. CD14 is not expressed in plasmacytoid dendritic cells. Anti-CD14 positive histiocytes are reported as markedly increased in DLBCL, but not in chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL), mantle cell lymphoma (MCL), or follicular lymphoma (FL).<sup>7</sup> Anti-CD14 is useful in identifying massive lymphadenopathy with sinus histiocytosis (Rosai-Dorfman disease) when used in a panel including anti-S-100 and anti-CD68.<sup>8</sup> Anti-CD14 can also be used for decalcified bone marrow biopsy specimens to show increased myelomonocytic and monocytic neoplastic cells in chronic myelomonocytic leukemia and monocytic leukemia, and is very helpful in the distinction of myeloproliferative neoplasms, myelodysplastic syndrome, and acute monocytic leukemia. This antibody is more sensitive for leukemic monocytic cells than antibodies directed against CD163 and CD68/PG-M1.<sup>9</sup>

## Panel Quick View

Lymph Node	CD14	CD1a	CD68	CD169
Sinusoidal Histiocytes	+	-	-	-
Tingible Body Macrophages	-	-	+	-
Plasmacytoid Monocytes	-	-	-	-
Langerhans Cell Histiocytosis	+	+	+	+/-
Interdigitating DC	+/-	+	-	-

## Ordering Information

**Clone: EPR3653**

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	114R-14
0.5 ml, concentrate	114R-15
1 ml, concentrate	114R-16
1 ml, predilute	114R-17
7 ml, predilute	114R-18

## Designations



IVD



IVD



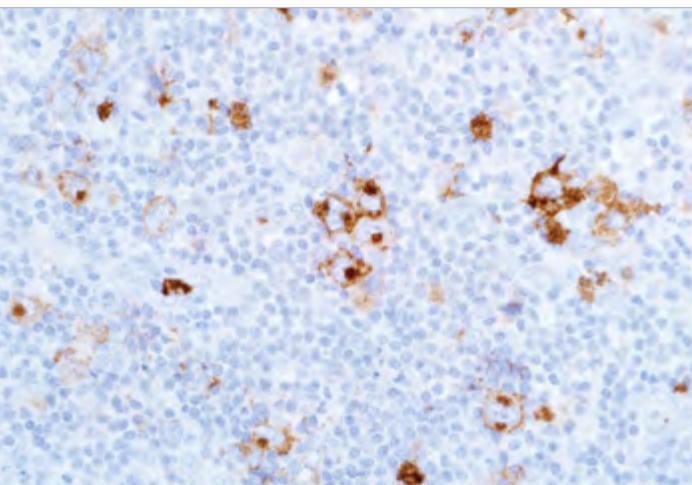
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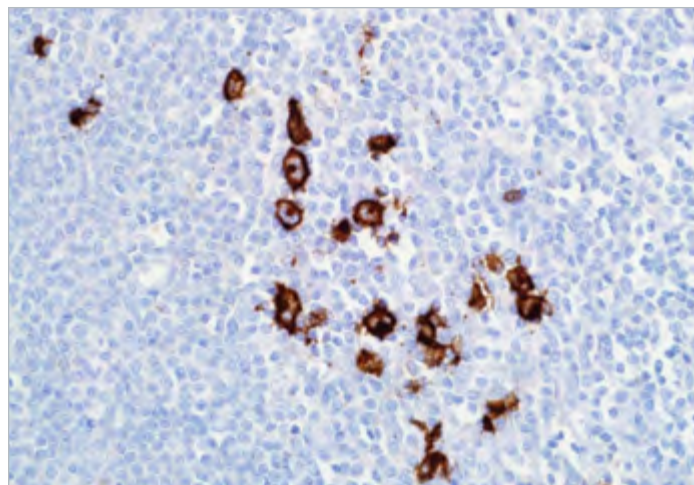
RUO

**CELL MARQUE**

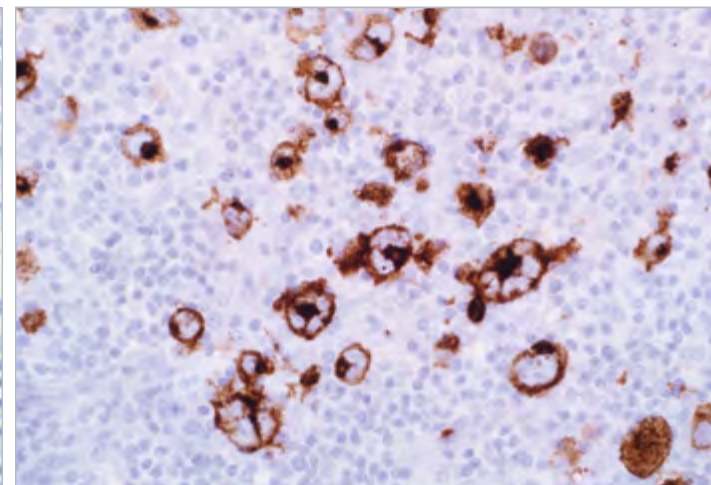
**RabMab®**  
Technology from Abcam



CD15 (MMA) on lymph node, classic Hodgkin lymphoma.



Classic Hodgkin lymphoma Reed-Sternberg cells are highlighted by CD15 (5D11).



CD15 (MMA) on classic Hodgkin lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** Hodgkin lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM

## Associated Specialties

● Hematopathology

## Associated Panels

- Skin Adnexal Tumors ..... 293
- Hodgkin vs. Non-Hodgkin Lymphomas ..... 297
- Lymphomas ..... 299

## Reference

1. Skubitz K, et al. Oxford Univ Press. 1989; 800-805.
2. Hsu SM, et al. Am J Clin Path. 1984; 82.
3. Pinkus GS, et al. Am J Path. 1985; 119:244-252.
4. Wieczorek R, et al. Am J Path. 1985; 121:374-380.
5. Swerdlow SH, et al. Am J Path. 1986; 85:283-282.

## Product Description

A positive reaction for CD15 combined with a negative reaction for LCA and other B and T lineage markers provides support for Reed-Sternberg cells found in Hodgkin's disease. Also this antibody does not detect mesotheliomas making it a more frequently used antibody to distinguish epithelial mesothelioma from adenocarcinoma.

## Panel Quick View

Skin Adnexal Tumors						
	CD15	CK 7	CK 20	EMA	BRST-2	S-100
Merkel Cell Carcinoma	-	-	+	+	-	-
Sebaceous Tumor	+	+	-	-	-	-
Apocrine Tumor	+/-	+	-	+/-	+	-
Eccrine Tumor	-	+	-	+	-	+

Hodgkin vs. Non-Hodgkin Lymphomas										
	CD15	ALK	BCL6	CD30	CD79a	EMA	Fascin	Gran-zyme B	MUM1	PU.1
Anaplastic Large Cell Lymphoma	-	+	+/-	+	-	+	-	+	-	-
Angioimmunoblastic T-cell Lymphoma	-	-	+	-	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	+	-	-	+	-	-	+	-	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-	-	+	-	+	+	-	-	-/+	+
T-cell Rich B-cell Lymphoma	-	-	+	-	+/-	-/+	-	-	+	-

## Ordering Information

**Clone: MMA**

Mouse Monoclonal

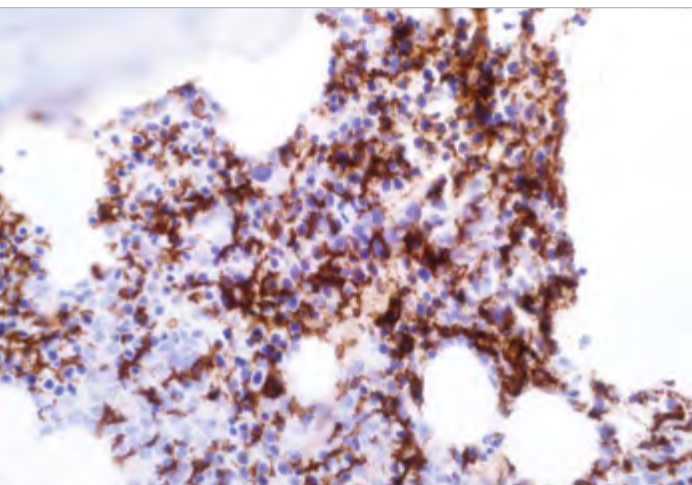
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0.5 ml, concentrate.....	115M-15
1 ml, concentrate .....	115M-16
1 ml, predilute .....	115M-17
7 ml, predilute .....	115M-18

## Designations

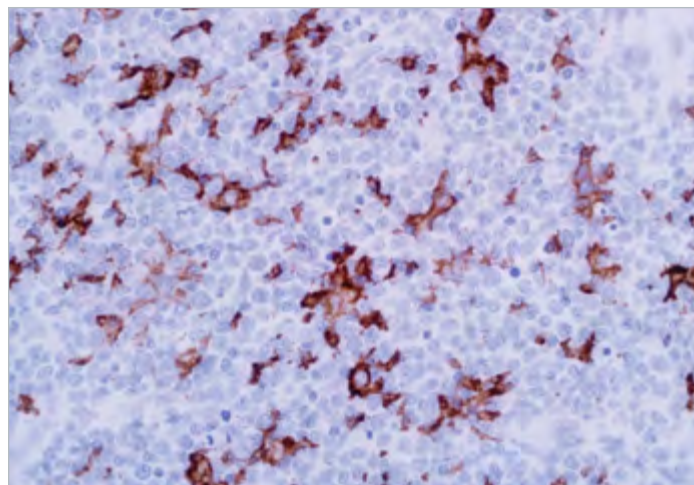
			
IVD	IVD	IVD	RUO



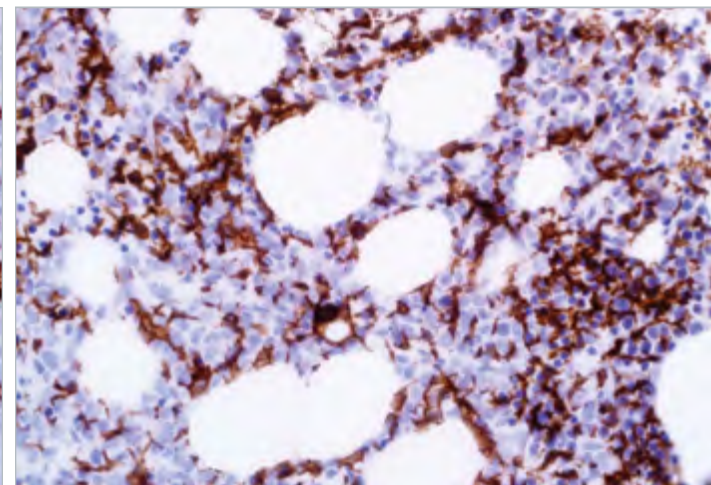
# CD16



Acute myeloid leukemia cells are stained with CD16 (SP175).



CD16 (SP175) on spleen.



CD16 (SP175) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● Leukemia. . . . . 298

● NK Cell Leukemia/Lymphoma. 299

## Reference

1. Liang X, et al. Cancer. 2008; 112:1425-36.
2. Gibson SE, et al. Hum Pathol. 2011; 42:679-687.
3. Cooke CB, et al. Blood. 1996; 88:4265-4274.
4. Arnulf B, et al. Blood. 1998; 91:1723-1731.
5. Qubaja M, et al. Virchows Arch. 2009; 454:411-419.

## Product Description

CD16 is a biomarker associated with monocytes and natural killer (NK) cells of the lymphoid lineage.<sup>1</sup> Anti-CD16 immunohistochemistry is useful in differentially diagnosing hepatosplenic gamma delta T-cell lymphoma and gamma delta T-cell large granular lymphocyte leukemia from other peripheral T-cell lymphomas, such as mucosal and cutaneous gamma delta T-cell lymphoma.<sup>2-4</sup> It is reported that 58% of hepatosplenic gamma delta T-cell lymphomas express CD16, and 86% of gamma delta T-cell large granular lymphocyte leukemias are immunoreactive with anti-CD16.<sup>2-3</sup> Mucosal and cutaneous gamma delta T-cell lymphomas usually do not express CD16 antigen.<sup>4</sup> A significant decrease can be seen in the number of granulocytes expressing CD16 in chronic myelomonocytic leukemia compared to chronic myelogenous leukemia and control bone marrow biopsy, probably related to dysgranulopoiesis.<sup>5</sup> Bone marrow biopsy immunohistochemistry can be helpful in CMML by identifying both the monocyte expansion and the dysgranulopoiesis with anti-CD16.<sup>5</sup>

## Panel Quick View

NK Cell Leukemia/Lymphoma								
	CD16	CD2	CD3	CD56	CD57	Gran-zyme B	Perforin	TIA-1
Aggressive NK-Cell Leukemia	+	+	+	+	-	+	+	+
T-Cell Large Granular Lymphocytic Leukemia	+	+	+	-	+	+	+	+
Extranodal NK/T-Cell Lymphoma, Nasal Type	-	+	+	+	-	+	+	+

## Ordering Information

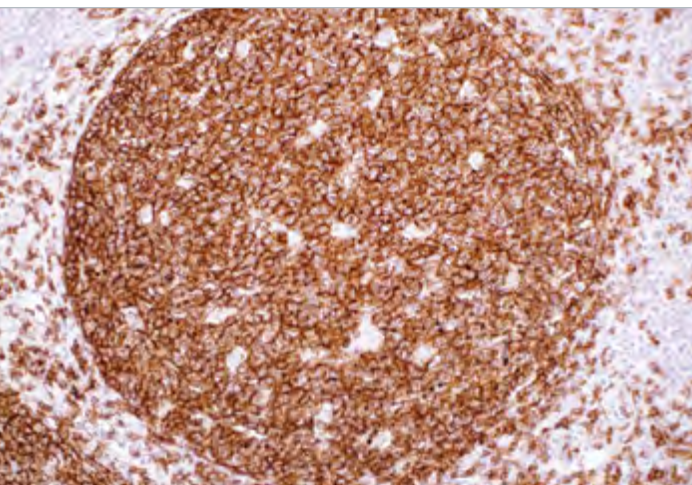
**Clone: SP175**

Rabbit Monoclonal

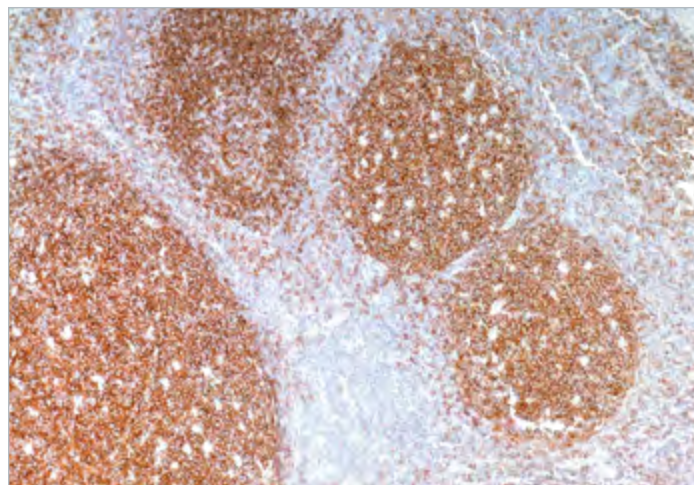
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0.5 ml, concentrate. . . . .	116R-15
1 ml, concentrate . . . . .	116R-16
1 ml, predilute . . . . .	116R-17
7 ml, predilute . . . . .	116R-18

## Designations

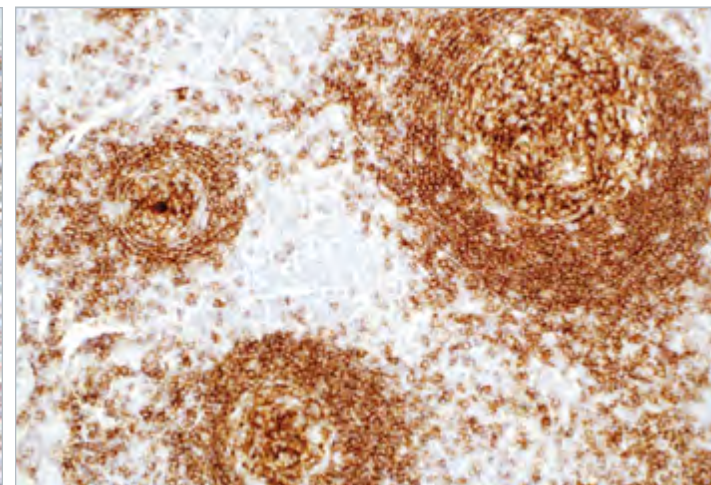
 IVD	 IVD	 IVD	 RUO
-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------



The germinal center cells strongly express CD19 (EP169) protein.



Germinal center cells strongly express CD19 (MRQ-36).



CD19 (MRQ-36) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- Thyroid: Malignant vs. Benign . 291
- Lymphoblastic Lymphomas, BCL vs. TCL..... 298
- Plasma Cell Neoplasm and Lymphoproliferative Neoplasms..... 300

## Reference

1. Kimura M, et al. Int J Hematol. 2007; 85:41-8.
2. Masir N, et al. Histopathology. 2006; 48:239-46.
3. Greenberg SA, et al. Neurology. 2005; 65:1782-7.

## Product Description

CD19 is present in both normal and malignant B-cells and has long been considered to be the most reliable surface marker of this lineage over a wide range of maturational stages. In normal lymphoid tissue, CD19 is observed in germinal centers, mantle zone cells, and scattered cells in the interfollicular areas. Anti-CD19 exhibits an overall immunoreactivity pattern similar to those of the antibodies against CD20 and CD22. However, in contrast to CD20, CD19 is also expressed in immature B-cells; although recent studies have described CD19 loss in a few B-cell neoplasms.<sup>1-3</sup>

## Panel Quick View

Lymphoblastic Lymphomas, BCL vs. TCL										
	CD19	CD1a	CD3	CD5	CD7	CD10	CD20	CD117	PAX-5	TdT
Lymphoblastic BCL	+	-	-	-	-	+/-	+/-	-	+	+
Lymphoblastic TCL	-	+/-	+	+/-	+	+	-	-	-	+

## Ordering Information

### Clone: EP169

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	119R-14
0.5 ml, concentrate.....	119R-15
1 ml, concentrate .....	119R-16
1 ml, predilute .....	119R-17
7 ml, predilute .....	119R-18

### Alternate Clones Available

- Mouse Monoclonal, MRQ-36
- Contact us for more information.

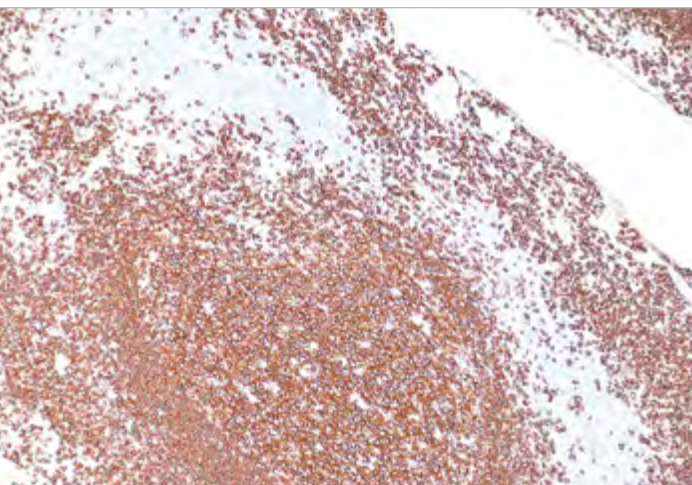
### Designations



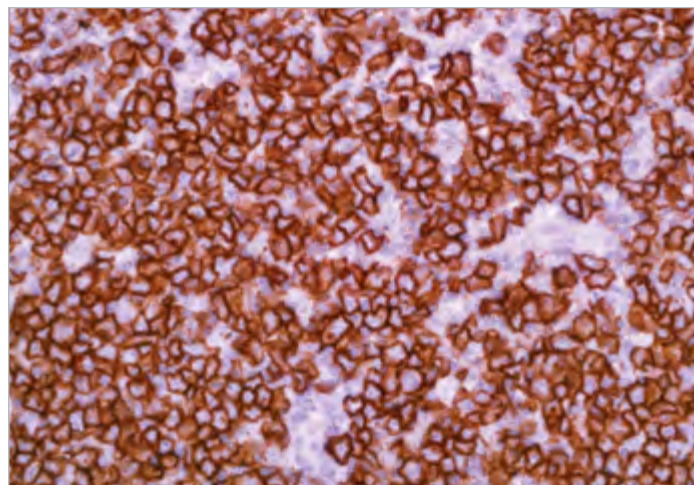
**CELL MARQUE**

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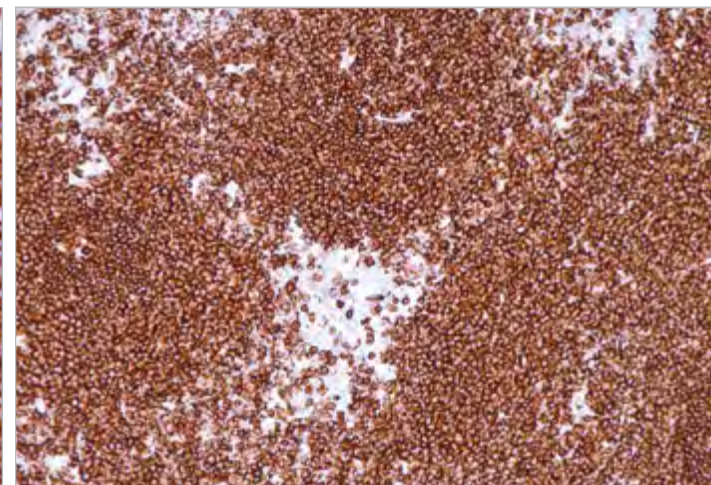




CD20 (L26) on tonsil.



Diffuse large B-cell lymphoma cells show a strong membranous expression of CD20 (L26).



CD20 (SP32) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Histiocytic Neoplasms / Histiocytic Lesions..... 297
- Lymphoblastic Lymphomas, BCL vs. TCL..... 298
- Lymphoma..... 298
- Mature B-cell Lymphomas ... 299
- Non-Hodgkin Lymphomas... 299
- Plasma Cell Neoplasm and Lymphoproliferative Neoplasms. .... 300

## Reference

1. Ishii Y, et al. Clin Exp Immuno. 1984; 58:183-192.
2. Davey FR, et al. Am J Pathol. 1987; 129:54-63.
3. Mason DY. Am J Pathol. 1987; 128:1-4.
4. Browne P, et al. Am J Clin Pathol. 2003; 120:767-77.
5. Tzankov A, et al. Clin Cancer Res. 2003; 9:1381-6.

## Product Description

Anti-CD20 (B-cell Pan) reacts with a membrane antigen that is present in B-cells. This antibody recognizes Reed-Sternberg cells, predominant in Hodgkin's disease, in a minority of cases. Since no staining of histiocytes or plasma cells has been observed and CD20 has not been detected in T-cell malignancies, it is a very strong marker of B-cell lymphomas. Anti-CD20 does not cross-react with non-hematopoietic neoplasms.

## Panel Quick View

B-cell Lymphomas										
	CD20	ANXA1	BCL2	BCL6	CD10	CD23	CD79a	Cyclin D1	IgD	MUM1
Burkitt Lymphoma	+	-	-	+	+	-	+	-	-	-
CLL/SLL	+	-	+	-	-	+	+	-	+	+
Diffuse Large Cell Lymphoma	+	-	+	+/-	-/+	-	+	-	-	+/-
Follicular	+	-	+	+	+	-	+	-	+	-
Hairy Cell Leukemia	+	+	+	-	-	-	+	+(weak) /-	-	-
Lymphoplasmacytic	+	-	+	-	-	-	+	-	-	+
Malt Lymphoma	+	-	+	-/+	-	-	+	-	-	-
Mantle Cell	+	-	+	-	-	-	+	+	+	-
Marginal Zone	+	-	+	-	-	-	+	-	+	+
Marginal Zone BCL	+	-	+	-	-	-	+	-	-/+	+
Splenic Marginal Zone		-	+	-	-	-	+	-	-	+/-

Lymphoblastic Lymphomas, BCL vs. TCL										
	CD20	CD1a	CD3	CD5	CD7	CD10	CD19	CD117	PAX-5	TdT
Lymphoblastic BCL	+/-	-	-	-	-	+/-	+	-	+	+
Lymphoblastic TCL	-	+/-	+	+/-	+	+	-	-	-	+

## Ordering Information

### Clone: L26

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	120M-84
0.5 ml, concentrate.....	120M-85
1 ml, concentrate .....	120M-86
1 ml, predilute .....	120M-87
7 ml, predilute .....	120M-88
25 ml, predilute .....	120M-80

### Alternate Clones Available

- Rabbit Monoclonal, SP32
- Contact us for more information.

### Designations



IVD



IVD

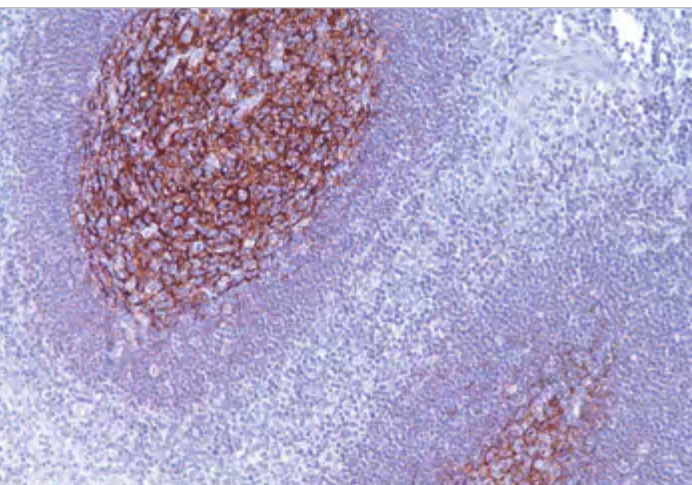


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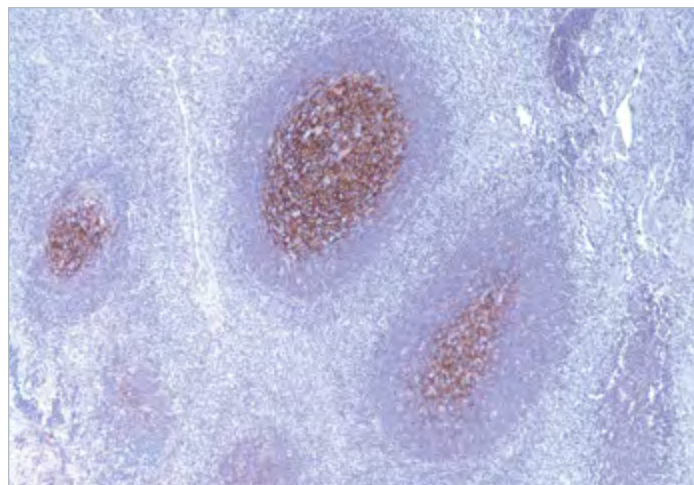


RUO

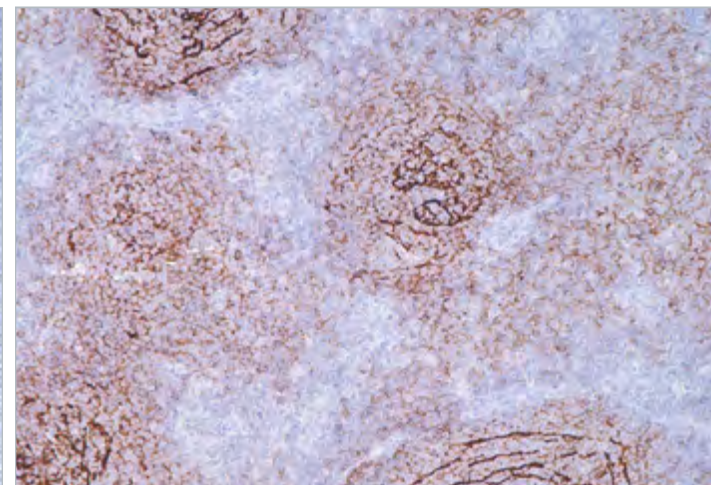




Germinal center and interfollicular B-cells are highlighted by rabbit monoclonal anti-CD21.



CD21 (EP3093) on tonsil.



CD21 (EP3093) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** lymph node, tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymph Node ..... 289

● Histiocytic/Dendritic Cell Lesions. . . . . 297

## Reference

- Cheuk W, et al. Am J Surg Pathol. 2001; 25:721-31.
- Pileri SA, et al. Histopathology. 2002; 41:1-29.
- Maeda K, et al. 2002; 50:1475-1485.
- Biddle DA, et al. Mod Pathol. 2002; 15:50-58.
- Chan AC, et al. Histopathology. 2001; 38:510-8.
- Chang KC, et al. J Pathol. 2003; 201:404-12.
- Chuang SS, et al. Int J Hematol. 2010; 91:687-91.

## Product Description

CD21 (also known as complement receptor 2 (CR2), C3d receptor, or EBV receptor) is a 140 kDa membrane protein on B-lymphocytes to which the Epstein-Barr virus (EBV) binds during infection of these cells.<sup>1</sup> The antigen is absent on T-lymphocytes, monocytes, and granulocytes.<sup>2,3</sup>

Anti-CD21 is useful in the identification of follicular dendritic cell matrix found in normal lymph node and tonsillar tissue. This antibody also labels follicular dendritic cell sarcomas.<sup>2,4,5</sup> Anti-CD21 is valuable in differentiating follicular lymphoma with marginal zone differentiation from marginal zone lymphoma with follicular involvement. It also plays a role in distinguishing among nodular lymphocyte predominant Hodgkin lymphoma, lymphocyte-rich classic Hodgkin lymphoma, and T-cell/histiocyte-rich B-cell lymphoma in combination with other B-cell and T-cell markers.<sup>6</sup> Anti-CD21 is also useful in identifying abnormal follicular dendritic cell pattern in angioimmunoblastic T-cell lymphoma and follicular T-cell lymphoma.<sup>7</sup>

## Panel Quick View

Lymph Node	CD21	CD1a	CD35	CD68	Lysozyme	S-100
Reactive Histiocytosis	-	-	-	+	+	-
Langerhans Cell Histiocytosis	-	+	-	+	+	+
Sinus Histiocytosis with Massive Lymphadenopathy	-	-	-	+	+	+
Follicular Dendritic Cell Sarcoma	+	+/-	+	-	-	-
Dermatopathic Lymphadenitis	-	+	-	-	+	+

## Ordering Information

**Clone: EP3093**

Rabbit Monoclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 121R-14

0.5 ml, concentrate . . . . . 121R-15

1 ml, concentrate . . . . . 121R-16

1 ml, predilute . . . . . 121R-17

7 ml, predilute . . . . . 121R-18

## Alternate Clones Available

• Mouse Monoclonal, 2G9

Contact us for more information.

## Designations



IVD



IVD



IVD

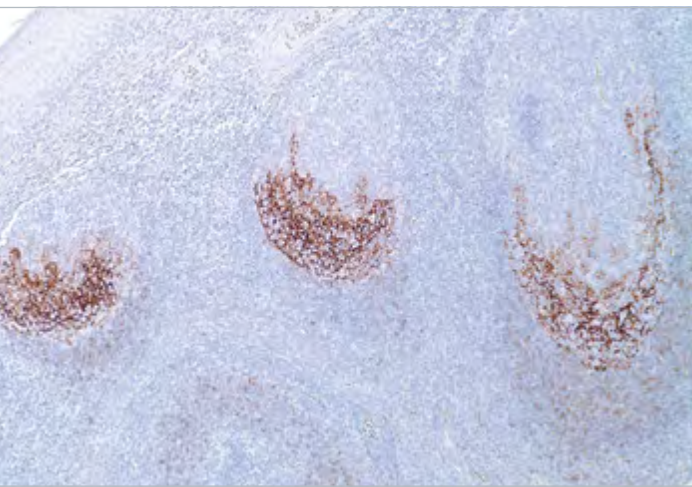


RUO

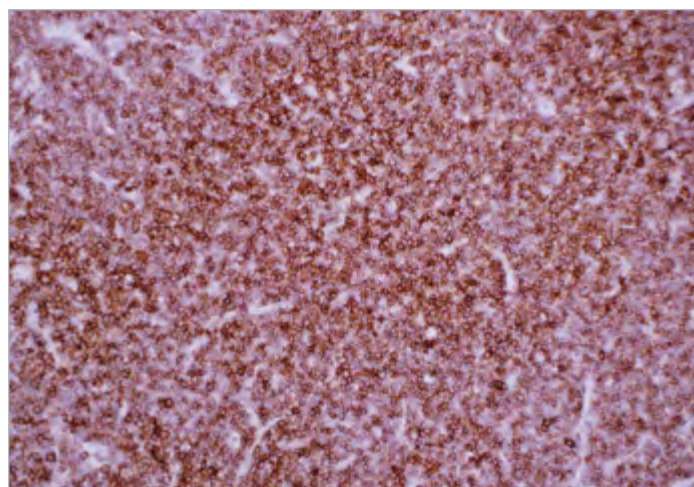
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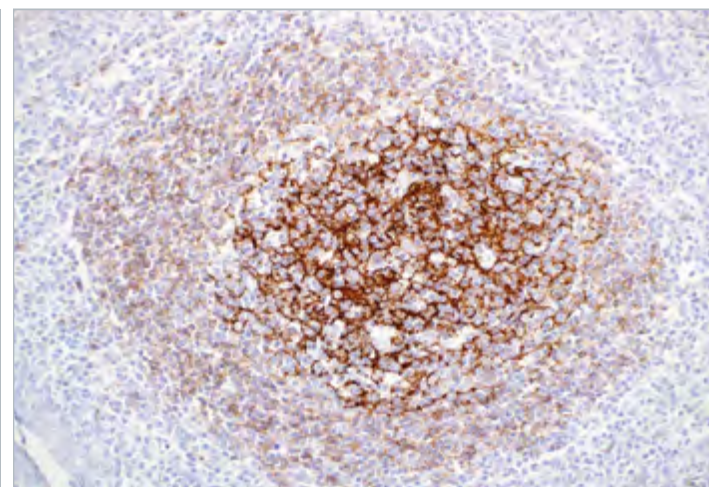




Germinal center follicular dendritic cells show staining by CD23 (1B12). Note the mantle cells demonstrate weak staining.



Neoplastic cells of small lymphocytic lymphoma exhibit a diffuse, strong reaction to CD23 (MRQ-57).



Germinal center follicular dendritic cells show strong staining by CD23 (SP23). Note the mantle cells demonstrate weak staining.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, lymph node, CLL/SLL

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- 1B12: IgG<sub>1</sub>/k
- MRQ-57: IgG<sub>2a</sub>
- SP23: IgG<sub>1</sub>

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas . . . . . 296
- Histiocytic/Dendritic Cell Lesions . . . . . 297
- Mature B-cell Lymphomas . . . . . 299
- Non-Hodgkin Lymphomas . . . . . 299

## Reference

1. Rowlands DC, et al. Journal of Pathology. 1990; 160:239-43.
2. DiRaimondo F, et al. Cancer. 2002; 94:1721-30.
3. Raghoebier S, et al. Blood. 1991; 78:2680-5.

## Product Description

CD23 antigen is a 45-60 kDa membrane glycoprotein identified as a low affinity receptor for IgE production as well as a receptor for lymphocyte growth factor. CD23 is found in some mature B-cell lymphomas and in Reed-Sternberg cells in Hodgkin disease.<sup>1</sup> Follicular dendritic cells and some activated B-cells within germinal centers express CD23 in high density and mantle zone B-cells are stained weakly.<sup>2</sup> The majority of chronic lymphocytic leukemias/small lymphocytic lymphomas (CLL/SLL) are CD23 positive, whereas mantle cell lymphomas are generally negative, so this marker is useful when applied with other markers to separate the small cell lymphomas.<sup>2</sup> Precursor B- and T-lymphomas, myeloid neoplasms, and mature T-cell lymphomas are CD23 negative and other small cell lymphomas are occasionally positive.<sup>3</sup> CD23 is also positive on activated mature B-cells expressing IgM or IgD, monocytes/ macrophages, follicular dendritic cells, T-cell subsets, eosinophils, Langerhans cells and B-cell CLL/SLL.

## Panel Quick View

B-cell Lymphomas										
	CD23	BCL2	BCL6	CD5	CD10	CD20	Cyclin D1	MUM1	TCL1	TRAcP
Burkitt Lymphoma	-	-	+	-	+	+	-	-	+	-
CLL/SLL	+	+	-	+	-	+	-	+	+	-
Diffuse Large Cell Lymphoma	-	+	+/-	-/+	-/+	+	-	+/-	+	-
Follicular	-	+	+	-	+	+	-	-	+	-
Hairy Cell Leukemia	-	+	-	-	-	+	+ (weak) /-		+	+
Lymphoplasmacytic	-	+	-	-	-	+	-	+	+	-
Malt Lymphoma	-	+	-/+		-	+	-	-	+	
Mantle Cell	-	+	-	+	-	+	+	-	+	-
Marginal Zone	-	+	-	-	-	+	-	+	-	+/-
Marginal Zone BCL	-	+	-	-	-	+	-	+	-	+/-
Splenic Marginal Zone	-	+	-	-	-		-	+/-	-	

## Ordering Information

### Clone: 1B12

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	123M-14
0.5 ml, concentrate . . . . .	123M-15
1 ml, concentrate . . . . .	123M-16
1 ml, predilute . . . . .	123M-17
7 ml, predilute . . . . .	123M-18

### Clone: MRQ-57

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	123M-24
0.5 ml, concentrate . . . . .	123M-25
1 ml, concentrate . . . . .	123M-26
1 ml, predilute . . . . .	123M-27
7 ml, predilute . . . . .	123M-28

### Clone: SP23

Rabbit Monoclonal

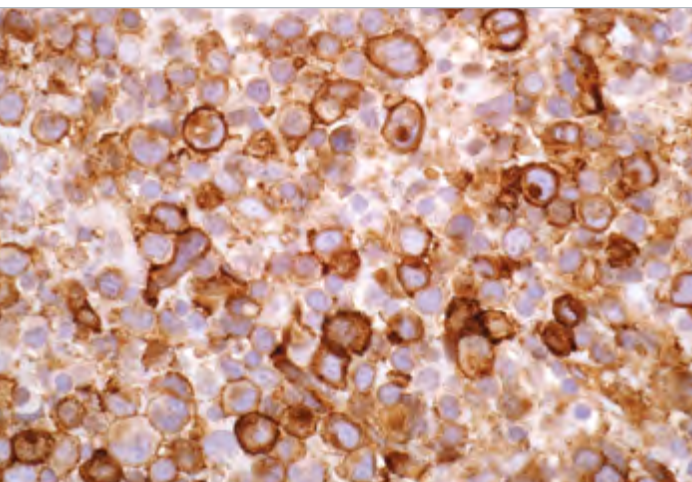
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0.5 ml, concentrate . . . . .	123R-15
1 ml, concentrate . . . . .	123R-16
1 ml, predilute . . . . .	123R-17
7 ml, predilute . . . . .	123R-18

## Designations

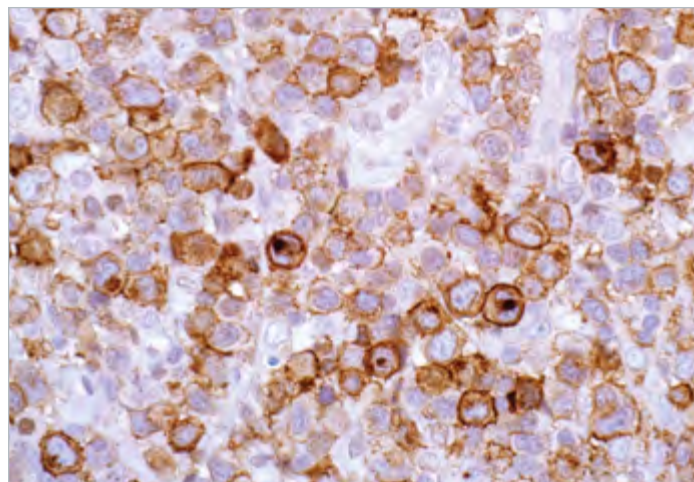


IVD IVD IVD RUO

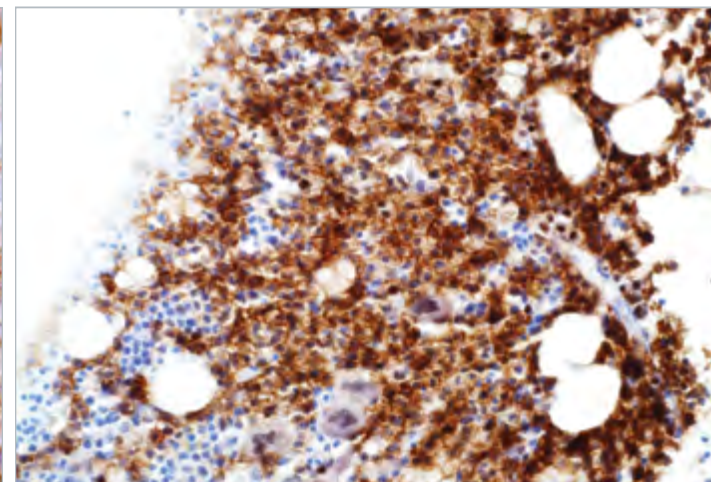




CD25 (4C9) stains neoplastic cells of adult T-cell leukemia/lymphoma.



CD25 (4C9) on lymph node.



CD25 (4C9) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** lesions of mastocytosis

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Mastocytosis ..... 299
- Mature B-cell Neoplasms. .... 299
- T-cell Lymphomas ..... 300

## Reference

- Hahn HP, et al. Am J Surg Pathol. 2007; 31:1669-76.
- Hollmann TJ, et al. Am J Surg Pathol. 2008; 32:139-45.
- Miracco C, et al. Oncol Rep. 2007; 18:1115-22.
- Siddiqui SA, et al. Clin Cancer Res. 2007; 13:2075-81.

## Product Description

According to the WHO classification system, the major diagnostic criterion for bone marrow involvement by systemic mastocytosis (SM) is the presence of dense aggregates (>15 cells) of mast cells. Expression of CD25, a low-affinity receptor for interleukin-2 (IL-2), is a reliable diagnostic tool for distinguishing neoplastic mast cell aggregates from reactive proliferations, and has therefore recently become a minor criterion for the diagnosis of SM. Hahn et al. demonstrated that aberrant staining of mast cell clusters by anti-CD25 antibody in GI biopsies was essentially diagnostic of SM. Anti-CD25 antibody has also been useful in identifying mast cells in skin biopsies in the setting of urticaria pigmentosa, which is predictive of SM. Quantitation of regulatory T-cells (Treg) in the setting of hepatocellular carcinoma (HCC) has been used as an independent predictive factor of tumor recurrence after hepatic resection for HCC. Also, the percentage of tumor-infiltrating CD25+FOXP3+ regulatory T-cells among tumor cells, inside tumor parenchyma and at its periphery, is significantly higher in recurrent cutaneous melanoma than in non-recurrent melanoma.

## Panel Quick View

B-cell Lymphomas									
	CD25	ANXA1	BCL2	CD20	CD43	CD45	CD79a	T-bet	TRAcP
Follicular	-	-	+	+		+	+	-	-
Hairy Cell Leukemia	+	+	+	+	-	+	+	+	+
Lymphoplasmacytic	-	-	+	+		+	+	+	-
Mantle Cell	+	-	+	+	+	+	+	-	-
Marginal Zone	-	-	+	+	+	+	+		+/-

Mastocytosis					
	CD25	CD2	CD117	CD163	Tryptase
Mastocytosis / Systemic Mastocytosis	+	+	+	-	+
Mast Cell Leukemia	+	+	+	-	+
Reactive Mast Cells	-	-	+	+	+

T-cell Lymphomas										
	CD25	CD2	CD3	CD4	CD5	CD7	CD8	CD45RO	Gran-zyme B	PD-1
Angioimmunoblastic	+	+	+	+	+	+	-	+	-	+
Lymphoblastic	+	+/-	+	+/-	+	+	+/-	+	+/-	-
Subcutaneous Panniculitis-Like	-	+	+	-	+	+	+/-	+	+	-
NK/T-cell Lymphoma	-	+	+	-	-	-/+	-	-/+	+	-
Cutaneous	-	+	+	+	-	+	-	-	+	-/+
Peripheral, NOS	+	+	+	+/-	+/-	+/-	-/+	+		-
Mycosis Fungoides	+	+	+	+	+	-	-	+	+/-	-

## Ordering Information

### Clone: 4C9

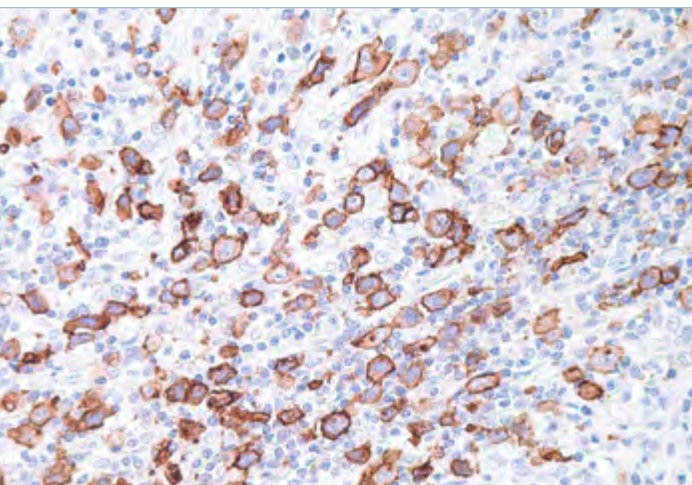
### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	125M-14
0.5 ml, concentrate	125M-15
1 ml, concentrate	125M-16
1 ml, predilute	125M-17
7 ml, predilute	125M-18

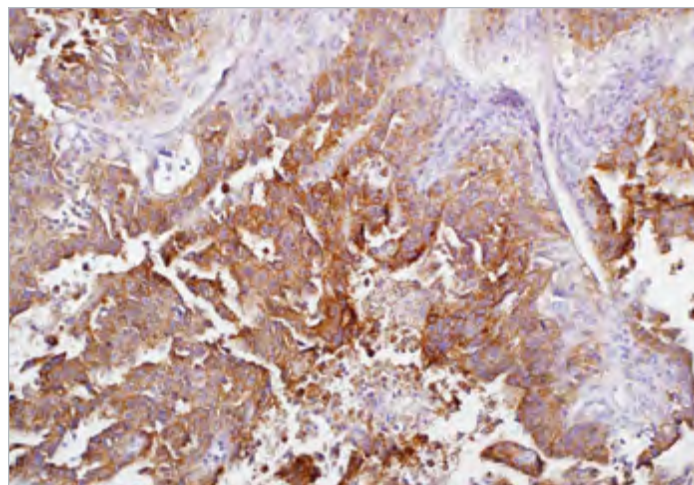
### Designations

 IVD	 IVD	 IVD	 RUO
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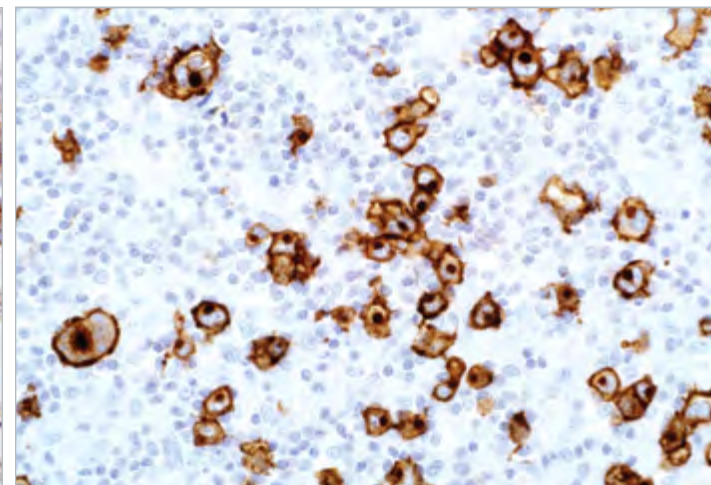




CD30 (Ber-H2) on lymph node, ALCL.



CD30 (Ber-H2) on ovary, embryonal carcinoma.



Classic Hodgkin lymphoma Reed-Sternberg cells have strong labelling by CD30 (Ber-H2).

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** classic Hodgkin lymphoma, lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

● Germ Cell Tumors.....295

● Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma.....295

● Hodgkin vs. Non-Hodgkin Lymphomas.....297

● Lymphoma.....298

● Lymphomas.....299

## Reference

- Schwartz R, et al. Blood. 1989; 74:1678-1689.
- George DH, et al. Am J Surg Pathol. 2003; 27:487-93.
- Hedvat CV, et al. Hum Pathol. 2002; 33:968-74.
- Rabban JT, et al. Diagnostic Immunohistochemistry Theranostic and Genomic Applications. 3rd Edition Saunders Elsevier. 2010; 738.

## Product Description

Anti-CD30 detects a formalin-resistant epitope that is expressed by Reed-Sternberg cells in classic Hodgkin lymphoma, the majority of anaplastic large cell lymphomas, primary cutaneous CD30 positive T-cell lymphoproliferative disorders,<sup>1-3</sup> and in embryonal carcinomas.<sup>4</sup> Occasionally diffuse large B-cell lymphoma stains with this antibody.<sup>3</sup> This antibody also stains plasma cells in paraffin-embedded tissue. However, reactive immunoblasts are immunoreactive with this antibody. The staining pattern of anti-CD30 in lymphoma or embryonal carcinoma is different, with the former being membranous and exhibiting Golgi zone accentuation in location, and the latter being membranous only.<sup>4</sup>

## Panel Quick View

Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma										
	CD30	AFP	CD117	EMA	GPC-3	hPL	Inhibin	Oct-4	PLAP	Vimentin
Seminoma	-	-	+	-	-	-	-	+	+	+
Embryonal Carcinoma	+	-	-	-	-	-	-	+	+	-
Choriocarcinoma	-	-	-	+	+	+	-	-	+	-/+
Yolk Sac Tumor	-	+	-	-	+	-	-	-	+	-
Somatic Carcinoma	-	-	-	+	-	-	-	-	-	-
Granulosa Cell Tumor	-	-	-	-	-	-	+	-	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	+	-	-	-	-	-	-

Hodgkin vs. Non-Hodgkin Lymphomas										
	CD30	ALK	BCL6	CD15	CD79a	EMA	Fascin	Granzyme B	MUM1	PU.1
Anaplastic Large Cell Lymphoma	+	+	+/-	-	-	+	-	+	-	-
Angioimmunoblastic T-cell Lymphoma	-	-	+	-	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	+	-	-	+	-	-	+	-	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-	-	+	-	+	+	-	-	-/+	+
T-cell Rich B-cell Lymphoma	-	-	+	-	+/-	-/+	-	-	+	-
T-cell Rich LBCL	-	-	+	-	+	-	-	-	+	-

## Ordering Information

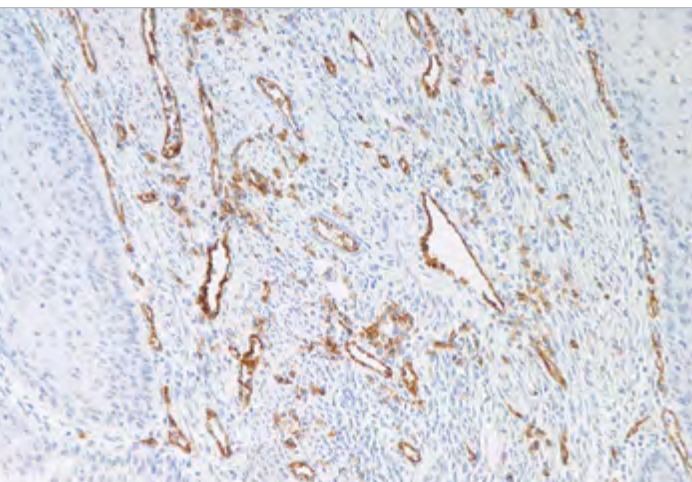
### Clone: Ber-H2

### Mouse Monoclonal

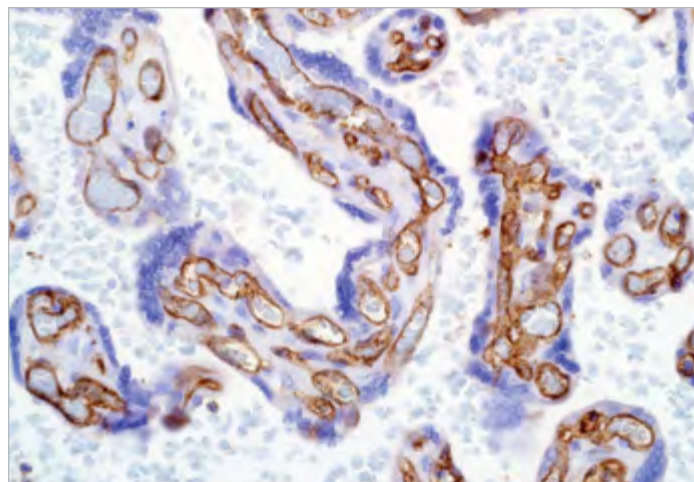
Volume .....	Part No.
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0.5 ml, concentrate.....	130M-95
1 ml, concentrate .....	130M-96
1 ml, predilute .....	130M-97
7 ml, predilute .....	130M-98

### Designations

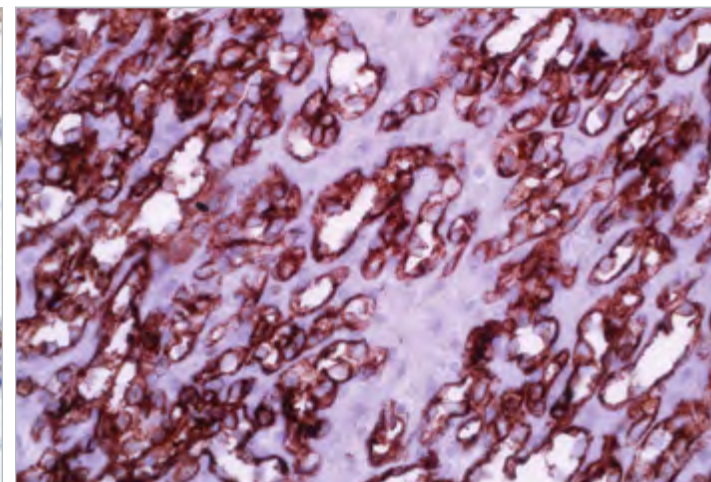
			
IVD	IVD	IVD	RUO



CD31 (JC70) on tonsil.



CD31 (JC70) on placenta.



Hepatic hemangioendothelioma cells strongly express CD31 (JC70).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Hematopathology
- Soft Tissue Pathology

## Associated Panels

- Skin: Spindle Cell Tumors . . . . . 294

## Reference

1. Parums DV, et al. J Clin Pathol. 1990; 43:752-7.
2. De Young BR, et al. Applied Immunohistochemistry. 1993; 1:97-100.
3. Alles JU, et al. J Histochem Cytochem. 1986; 34:209-14.
4. Alexander-Sefre F, et al. J Clin Pathol. 2003; 56:786-8.

## Product Description

CD31 is expressed by stem cells of the hematopoietic system and is primarily used to identify and concentrate these cells for experimental studies as well as for bone marrow transplantation. Endothelial cells also express this marker; therefore, antibodies to CD31 have been used as a tool to identify the vascular origin of neoplasms.<sup>1-3</sup> Anti-CD31 has shown to be highly specific and sensitive for vascular endothelial cells.<sup>4</sup> Staining of nonvascular tumors (excluding hematopoietic neoplasms) has not been observed.

## Panel Quick View

Skin: Spindle Cell Tumors										
	CD31	MS Actin	SM Actin	CD10	Colla-gen IV	Factor VIII	FLI-1	HHV-8	NGFR	D2-40
Angiosarcoma	+	-	-	-	+/-	+	+	-	-	+/-
Atypical Fibroxanthomas	-	+	+	+	-	-	-	-	-	-
DF-FH	-	-	-	+	-	-	-	-	-	-
DF-SP	-	-	-	+/-	-	-	-	-	+	-
Glomus Tumor	-	+	+	-	+	-	-	-	-	-
Hemangioma	+	-	+	-	+	+	+	-	-	-
Hemangiopericytoma	+	-	-	-	-	-	+	-	-	-
Kaposi's Sarcoma	+	-	+	-	+/-	+	+	+	-	+
Kaposiform Hemangioendothelioma	+	-	-	-	-	-	+	-	-	-
Peripheral Nerve Sheath	-	+	-	-	+	-	-	-	+	+
Smooth Muscle	-	+	+	-	-	-	-	-	-	-
Solitary Fibrous Tumor	-	-	-	-	-	-	-/+	-	-	-
Spindle Cell Melanoma	-	-	-	-	-	-	+	-	+	+
Spindle Squamous Cell Carcinoma	-	-	-	-	-	-	-	-	-	+
Squamous Cell Carcinoma	-	-	-	-	-	-	-	-	-	+

## Ordering Information

**Clone: JC70**  
Mouse Monoclonal

**Volume . . . . . Part No.**  
0.1 ml, concentrate . . . . . 131M-94  
0.5 ml, concentrate . . . . . 131M-95  
1 ml, concentrate . . . . . 131M-96  
1 ml, predilute . . . . . 131M-97  
7 ml, predilute . . . . . 131M-98

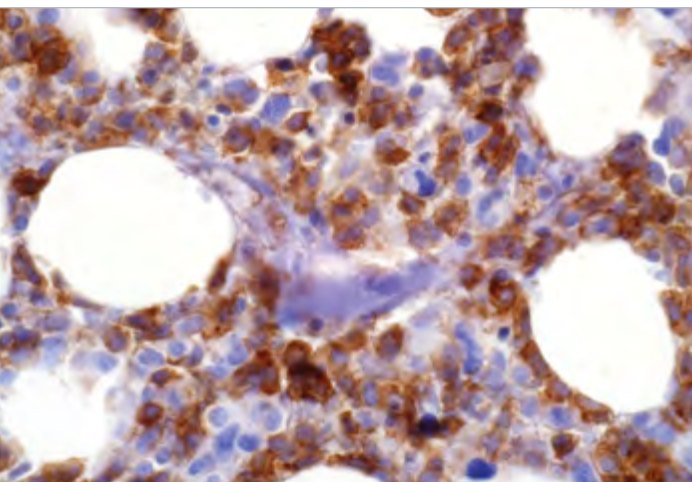
## Alternate Clones Available

- Rabbit Monoclonal, EP78
- Contact us for more information.

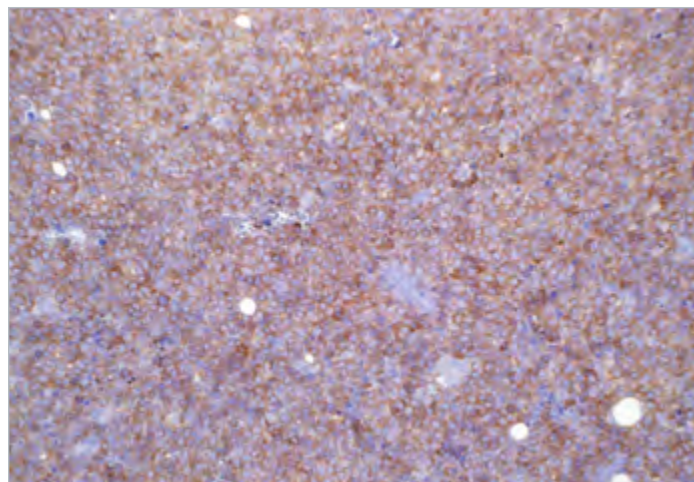
## Designations

-  IVD
-  IVD
-  IVD
-  RUO

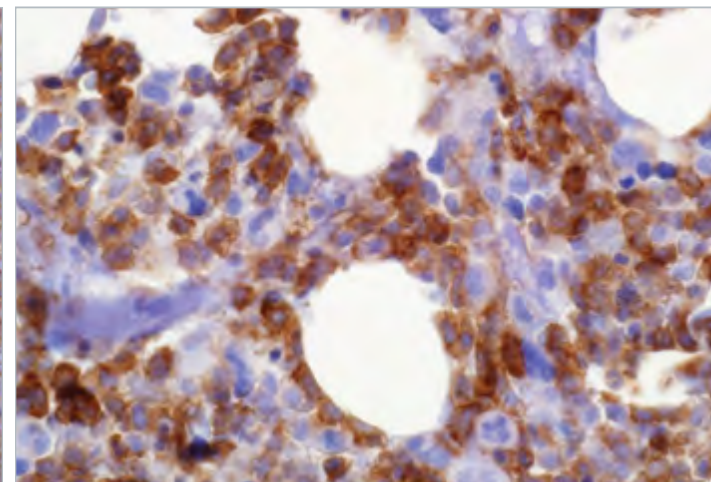




CD33 (PWS44) stains acute myelomonocytic leukemia.



CD33 (PWS44) on bone marrow.



CD33 (PWS44) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** acute myeloid leukemia with monocytic differentiation or with minimal differentiation, placenta syncytiotrophoblasts

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Leukemia.....298

## Reference

1. Crocker PR, et al. *Biochem Soc Symp.* 2002; 69:83-96.
2. Braylan RC, et al. *Cytometry.* 2001; 46:23-27.
3. Chang H, et al. *Leuk Res.* 2004; 28:43-48.
4. Mason KD, et al. *Blood Rev.* 2006; 20:71-78.

## Product Description

CD33 (gp67, or siglec-3) is a 67 kDa glycosylated transmembrane protein that is a member of the sialic acid-binding immunoglobulin-like lectin (siglec) family. The genomic locus of this protein has been mapped to chromosome 19q13.1-3.5. In maturing granulocytic cells, there is progressive down-regulation of CD33 from the blast stage to mature neutrophils. However, in monocytes and macrophages/histiocytes, strong expression of CD33 is maintained throughout maturation. Therefore, the positive control tissue should be bone marrow myeloid cells (especially myeloid precursors), liver Kupffer cells, lung alveolar macrophages, or placental syncytiotrophoblasts. Detection of CD33 using monoclonal antibodies has been a critical component in immunophenotyping acute leukemias, particularly acute myeloid leukemias. This anti-CD33 may be particularly advantageous for cases of acute myeloid leukemia, minimally differentiated (AML-M0) and acute monocytic leukemia (AML-M5), in which other paraffin section markers of myeloid differentiation (such as anti-myeloperoxidase) may be negative. However, anti-CD33 staining cannot be used in isolation and must be correlated with other myeloid and lymphoid markers because cases of myeloid antigen-positive acute lymphoblastic leukemia may show bona fide CD33 expression.

## Panel Quick View

Leukemia	CD33	CD13	CD38	CD71	CD117	CD163	MPO
Acute Myeloid Leukemia with Minimal Differentiation	+	+	+	-	+	-	-
Acute Myeloid Leukemia without Maturation	+	+	-	-	+	-	+
Acute Myeloid Leukemia with Maturation	+	+	-	-	+	-	+
Acute Myelomonocytic Leukemia	+	+	-	-	+	+	+
Acute Monoblastic and Monocytic Leukemia	+	+	-	-	+/-	+	+
Acute Erythroid Leukemia	-	-	-	+	+/-	-	-
Acute Megakryoblastic Leukemia	+/-	+/-	-	-	-	-	-
Acute Basophilic Leukemia	+	+	-	-	-	-	-
Acute Panmyelosis with Myelofibrosis	+	+	-	-	+	-	-

## Ordering Information

### Clone: PWS44

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	133M-14
0.5 ml, concentrate.....	133M-15
1 ml, concentrate .....	133M-16
1 ml, predilute .....	133M-17
7 ml, predilute .....	133M-18

### Designations



IVD



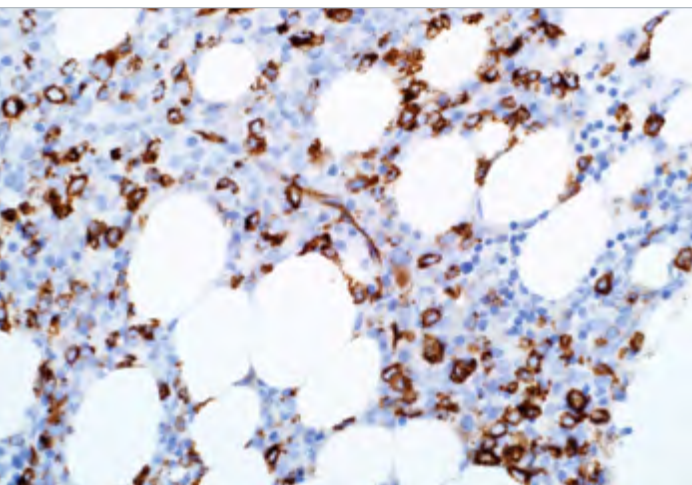
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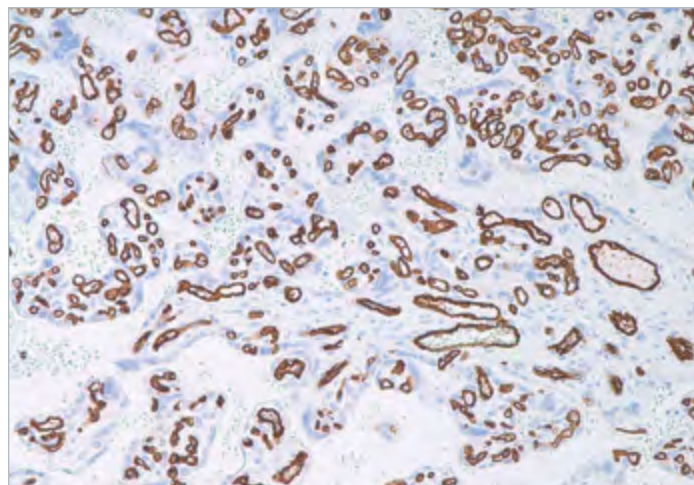
IVD



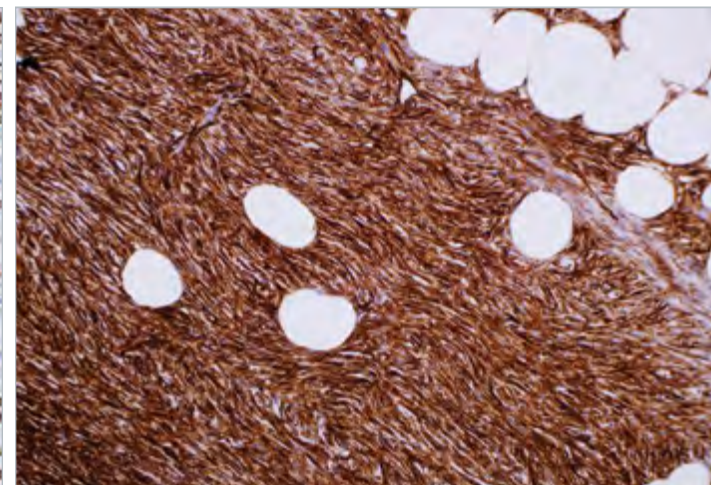
RUO



Acute monoblastic leukemia blasts are strongly highlighted by CD34 (QBEnd/10).



CD34 (QBEnd/10) on placenta.



CD34 (QBEnd/10) on subcutis, DFSP.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, placenta

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Hematopathology
- Soft Tissue Pathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- Liver: Malignant vs. Benign... 288
- Spindle Cell Lesions ..... 290
- Spindle Cell Tumors..... 290
- Cutaneous Neoplasm ..... 292
- Skin: DF-SP vs. DF-FH ..... 293
- Skin: Spindle Cell Tumors ..... 294
- GIST Mutation vs. Wild Type... 294
- Leukemia..... 298
- Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders ..... 300
- Soft Tissue Neoplasms ..... 302
- Soft Tissue Sarcoma ..... 303
- Soft Tissue Tumor..... 303
- Vascular Tumors ..... 303

## Reference

1. Torlakovic G, et al. Arch Pathol Lab Med. 2002; 126:823-8.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-CD34 recognizes a cell surface antigen of approximately 110 kD that is expressed selectively on human hematopoietic progenitor cells, including myeloid and lymphoid lineage progenitors.<sup>1</sup> It is a marker of choice for identifying and counting the blasts in leukemia.<sup>1</sup> In addition, this marker is expressed by soft tissue tumors, such as solitary fibrous tumor and gastrointestinal stromal tumor.<sup>2</sup> CD34 expression is also found in vascular endothelium.<sup>3</sup> Additionally, it appears that proliferating endothelial cells express this molecule in greater amounts than non-proliferating endothelial cells.<sup>3</sup> Anti-CD34 labels greater than 85% of angiosarcoma<sup>3</sup> and Kaposi's sarcoma<sup>4</sup>, but shows low specificity.

## Panel Quick View

Epithelioid Cell Neoplasms										
	CD34	MS Actin	SM Actin	CD56	Claudin 1	Desmin	EMA	FLI-1	GLUT1	INI-1
Epithelioid Sarcoma	+	+	-	-	+	+	+	-	+	+
Epithelioid Angiosarcoma	+	-	-	-	-	-	-	+	-	+
GIST	+	-	-	-	-	-	-	-	-	-

Skin: Spindle Cell Tumors									
	CD34	BG8	CD99	Collagen IV	CK 8&18	Factor VIII	FLI-1	HHV-8	NGFR
Angiosarcoma	+	-	-	+/-	-	+	+	-	-
Atypical Fibroxanthomas	-	-	+	-	-	-	-	-	-
DF-FH	-	-	-	-	-	-	-	-	-
DF-SP	+	-	-	-	-	-	-	-	+
Glomus Tumor	+/-	-	-	+	-	-	-	-	-
Hemangioma	+	+	-	+	-	+	+	-	-
Hemangiopericytoma	+	-	-	-	-	-	+	-	-
Kaposi's Sarcoma	+	-	-	+/-	-	+	+	+	-
Kaposiform Hemangioendothelioma	+	-	-	-	+	-	+	-	-

Soft Tissue Tumor							
	CD34	MS Actin	CD99	CK Cocktail	EMA	S-100	TLE1
Epithelioid Sarcoma	+	-/+	-	+	+	-	-
Myxoid Chondrosarcoma	-/+	-	-	-	-	+/-	-
Synovial Sarcoma	-	-	+	+	+	-	+

## Ordering Information

### Clone: QBEnd/10 Mouse Monoclonal

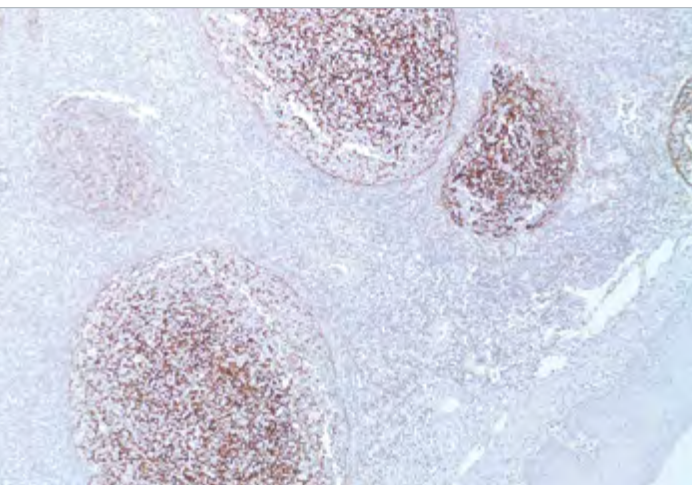
Volume	Part No.
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0.5 ml, concentrate	134M-15
1 ml, concentrate	134M-16
1 ml, predilute	134M-17
7 ml, predilute	134M-18

### Designations

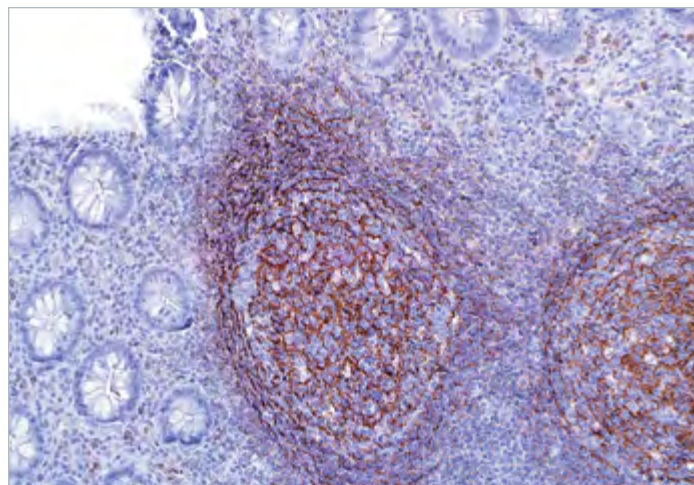


IVD IVD IVD RUO

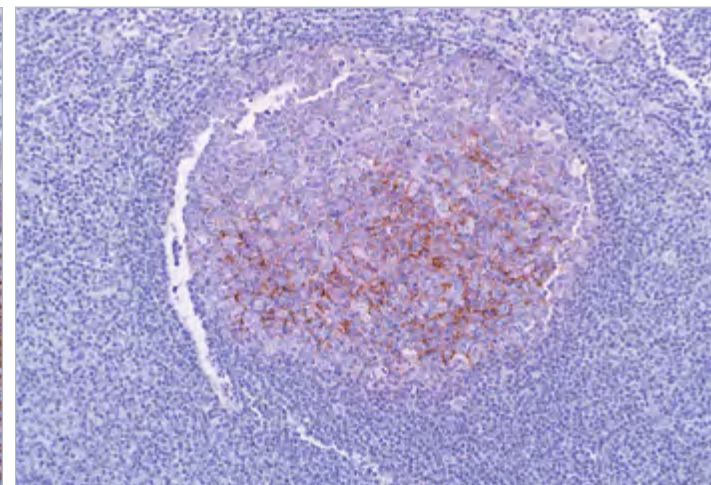




Germinal center follicular dendritic cells show strong staining by CD35 (RLB25).  
Note the mantle cells demonstrate weak staining.



CD35 (RLB25) on appendix.



CD35 (RLB25) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymph Node ..... 289

● Histiocytic/Dendritic Cell Lesions...  
..... 297

## Reference

1. Dillon KM, et al. J Clin Pathol. 2002; 55:791-4.
2. Pileri SA, et al. Histopathology. 2002; 41:1-29.
3. Kunihiro Maeda, et al. J Histochem Cytochem. 2002; 50:1475-1485.
4. Chan AC, et al. Histopathology. 2001; 38:510-8.
5. Biddle DA, et al. Modern Pathology. 2002; 15:50-58.
6. Cheuk W, et al. Am J Surg Pathol. 2001; 25:721-31.
7. Chang KC, et al. J Pathol. 2003; 201:404-12.

## Product Description

Anti-CD35 is considered a mature B-cell marker which labels follicular dendritic reticulum cells and tumors derived from such cells such as follicular dendritic cell tumor/sarcoma. CD35 antigen is found on erythrocytes, B-cells, a subset of T-cells, monocytes, as well as eosinophils, and neutrophils.

## Panel Quick View

Lymph Node	CD35	CD1a	CD21	CD68	Lysozyme	S-100
Reactive Histiocytosis	-	-	-	+	+	-
Langerhans Cell Histiocytosis	-	+	-	+	+	+
Sinus Histiocytosis with Massive Lymphadenopathy	-	-	-	+	+	+
Follicular Dendritic Cell Sarcoma	+	+/-	+	-	-	-
Dermatopathic Lymphadenitis	-	+	-	-	+	+

## Ordering Information

### Clone: RLB25

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	135M-14
0.5 ml, concentrate	135M-15
1 ml, concentrate	135M-16
1 ml, predilute	135M-17
7 ml, predilute	135M-18

### Designations



IVD



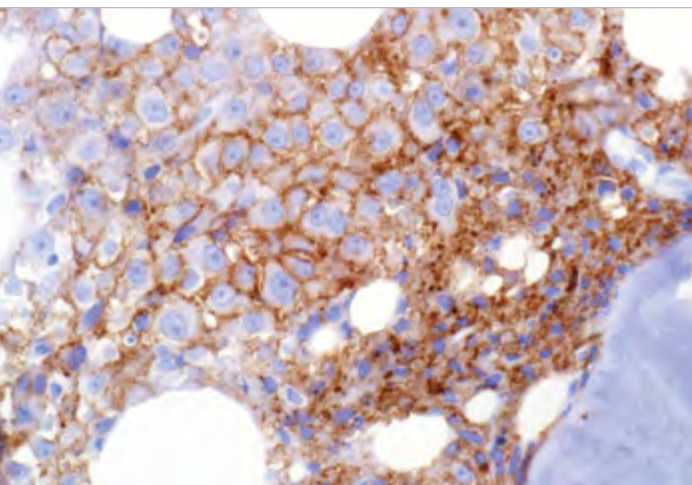
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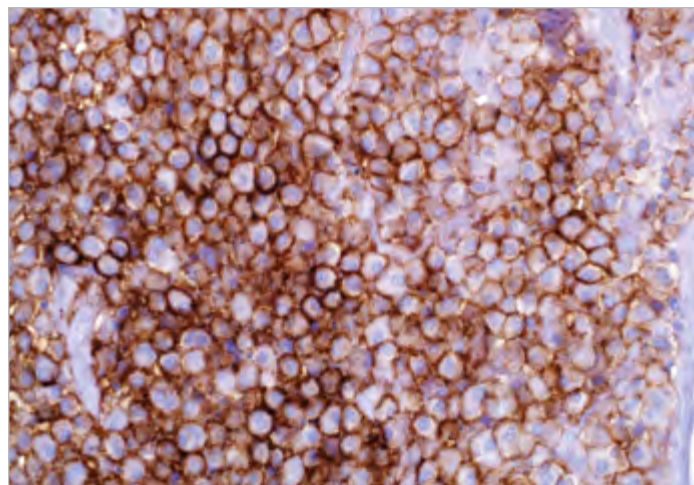
IVD



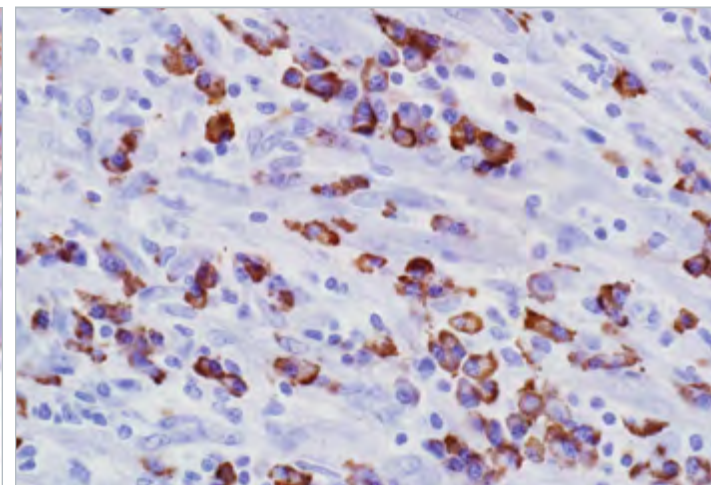
RUO



CD38 (SP149) on bone marrow.



Plasmacytoma cells are highlighted by CD38 (SP149).



CD38 (SP149) on soft tissue.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** plasma cell myeloma, plasma cells, lymph node, bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- c-Myc in DLBCL.....297
- Leukemia.....298
- Lymphoma.....298

## Reference

1. Martin F, et al. Nat Rev Immunol. 2002; 2:323-335.
2. Dono M, et al. J Immunol. 2000; 164:5596-5604.
3. Malavasi F, et al. Physiol Rev. 2008; 88:841-886.
4. Dave SS, et al. N Engl J Med. 2006; 354:2431-2442.
5. Leoncini L, et al. IARC WHO Press Lyon France. 2008; 262-264.
6. Rodig S, et al. Am J Surg Pathol. 2008; 32:113-122.
7. Naresh KN, et al. British Journal of Haematology. 2011; 154:770-776.

## Product Description

Anti-CD38 is a very useful immunostaining marker, when combined with antibodies against CD138, MUM1, and EMA in a panel, for the diagnosis of immunodeficiency-related lymphomas, which usually include plasmablastic lymphoma, primary effusion lymphoma, and large B-cell lymphoma arising in HHV8-associated multicentric Castlemans disease. Such immunodeficiency-related lymphomas are either pan-B-cell-marker negative or only weakly positive. Furthermore, IHC detection of plasma cells by anti-CD38 immunohistochemical staining on a bone marrow trephine biopsy is necessary to obtain the accurate counts of malignant plasma cells needed to make a definitive diagnosis given that malignant plasma cell counts are difficult to obtain due to sub-optimal bone marrow aspiration, frequent focal distribution of myeloma cells in bone marrow, and loss of neoplastic plasma cells when manual processing is being performed. Recent studies have demonstrated that anti-CD38, combined with anti-CD44 (negative) and/or anti-TCL1 (positive), is useful in identifying the cases of large B-cell lymphoma with cMYC gene rearrangement (respective sensitivity of 82% and 77%; respective specificity of 100% and 100%). Therefore, anti-CD38 is very important in differential diagnosis of anti-CD20-positive, anti-TdT/anti-cyclin D1-negative diffuse large-to-medium-sized B-cell neoplasms, including diffuse large B-cell lymphoma (DLBCL), Burkitt lymphoma, and B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and Burkitt lymphoma.

## Panel Quick View

c-Myc in DLBCL					
	CD38	BCL2	CD10	CD44	TCL1
Large B-cell Lymphoma with c-Myc Rearrangement	+	-/+	+	-	+
Large B-cell Lymphoma with no c-Myc Rearrangement	-	+	+/-	+	-/+

Lymphoma										
	CD38	CD20	CD30	CD45	CD79a	CD138	EMA	HHV-8	MUM1	PAX-5
Plasmablastic Lymphoma	+	-	+	-	+	+	+	-	+	-
Primary Effusion Lymphoma	+/-	-	+/-	+	-	+	+/-	+	+	-
Large B-cell Lymphoma arising in HHV8-associated Multicentric Castlemans Disease	-/+	-/+		+	-	-		+		
Extranodal Marginal Zone Lymphoma with Plasmacytoid Differentiation	+	-		+	+	+			+	-

## Ordering Information

**Clone: SP149**

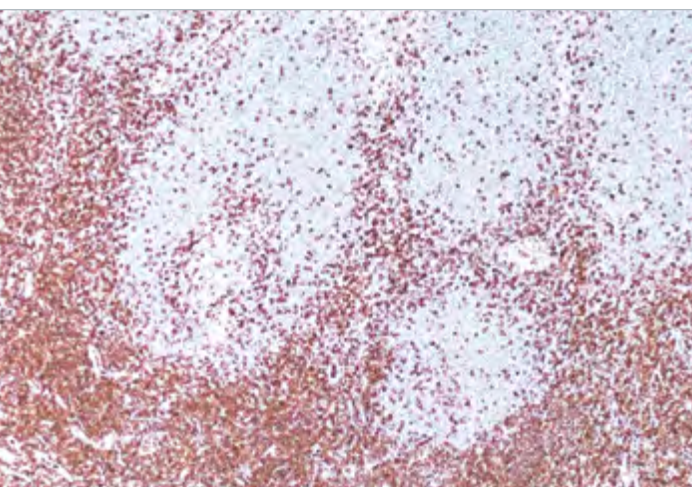
Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	118R-14
0.5 ml, concentrate	118R-15
1 ml, concentrate	118R-16
1 ml, predilute	118R-17
7 ml, predilute	118R-18

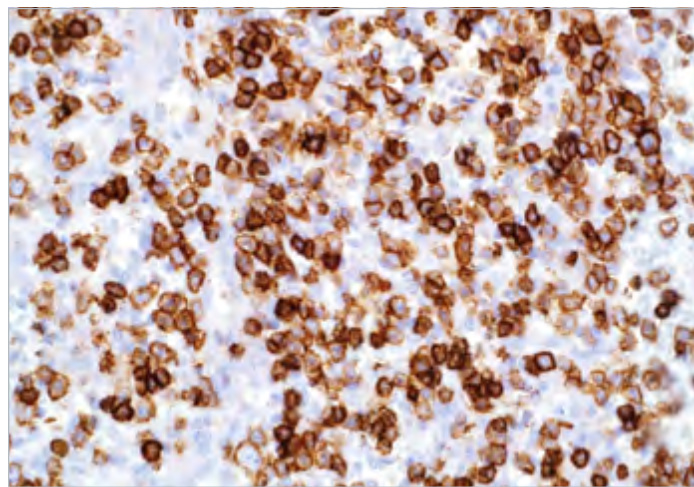
## Designations

			
IVD	IVD	IVD	RUO

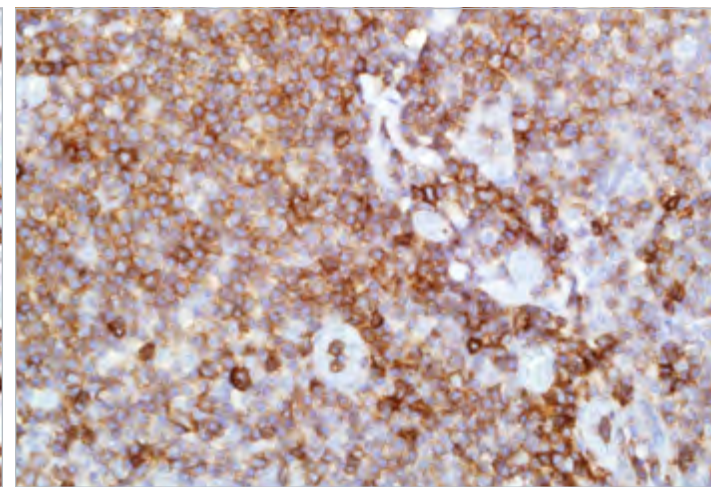




CD43 (MT1) stains paracortical T-zone in this tonsil tissue.



CD43 (MT1) on spleen.



CD43 (SP55) stains paracortical T-zone in this tonsil tissue.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296

● Lymphoma ..... 298

● Plasma Cell Neoplasm and Lymphoproliferative Neoplasms ..... 300

## Reference

1. Cabecades JM, et al. Histopathology. 1991; 19:419-424.
2. Strickler JG, et al. Hum Pathol. 1987; 18:808-814.
3. Sheibani K, et al. Hum Pathol. 1987; 18:1051-1062.
4. Chan JKC, et al. Histopathology. 1988; 12:461-480.
5. Arber, DA, et al., App Immunohistochem 1993; 1:88-96.

## Product Description

From 70 to 90% of T-cell lymphomas and from 22 to 37% of B-cell lymphomas are labeled with this antibody. No reactivity has been observed with reactive B-cells. So, a B lineage population that co-expresses a T-cell marker is highly likely to be a malignant lymphoma rather than a reactive B-cell population. When used in combination with CD45 and L26, effective immunophenotyping of the majority of paraffin-embedded lymphomas can be obtained. Co-staining of a lymphoid infiltrate with CD20 and CD3 argues against a reactive process and favors lymphoma.

## Panel Quick View

Lymphoma	CD43	CD3	CD20	CD45R	CD45RO
Mature B-cell	-	-	+	+	-
Mature T-cell	+	+	-	-	+

## Plasma Cell Neoplasm and Lymphoproliferative Neoplasms

	CD43	CD19	CD20	CD56	CD79a	CD138	Cyclin D1	EMA	MUM1
Plasma Cell Neoplasm	-	-	-/+	+	+	+	-/+	+	+
ALK + LBCL	-/+	-	-	-	-	+	-	+	+
Plasmablastic Lymphoma	-	-	-	-	+	+	-	+	+
HHV Associated LBCL	-	+/-	+/-	-	-	-	-	-	-
Primary Effusion Lymphoma	-	-	-	-	-	+	-	+	+
Lymphoblastic Lymphoma	-	+	+	-	+	+	-	-	+/-
Splenic Marginal Zone Lymphoma	-	+	+	-	+	-/+	-	-	+/-

## Ordering Information

### Clone: MT1

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	143M-14
0.5 ml, concentrate	143M-15
1 ml, concentrate	143M-16
1 ml, predilute	143M-17
7 ml, predilute	143M-18

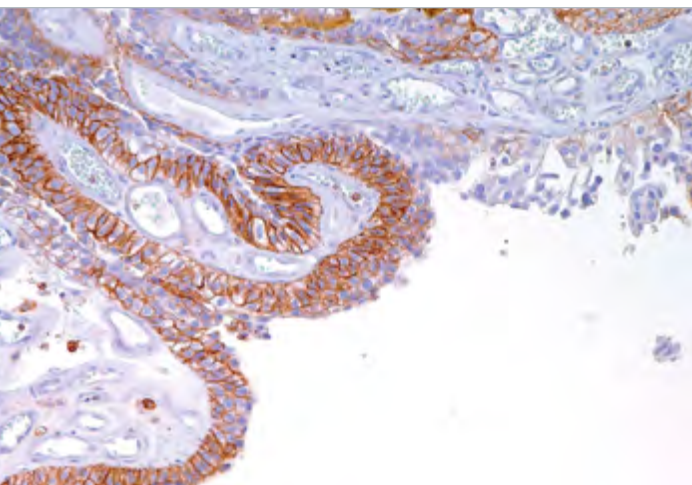
### Alternate Clones Available

• Rabbit Monoclonal, SP55  
Contact us for more information.

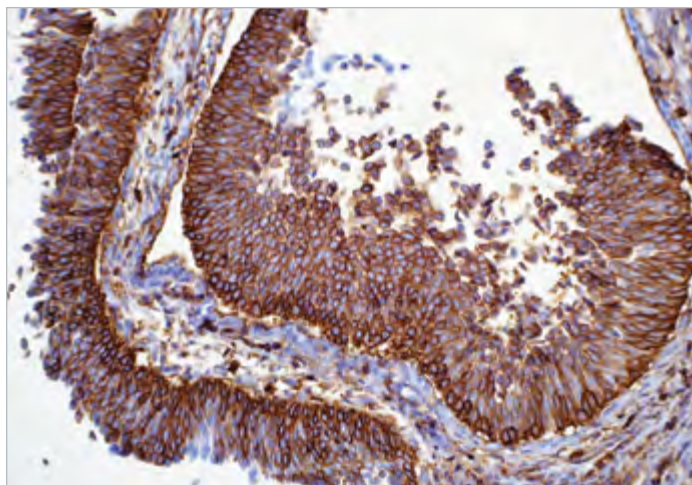
### Designations



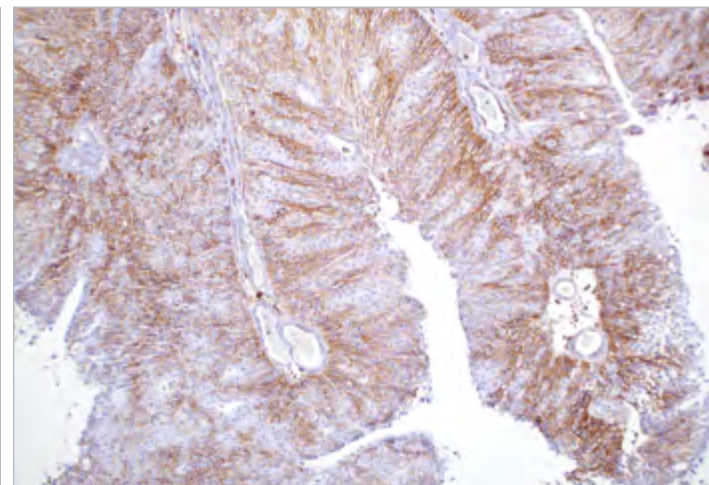




CD44 (MRQ-13) on urinary bladder.



Low-grade urothelial carcinoma shows CD44 expression in a strong membranous staining pattern.



CD44 (MRQ-13) on low-grade papillary urothelial cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** benign urothelium

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

- Hematopathology
- Anatomic/Surgical Pathology
- Genitourinary (GU) Pathology

## Associated Panels

- Bladder: Dysplasia vs. Reactive. 295
- c-Myc in DLBCL..... 297

## Reference

1. Abbasi AM, et al. European Journal of Cancer. 1993; 29A:294.
2. Chuang CK, et al. Anticancer Res. 2003; 23:4635-9.
3. East JE, et al. European Journal of Cancer. 1993; 29A:1921-22.
4. Ekici S, et al. Journal of Urology. 2002; 167:2037-41.
5. Gadalla HA, et al. BJU Int. 2004; 93:151-5.

## Product Description

The CD44 family of glycoproteins exists in a number of variant isoforms, the most common being the standard 85-95kD or hematopoietic variant (CD44s) that is found in mesodermal cells such as hematopoietic, fibroblastic, and glial cells, and in some carcinoma cell lines. Higher molecular weight isoforms have been described in epithelial cells (CD44v) and are thought to function in intercellular adhesion and stromal binding. While the other functions and distributions of the CD44 family have not yet been completely elucidated they are also known to participate in embryonic development and angiogenesis as well as other molecular processes associated with specific adhesions, signal transduction, and cell migration. The recent demonstration of a concordance of the cell proliferation nuclear antigen, Ki-67, and CD44 expression in adenomatous polyps, colonic carcinomas and adjacent mucosa raises the possibility of involvement of CD44 in stimulating cell growth. It appears that the CD44-hyaluronate interaction is central to tumor invasiveness; the receptor allowing the uptake and subsequent degradation of metrical hyaluronate. While many human tumors express CD44, a positive correlation between increased CD44v expression and tumor progression and/or dedifferentiation has been demonstrated in only some. Such tumors include non-Hodgkin lymphoma (Stauder et al, 1995), hepatocellular carcinoma (Matthew et al, 1996), breast carcinoma, renal cell carcinoma (Terpe et al, 1993), colonic carcinoma<sup>1</sup> (Wielenga et al, 1993; Herrlich et al, 1995) and some soft tissue tumors (Wand et al, 1996). More recent additions to the list include metastatic melanoma (Sviatoha, et al, 2002), prostatic carcinoma,<sup>4</sup> and gastric cancer (Yamaguchi et al, 2002). Conversely, CD44v expression is downgraded in other tumors including neuroblastoma (Shtivelman & Bisho, 1991), squamous cell and basal cell carcinomas of the skin (Herold-Mende et al, 1996). The suggestion that there is a positive association between CD44 isoform expression and progression in human tumors has important implications for diagnosis and prognosis. Unfortunately, the situation is not yet clear-cut. Confusion over the complicated exon boundaries together with the different nomenclature employed by researchers have added to problems of identifying the true metastasis-associated isoforms. Furthermore, stromal cells may contribute to the isoform pattern detected. Probably the most practical application of CD44 immunostaining at present is the discrimination of urothelial transitional cell carcinoma-*in-situ* from non-neoplastic changes in the urothelium (McKenney JK, et al. 2001).

## Panel Quick View

Bladder: Dysplasia vs. Reactive						
	CD44	CK 20	CK 5&6	Ki-67	MCM3	p53
Carcinoma- <i>in-situ</i>	-	+	-	+	+	+
Reactive Atypia	+	-	+	+	+	-
Normal Urothelium	+	+	-/+	-/+	-/+	-

## Ordering Information

**Clone: MRQ-13**  
Mouse Monoclonal

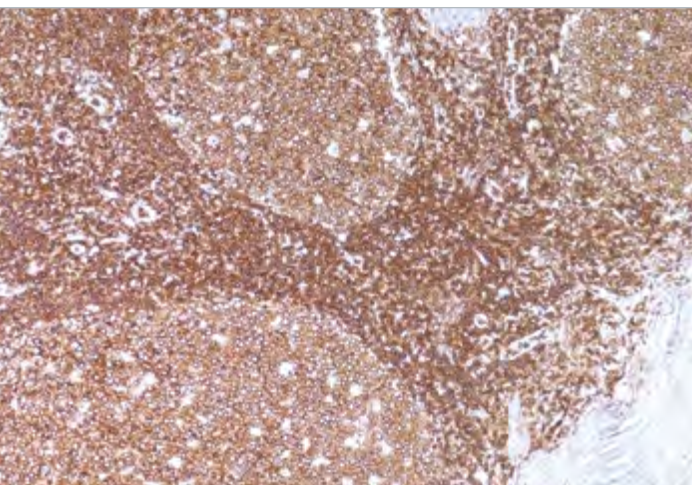
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1 ml, concentrate .....	144M-96
1 ml, predilute .....	144M-97
7 ml, predilute .....	144M-98

## Designations

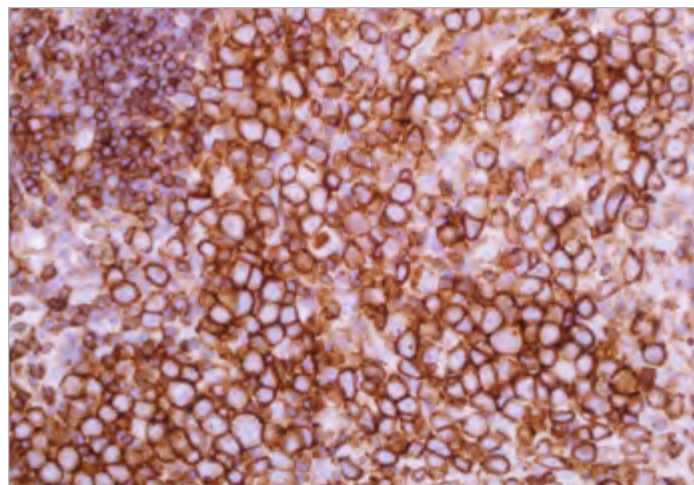
			
IVD	IVD	IVD	RUO



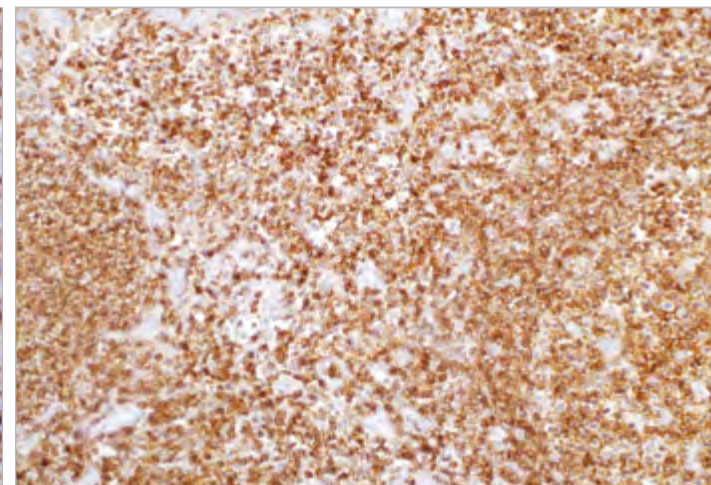
# CD45 (LCA)



CD45 (LCA) (2B11 & PD7/26) on tonsil.



Nodular lymphocytes predominant Hodgkin lymphoma cells are positive for CD45 in a membranous pattern.



CD45 (LCA) (2B11 & PD7/26) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil, lymph node, lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/κ

## Synonyms and Abbreviations

LCA

## Associated Specialties

- Hematopathology

## Associated Panels

- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- B-cell Lymphomas. . . . . 296
- Histiocytic Neoplasms / Histiocytic Lesions. . . . . 297
- Hodgkin vs. Non-Hodgkin Lymphomas. . . . . 297
- Lymphoma. . . . . 298
- T-cell Lymphomas. . . . . 300
- Small Blue Round Cell Tumors. 302

## Reference

1. Mason DY. Am J Pathol. 1987; 128:1-4.
2. Hall PA, et al. Histopathology. 1988; 13:149-160.
3. Kurtin PJ, et al. Hum Path. 1985; 16:353-365.
4. Maluf HM, et al. Mod Pathol. 1995; 8:155-9.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-CD45 (anti-leukocyte common antigen) is routinely used to aid the differential diagnosis of undifferentiated neoplasms, whenever malignant lymphoma is suspected by the morphological or clinical data. It is a highly specific antibody, therefore a positive result is highly indicative of hematolymphoid origin. Certain types of hematolymphoid neoplasms may lack CD45 (Hodgkin lymphoma, some T-cell lymphomas, and some leukemias) so its absence does not rule out a hematolymphoid tumor. This antibody is expressed almost exclusively by cells of hematopoietic lineage and is present in most benign and malignant lymphocytes as well as plasma cell precursors.<sup>1-8</sup>

## Panel Quick View

B-cell Lymphomas										
	CD45	BCL2	BCL6	CD5	CD10	CD20	CD23	Cyclin D1	MUM1	TRAcP
Burkitt Lymphoma	+	-	+	-	+	+	-	-	-	-
CLL/SLL	+	+	-	+	-	+	+	-	+	-
Diffuse Large Cell Lymphoma	+	+	+/-	-/+	-/+	+	-	-	+/-	-
Follicular	+	+	+	-	+	+	-	-	-	-
Hairy Cell Leukemia	+	+	-	-	-	+	-	+(weak) /-		+
Lymphoplasmacytic	+	+	-	-	-	+	-	-	+	-
Mantle Cell	+	+	-	+	-	+	-	+	-	-
Marginal Zone	+	+	-	-	-	+	-	-	+	+/-

T-cell Lymphomas										
	CD45	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45RO	PD-1
Angioimmunoblastic	+	+	+	+	+	+	-	+	+	+
Lymphoblastic	+	+/-	+	+/-	+	+	+/-	+	+	-
Subcutaneous Panniculitis-Like	+	+	+	-	+	+	+/-	-	+	-
NK/T-cell Lymphoma	+	+	+	-	-	-/+	-	-	-/+	-
Cutaneous	+	+	+	+	-	+	-	-	-	-/+
Peripheral, NOS	+	+	+	+/-	+/-	+/-	-/+	+	+	-
Mycosis Fungoides	+	+	+	+	+	-	-	+	+	-

## Ordering Information

### Clone: 2B11 & PD7/26 Mouse Monoclonal

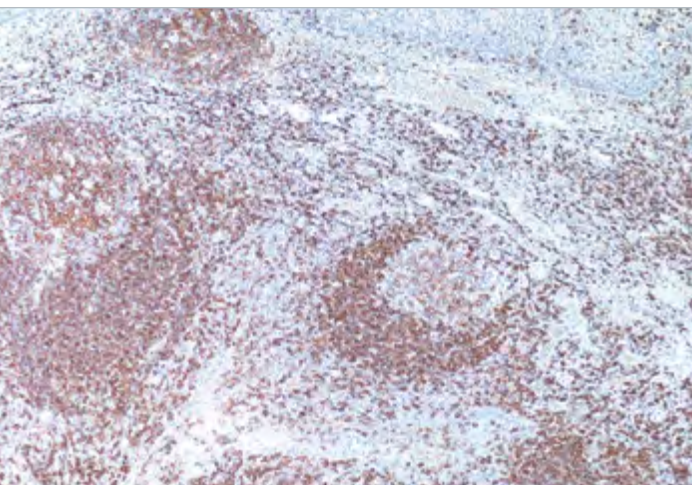
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0.5 ml, concentrate . . . . .	145M-95
1 ml, concentrate . . . . .	145M-96
1 ml, predilute . . . . .	145M-97
7 ml, predilute . . . . .	145M-98
25 ml, predilute . . . . .	145M-90

### Designations

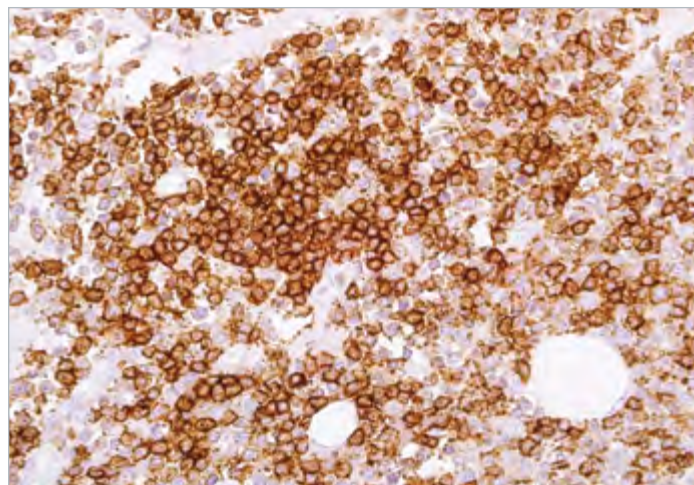


IVD IVD IVD RUO

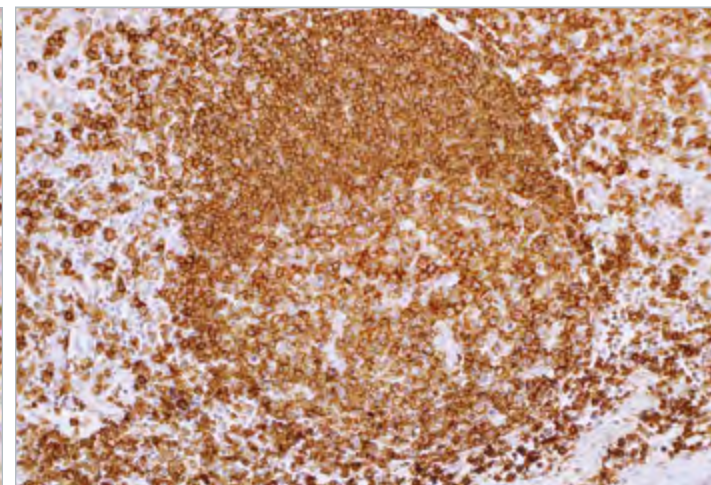




Tonsil B-lymphocytes are positive for CD45R (MB1).



CD45R (MB1) mucosa associated lymphoid tissue lymphoma.



CD45R (MB1) tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** lymph node, tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymphoma.....298

## Reference

- Hall PA, et al. J Clinical Pathology. 1987; 40:870-873.
- Myskow MW, et al. American J Clin Pathology. 1988; 90:564-574.
- West KP, et al. J of Pathology. 1986; 150:89-101.
- Poppema S, et al. Am J of Pathology. 1987; 127:418-429.
- Norton AJ, et al. Histopathology. 1986; 10:1243-1260.
- Lauritzen AF, et al. APMIS. 1991; 99:631-9.
- Sott CS, et al. Clin Exp Immunol. 1991; 86:500-5.
- Master PS, et al. Int J Hematol. 1992; 55:235-42.
- Shin SS, et al. Hum Pathol. 1992 Jun; 23:686-94.

## Product Description

CD45R, also named MB1, is the isoform of CD45, the protein encoded by this gene is a member of the protein tyrosine phosphatase (PTP) family. PTPs are known to be signaling molecules that regulate a variety of cellular processes including cell growth, differentiation, mitotic cycle, and oncogenic transformation. This PTP contains an extracellular domain, a single transmembrane segment, and two tandem intracytoplasmic catalytic domains and thus belongs to receptor type PTP. This gene is specifically expressed in hematopoietic cells and has been shown to be an essential regulator of T- and B-cell antigen receptor signaling. CD45 functions as a phospho-tyrosine phosphatase, a vital component for efficient tyrosine phosphorylation induction by the TCR/CD3 complex. The tyrosine phosphatase activity of CD45 is contained within the conserved intracellular domain. Src and Syk family protein tyrosine kinases are utilized by the TCR/CD3 complex to initiate signaling cascades. Several members of these two families, including Lck, Fyn and Zap70, have been implicated as physiological substrates of CD45.

This antibody exhibits strong and specific reactivity with most B-lymphocytes such as follicle center cells, mantle cells, some medullary thymocytes, post-thymic naïve T-lymphocytes, and 80% of B-cell lymphomas. It is a useful marker for distinguishing B-cell lymphomas from T-cell lymphomas.

## Panel Quick View

Lymphoma	CD45R	CD3	CD20	CD43	CD45RO
Mature B-cell	+	-	+	-	-
Mature T-cell	-	+	-	+	+

## Ordering Information

### Clone: MB1

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	146M-14
0.5 ml, concentrate.....	146M-15
1 ml, concentrate .....	146M-16
1 ml, predilute .....	146M-17
7 ml, predilute .....	146M-18

### Designations



IVD



IVD



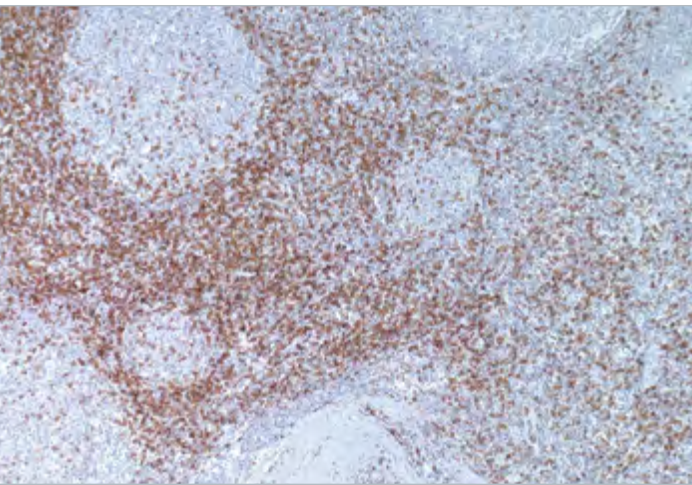
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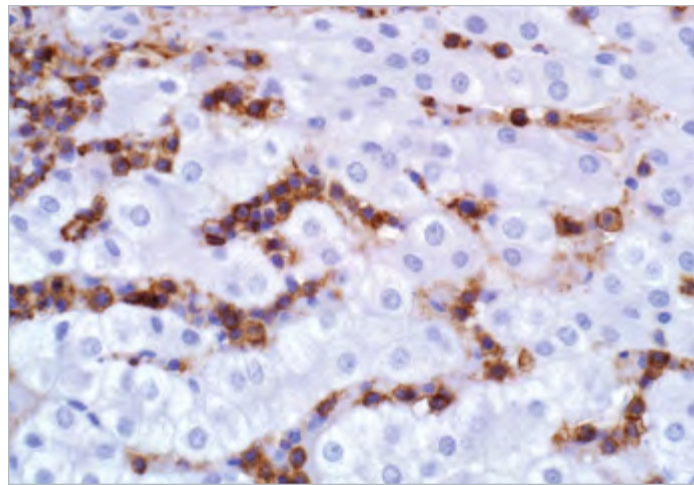
RUO



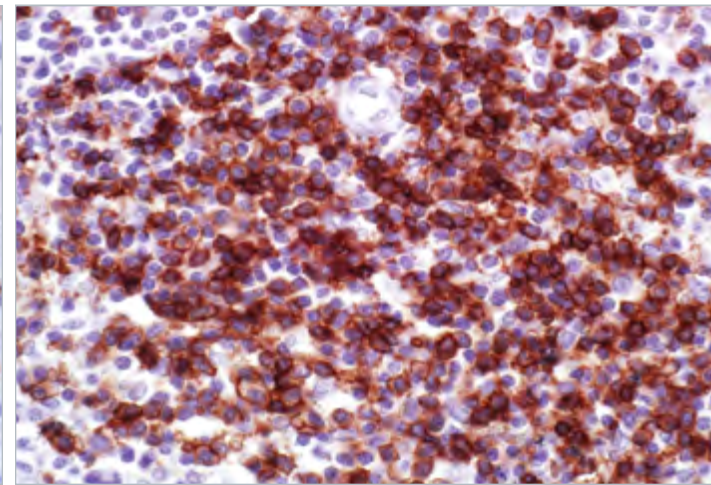
# CD45RO



CD45RO (UCLH-1) on tonsil.



CD45RO (UCLH-1) on liver.



CD45RO (UCLH-1) stains paracortical T-zone lymphocytes in a strong membranous pattern.

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymphoma ..... 298  
 ● T-cell Lymphomas ..... 300

## Reference

- Hall PA, et al. J Clin Pat.h 1987; 40:151-156.
- Smith SH, et al. Immunology. 1986; 58:63-70.
- Cabecadas JM, et al. Histopathology. 1991.
- Tworek JA, et al. Am J Clin Pathol. 1998; 110:582-9.
- Falini B, et al. Hum Pathol. 1990; 21:624-9.
- Koch AE, et al. J Clin Immunol. 1990; 1094:192-9.
- Ritter JH, et al. J Cutan Pathol. 1994; 21:481-93.

## Product Description

Anti-CD45RO (T-Cell, Pan) antibody reacts with thymocytes and activated T-cells, but only on a subpopulation of resting T-cells. This antibody shows no reactivity with B-cells making it a good marker for T-cell tumors. In addition, granulocytes and monocytes are also labeled with this antibody. T-Cell, Pan has been designated as CD45RO at The International Leukocyte Typing Workshop.

## Panel Quick View

Lymphoma					
	CD45RO	CD3	CD20	CD43	CD45R
Mature B-cell	-	-	+	-	+
Mature T-cell	+	+	-	+	-

T-cell Lymphomas										
	CD45RO	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45	PD-1
Angioimmunoblastic	+	+	+	+	+	+	-	+	+	+
Lymphoblastic	+	+/-	+	+/-	+	+	+/-	+	+	-
Subcutaneous Panniculitis-Like	+	+	+	-	+	+	+/-	-	+	-
NK/T-cell Lymphoma	-/+	+	+	-	-	-/+	-	-	+	-
Cutaneous	-	+	+	+	-	+	-	-	+	-/+
Peripheral, NOS	+	+	+	+/-	+/-	+/-	-/+	+	+	-
Mycosis Fungoides	+	+	+	+	+	-	-	+	+	-

## Ordering Information

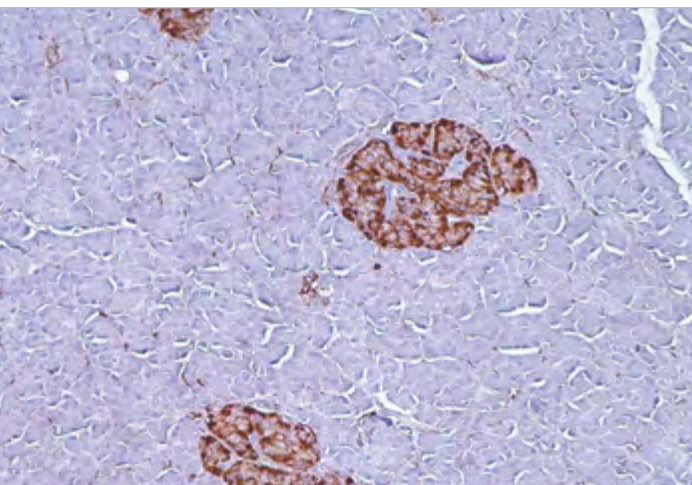
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 Mouse Monoclonal

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 1 ml, predilute . . . . . 147M-97  
 7 ml, predilute . . . . . 147M-98

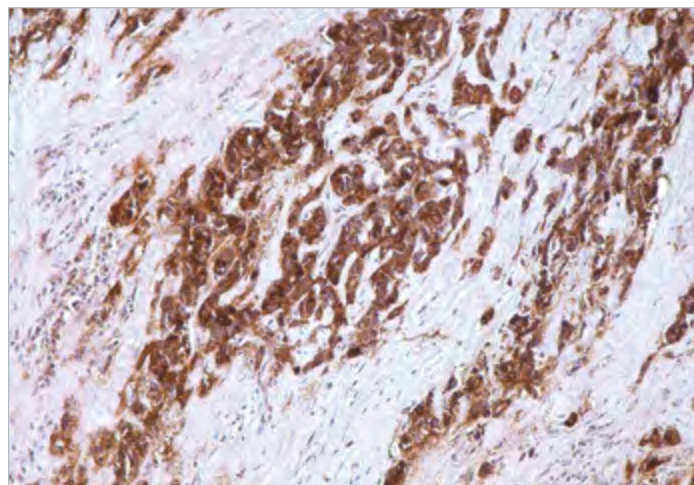
## Designations

 IVD     IVD     IVD     RUO

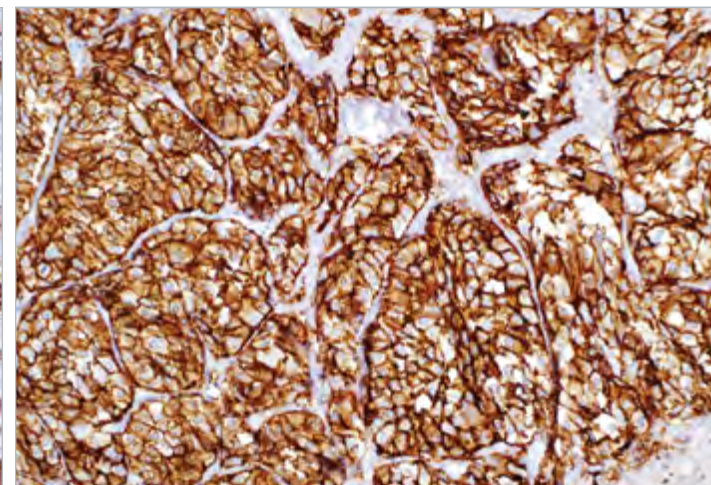




CD56 (MRQ-42) on pancreas.



CD56 (MRQ-42) on lung.



CD56 rabbit monoclonal (MRQ-42) stains neuroendocrine carcinoma of the pancreas.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** neuroblastoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

NCAM

## Associated Specialties

- Anatomic/Surgical Pathology
- Hematopathology

## Associated Panels

- Adrenal Tumors.....286
- Epithelioid Cell Neoplasms....288
- Spindle Cell Tumors.....290
- Pancreas / Pancreatic Tumors .294
- Plasma Cell Neoplasm and Lymphoproliferative Neoplasms.....300
- T-cell Lymphomas .....300
- Soft Tissue Neoplasms .....302
- Soft Tissue Sarcoma .....303

## Reference

- Gerardy-Schahn R, et al. International J of Cancer Sup. 1994; 8:38-42.
- Michalides R, et al. International J of Cancer Sup. 1994; 8:34-37.
- Kibbelaar RE, et al. Euro J of Cancer. 1991; 27:431-435.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

CD56, known as neural cell adhesion molecule (NCAM), was originally identified in the nervous system and belongs to a group of cell adhesion molecules including cadherins, selectins, and integrins. Anti-CD56 recognizes two proteins of the NCAM, the basic molecule expressed on most neuroectodermally-derived cell lines, tissues and neoplasms (e.g. neuroblastomas, small cell carcinomas). It is also expressed on some mesodermally-derived tumors (rhabdomyosarcoma). Furthermore, anti-CD56 has found great utility in the recognition of NK cell and NK/T-cell lymphomas. It has been shown that 71% of myelomas are positive for anti-CD56 as well. It also offers higher sensitivity in the diagnosis of small cell carcinoma than anti-chromogranin and anti-synaptophysin. Light staining of smooth muscle elements may be seen.<sup>1-9</sup>

## Panel Quick View

Spindle Cell Tumors										
	CD56	MS Actin	SM Actin	ALK	BCL2	Cal-ponin	CK Cocktail	Myo-genin	SM Myosin	PGP 9.5
Myofibroblastic Tumor	+	+	+	+	-	+	-	-	-	-
Spindle Cell Carcinoma	-	-	-	-	-	-	+	-	-	+
Neurofibroma	+	-	-	-	+	-	-	-	-	+
Rhabdomyosarcoma	-	+	-	-	+	-	-	+	-	-
Endometrial Stromal Tumor	-	+	+	-	-	+	-	-	-	+
Smooth Muscle	-	+	+	-	-	+	-	-	-	+
Fibromatosis	-	-	+	-	-	-	-	-	-	+
GIST	-	-	-	-	+	-	-	-	-	-
Schwannoma	+	-	-	-	+	-	-	-	-	-
Leiomyosarcoma	+	+	+	-	-	+	-/+	-	+	-

Pancreas / Pancreatic Tumors							
	CD56	β-Catenin	CD10	Chromo-granin A	CK 19	PGP 9.5	Synapto-physin
Pancreatoblastoma	+	+	-	+	-	-	-
Neuroendocrine Tumor	+	+	-	+	+/-	+	+
Solid Pseudopapillary Tumor	+	+	+	-	-	-	+

T-cell Lymphomas								
	CD56	CD2	CD4	CD5	CD8	Gran-zyme B	PD-1	Perforin
Subcutaneous Panniculitis-Like	-	+	-	+	+/-	+	-	+
NK/T-cell Lymphoma	+	+	-	-	-	+	-	+
Peripheral, NOS	-	+	+/-	+/-	-/+	-	-	-
Mycosis Fungoides	-	+	+	+	-	+/-	-	-

## Ordering Information

**Clone: MRQ-42**  
Rabbit Monoclonal

Volume .....	Part No.
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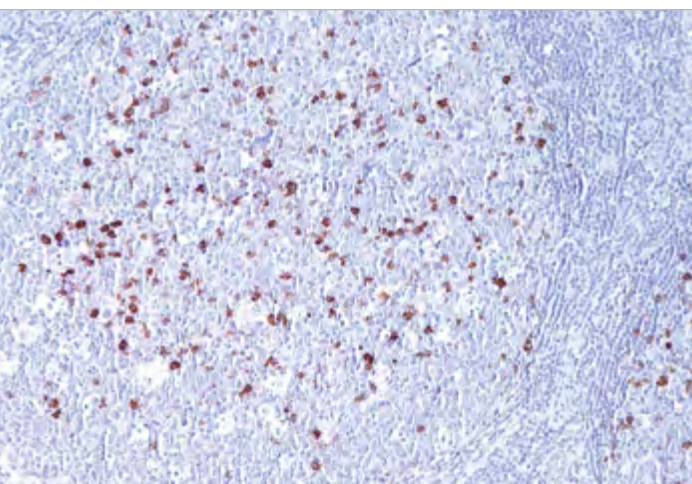
## Alternate Clones Available

- Mouse Monoclonal, 123C3.D5
- Contact us for more information.

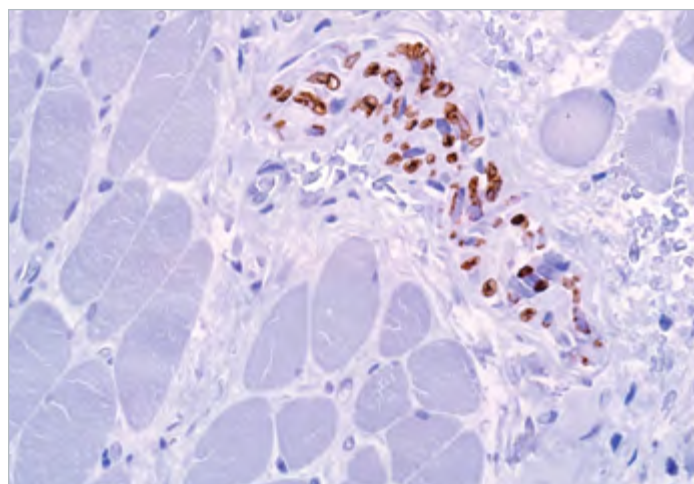
## Designations



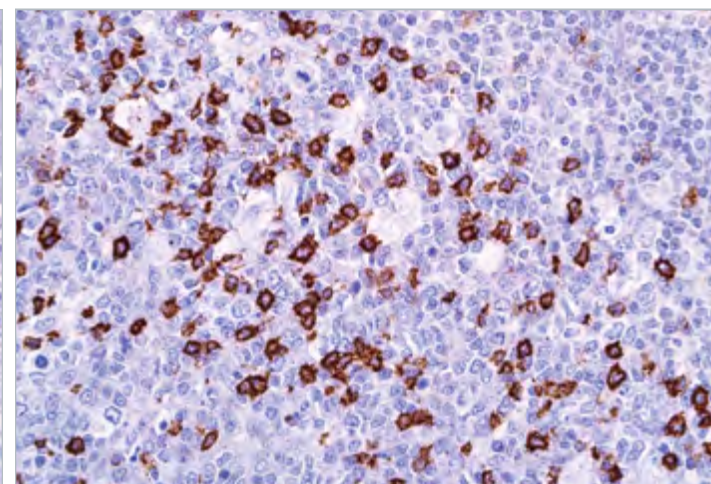




Intrafollicular NK cells are positive for CD57.



CD57 (NK-1) on nerve fiber.



CD57 (NK-1) on tonsil.

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgM/k

## Associated Specialties

● Hematopathology

## Associated Panels

● Thymus ..... 290  
 ● Neuroid Skin Lesions ..... 293  
 ● NK Cell Leukemia/Lymphoma. 299  
 ● T-cell Lymphomas ..... 300  
 ● Small Blue Round Cell Tumors. 302

## Reference

- Ritchie AW, et al. Clin Exp Immunol. 1983; 51:439-447.
- Boudova L, et al. Blood. 2003; 102:3753-8.
- Dabbs DJ. Diagnostic Immunohistochemistry Theranostic and Genomic Applications, 4th Edition. 2014; 324.
- Eiden SV, et al. Hum Pathol. 2002; 33:1126-32.
- Khoury T, et al. Int j Exp Pathol. 2011; 92:87-96.

## Product Description

CD57 is a marker expressed in the membrane of NK cells and other T-cells.<sup>1</sup> It is often used in the identification of nodular lymphocyte predominant Hodgkin lymphoma (NLPHL) to visualize the small T-cells that ring the LP cells (rosettes of follicular T-cells around the large neoplastic LP cells). These features can be used to distinguish NLPHL from T-cell/histiocyte-rich large B-cell lymphoma, which usually shows no rosettes of CD57-positive follicular T-cells around the large tumor cells.<sup>2</sup> Anti-CD57 also reacts with neuroendocrine cells and their derived tumors, including neuroendocrine tumors of diverse origins, pheochromocytomas, paragangliomas, medulloblastoma, and varying proportions of neural tumors such as schwannomas, neurofibromas, neuromas, and granular cell tumors.<sup>3</sup> However, anti-CD57 lacks the specificity of chromogranin and synaptophysin for detecting neuroendocrine neoplasms and therefore should be considered in a panel.<sup>4</sup> Anti-CD57 can also be useful in separating thymoma from thymic carcinoma when combined with a panel that includes antibodies against CD5 and CD117.<sup>5</sup>

## Panel Quick View

Thymus	CD57	CD5	CK 5&6	CD117	CEA	MOC-31	GLUT1
Thymic Carcinoma	-	+	+	+	+	-/+	+
Thymoma	+	-	-/+	-	-	+	-/+

## Neuroid Skin Lesions

	CD57	GFAP	MBP	S-100
Neuroma	+	-	+	+
Neurotised Nevi	-	-	-	+
Neurofibroma	+	-	+	+

## T-cell Lymphomas

	CD57	CD2	CD3	CD4	CD5	CD7	CD25	CD45RO	Gran-zyme B	Perforin
NK/T-cell Lymphoma	+/-	+	+	-	-	-/+	-	-/+	+	+
Peripheral, NOS	-	+	+	+/-	+/-	+/-	+	+		

## Small Blue Round Cell Tumors

	CD57	SM Actin	CD99	CK Cocktail	FLI-1	INI-1	PGP 9.5	Vimentin	WT1
Neuroblastoma	+	-	-	-	-	+	+	+	-
Embryonal Carcinoma	+	-	-	-	-	+	+	-	-
PNET/ES	+	-	+	-/+	+	+	+	+	-
DSRCT	+/-	-	-	+	+	+	-	+	+
Medulloblastoma	+	-	-	-	-	+	-	-	

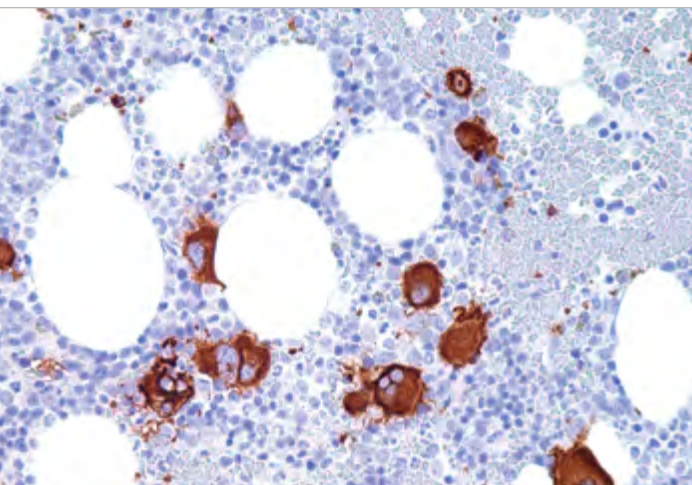
## Ordering Information

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 Mouse Monoclonal

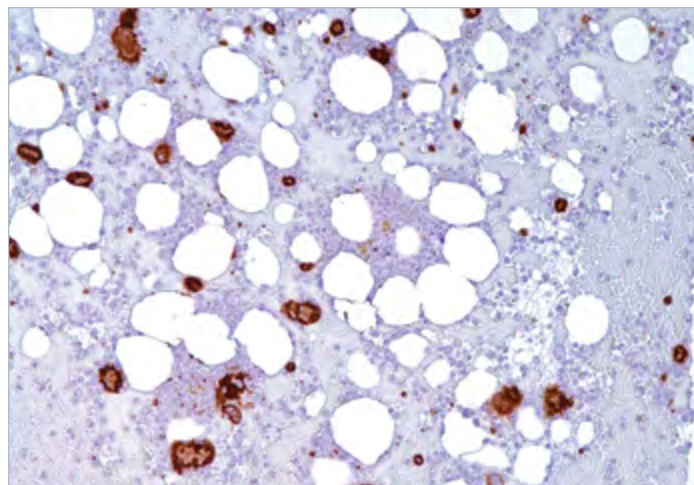
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 0.5 ml, concentrate ..... 157M-95  
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 1 ml, predilute ..... 157M-97  
 7 ml, predilute ..... 157M-98

## Designations

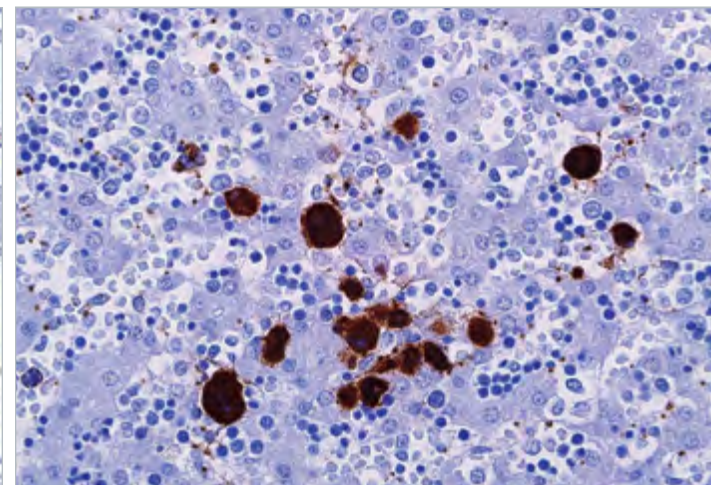
 IVD  IVD  IVD  RUO



Megakaryocytes are strongly highlighted in a cytoplasmic staining reaction.



CD61 (2f2) on bone marrow.



CD61 (2f2) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Reference

1. Thiele J, et al. Eur J Haematol. 1990; 44:63-70.
2. Thiele J, et al. Virchows Arch B Cell Pathol Incl Mol Pathol. 1990; 58:295-302.
3. Goldman BI, et al. Modern Pathology. 2001; 14:589-594.
4. Fox SB, et al. Histopathology. 1990; 17:69-74.
5. Duperray A, et al. Blood. 1989; 74:1603-11.
6. Campana D, et al. Leukemia. 1990; 4:620-4.
7. Thiele J, et al. Anal Quant Histol. 1990; 12:285-9.

## Product Description

CD61 is the human integrin beta chain beta 3 protein (ITGB3). Integrins are integral cell-surface proteins composed of an alpha chain and a beta chain. A given chain may combine with multiple partners resulting in different integrins. Integrin beta 3 is found along with the alpha IIb chain in platelets. Integrins are known to participate in cell adhesion as well as cell-surface mediated signaling. The integrin beta 3 chain of the vitronectin receptor and GPIIb/IIIa complex is a 90-110 kDa glycoprotein polypeptide which is expressed on platelets, megakaryocytes, macrophages, osteoclasts, and synovial lining cells. Integrin alpha-IIb/beta-3 recognizes the sequence H-H-L-G-G-G-A-K-Q-A-G-D-V in fibrinogen gamma chain. Following activation, integrin alpha-IIb/beta-3 brings about platelet/platelet interaction through binding of soluble fibrinogen. This step leads to rapid platelet aggregation which physically plugs ruptured endothelial surface. In case of HIV-1 infection, the interaction with extracellular viral Tat protein seems to enhance angiogenesis in Kaposi's sarcoma lesions.

This antibody is useful in evaluating the number of megakaryocytes, size, nuclear lobation, and the presence of obviously abnormal forms and micromegakaryocytes in myelodysplastic syndrome, acute myeloid leukemia with multilineage dysplasia, acute megakaryoblastic leukemia, and myeloproliferative neoplasms.

## Ordering Information

**Clone: 2f2**

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	161M-14
0.5 ml, concentrate.....	161M-15
1 ml, concentrate .....	161M-16
1 ml, predilute .....	161M-17
7 ml, predilute .....	161M-18

## Designations



IVD



IVD

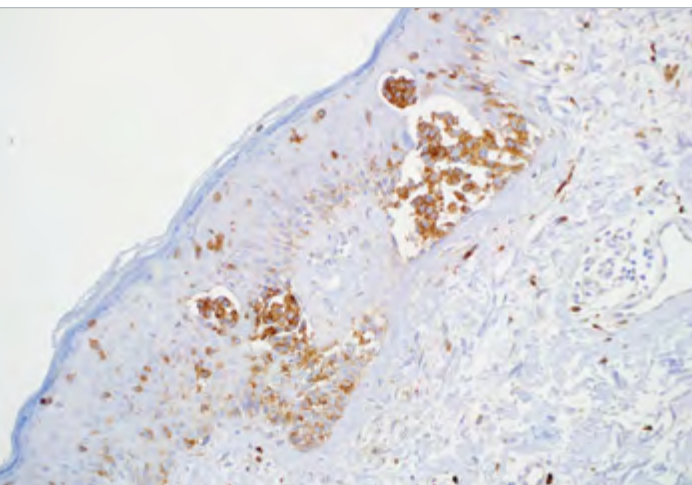


IVD

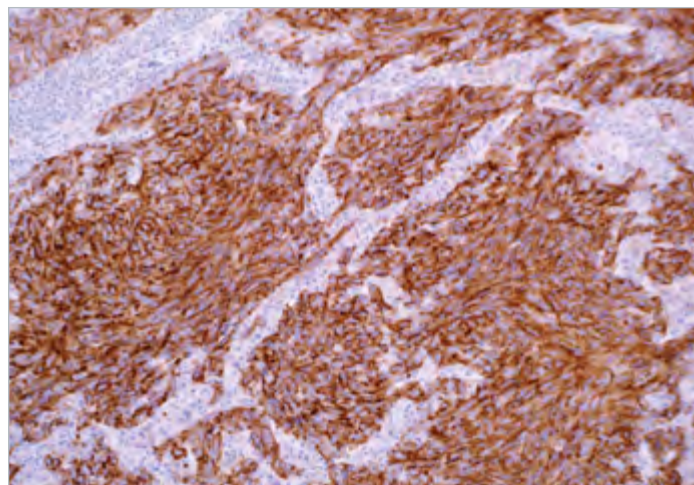


RUO

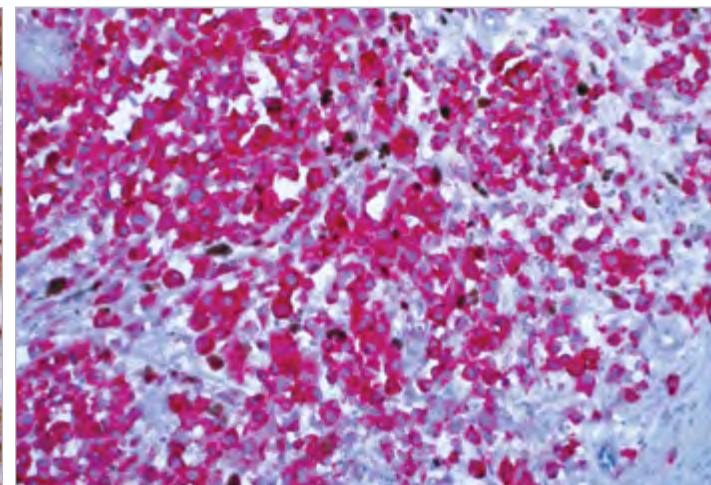




CD63 (NK1/C3) on skin.



The neoplastic cells of melanoma show strong cytoplasmic staining by CD63 (NK1/C3).



Malignant melanoma labeled with CD63 using Permanent Red chromogen.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** melanoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Dermatopathology

## Associated Panels

- PEComa ..... 290
- Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290
- Melanotic Lesions ..... 293

## Reference

1. Azorsa DO, et al. Blood. 1991; 78:280-4.
2. Barrio MM, et al. Hybridoma. 1998; 17:355-64.
3. Demetrick DJ, et al. J Natl Cancer Inst. 1992; 84:422-9, 727.
4. Mete O, et al. Virchows Arch. 2005; 447:938-46.
5. Kwon MS, et al. Lung Cancer. 2007; 57:46-53.

## Product Description

This antibody reacts with a 53 kDa protein which forms a part of the family of tetraspan moieties. The antigen was originally designated as a lysosomal membrane protein characterized as an activation dependent platelet surface antigen. In fact the CD63 antigen has a diverse distribution on the surface and in the cytoplasm of many cell types including lymphoid, myeloid, endothelial cells and melanoma. It has been quite useful in identifying malignant melanoma. Mete et al. found it useful in differentiating renal oncocytomas (RO) from eosinophilic renal cell carcinomas (eRCC). In his series of 35 ROs, 94% demonstrated apical and/or polar CD63 positivity. Of his 77 eRCCs, 96% showed diffuse cytoplasmic staining.

## Panel Quick View

PEComa									
	CD63	SM Actin	Caldesmon	Calponin	CD68	Desmin	HMB-45	MART-1	S-100
Angiomyolipoma	+	+	+	+	+	-	+	+	-
Lymphangiomyomatosis	+	+	+	+	-	-	+	+	-
Extrapulmonary Clear Cell Tumor	+	+	-	-	-	-	+	+	+
Primary Cutaneous PEComa	+	-/+	-	-	+/-	-	+	+	-
Pulmonary Clear Cell Sugar Tumor	+	-	-	-	+/-	-	+	+	+/-

Melanotic Lesions								
	CD63	Factor XIIIa	HMB-45	MART-1	MiTF	S-100	SOX-10	Tyrosinase
Adrenal Cortical	-	-	-	+	-	+	-	-
Adult Melanocytes	+	-	-	+	+	+	+	+
Angiomyolipoma	+	-	+	+	+	+	-	-
Dermatofibroma	-	+	-	-	-	-	-	-
Interdermal Nevus	-	-	-	+	+	+	-	+
Intranodal Nevus Cells	-	-	-	+	+	+	-	+
Junctional Nevus	-	-	+	+	+	+	-	+
Metastatic Melanoma	+	-	+	+	+	+	+	+
Primary Melanoma	+	-	+	+	+	+	+	+
Spindle Cell Melanoma	+	-	+	+	+	+	+	+

## Ordering Information

**Clone: NK1/C3**

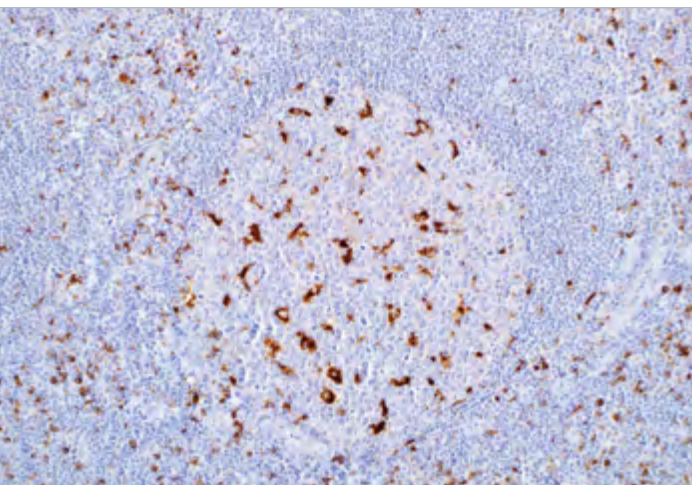
Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	263M-14
0.5 ml, concentrate	263M-15
1 ml, concentrate	263M-16
1 ml, predilute	263M-17
7 ml, predilute	263M-18

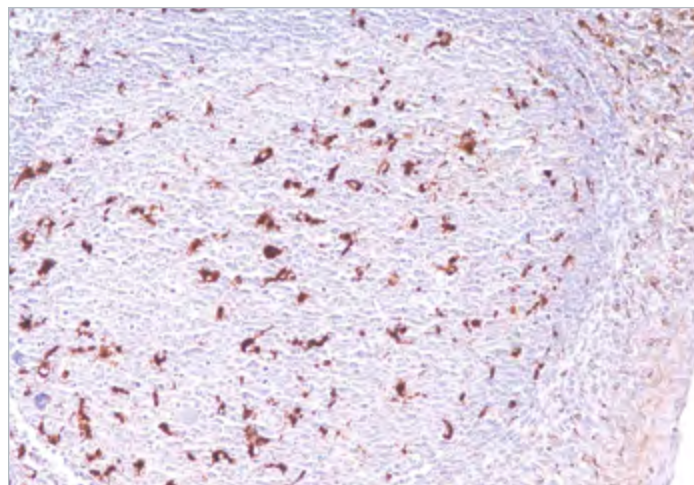
## Designations



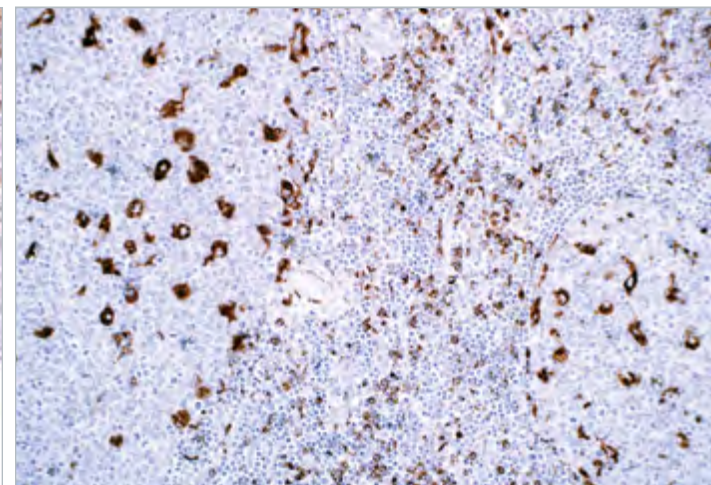
IVD IVD IVD RUO



CD68 (Kp-1) on tonsil.



CD68 (Kp-1) on tonsil.



Macrophages in germinal centers and interfollicular areas show strong expression of CD68 protein.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

- Lymph Node ..... 289
- PEComa ..... 290
- Histiocytic/Dendritic Cell Lesions. . . . . 297
- Histiocytic Neoplasms / Histiocytic Lesions. . . . . 297
- Histiocytic Proliferation ..... 297
- Lymph Node ..... 298
- Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders ..... 300

## Reference

1. Facchetti F, et al. *Histopathology*. 1991; 19:141-5.
2. Ruco LP, et al. *Am J Clin Pathol*. 1989; 92:273-9.
3. Cordell JL, et al. Oxford Univ Press, NY Tokyo. 1995; 925-927.
4. Pulford KAF, et al. *J Clin Pathol*. 1989; 42:414-21.
5. Vergier B, et al. *Blood*. 2000; 95:2212-8.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-CD68 marks cells of monocyte/macrophage lineage. This antibody is capable of staining monocytes, Kupffer cells, osteoclasts, granulocytes and their precursors; lymphomas are negative or show a few granules. This antibody may be useful for the identification of myelomonocytic and histiocytic tumors. Anti-CD68 may help to distinguish malignant fibrous histiocytoma from other pleomorphic sarcomas. However, since this detects a formalin-resistant epitope that may be associated with lysosomal granules, other lysosome-rich cells may also stain.

## Panel Quick View

Lymph Node						
	CD68	CD1a	CD21/CD35	Lysozyme	PD-1	S-100
Reactive Histiocytosis	+	-	-	+	-	-
Langerhans Cell Histiocytosis	+	+	-	+	-	+
Sinus Histiocytosis with Massive Lymphadenopathy	+	-	-	+	-	+
Follicular Dendritic Cell Sarcoma	-	+/-	+	-	-	-
Dermatopathic Lymphadenitis	-	+	-	+	-	+

Histiocytic Lesions							
	CD68	CD3	CD4	CD20	CD45	Factor XIIIa	Lysozyme
Histiocytic Neoplasms	+	-	+	-	+	+	+

## Ordering Information

**Clone: Kp-1**  
Mouse Monoclonal

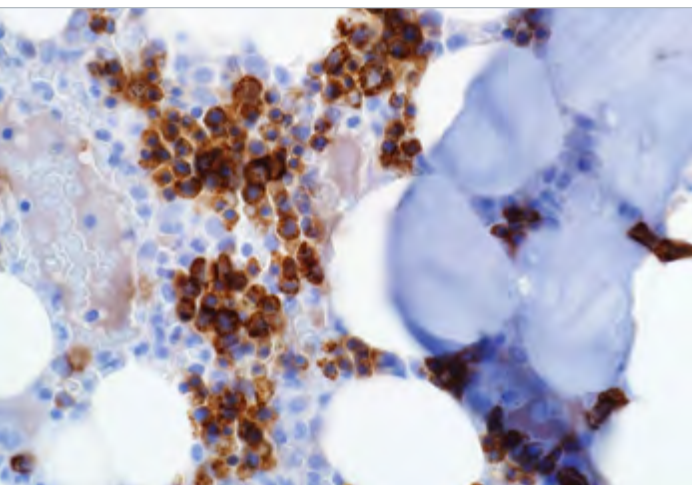
Volume	Part No.
0.1 ml, concentrate	168M-94
0.5 ml, concentrate	168M-95
1 ml, concentrate	168M-96
1 ml, predilute	168M-97
7 ml, predilute	168M-98

## Designations

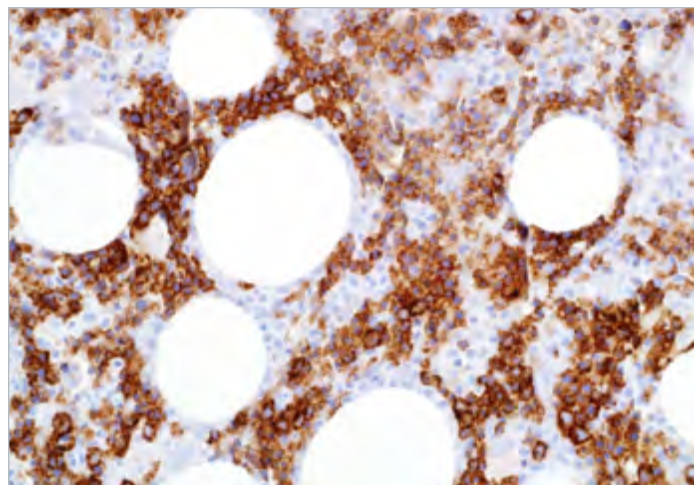


IVD IVD IVD RUO

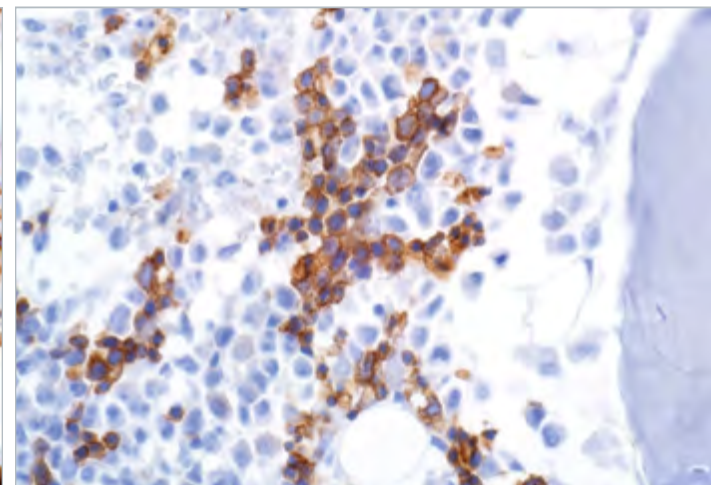




Bone marrow erythroid precursors demonstrate strong expression of CD71 protein.



CD71 (MRQ-48) on bone marrow.



CD71 (MRQ-48) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Erythroid.....297

● Leukemia.....298

## Reference

1. Ponka P, et al. Int J Biochem Cell Biol. 1999; 31:1111-1137.
2. Sieff C, et al. Blood. 1982; 60:703-713.
3. Lesley J, et al. Cell Immunol.1984; 83:14-25.
4. Nakahata T, et al. Leuk Lymphoma. 1994; 13:401-409.
5. Marsee DK, et al. Am J Clin Pathology. 2010; 13:429-435.

## Product Description

The transferrin receptor (CD71) is most highly expressed on placental syncytiotrophoblasts, myocytes, basal keratinocytes, hepatocytes, endocrine pancreas, spermatocytes, and erythroid precursors.<sup>1</sup> The level of transferrin receptor expression is highest in early erythroid precursors through the intermediate normoblast phase, after which expression decreases through the reticulocyte phase.<sup>2-4</sup> The maturation of erythrocytes results in loss of transferrin receptor expression, in concert with down-regulation of the machinery for hemoglobin synthesis. The high level of transferrin receptor within erythroid precursors makes it an excellent marker for evaluation of erythroid components within bone marrow. Anti-CD71 is a highly effective marker for highlighting erythroid precursors in bone marrow biopsy specimens and shows the following features: 1) distinct membranous and cytoplasmic staining pattern, which is easily recognized in bone marrow biopsy; 2) restriction to erythroid lineage within bone marrow biopsy specimens; 3) CD71 expression decreases with the maturation of erythrocytes, with the highest level seen in early forms and the lowest level in late normoblast stage, and most importantly; 4) mature erythrocytes do not express CD71, which facilitates bone marrow analyses.<sup>5</sup> Anti-CD71 is useful in identifying erythroid precursors with very little interference from mature erythrocytes and also in the determination of erythroid leukemia, benign erythroid proliferative disorders, and myelodysplastic syndrome, although further studies are needed for making a definitive diagnosis of MDS.<sup>5</sup>

## Panel Quick View

Erythroid	CD71	Glycophorin A	Hemoglobin A	Spectrin
Erythroid Hyperplasia	+	+	+	+
Erythroid Hypoplasia	+	+	+	+
Acute Erythroid Leukemia	+	+	+	+
Extramedullary Hematopoiesis	+	+	+	+
Mature Erythrocytes	-	+	+	+

## Ordering Information

### Clone: MRQ-48

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	171M-94
0.5 ml, concentrate.....	171M-95
1 ml, concentrate .....	171M-96
1 ml, predilute .....	171M-97
7 ml, predilute .....	171M-98

### Designations



IVD



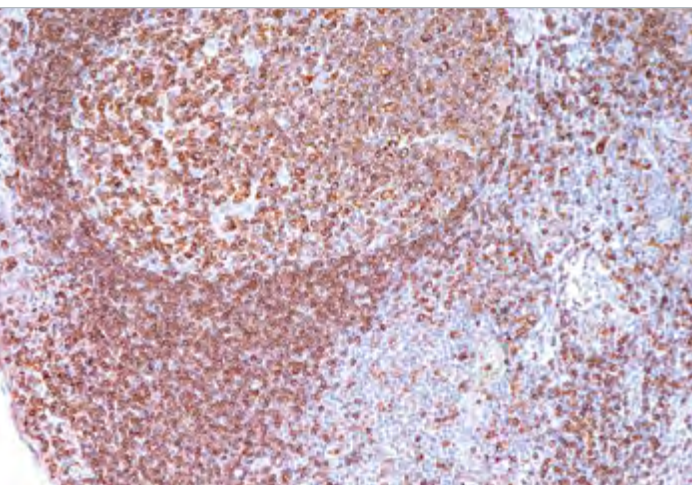
IVD



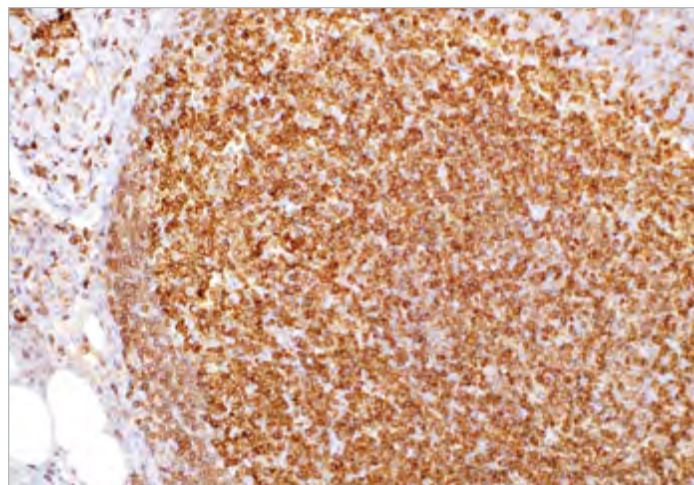
IVD



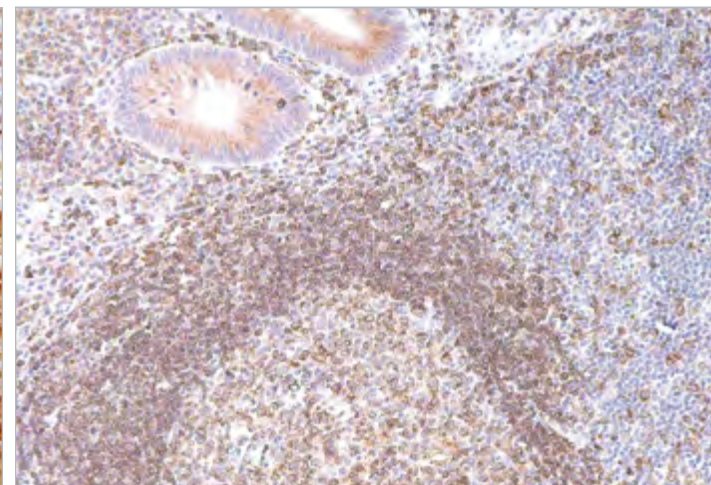
RUO



Germinal center cells and paracortical T-zone cells are positive for CD74 (LN2).



CD74 (LN2) on tonsil.



CD74 (LN2) on appendix.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymphoblastic Lymphomas, BCL vs. TCL.....298

## Reference

1. Chan JKC, et al. *Histopathology*. 1994; 25:517-536.
2. Kasaian MT, et al. *Proc Soc Exp Bio Med*. 1991; 197:226-241.
3. Jones NH, et al. *Nature*. 1986; 323:346-349.
4. Lazova R, et al. *Cancer*. 1997; 79:2115-24.
5. Ioachim HL, et al. *Am J SurgPathol*. 1996; 20:64-71.
6. Tang X, et al. *Pathol Int*. 1995; 45:34-44.
7. Ohsawa M, et al. *J ClinPathol*. 1994; 47:928-32.
8. Ross CW, et al. *Cancer*. 1992; 70:2517-23.

## Product Description

Anti-CD74 stains predominantly germinal center lymphocytes and B-cell lymphomas but rarely T-cell lymphomas. It stains the cell membrane but a paranuclear globular labeling is also noted. It is a useful addition to the lymphoma phenotyping panel. Anti-CD74 has been shown to be useful in differentiating atypical fibroxanthoma from malignant fibrous histiocytoma, as well as small cell lung carcinomas from non-small cell lung carcinomas.<sup>1-8</sup>

## Panel Quick View

Lymphoblastic Lymphomas, BCL vs. TCL										
	CD74	CD3	CD5	CD7	CD10	CD19	CD20	CD117	PAX-5	TdT
Lymphoblastic BCL	+	-	-	-	+/-	+	+/-	-	+	+
Lymphoblastic TCL	-	+	+/-	+	+	-	-	-	-	+

## Ordering Information

### Clone: LN2

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	174M-14
0.5 ml, concentrate.....	174M-15
1 ml, concentrate .....	174M-16
1 ml, predilute .....	174M-17
7 ml, predilute .....	174M-18

### Designations



IVD



IVD

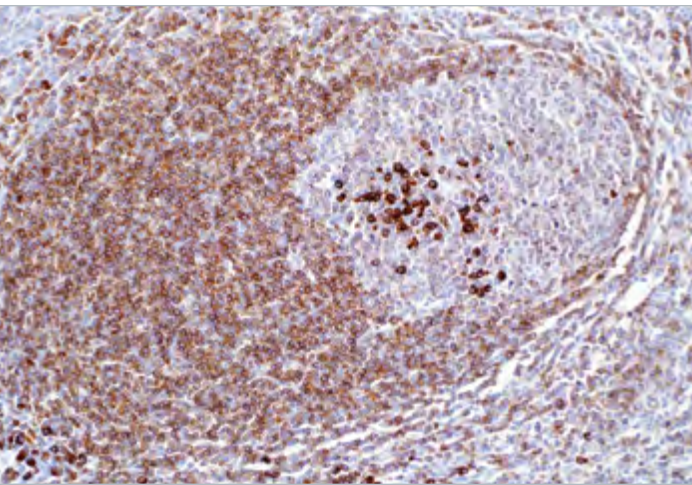


IVD

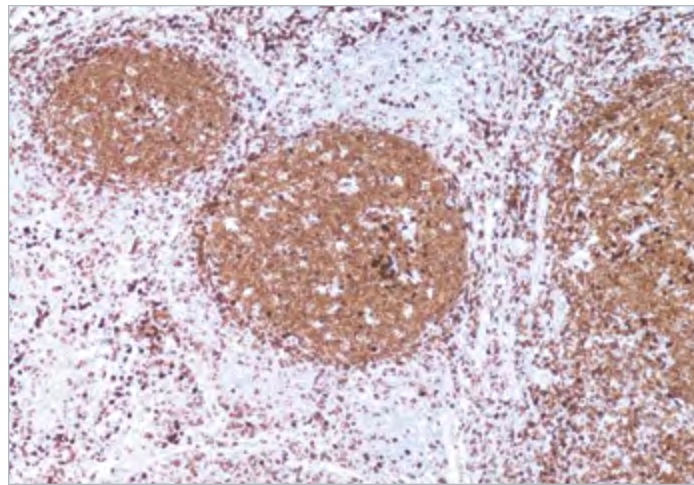


RUO

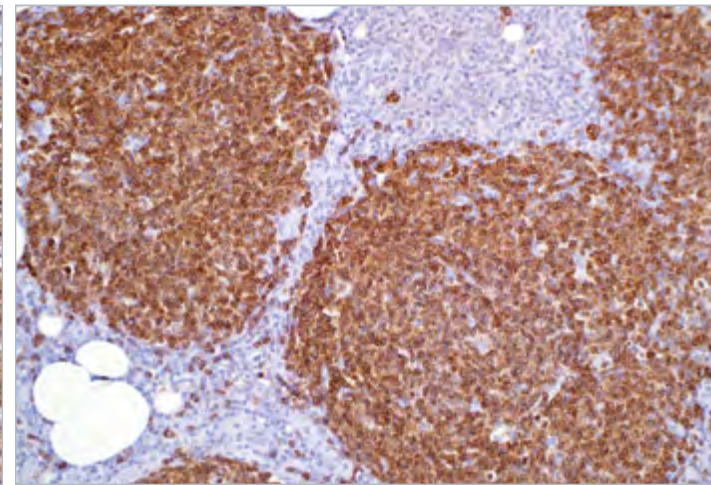




Plasma cells, mantle zone B-cells, and germinal center cells show strong, moderate, and weak staining by CD79a (JCB117).



CD79a (JCB117) on tonsil.



Follicular lymphoma cells are highlighted by CD79a (SP18).

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Hodgkin vs. Non-Hodgkin Lymphomas ..... 297
- Lymphoma ..... 298
- Plasma Cell Neoplasm and Lymphoproliferative Neoplasms ..... 300

## Reference

1. Van Nosal CJM, et al. J Immunol. 1991; 146:3881-3888.
2. Van Nosal CJM, et al. J Exp Med. 1992; 175:1511-1519.
3. Mason DY, et al. Eur J Immun. 1992; 22:2753-2756.
4. Mason DY, et al. Blood. 1995; 86:1453-9.
5. Lin BT, et al. Hum Pathol. 1997; 28:1083-90.
6. Pillozzi E, et al. J Pathol. 1998; 186:140-3.
7. Kurtin PJ, et al. Am J Clin Pathol. 1999; 112:319-29.
8. Blakolmer K, et al. Mod Pathol. 2000; 13:766-72.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-CD79a is a B-cell marker that is generally used to complement CD20. This antibody will stain many of the same lymphomas as CD20, but also is more likely to stain precursor B-lymphoid leukemias than CD20. Anti-CD79a also stains more cases of plasma cell myeloma and occasionally some types of endothelial cells as well. Anti-CD79a will stain many cases of acute promyelocytic leukemia (FAB-M3), but only rarely stains other types of myeloid leukemia.

## Panel Quick View

B-cell Lymphomas										
	CD79a	BCL2	BCL6	CD10	CD23	Cyclin D1	MUM1	p27	PAX-5	TRAcP
Burkitt Lymphoma	+	-	+	+	-	-	-	-	+	-
CLL/SLL	+	+	-	-	+	-	+	+	+	-
Diffuse Large Cell Lymphoma	+	+	+/-	-/+	-	-	+/-	-	+	-
Follicular	+	+	+	+	-	-	-	+	+	-
Hairy Cell Leukemia	+	+	-	-	-	+ (weak) /-		-	+	+
Lymphoplasmacytic	+	+	-	-	-	-	+	+		-
Malt Lymphoma	+	+	-/+	-	-	-	-			
Mantle Cell	+	+	-	-	-	+	-	+	+	-
Marginal Zone	+	+	-	-	-	-	+		+	+/-
Marginal Zone BCL	+	+	-	-	-	-	+	+	+	+/-
Splenic Marginal Zone	+	+	-	-	-	-	+/-		-	

## Ordering Information

### Clone: JCB117

### Mouse Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 179M-94  
 0.5 ml, concentrate ..... 179M-95  
 1 ml, concentrate ..... 179M-96  
 1 ml, predilute ..... 179M-97  
 7 ml, predilute ..... 179M-98

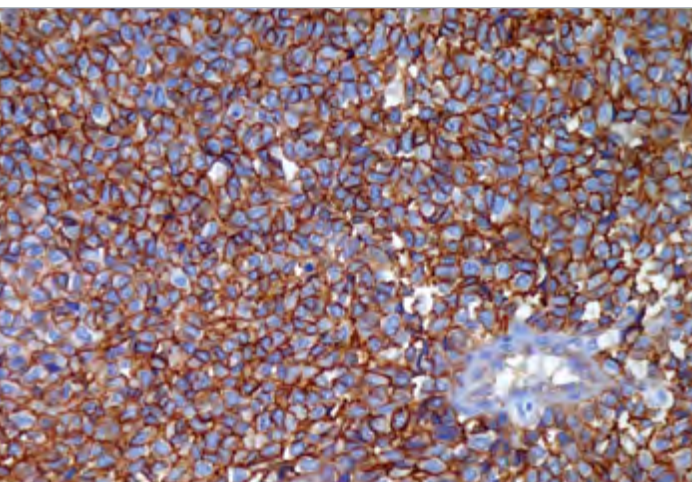
### Alternate Clones Available

• Rabbit Monoclonal, SP18  
 Contact us for more information.

### Designations

 IVD     IVD     IVD     RUO

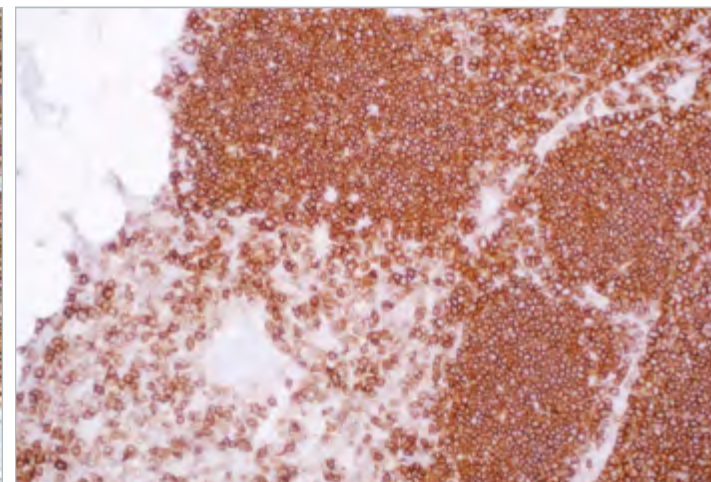




The neoplastic cells of Ewing sarcoma are stained strongly by CD99 (EPR3097Y) in a membranous pattern.



CD99 (EPR3097Y) on soft tissue.



CD99 (EPR3097Y) on thymus cortex medulla.

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** Ewings sarcoma, pancreas  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

MIC-2

## Associated Specialties

- Soft Tissue Pathology
- Pediatric Pathology

## Associated Panels

- Retroperitoneal Lesions. . . . . 290
- Spindle Cell Lesions . . . . . 290
- Sex Cord Stromal Tumors . . . . . 292
- Skin: Spindle Cell Tumors . . . . . 294
- Retroperitoneal Neoplasms . . . 301
- Small Blue Round Cell Tumors. 302
- Soft Tissue Sarcoma . . . . . 303
- Soft Tissue Tumor. . . . . 303

## Reference

1. Rettig WJ, et al. Lab Invest. 1992; 66:133.
2. Fellingner EJ, et al. Amer J Surg Pathol. 1992; 16:746.
3. Ambros IM, et al. Cancer. 1991; 139:317.
4. Khoury JD. Adv Anat Pathol. 2005; 12:212-20.
5. Dabbs DJ. Theranostic and Genomic Applications. 2014; 126.

## Product Description

CD99, as detected with a variety of antibodies, is expressed by virtually almost all Ewings sarcoma and primitive peripheral neuroectodermal tumors (ES/PNET) and demonstrates strong and diffuse membranous staining.<sup>1-4</sup> Other tumors that may show CD99 expression include neuroendocrine carcinomas, mesenchymal chondrosarcomas, solitary fibrous tumors, synovial sarcomas, vascular tumors, small round blue cell tumors, lymphoblastic lymphoma, acute myeloid leukemia, and myeloid sarcoma.<sup>5</sup> However, strong and diffuse membranous reactivity for CD99 favors ES/PNET over the other diagnostic considerations.<sup>5</sup> The other CD99+ tumors usually show cytoplasmic and more heterogeneous staining. Therefore, when making a final diagnostic interpretation, CD99 must be considered in a panel with other antibodies.<sup>4-5</sup>

## Panel Quick View

Soft Tissue Sarcoma										
	CD99	MS Actin	SM Actin	Cal-retinin	CD34	CD56	CK Cocktail	S-100	TFE3	TLE1
Alveolar Soft Part Sarcoma	-	+	+	-	-	-	-	-	+	-
Clear Cell Sarcoma	-	-	-	-	-	-	-	+	-	-
Desmoplastic Small Round Cell	-	-	-	-	-	-	+	-	-	-
Mesenchymal Chondrosarcoma	+	-	-	+	-/+	-	-	+/-	-	-
PEComa	-	-	+	+	-	-	-	-	-	-
PNET/ES	+	-	-	-	-	-	-/+	+	-	-
Synovial Sarcoma	+	-	-	+/-	-	+	+	+/-	-	+

Skin: Spindle Cell Tumors									
	CD99	MS Actin	SM Actin	CD10	CD34	Factor VIII	FLI-1	HHV-8	D2-40
Angiosarcoma	-	-	-	-	+	+	+	-	+/-
Atypical Fibroxanthomas	+	+	+	+	-	-	-	-	-
Glomus Tumor	-	+	+	-	+/-	-	-	-	-
Hemangioma	-	-	+	-	+	+	+	-	-
Hemangiopericytoma	-	-	-	-	+	-	+	-	-
Kaposi's Sarcoma	-	-	+	-	+	+	+	+	+
Kaposiform Hemangioendothelioma	-	-	-	-	+	-	+	-	-

Sex Cord Stromal Tumors							
	CD99	Calretinin	CK 7	EMA	Inhibin	MART-1	Vimentin
Granulosa Cell Tumors	+	+	-	-	+	+	+
Sertoli-Leydig Cell Tumors	+	+	+	-	+	+	+
Gynandroblastoma	-/+	+	-	-	+	-	+
Gonadoblastomas	+	+	-	-	+	-	+

## Ordering Information

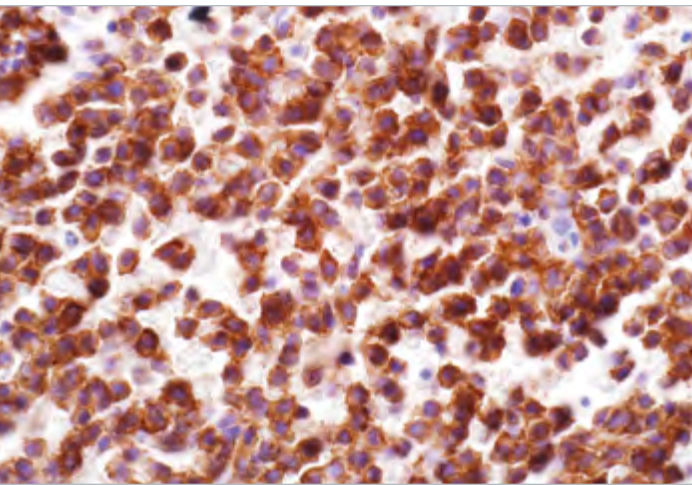
**Clone: EPR3097Y**  
 Rabbit Monoclonal

Volume . . . . .	Part No.
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0.5 ml, concentrate . . . . .	199R-15
1 ml, concentrate . . . . .	199R-16
1 ml, predilute . . . . .	199R-17
7 ml, predilute . . . . .	199R-18

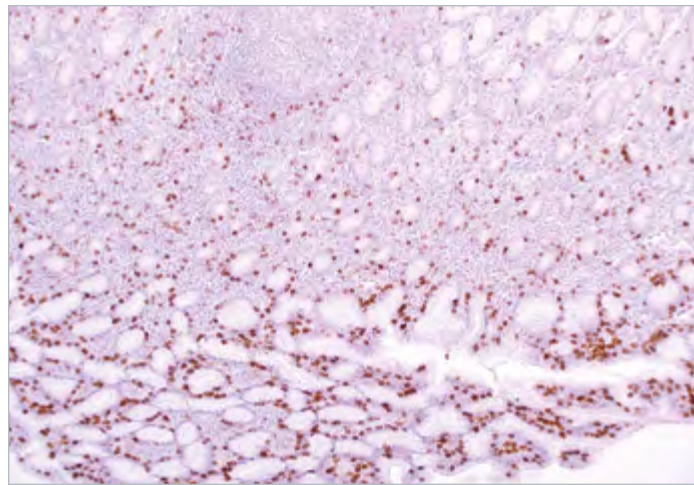
## Designations



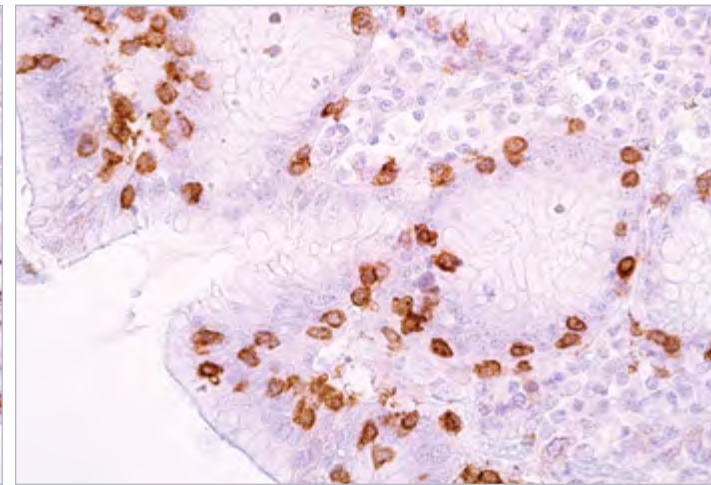




CD103 (EP206) on hairy cell leukemia.



CD103 (EP206) on gastric mucosa.



CD103 (EP206) on gastric mucosa.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** hairy cell leukemia, colon

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● Mature B-cell Neoplasms. . . . . 299

## Reference

1. Dong HY, et al. Am J Clin Pathol. 2009; 131:586-95.
2. Morgan EA, et al. Am J Clin Pathol. 2013; 139: 220-30.

## Product Description

CD103 is an integrin subunit,  $\alpha E$ , encoded by the ITGAE gene on chromosome 17.<sup>2</sup> CD103 is expressed in almost all cases of hairy cell leukemia (HCL) and absent in the majority of other B-cell neoplasms with an exception to splenic marginal zone lymphoma, in which rare cases express CD103.<sup>1,2</sup> CD103 has been found in mononuclear cells in the interfollicular area of lymph nodes and in intraepithelial cells in the overlying mucosa located primarily toward the basal layer of the tonsil.<sup>2</sup> The high sensitivity of anti-CD103 for hairy cell leukemia makes this marker valuable when distinguishing from other B-cell neoplasms.

## Panel Quick View

B-cell Neoplasms												
	CD103	ANXA1	BCL2	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	MUM-1	T-bet	ZAP-70
FL	-	-	+	+	-	+	-	+	-	-	-	-
CLL/SLL	-	-	+	-	+	-	+	+	-	+	+/-	+/-
MCL	-	-	+	-	+	-	-	+	+	-/+	-	-
MZL	-	-	+	-	-	-	-	+	-	+	+	-
LPL	-	-	+	-	-	-	-	+	-	+	+	-
DLBCL	-	-	+	+/-	-/+	-/+	-	+	-	+/-	-	-
BL	-	-	-	+	-	+	-	+	-	-	-	-
HCL	+	+	+	-	-	-	-	+	+	-	+	-

## Ordering Information

### Clone: EP206

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	437R-14
0.5 ml, concentrate . . . . .	437R-15
1 ml, concentrate . . . . .	437R-16
1 ml, predilute . . . . .	437R-17
7 ml, predilute . . . . .	437R-18

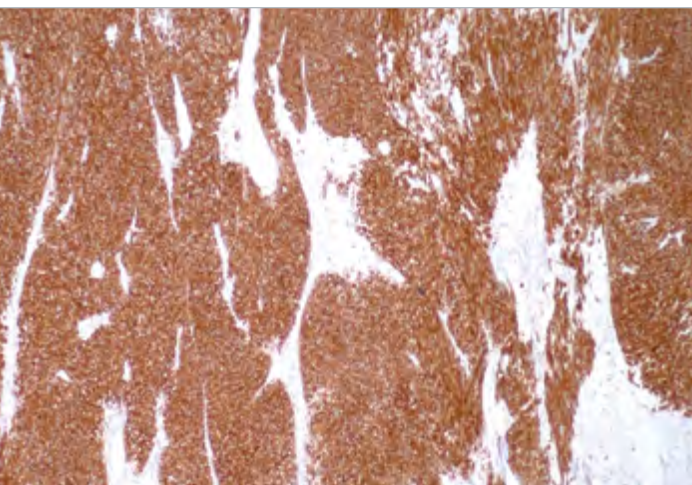
### Designations



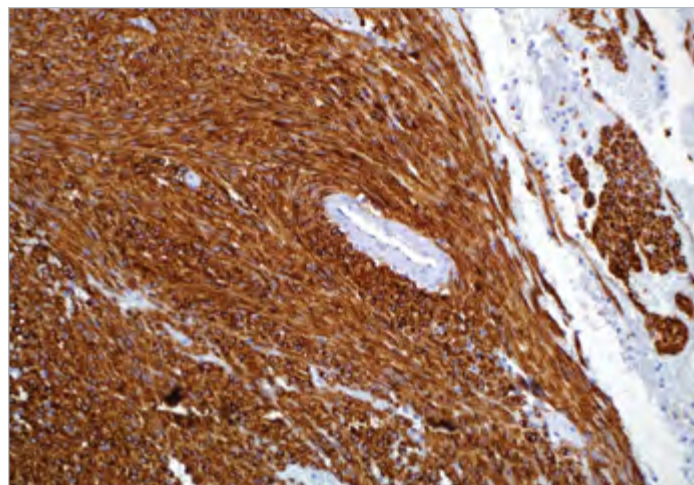
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

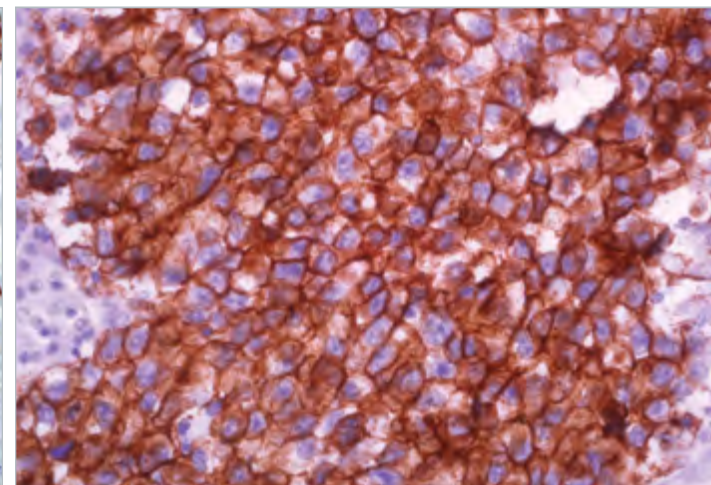
# CD117, c-kit



CD117, c-kit (YR145) on GIST.



Gastrointestinal stromal tumor cells are strongly highlighted by CD117 (YR145).



CD117, c-kit (YR145) on testis, seminoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** gastrointestinal stromal tumor, seminoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Spindle Cell Tumors..... 290
- Thymus ..... 290
- Breast Carcinoma ..... 291
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- GIST Mutation vs. Wild Type... 294
- Carcinomas. .... 295
- Germ Cell Tumors..... 295
- Kidney: Renal Epithelial Tumors ... 295
- Leukemia. .... 298
- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma ..... 289
- Mastocytosis ..... 299

## Reference

- Turner MS, et al. Arch Pathol Lab Med. 2009; 133:1370-4.
- Gibson PC, et al. Adv Anat Pathol. 2002; 9:65-9.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

CD117, c-kit, is a tyrosine kinase receptor found on interstitial cells of Cajal, germ cells, bone marrow stem cells, melanocytes, breast epithelium, and mast cells. This receptor is found on a wide variety of tumor cells including follicular and papillary carcinoma of thyroid, adenocarcinomas from endometrium, lung, ovary, pancreas, and breast as well as malignant melanoma, endodermal sinus tumor, and small cell carcinoma; however, anti-CD117 has been particularly useful in differentiating gastrointestinal stromal tumors from Kaposi's sarcoma, tumors of smooth muscle origin, fibromatosis, and neural tumors of the GI tract. Anti-CD117 is also useful in recognizing myeloblasts in bone marrow biopsy and clot section.

## Panel Quick View

GIST Mutation vs. Wild Type			
	CD117	CD34	DOG1
GIST, Kit Mutation	+	+	+
GIST, PDGFRA Mutation	-	-	+
GIST, Wild Type	+	+/-	+

Germ Cell Tumors										
	CD117	AFP	CD30	CK Cocktail	EMA	Inhibin	Oct-4	PLAP	D2-40	Vimentin
Seminoma	+	-	-	-	-	-	+	+	+	+
Embryonal Carcinoma	-	-	+	+	-	-	+	+	-	-

Kidney: Renal Epithelial Tumors									
	CD117	CD10	Ep-CAM	Ksp-cadherin	Parvalbumin	PAX-2	RCC	S100A1	Vimentin
Clear Cell RCC	-	+	-	-	-	+	+	+	+
Chromophobe RCC	+	-/+	+	+	+	+	-/+	-	-
Papillary RCC	+	+	-	-/+	-	-	+	+	+
Oncocytoma	+	+/-	-	+/-	+	+	-	+	-

Mastocytosis					
	CD117	CD2	CD25	CD163	Tryptase
Systemic Mastocytosis	+	+	+	-	+
Mast Cell Leukemia	+	+	+	-	+
Reactive Mast Cells	+	-	-	+	+

## Ordering Information

### Clone: YR145

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	117R-14
0.5 ml, concentrate	117R-15
1 ml, concentrate	117R-16
1 ml, predilute	117R-17
7 ml, predilute	117R-18
25 ml, predilute	117R-10

### Designations

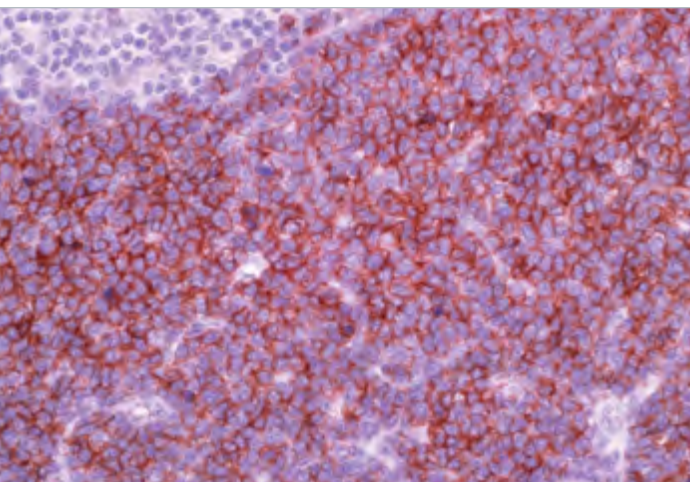


IVD IVD IVD RUO

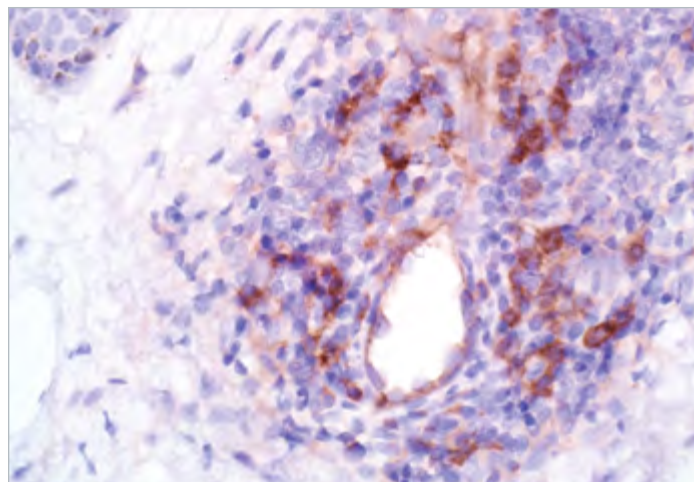
**CELL MARQUE**

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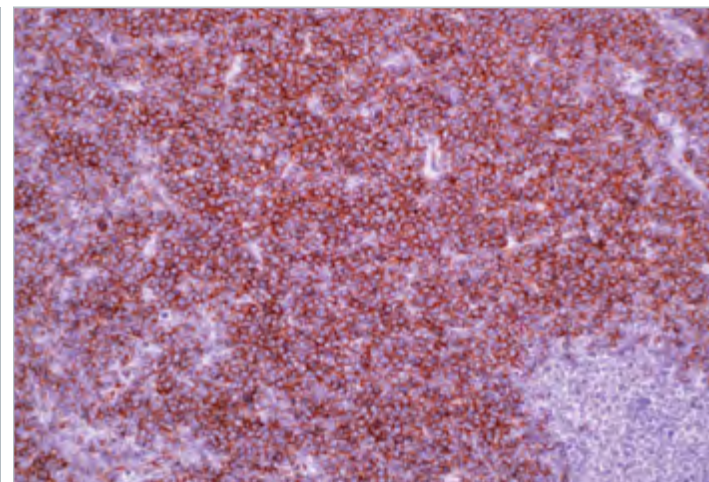




CD123 (6H6) labels blastic plasmacytoid dendritic cell neoplasm.



CD123 (6H6) on lupus plasmacytoid dendrocytes.



CD123 (6H6) on BPDCN.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** blastic plasmacytoid dendritic cell neoplasm

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Hematopathology

## Associated Panels

- Mature B-cell Neoplasms. . . . . 299

## Reference

1. Facchetti F, et al. Lyon France: IARC Press. 2008; 145-147.
2. Cronin DMP, et al. Am J Clin Pathol. 2012; 137:367-376.
3. Rollins-Raval M, et al. Appl Immunohistochem Mol Morphol. 2013; 21:212-7.

## Product Description

Blastic plasmacytoid dendritic cell neoplasm (BPDCN), previously known as CD4+/CD56+ hematodermic neoplasm or blastic NK-cell lymphoma, is a malignant neoplasm composed of immature hematopoietic precursors of plasmacytoid dendritic cells.<sup>1</sup> The most frequent manifestation is a skin lesion, bone marrow involvement, and regional lymphadenopathy.<sup>1</sup> Myeloid leukemia cutis (LC), myeloid sarcoma, and large aggressive B-cell lymphomas should be differentiated from BPDCN. Recently, it has been reported that these entities can be distinguished by using immunohistochemistry (IHC) in paraffin-embedded tissue sections.<sup>2</sup> In this study, 23 myeloid LC and 12 BPDCN cases were evaluated using a panel of antibodies against CD123, TCL1, CD4, CD56, MPO and CD33; with results as follows: anti-CD123 stained 4 cases (17%) of myeloid LC and 10 cases (83%) of BPDCN; anti-TCL-1 stained 2 cases (9%) of myeloid LC and 9 (82%) of 11 cases of BPDCN; anti-CD4 stained 2 cases (9%) of LC and all 12 cases (100%) of BPDCN; anti-CD56 stained 12 cases (52%) of LC and all 12 cases (100%) of BPDCN; anti-myeloperoxidase stained 7 cases (30%) of LC and 0 cases (0%) of BPDCN. Anti-CD33 was not helpful; it stained 18 (78%) cases of LC and 11 cases (92%) of BPDCN. The results indicated that a panel that includes antibodies against CD4, CD56, CD123, and TCL-1 can appropriately distinguish between myeloid LC and BPDCN.<sup>2</sup> CD123 IHC expression has been studied in 157 acute myeloid leukemia (AML) bone marrow biopsies and/or marrow particle preparations, and correlated with the morphologic, immunophenotypic, and cytogenetic features and with the presence of FLT3-ITD and NPM1 mutations.<sup>3</sup>

CD123 IHC expression has been seen in 40% of AML, across a wide spectrum of 2008 World Health Organization subtypes and was most frequent within the intermediate risk group. Compared with CD123 IHC negative AML, CD123 IHC positive AML demonstrated higher marrow blast percentages (median 69%), monocytic differentiation (33/63 cases), and CD34 negativity (29/63 cases). 83% (25/30) FLT3-ITD-mutated AML were CD123+ and 62% (18/29) NPM1-mutated cases were CD123 IHC+ (P=0.0052). CD123 IHC+AML presents with characteristic pathologic features, some of which may be related to underlying FLT3-ITD and/or NPM1 mutations.<sup>3</sup>

## Panel Quick View

Plasmacytoid Dendritic Cell Neoplasm and Leukemia										
	CD123	CD2	CD4	CD7	CD8	CD13	CD16	CD11c	CD33	CD34
Blastic Plasmacytoid Dendritic Cell Neoplasm	+	+	+	-	-	-	-	-	-	-
Myeloid Leukemia Cutis	-	-	-	-	-	+/-	-/+	-	+/-	+/-
Hairy Cell Leukemia	+/-	-	-	-	-	-	-	+	-	-
Acute Myeloid Leukemia	+/-	-/+	-	-/+	-	+/-	+/-	-	+	+

## Ordering Information

### Clone: 6H6

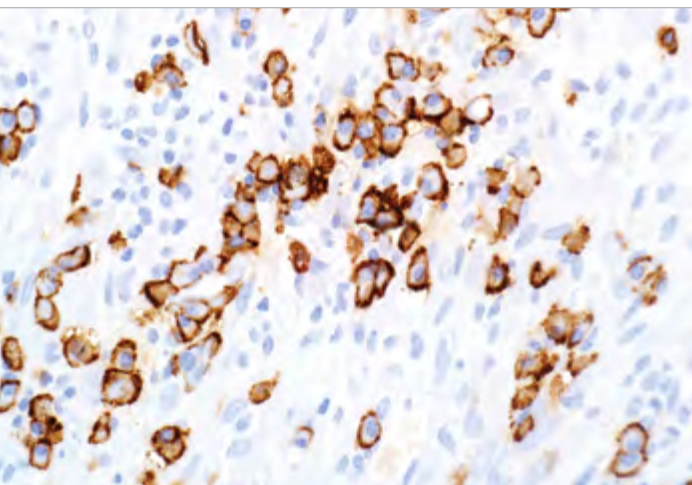
### Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	198M-14
0.5 ml, concentrate . . . . .	198M-15
1 ml, concentrate . . . . .	198M-16
1 ml, predilute . . . . .	198M-17
7 ml, predilute . . . . .	198M-18

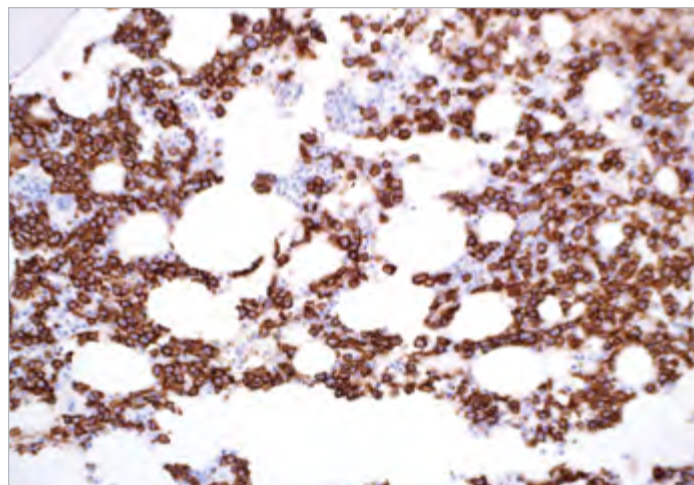
### Designations

			
IVD	IVD	IVD	RUO

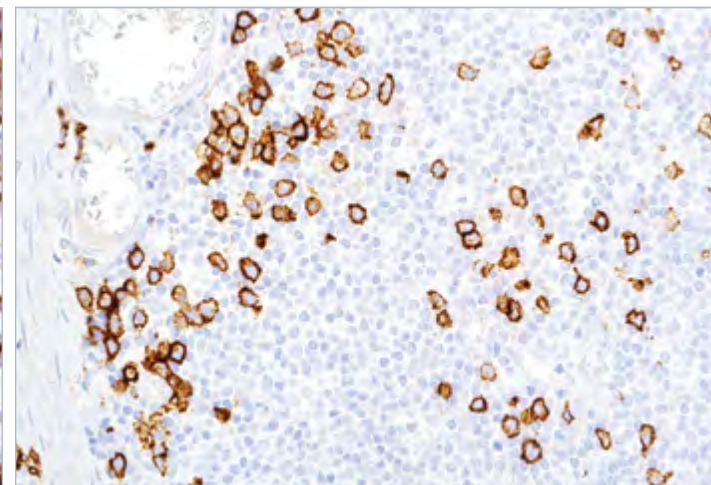
# CD138/syndecan-1



CD138 (B-A38) stains plasma cells.



CD138 (B-A38) on bone marrow.



CD138 (B-A38) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

Syndecan-1

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymphoma ..... 298

● Plasma Cell Neoplasm and Lymphoproliferative Neoplasms ..... 300

## Reference

1. Chilosi M, et al. Mod Pathol. 1999; 12:1101-6.
2. Sebestyén A, et al. Br J Haematol. 1999; 104:412-9.
3. Delsol G, et al. WHO Press, Geneva, Switzerland. 254.
4. Bayer-Garner IB, et al. Mod Pathol. 2001; 14:1052-8.
5. Said J, et al. WHO Press, Geneva, Switzerland. 261.
6. O'Connell FP, et al. Am J Clin Pathol. 2004; 121:254-63.
7. Colomo L, et al. Am J Surg Pathol. 2004; 28:736-47.

## Product Description

CD138, Syndecan 1, is expressed in the late stages of B-cell differentiation with progression towards plasma cells.<sup>1,2</sup> It can be used to differentiate lymphoplasmacytic lymphoma from marginal zone lymphoma.<sup>1</sup> ALK+ large B-cell lymphoma (LBCL) usually strongly expresses CD138 whereas lineage-associated markers such as anti-CD20 and anti-CD79a do not stain ALK+LBCL.<sup>3,7</sup> Anti-CD138 is immunoreactive with HHV-8-associated primary effusion lymphoma even though the lymphoma cells lack the expression of B-cell markers.<sup>5</sup> Anti-CD138 is a good marker to identify and enumerate plasma cells, benign, reactive, or malignant, in bone marrow biopsy specimens.<sup>4,6</sup> CD138 is also expressed in epithelial cells.<sup>6</sup>

## Panel Quick View

Plasma Cell Neoplasm and Lymphoproliferative Neoplasms									
	CD138	CD19	CD20	CD43	CD56	CD79a	Cyclin D1	EMA	MUM1
Plasma Cell Neoplasm	+	-	-/+	-	+	+	-/+	+	+
HHV-8 Associated LBCL	-	+/-	+/-	-	-	-	-	-	-
Lymphoblastic Lymphoma	+	+	+	-	-	+	-	-	+/-
Splenic Marginal Zone Lymphoma	-/+	+	+	-	-	+	-	-	+/-
ALK + LBCL	+	-	-	-/+	-	-	-	+	+
Plasmablastic Lymphoma	+	-	-	-	-	+	-	+	+
Primary Effusion Lymphoma	+	-	-	-	-	-	-	+	+

## Ordering Information

**Clone: B-A38**

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	138M-14
0.5 ml, concentrate	138M-15
1 ml, concentrate	138M-16
1 ml, predilute	138M-17
7 ml, predilute	138M-18
25 ml, predilute	138M-10

## Alternate Clones Available

• Rabbit Monoclonal, EP201  
Contact us for more information.

## Designations



IVD



IVD



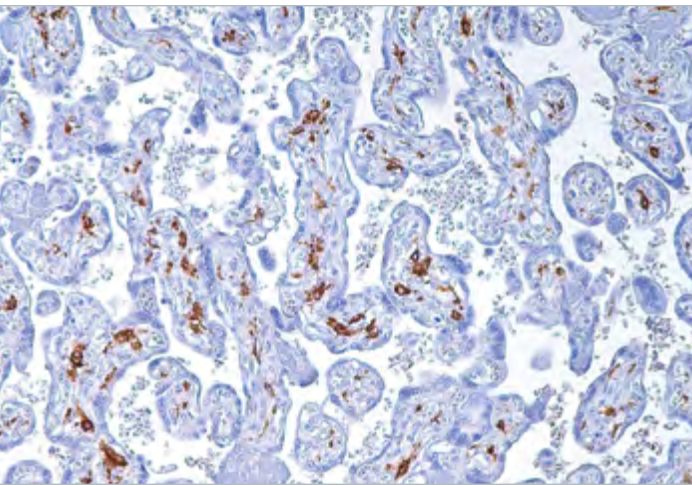
IVD



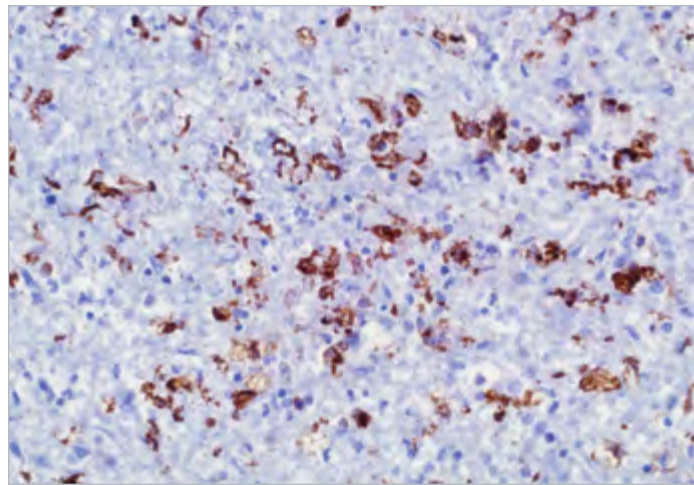
RUO



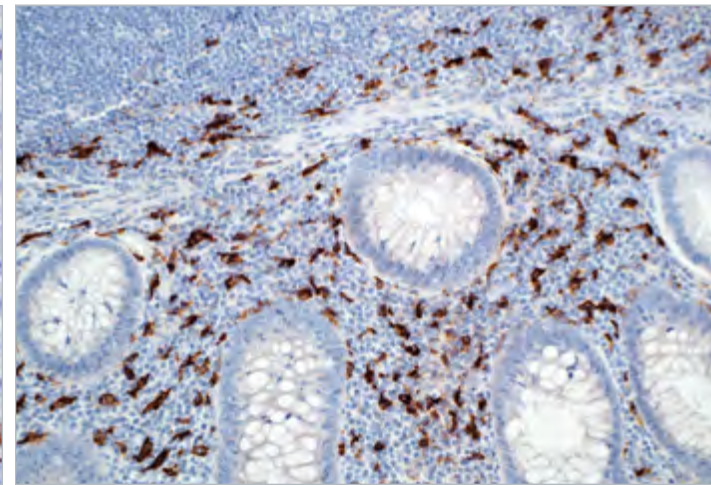
# CD163



CD163 (MRQ-26) on placenta.



Macrophages show strong CD163 expression.



CD163 (MRQ-26) on colon mucosa.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** inflamed tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Hematopathology

## Associated Panels

- Lymph Node ..... 289
- Skin: Dermatofibrosarcoma Protuberans (DF-SP) vs. Dermatofibroma Fibrous Histiocytoma (DF-FH) ..... 293
- Histiocytic Neoplasms / Histiocytic Lesions ..... 297
- Histiocytic Proliferation ..... 297
- Leukemia ..... 298
- Mastocytosis ..... 299

## Reference

1. Backe E, et al. J Clin Pathol. 1991; 44:936-945.
2. Buechler C, et al. J Leukoc Biol. 2000; 67:97-103.
3. Hiraoka A, et al. Pathol Res Pract. 2005; 201:379-84.
4. Hogger P, et al. J Immunol. 1998; 161:1883-1890.
5. Kristiansen M, et al. Nature. 2001; 409:198-201.

## Product Description

CD163 was recently identified as an acute phase-regulated transmembrane protein whose function is to mediate the endocytosis of haptoglobin-hemoglobin complexes. This receptor is expressed on the surface of monocytes (low expression) and tissue macrophages [also known as histiocytes] (high expression). It is a member of the cysteine-rich scavenger receptor superfamily, encoded by a gene localized on human chromosome 12p13.3. Solubilized in plasma, CD163 functions as an anti-inflammatory signal and has many roles in disease processes that range from autoimmune conditions such as rheumatoid arthritis to atherosclerosis. Previous work has shown that the CD163 gene can be regulated by glucocorticoids, IL-10, and other inflammatory modulators, and is highly expressed in inflamed tissues, consistent with its role in the resolution of inflammation.

Staining for CD163 has been helpful in distinguishing synovial macrophages from synovial intimal fibroblasts in the setting of rheumatoid arthritis, where its specificity for macrophages was found to be superior to that of CD68, which does not discriminate between these cell types. Increased levels of CD163 were also detected in patients with microbial infections and myelomonocytic leukemias by an enzyme-linked immunosorbent assay. Flow cytometry studies have confirmed that CD163 expression is limited to leukemias with monocytic differentiation. Another recent study showed that all 5 cases of synovial-type giant cell tumors of the vertebral column stained for CD163.

## Panel Quick View

Histiocytic Neoplasms / Histiocytic Lesions									
	CD163	CD3	CD4	CD20	CD45	CD68	Factor XIIIa	Lysozyme	MPO
Histiocytic Neoplasms	+	-	+	-	+	+	+	+	-

Histiocytic Proliferation						
	CD163	CD1a	CD68	HAM-56	Lysozyme	S-100
Juvenile Xanthogranuloma	+	-	+	+	+	-
Langerhans Cell Histiocytosis	+	+	+	+	+	+
Dermatofibroma	-	-	+	-	-	-

Mastocytosis					
	CD163	CD2	CD25	CD117	Tryptase
Systemic Mastocytosis	-	+	+	+	+
Mast Cell Leukemia	-	+	+	+	+
Reactive Mast Cells	+	-	-	+	+

## Ordering Information

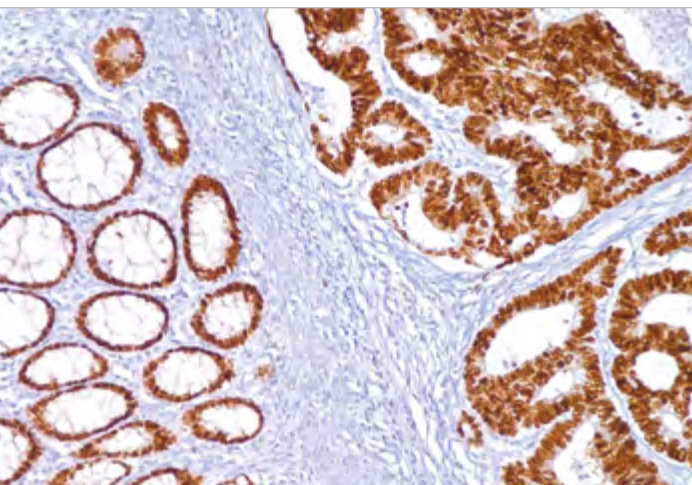
**Clone: MRQ-26**  
Mouse Monoclonal

Volume	Part No.
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0.5 ml, concentrate	163M-15
1 ml, concentrate	163M-16
1 ml, predilute	163M-17
7 ml, predilute	163M-18

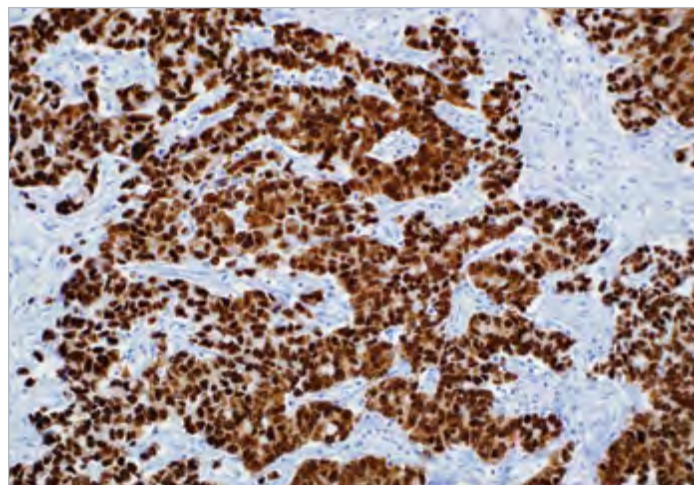
## Designations

			
IVD	IVD	IVD	RUO

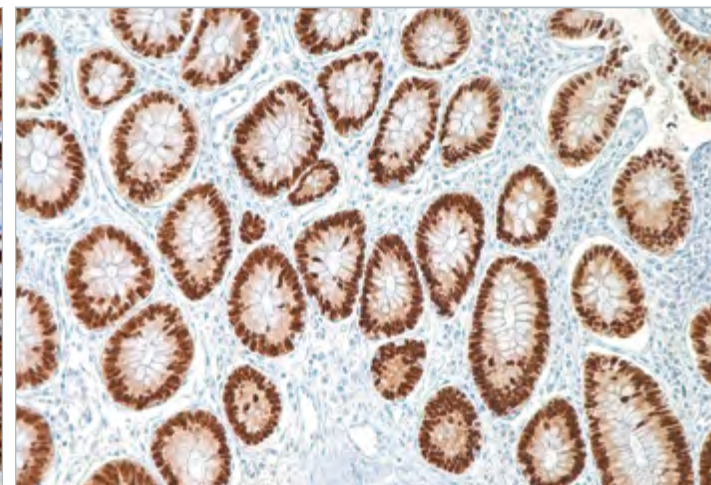




Colon adenocarcinoma is highlighted by CDX-2 (EPR2764Y) in a strong nuclear staining reaction.



CDX-2 (EPR2764Y) on metastatic colorectal adenocarcinoma.



CDX-2 (EPR2764Y) on colon.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** colon  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Gastrointestinal (GI) Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Carcinomas. . . . . 287
- Colon vs. Ovarian Carcinoma. . 287
- Colon vs. Prostate Adenocarcinoma . . . . . 287
- Ampullary Cancer . . . . . 294
- Pancreas / Pancreatic Tumors . 294

## Reference

1. Mazziotta RM, et al. Appl Immunohistochem Mol Morphol. 2005; 13:55-60.
2. Erickson LA, et al. Endocr Pathol. 2004; 15:247-52.
3. Saqi A, et al. Am J Clin Pathol. 2005; 123:394-404.
4. Saad RS, et al. Am J Clin Pathol. 2004; 122:421-7.
5. Kaimaktchiev V, et al. Mod Pathol. 2004; 17:1392-9.
6. Werling RW, et al. Am J Surg Pathol. 2003; 27:303-10.
7. Groisman GM, et al. Int J Gynecol Pathol. 2004; 23:152-7.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

CDX-2 is a caudal-related homeobox transcription factor whose expression in the adult is normally present in the gastrointestinal (GI) epithelium.<sup>1</sup> It is implicated in the development and maintenance of the intestinal mucosa.<sup>2</sup> This protein is expressed immunohistochemically in the nuclei of normal GI epithelium.<sup>1</sup> CDX-2 protein expression has been seen in GI carcinomas. Anti-CDX-2 has been useful to establish GI origin of metastatic adenocarcinomas and carcinoids<sup>2,3</sup> and is especially useful to distinguish metastatic colorectal adenocarcinoma from lung adenocarcinoma.<sup>1,4,5,6,7</sup> However, mucinous carcinomas of the ovary also stain positively with this antibody, which limits the usefulness of this marker in the distinction of metastatic colorectal adenocarcinoma versus mucinous carcinoma of the ovary.<sup>8</sup>

## Panel Quick View

Carcinomas										
	CDX-2	β-Catenin	pCEA	CK 5	CK 7	CK 20	CK Cocktail	Hep Par-1	p63	TTF-1
Bladder Carcinoma	+	-	+	-	+	+	+	-	-	-
Cervical Carcinoma	-	-	+	-	+	-	+	-	-	-
Colorectal Adenocarcinoma	+	+	+	-	-	+	+	-	-	-
Gastric Carcinoma	+	-	+	-	+	-	+	-	-	-
Hepatocellular Carcinoma	-	-	+	-	-	-	-	+	-	+ (cytoplasmic)
Lung Adenocarcinoma	-	-	+	-	+	-	+	-	-	+
Pancreatic Carcinoma	-	-	+	-	+	-	+	-	-	-
Salivary Gland Carcinoma	-	-	+	+	+	-	+	-	+	-
Sweat Gland Carcinoma	-	-	+	+	+	-	+	-	+	-

Colon vs. Prostate Adenocarcinoma								
	CDX-2	AR	CA 19-9	CEA	CK 20	NKX3.1	P504s	PSA
Colon Adenocarcinoma	+	-	+	+	+	-	+	-
Prostate Adenocarcinoma	-	+	-	-	-	+	+	+

## Ordering Information

**Clone: EPR2764Y**  
Rabbit Monoclonal

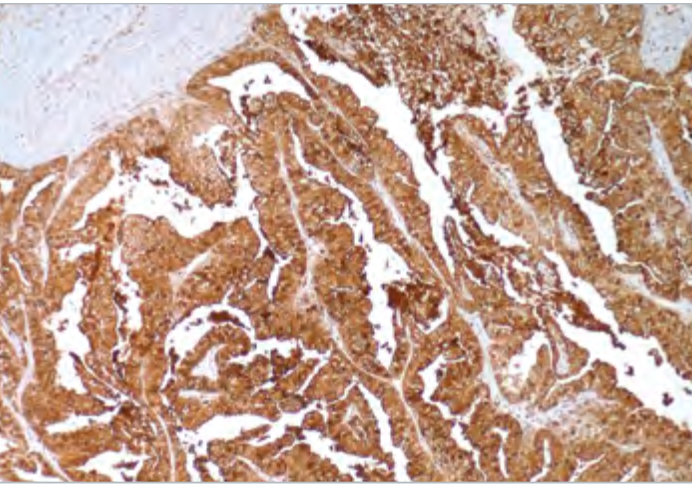
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0.5 ml, concentrate . . . . .	235R-15
1 ml, concentrate . . . . .	235R-16
1 ml, predilute . . . . .	235R-17
7 ml, predilute . . . . .	235R-18
25 ml, predilute . . . . .	235R-10

## Designations

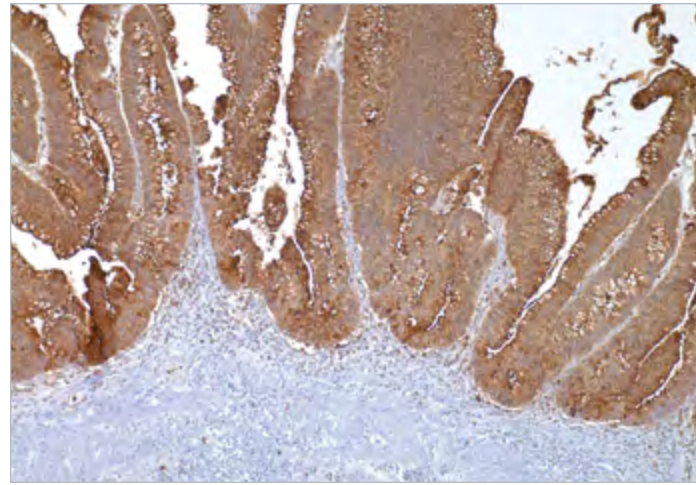
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- IVD
- IVD
- RUO



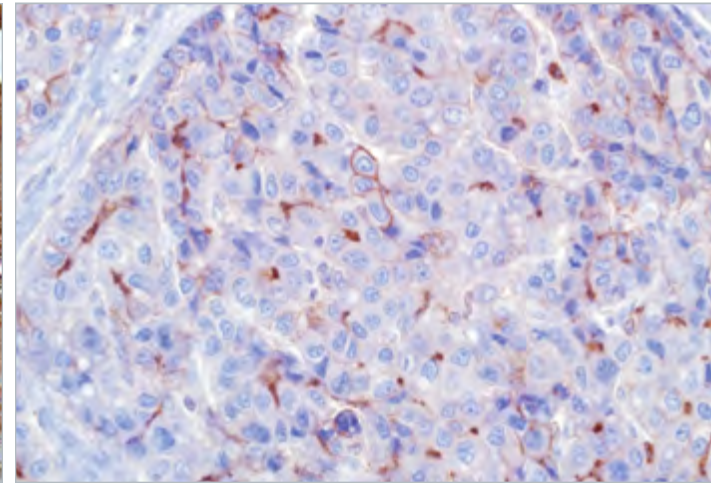




CEA (CEA31) shows a strong cytoplasmic expression in adenocarcinoma cells.



CEA (polyclonal) on colon.



CEA polyclonal shows weak to moderate expression of CEA protein in a unique canalicular staining pattern in HCC.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** colon adenocarcinoma, colon mucosa

**Stability** up to 36 mo. at 2-8°C

**Isotype** CEA31: IgG<sub>1</sub>

## Associated Specialties

- Anatomic/Surgical Pathology
- Cytopathology

## Associated Panels

- Carcinomas . . . . . 286
- Colon vs. Ovarian Carcinoma . . . 287
- Colon vs. Prostate Adenocarcinoma . . . . . 287
- Liver: Malignant vs. Benign . . . 288
- Liver Neoplasm . . . . . 288
- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma . . . . . 289
- Thymus . . . . . 290
- Ovarian Carcinomas . . . . . 292
- Skin: Pagetoid Tumors . . . . . 294
- Lung Adenocarcinoma vs. Mesothelioma . . . . . 302
- Pleura: Adenocarcinoma vs. Mesothelioma . . . . . 302

## Reference

1. Shield PW, et al. Am J Clin Pathol. 1996; 105:157-62.
2. Sheahan K, et al. Am J Clin Pathol. 1990; 94:157-64.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-CEA is employed essentially as a tool to assist in the distinction between adenocarcinoma and epithelioid malignant mesotheliomas,<sup>1</sup> along with other markers such as those against calretinin, CK 5&6, CD15, HBME-1, MOC-31, and Ber-EP4.<sup>1</sup> Another suggested use of anti-CEA is to immunophenotype various metastatic adenocarcinomas as a means of identifying their origin within a panel of different markers.<sup>1</sup> Anti-CEA positivity is seen in adenocarcinomas from the lung, colon, stomach, esophagus, pancreas, gallbladder, urachus, salivary gland, ovary, and endocervix.<sup>2,3</sup> Polyclonal anti-CEA is useful in staining hepatocellular carcinoma in a canalicular pattern.<sup>2,4</sup>

## Panel Quick View

Carcinomas										
	pCEA	β-Cat- enin	CDX-2	CK 5	CK 7	CK 20	CK Cocktail	Hep Par-1	p63	TTF-1
Bladder Adenocarcinoma/ Carcinoma	+	-	+	-	+	+	+	-	-	-
Cervical Carcinoma	+	-	-	-	+	-	+	-	-	-
Colorectal Adenocarcinoma	+	+	+	-	-	+	+	-	-	-
Gastric Carcinoma	+	-	+	-	+	-	+	-	-	-
Hepatocellular Carcinoma	+	-	-	-	-	-	-	+	-	+ (cyto- plasmic)
Lung Adenocarcinoma	+	-	-	-	+	-	+	-	-	+
Pancreatic Carcinoma	+	-	-	-	+	-	+	-	-	-
Salivary Gland Carcinoma	+	-	-	+	+	-	+	-	+	-
Sweat Gland Carcinoma	+	-	-	+	+	-	+	-	+	-

Liver: Malignant vs. Benign										
	mCEA	pCEA	A1ACT	A1AT	AFP	CD34	GPC-3	Hep Par-1	p53	TTF-1
Hepatocellular Carcinoma	-	+	-/+	-/+	-/+	+	+	+	+	+ (cyto- plasmic)
Hepatoblastoma	-	+	+	+	+	-	+	+	+	-
Benign Liver Nodules	-	-	+/-	+/-	-	-	-	+	-	+ (cyto- plasmic)

Pleura: Adenocarcinoma vs. Mesothelioma										
	CEA	Caldes- mon	Cal- retinin	CK 5&6	Ep- CAM	E-cad- herin	D2-40	TAG-72	TTF-1	WT1
Adenocarcinoma	+	-	-	-	+	+	-	+	+	-
Mesothelioma	-	+	+	+	-	-	+	-	-	+

## Ordering Information

### Clone: CEA31

#### Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	236M-94
0.5 ml, concentrate . . . . .	236M-95
1 ml, concentrate . . . . .	236M-96
1 ml, predilute . . . . .	236M-97
7 ml, predilute . . . . .	236M-98

### Clone: polyclonal

#### Rabbit Polyclonal

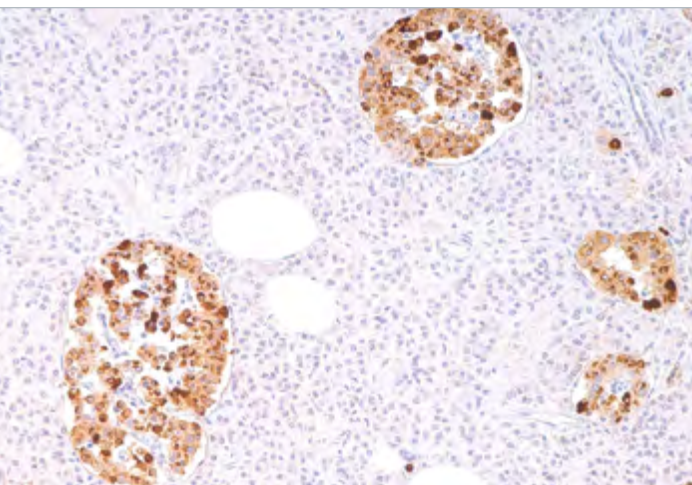
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	236A-14
0.5 ml, concentrate . . . . .	236A-15
1 ml, concentrate . . . . .	236A-16
1 ml, predilute . . . . .	236A-17
7 ml, predilute . . . . .	236A-18

## Designations

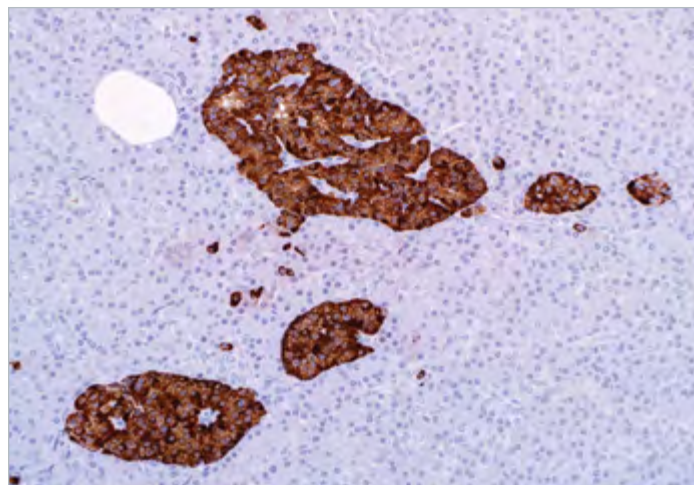




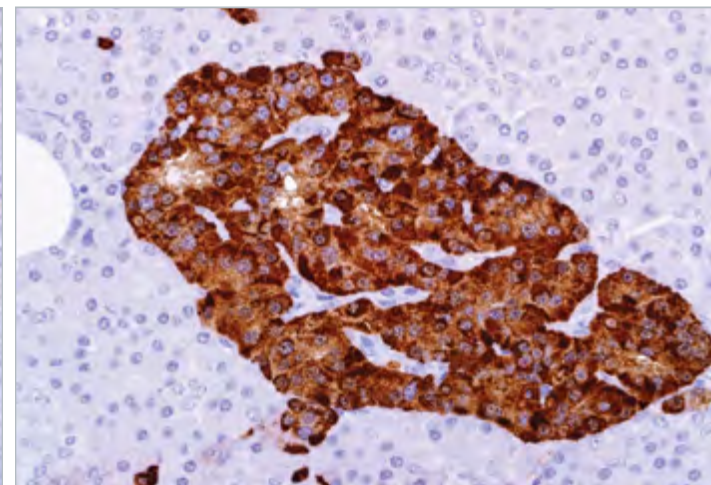
# Chromogranin A



Pancreatic islet cells are highlighted by Chromogranin A (LK2H10) in a cytoplasmic reaction.



Chromogranin A (LK2H10) on pancreas.



Chromogranin A (LK2H10) on pancreas.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreas

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Adrenal Tumors. . . . . 286
- Differential Diagnosis of Parathyroid Tumors. . . . . 288
- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma. . . . . 289
- Retroperitoneal Lesions. . . . . 290
- Pancreas / Pancreatic Tumors. . . . . 294
- Differential Diagnosis of Parathyroid vs. Thyroid Tumors. 296
- Retroperitoneal Neoplasms . . . 301

## Reference

1. Fischer-Colbrie R, et al. Neuroscience. 1985; 16:547.
2. Hearn SA. J Histochem Cytochem. 1987; 35:795-801.
3. O'Connor DT, et al. Live Sciences. 1986; 33:1657-1663.
4. Wilson BS, et al. Am J Pathol. 1984; 115:458-468.
5. Lyda MH, et al. Hum Pathol. 2000; 31:980-7.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Immunohistochemical methods have localized chromogranin in a wide variety of endocrine tissues including the pituitary, pancreas, hypothalamus, thymus, thyroid, intestine, and parathyroid. Neuroendocrine cells exhibit a fine granular immunoreactivity to chromogranin. It is generally accepted that the co-expression of certain keratins and chromogranin mean neuroendocrine lineage. The presence of strong chromogranin staining and absence of keratin staining should raise the possibility of paraganglioma. The co-expression of chromogranin and NSE is typical of neuroendocrine neoplasms. Most pituitary adenomas and prolactinomas readily express chromogranin.

## Panel Quick View

Adrenal Tumors						
	Chromogranin A	Calretinin	CD56	Inhibin, alpha	MART-1	Synaptophysin
Pheochromocytoma	+	-	+	-	-	+
Adrenocortical Carcinoma	-	+	+	+	+	-/+
Adrenocortical Adenoma	-	+	+	+	+	-/+

Pancreas / Pancreatic Tumors									
	Chromogranin A	β-Catenin	CA 19-9	CD10	CD56	CK 19	E-cadherin	S100P	Synaptophysin
Ductal Adenocarcinoma / Ductal Carcinoma	-	+/-	+	+/-	-	-	+/-	+	-
Pancreatic Adenocarcinoma	-	-	+	+/-	-	+	-	-	-
Pancreatic Endocrine Tumor	+							-	+
Acinar Cell Carcinoma	-	+	-/+	+/-	-	+	+	-	-
Pancreatoblastoma	+	+	-	-	+	-	-	-	-
Neuroendocrine Tumor	+	+	+/-	-	+	+/-	-	-	+
Solid Pseudopapillary Tumor	-	+	-	+	+	-	+	(nuclear)	+
Islet Cells	+	+	-	-	+	-	-	-	+
Pancreatic Ducts	-	-	-	-	-	-	-	-	-

Retroperitoneal Neoplasms									
	Chromogranin A	CD99	GFAP	Neurofilament	NSE	PGP 9.5	S-100	MBP	Synaptophysin
Neuroblastoma	+	-	+/-	+	+	+	-	-	+
Ganglioneuroblastoma	+	-	+	+	+	+	+	-/+	+
Ganglioneuroma	+	-	+	+	+	+	+	+	+

## Ordering Information

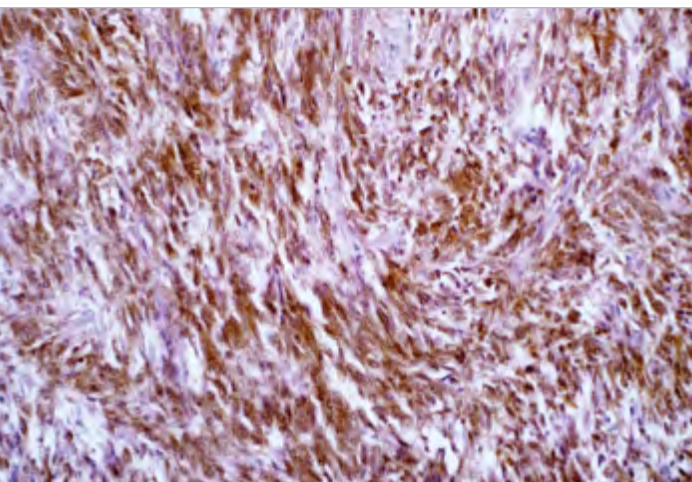
**Clone: LK2H10**  
Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	238M-94
0.5 ml, concentrate. . . . .	238M-95
1 ml, concentrate . . . . .	238M-96
1 ml, predilute . . . . .	238M-97
7 ml, predilute . . . . .	238M-98
25 ml, predilute . . . . .	238M-90

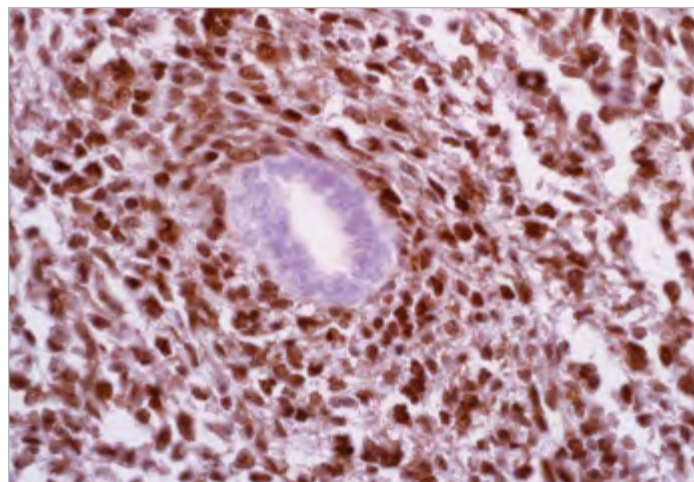
## Designations



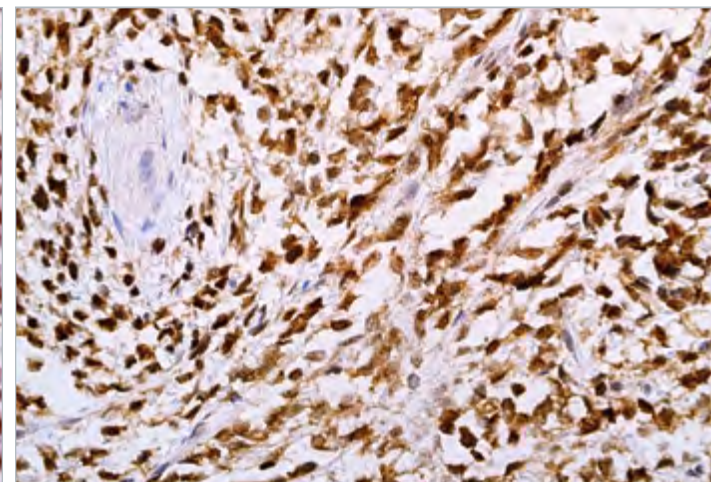




CITED1 (5H6) on Wilms' tumor.



Wilms' tumor, blastema components, is stained with CITED1 (5H6) in a strong nuclear pattern. Note the glandular components are not highlighted.



CITED1 (5H6) on Wilms' tumor.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** Wilms' tumor

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

● Pediatric Pathology

## Reference

1. Lovvorn III H, et al. Neoplasia. 2007; 9:589-600.
2. Murphy A, et al. Journal of Pediatric Surgery. 2012; 47:1239-1249.
3. Boyle S, et al. Developmental Dynamics. 2007; 236:2321-2330.
4. Sehic D, et al. American Journal of Clinical Pathology. 2014; 141:828-833.

## Product Description

CITED1 is a transcriptional cofactor expressed in the metanephric mesenchyme (MM) of the embryonic kidney and is down-regulated as these cells undergo epithelial differentiation.<sup>1-4</sup> It is thought that CITED1 may play a role in maintaining MM cells in an undifferentiated state.<sup>3</sup> Wilms' tumors (WT) are thought to arise from abnormal postnatal retention and dysregulated differentiation of nephrogenic progenitor cells that originate as a condensed MM within embryonic kidneys.<sup>1</sup> CITED1 expression has been shown to persist in blastemal cell populations of human WT.<sup>1,2</sup> In the developing embryonic kidney, CITED1 expression is seen in the cytoplasmic compartment. In WT, expression of CITED1 is detected in the nuclear compartment of tumor cells.<sup>1-4</sup> It has been suggested that persistent expression of CITED1 in the MM could play a role in WT initiation and pathogenesis.<sup>1</sup> CITED1 has been detected in 86.8% of WT cases.<sup>2</sup>

## Panel Quick View

Kidney Neoplasms									
	CITED1	CD10	CD117	CK 7	Ksp-cad-herin	Parvalbumin	RCC	S100A1	Vimentin
Wilms' Tumor	+	-	-	-/+			-		+
Clear Cell RCC	-	+	-/+	-/+	-/+	-	+	+	+
Papillary RCC	-	+	-	+	-/+	-	+	+	+
Oncocytoma	-	+/-	+	-/+	+	+	-	+	-
Chromophobe RCC	-	-/+	+	+	+	+	-/+	-	-

## Ordering Information

### Clone: 5H6

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate .....	424M-14
0.5 ml, concentrate .....	424M-15
1 ml, concentrate .....	424M-16
1 ml, predilute .....	424M-17
7 ml, predilute .....	424M-18

### Designations



IVD



IVD



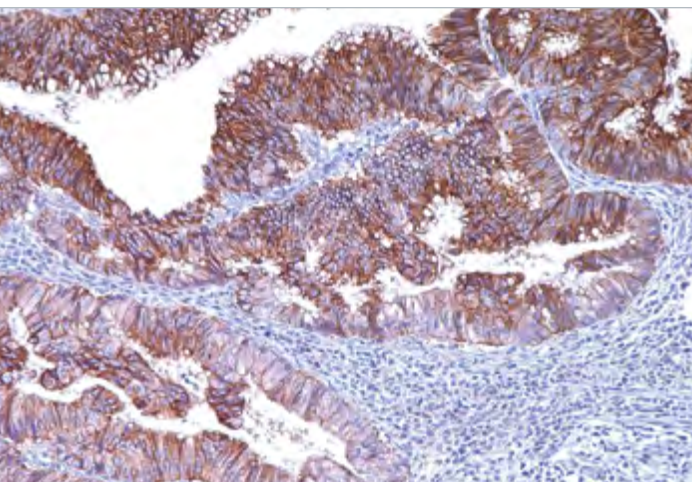
IVD



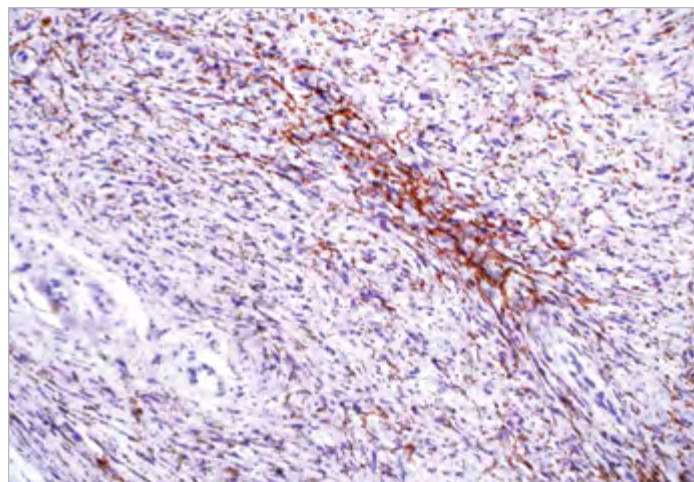
RUO



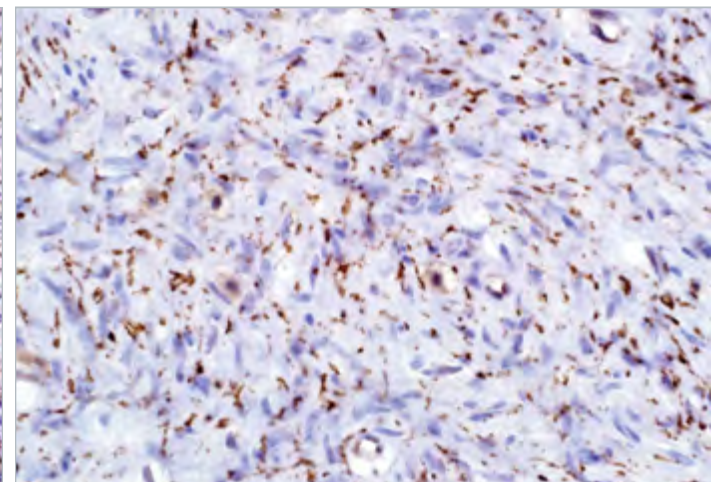
# Claudin 1



Claudin 1 (polyclonal) stains colon adenocarcinoma in a cell membranous pattern.



Claudin 1 (polyclonal) on neurofibroma.



Claudin 1 (polyclonal) on neurofibroma.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** neurofibroma, colon carcinoma

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Epithelioid Cell Neoplasms. . . . . 288
- Spindle Cell Lesions . . . . . 290

## Reference

- Folpe A.L., et al. Am J Surg Pathol. 2002; 26:1620-6.
- Hornick JL, et al. Am J Surg Pathol. 2005; 29:845-58.
- Soini Y. Histopathology 2005; 47:551-560.
- Smith ME, et al. Histopathology. 2005; 47:575-581.
- Liu Y, et al. Lung Cancer. 2007; 56:307-17.
- Macarenco RS, et al. Arch Pathol Lab Med. 2007; 131:625-36.

## Product Description

The claudins are a family of over twenty proteins which are components of tight junctions. Tight junctions are specialized regions of cell-to-cell contact made up of a network of strands to act as a molecular 'gasket' for preventing the leakage of ions, water, etc. between cells. They are abundant in luminal epithelial sheets where they maintain epithelial cell polarity. The claudins constitute a variable component, with specific claudins being associated with specific tissues. The immunoreactivity for anti-claudin 1 is membranous and is found in nearly all carcinomas. The staining is much stronger in the carcinoma cells than in normal tissues. Anti-claudin 1 in a panel of immunostains that includes antibodies against EMA (positive), S-100 (negative), and GLUT1 can be utilized as a robust marker in the diagnosis of perineurioma and neurofibroma. Some studies have shown anti-claudin 1 to be a specific marker for meningiomas. Therefore, anti-claudin 1 with anti-EMA, anti-S-100 protein, anti-CD34, and anti-gliab fibrillary acidic protein (GFAP) may be helpful in the differentiation of meningiomas from histologic mimics.

## Panel Quick View

Perineurioma vs. Neurofibroma vs Schwannoma								
	Claudin 1	SM Actin	Desmin	CD34	CD99	EMA	GLUT1	S-100
Perineurioma	+	+/-	-	+	+	+	+	-
Neurofibroma	+	-	-	-	-	-/+	-	+
Schwannoma	-	-	-	-	-	-	-	+

Meningiomas from Histologic Mimics								
	Claudin 1	ALD-H1A1	CD34	EMA	E-cad-herin	GFAP	S-100	STAT6
Meningothelial Meningioma	+	-	-	+	+	-	-	-
Atypical Meningioma	+	-	+	+	+	-	-	-
Fibrous Meningioma	-	-	-	+	+	-	+	-
Solitary Fibrous Tumor	-	+	+	-	-	-	-	+
Meningeal Hemangiopericytoma	-	+	+	-	-	-	-	-/+
Schwannoma	+/-	-	-	-	+	+	+	-

## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

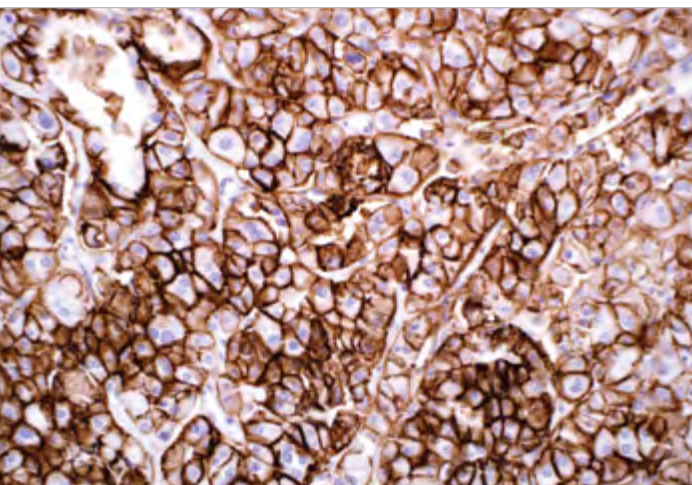
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	359A-14
0.5 ml, concentrate . . . . .	359A-15
1 ml, concentrate . . . . .	359A-16
1 ml, predilute . . . . .	359A-17
7 ml, predilute . . . . .	359A-18

## Designations

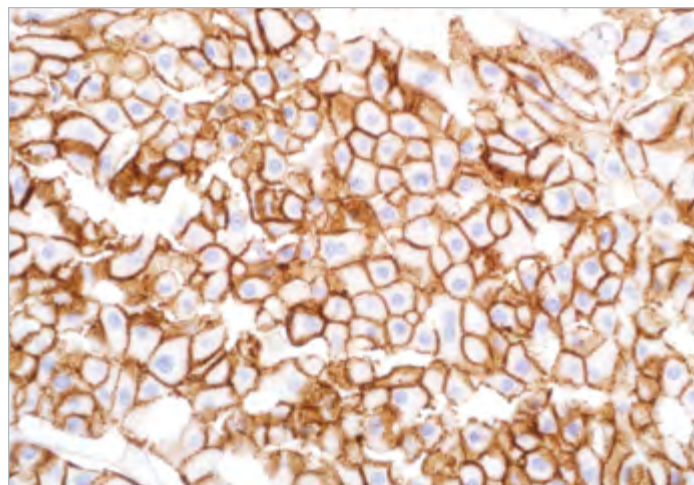




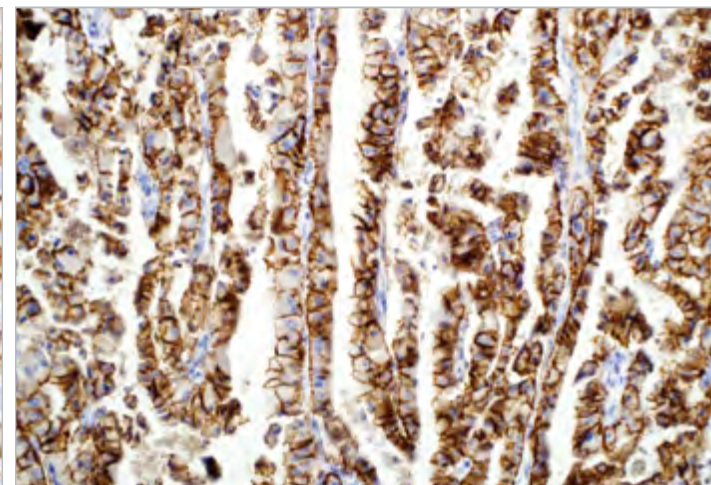
# Claudin 7



Claudin 7 (5D10F3) on RCC.



Claudin 7 expression is found in the membrane of chromophobe RCC.



Claudin 7 (5D10F3) on RCC.

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** chromophobe renal cell carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Li L, et al. International Journal of Clinical and Experimental Pathology. 2008; 1:57-64.
2. Hornsby CD, et al. Archives of Pathology and Laboratory Medicine. 2007; 10:1541-1546.
3. Choi YD, et al. Journal of Korean Medical Science. 2007; 2:305-310.
4. Osunkoya AO, et al. Human Pathology. 2009; 2:206-210.

## Product Description

Claudin 7 is a transmembrane protein involved in the formation of tight junctions between epithelial cells.<sup>1</sup> Tight junctions restrict lateral diffusion of lipids and membrane proteins which physically define the border between the apical and basolateral compartments of epithelial cells. The Claudin family of proteins has been implicated in the pathogenesis of various human neoplasms. The differential diagnosis of chromophobe renal cell carcinoma (RCC) and oncocytoma is difficult by light microscopy, and yet important as chromophobe RCC is malignant, whereas oncocytoma is benign.<sup>2</sup> Membranous claudin 7 expression was detected in 67-100% chromophobe RCCs, compared with 0-7% clear cell RCCs, 28-90% papillary RCCs, and 26-45% oncocytomas.<sup>1,3</sup> Distal nephron (distal convoluted tubule and thick ascending limb of Henle's loop) epithelium showed strong membranous staining in 100% (174/174) of the cases.<sup>4</sup>

## Panel Quick View

Kidney Neoplasms									
	Claudin 7	CD10	CD117	CK 7	Ksp-cadherin	Parvalbumin	RCC	S100A1	Vimentin
Clear Cell RCC	-	+	-/+	-/+	-/+	-	+	+	+
Papillary RCC		+	-	+	-/+	-	+	+	+
Chromophobe RCC	+	-/+	+	+	+	+	-/+	-	-
Oncocytoma	-	+/-	+	-/+	+	+	-	+	-

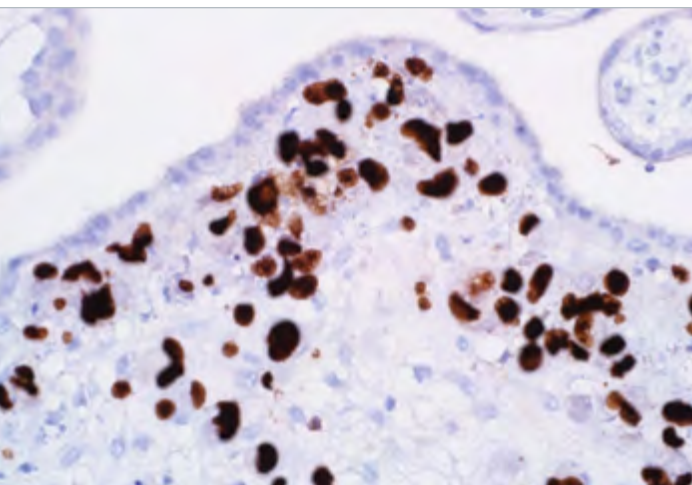
## Ordering Information

**Clone: 5D10F3**  
**Mouse Monoclonal**

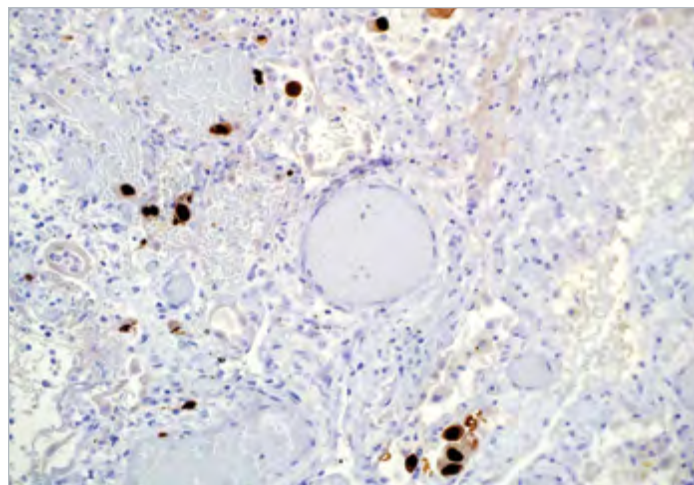
**Volume . . . . . Part No.**  
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 0.5 ml, concentrate . . . . . 418M-15  
 1 ml, concentrate . . . . . 418M-16  
 1 ml, predilute . . . . . 418M-17  
 7 ml, predilute . . . . . 418M-18

## Designations

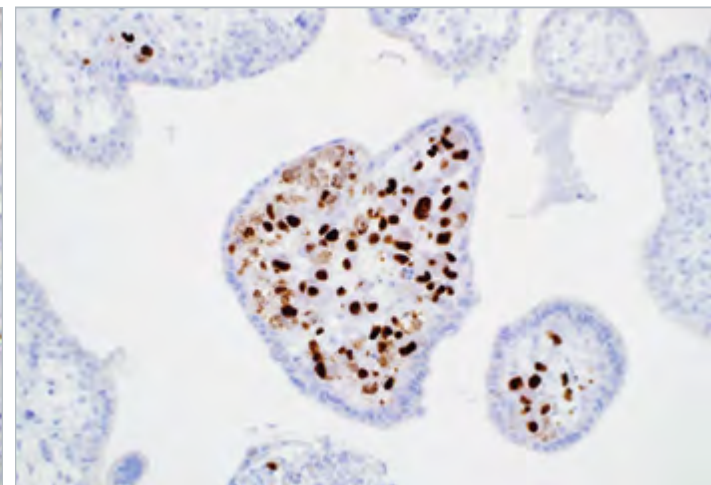
 IVD  IVD  IVD  RUO



CMV (8B1.2, 1G5.2 & 2D4.2)



CMV (8B1.2, 1G5.2 & 2D4.2)



CMV (DDG9/CCH2)

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** CMV infected tissue

**Stability** up to 36 mo. at 2-8°C

### Isotype

- 8B1.2, 1G5.2 & 2D4.2 : IgG<sub>2a</sub>
- DDG9/CCH2: IgG<sub>2a</sub>/k, IgG<sub>1</sub>/k

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: 8B1.2, 1G5.2 & 2D4.2 Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	213M-24 (ASR)
0.5 ml, concentrate	213M-25 (ASR)
1 ml, concentrate	213M-26 (ASR)
1 ml, predilute	213M-27 (ASR)
7 ml, predilute	213M-28 (ASR)

### Clone: DDG9/CCH2 Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	213M-14 (ASR)
0.5 ml, concentrate	213M-15 (ASR)
1 ml, concentrate	213M-16 (ASR)
1 ml, predilute	213M-17 (ASR)
7 ml, predilute	213M-18 (ASR)

### Designations



ASR†



IVD



RUO



RUO

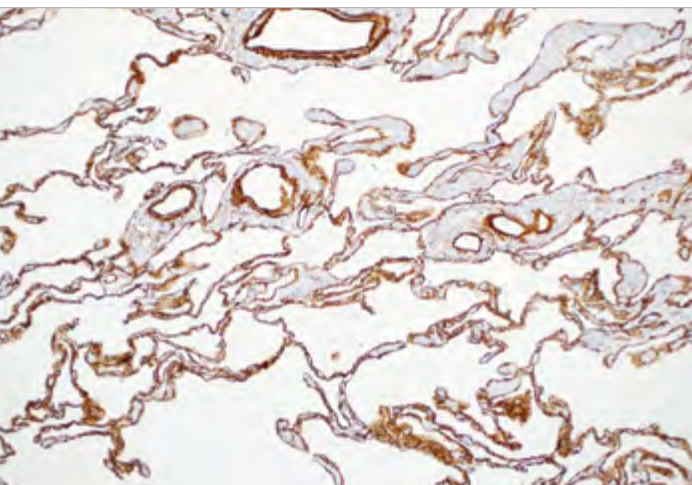
†Analyte Specific Reagent: Analytical and performance characteristics are not established.

For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.

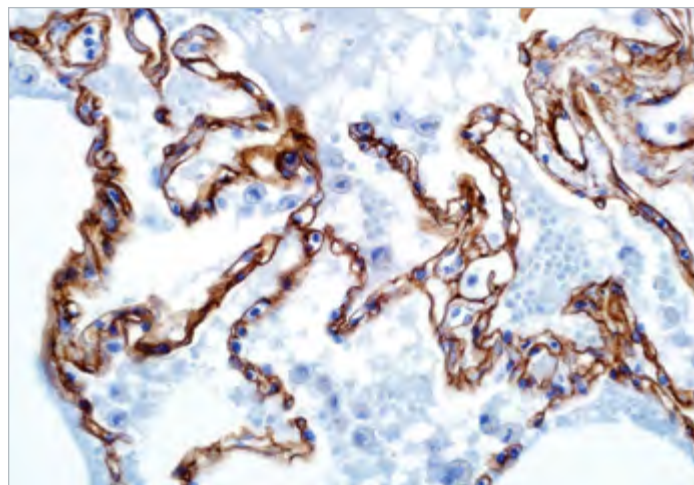
For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.



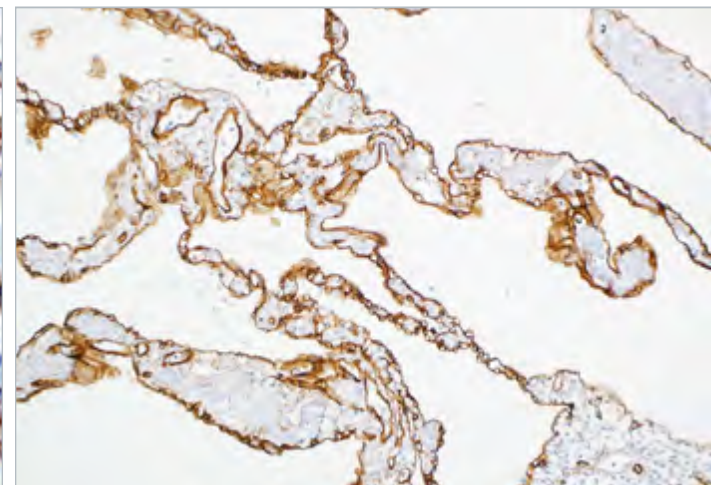
# Collagen Type IV



Collagen Type IV (CIV22) on lung.



Collagen Type IV (CIV22) stains lung alveolar wall.



Collagen Type IV (CIV22) on lung.

## Product Specifications

**Reactivity** paraffin  
**Visualization** intercellular  
**Control** lung, muscle  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290  
 ● Skin: Spindle Cell Tumors ..... 294

## Reference

- Gould VE, et al. Pathol Annul. 1976; 11:353-386.
- McArdle JP, et al. Int J Cancer. 1984; 34:633-638.
- Sakr WA, et al. Hum Path. 1987; 18:1043-1050.
- Barsky SH, et al. Am J Surg Pathol. 1983; 7:667-677.
- De Iorio P, et al. Anticancer Res. 2001; 21:1395-9.
- Maatta M, et al. J Histochem Cytochem. 2001; 49:711-26.
- Schmehl K, et al. Int J Colorectal Dis. 2000; 15:39-48.
- Felix A, et al. Hum Pathol. 1999; 30:964-9.
- Damiani S, et al. Virchows Arch. 1999; 434:227-34.

## Product Description

Collagen Type IV is the major component of the basal lamina so antibodies to this molecule confirm its presence and reveal the morphological appearance of the structure. Normal tissue stains with this antibody in a fashion consistent with the sites of mesenchymal elements and epithelial basal laminae. Anti-Collagen IV can also be useful in the classification of soft tissue tumors: schwannomas and leiomyomas. Their well-differentiated, malignant counterparts usually immunoreact with this antibody. The vascular nature of neoplasms, hemangiopericytoma, angiosarcoma and epithelioid hemangioendothelioma can be revealed by this antibody with greater reliability than non-specific stains (e.g. silver reticulum).

## Panel Quick View

Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor								
	Collagen IV	CD63	HMB-45	NGFR	PNL2	S-100	SOX-10	Tyrosinase
Spindle Cell Melanoma	-	+	+	+	+	+	+	+
PNST (Peripheral Nerve Sheath Tumor)	+	+	+	+	-	+	+	+
Adrenal Adenoma	+		+	-/+		+		+

Skin: Spindle Cell Tumors									
	Collagen IV	MS Actin	CD10	CD34	Factor XIIIa	FLI-1	HHV-8	D2-40	S-100
Angiosarcoma	+/-	-	-	+		+	-	+/-	-
Atypical Fibroxanthomas	-	+	+	-	+/-	-	-	-	-
DF-FH	-	-	+	-	+	-	-	-	-
DF-SP	-	-	+/-	+	-	-	-	-	-
Glomus Tumor	+	+	-	+/-	-	-	-	-	-
Hemangioma	+	-	-	+		+	-	-	-
Hemangiopericytoma	-	-	-	+		+	-	-	
Kaposi's Sarcoma	+/-	-	-	+	+/-	+	+	+	-
Kaposiform Hemangioendothelioma	-	-	-	+	-	+	-	-	-
Peripheral Nerve Sheath	+	+	-	-	-	-	-	+	+/-
Smooth Muscle	-	+	-	-	-	-	-	-	-
Solitary Fibrous Tumor	-	-	-	+	-	-/+	-	-	-
Spindle Cell Melanoma	-	-	-	-	-	+	-	+	+
Spindle Squamous Cell Carcinoma	-	-	-	-	-	-	-	+	-
Squamous Cell Carcinoma	-	-	-	-	-	-	-	+	-

## Ordering Information

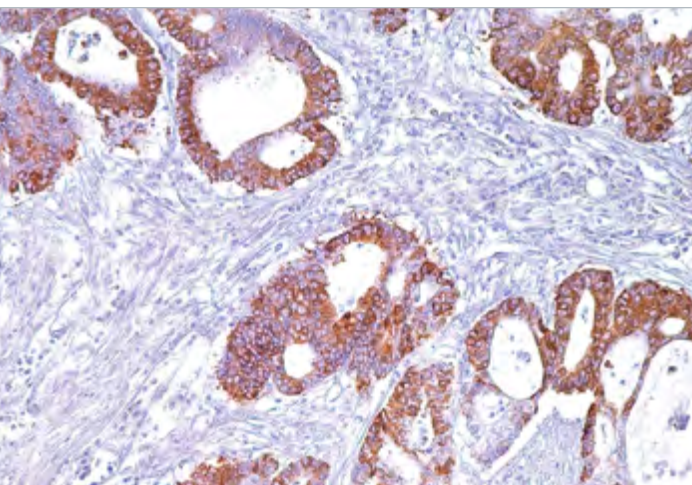
**Clone: CIV22**  
 Mouse Monoclonal

**Volume ..... Part No.**  
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 0.5 ml, concentrate ..... 239M-15  
 1 ml, concentrate ..... 239M-16  
 1 ml, predilute ..... 239M-17  
 7 ml, predilute ..... 239M-18

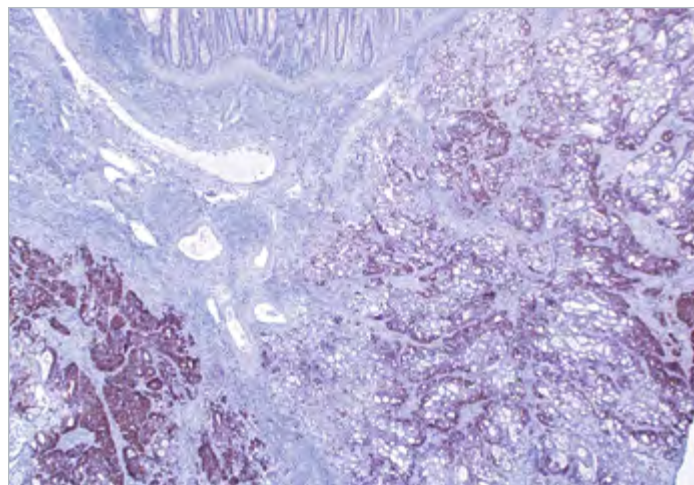
## Designations

 IVD  IVD  IVD  RUO

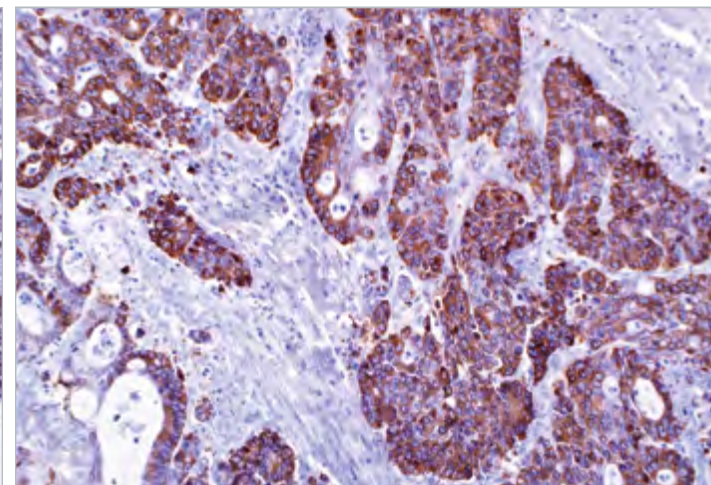
# COX-2



COX-2 (SP21) highlights colorectal carcinoma in a cytoplasmic staining reaction.



COX-2 (SP21) on colorectal carcinoma.



COX-2 (SP21) on colorectal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** colon adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Squamous Cell Carcinoma vs  
Urothelial Carcinoma ..... 296

## Reference

1. Stoehlmacker J, et al. Semin Oncol. 2003; 30:10-6.
2. Gallo O, et al. Hum Pathol. 2002; 33:708-14.
3. Sano H, et al. Cancer Res. 1995; 55:3785-9.
4. Denkert C, et al. Cancer. 2003; 97:2978-87.
5. Sheehan KM, et al. Hum Pathol. 2003; 34:1242-1246.

## Product Description

Cyclooxygenase 2 (COX-2) catalyzes the conversion of arachidonic acid to prostaglandin H2 in the first step in the biosynthesis of prostaglandins, thromboxanes, and prostacyclins. COX-2 inhibition by nonsteroidal anti-inflammatory agents has been shown to decrease angiogenesis and tumor growth, and promote apoptosis. COX-2 overexpression has been associated with increased microvascular density.<sup>1-3</sup>

## Panel Quick View

Squamous Cell Carcinoma vs Urothelial Carcinoma									
	COX-2	CK 34βE12	CK 5	CK 14	CK 7	CK 20	Desmo-glein 3	GATA3	URO III
Squamous Carcinoma	-	+	+	+	-	-	+	-	-
Urothelial Carcinoma	+	+	-/+	-	+	+	-	+	+

## Ordering Information

### Clone: SP21

Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 240R-14  
 0.5 ml, concentrate ..... 240R-15  
 1 ml, concentrate ..... 240R-16  
 1 ml, predilute ..... 240R-17  
 7 ml, predilute ..... 240R-18

### Designations



IVD



IVD



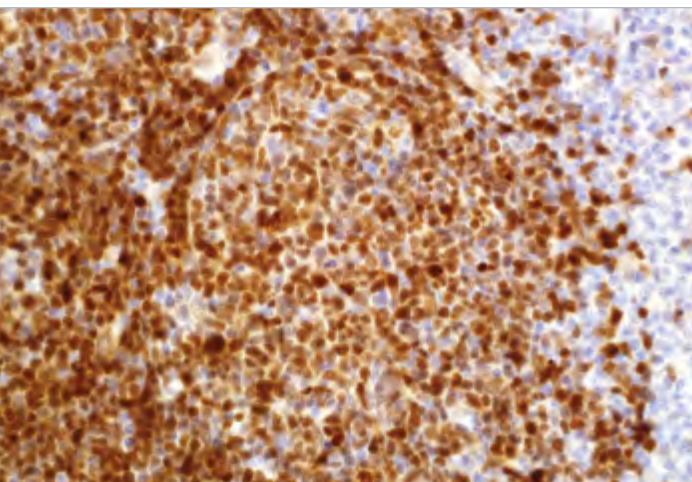
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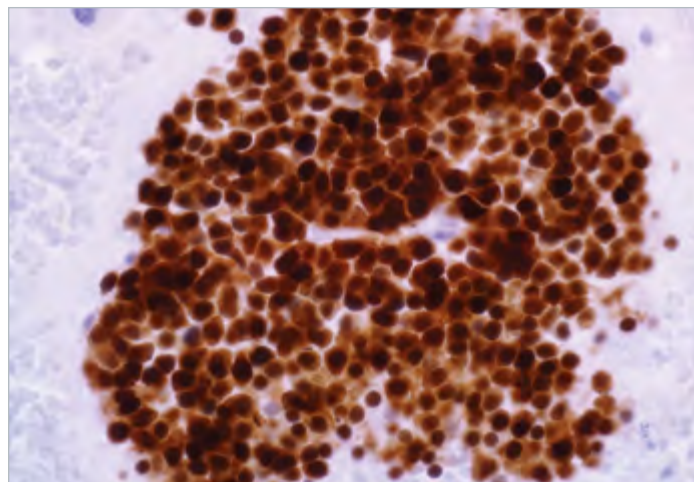
RUO



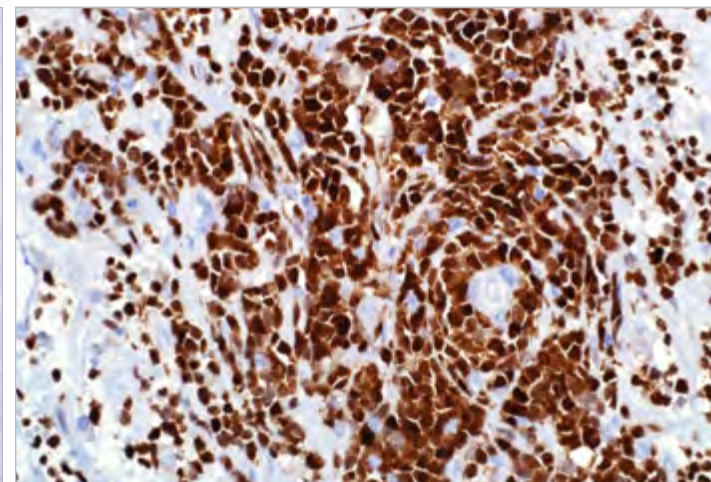
# Cyclin D1



Cyclin D1 (EP12) on mantle cell lymphoma.



Cyclin D1 (SP4) on mantle cell lymphoma (bone marrow).



Rabbit monoclonal anti-cyclin D1 (SP4) strongly stains mantle cell lymphoma in a nuclear pattern.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** mantle cell lymphoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

BCL1

## Associated Specialties

● Hematopathology

## Associated Panels

- B-cell Lymphomas . . . . . 296
- Lymphomas . . . . . 299
- Mature B-cell Lymphomas . . . . . 299
- Mature B-cell Neoplasms . . . . . 299
- Non-Hodgkin Lymphomas . . . . . 299
- Plasma Cell Neoplasm and Lymphoproliferative Neoplasms . . . . . 300

## Reference

1. Bartkova J, et al. Cancer Research. 1995; 55:949-956.
2. Bartkova J, et al. Oncogene. 1995; 10:775-778.
3. Bartkova J, et al. J Pathol. 1994; 172:237-245.
4. Hankin RC, et al. Arch Pathol Lab Med. 1999; 123:1182-8.
5. Yatabe Y, et al. Blood. 2000; 95:2253-61.
6. Kodet R, et al. Virchows Arch. 2003; 442:538-47.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Cyclin D1, one of the key cell cycle regulators, is a putative proto-oncogene overexpressed in a wide variety of human neoplasms. Cyclins are proteins that govern transitions through distinct phases of the cell cycle by regulating the activity of the cyclin-dependent kinases.<sup>1</sup> In mid-to-late G1 phase of the cell cycle, cyclin D1 shows a maximum expression following growth factor stimulation. Anti-cyclin D1 has been successfully employed and is a promising tool for further studies in both cell cycle biology and cancer associated abnormalities.<sup>1-3</sup> This antibody is useful for separating mantle cell lymphomas (cyclin D1 positive) from chronic lymphocytic leukemia/small lymphocytic lymphoma and follicular lymphomas (cyclin D1 negative).<sup>4-7</sup> Hairy cell leukemia and plasma cell myeloma can weakly express cyclin D1.<sup>8</sup>

## Panel Quick View

B-cell Lymphomas										
	Cyclin D1	ANXA1	BCL2	BCL6	CD5	CD10	CD23	CD79a	MUM1	PD-1
Burkitt Lymphoma	-	-	-	+	-	+	-	+	-	-
CLL/SLL	-	-	+	-	+	-	+	+	+	-
Diffuse Large Cell Lymphoma	-	-	+	+/-	-/+	-/+	-	+	+/-	-
Follicular	-	-	+	+	-	+	-	+	-	+
Hairy Cell Leukemia	+(weak) /-	+	+	-	-	-	-	+		-
Lymphoplasmacytic	-	-	+	-	-	-	-	+	+	-
Malt Lymphoma	-		+	-/+		-	-	+	-	
Mantle Cell	+	-	+	-	+	-	-	+	-	-
Marginal Zone	-	-	+	-	-	-	-	+	+	-
Marginal Zone BCL	-	-	+	-	-	-	-	+	+	
Splenic Marginal Zone	-	-	+	-	-	-	-	+	+/-	

## Ordering Information

### Clone: EP12

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	241R-44
0.5 ml, concentrate . . . . .	241R-45
1 ml, concentrate . . . . .	241R-46
1 ml, predilute . . . . .	241R-47
7 ml, predilute . . . . .	241R-48

### Clone: SP4

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	241R-14
0.5 ml, concentrate . . . . .	241R-15
1 ml, concentrate . . . . .	241R-16
1 ml, predilute . . . . .	241R-17
7 ml, predilute . . . . .	241R-18

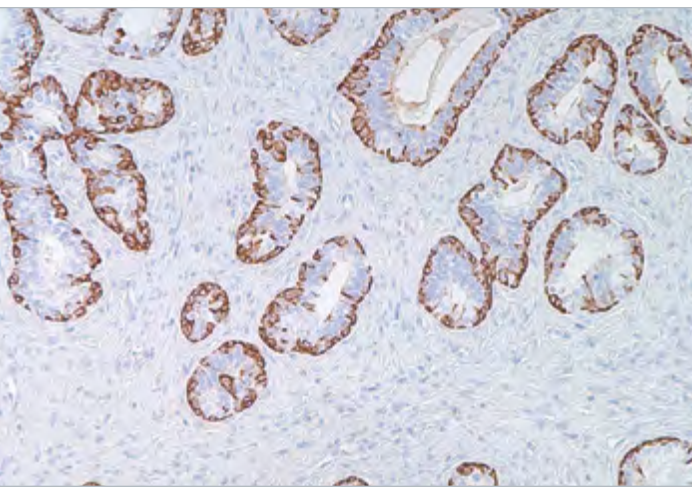
## Designations



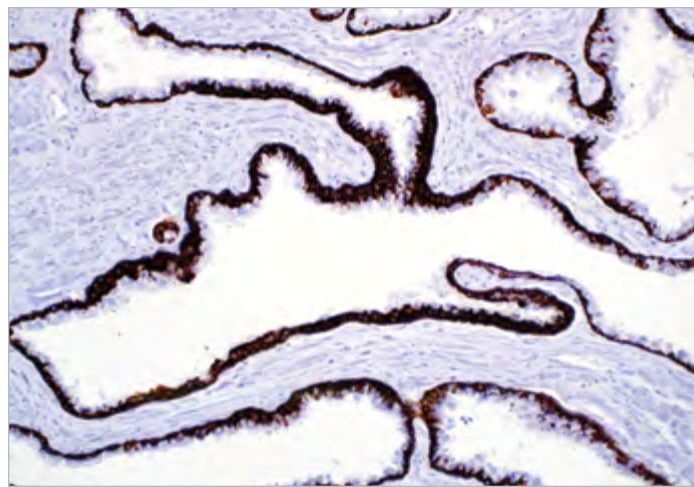
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

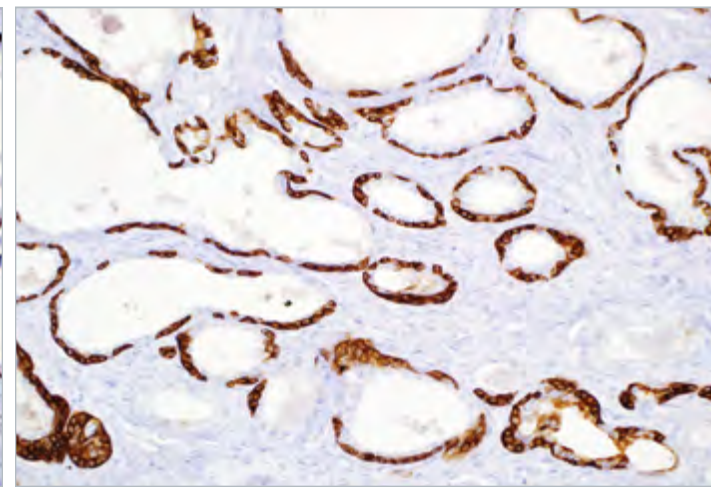
# Cytokeratin (34betaE12)



Cytokeratin (34betaE12) on prostate gland.



High molecular weight Cytokeratin (34BetaE12) shows positive staining in basal cells of the benign prostate acini.



Cytokeratin (34betaE12) on prostate.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology
- Genitourinary (GU) Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Breast Lesion . . . . . 291
- Prostate Lesions . . . . . 296
- Prostate: Malignant vs. Benign . 296
- Squamous Cell Carcinoma vs Urothelial Carcinoma . . . . . 296

## Reference

1. Gown AM, et al. Am J Pathol. 1984; 114:309.
2. O'Malley FP, et al. Virch Arch A. 1990; 417:191-6.
3. Amin MB. Arch Pathol Lab Med. 1994; 118:260-264.
4. Wojno KJ, et al. Am J Surg Pathol. 1995; 19:251-60.
5. Moinfar F, et al. Am J Surg Pathol. 1999; 23:1048-58.
6. Yang XJ, et al. Am J Surg Pathol. 1999; 23:147-52.

## Product Description

Anti-cytokeratin, 34betaE12 is an antibody to high molecular weight cytokeratin that reacts with all squamous and ductal epithelium and stains carcinomas. This antibody recognizes cytokeratins 1,5,10, and 14 that are found in complex epithelia. Anti-cytokeratin, 34betaE12 shows no reactivity with hepatocytes, pancreatic acinar cells, proximal renal tubules, or endometrial glands; there has been no reactivity with cells derived from simple epithelia. Mesenchymal tumors, lymphomas, melanomas, and neural tumors are unreactive with this antibody with some exceptions. Anti-cytokeratin, 34betaE12 does label myoepithelial cells and has been shown to be useful in distinguishing prostatic adenocarcinoma from hyperplasia of the prostate. This antibody has also been useful in separating benign from malignant intraductal breast proliferations.<sup>1-6</sup>

## Panel Quick View

Prostate Lesions									
	CK 34βE12	CK 7	GATA3	p63	P504s	PAX-2	PSA/PSAP	TBM*	URO III
Prostate Carcinoma	-	-	-	-	+	-	+	-	-
Urothelial Carcinoma	+	+	+	+	-	-	-	+	+
Nephrogenic Adenoma	+/-	+	+	-	+	+	-	-	-

\*Thrombomodulin

Prostate: Malignant vs. Benign								
	CK 34βE12	AR	CK 5&6	CK 14	p63	P504s	PSA	PSAP
Prostate Carcinoma	-	+	-	-	-	+	+	+
Benign Prostate	+	+	+	+	+	-/+	+	+

## Ordering Information

**Clone: 34betaE12**  
Mouse Monoclonal

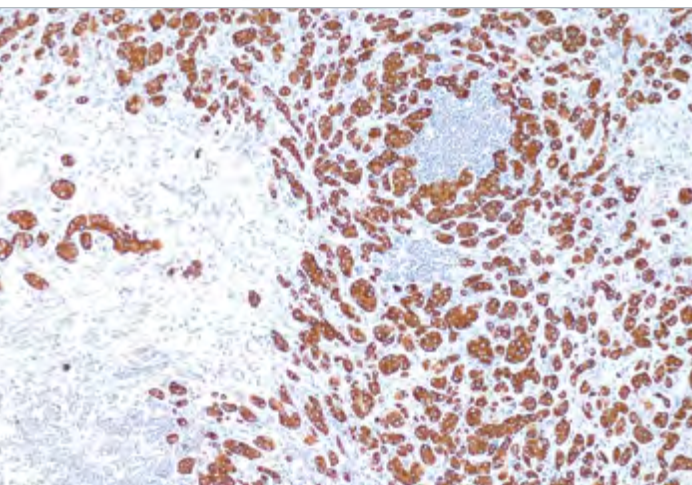
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0.5 ml, concentrate . . . . .	334M-85
1 ml, concentrate . . . . .	334M-86
1 ml, predilute . . . . .	334M-87
7 ml, predilute . . . . .	334M-88
25 ml, predilute . . . . .	334M-80

## Designations

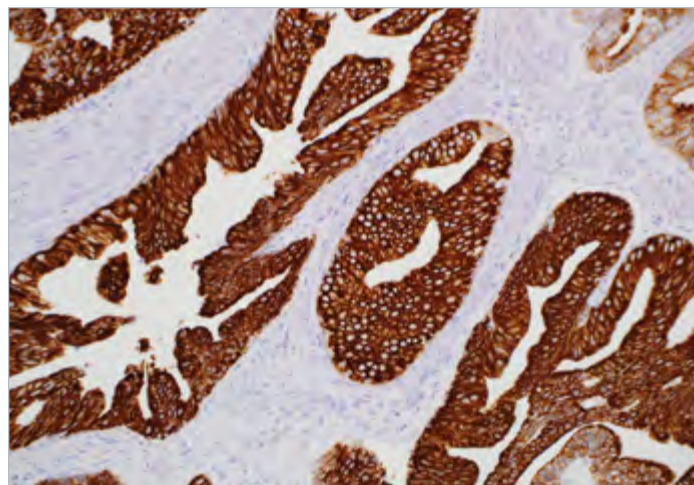
			
IVD	IVD	IVD	RUO



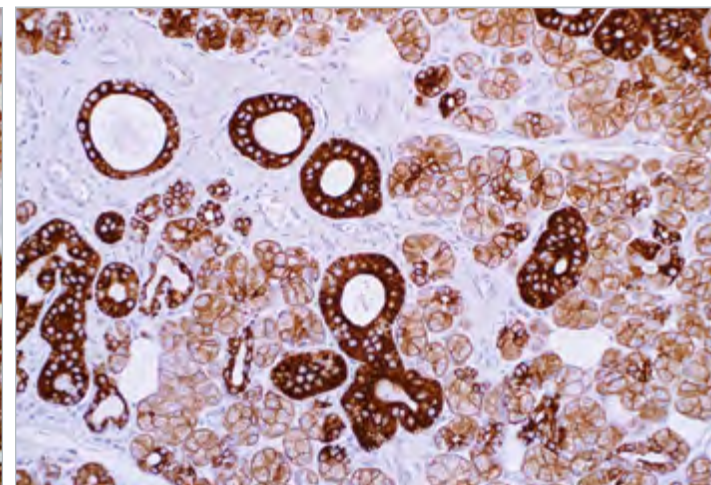
# Cytokeratin (35betaH11)



Cytokeratin (35betaH11) diffusely and strongly illustrates the neoplastic cells of breast invasive ductal carcinoma in a cytoplasmic pattern.



Cytokeratin (35betaH11) on prostate.



Cytokeratin (35betaH11) on salivary gland.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM/k

## Synonyms and Abbreviations

Cytokeratin 8

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Epithelioid Cell Neoplasms... 288

● Cervix Neoplasia... 291

## Reference

1. Battifora H. Am J Surg Pathol. 1988; 12:24.
2. Gown AM, et al. Am J Clin Pathol. 1985; 84:413.
3. Knapp AC, et al. Cell. 1989; 59:67-79.
4. Sunn TT, et al. J Invest Dermatol. 1983; 81:109s-115s.
5. Eichner R, et al. J Cell Biol. 1984; 98:1388-1396.

## Product Description

Anti-cytokeratin 8 stains most non-squamous epithelial tumors, squamous tumors are negative for this antibody as a rule. This antibody stains adenocarcinomas of the breast, ovary, gastrointestinal tract, thyroid, pancreas, bile duct, and salivary glands. This antibody does not react with skeletal muscle or nerve cells.

## Panel Quick View

Epithelioid Cell Neoplasms	CK 35βH11	CD34	Desmin	DOG1	EMA	FLI-1	HMB-45	INI-1	S-100	TFE3
Epithelioid Sarcoma	-	+	+	-	+	-	-	+	-	-
Epithelioid Angiosarcoma	+	+	-	-	-	+	-	+	-	-
MPNST	+	-/+	+	-	-	-	-	+/-	+	-
Leiomyosarcoma	+	-/+	+	-	-	-	-	-	-	-
GIST	-	+	-	+	-	-	-	-	-	-
Endothelial Tumors	-	+	-	-	-	+	-	+	-	-
PEComa	-	-	-	-	-	-	+	-	+	-
Clear Cell Sarcoma	+	-	-	-	-	-	-	-	+	-
Alveolar Soft Part Sarcoma	-	-	-	-	-	-	-	-	-	+
Melanoma	-	-	-	-	-	-	+	-	+	-
Plasmacytoma	-	-	-	-	+	-	-	-	-	-

## Ordering Information

**Clone: 35betaH11**

Mouse Monoclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 335M-94

0.5 ml, concentrate . . . . . 335M-95

1 ml, concentrate . . . . . 335M-96

1 ml, predilute . . . . . 335M-97

7 ml, predilute . . . . . 335M-98

## Designations



IVD



IVD



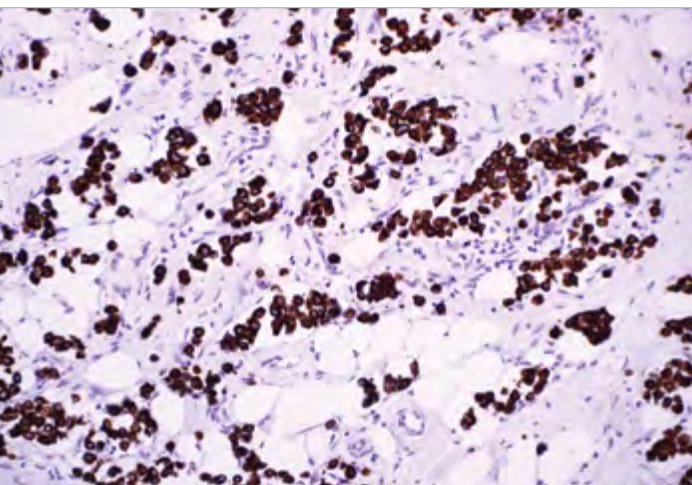
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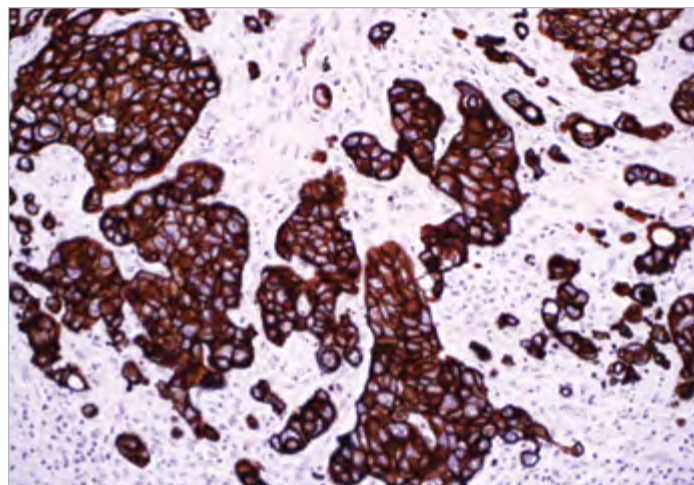
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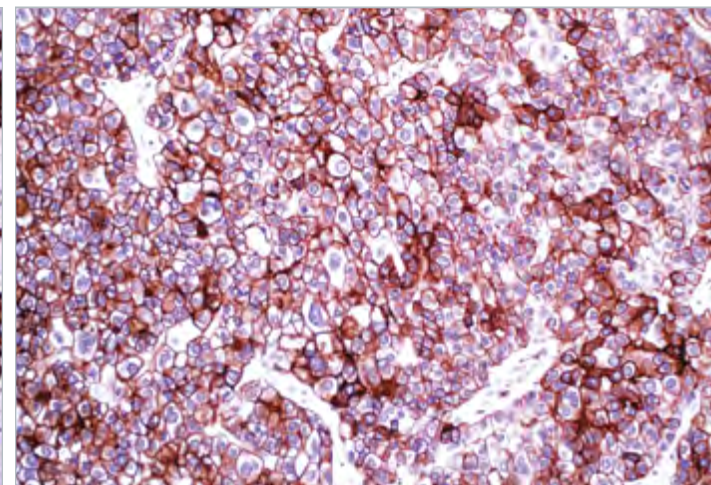
# Cytokeratin (CAM 5.2)



Cytokeratin (CAM 5.2) on breast.



Cytokeratin (CAM 5.2) on colon.



Hepatocellular carcinoma cells are strongly highlighted by Cytokeratin (CAM 5.2).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** appendix, hepatocellular carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. .... 286

## Reference

- Ordóñez NG. Human Pathology. 2013; 44:1195-1215.
- Pan CC, et al. Appl Immunohistochem Mol Morphol. 2005; 13:347-352.
- Sinard JH. Arch. Ophthalmol. 1995; 117:776-783.
- Cosgrove MM, et al. Mod Pathol. 1993; 6:342-347.

## Product Description

Anti-CAM 5.2 is a mouse monoclonal antibody that was generated by using the human colorectal carcinoma cell line HT24. Anti-CAM 5.2 is not technically a pan-keratin antibody because its reactivity has been reported to be restricted primarily to a few keratins. However, since the few keratins are widely expressed in formalin-fixed, paraffin-embedded tissues, especially in simple and glandular epithelia, this antibody can be successfully used as a reliable marker for neoplasms of epithelial differentiation. Anti-CAM 5.2 reacts with the majority of epithelial tumors, including lung, liver, pancreas, GI tract, breast, genitourinary system, female reproductive organs and some endocrine organs.<sup>1</sup> Hepatocellular carcinoma is targeted by anti-CAM 5.2, but not by pan-cytokeratin AE1 & AE3 antibody.<sup>1</sup> Adrenal cortical carcinomas frequently do not react with anti-CAM 5.2.<sup>2</sup> Sebaceous carcinoma, squamous cell carcinoma, and basal cell carcinoma may show an overlapping morphology. Anti-CAM 5.2 is useful to discriminate among them. Literature indicates no reactivity by anti-CAM 5.2 for squamous cell carcinoma while sebaceous carcinoma and basal cell carcinoma show 73% and 44% immunoreactivity respectively.<sup>3</sup> Similar to other broad-spectrum keratin antibodies, such as the AE1 & AE3 antibody cocktail, anti-CAM 5.2 may stain astrocytic tumors, but the positivity reported for this tumor cross-reactivity is lower than with anti-AE1 & AE3.<sup>4</sup>

## Panel Quick View

Neoplasms with Different Origins								
	CAM 5.2	CD45	CK Cocktail	Desmin	HMB-45	S-100	SOX-10	Vimentin
Poorly Differentiated Carcinoma	+	-	+	-	-	-	-	-
Lymphoma	-	+	-	-	-	-	-	+
Epithelioid Sarcoma	+	-	+/-	-	-	-	-	-
Spindle Cell Melanoma	-	-	-	-	-	+	+	+
Astrocytic Tumor	-/+	-	+	-	-	-	-	+
Synovial Sarcoma	+	-	+/-	-	-	-	-	+
Chordoma	+	-	-	-	+/-	-/+	-	+

## Ordering Information

### Clone: CAM 5.2

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	452M-94
0.5 ml, concentrate	452M-95
1 ml, concentrate	452M-96
1 ml, predilute	452M-97
7 ml, predilute	452M-98
25 ml, predilute	452M-90

### Designations



IVD



IVD



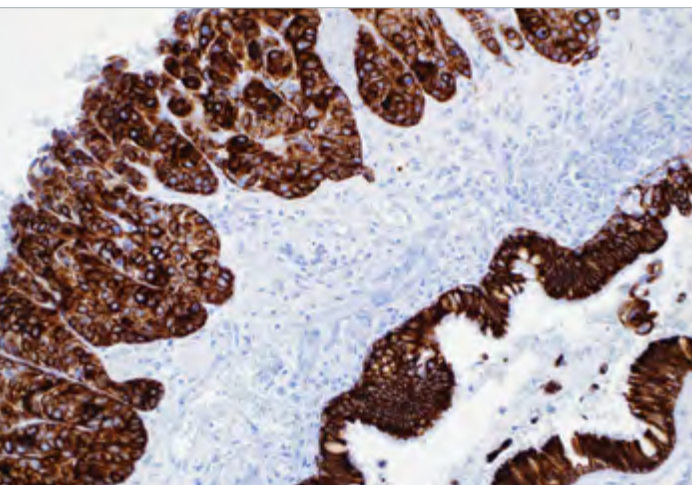
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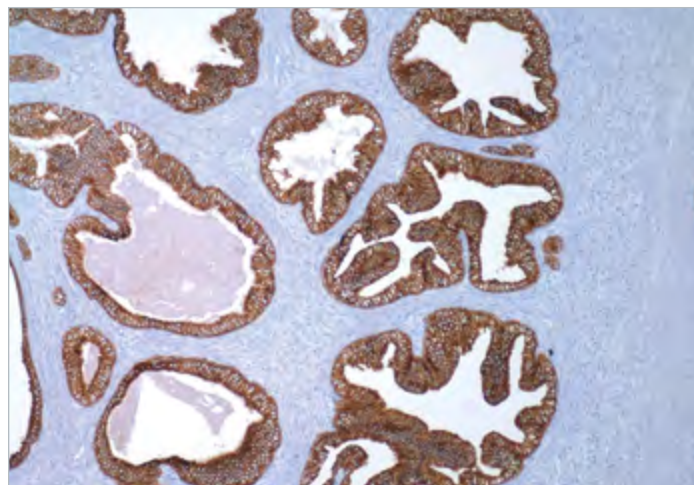
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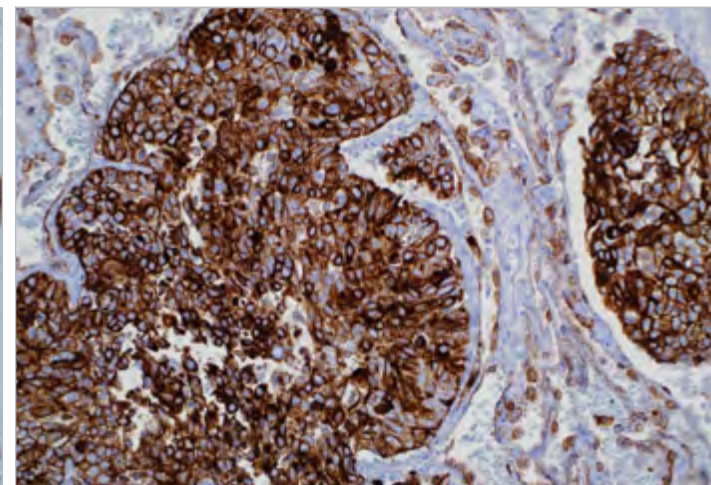
# Cytokeratin (OSCAR)



Cytokeratin (OSCAR) stains neoplastic cells of lung squamous cell carcinoma strongly and diffusely in a cytoplasmic pattern.



Cytokeratin (OSCAR) on prostate.



Cytokeratin (OSCAR) on lung squamous cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas ..... 286

● Placental Trophoblastic

Proliferations ..... 292

## Reference

- Battifora H. Am J Surg Pathol. 1988; 12:24.
- Gown AM, et al. Am J Clin Pathol. 1985; 84:413.
- Knapp AC, et al. Cell. 1989; 59:67-79.
- Sunn TT, et al. J Invest Dermatol. 1983; 81:109s-115s.
- Eichner R, et al. J Cell Biol. 1984; 98:1388-1396.
- Lewis JE, et al. Hum Pathol. 1997; 28:664-73.
- Mueller JD, et al. Cancer. 2000; 89:1874-82.
- Sato F, et al. Br J Surg. 2001; 88:426-32.
- Gown AM, et al. USCAP Ann Meeting. 2003.

## Product Description

Anti-cytokeratin (OSCAR) is well-suited to distinguish epithelial carcinoma from non-epithelial malignancies and is used to aid epithelial tumor classification. This antibody has been used to characterize the source of various neoplasms and to study the distribution of keratin containing cells in epithelia during normal development and during the development of epithelial neoplasms. This antibody stains cytokeratins present in normal and abnormal human tissues and has shown high sensitivity in the recognition of epithelial cells and carcinomas.

## Panel Quick View

Carcinomas	CK OSCAR	pCEA	CK 5	CK 7	CK 20	BRST-2	Hep Par-1	p63	RCC	TTF-1
Bladder Adenocarcinoma/ Carcinoma	+	+	-	+	+	-	-	-	-	-
Breast Carcinoma	+	-	-	+	-	+	-	-	-	-
Cervical Carcinoma	+	+	-	+	-	-	-	-	-	-
Colorectal Adenocarcinoma	+	+	-	-	+	-	-	-	-	-
Endometrial Adenocarcinoma	+	-	-	+	-	-	-	-	-	-
Gastric Carcinoma	+	+	-	+	-	-	-	-	-	-
Hepatocellular Carcinoma	-	+	-	-	-	-	+	-	-	+ (cytoplasmic)
Lung Adenocarcinoma	+	+	-	+	-	-	-	-	-	+
Ovarian Carcinoma	+	-	+	+	-	-	-	-	-	-
Pancreatic Carcinoma	+	+	-	+	-	-	-	-	-	-
Prostate Adenocarcinoma/ Carcinoma	+	-	-	-	-	-	-	-	-	-
Renal Cell Carcinoma	+	-	-	-	-	-	-	-	+	-
Salivary Gland Carcinoma	+	+	+	+	-	+	-	+	-	-
Spindle Cell Carcinoma	+	-	-	-	-	-	-	-	-	-
Squamous Cell Carcinoma	+	-	+	-	-	-	-	+	-	-
Sweat Gland Carcinoma	+	+	+	+	-	-	-	+	-	-
Thyroid Carcinoma	+	-	-	+	-	-	-	-	-	+
Transitional Cell Carcinoma	+	-	+	+	+	-	-	+	-	-

## Ordering Information

### Clone: OSCAR

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	300M-14
0.5 ml, concentrate	300M-15
1 ml, concentrate	300M-16
1 ml, predilute	300M-17
7 ml, predilute	300M-18

### Designations



IVD



IVD



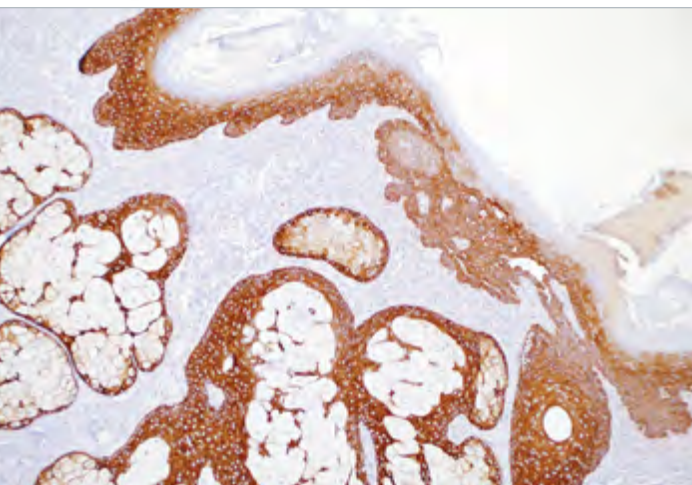
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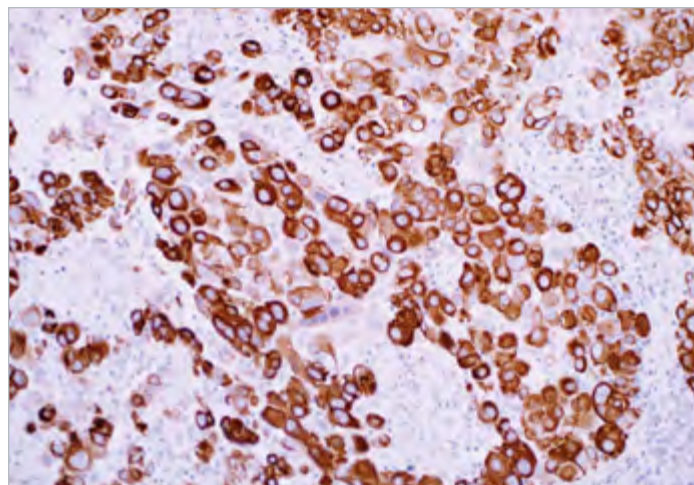
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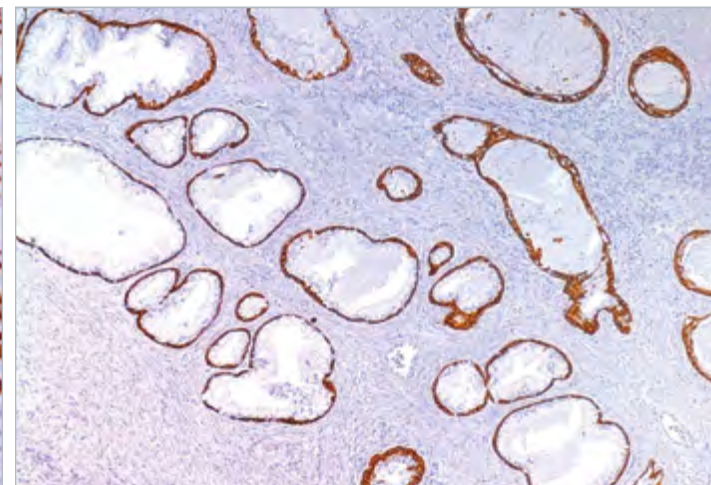
# Cytokeratin 5



Cytokeratin 5 (EP1601Y) labels squamous elements in the basal epidermis and sebaceous glands.



Rabbit monoclonal CK5 (EP1601Y) strongly highlights mesothelioma cells in a cytoplasmic pattern.



Cytokeratin 5 (EP1601Y) on prostate.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** mesothelioma, prostate  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas ..... 286  
 ● Breast Carcinoma ..... 291  
 ● Squamous Cell Carcinoma vs Urothelial Carcinoma ..... 296  
 ● Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

- Dabbs DJ. Diagnostic Immunohistochemistry. 4th Edition. Elsevier Saunders, Philadelphia, PA. 2014 p. 212.
- Ordenez NG. Human Pathology. 2007; 38:1-16.
- Kargi A, et al. Appl Immunohistochem Mol Morphol. 2007; 15:415-420.
- Clarke CL, et al. J Pathol. 2004; 204:147-52.
- Dabbs DJ, et al. Mod Pathol. 2006; 19:1506-11.
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- Livasy CA, et al. Hum Pathol. 2007; 38:197-204.

## Product Description

Cytokeratin 5 is an intermediate filament protein of 58 kD molecular weight within the cytokeratin family. It is a type II (basic) cytokeratin. Antibodies to this protein identify basal cells of squamous and glandular epithelia, myoepithelia, and mesothelium.<sup>1</sup> Anti-cytokeratin 5 has been reported useful in the differential diagnosis of metastatic carcinoma in the pleura versus epithelioid mesothelioma.<sup>2</sup> Epithelioid mesotheliomas are strongly positive in almost all cases, but a minority of pulmonary adenocarcinomas will show focal immunoreactivity.<sup>2</sup> Almost all squamous cell carcinomas, half of transitional carcinomas, and many undifferentiated large cell carcinomas immunostain with anti-CK 5.<sup>3</sup> Anti-CK 5, along with anti-p63, affords a high sensitivity and specificity for squamous differentiation. Myoepithelial cells of the breast,<sup>4,5</sup> glandular epithelia, and basal cells of the prostate are labeled with anti-CK 5.<sup>6</sup> This antibody, along with anti-CK 14, has found application in identifying basal-like breast carcinoma.<sup>5,7</sup>

## Panel Quick View

Breast Carcinoma								
	CK 5	CA15-3	CA 19-9	CK 7	CK 20	ER/PR	p63	CD117
Infiltrating Ductal Carcinoma	-	+	-	+	-	+	-	-
Adenoid Cystic Carcinoma	+	+	+	+	-	-	+	+

Squamous Cell Carcinoma vs Urothelial Carcinoma								
	CK 5	COX-2	CK 34βE12	CK 14	CK 7	CK 20	GATA3	URO III
Squamous Carcinoma	+	-	+	+	-	-	-	-
Urothelial Carcinoma	-/+	+	+	-	+	+	+	+

## Ordering Information

**Clone: EP1601Y**  
 Rabbit Monoclonal

**Volume ..... Part No.**  
 0.1 ml, concentrate ..... 305R-14  
 0.5 ml, concentrate ..... 305R-15  
 1 ml, concentrate ..... 305R-16  
 1 ml, predilute ..... 305R-17  
 7 ml, predilute ..... 305R-18

## Designations

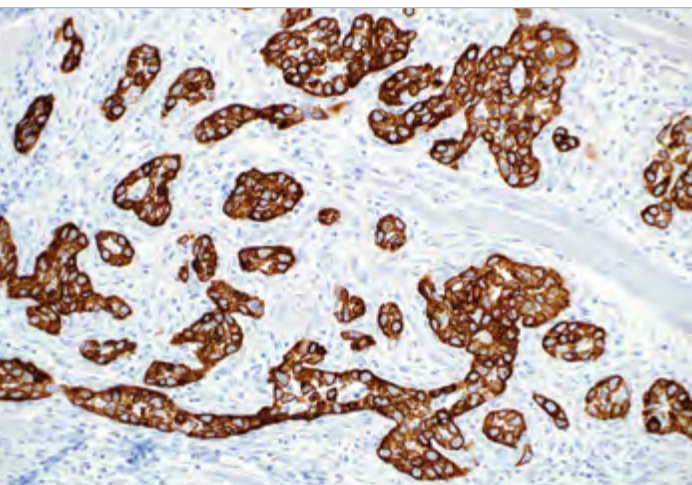
 IVD  IVD  IVD  RUO

 CELL MARQUE

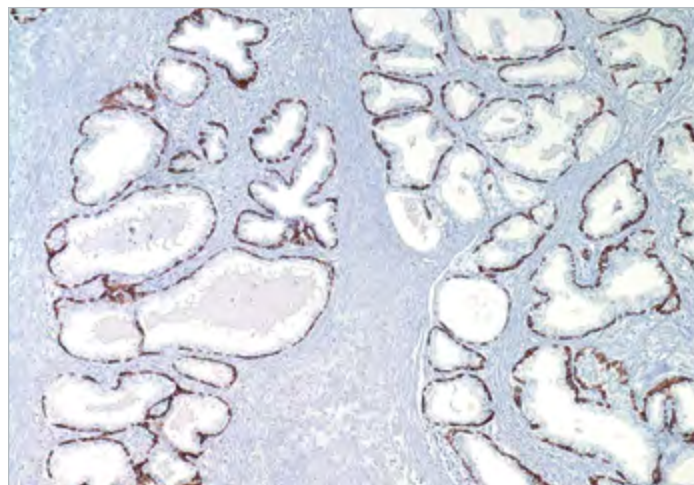
 RabMab®  
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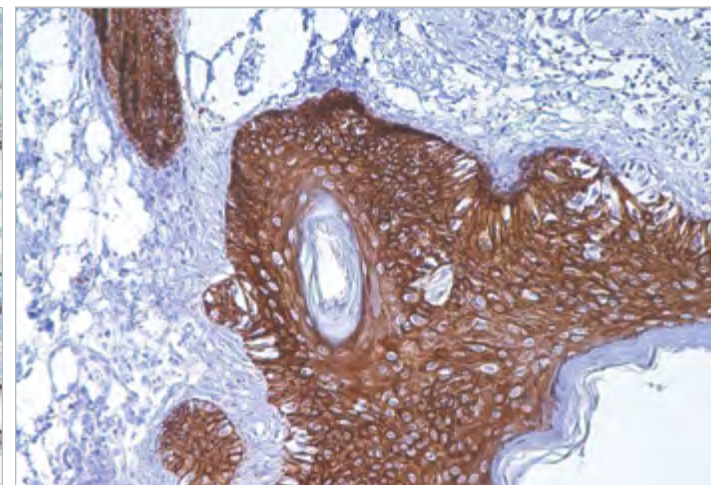
# Cytokeratin 5 + Cytokeratin 14



Tumor cells of lung squamous carcinoma are labeled by Cytokeratin 5 (EP1601Y) + Cytokeratin 14 (LL002) in a cytoplasmic pattern.



Cytokeratin 5 (EP1601Y) + Cytokeratin 14 (LL002) on prostate.



Cytokeratin 5 (EP1601Y) + Cytokeratin 14 (LL002) on skin.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** esophagus, squamous cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG + IgG<sub>3</sub>

## Synonyms and Abbreviations

Basaloid Cocktail

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Lesions..... 293

## Reference

1. Dabbs DJ. Diagnostic Immunohistochemistry. 4th Edition. Elsevier Saunders, Philadelphia, PA. 2014 p. 212.
2. Comin CE, et al. Am J Surg Pathol. 2007; 31:1139- 48.
3. Reis-Filho JS, et al. Appl Immunohist Mol Morphol. 2003; 11:1-8.
4. Chu PG, et al. Histopathology. 2001; 39:455-62.
5. Dabbs DJ, et al. Mod Pathol. 2006; 19:1506-11.
6. Chu PG, et al. Histopathology. 2001; 39:9-16.
7. Livasy CA, et al. Hum Pathol. 2007; 38:197-204.
8. Dabbs DJ. Diagnostic Immunohistochemistry. 4th Edition. Elsevier Saunders, Philadelphia, PA. 2014 p. 728-729.

## Product Description

Cytokeratin 5 is an intermediate filament protein of 58 kD molecular wt. amongst the cytokeratin family. It is a type II (basic) cytokeratin. Antibodies to this protein identify basal cells of squamous and glandular epithelia, myoepithelia, and mesothelium.<sup>1</sup> Cytokeratin 14 is a 50 kD polypeptide found in basal cells of squamous epithelia, some glandular epithelia, myoepithelium, and mesothelial cells.<sup>1</sup>

Anti-Cytokeratin 5 has been useful in the differential diagnosis of metastatic carcinoma in the pleura versus epithelial mesothelioma.<sup>2</sup> Almost all squamous cell carcinomas, half of transitional carcinomas, and many undifferentiated large cell carcinomas immunostain with CK5. Anti-CK14 has been demonstrated to be useful in differentiating squamous cell carcinomas<sup>6</sup> from other epithelial tumors.<sup>3,4</sup> Anti-CK5, along with anti-CK14, has found application in identifying the basaloid phenotype of breast carcinoma, a tumor with poor prognosis.<sup>5,7,8</sup>

## Panel Quick View

Lesions	CK 5+14	Adipophilin	CK Cocktail	EMA	Ber-EP4
Sebaceous Adenoma	+	+	+	+	+
Sebaceous Carcinoma	+	+	+	+	+
Basal Cell Carcinoma	-	-	+	-	+
Squamous Cell Carcinoma	+	-	+	+	-

## Ordering Information

**Clone: EP1601Y + LL002**  
Rabbit/Mouse Cocktail

**Volume ..... Part No.**  
1 ml, predilute ..... 905H-07  
7 ml, predilute ..... 905H-08

## Designations

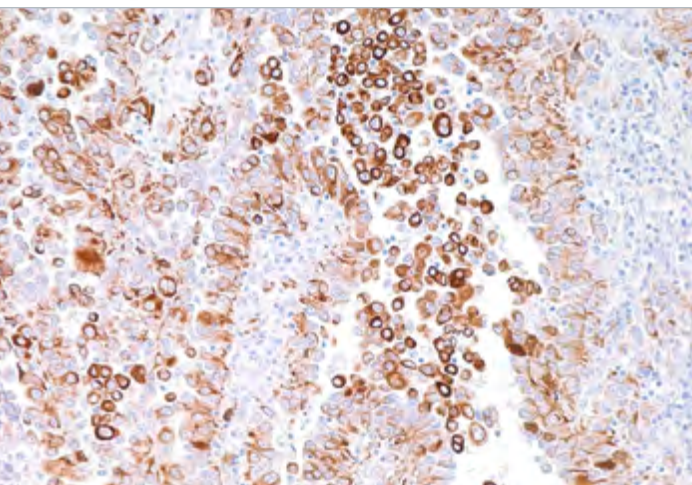
 IVD     IVD     IVD     RUO

 CELL MARQUE

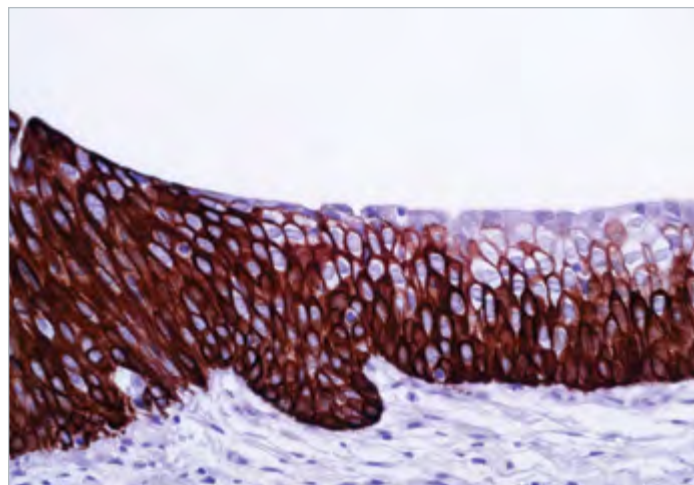
 RabMab®  
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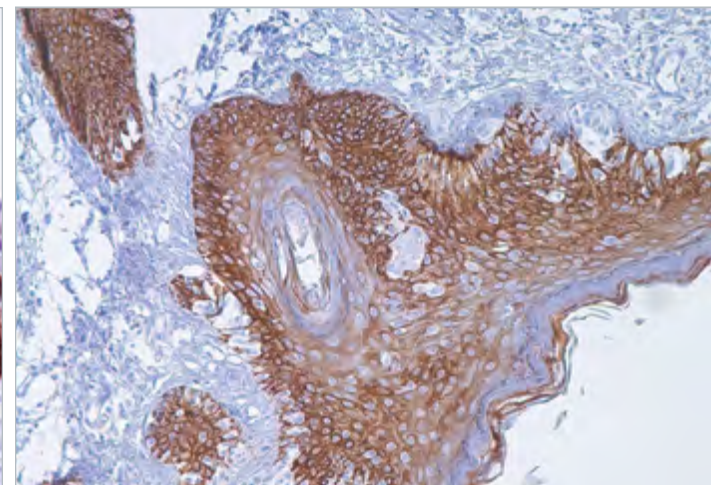
# Cytokeratin 5 & 6



Cytokeratin 5 & 6 (D5 & 16B4) labels mesothelioma cells in a cytoplasmic pattern.



Cytokeratin 5 & 6 (D5 & 16B4) on renal pelvis.



Cytokeratin 5 & 6 (D5 & 16B4) on skin.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** mesothelioma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Thymus . . . . . 290
- Non-invasive Breast Lesions vs. Invasive Ductal Carcinoma . . . 291
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Bladder: Dysplasia vs. Reactive. 295
- Prostate: Malignant vs. Benign . 296
- Lung Adenocarcinoma vs. Mesothelioma . . . . . 302
- Lung Squamous Cell Carcinoma vs. Adenocarcinoma . . . . . 302
- Pleura: Adenocarcinoma vs. Mesothelioma . . . . . 302

## Reference

1. Ordonez NG. Am J Surg Pathol. 1998; 22:1203-1214.
2. Cury PM, et al. Mod Pathol. 2000; 13:107-12.
3. Chu PG, et al. Mod Pathol. 2002; 15:6-10.
4. Ordonez NG. Am J Surg Pathol. 1998; 22:1215-1221.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-CK 5 & 6 positivity is seen in 65% to 100% of epithelioid mesotheliomas, in 0% to 19% of lung adenocarcinomas, and in 22% to 80% of serous carcinoma of the ovary and peritoneum.<sup>1-3</sup> Keratin 5 & 6 expression in lung adenocarcinoma is not common, and when it occurs, the reaction is usually confined to small focal areas or scattered cells.<sup>1-4</sup> The most probable cause of this finding is the presence of squamous differentiation of lung adenocarcinoma. Anti-CK 5 & 6 positivity has been useful in recognizing squamous cell carcinoma of the skin.<sup>5,6</sup> Less than 10% of carcinomas of the breast, colon, and prostate stain positively for this marker.<sup>4</sup> Anti-CK 5 & 6 has also been used successfully as a myoepithelial cell marker in the prostate and breast to determine malignancy.<sup>7-10</sup> Anti-CK 5 & 6 is a useful marker to distinguish lung squamous cell carcinoma from lung adenocarcinoma and large cell carcinoma within a panel including antibodies against TTF-1, Napsin A, p63, SOX-2, desmocollin 3, and desmoglein 3.<sup>3,8</sup>

## Panel Quick View

Carcinomas										
	CK 5&6	CK Cocktail	CK 7	CK 20	p63	ER/PR	CD10	CEA	CK, HMW	CK, LMW
Salivary Gland Carcinoma	+	+	+	-	+	-	-/+	+	+	+
Ovarian Carcinoma	+	+	+	-	-	-	-	-	+	+
Sweat Gland Carcinoma	+	+	+	-	+	-/+	-	+	+	+
Squamous Cell Carcinoma	+	+	-	-	+	organ specific	-	-	+	+
Transitional Cell Carcinoma	+	+	+	+	+	-	+	-	+	+

Pleura: Adenocarcinoma vs. Mesothelioma										
	CK 5&6	Caldesmon	Calretinin	CEA	Ep-CAM	E-cadherin	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	-	-	-	+	+	+	-	-	+	+
Mesothelioma	+	+	+	-	-	-	+	+	-	-

## Ordering Information

**Clone: D5 & 16B4**  
**Mouse Monoclonal**

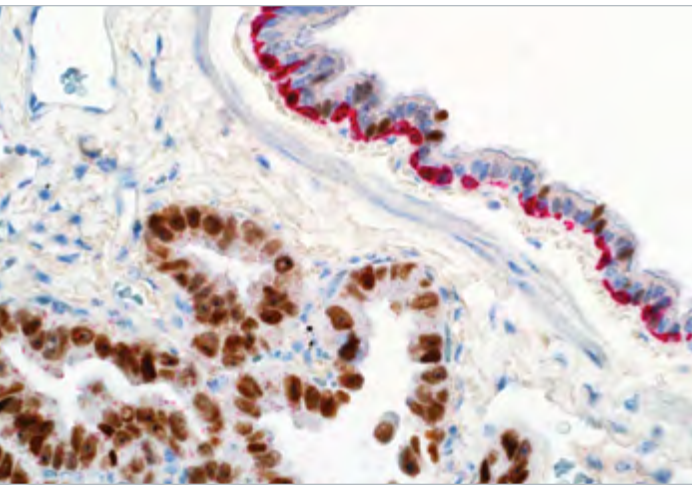
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0.5 ml, concentrate . . . . .	356M-15
1 ml, concentrate . . . . .	356M-16
1 ml, predilute . . . . .	356M-17
7 ml, predilute . . . . .	356M-18
25 ml, predilute . . . . .	356M-10

## Designations

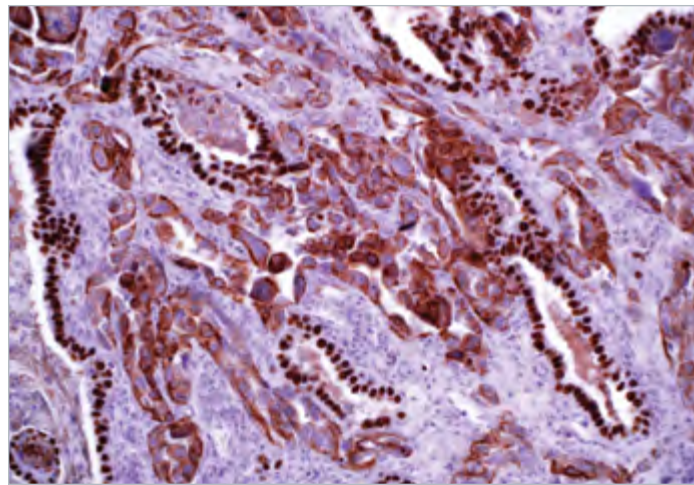




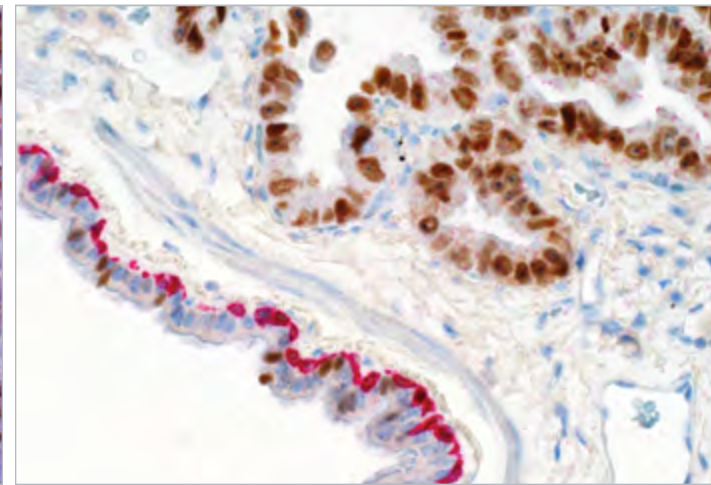
# Cytokeratin 5 & 6 + TTF-1



Cytokeratin 5 & 6 + TTF-1 (D5/16B4 + 8G7G3/1) on lung.



CK 5 & 6 is expressed cytoplasmically in lung squamous carcinoma, and TTF-1 is expressed in the alveolar/bronchial nuclei.



Cytokeratin 5 & 6 + TTF-1 (D5/16B4 + 8G7G3/1) on lung.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic (cytokeratin 5 & 6), nuclear (TTF-1)

**Control** mesothelioma, lung adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub> & IgG<sub>1</sub> + IgG<sub>1</sub>

## Synonyms and Abbreviations

Lung Cocktail

## Associated Specialties

● Pulmonary Pathology

## Reference

1. Ordonez NG. Am J Surg Pathol. 1998; 22:1215-1221.
2. Ordonez NG. Am J Surg Pathol. 1998; 22:1203-1214.
3. Cury PM, et al. Mod Pathol. 2000; 13:107-12.
4. Jang KY, et al. Anal Quant Cytol Histol. 2001; 23:400-4.
5. Srodon M, et al. Hum Pathol. 2002; 33:642-5.
6. Abutaily AS, et al. J Clin Pathol. 2002; 55:662-8.
7. Bejarano PA, et al. Arch Pathol Lab Med. 2003; 127:193-5.
8. Saad RS, et al. Appl Immunohistochem Mol Morphol. 2003; 11:107-12.
9. Tan D, et al. Hum Pathol. 2003; 34:597-604.

## Product Description

Anti-Cytokeratin 5 & 6 labels greater than 90% of epithelioid mesotheliomas. Anti-Cytokeratin 5 & 6 stains the cytoplasm of such cells. Anti-TTF-1 stains the nuclei in the case of lung adenocarcinomas and is negative in nearly all mesotheliomas. When the differential diagnosis seeks to distinguish between mesothelioma and adenocarcinoma of the lung, the nuclear vs. cytoplasmic staining pattern of this cocktail can be of significant value in making the diagnosis.

## Ordering Information

**Clone: D5/16B4 + 8G7G3/1**  
Mouse Cocktail

**Volume . . . . . Part No.**

1 ml, predilute . . . . . 902H-07

7 ml, predilute . . . . . 902H-08

## Designations



IVD



IVD

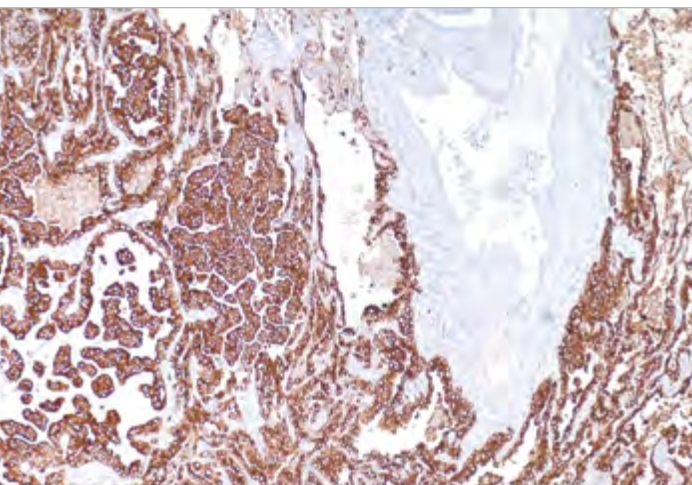


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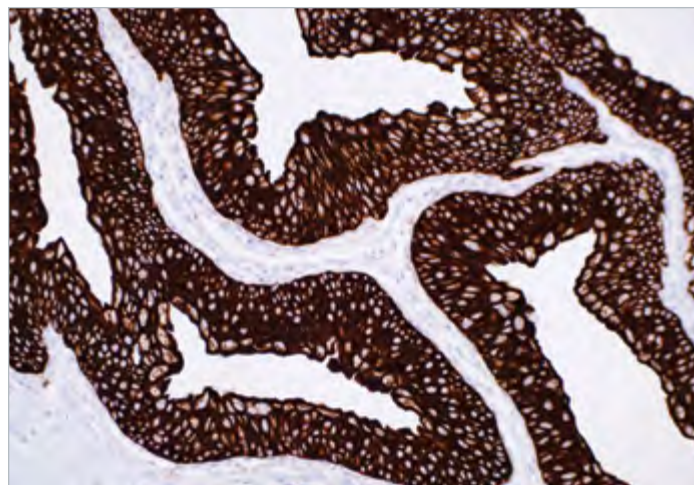


RUO

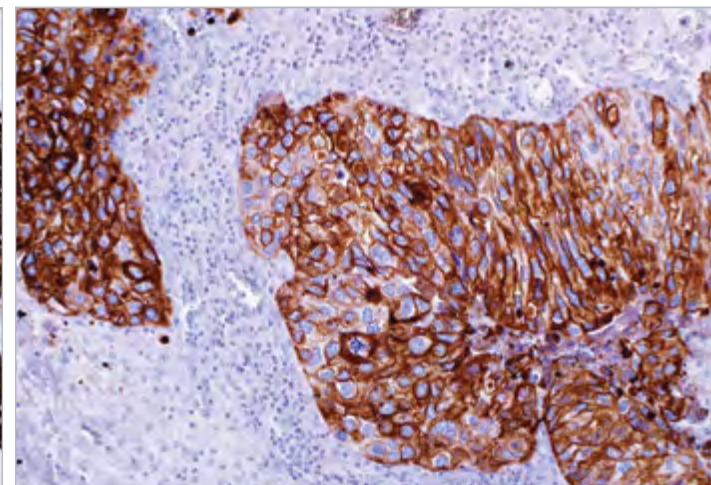
# Cytokeratin 7



Lung adenocarcinoma is strongly and diffusely positive for Cytokeratin 7 (OV-TL 12/30).



Cytokeratin 7 (OV-TL 12/30) on urothelial mucosa.



Cytokeratin 7 (OV-TL 12/30) on urothelial carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** salivary gland, lung adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Colon vs. Ovarian Carcinoma. . 287
- Breast Carcinoma. . . . . 291
- Sex Cord Stromal Tumors . . . . 292
- Skin Adnexal Tumors . . . . . 293
- Pancreas / Pancreatic Tumors . 294
- Carcinomas. . . . . 295
- Prostate Lesions . . . . . 296
- Squamous Cell Carcinoma vs Urothelial Carcinoma . . . . . 296

## Reference

1. Jerome MV, et al. Histopathology. 2004; 45:125-34.
2. Murray SK, et al. Am J Surg Pathol. 2004; 28:1154-62.
3. Chu P, et al. Mod Pathol. 2000; 13:962-72.
4. Logani S, et al. Am J Surg Pathol. 2003; 27:1434-41.
5. Ramalingam P, et al. Ann Diagn Pathol. 2003; 7:112-9.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-cytokeratin 7 reacts with proteins that are found in most ductal, glandular, transitional, and biliary duct epithelial cells. Cytokeratin 7 (CK7) labeling can help distinguish between lung,<sup>1</sup> breast carcinomas, and urothelial carcinomas that typically stain positive, and colon and prostate carcinomas that typically lack CK7 expression.<sup>2-7</sup> CK 7 is a common marker of primary lung adenocarcinomas (almost all cases) with a lower specificity since it is also observed in other primary lung carcinomas and non-pulmonary carcinomas.<sup>1</sup> Anti-cytokeratin 7 has also been useful in the differential diagnosis of ovarian neoplasms.<sup>8</sup> This antibody does not recognize intermediate filament proteins.

## Panel Quick View

Carcinomas										
	CK 7	CK 5	CK 20	CK Cocktail	CDX-2	CEA	ER/PR	BRST-2	p63	TTF-1
Bladder Adenocarcinoma/ Carcinoma	+	-	+	+	+	+	-	-	-	-
Breast Carcinoma	+	-	-	+	-	-	+	+	-	-
Cervical Carcinoma	+	-	-	+	-	+	-	-	-	-
Endometrial Adenocarcinoma	+	-	-	+	-	-	-	-	-	-
Gastric Carcinoma	+	-	-	+	+	+	-	-	-	-
Lung Adenocarcinoma	+	-	-	+	-	+	-	-	-	+
Ovarian Carcinoma	+	+	-	+	-	-	-	-	-	-
Pancreatic Carcinoma	+	-	-	+	-	+	-	-	-	-
Squamous Cell Carcinoma	-	+	-	+	-	-	organ specific	-	+	-
Sweat Gland Carcinoma	+	+	-	+	-	+	-/+	-	+	-
Transitional Cell Carcinoma	+	+	+	+	-	-	-	-	+	-

## Colon vs. Ovarian Carcinoma

	CK 7	CK 20	CA-125	Cadherin-17	CDX-2	CEA	SATB2	WT1
Ovarian Carcinoma, Serous	+	-	+	-	-	+	-	+
Ovarian Carcinoma, Mucinous	+	-	-	-	+	-	-	-
Ovarian Carcinoma, Endometrioid	+	-	+	-	-	-	-	+
Colorectal Carcinoma / Colon Carcinoma	-	+	-	+	+	+	+	-

## Ordering Information

**Clone: OV-TL 12/30**  
Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	307M-94
0.5 ml, concentrate. . . . .	307M-95
1 ml, concentrate . . . . .	307M-96
1 ml, predilute . . . . .	307M-97
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25 ml, predilute . . . . .	307M-90

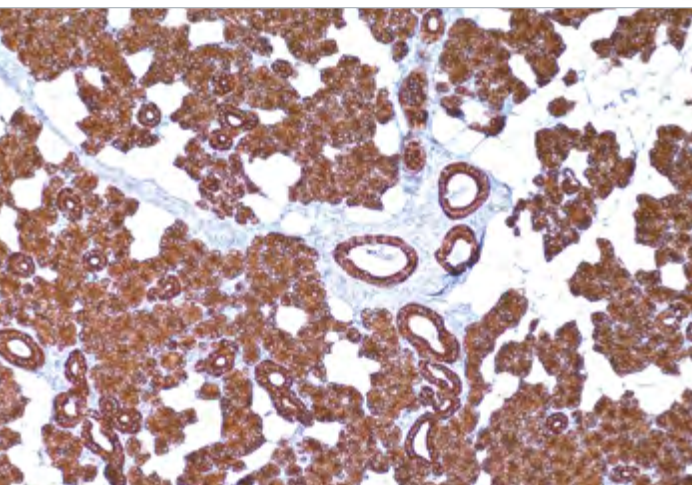
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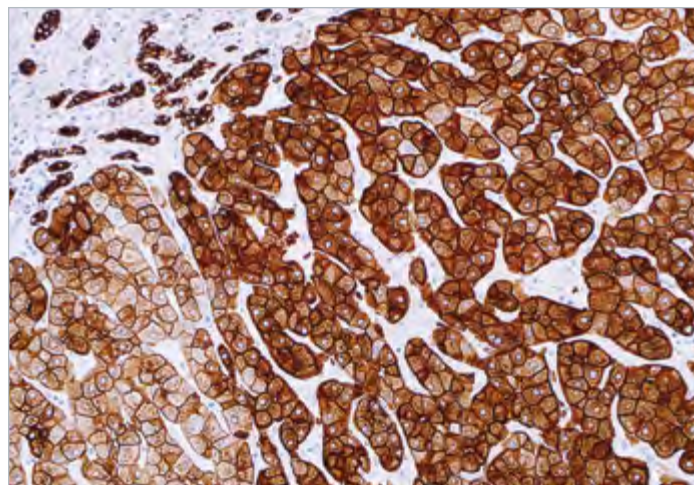
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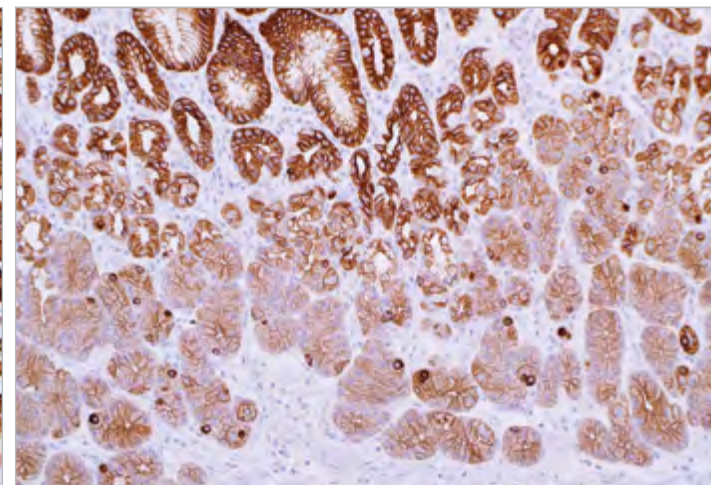
# Cytokeratin 8 & 18



Ducts and acini of the salivary gland are labeled by anti-cytokeratin 8 & 18 in a cytoplasmic reaction.



Cytokeratin 8 & 18 (B22.1 & B23.1) on cirrhotic liver.



Cytokeratin 8 & 18 (B22.1 & B23.1) on stomach.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate, pancreas

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Skin: Basal vs. Squamous Cell Carcinoma ..... 293
- Skin: Spindle Cell Tumors ..... 294

## Reference

1. Angus B, et al. J Pathol. 1987; 155:377-84.
2. Corson, JM. Pathol Annu. 1986; 21:47-81.
3. Liegl B, et al. Histopathology. 2007; 50:439-47.
4. Sasaki M, et al. Histopathology. 1998; 32:199-208.

## Product Description

Cytokeratins 8 & 18 (CK 8&18) can be found in most simple epithelia, e.g. thyroid, breast, gastrointestinal tract, and respiratory tract. Adenocarcinomas and most non-keratinizing squamous carcinomas will stain with anti-CK 8&18, but keratinizing squamous carcinomas will not.<sup>1,2</sup> This antibody is used when attempting to demonstrate the presence of Paget cells; there is very little keratin 18 in the normal epidermis so this will only stain Paget cells.<sup>3</sup> The use of immunostaining facilitates interpretation and has been shown to be more sensitive than genetic analysis in colorectal carcinoma metastases.<sup>4</sup>

## Panel Quick View

Skin: Spindle Cell Tumors										
	CK 8&18	MS Actin	CD10	CD34	CD99	Collagen IV	FLI-1	HHV-8	D2-40	S-100
Angiosarcoma	-	-	-	+	-	+/-	+	-	+/-	-
Atypical Fibroxanthomas	-	+	+	-	+	-	-	-	-	-
DF-FH	-	-	+	-	-	-	-	-	-	-
DF-SP	-	-	+/-	+	-	-	-	-	-	-
Glomus Tumor	-	+	-	+/-	-	+	-	-	-	-
Hemangioma	-	-	-	+	-	+	+	-	-	-
Kaposi's Sarcoma	-	-	-	+	-	+/-	+	+	+	-
Kaposiform Hemangioendothelioma	+	-	-	+	-	-	+	-	-	-
Smooth Muscle	-	+	-	-	-/+	-	-	-	-	-
Solitary Fibrous Tumor	-	-	-	+	+/-	-	-/+	-	-	-
Spindle Cell Melanoma	-	-	-	-	-	-	+	-	+	+
Spindle Squamous Cell Carcinoma	+	-	-	-	-	-	-	-	+	-

## Ordering Information

**Clone: B22.1 & B23.1**  
Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	818M-94
0.5 ml, concentrate.....	818M-95
1 ml, concentrate .....	818M-96
1 ml, predilute .....	818M-97
7 ml, predilute .....	818M-98
25 ml, predilute .....	818M-90

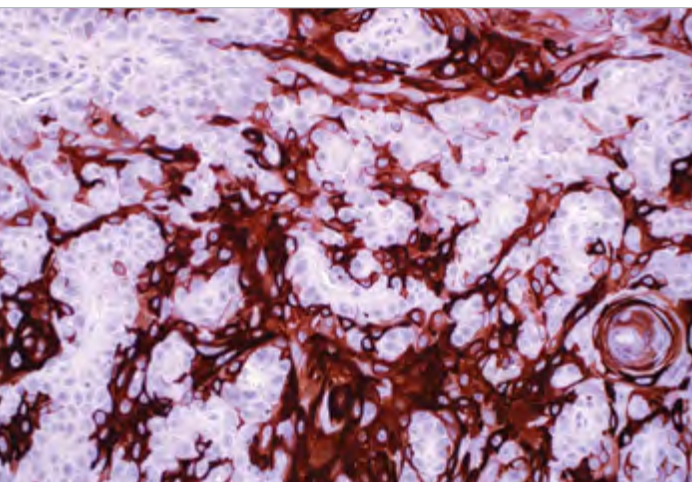
## Designations



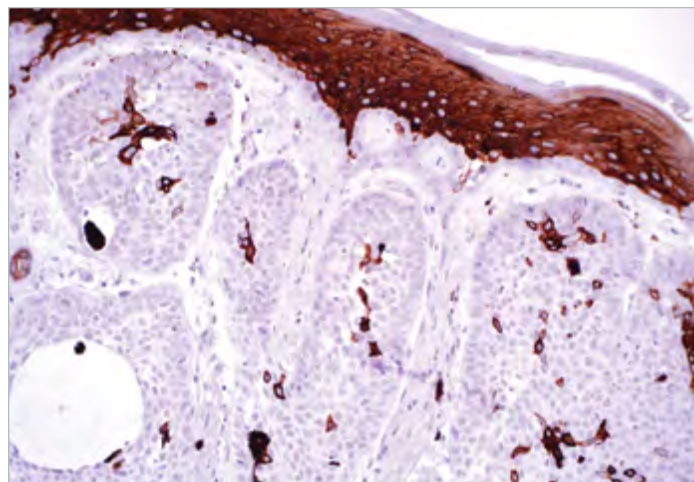
IVD IVD IVD RUO



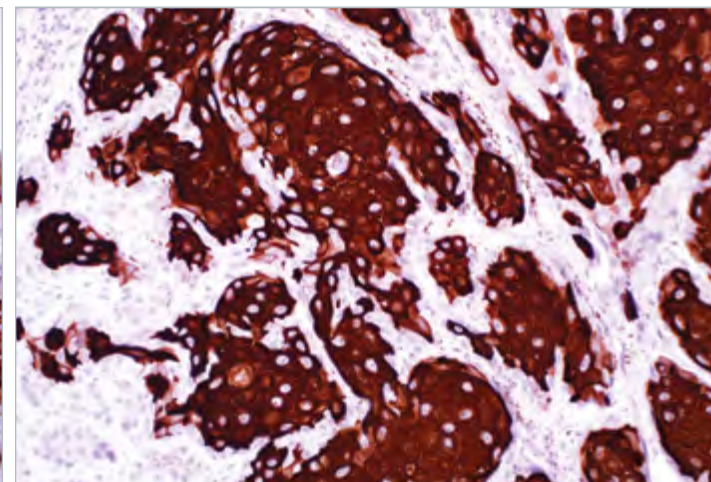
# Cytokeratin 10



Cytokeratin 10 (EP97) on skin.



Cytokeratin 10 (EP97) on skin.



Skin squamous carcinoma is strongly and diffusely labeled by Cytokeratin 10 (EP97).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** squamous cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology

## Reference

- Moll, R. et al. Histochem Cell Biol. 2008; 129:705-733.
- Kurokawa I, et al. Experimental Dermatol. 2011; 20:217-228.
- Moll R, et al. Subcell Biochem. 1998; 31:205-262.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Cytokeratin 10 (CK10) belongs to type I and acidic keratin family.<sup>1</sup> It is low molecular weight keratin that is usually expressed in suprabasal keratinocytes and can also be seen in suprabasal cells of internal noncornifying, stratified squamous epithelia.<sup>1</sup> In addition, CK10 is reported to be a typical component of cells of eccrine sweat gland ducts and sebaceous cells.<sup>2</sup> Anti-CK10 is helpful in the identification of well differentiated squamous cell carcinoma derived from skin or from internal organs.<sup>2,3</sup> However, CK10 was found to be sparse in poorly differentiated squamous cell carcinoma, even though it has been reported that focal CK10 expression has been found in 50% of cases of oral and pharyngeal squamous cell carcinoma.<sup>3</sup> Anti-CK10 has demonstrated utility in the differentiation of extra-mammary Paget's disease (negative) from basal cell carcinoma and squamous cell carcinoma (positive).<sup>3</sup>

## Panel Quick View

Skin Neoplasms								
	CK 10	CAM 5.2	CK 5	CK 7	CK 14	CK 17	CK 19	CK 20
Skin Squamous Cell Carcinoma	+/-	+	+	+/-	+	+	+	-
Basal Cell Carcinoma	+/-	+/-	+	+/-	+	+	+/-	-
Extra Mammary Paget's Disease	-	+	-	+/-	-	-	+	-/+
Sebaceous Carcinoma	+/-	+/-	+	+	+	+/-	+/-	-
Merkel Cell Carcinoma	-	+	-	-	-	-	+	+
Bowen's Disease	-/+	+/-	+	-	+	+/-	+/-	-
Tricholemmal Carcinoma	+	-	+	-	+	+	-	-
Actinic Keratosis	+/-	+/-	+	+/-	+	+	+	-

## Ordering Information

**Clone: EP97**

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate .....	410R-14
0.5 ml, concentrate .....	410R-15
1 ml, concentrate .....	410R-16
1 ml, predilute .....	410R-17
7 ml, predilute .....	410R-18

## Designations



IVD

IVD

IVD

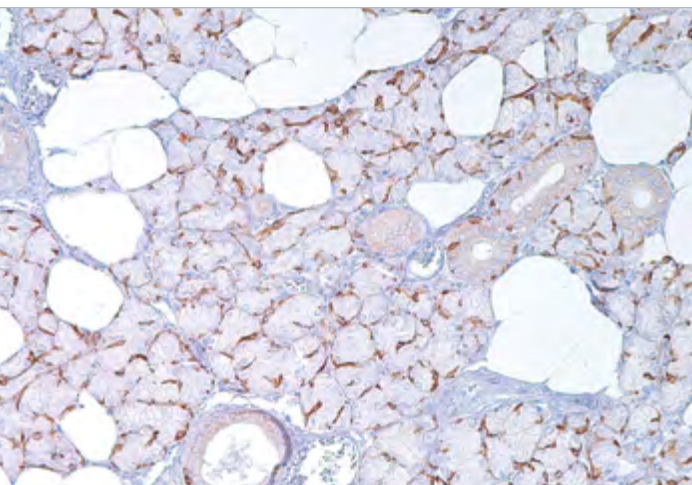
RUO

**CELL MARQUE**

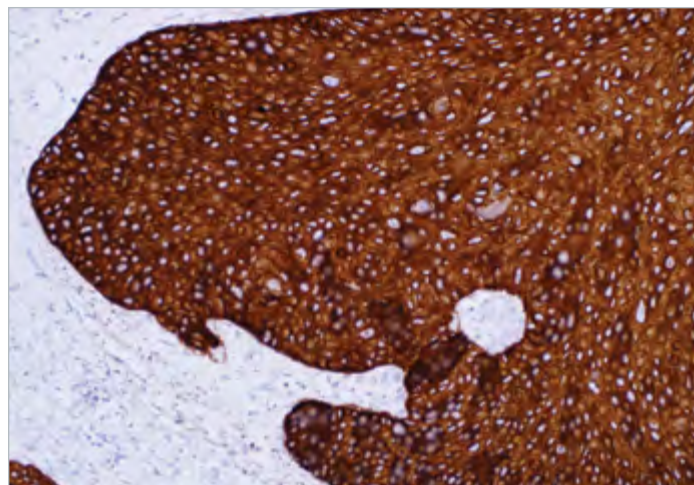
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Technology from Abcam



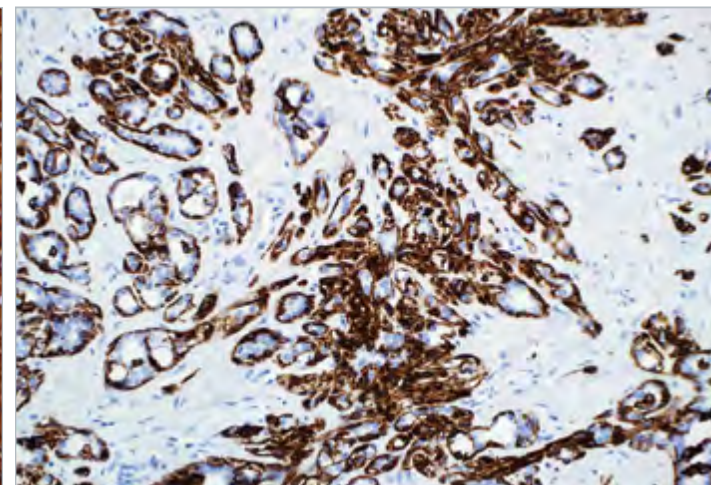
# Cytokeratin 14



In the salivary gland, contractile myoepithelial cells are highlighted by Cytokeratin 14 (LL002).



Cytokeratin 14 (SP53) on lung squamous carcinoma.



Cytokeratin 14 (SP53) labels the myoepithelial cells in sclerosing adenosis.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** squamous cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>3</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Thymus ..... 290
- Prostate: Malignant vs. Benign . 296
- Squamous Cell Carcinoma vs Urothelial Carcinoma ..... 296

## Reference

1. Reis-Filho JS, et al. Appl Immunohistochem Mol Morphol. 2003; 11:1-8.
2. Chu PG, et al. Histopathology. 2001; 39:9-16.
3. Chu PG, et al. Histopathology. 2001; 39:455-62.
4. Dabbs David J. Diagnostic Immunohistochemistry. Churchill-Livingstone. 2002; 166-176

## Product Description

Cytokeratin 14 (CK 14) is a 50 kD polypeptide found in basal cells of squamous epithelia, some glandular epithelia, myoepithelium, and mesothelial cells. Anti-CK 14 has been demonstrated to be useful in differentiating squamous cell carcinomas from other epithelial tumors. This antibody has also been useful in separating oncocytic tumors of the kidney from its renal cell mimic, as well as in determining metaplastic carcinomas of the breast.

## Panel Quick View

Prostate: Malignant vs. Benign								
	CK 14	AR	CK 34βE12	CK 5&6	p63	P504s	PSA	PSAP
Prostate Carcinoma	-	+	-	-	-	+	+	+
Benign Prostate	+	+	+	+	+	-/+	+	+

## Ordering Information

**Clone: LL002**

Mouse Monoclonal

**Volume ..... Part No.**  
 0.1 ml, concentrate ..... 314M-14  
 0.5 ml, concentrate ..... 314M-15  
 1 ml, concentrate ..... 314M-16  
 1 ml, predilute ..... 314M-17  
 7 ml, predilute ..... 314M-18

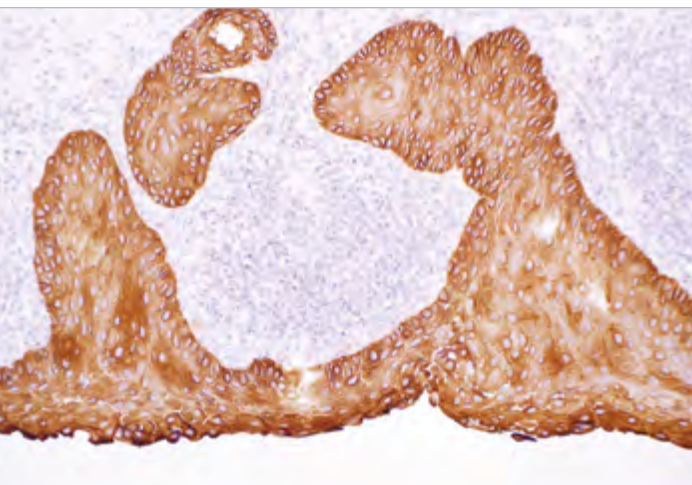
## Alternate Clones Available

• Rabbit Monoclonal, SP53  
 Contact us for more information.

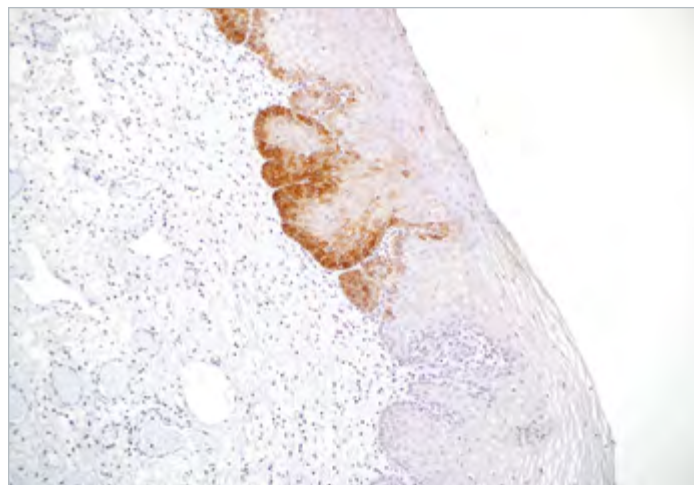
## Designations

 IVD     IVD     IVD     RUO

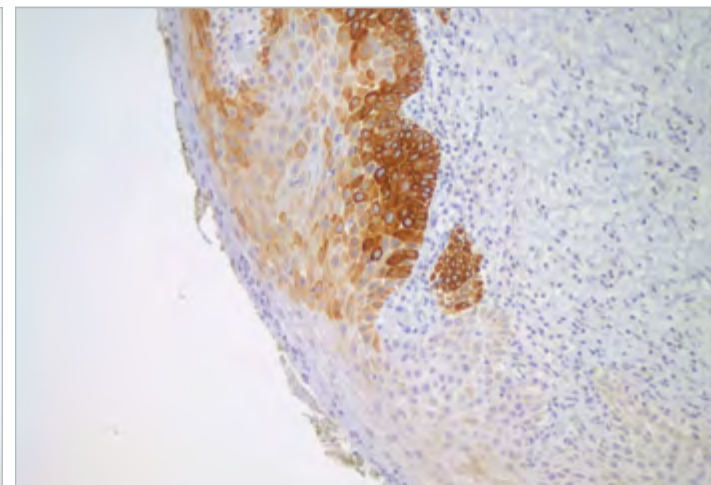
# Cytokeratin 17



Cytokeratin 17 (EP98) on cervical intraepithelial neoplasia III.



Cytokeratin 17 (Ks 17.E3) expression is strong in the basal layers of benign cervix, and diminishes in the superficial layers.



Cytokeratin 17 (Ks 17.E3) on uterine cervix.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** cervix immature metaplasia, breast

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Cervix ..... 291
- Cervix Neoplasia ..... 291
- Ampullary Cancer ..... 294

## Reference

1. Regauer S, et al. Histopathology. 2007; 50:629-35.
2. Martens JE, et al. Anticancer Res. 2004; 24:771-5.
3. Escobar-Hoyos LF, et al. Mod Pathol. 2014; 27:621-30.
4. Kitamura R, et al. J Cancer Res Clin Oncol. 2012; 138:1299-1310.

## Product Description

Cytokeratin 17 is 46 kD intermediate filament found in simple epithelia and is a marker for cervical reserve (stem) cells.<sup>1,2</sup> CK17 can be useful in the identification of uterine cervical squamous lesions including atypical immature metaplasia, cervical intraepithelial neoplasia, and cervical squamous carcinoma.<sup>1-3</sup> CK17 also assists in the differentiation of oral squamous cell carcinoma.<sup>4</sup>

## Panel Quick View

Cervix Neoplasia				
	CK 17	CK 8		p16
CIN I	-/+	-/+		+
CIN II	+	-/+		+
CIN III	+	+		+

Ampullary Cancer				
	CK 17	CDX-2	MUC2	MUC1
Intestinal Subtype	-	+	+	-
Ductal	+	-	-	+

## Ordering Information

### Clone: EP98

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	317R-14
0.5 ml, concentrate.....	317R-15
1 ml, concentrate .....	317R-16
1 ml, predilute .....	317R-17
7 ml, predilute .....	317R-18

### Alternate Clones Available

- Mouse Monoclonal, Ks 17.E3
- Contact us for more information.

### Designations

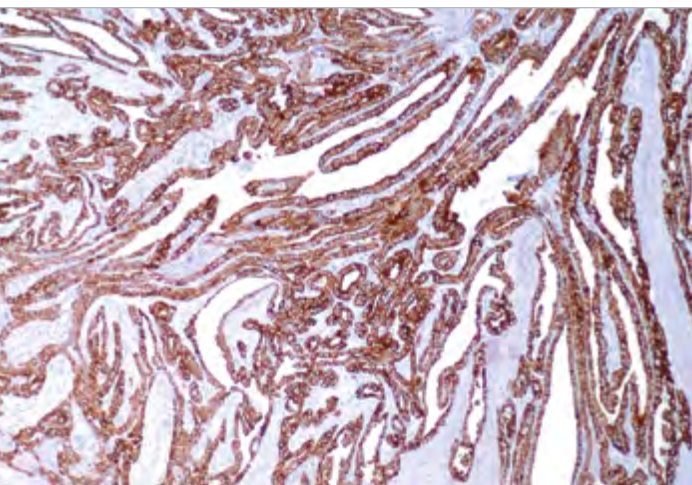


**CELL MARQUE**

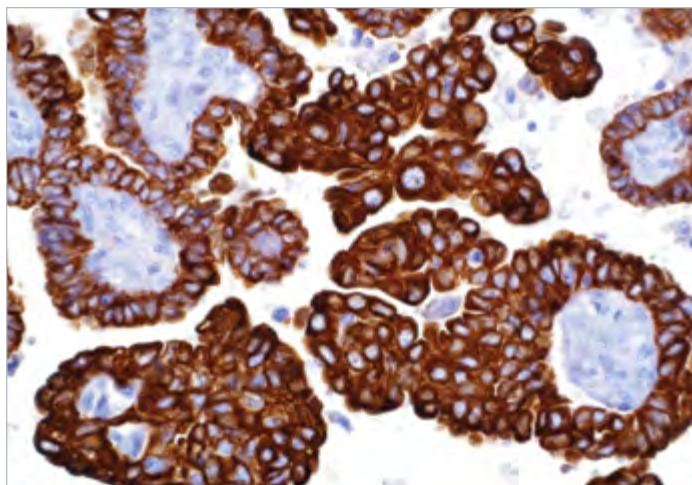
**RabMab®**  
Technology from Abcam



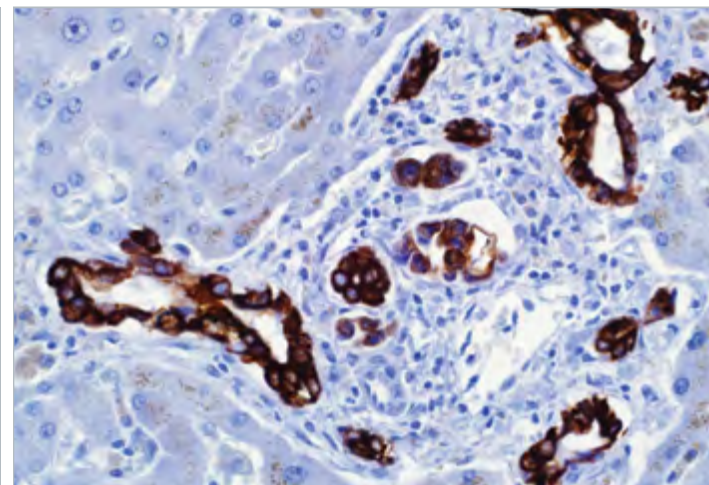
# Cytokeratin 19



Cytokeratin 19 (A53-B/A2.26) detects the antigen in the cytoplasm of papillary carcinoma of the thyroid.



Cytokeratin 19 (A53-B/A2.26) on thyroid.



Cytokeratin 19 (A53-B/A2.26) on liver.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** bladder, colon carcinoma, colon, thyroid carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/λ

## Associated Specialties

- Anatomic/Surgical Pathology
- Cytopathology

## Associated Panels

- Carcinomas. . . . . 286
- Thyroid: Malignant vs. Benign . 291
- Cutaneous Neoplasm . . . . . 292
- Pancreas / Pancreatic Tumors . 294

## Reference

1. Jain R, et al. Appl Immunohistochem Mol Morphol. 2010; 18:9-15.
2. Rosai J. Tumori. 2003; 89:517-9.
3. de Matos LL, et al. Diagn Pathol. 2012; 7:97.

## Product Description

Anti-cytokeratin 19 reacts with epithelia and epithelial malignancies including carcinomas of the colon, stomach, pancreas, biliary tract, liver, and breast.<sup>1</sup> Anti-cytokeratin 19 is very useful in differentiation of hepatocellular carcinoma from intrahepatic cholangiocarcinoma, especially in a combination of cytokeratin 7, CAM5.2, Ber-EP4/MOC31, Hep Par-1 and TTF-1.<sup>1</sup> Another useful application is the identification of thyroid papillary carcinoma.<sup>2-3</sup>

## Panel Quick View

Thyroid: Malignant vs. Benign							
	CK 19	Calcitonin	Galectin-3	HBME-1	p27	Thyroglobulin	TTF-1
Papillary Carcinoma	+	-	+	+	-/+	+	+
Follicular Carcinoma	-	-	+	+/-	-	+	+
Medullary Carcinoma	+	+	-	+	+/-	-	+
Benign Thyroid	-	-	-	-	+	+	+

Cutaneous Neoplasm							
	CK 19	AR	BCL2	Ber-EP4	CD10	CD34	CK 20
Basal Cell Carcinoma	+	+	+	+	+	-	-
Trichoepithelioma	+	-	+	+	-	+	+
Merkel Cell Carcinoma	+	-	+	+	-	-	+
Microcystic Adnexal Carcinoma	+	-	+	-/+	+/-	-	-
Sebaceous Carcinoma	-	+	+/-	+	+/-	-	-
Sebaceous Adenoma	-	+	+	+	-	-	-

## Ordering Information

**Clone: A53-B/A2.26**  
Mouse Monoclonal

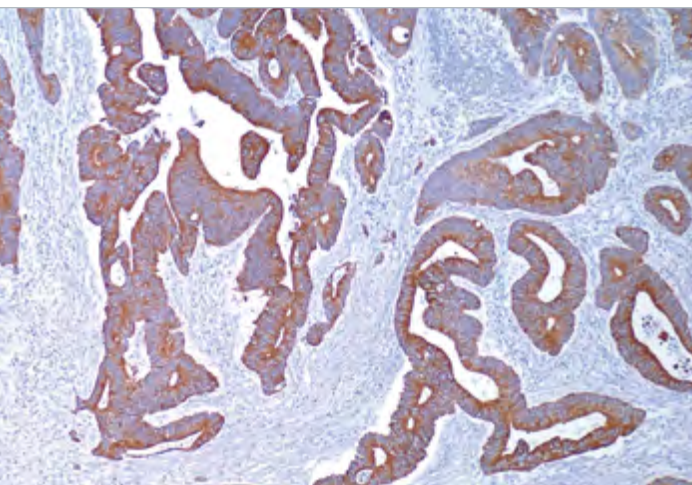
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0.5 ml, concentrate . . . . .	319M-15
1 ml, concentrate . . . . .	319M-16
1 ml, predilute . . . . .	319M-17
7 ml, predilute . . . . .	319M-18

## Designations

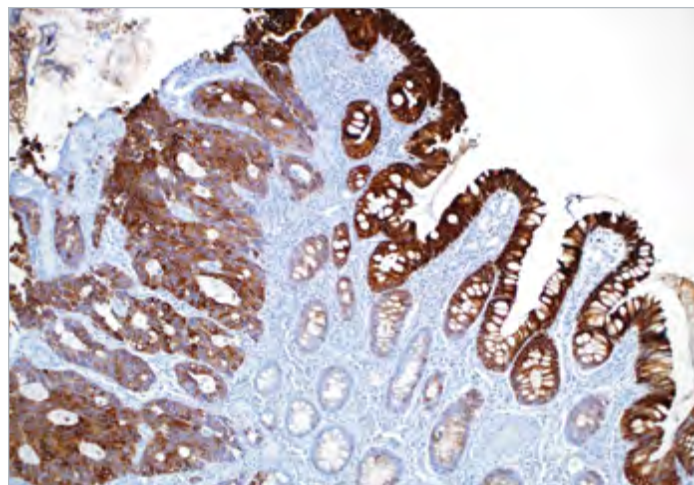
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- IVD
- IVD
- RUO



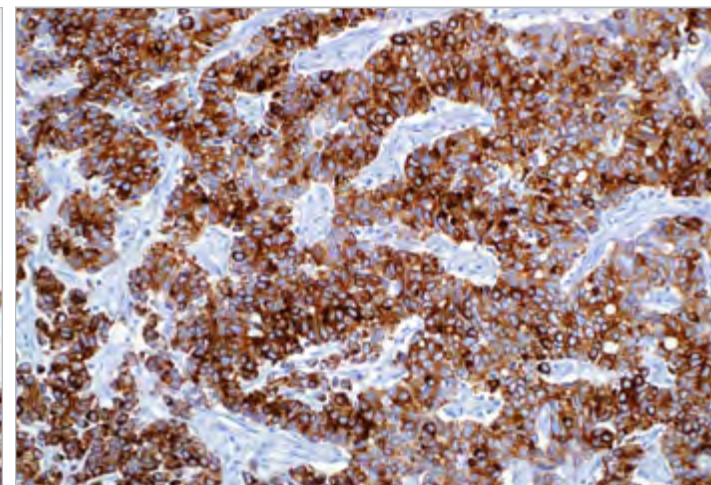
# Cytokeratin 20



Cytokeratin 20 (Ks20.8) on colon.



Cytokeratin 20 (Ks20.8) demonstrates low-grade and high grade dysplasia and colonic adenocarcinoma.



Cytokeratin 20 (Ks20.8) on metastatic colorectal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** colon carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Colon vs. Ovarian Carcinoma. . 287
- Colon vs. Prostate Adenocarcinoma . . . . . 287
- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma . . . . . 289
- Micropapillary Carcinomas. . . . 289
- Breast Carcinoma . . . . . 291
- Cutaneous Neoplasm . . . . . 292
- Skin Adnexal Tumors . . . . . 293
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Bladder: Dysplasia vs. Reactive. 295
- Squamous Cell Carcinoma vs Urothelial Carcinoma . . . . . 296

## Reference

- Moll R, et al. Am J Pathol. 1992; 427-47.
- Moll R, et al. J Cell Biol. 1990; 111:567-580.
- Moll R, et al. Cell. 1982; 31:11-24.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

This antibody reacts primarily with gastric and intestinal epithelium, urothelium, and Merkel cells. Anti-cytokeratin 20 is useful in the differentiation of specific types of simple epithelial cells of the urinary tract as well as normal and malignantly transformed epithelia. Studies have identified the presence of cytokeratin 20 in adenocarcinomas of the colon, stomach, pancreas and biliary system. Additionally, mucinous ovarian tumors, transitional-cell and Merkel cell carcinomas have shown reactivity. In contrast, squamous cell carcinomas and adenocarcinomas of the breast, lung and endometrium, non-mucinous tumors of the ovary, and small cell carcinomas are non-reactive.

## Panel Quick View

Carcinomas										
	CK 20	β-Catenin	CD10	CDX-2	CEA	CK 5	CK 7	CK Cocktail	p63	Villin
Colorectal Adenocarcinoma	+	+	+	+	+	-	-	+	-	+
Lung Adenocarcinoma	-	-	-/+	-	+	-	+	+	-	-
Squamous Cell Carcinoma	-	-	-	-	-	+	-	+	+	-
Transitional Cell Carcinoma	+	-	+	-	-	+	+	+	+	-

Cutaneous Neoplasm							
	CK 20	AR	BCL2	Ber-EP4	CD10	CD34	CK 19
Basal Cell Carcinoma	-	+	+	+	+	-	+
Trichoepithelioma	+	-	+	+	-	+	+
Merkel Cell Carcinoma	+	-	+	+	-	-	+
Microcystic Adnexal Carcinoma	-	-	+	-/+	+/-	-	+
Sebaceous Carcinoma	-	+	+/-	+	+/-	-	-
Sebaceous Adenoma	-	+	+	+	-	-	-

Bladder: Dysplasia vs. Reactive						
	CK 20	CD44	CK 5&6	Ki-67	MCM3	p53
Carcinoma- <i>in-situ</i>	+	-	-	+	+	+
Reactive Atypia	-	+	+	+	+	-
Normal Urothelium	+	+	-/+	-/+	-/+	-

## Ordering Information

### Clone: Ks20.8

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	320M-14
0.5 ml, concentrate. . . . .	320M-15
1 ml, concentrate . . . . .	320M-16
1 ml, predilute . . . . .	320M-17
7 ml, predilute . . . . .	320M-18
25 ml, predilute . . . . .	320M-10

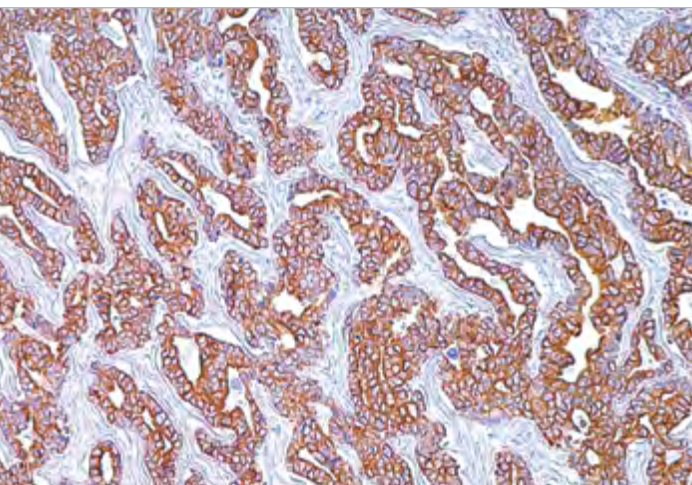
### Designations



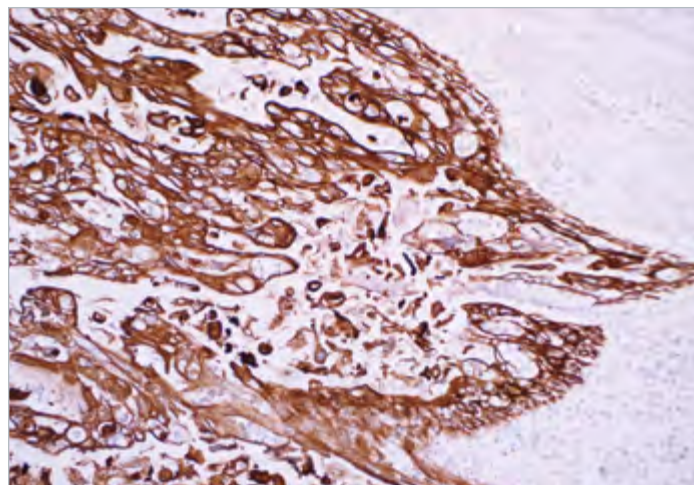
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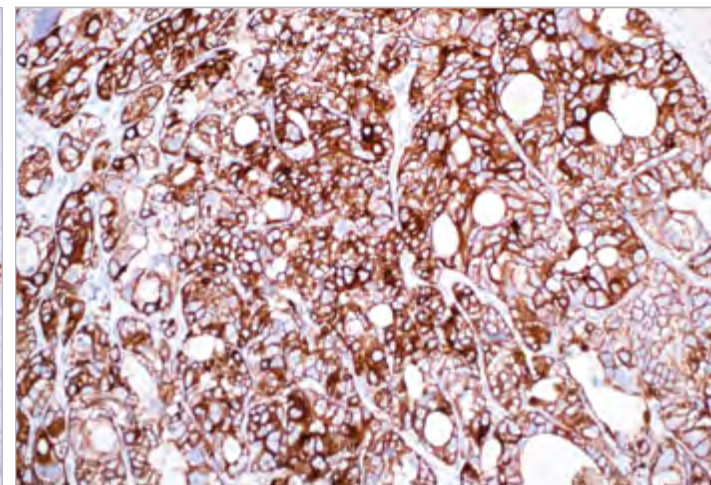
# Cytokeratin Cocktail



Cytokeratin Cocktail (AE1 & AE3) on colon.



Cytokeratin Cocktail (AE1 & AE3) shows a strong, diffuse and cytoplasmic positivity for esophageal squamous cell carcinoma.



Cytokeratin Cocktail (AE1 & AE3) on prostate.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** breast, lung, colon, skin  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>/k & IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Lymph Node . . . . . 289
- Spindle Cell Tumors. . . . . 290
- Cutaneous Lesion . . . . . 292
- Lesions. . . . . 293
- Skin: Basal vs. Squamous Cell Carcinoma . . . . . 293
- Skin: DF-SP vs. DF-FH . . . . . 293
- Skin: Spindle Cell Tumors . . . . . 294
- Germ Cell Tumors. . . . . 295
- Renal Cell Carcinoma vs. Hemangioblastoma. . . . . 296
- Brain: CNS Tumors 2 . . . . . 301
- Small Blue Round Cell Tumors. 302
- Soft Tissue Neoplasms . . . . . 302
- Soft Tissue Sarcoma . . . . . 303
- Soft Tissue Tumor. . . . . 303

## Reference

1. Battifora H. Am J Surg Pathol. 1988; 12:24.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-cytokeratin cocktail (AE1 & AE3) is the broad-spectrum keratin antibody cocktail.<sup>1-3</sup> It is composed of mouse monoclonal antibody AE1 that recognizes the acidic type I keratins 10, 14, 15, 16, 19, and AE3 that reacts with the basic type II keratins 1, 2, 3, 4, 5, 6, 7, and 8. Both clones were generated using epidermal keratin as immunogen.<sup>1-3</sup> This antibody detects almost all carcinomas of different organ origin, but is most frequently negative in hepatocellular carcinoma, chromophobe RCC, adrenal cortical carcinoma, some clear cell renal cell carcinomas, and renal oncocyoma.<sup>1,2</sup> This antibody cocktail can cross-react with other intermediate filaments, such as glial fibrillary acidic protein, giving a false-positive staining in glial tumors.<sup>4</sup>

## Panel Quick View

Small Blue Round Cell Tumors										
	CK Cocktail	MS Actin	SM Actin	CD45	CD57	CD99	FLI-1	INI-1	Myogenin	Vimentin
Lymphoblastic Lymphoma	-	-	-	+	-	+	+	+	-	+
Leiomyosarcoma	-/+	+	+	-	+/-	-	-	-	-	+
Rhabdomyosarcoma	-	+	-	-	-	-	-	+	+	+
Neuroblastoma	-	-	-	-	+	-	-	+	-	+
Embryonal Carcinoma	+	-	-	-	+	-	-	+	-	-
PNET/ES	-/+	-	-	-	+	+	+	+	-	+
DSRCT	+	-	-	-	+/-	-	+	+	-	+
Medulloblastoma	-	-	-	-	+	-	-	+	-	-

Soft Tissue Tumor									
	CK Cocktail	MS Actin	SM Actin	ALK	CD34	CD99	S-100	TFE3	TLE1
Alveolar Soft Part Sarcoma	-	+	+	-	-	-	-	+	-
Clear Cell Sarcoma	-	-	-	-	-	-	+	-	-
Desmoplastic Small Round Cell	+	-	-	-	-	-	-	-	-
Epithelioid Sarcoma	+	-/+	-	-	+	-	-	-	-
Fibrous Histiocytoma	-	-	+	-	-	-	-	-	-
Inflammatory Myofibroblastic Tumor	-	+	+	+	-	-	-	-	-
Leiomyosarcoma	-/+	+	+	-	-	-	-	-	-
Myxoid Chondrosarcoma	-	-	-	-	+/-	-	+/-	-	-
PEComa	-	-	+	-	-	-	-	-	-
PNET/ES	-/+	-	-	-	-	+	+	-	-
Rhabdomyosarcoma	-	-/+	-/+	-	-	-	-	-	-
Synovial Sarcoma	+	-	-	-	-	+	-	-	+

## Ordering Information

**Clone: AE1 & AE3**  
**Mouse Cocktail**

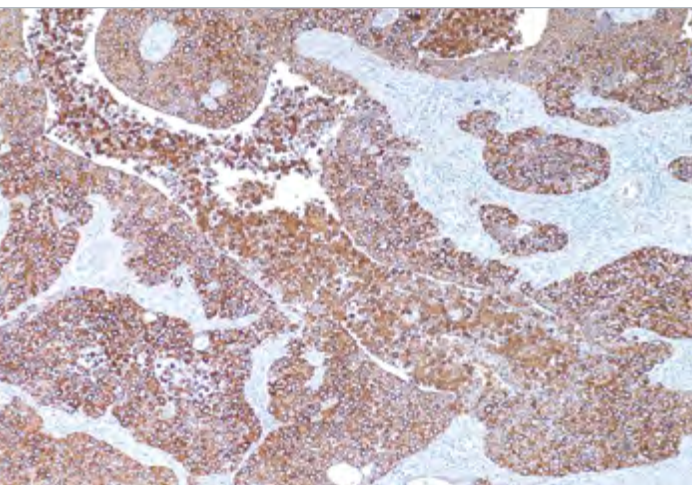
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 0.5 ml, concentrate. . . . . 313M-15  
 1 ml, concentrate . . . . . 313M-16  
 1 ml, predilute . . . . . 313M-17  
 7 ml, predilute . . . . . 313M-18  
 25 ml, predilute . . . . . 313M-10

## Designations

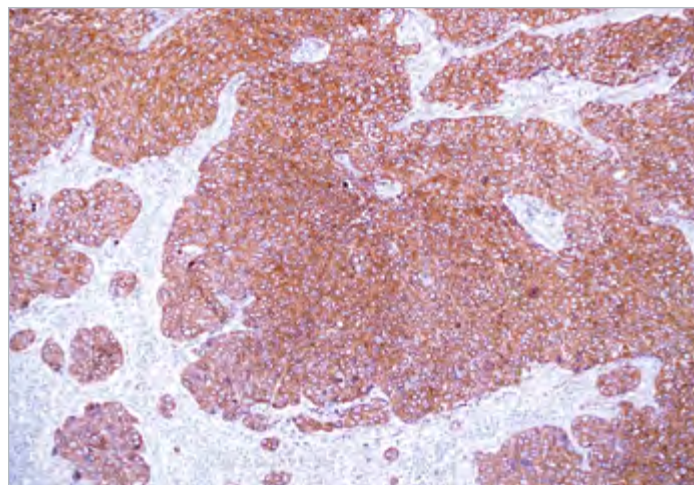
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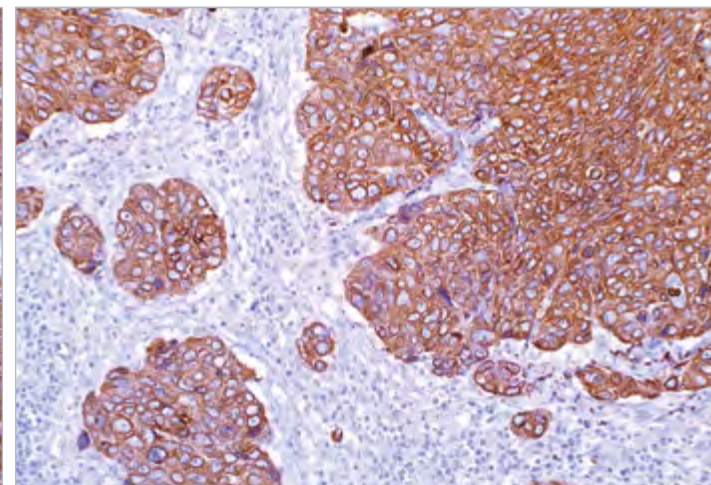
# Cytokeratin, HMW



Cytokeratin, HMW (AE3) stains the cytoplasm of squamous cell carcinoma.



Cytokeratin, HMW (AE3) on squamous cell carcinoma.



Cytokeratin, HMW (AE3) on squamous cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate, salivary gland, bladder

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

Cytokeratin AE3

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas ..... 286
- Micropapillary Carcinomas.... 289
- Skin: Pagetoid Tumors ..... 294
- Carcinomas ..... 295

## Reference

1. Tyler CR. Arch Pathol Lab Med. 1978; 102:113.
2. Weiss RA, et al. J Cell Biol. 1984; 98:1397.
3. Nelson WG, et al. J Cell Biol. 1984; 44:1600-1603.
4. Sun TT, et al. Intermediate Filaments. 1985; 455:307-329.
5. Swanson PE, et al. Am J Clin Pathol. 1991; 95:S2-S7.
6. Eusebi V, et al. Am J Clin Pathol. 1990; 14:737-747.
7. Lopez-Beltran A, et al. Virchows Arch. 2001; 438:552-7.

## Product Description

Anti-cytokeratin, high molecular weight (AE3) is capable of recognizing all basic keratins; therefore, it is a broadly reactive antibody staining most epithelia and their neoplasms. Members of the acidic and basic subfamilies are found together in pairs. Since each epithelium contains at least one acidic and one basic keratin, this antibody is used to observe the distribution of keratin-containing cells in normal epithelia and to identify neoplasms derived from such epithelium.

## Panel Quick View

Carcinomas	CK, HMW	pCEA	CK 5	CK 7	CK 20	CK, LMW	BRST-2	Hep Par-1	RCC	TTF-1
Bladder Carcinoma	+	+	-	+	+	+	-	-	-	-
Breast Carcinoma	+	-	-	+	-	+	+	-	-	-
Colorectal Adenocarcinoma	-	+	-	-	+	+	-	-	-	-
Hepatocellular Carcinoma	-	+	-	-	-	-	-	+	-	+ (cytoplasmic)
Lung Adenocarcinoma	+	+	-	+	-	+	-	-	-	-
Ovarian Carcinoma, Non Mucinous	+	-	+	+	-	+	-	-	-	-
Pancreatic Carcinoma	+/-	+	-	+	-	+	-	-	-	-
Prostate Adenocarcinoma/ Carcinoma	-	-	-	-	-	+	-	-	-	-
Renal Cell Carcinoma	-	-	-	-	-	+	-	-	+	-
Salivary Gland Carcinoma	+	+	+	+	-	+	+	-	-	-
Spindle Cell Carcinoma	+	-	-	-	-	-	-	-	-	-
Squamous Cell Carcinoma	+	-	+	-	-	+	-	-	-	-
Thyroid Carcinoma	+	-	-	+	-	+	-	-	-	+
Transitional Cell Carcinoma	+	-	+	+	+	+	-	-	-	-

## Skin: Pagetoid Tumors

	CK, HMW	CEA	CK, LMW	S-100	Vimentin
Melanoma	-	-	-	+	+
Paget's Disease	-	+	+	-/+	-
Bowen's Disease	+	-	+	-	-

## Ordering Information

### Clone: AE3

### Mouse Monoclonal

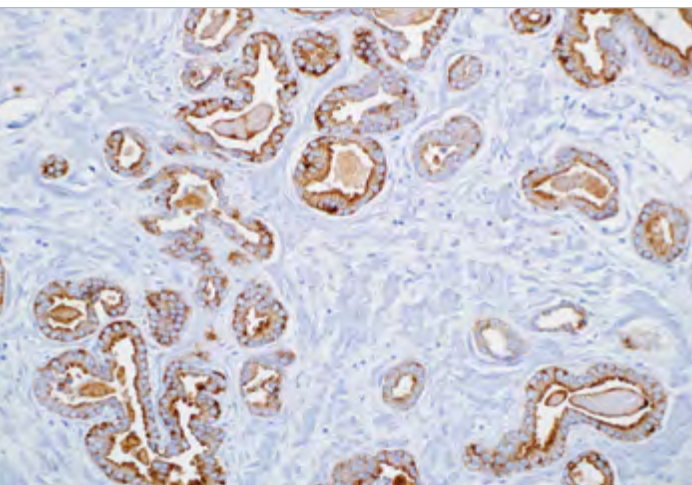
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0.5 ml, concentrate.....	303M-15
1 ml, concentrate .....	303M-16
1 ml, predilute .....	303M-17
7 ml, predilute .....	303M-18

### Designations

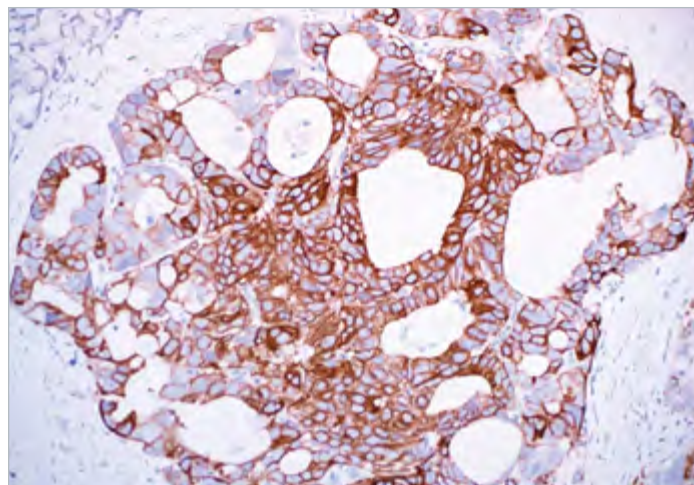
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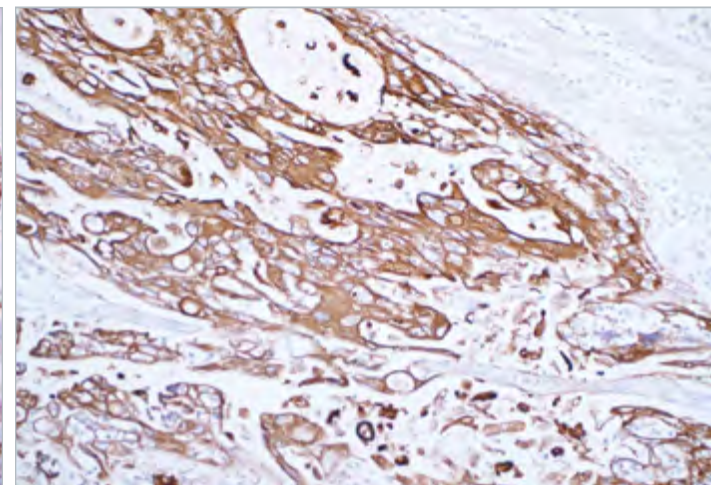
# Cytokeratin, LMW



Cytokeratin, LMW (AE1) on prostate.



Cytokeratin, LMW (AE1) on prostate.



Cytokeratin, LMW (AE1) stains neoplastic cells of esophageal squamous cell carcinoma in a cytoplasmic pattern.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate, salivary gland

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

Cytokeratin AE1

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas ..... 286

● Skin: Pagetoid Tumors ..... 294

## Reference

1. Tyler CR. Arch Pathol Lab Med. 1978; 102:113.
2. Weiss RA, et al. J Cell Biol. 1984; 98:1397.
3. Swanson PE, et al. Am J Clin Pathol. 1991; 95:S2-S7.
4. Eusebi V, et al. Am J Clin Pathol. 1990; 14:737-747.
5. Dabbs DJ. Diagnostic Immunohistochemistry. Churchill Livingstone. 2002. 166-174.
6. Lopez-Beltran A, et al. Virchows Arch. 2001; 438:552-7.
7. Kitazawa R, et al. Virchows Arch. 1999; 435:137-42.
8. Judkins AR, et al. Am J Clin Pathol. 1998; 110:641-6.
9. Demetris AJ, et al. Am J Pathol. 1996; 149:439-48.

## Product Description

Anti-cytokeratin, low molecular weight (AE1) labels most acidic keratins; therefore, it is a broadly reactive antibody staining most epithelia and their neoplasms. Members of the acidic and basic cytokeratin subfamilies are found together in pairs; each epithelium contains at least one acidic and one basic keratin so this antibody can show the distribution of keratin containing cells in epithelia. This antibody has shown great sensitivity and broad specificity for keratins under various conditions of fixation and staining. Anti-low molecular weight cytokeratin (AE1) is particularly suited to distinguish poorly differentiated carcinomas from non-epithelial neoplasms. This marker stains both normal and neoplastic cells of epithelial origin.

## Panel Quick View

Carcinomas										
	CK, LMW	pCEA	CK 5	CK 7	CK 20	CK, HMW	BRST-2	Hep Par-1	RCC	TTF-1
Bladder Carcinoma	+	+	-	+	+	+	-	-	-	-
Breast Carcinoma	+	-	-	+	-	+	+	-	-	-
Colorectal Adenocarcinoma	+	+	-	-	+	-	-	-	-	-
Hepatocellular Carcinoma	-	+	-	-	-	-	-	+	-	+ (cytoplasmic)
Lung Adenocarcinoma	+	+	-	+	-	+	-	-	-	+
Ovarian Carcinoma, Non Mucinous	+	-	+	+	-	+	-	-	-	-
Pancreatic Carcinoma	+	+	-	+	-	+/-	-	-	-	-
Prostate Adenocarcinoma/ Carcinoma	+	-	-	-	-	-	-	-	-	-
Renal Cell Carcinoma	+	-	-	-	-	-	-	-	+	-
Salivary Gland Carcinoma	+	+	+	+	-	+	+	-	-	-
Squamous Cell Carcinoma	+	-	+	-	-	+	-	-	-	-
Thyroid Carcinoma	+	-	-	+	-	+	-	-	-	+
Transitional Cell Carcinoma	+	-	+	+	+	+	-	-	-	-

## Skin: Pagetoid Tumors

	CK, LMW	CEA	CK, HMW	S-100	Vimentin
Melanoma	-	-	-	+	+
Paget's Disease	+	+	-	-/+	-
Bowen's Disease	+	-	+	-	-

## Ordering Information

### Clone: AE1

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	301M-14
0.5 ml, concentrate.....	301M-15
1 ml, concentrate .....	301M-16
1 ml, predilute .....	301M-17
7 ml, predilute .....	301M-18

### Designations



IVD



IVD



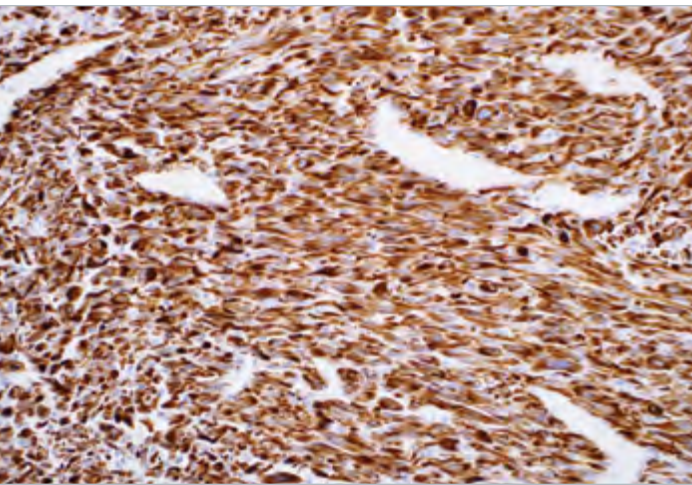
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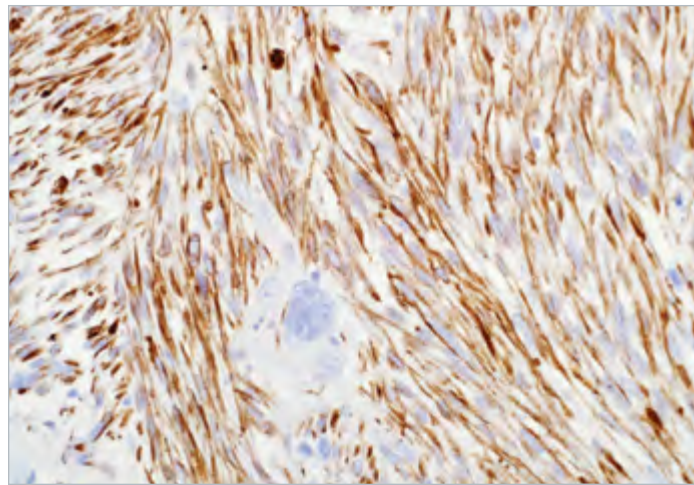
RUO



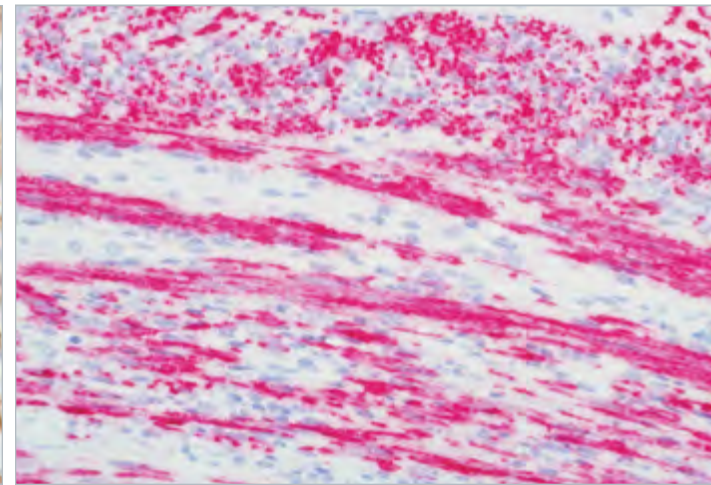
# Desmin



Rabbit monoclonal Desmin (EP15) shows a strong, diffuse, and cytoplasmic expression of the desmin protein in rhabdomyosarcoma.



Desmin (D33) on leiomyosarcoma.



Desmin (D33) on smooth muscle.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** skeletal muscle

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Soft Tissue Pathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- PEComa... 290
- Spindle Cell Lesions... 290
- Spindle Cell Tumors... 290
- Skin: Dermatofibrosarcoma  
Protuberans (DF-SP) vs.  
Dermatofibroma Fibrous  
Histiocytoma (DF-FH)... 293
- Soft Tissue Neoplasms... 302
- Soft Tissue Sarcoma... 303
- Soft Tissue Tumor... 303

## Reference

1. Altmannsberger M, et al. Am J Pathol 1985; 118:85-95.
2. Debus E, et al. EMBO J. 1983; 2:2305-2312.
3. Yamaguchi U, et al. Virchows Arch. 2004; 2:142-50.

## Product Description

Anti-desmin detects a protein that is expressed by cells of normal smooth, skeletal, and cardiac muscles. It has been suggested that desmin is primarily located at or near the periphery of Z lines in striated muscle fibrils. In smooth muscle, desmin interconnects cytoplasmic dense bodies with membrane bound dense plaques. Anti-desmin reacts with leiomyomas, leiomyosarcoma, rhabdomyomas, rhabdomyosarcoma, and perivascular cells of glomus tumors of the skin. This antibody is used to demonstrate the myogenic components/derivation of tumors.<sup>1,2</sup> Desmin can also be present in myofibroblasts and be focally positive in desmoid fibromatosis.<sup>3</sup>

## Panel Quick View

Spindle Cell Tumors										
	Desmin	β-Cat- enin	BCL2	Cal- ponin	CD34	CD117	CK Cocktail	Myo- genin	PGP 9.5	S-100
Myofibroblastic Tumor	+	-	-	+	-	-	-	-	-	-
Spindle Cell Carcinoma	-	+/-	-	-	-	-	+	-	+	-
Neurofibroma	-	-	+	-	-	-	-	-	+	+
Rhabdomyosarcoma	+	-	+	-	-	+	-	+	-	-
Endometrial Stromal Tumor	-	+/-	-	+	-	-	-	-	+	-
Smooth Muscle	+	-	-	+	-	-	-	-	-	-
Fibromatosis	-	+	-	-	-	-	-	-	+	-
GIST	-	-	+	-	+	+	-	-	-	-
Schwannoma	-	-	+	-	-	-	-	-	-	+
Leiomyosarcoma	+	-	-	+	-	-	-/+	-	-	-
MPNST	-	-	+	-	-/+		-	-	+	+/-
			(focal)							

Soft Tissue Tumor								
	Desmin	MS Actin	SM Actin	ALK	CD34	CD99	CK Cocktail	EMA
Desmoplastic Small Round Cell	+	-	-	-	-	-	+	-
Epithelioid Sarcoma	-	-/+	-	-	+	-	+	+
PNET/ES	-	-	-	-	-	+	-/+	

## Ordering Information

### Clone: EP15

Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate..... 243R-14  
 0.5 ml, concentrate..... 243R-15  
 1 ml, concentrate ..... 243R-16  
 1 ml, predilute ..... 243R-17  
 7 ml, predilute ..... 243R-18

### Alternate Clones Available

• Mouse Monoclonal, D33  
 Contact us for more information.

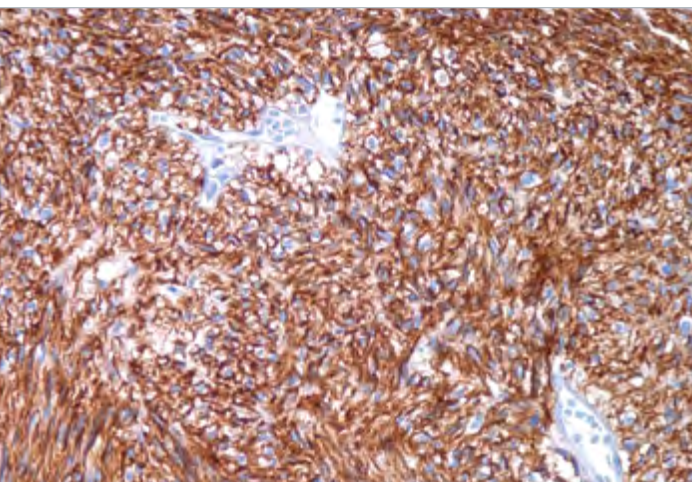
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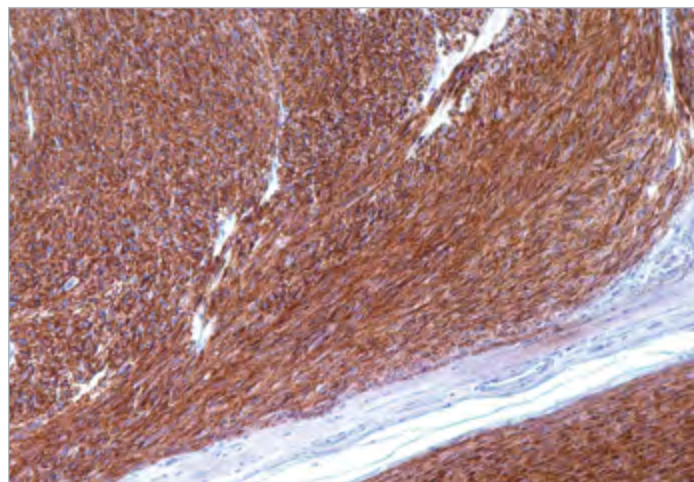
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**RabMAb®**  
 Technology from Abcam

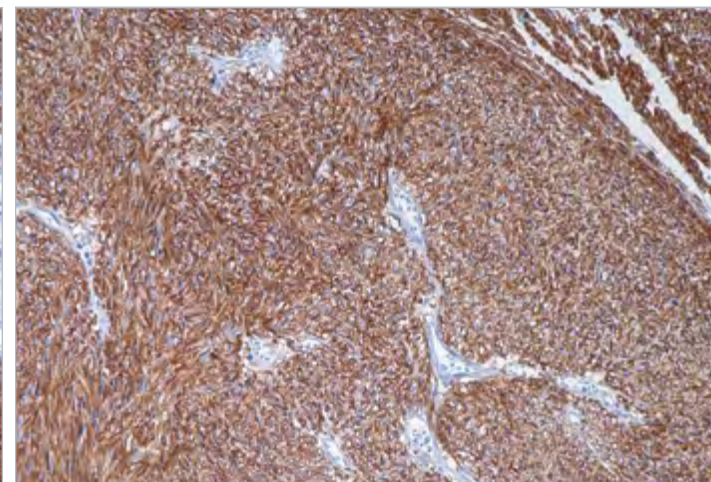




DOG1 (SP31) shows diffuse and strong staining for GI stromal tumor in a membranous/cytoplasmic reaction.



DOG1 (SP31) on GI stromal tumor.



DOG1 (SP31) on GIST.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** GIST

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Gastrointestinal (GI) Pathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- Spindle Cell Tumors... 290
- GIST Mutation vs. Wild Type... 294

## Reference

1. Espinosa I, et al. Am J Surg Pathol. 2008; 32:210-8.
2. Miwa S, et al. J Gastroenterol. 2008; 43:531-7.
3. Parfitt JR, et al. Histopathology. 2008; 52:816-23.
4. West RB, et al. Am J Pathol 2004; 165:107-13.

## Product Description

Anti-DOG1 antibody has been shown to be highly specific and sensitive in the diagnosis of gastrointestinal stromal tumors (GIST). Approximately 4-15% of GIST stain weakly or are negative for c-kit by immunohistochemistry (IHC). In the vast majority of these cases, DOG1 is expressed by IHC.<sup>1-4</sup>

## Panel Quick View

Spindle Cell Tumors	DOG1	ALK	β-Catenin	BCL2	Cal-ponin	CD34	CK Cocktail	Desmin	PGP 9.5	S-100
Myofibroblastic Tumor	-	+	-	-	+	-	-	+	-	-
Spindle Cell Carcinoma	-	-	+/-	-	-	-	+	-	+	-
Neurofibroma	-	-	-	+	-	-	-	-	+	+
Rhabdomyosarcoma	-	-	-	+	-	-	-	+	-	-
Endometrial Stromal Tumor	-	-	+/-	-	+	-	-	-	+	-
Smooth Muscle	-	-	-	-	+	-	-	+	-	-
Fibromatosis	-	-	+	-	-	-	-	-	+	-
GIST	+	-	-	+	-	+	-	-	-	-
Schwannoma	-	-	-	+	-	-	-	-	-	+
Leiomyosarcoma	-	-	-	-	+	-	-/+	+	-	-

## GIST Mutation vs. Wild Type

	DOG1	CD34	CD117
GIST, Kit Mutation	+	+	+
GIST, PDGFRA Mutation	+	-	-
GIST, Wild Type	+	+/-	+

## Ordering Information

### Clone: SP31

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	244R-14
0.5 ml, concentrate	244R-15
1 ml, concentrate	244R-16
1 ml, predilute	244R-17
7 ml, predilute	244R-18

### Designations



IVD



IVD



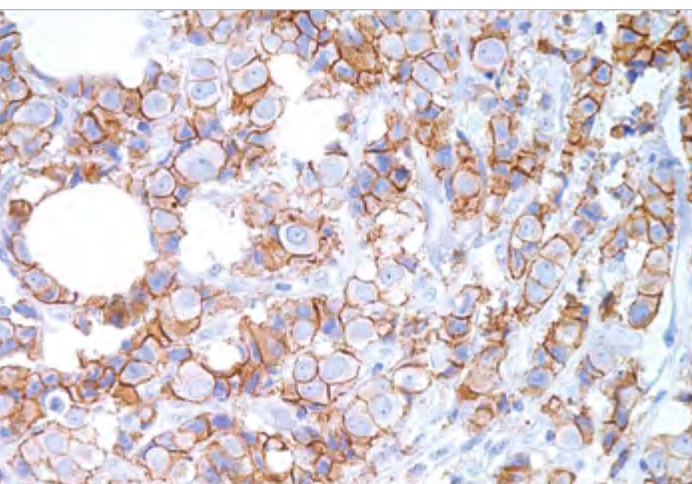
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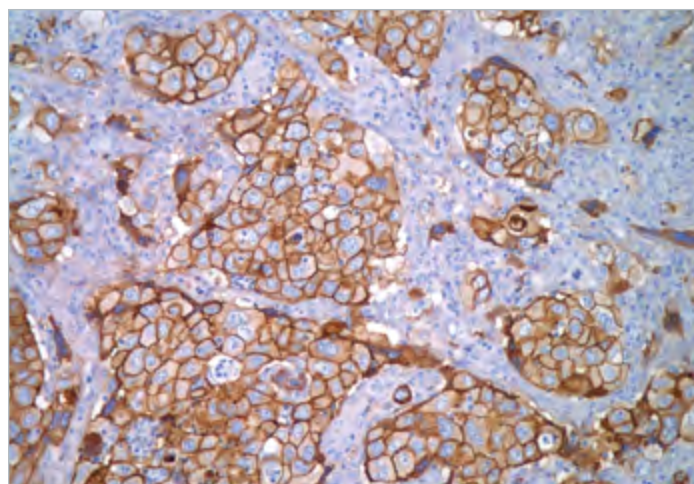
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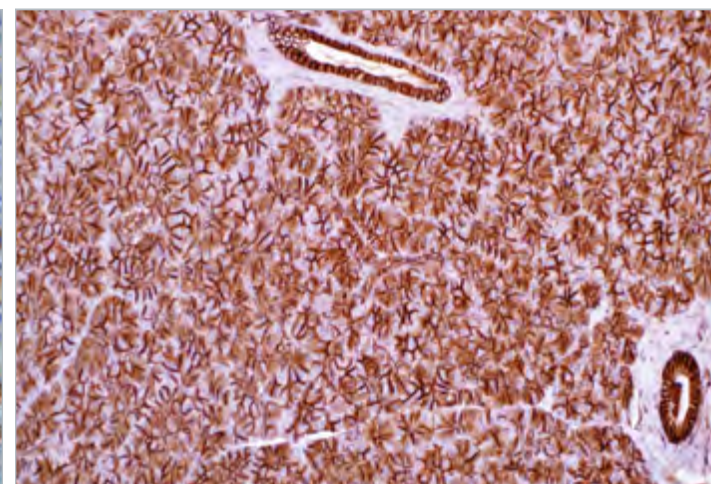
# E-cadherin



E-cadherin (EP700Y) on breast.



E-cadherin (EP700Y) reveals E-cadherin expression in the membrane of invasive ductal carcinoma of the breast.



E-cadherin (EP700Y) on liver.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** breast

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Breast/Gynecological Pathology

## Associated Panels

- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma ..... 289
- Breast Lesion ..... 291
- Pancreas / Pancreatic Tumors . 294
- Lung Adenocarcinoma vs. Mesothelioma ..... 302
- Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Han AC, et al. Hum Pathol. 1997; 28:641-5.
2. Simsir A, et al. Diagn Cytopathol. 1999; 20:125-30.
3. Lear MP, et al. Histopathology. 1998; 32:209-16.
4. Karayiannakis AG, et al. Hepatogastroenterology. 1998; 45:2437-42.
5. Peralta Soler A, et al. Hum Pathol. 1997; 28:734-9.
6. Abutaily AS, et al. J Clin Pathol. 2002; 55:662-8.
7. Wahed A, et al. Ann Diagn Pathol. 2002; 6:349-51.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

E-cadherin is an adhesion protein that is expressed in cells of epithelial lineage. Anti-E-cadherin stains positively in glandular epithelium as well as adenocarcinomas of the lung,<sup>1-3,6</sup> gastrointestinal tract,<sup>4</sup> and ovary.<sup>5</sup> Another application involves the differentiation of ductal (which is membrane staining) vs. lobular cancer of the breast (which is cytoplasmic staining).<sup>7,8</sup> It has also been shown to be positive in some thyroid carcinomas. A combination of E-cadherin and p120 catenin helps distinguish ductal carcinoma of the breast from lobular carcinoma.<sup>9</sup>

## Panel Quick View

Breast Lesion					
	E-cadherin	CK 34βE12	BRST-2	Mammaglobin	p120
Lobular	-	+	+	+	+ (cytoplasmic)
Ductal	+	-	+	+	+ (membranous)

Pancreas / Pancreatic Tumors									
	E-cadherin	β-Catenin	CA 19-9	CD10	CD56	Chromogranin A	CK 19	S100P	Synaptophysin
Ductal Adenocarcinoma / Ductal Carcinoma	+/-	+/-	+	+/-	-	-	-	+	-
Acinar Cell Carcinoma	+	+	-/+	+/-	-	-	+	-	-
Pancreatoblastoma	-	+	-	-	+	+	-	-	-
Neuroendocrine Tumor	-	+	+/-	-	+	+	+/-	-	+
Solid Pseudopapillary Tumor	+ (nuclear)	+	-	+	+	-	-		+
Pancreatic Ducts	-	-	-	-	-	-	-	-	-

## Ordering Information

### Clone: EP700Y

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	246R-14
0.5 ml, concentrate.....	246R-15
1 ml, concentrate .....	246R-16
1 ml, predilute .....	246R-17
7 ml, predilute .....	246R-18

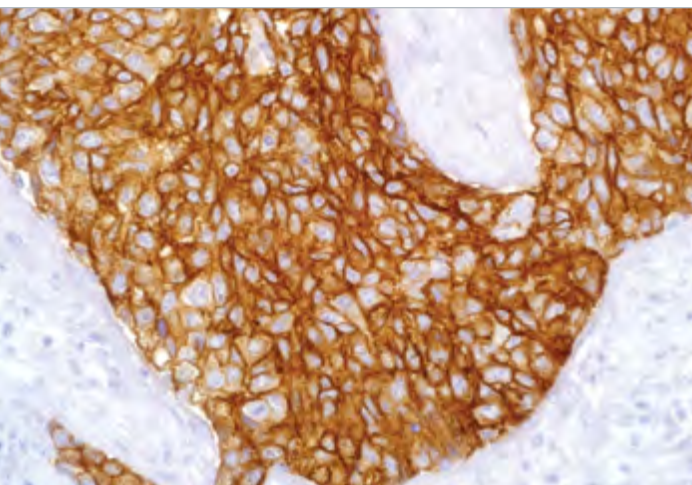
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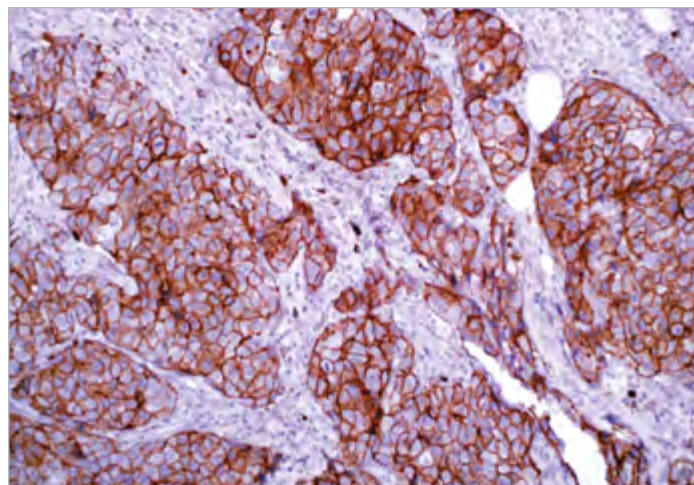
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 RabMab®  
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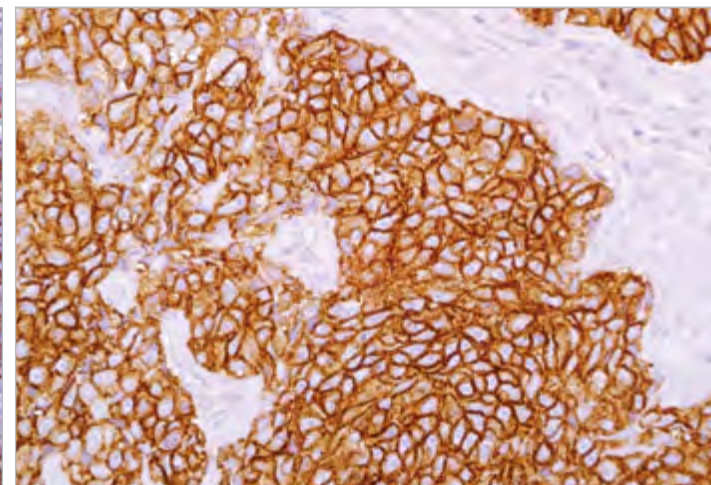




Rabbit monoclonal anti-EGFR finds EGFR protein expression in invasive ductal carcinoma of the breast.



EGFR (SP84) on triple negative breast carcinoma.



EGFR (SP84) on metastatic breast carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Hematopathology

## Reference

1. Vranic S, et al. Modern Pathology. 2010; 23:644-53.
2. Ch'ng S, et al. Hum Pathol. 2008; 39:344-9.
3. Van Damme, et al. BMC Cancer. 2010; 10:189.
4. Tawbi H, et al. Oncologist. 2008; 13:459.
5. Cascio MJ, et al. Mod Pathol. 2010; 23:574.

## Product Description

EGFR is a 170-kDa transmembrane glycoprotein encoded by the HER-1 proto-oncogene located at 7p11.2-p12.1-2, EGFR is widely expressed on the surface of epithelial cells, fibroblasts, gliocytes, keratinocytes, and other cell types.<sup>1</sup> EGFR is overexpressed in many epithelial malignancies including carcinomas of the colorectum, stomach, esophagus, pancreas, oropharynx, adrenocortical carcinoma, non-small cell carcinoma of the lung, cutaneous and anal squamous carcinoma, and head and neck squamous carcinoma.<sup>1-5</sup> EGFR protein expression has also been a common finding in breast carcinoma, particularly in triple-negative, basal-like breast carcinomas.<sup>4</sup> Studies suggest that EGFR expression is not unique to carcinomas and may be present in malignant bone and soft tissue tumors.<sup>5</sup> Soft tissue sarcomas such as synovial sarcoma and epithelioid sarcoma show morphologic and immunophenotypic features of epithelial differentiation. Hence, EGFR overexpression is often seen in synovial sarcoma and epithelioid sarcoma. IHC analysis of 48 synovial sarcoma specimens representing primary and metastatic lesions using the anti-EGFR antibody demonstrated positive reactions in 34 of 48 cases (71%). The same study included 32 cases of malignant peripheral nerve sheath tumor, in which EGFR overexpression was found in 20 cases (62.5%).<sup>4</sup> Cascio, MJ et al. found 13 of 15 cases (87%) of epithelioid sarcoma displayed immunoreactivity of EGFR by IHC. Findings included strong, homogenous staining in the majority of cases, but absence of either gene amplification or kinase domain mutations.<sup>5</sup>

## Panel Quick View

Carcinomas and Sarcomas with Epithelioid Morphology (Features)						
	EGFR	CD34	CAM 5.2	CK Cocktail	PAX-8	SOX-10
Breast Carcinoma	+	-	-	+	-	-/+
Lung Carcinoma	+	-	-/+	+	-	-
Colorectal Adenocarcinoma	+	-	-/+	+	-	-
Hepatocellular Carcinoma	+	-	+	-	-	-
Renal Cell Carcinoma	+	-	-/+	+	+	-
Synovial Sarcoma	+	-	+	+	-	-
Epithelioid Sarcoma	+	+	+/-	+	-	-
Malignant Peripheral Nerve Sheath Tumor	+	-	+/-	+/-	-	+/-

## Ordering Information

### Clone: SP84

### Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	414R-14
0.5 ml, concentrate	414R-15
1 ml, concentrate	414R-16
1 ml, predilute	414R-17
7 ml, predilute	414R-18

### Designations



IVD



IVD

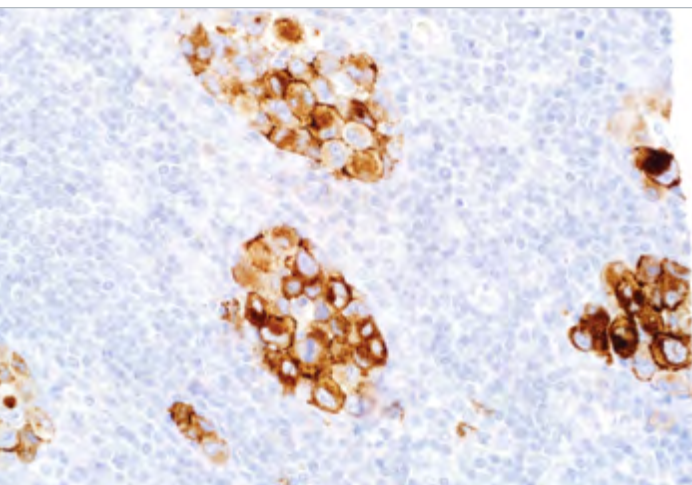


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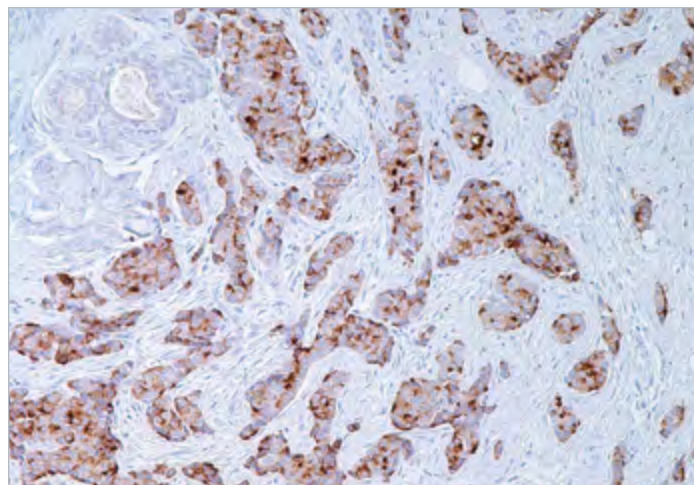


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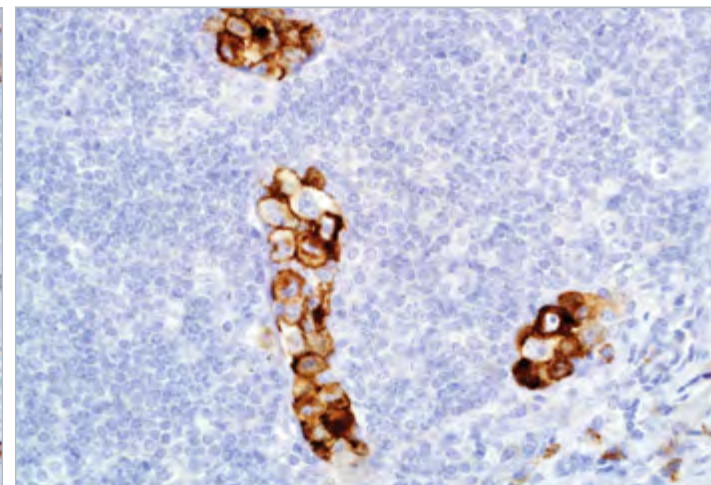




Anti-EMA recognizes the neoplastic cells of anaplastic large cell lymphoma in membranous/cytoplasmic and Golgi pattern.



EMA (E29) on breast.



EMA (E29) on anaplastic large cell lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous, cytoplasmic

**Control** breast, skin

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology
- Hematopathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- Micropapillary Carcinomas... 289
- Spindle Cell Tumors... 290
- Sex Cord Stromal Tumors... 292
- Skin Adnexal Tumors... 293
- Skin: Basal vs. Squamous Cell Carcinoma... 293
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma... 295
- Hodgkin vs. Non-Hodgkin Lymphomas... 297
- Soft Tissue Tumor... 303
- Brain: CNS Tumors 1... 300
- Brain: CNS Tumors 2... 301

## Reference

- Pincus GS, et al. Human Pathol. 1985; 16:929-940.
- Pincus GS, et al. Am J Clin Pathol. 1986; 77:269-277.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-EMA antibody is a useful marker for staining many carcinomas. It stains normal and neoplastic cells from various tissues, including mammary epithelium, sweat glands and squamous epithelium. Hepatocellular carcinoma, adrenal carcinoma and embryonal carcinomas are consistently EMA negative, so keratin positivity with negative EMA favors one of these tumors. EMA is frequently positive in meningioma, which can be useful when distinguishing it from other intracranial neoplasms, e.g. Schwannomas. The absence of EMA can also be of value since negative EMA staining is characteristic of some tumors including adrenal carcinoma, seminomas, paraganglioma and hepatoma.

## Panel Quick View

Skin: Adnexal Tumors						
	EMA	CD15	CK 7	CK 20	BRST-2	S-100
Merkel Cell Carcinoma	+	-	-	+	-	-
Sebaceous Tumor	-	+	+	-	-	-
Apocrine Tumor	+/-	+/-	+	-	+	-
Eccrine Tumor	+	-	+	-	-	+

Skin: Basal vs. Squamous Cell Carcinoma							
	EMA	BCL2	CK 8&18	CK Cocktail	Ep-CAM	MOC-31	UEA-1
Basal Cell Carcinoma	-	+	-/+	+	+	+	-
Squamous Cell Carcinoma	+	-	-	+	-	-	+

Hodgkin vs. Non-Hodgkin Lymphomas										
	EMA	ALK	BCL6	CD15	CD30	CD79a	Fascin	Gran-zyme B	MUM1	PU.1
Anaplastic Large Cell Lymphoma	+	+	+/-	-	+	-	-	+	-	-
Angioimmunoblastic T-cell Lymphoma	-	-	+	-	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	-	-	-	+	+	-	+	-	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	+	-	+	-	-	+	-	-	-/+	+
T-cell Rich B-cell Lymphoma	-/+	-	+	-	-	+/-	-	-	+	-
T-cell Rich LBCL	-	-	+	-	-	+	-	-	+	-

Brain: CNS Tumors 2										
	EMA	CK Cocktail	GFAP	INI-1	NGFR	Neuro-filament	PR	S-100	Synap-tophysin	Vimen-tin
Meningioma	+	-	-	+	-	-	+	-	-	+
Rhabdoid Tumors	+	+	-	-	-	+/-	-	+/-	+/-	+

## Ordering Information

### Clone: E29

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	247M-94
0.5 ml, concentrate	247M-95
1 ml, concentrate	247M-96
1 ml, predilute	247M-97
7 ml, predilute	247M-98
25 ml, predilute	247M-90

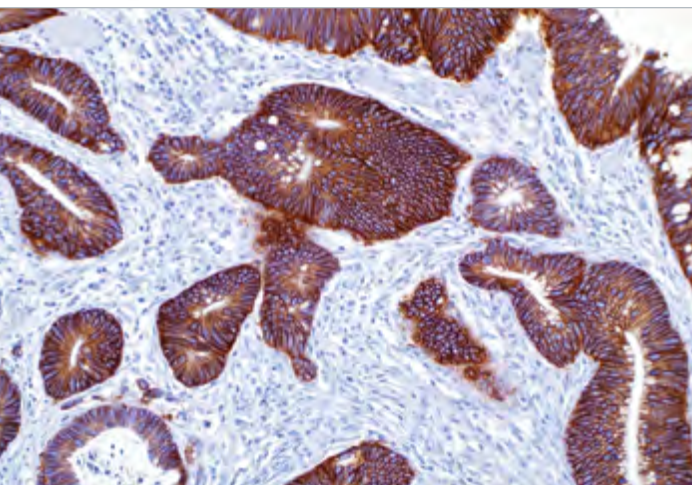
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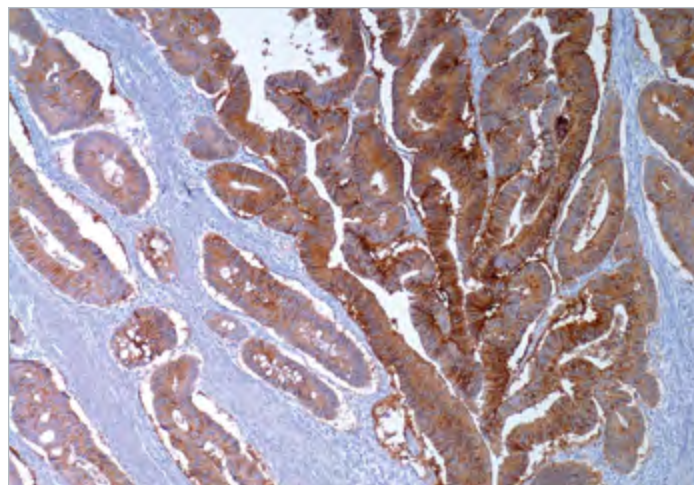
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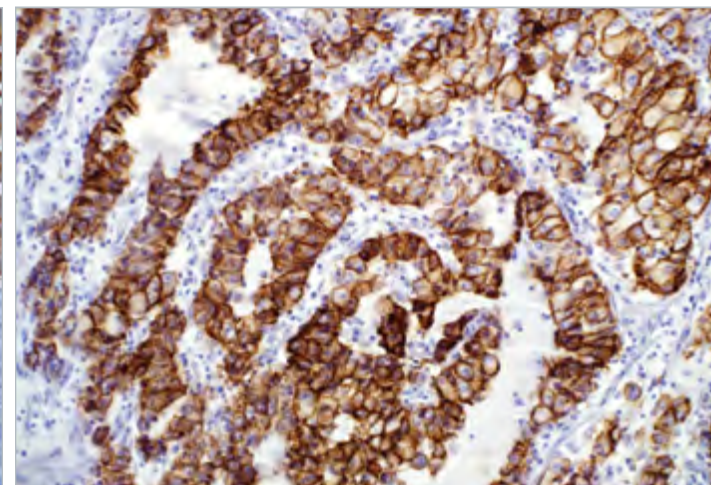
# Ep-CAM/Epithelial Specific Antigen (Ber-EP4)



Ep-CAM/Epithelial Specific Antigen (Ber-EP4) on colon.



Ep-CAM/Epithelial Specific Antigen (Ber-EP4) on colon.



Anti-Ep-CAM/Epithelial Specific Antigen (Ber-EP4) shows strong and diffuse membranous labelling of lung adenocarcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** membranous  
**Control** adenocarcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

Ber-EP4

## Associated Specialties

- Anatomic/Surgical Pathology
- Cytopathology

## Associated Panels

- Carcinomas ..... 287
- Cutaneous Neoplasm ..... 292
- Lesions ..... 293
- Skin: Basal vs. Squamous Cell Carcinoma ..... 293
- Lung Adenocarcinoma vs. Mesothelioma ..... 302
- Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Schnell U, et al. 2013; 1828:1989-2001.
2. Latza, et al. J Clin Pathol. 1990; 43:213-19.
3. Ma CK, et al. Am J Clin Pathol. 1993; 99:551-7.
4. Ordóñez NG. Mod Pathol. 2006; 19:417-28.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Epithelial cell adhesion molecule (Ep-CAM) is an approximate 40 kDa transmembrane glycoprotein. In paraffin sections, the protein is detected with many antibodies like anti-Ber-EP4 and anti-MOC-31. Ep-CAM (Ber-EP4) is normally expressed at the basolateral membrane of cells in the majority of epithelial tissues.<sup>1</sup> It is not expressed in adult squamous epithelia, hepatocytes, myoepithelial cells, mesothelial cells or fibroblasts. Ep-CAM is found in the large majority of adenocarcinomas of most sites (50-100%) in various studies; as well as neuroendocrine tumors, including small cell carcinoma.<sup>2</sup> Renal clear cell carcinoma, renal oncocytoma and hepatocellular carcinoma stain in a minority of the cases,<sup>3</sup> but papillary renal cell carcinoma, chromophobe renal cell carcinoma and cholangiocarcinoma stain with anti-Ber-EP4 at a higher percentage. Basal cell carcinoma is anti-Ber-EP4 positive in almost all cases.<sup>4</sup> Ep-CAM can be of great help in the differentiating malignant involvement in the peritoneal and pleural cavities.<sup>5-7</sup>

## Panel Quick View

Cutaneous Neoplasm								
	Ber-EP4	AR	BCL2	CD10	CD34	CK 15	CK 19	CK 20
Basal Cell Carcinoma	+	+	+	+	-	-	+	-
Trichoepithelioma	+	-	+	-	+	+	+	+
Merkel Cell Carcinoma	+	-	+	-	-	-	+	+
Microcystic Adnexal Carcinoma	-/+	-	+	+/-	-	+	+	-
Sebaceous Carcinoma	+	+	+/-	+/-	-	-	-	-
Sebaceous Adenoma	+	+	+	-	-	-	-	-

Pleura: Adenocarcinoma vs. Mesothelioma										
	Ber-EP4	Caldesmon	Calretinin	CEA	CK 5&6	E-cadherin	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	+	-	-	+	-	+	-	-	+	+
Mesothelioma	-	+	+	-	+	-	+	+	-	-

## Ordering Information

**Clone: Ber-EP4**  
**Mouse Monoclonal**

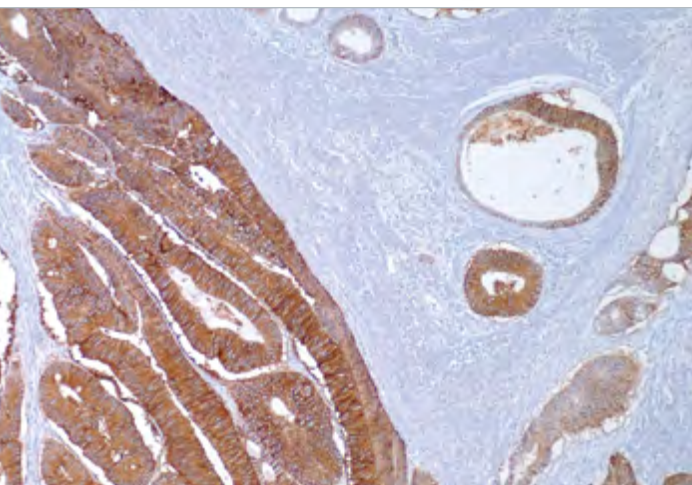
**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 248M-94  
 0.5 ml, concentrate ..... 248M-95  
 1 ml, concentrate ..... 248M-96  
 1 ml, predilute ..... 248M-97  
 7 ml, predilute ..... 248M-98

## Designations

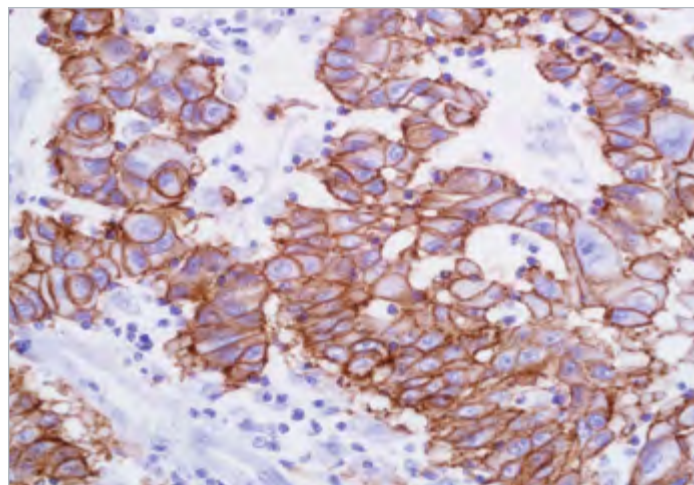
 IVD     IVD     IVD     RUO



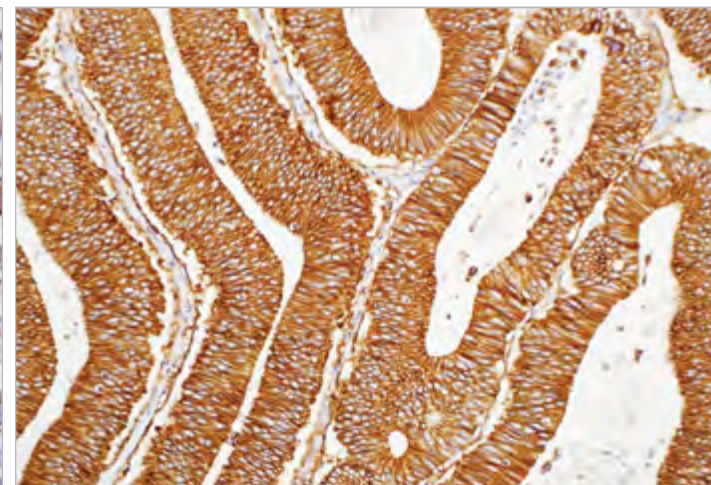
# Ep-CAM/Epithelial Specific Antigen (MOC-31)



Ep-CAM/Epithelial Specific Antigen (MOC-31) on colon.



MOC-31 antigen expression is detected by anti-MOC-31 in the membrane of lung adenocarcinoma cells.



Ep-CAM/Epithelial Specific Antigen (MOC-31) on colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** colon adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

MOC-31

## Associated Specialties

- Anatomic/Surgical Pathology
- Cytopathology

## Associated Panels

- Carcinomas ..... 286
- Thymus ..... 290
- Skin: Basal vs. Squamous Cell Carcinoma ..... 293
- Kidney: Renal Epithelial Tumors ... ..... 295
- Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Gokden M, et al. Diagn Cytopathol. 2005; 33:166-72.
2. Hecht JL, et al. Cancer. 2006; 108:56-9.
3. Kakar S, et al. Arch Pathol Lab Med. 2007; 131:1648-54.
4. King JE, et al. Histopathology. 2006; 48:223-32.
5. Lewis JS, et al. Mod Pathol. 2005; 18:1471-81.

## Product Description

Anti-MOC-31 reacts with a transmembrane glycoprotein present on most glandular epithelium and tumors originating from such epithelium. This antibody has been used to distinguish adenocarcinoma from mesothelioma and hepatocellular carcinoma. This antibody is also useful in distinguishing serous carcinomas of the ovary from mesothelioma.

## Panel Quick View

### Skin: Basal vs. Squamous Cell Carcinoma

	MOC-31	BCL2	CK Cocktail	EMA	CK 8&18	Ber-EP4	UEA-1
Basal Cell Carcinoma	+	+	+	-	-/+	+	-
Squamous Cell Carcinoma	-	-	+	+	-	-	+

### Kidney: Renal Epithelial Tumors

	MOC-31	CD10	CD117	Ksp-cadherin	Parvalbumin	PAX-2	RCC	S100A1	Vimentin
Clear Cell RCC	-	+	-	-	-	+	+	+	+
Chromophobe RCC	+	-/+	+	+	+	+	-/+	-	-
Oncocytoma	-	+/-	+	+/-	+	+	-	+	-

### Pleura: Adenocarcinoma vs. Mesothelioma

	MOC-31	Caldesmon	Calretinin	CEA	CK 5&6	E-cadherin	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	+	-	-	+	-	+	-	-	+	+
Mesothelioma	-	+	+	-	+	-	+	+	-	-

## Ordering Information

### Clone: MOC-31

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	248M-14
0.5 ml, concentrate	248M-15
1 ml, concentrate	248M-16
1 ml, predilute	248M-17
7 ml, predilute	248M-18

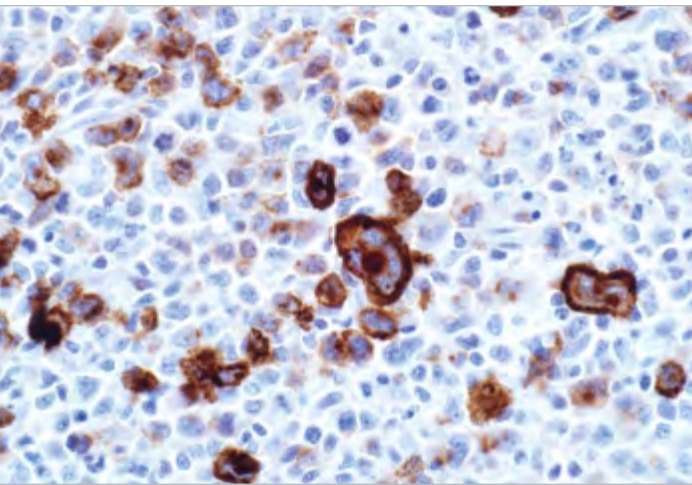
### Designations



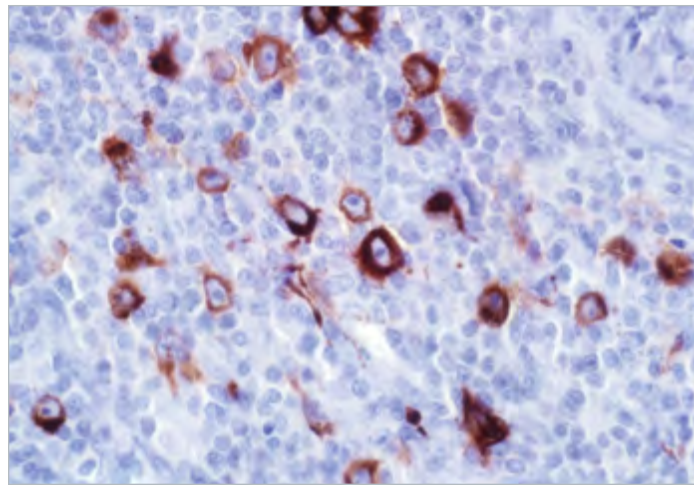
IVD IVD IVD RUO



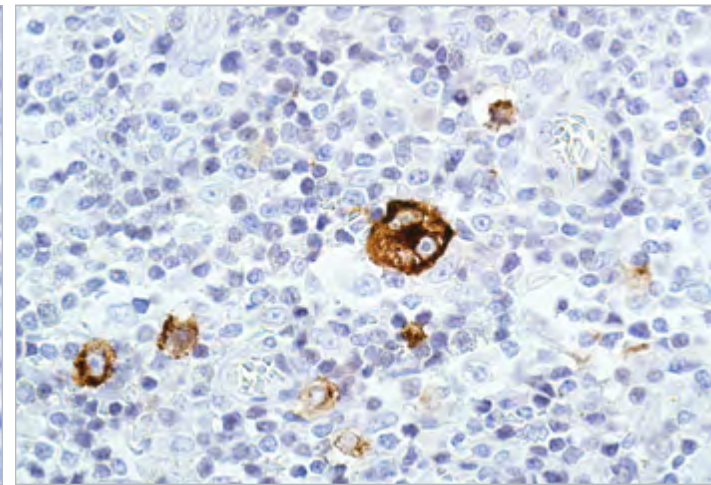
# Epstein-Barr Virus



Epstein-Barr Virus (MRQ-47)



Epstein-Barr Virus (MRQ-47)



Epstein-Barr Virus (MRQ-47)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic,  
membranous

**Control** EBV infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

EBV

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: MRQ-47

Rabbit Monoclonal

#### Volume . . . . .Part No.

0.1 ml, concentrate . . . . .245R-14 (ASR)

0.5 ml, concentrate . . . . .245R-15 (ASR)

1 ml, concentrate . . . . .245R-16 (ASR)

1 ml, predilute . . . . .245R-17 (ASR)

7 ml, predilute . . . . .245R-18 (ASR)

#### Alternate Clones Available

• Mouse Monoclonal, CS1-4

Contact us for more information.

#### Designations



ASR<sup>†</sup>



IVD



IVD

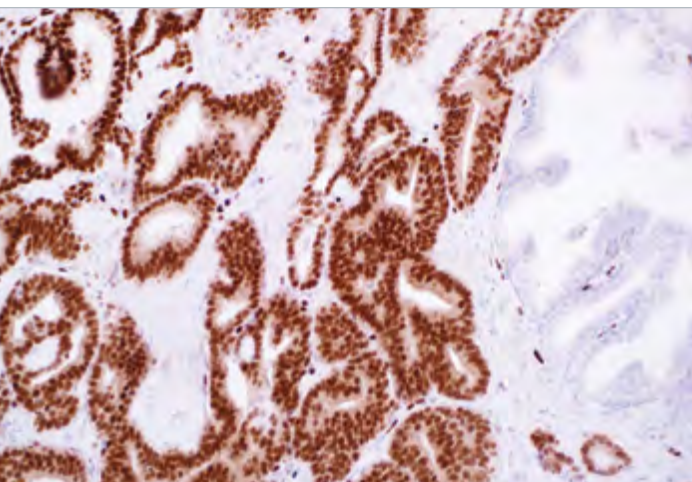


RUO

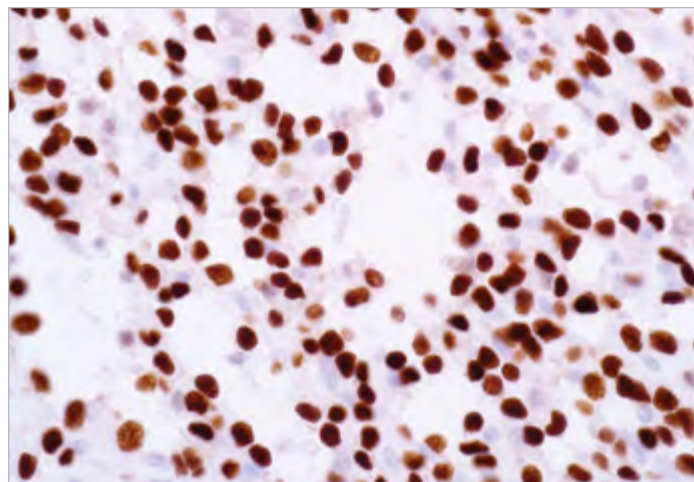
*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

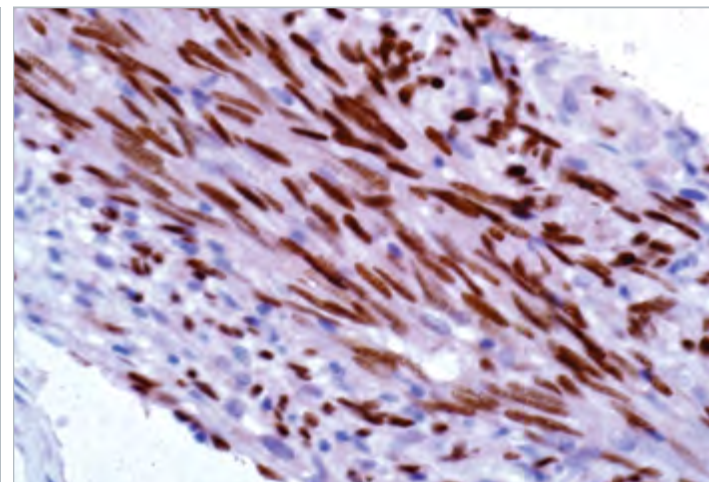
*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*



Prostatic acinar carcinoma is stained positive by ERG (EP111) in a nuclear pattern. Note, the low-grade prostate intraepithelial neoplasia is negative.



ERG (EP111) on hepatic hemangioendothelioma.



ERG (EP111) on Kaposi sarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** hemangioma, tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Genitourinary (GU) Pathology
- Soft Tissue Pathology

## Associated Panels

- Vascular Tumors ..... 303

## Reference

1. Yaskiv O, et al. Am J Clin Pathol. 2012; 138:803-810.
2. Miettinen M, et al. Am J Surg Pathol. 2011; 35:432-441.
3. Minner S, et al. Modpathol. 2013; 26:106-116.
4. Hornick JL. Modern Pathology. 2014; 27:S47-S63.
5. Tomlins SA, et al. Am J Clin Pathol. 2013; 139:771-779.

## Product Description

ERG is a member of the erythroblastosis virus E26 transforming sequence (ETS) transcription factor gene family, which also includes FLI-1 and ETS-1.<sup>1-5</sup> ERG is expressed in lymphocytes and endothelial cells and regulates endothelial apoptosis and angiogenesis. ERG has been found to be expressed in both benign and malignant vascular tumors. Anti-ERG was found to have high sensitivity for vascular neoplasms.<sup>1</sup> ERG expression has been observed in prostate carcinomas and high-grade prostatic intraepithelial neoplasia (HGPIN).<sup>1-4</sup> ERG positivity in any other epithelial tumor other than prostate carcinoma is extremely rare. In a study of all carcinomas of the breast, gastrointestinal tract, gynecologic system, kidney, lung, ovary, pancreas, salivary glands, skin, thyroid, and testis were negative for ERG.<sup>1</sup> ERG has also been observed to be positive in a minority of Ewing sarcomas.<sup>2</sup> This is caused by a chromosomal rearrangement which fuses the EWSR1 gene with the ERG gene (EWSR1:ERG).<sup>5</sup> ERG has also been observed to stain some meningiomas due to cross reactivity with FLI-1.<sup>1</sup>

## Panel Quick View

Prostate Adenocarcinoma/Carcinoma						
	ERG	CD34	Factor VIII	FLI-1	HHV-8	D2-40
Hemangioma	+	+	+	+	-	-
Kaposi's Sarcoma	+	+	+	+	+	+
Hemangioendothelioma	+	+	-	+	-	-
Angiosarcoma	+	+	+	+	-	+/-
Colorectal Adenocarcinoma	-	-	-	-/+	-	-
Invasive Ductal Carcinoma	-	-	-	-/+	-	-

## Ordering Information

### Clone: EP111

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	434R-14
0.5 ml, concentrate.....	434R-15
1 ml, concentrate .....	434R-16
1 ml, predilute .....	434R-17
7 ml, predilute .....	434R-18
25 ml, predilute .....	434R-10

### Designations

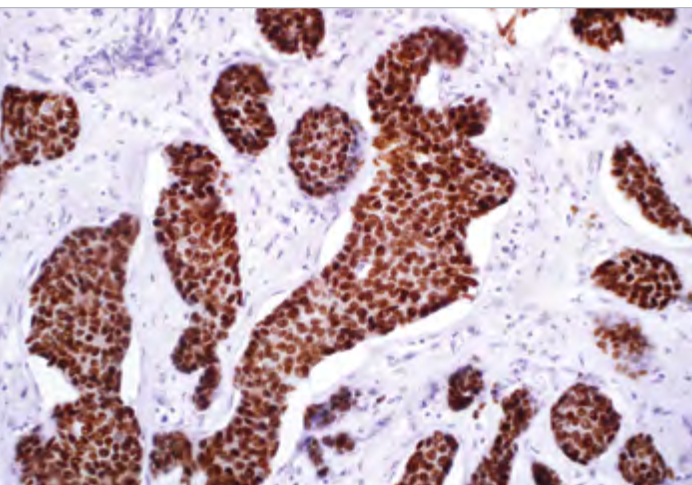
			
IVD	IVD	IVD	RUO

 CELL MARQUE

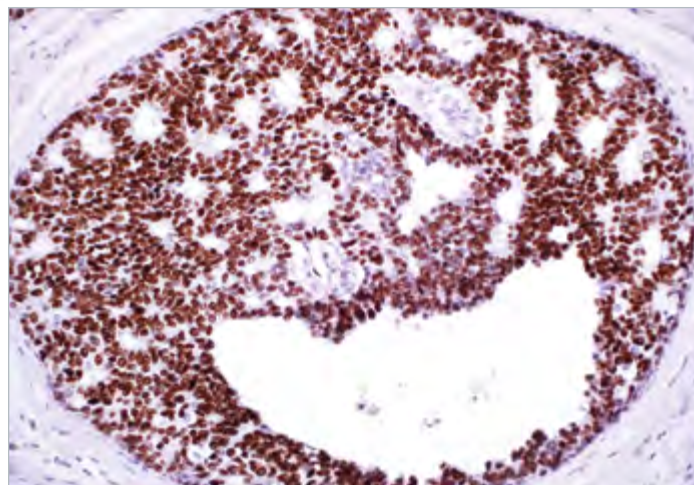
 RabMab®  
Technology from Abcam



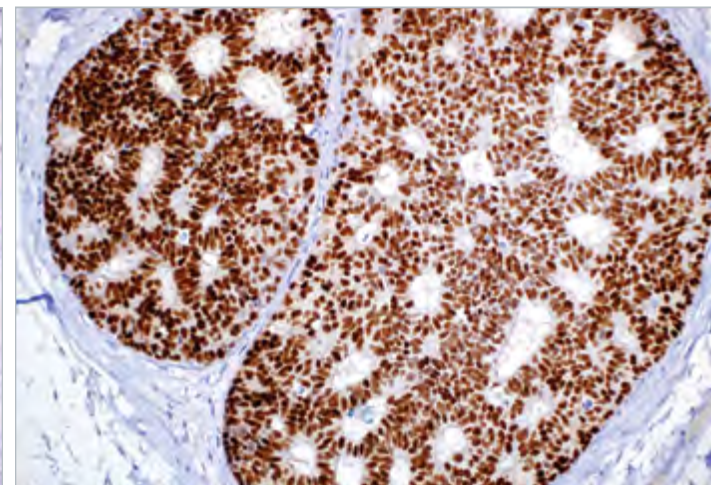
# Estrogen Receptor



Estrogen receptor (EP1)



Estrogen Receptor (EP1)



Estrogen Receptor (SP1)

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

ER

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: EP1

Rabbit Monoclonal

#### Volume . . . . .Part No.

0.1 ml, concentrate . . . . .249R-24 (ASR)

0.5 ml, concentrate . . . . .249R-25 (ASR)

1 ml, concentrate . . . . .249R-26 (ASR)

1 ml, predilute . . . . .249R-27 (ASR)

7 ml, predilute . . . . .249R-28 (ASR)

25 ml, predilute . . . . .249R-20 (ASR)

#### Alternate Clones Available

- Rabbit Monoclonal, SP1

Contact us for more information.

#### Designations



ASR†



IVD



IVD



RUO

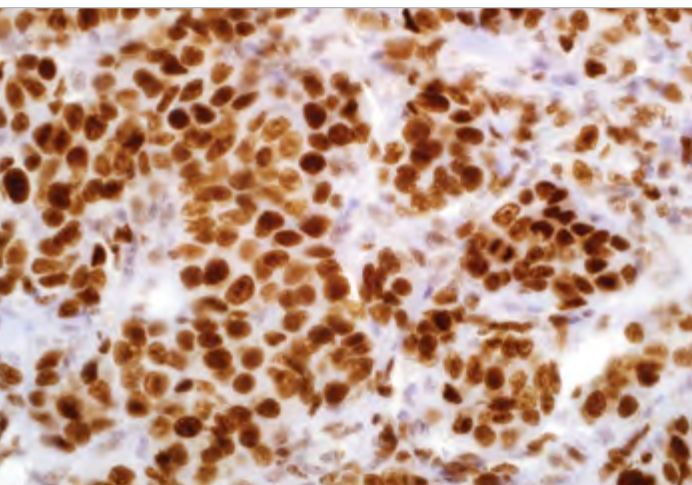
†Analyte Specific Reagent: Analytical and performance characteristics are not established.

For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.

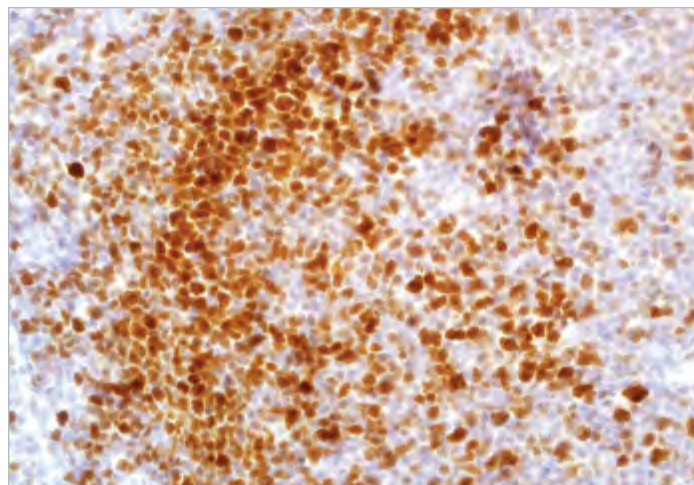
For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.

 CELL MARQUE

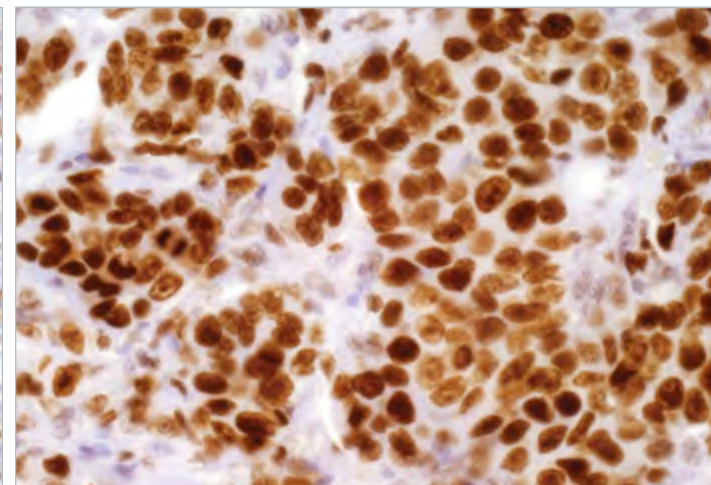
 RabMab®  
Technology from Abcam



EZH2 (11) labels invasive ductal carcinoma of the breast in a diffuse, strong and nuclear pattern.



EZH2 (11) on lymph node.



EZH2 (11) on invasive ductal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** prostate adenocarcinoma, tonsil, breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Anatomic/Surgical Pathology

## Reference

- Ciarapica R, et al. BMC Medicine. 2011; 9:63.
- Kader LAA, et al. Virchows Arch. 2013; 463:697.
- Varambally S, et al. Nature. 2002; 419:624.
- Tan J, et al. Acta Pharmacologica Sinica. 2014; 35:161.

## Product Description

Enhancer of zeste homolog 2 (EZH2) is the catalytic subunit of polycomb repressive complex 2 (PRC2). It generates a methylation epigenetic mark at lysine 27 residue of histone H3 (H3K27me3) in order to silence gene expression.<sup>1</sup> EZH2 target genes are involved in a variety of biological processes such as stem cell pluripotency, cell proliferation, and oncogenic transformation.<sup>1</sup> EZH2 is frequently overexpressed in many cancer types.<sup>1-2</sup> Hyperactivation of EZH2, either by overexpression or mutations, is found in a variety of malignancies including prostate, breast, uterine, gastric, and renal cell cancers in addition to melanoma.<sup>3-4</sup> EZH2 overexpression has been reported in non-small cell lung cancers and lymphoma.<sup>1</sup> The EZH2 protein is rarely detected in normal breast duct epithelium and in normal and hyperplastic lymph node. EZH2 is usually expressed in follicular centers, but not in mantle zones, follicular and interfollicular T-cells, plasma cells or NK/T-cells. However, its expression can be seen in most B-cell and T-cell lymphomas, although only in 20% (1/5) of small lymphocytic lymphoma and 14% (1/7) of plasma cell myeloma. Plasmacytoma, lymphoplasmacytic lymphoma, and MALT lymphoma have not been shown to express this protein.<sup>2</sup> Recent studies also have demonstrated EZH2 is aberrantly over-expressed in pediatric rhabdomyosarcoma, independent of the histological subtypes.<sup>1</sup> In summary, EZH2 correlates with tumor proliferation and may be used in an antibody panel to differentiate proliferative/aggressive lymphoma variants from indolent ones and normal resting cell populations.

## Panel Quick View

Adenocarcinoma and Non-Epithelial Neoplasms									
	EZH2	CD45	CDX-2	GATA3	GCDFP-15	Napsin A	P504s	PSA	TTF-1
Prostate Adenocarcinoma	+	-	-	-	-	-	+	+	-
Breast Carcinoma	+	-	-	+	+	-	-	-	-
Colorectal Adenocarcinoma	+	-	+	-	-	-	-	-	-
Lung Adenocarcinoma	+/-	-	-	-	-	+	-	-	+
Lymphoma	+	+	-	+	-	-	-	-	-
Sarcoma	-	-	-	-	-	-	-	-	-

## Ordering Information

### Clone: 11

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	415M-14
0.5 ml, concentrate	415M-15
1 ml, concentrate	415M-16
1 ml, predilute	415M-17
7 ml, predilute	415M-18

### Designations



IVD



IVD



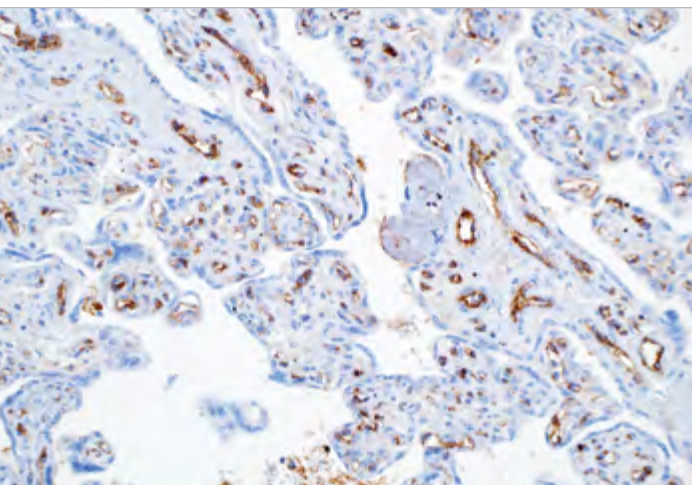
IVD



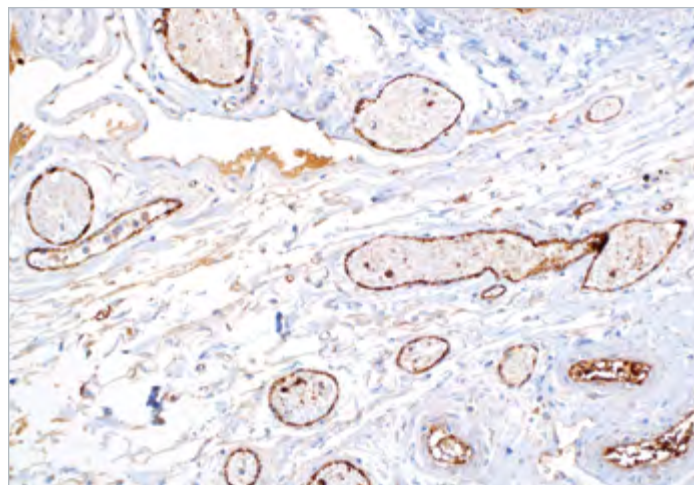
RUO



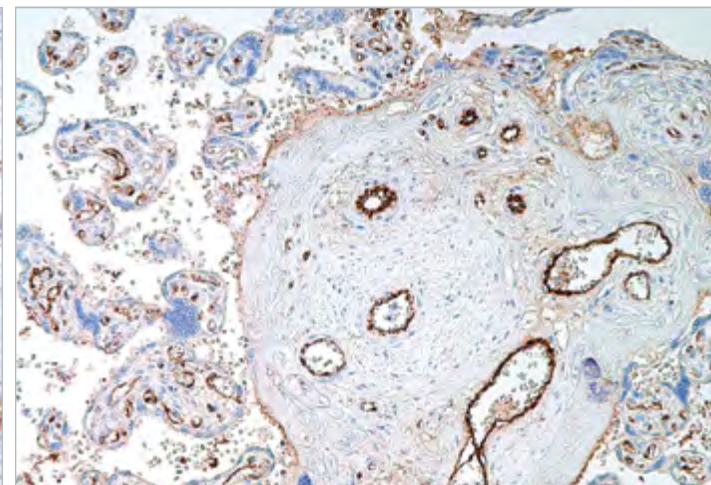
# Factor VIII-R Ag.



The capillaries of the placenta are stained with Factor VIII (polyclonal).



Factor VIII-R Ag. (polyclonal) on connective tissue.



Factor VIII-R Ag. (polyclonal) on placenta.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** placenta

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

Von Willebrand Factor

## Associated Specialties

● Soft Tissue Pathology

## Associated Panels

● Skin: Spindle Cell Tumors . . . . .294

● Vascular Tumors . . . . .303

## Reference

1. Wick MR, et al. Lab Invest. 1985; 52:75A.
2. Bhawan J, et al. Cancer. 1985; 55:570-576.
3. Ansell J, et al. Cancer. 1982; 50:1506-1512.
4. Fulling KH, et al. Cancer. 1983; 51:1107-1118.
5. Bian XW, et al. Anal Quant Cytol Histol. 2000; 22:267-74.
6. Yamamoto T, et al. Pathol Int. 1996; 46:364-71.
7. Zatterstrom UK, et al. Head Neck. 1995; 17:312-8.

## Product Description

Anti-Factor VIII-Related Antigen antibody reacts with endothelial cells and neoplastic blood cells. This antibody has helped to establish the endothelial nature of some lesions of disputed histogenesis, e.g. Kaposi's sarcoma and cardiac myxoma. Not all endothelial cells synthesize (or store) this molecule; therefore, it should not be surprising that not all tumors of endothelial differentiation (benign or malignant) react with this antigen.

## Panel Quick View

	Factor VIII	MS Actin	SM Actin	CD10	CK Cocktail	FLI-1	HHV-8	NGFR	D2-40	S-100
Angiosarcoma	+	-	-	-	-	+	-	-	+/-	-
Atypical Fibroxanthomas	-	+	+	+	-	-	-	-	-	-
Hemangioma	+	-	+	-	-	+	-	-	-	-
Kaposi's Sarcoma	+	-	+	-	-	+	+	-	+	-
Peripheral Nerve Sheath	-	+	-	-	-	-	-	+	+	+/-
Smooth Muscle	-	+	+	-	-	-	-	-	-	-
Spindle Cell Melanoma	-	-	-	-	-	+	-	+	+	+
Spindle Squamous Cell Carcinoma	-	-	-	-	+	-	-	-	+	-

## Ordering Information

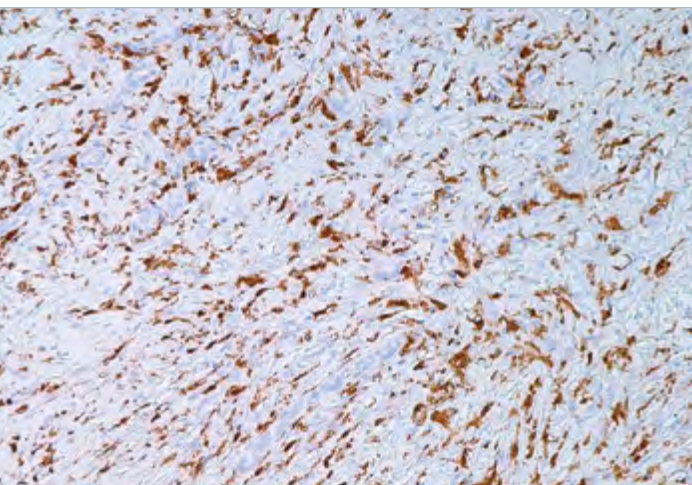
**Clone: polyclonal**  
Rabbit Polyclonal

**Volume . . . . . Part No.**  
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0.5 ml, concentrate . . . . .250A-15  
1 ml, concentrate . . . . .250A-16  
1 ml, predilute . . . . .250A-17  
7 ml, predilute . . . . .250A-18

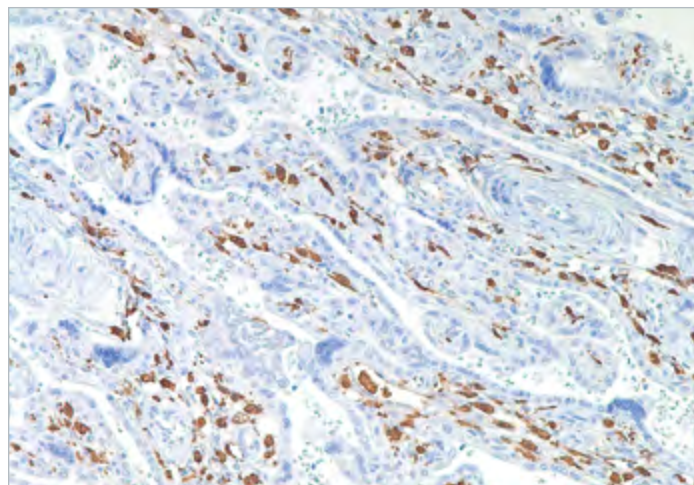
## Designations

 IVD  IVD  IVD  RUO

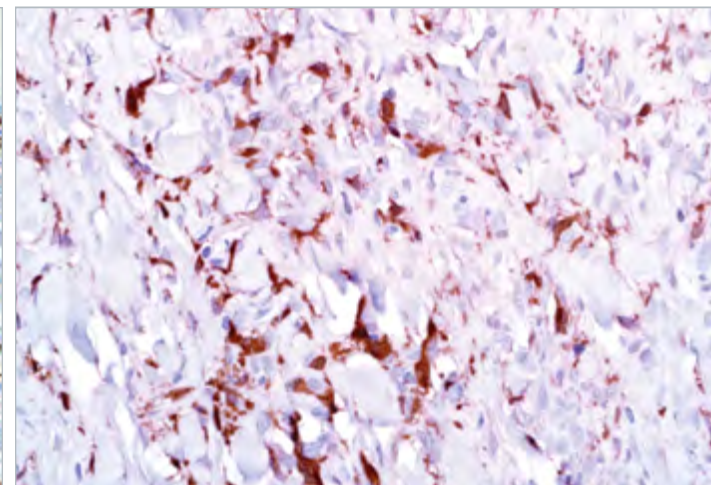
# Factor XIIIa



The neurofibroma cells are labeled by Factor XIIIa (EP3372) in a cytoplasmic pattern.



Factor XIIIa (EP3372) on placenta.



Histiocytes are labeled in this dermatofibroma by Factor XIIIa (AC-1A1).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** dermatofibroma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Dermatopathology

## Associated Panels

- Melanotic Lesions ..... 293
- Skin: Dermatofibrosarcoma Protuberans (DF-SP) vs. Dermatofibroma Fibrous Histiocytoma (DF-FH) ..... 293
- Skin: Spindle Cell Tumors ..... 294
- Histiocytic Neoplasms / Histiocytic Lesions..... 297
- Histiocytic Proliferation ..... 297

## Reference

1. Abenzo P, et al. Am J Dermatopathol. 1993; 15:429-34.
2. Horenstein MG, et al. Am J Surg Pathol. 2000; 24:996-1003.
3. Kraus MD, et al. Am J Dermatopathol. 2001; 23:104-11.

## Product Description

Factor XIIIa has been identified in platelets, megakaryocytes, and fibroblast-like mesenchymal or histiocytic cells in the placenta, uterus, and prostate, monocytes and macrophages and dermal dendritic cells. Anti-factor XIIIa has been found to be useful in differentiating between dermatofibroma (almost all cases +), dermatofibrosarcoma protuberans (-/+) and desmoplastic malignant melanoma (-).<sup>1-2</sup> Anti-factor XIIIa positivity is also seen in capillary hemangioblastoma, hemangiopericytoma, xanthogranuloma, xanthoma, hepatocellular carcinoma, glomus tumor, and meningioma.<sup>3</sup>

## Panel Quick View

Melanotic Lesions									
	Factor XIIIa	CD63	HMB-45	MART-1	MiTF	S-100	SOX-10	Tyrosinase	WT1
Adrenal Cortical	-	-	-	+	-	+	-	-	
Dermatofibroma	+	-	-	-	-	-	-	-	
Junctional Nevus	-	-	+	+	+	+	+	+	+/-
Metastatic Melanoma	-	+	+	+	+	+	+	+	+
Primary Melanoma	-	+	+	+	+	+	+	+	+

Skin: Spindle Cell Tumors								
	Factor XIIIa	MS Actin	SM Actin	ALD-H1A1	CD10	CD34	CD99	STAT6
Atypical Fibroxanthomas	+/-	+	+	+	+	-	+	+
Dermatofibroma Fibrous Histiocytoma	+	-	-	-	+	-	-	-
Dermatofibrosarcoma Protuberans	-	-	-	-	+/-	+	-	-

Histiocytic Proliferation								
	Factor XIIIa	CD1a	CD68	CD163	HAM-56	Lysozyme	S-100	Vimentin
Juvenile Xanthogranuloma	+	-	+	+	+	+	-	+
Langerhans Cell Histiocytosis	-	+	+	+	+	+	+	+
Dermatofibroma	+	-	+	-	-	-	-	+

## Ordering Information

### Clone: EP3372

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	251R-14
0.5 ml, concentrate.....	251R-15
1 ml, concentrate .....	251R-16
1 ml, predilute .....	251R-17
7 ml, predilute .....	251R-18

### Alternate Clones Available

- Mouse Monoclonal, AC-1A1
- Contact us for more information.

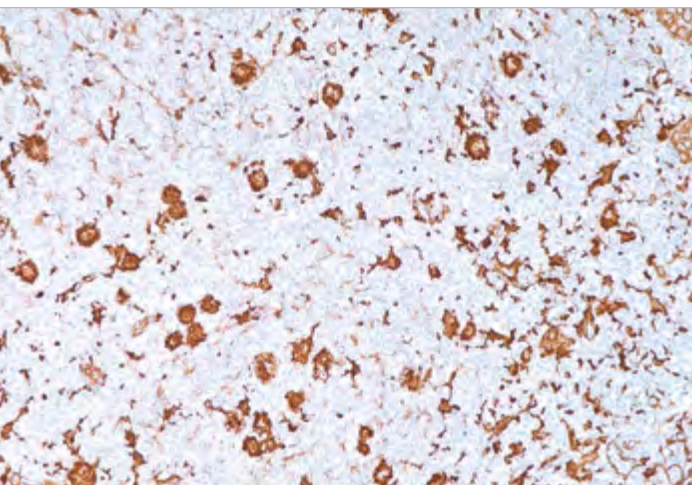
### Designations



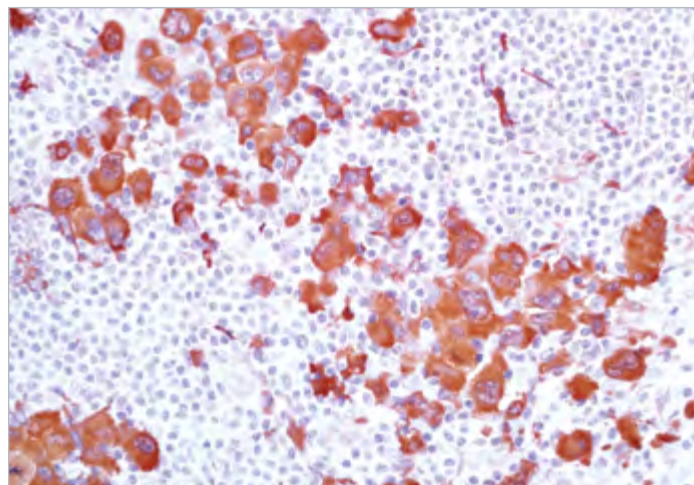
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

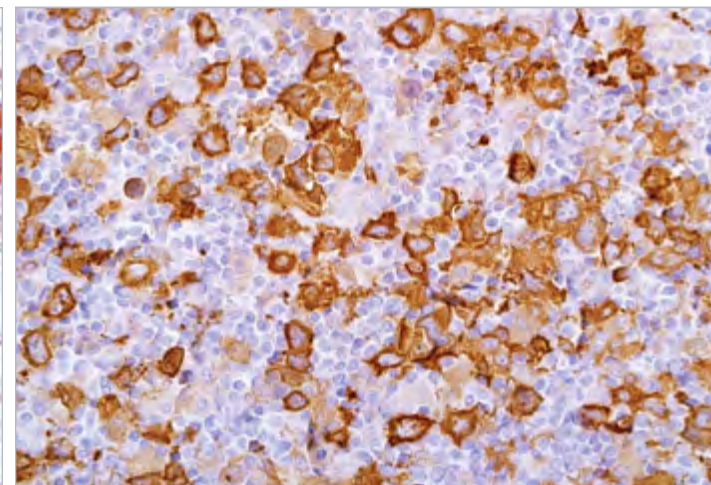




Fascin (55k-2) on classical Hodgkin lymphoma.



Fascin (55k-2) shows strong cytoplasmic staining in Reed-Sternberg cells of classic Hodgkin lymphoma.



Fascin (55k-2) on classical Hodgkin lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** Hodgkin lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Hodgkin vs. Non-Hodgkin Lymphomas ..... 297

## Reference

1. Pinkus GS, et al. American Journ of Path. 1997; 150:543-562.
2. Pelosi G, et al. Lung Cancer. 2003; 42:203-13.
3. Goncharuk VN, et al. J Cutan Pathol. 2002; 29:430-8.
4. Kempf W, et al. J Cutan Pathol. 2002; 29:295-300.
5. Kraus MD, et al. Am J Dermatopathol. 2001; 23:104-11.
6. Hu W, et al. Clin Exp Metastasis. 2000; 18:83-8.
7. Chu PG. Ann Diagn Pathol. 1999; 3:104-33.

## Product Description

Anti-fascin is a very sensitive marker for Reed-Sternberg cells and variants in nodular sclerosis, mixed cellularity, and lymphocyte depletion Hodgkin disease. It is uniformly negative in lymphoid cells, plasma cells, and myeloid cells. Anti-fascin is positive in dendritic cells. This marker may be helpful to distinguish between Hodgkin lymphoma and non-Hodgkin lymphoma in difficult cases. Also, the lack of expression of fascin in the neoplastic follicles in follicular lymphoma can be helpful in distinguishing these lymphomas from reactive follicular hyperplasia in which the number of follicular dendritic cells is normal or increased.

## Panel Quick View

Hodgkin vs. Non-Hodgkin Lymphomas									
	Fascin	ALK	BCL6	CD15	CD30	CD79a	EMA	Gran-zyme B	MUM1
Anaplastic Large Cell Lymphoma	-	+	+/-	-	+	-	+	+	-
Angioimmunoblastic T-cell Lymphoma	-	-	+	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	+	-	-	+	+	-	-	-	+
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-	-	+	-	-	+	+	-	-/+
T-cell Rich B-cell Lymphoma	-	-	+	-	-	+/-	-/+	-	+
T-cell Rich LBCL	-	-	+	-	-	+	-	-	+

## Ordering Information

**Clone: 55k-2**  
Mouse Monoclonal

**Volume ..... Part No.**  
0.1 ml, concentrate ..... 252M-14  
0.5 ml, concentrate ..... 252M-15  
1 ml, concentrate ..... 252M-16  
1 ml, predilute ..... 252M-17  
7 ml, predilute ..... 252M-18

## Designations



IVD



IVD

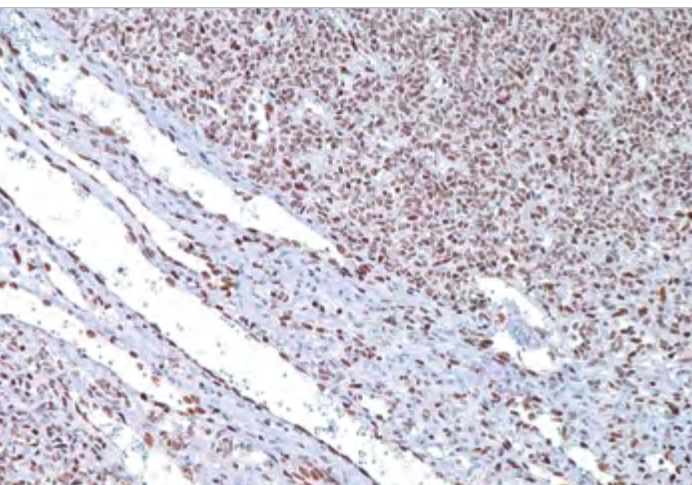


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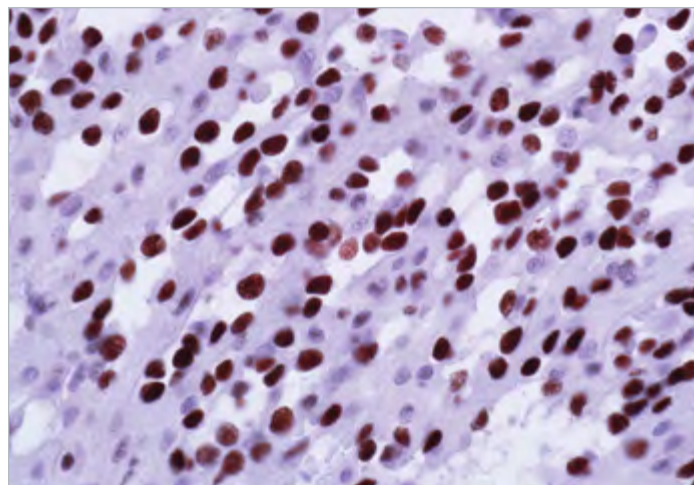


RUO

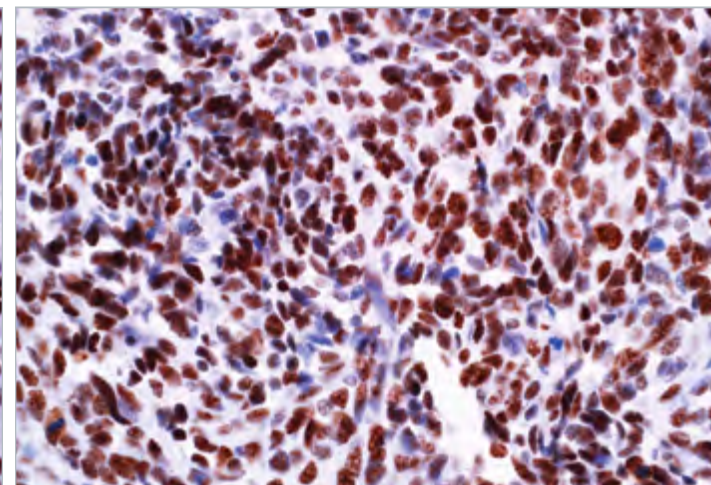




FLI-1 (MRQ-1) on soft tissue.



FLI-1 (MRQ-1) on liver, hemangioendothelioma.



FLI-1 (MRQ-1) shows strong, diffuse and nuclear reaction in Ewing sarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** primitive neuroectodermal tumor

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Soft Tissue Pathology

● Pediatric Pathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- Epithelioid Cell Neoplasms... 288
- Skin: Spindle Cell Tumors... 294
- Small Blue Round Cell Tumors. 302
- Soft Tissue Tumor... 303
- Vascular Tumors... 303

## Reference

1. Mhawech-Fauceglia P, et al. Histopathology. 2006; 49:569-75.
2. Kuroda N, et al. Med Mol Morphol. 2006; 39:221-5.
3. Blind C, et al. J Clin Pathol. 2008; 61:79-83.
4. Ellison DA, et al. Hum Pathol. 2007; 38:205-11.

## Product Description

Ewing sarcoma/peripheral primitive neuroectodermal tumor (ES/pPNET) is a rare primary tumor of the bone/soft tissue that resembles other undifferentiated tumors. The differential diagnosis of undifferentiated tumors of the soft tissue includes blastemal Wilms' tumor, rhabdoid tumor, neuroblastoma, lymphoma, clear cell sarcoma, small cell carcinoma, synovial sarcoma (SS), neuroblastoma, desmoplastic small round cell tumor (DSRCT), and ES/pPNET. The FLI-1 gene and FLI-1 protein are best known for their critical role in the pathogenesis of ES/pPNET. FLI-1 is normally expressed in endothelial cells and in hematopoietic cells, including T-lymphocytes. The immunohistochemical detection of FLI-1 protein has been shown in two recent studies to be valuable in the discrimination of ES/pPNET from most of its potential mimics, with the notable exception of lymphoblastic lymphoma.

## Panel Quick View

Skin: Spindle Cell Tumors									
	FLI-1	CD34	CD99	Collagen IV	CK 8&18	Factor VIII	HHV-8	NGFR	D2-40
Angiosarcoma	+	+	-	+/-	-	+	-	-	+/-
Hemangioma	+	+	-	+	-	+	-	-	-
Hemangiopericytoma	+	+	-	-	-	-	-	-	-
Kaposi's Sarcoma	+	+	-	+/-	-	+	+	-	+
Kaposiform Hemangioendothelioma	+	+	-	-	+	-	-	-	-
Spindle Cell Melanoma	+	-	-	-	-	-	-	+	+

Small Blue Round Cell Tumors										
	FLI-1	MS Actin	SM Actin	CD45	CD57	CD99	CK Cocktail	Myogenin	PGP 9.5	Vimentin
Lymphoblastic Lymphoma	+	-	-	+	-	+	-	-	-	+
Leiomyosarcoma	-	+	+	-	+/-	-	-/+	-	-	+
Rhabdomyosarcoma	-	+	-	-	-	-	-	+	+	+
Neuroblastoma	-	-	-	-	+	-	-	-	+	+
Embryonal Carcinoma	-	-	-	-	+	-	+	-	+	-
PNET/ES	+	-	-	+	+	+	-/+	-	+	+
DSRCT	+	-	-	-	+/-	-	+	-	-	+
Medulloblastoma	-	-	-	-	+	-	-	-	-	-

## Ordering Information

### Clone: MRQ-1

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	254M-14
0.5 ml, concentrate	254M-15
1 ml, concentrate	254M-16
1 ml, predilute	254M-17
7 ml, predilute	254M-18

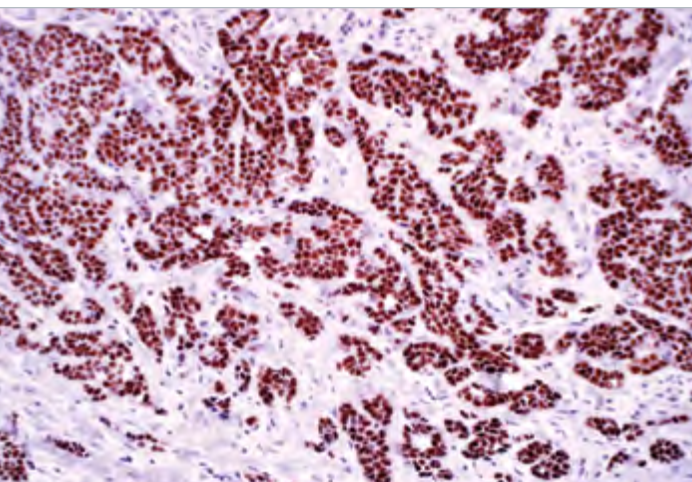
### Designations



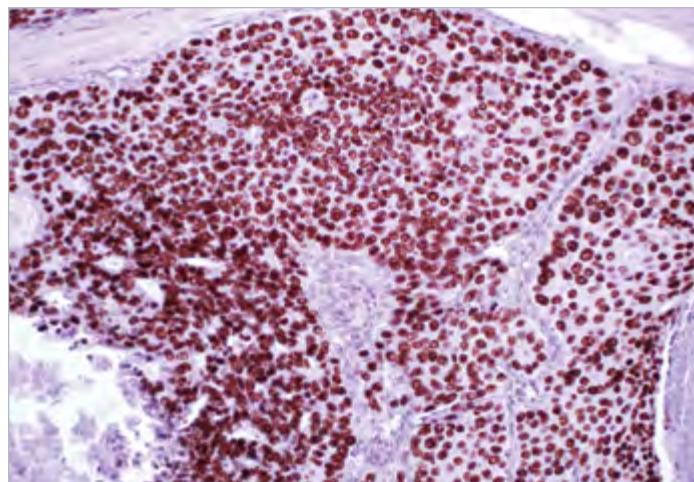
IVD IVD IVD RUO



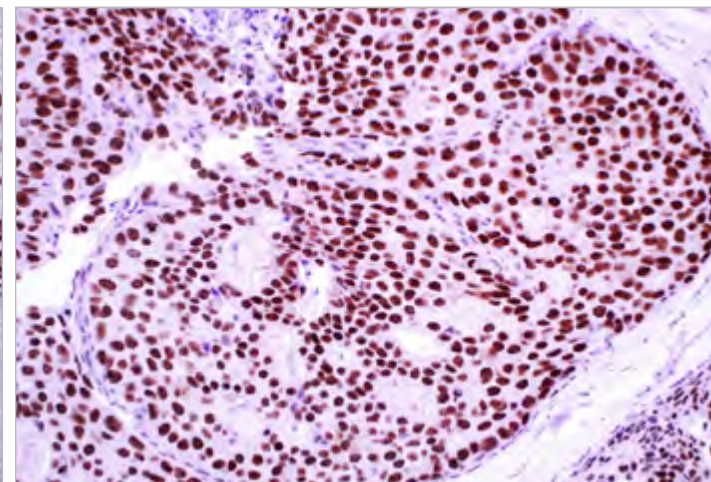
# FOXA1



FOXA1 nuclear expression in invasive ductal carcinoma of the breast is detected by FOXA1 (2F83).



FOXA1 (2F83) on breast.



FOXA1 (2F83) on breast carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

HNF3a

## Associated Specialties

● Breast/Gynecological Pathology

## Reference

1. Albergaria A, et al. Breast Cancer Research. 2009; 11:1-15.
2. Thorat MA, et al. J Clin Pathol. 2008; 61:327-332.

## Product Description

Forkhead box A1 (FOXA1), also known as hepatocyte nuclear factor 3 alpha (HNF3a), is a transcription factor expressed in normal breast ductal epithelium and other epithelium in different organs, such as lung, pancreas, bladder, prostate, and colon. It has been reported to co-express with ER in breast carcinoma, predominantly in luminal subtype A.<sup>1-2</sup> FOXA1 expression has been identified in 42% - 75% of invasive carcinoma of the breast.<sup>1-2</sup> Of the FOXA1-positive breast invasive carcinomas, 83% were comprised of ER+/PR+/Her2+ luminal A subtype.<sup>1</sup> The results indicate that anti-FOXA1 is useful in the sub-classification of breast carcinoma.

## Panel Quick View

Carcinomas of Different Origins	FOXA1	GATA3	BRST-2	Mama-globin	Napsin A	PSA	TTF-1
Invasive ductal carcinoma	+	+	+/-	+/-	-	-	-
Invasive lobular carcinoma	+	+	+/-	+/-	-	-	-
Lung carcinoma	+/-	-	-	-	+	-	+
Prostate carcinoma	+/-	-	-	-	-	+	-
Urothelial carcinoma	+/-	+	-	-	-	-	-

## Ordering Information

### Clone: 2F83

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	405M-14
0.5 ml, concentrate	405M-15
1 ml, concentrate	405M-16
1 ml, predilute	405M-17
7 ml, predilute	405M-18

### Designations



IVD



IVD

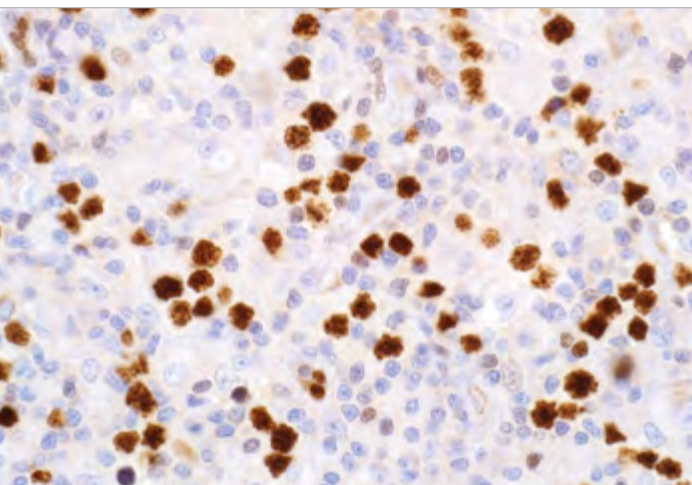


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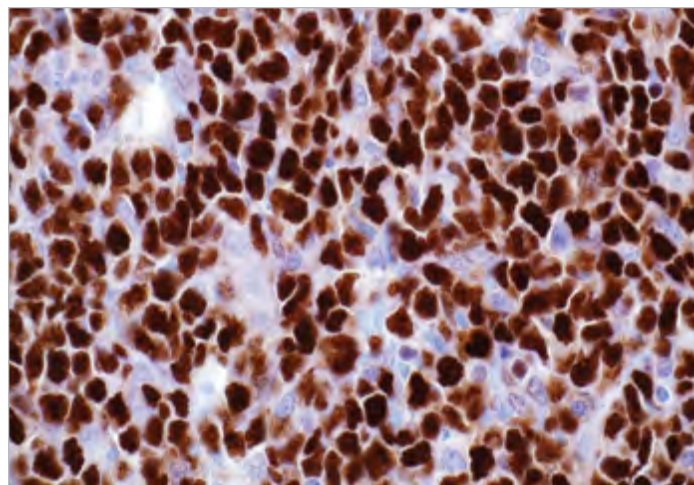


RUO

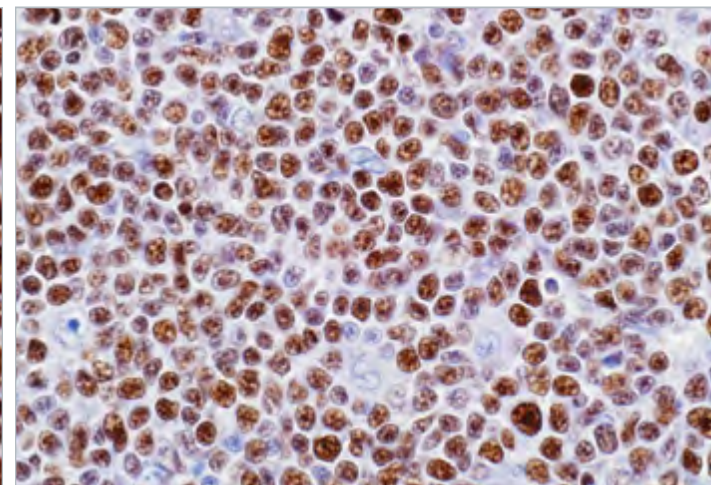




FoxP1 (SP133) on lymph node.



FoxP1 (SP133) shows diffuse, strong and nuclear expression of FoxP1 protein in diffuse large B-cell lymphoma.



FoxP1 (SP133) on lymph node.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** tonsil, lymph node  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296

## Reference

1. Swerdlow SH, et al. Geneva: World Health Organization. 2008.
2. Alizadeh AA, et al. Nature. 2000; 403:503-11.
3. Habermann TM, et al. J Clin Oncol. 2006; 24:3121-3127.
4. Pfreundschuh M, et al. Lancet Oncol. 2006; 7:379-391.
5. Hagberg H, et al. Ann Oncol. 2006; 17:iv31-32.
6. Rosenwald A, et al. N Engl J Med. 2002; 346:1937-47.
7. Wright G, et al. Proc Natl Acad Sci USA. 2003; 100:9991-6.
8. N Engl J Med. 1993; 329:987-94.
9. Rosenwald A, et al. J Exp Med. 2003; 198:851-62.
10. Colomo L, et al. Blood. 2003; 101:78-84.
11. Hans CP, et al. Blood. 2004; 103:275-282.
12. Muris JJ, et al. J Pathol. 2006; 208:714-723.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Diffuse large B-cell lymphoma (DLBCL) represents different clinicopathologic entities which are difficult to separate using standard techniques. From the clinical standpoint, the introduction of immunochemotherapy in the treatment of DLBCL has dramatically improved the outcome of these patients compared with chemotherapy alone. Gene expression profiling (GEP) studies have shown that DLBCL can be reproducibly divided into the important subtypes of germinal center B-cell-like (GCB), activated B-cell-like (ABC), and unclassified DLBCL. It is beneficial to translate the GEP classification into protein expression by tumor cells through immunohistochemical (IHC) staining of formalin-fixed, paraffin-embedded tissues. A panel of antibodies: CD10, BCL6, MUM1/IRF4, GCET1, FoxP1, LMO2, and BCL2 has been used to determine GCB or ABC and each has different percentage thresholds for positive staining. Choi et al. demonstrated that the cases positive for GCET1 ( $\geq 80\%$  of tumor cells) and MUM1/IRF4 ( $\geq 80\%$ ) and/or FoxP1 ( $\geq 80\%$ ) or negative for CD10 and BCL6 ( $\leq 30\%$ ) were assigned to the group. The cases positive for CD10 ( $\geq 30\%$ ), GCET1 ( $\geq 80\%$ ) without MUM1 expression, or positive for BCL6 without FoxP1 expression were classified as GCB. This study indicated the importance of FoxP1 in the subclassification of DLBCL. Choi et al then modified their approach to DLBCL subclassification by focusing on FoxP1. The tumors that are positive for both FoxP1 and GCET1 are assigned to GCB subgroup, but, if FoxP1 is positive and GCET1 is negative, the tumors belong to the ABC phenotype. If a case is FoxP1 negative but MUM1/IRF4 positive, it still belongs to the ABC phenotype as long as CD10 is not expressed. This modified method emphasized the role of FoxP1, MUM1/IRF4, and GCET1 in the subclassification of DLBCL. The Choi's algorithm had a very high concordance with the GEP results (87%). Therefore, FoxP1 is useful in subclassification of DLBCL and a high cutoff ( $\geq 80\%$ ) for FoxP1 is needed to achieve high specificity for the ABC subtype.

## Panel Quick View

B-cell Lymphomas										
	FoxP1	ANXA1	CD10	CD23	CD79a	Cyclin D1	BCL2	BCL6	MUM1	TCL1
Burkitt Lymphoma	+	-	+	-	+	-	-	+	-	+
CLL/SLL	-	-	-	+	+	-	+	-	+	+
Diffuse Large Cell Lymphoma	+	-	-/+	-	+	-	+	+/-	+/-	+
Follicular	-	-	+	-	+	-	+	+	-	+
Lymphoplasmacytic	-	-	-	-	+	-	+	-	+	+
Malt Lymphoma	+	-	-	-	+	-	+	-/+	-	+
Mantle Cell	-	-	-	-	+	+	+	-	-	+
Splenic Marginal Zone	-	-	-	-	+	-	+	-	+/-	-

## Ordering Information

### Clone: SP133

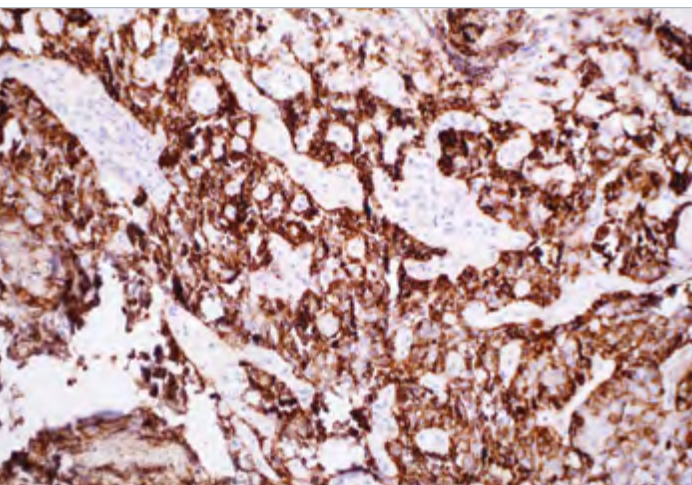
Rabbit Monoclonal

**Volume** ..... **Part No.**  
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 0.5 ml, concentrate ..... 350R-15  
 1 ml, concentrate ..... 350R-16  
 1 ml, predilute ..... 350R-17  
 7 ml, predilute ..... 350R-18

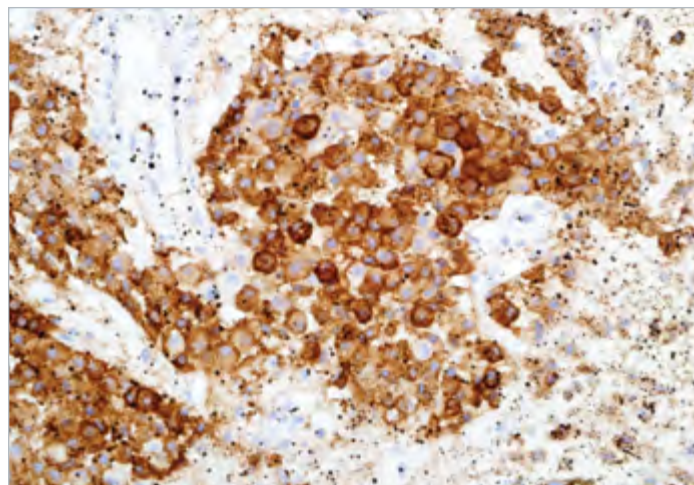
### Designations

 IVD     IVD     IVD     RUO

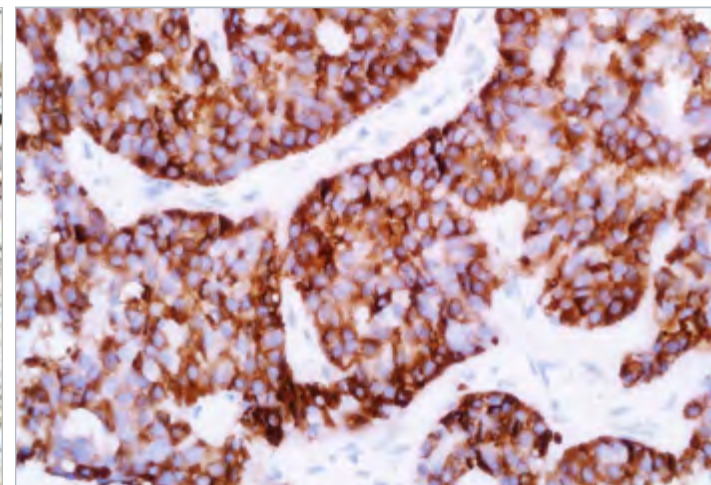




FSH (EP257) on pituitary.



FSH (EP257) on pituitary.



Pituitary adenoma cells express FSH protein in a cytoplasmic pattern.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pituitary

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Neuropathology

## Reference

1. Schmid M, et al. Pathol Res Pract. 2001; 197:663-9.
2. Uccella S, et al. Pituitary. 2000; 3:131-9.
3. La Rosa S, et al. Virchows Arch. 2000; 437:264-9.

## Product Description

Follicle-stimulating hormone (FSH) is a member of the pituitary glycoprotein hormone family which includes luteinizing hormone, chorionic gonadotropin, and thyroid-stimulating hormone. FSH enables ovarian folliculogenesis to the antral follicle stage and is essential for Sertoli cell proliferation and maintenance of sperm quality in the testis. Members of the pituitary glycoprotein hormone family consist of a shared alpha chain, and a beta chain encoded by a separate gene. The FSHB gene encodes the beta subunit of FSH. Anti-FSH is a useful marker in classification of pituitary tumors and the study of pituitary disease, as it reacts with FSH-producing cells (gonadotrophs).<sup>1-3</sup>

## Ordering Information

**Clone: EP257**  
Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	207R-14
0.5 ml, concentrate.....	207R-15
1 ml, concentrate .....	207R-16
1 ml, predilute .....	207R-17
7 ml, predilute .....	207R-18

### Alternate Clones Available

- Rabbit Polyclonal
- Contact us for more information.

### Designations



IVD



IVD



IVD



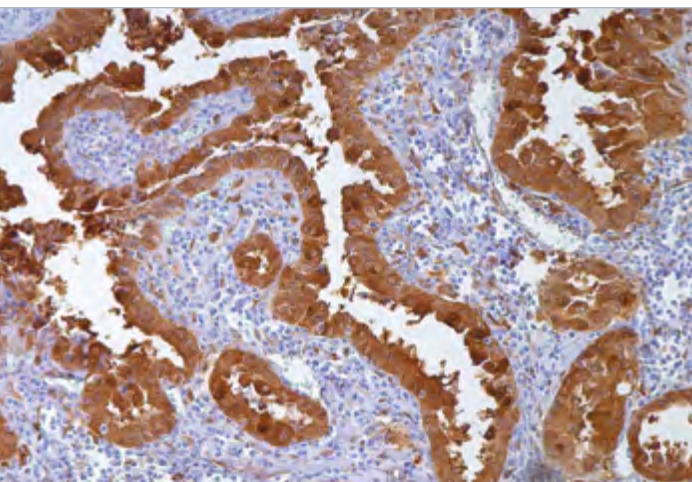
RUO

 **CELL MARQUE**

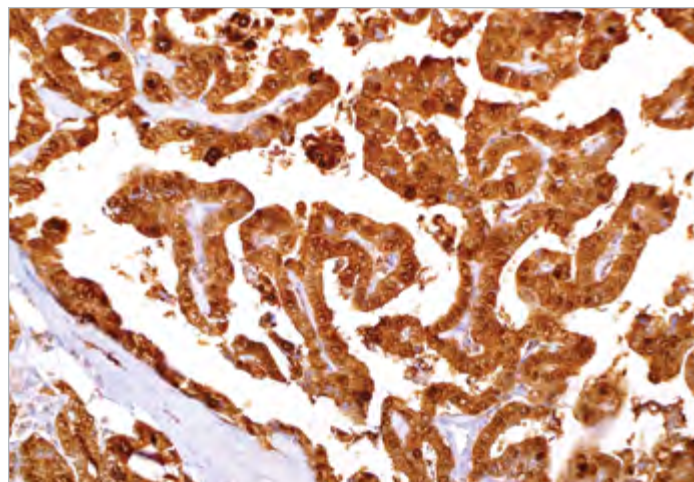
 **RabMab**<sup>®</sup>  
Technology from Abcam



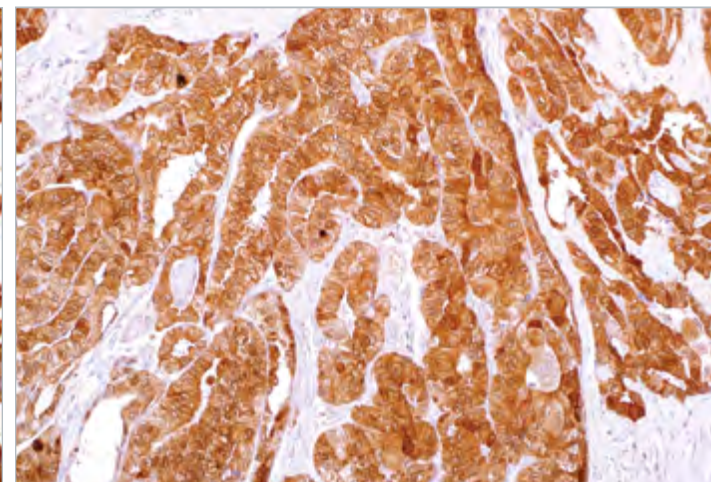
# Galectin-3



Galectin-3 (9C4) shows a strong, diffuse, and cytoplasmic staining in papillary thyroid carcinoma.



Galectin-3 (9C4) on papillary thyroid carcinoma.



Galectin-3 (9C4) on papillary thyroid carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** papillary thyroid carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Head/Neck Pathology
- Cytopathology

## Associated Panels

- Differential Diagnosis of Parathyroid Tumors . . . . . 288
- Thyroid: Malignant vs. Benign . 291
- Differential Diagnosis of Parathyroid vs. Thyroid Tumors. 296

## Reference

1. Inohara H, et al. Cancer. 1999; 85:2475-84.
2. Herrmann ME, et al. Arch Pathol Lab Med. 2002; 126:710-713.
3. Papotti M, et al. European Journal of Endocrinology. 2002; 147:515-521.
4. Bartolazzi A, et al. Lancet. 2001; 357:1644-50.
5. Orlandi F, et al. Cancer Research. 1998; 58:3015-3020.
6. Gasbarri A, et al. J Clin Oncol. 1999; 17:3494-3502.
7. Orlandi F, et al. Cancer Res. 1998; 58:3015-20.
8. Konstantinov KN, et al. Am J. Pathol. 1996; 148:25-30.

## Product Description

Galectin-3 is a 31 kD beta-galactosidase binding lectin. It has been associated with binding to the basement membrane glycoprotein laminin. Anti-galectin-3 has been demonstrated to be valuable in differentiating between benign and malignant thyroid neoplasms in both histologic sections and fine needle aspiration biopsy material. Anti-galectin-3 antibody has also been useful in identifying anaplastic large cell lymphoma.

## Panel Quick View

Thyroid: Malignant vs. Benign							
	Galectin-3	Calcitonin	CK 19	HBME-1	p27	Thyro-globulin	TTF-1
Papillary Carcinoma	+	-	+	+	-/+	+	+
Follicular Carcinoma	+	-	-	+/-	-	+	+
Medullary Carcinoma	-	+	+	+	+/-	-	+
Benign Thyroid	-	-	-	-	+	+	+

## Ordering Information

### Clone: 9C4

Mouse Monoclonal

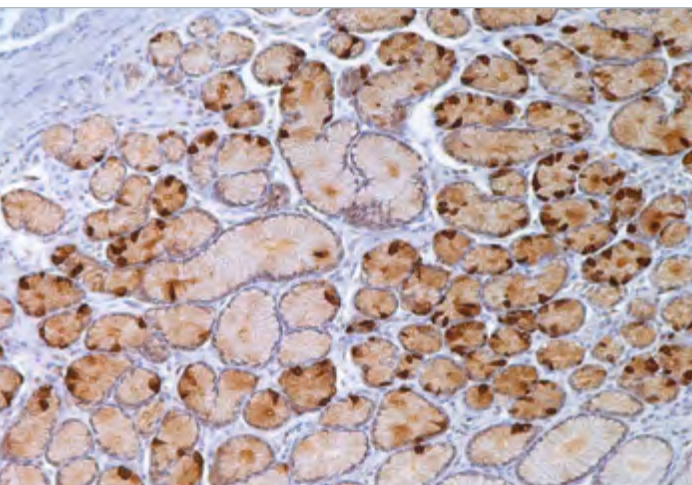
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0.5 ml, concentrate . . . . .	255M-15
1 ml, concentrate . . . . .	255M-16
1 ml, predilute . . . . .	255M-17
7 ml, predilute . . . . .	255M-18

### Designations

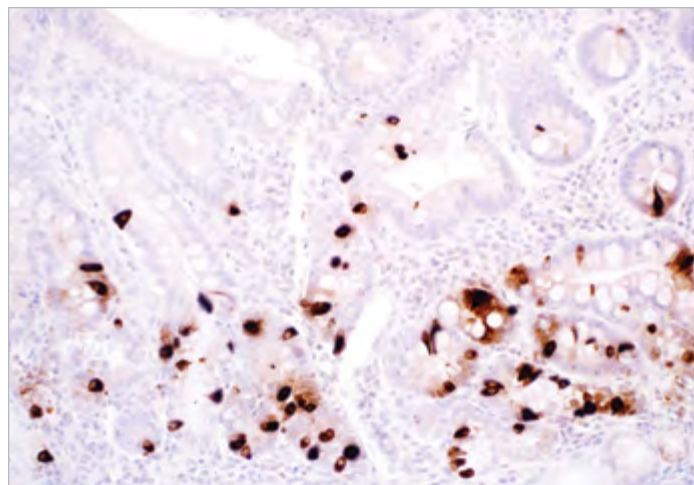
			
IVD	IVD	IVD	RUO



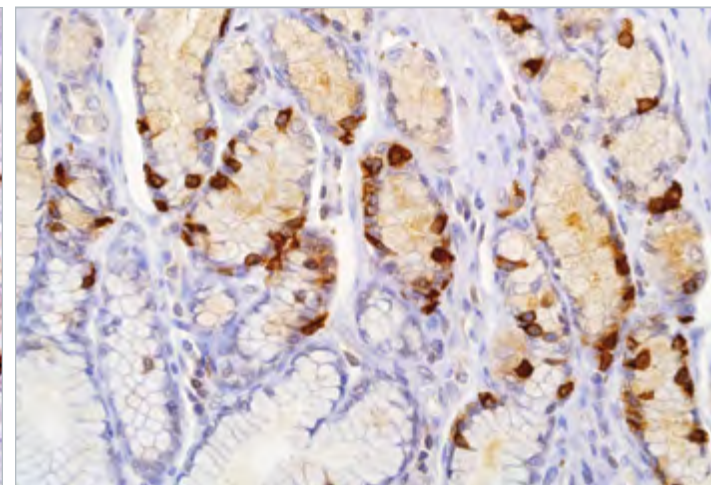
# Gastrin



Gastrin (polyclonal) on stomach.



Gastrin-producing cells in the small intestine are highlighted by the polyclonal anti-gastrin.



Gastrin (polyclonal) on stomach.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** stomach

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Anatomic/Surgical Pathology
- Gastrointestinal (GI) Pathology

## Reference

1. Rehfeld JF, et al. J Biol Chem. 1981; 256:10426-9.
2. Kirchner T, et al. Am J Surg Path. 1987; 11:909-17.
3. Bornstein-Quevedo L, et al. Hum Pathol. 2001; 32:1252-6.
4. Herrmann ME, et al. Arch Pathol Lab Med. 2000; 124:832-5.

## Product Description

Gastrin is a hormone whose main function is to stimulate secretion of hydrochloric acid by the gastric mucosa, which results in gastrin formation inhibition. This hormone also acts as a mitogenic factor for gastrointestinal epithelial cells. Gastrin has two biologically active peptide forms: G34 and G17. They activate two different receptors: the CCK-1 receptor, which has low affinity for gastrin but high affinity for the related hormone cholecystokinin (CCK), and the CCK-2 receptor, which has high affinity for both gastrin and CCK and mediates the acid-secretory as well as the proliferative effects of gastrin. More recently, gastrin has been suggested to induce leukocyte-endothelial cell interactions and to have a pro-inflammatory effect. Anti-gastrin stains G-cells of human antral/pyloric mucosa and cells producing gastrin or a structural gastrin analog as is seen in stomach; no staining of other cells or tissue types has been observed. This antibody may react with sulfated and non-sulfated forms of gastrin.

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

Volume .....	Part No.
0.1 ml, concentrate.....	256A-14
0.5 ml, concentrate.....	256A-15
1 ml, concentrate .....	256A-16
1 ml, predilute .....	256A-17
7 ml, predilute .....	256A-18

## Designations



IVD



IVD

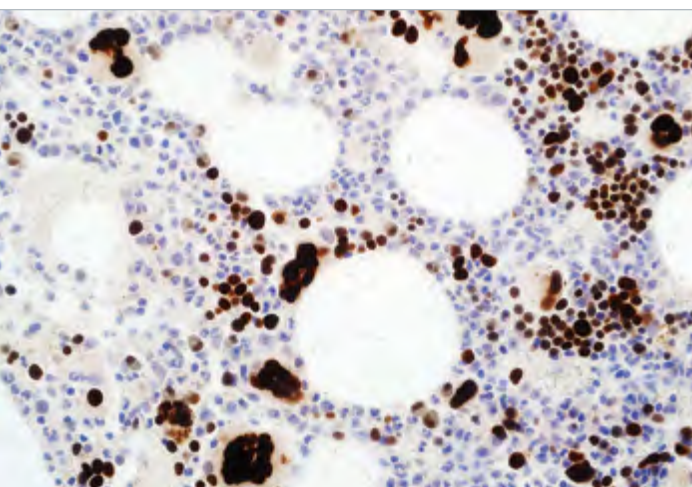


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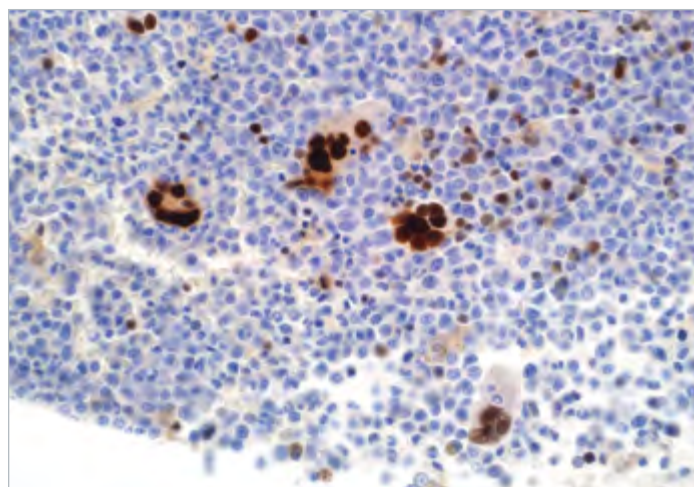


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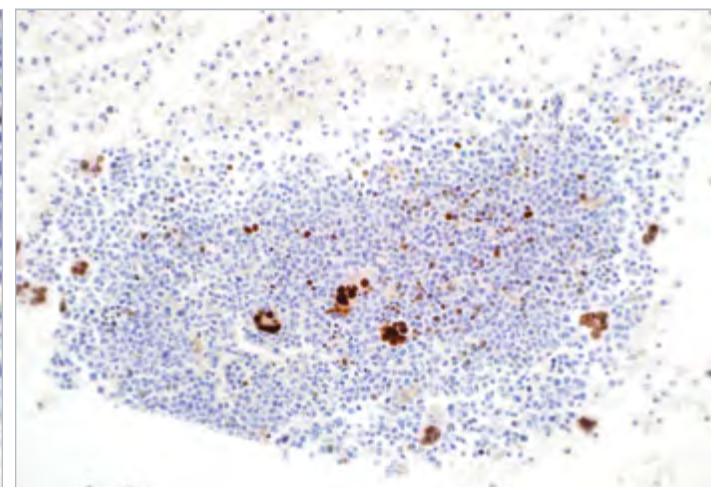
# GATA1



GATA1 (4F5) stains bone marrow megakaryocytes and erythroid precursors in a nuclear reaction.



GATA1 (4F5) on myeloproliferative neoplasm.



GATA1 (4F5) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** bone marrow, acute myeloid leukemia

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Hematopathology

## Reference

1. Elefanty A, et al. The EMBO Journal. 1996; 15:319-333.
2. Rainis L, et al. Blood. 2003; 102:981-986.

## Product Description

GATA1 is a nuclear transcription factor that belongs to the family of GATA proteins which bind the DNA sequence (A/T GATA-(A/G) by a highly conserved zinc finger domain located on the X chromosome.<sup>1,2</sup> GATA1 is expressed in the cells of the erythroid, megakaryocytic and mast cell lineages and is found in low levels in multipotential and Sertoli cells of the testis.<sup>1</sup> GATA1 normally suppresses the proliferation of megakaryocytic and erythroid precursors while promoting their differentiation. GATA1 is crucial for normal erythroid and megakaryocytic development. Missense mutations in GATA1 in humans causes a familial dyserythropoietic anemia and thrombocytopenia. GATA1 has been implicated in childhood acute megakaryoblastic leukemia (AMKL) and transient myeloproliferative disorder in children with Down syndrome (DS). Acquired mutations in exon 2 of GATA1 an X-linked gene has been described in DS patients with AMKL.<sup>2</sup> Anti-GATA1 can be used to identify megakaryocytes, erythroid precursors and megakaryocytic malignancies.<sup>1,2</sup>

## Panel Quick View

Neoplasm	GATA1	CD61	CD71	Glycophorin A	MPO
Megakaryocytes	+	+	-	-	-
Acute Megakaryoblastic Leukemia	+	+	-	-	-
Myeloproliferative Neoplasm	+	+	+	+	+
Acute Myeloid Leukemia	+/-	-	+	-	+
Anaplastic Large Cell Lymphoma	-	-	+	-	-
Erythroid precursors	+	-	+	+	-

## Ordering Information

### Clone: 4F5

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	417M-14
0.5 ml, concentrate	417M-15
1 ml, concentrate	417M-16
1 ml, predilute	417M-17
7 ml, predilute	417M-18

### Designations



IVD



IVD



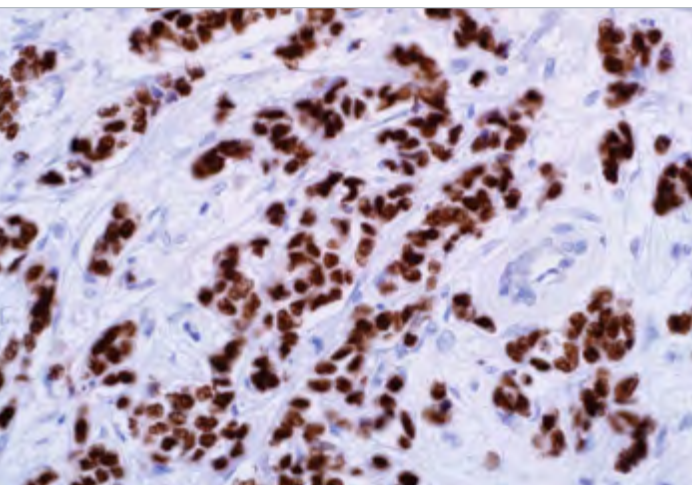
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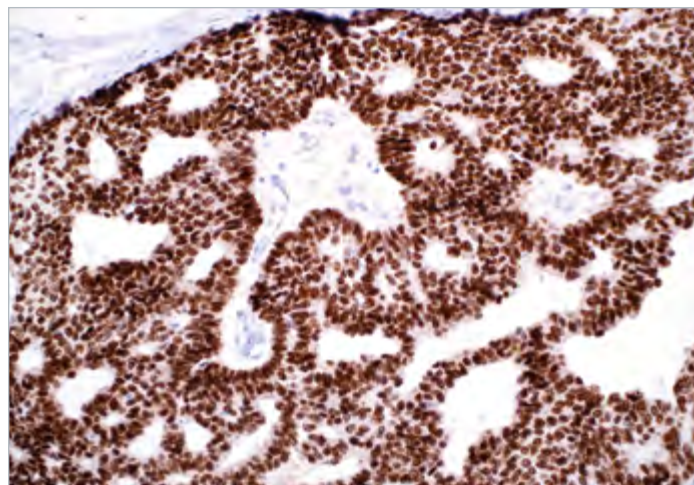
RUO



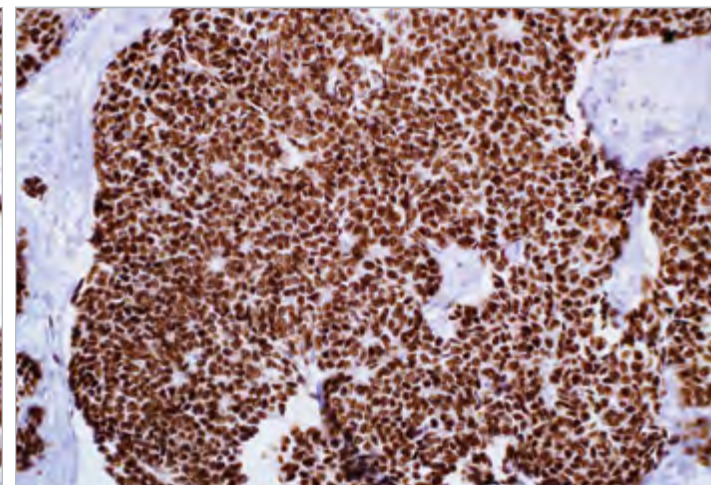
# GATA3



Mouse monoclonal anti-GATA3 demonstrates a strong diffuse and nuclear reaction in neoplastic cells of invasive ductal carcinoma of the breast.



GATA3 (L50-823) on breast.



GATA3 (L50-823) on breast.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** breast carcinoma, urothelial carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology
- Breast/Gynecological Pathology
- Genitourinary (GU) Pathology

## Associated Panels

- Carcinomas ..... 287
- Prostate Lesions ..... 296
- Squamous Cell Carcinoma vs Urothelial Carcinoma ..... 296

## Reference

1. Higgins JP, et al. Am J Surg Pathol. 2007; 31:673-680.
2. Liu H, et al. Am J Clin Pathol. 2012; 138:57-64.

## Product Description

GATA3 (GATA binding protein 3 to DNA sequence [A/T]GATA[A/G]) is a zinc finger transcription factor and plays an important role in promoting and directing cell proliferation, development, and differentiation in many tissues and cell types. GATA3 expression is primarily seen in breast carcinoma and urothelial carcinoma and only rarely found in tumors from other organs, such as endometrial endometrioid adenocarcinoma. GATA3 is expressed in all breast lobular carcinomas and 91% of invasive ductal carcinomas (grade I, 100%; grade II, 89% and grade III, 86%<sup>1-2</sup>). GATA3 expression seems to be lower in luminal B subtype breast carcinoma. It has also been reported that GATA3 expression is correlated with the status of ER, PR and Her2 in breast carcinoma.<sup>1-2</sup> GATA3 expression is found in urothelial carcinoma, especially in invasive and high grade tumors. Therefore, anti-GATA3 can be used in a panel of antibodies for diagnosis of unknown primary carcinoma, when carcinomas of the breast or bladder are a possibility.

## Panel Quick View

Carcinomas	GATA3	Arginase-1	CA IX	Cadherin-17	CDX-2	HBME-1	Napsin A	PAX-8	S100P	TTF-1
Breast Carcinoma	+	-	+	-	-	-	-	-	-	-
Lung Adenocarcinoma	-	-	-	-	-	-	+	-	-	+
Thyroid Carcinoma	-	-	-	-	-	+	-	+	-	+
Gastric Adenocarcinoma	-	-	+/-	-/+	+	-	-	-	-	-
Colon Adenocarcinoma	-	-	+/-	+	+	-	-	-	-	-
Pancreatic Ductal Carcinoma	-	-	+/-	-/+	+	-	-	-	+	-
Hepatocellular Carcinoma	-	+	-	-	-	-	-	-	-	-
Urothelial Carcinoma	+	-	-	-	-	-	-	-	+	-
Renal Cell Carcinoma	-	-	+	-	-	-	-/+	+	-	-

## Ordering Information

### Clone: L50-823

### Mouse Monoclonal

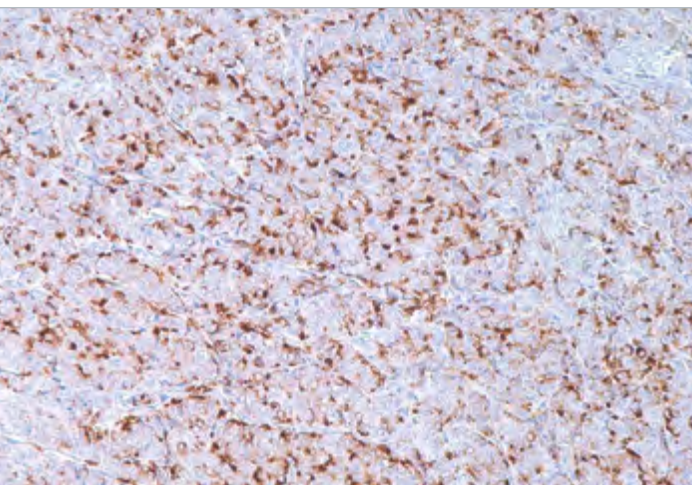
Volume	Part No.
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0.5 ml, concentrate	390M-15
1 ml, concentrate	390M-16
1 ml, predilute	390M-17
7 ml, predilute	390M-18
25 ml, predilute	390M-10

### Designations

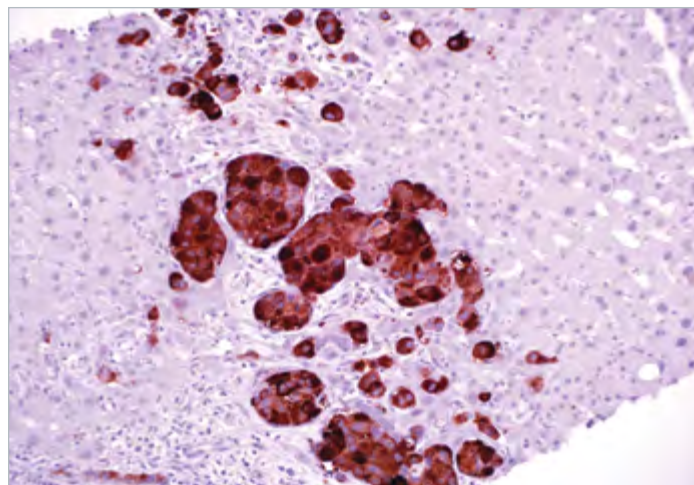
			
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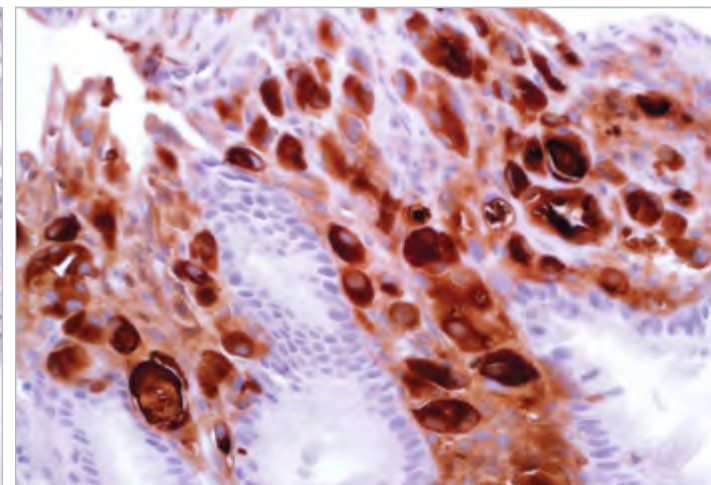
# GCDFP-15



GCDFP-15 (EP1582Y) on breast.



Metastatic breast carcinoma in the liver strongly expresses GCDFP-15 protein in a diffuse and cytoplasmic pattern.



GCDFP-15 (EP1582Y) on stomach, metastatic breast carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

BRST-2

## Associated Specialties

● Breast/Gynecological Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Carcinomas ..... 286
- Breast Lesion ..... 291
- Skin Adnexal Tumors ..... 293

## Reference

1. Mazoujian G, et al. 1988; 10:28-35.
2. Ansai S, et al. Am J Dermatopathol. 1995; 17:249-55.
3. Mazoujian G, et al. 1983; 110:105-12.
4. Wich MR, et al. 1989; 20:281-7.
5. Cohen C, et al. Arch Pathol Lab Med. 1993; 117:291-4.
6. Raju U, et al. Mod Pathol. 1993; 6:516-20.
7. Bhargava R, et al. Am J Clin Pathol. 2007; 127:103-113.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

GCDFP-15 is a 15 kD glycoprotein which is localized in the apocrine metaplastic epithelium lining breast cysts and in apocrine glands in the axilla, vulva, eyelid, and ear canal. Approximately 70% of breast carcinomas stain positive with antibody to GCDFP-15. Anti-GCDFP-15 is the most specific marker for breast carcinoma. Colorectal carcinomas, lung carcinoma, and mesotheliomas usually do not stain with this antibody. Lung adenocarcinoma rarely stains with this antibody.

## Panel Quick View

### Breast vs. Lung vs. Prostate Carcinoma

	BRST-2	AR	ER/PR	Mammaglobin	Napsin A	NKX3.1	PSA	PSAP	TTF-1
Breast Carcinoma	+	-	+	+	-	-	-	-	-
Lung Carcinoma	-	-	-	-	+	-	-	-	+
Prostate Carcinoma	-	+	-	-	-	+	+	+	-

### Carcinoma: Differential Diagnosis

	BRST-2	AR	BCA-225	ER/PR	Mammaglobin	NKX3.1	PSA/PSAP	TTF-1
Salivary Duct Carcinoma	+	+	+	-	-	-	-	-
Breast Carcinoma	+	+(apocrine)	+	+/-	+	-	-	-
Prostate Carcinoma	-	+	-	-	-	+	+	-
Lung Carcinoma	-	-	+/-	+/-	-	-	-	+

### Carcinomas

	BRST-2	CEA	CK 5	CK 7	CK 20	CK, HMW	CK, LMW	ER/PR	p63	Vimentin
Breast Carcinoma	+	-	-	+	-	+	+	+	-	-
Salivary Gland Carcinoma	+	+	+	+	-	+	+	-	+	+
Sweat Gland Carcinoma	-	+	+	+	-	+	+	-/+	+	-

### Breast Lesion

	BRST-2	CK 34βE12	E-cadherin	Mammaglobin	p120
Lobular	+	+	-	+	+(cytoplasmic)
Ductal	+	-	+	+	+(membranous)

## Ordering Information

### Clone: EP1582Y

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	257R-14
0.5 ml, concentrate.....	257R-15
1 ml, concentrate .....	257R-16
1 ml, predilute .....	257R-17
7 ml, predilute .....	257R-18
25 ml, predilute .....	257R-10

### Alternate Clones Available

- Mouse Monoclonal, 23A3
- Contact us for more information.

### Designations

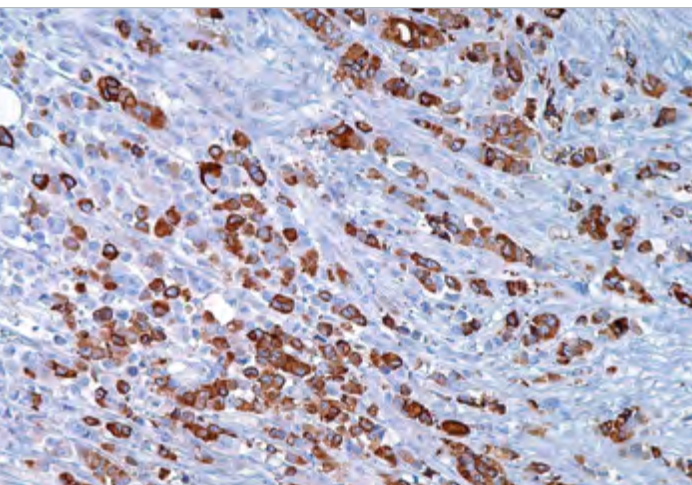


**CELL MARQUE**

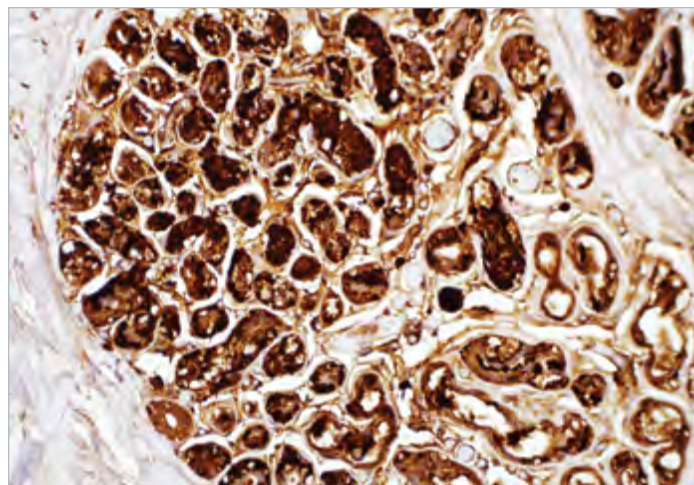
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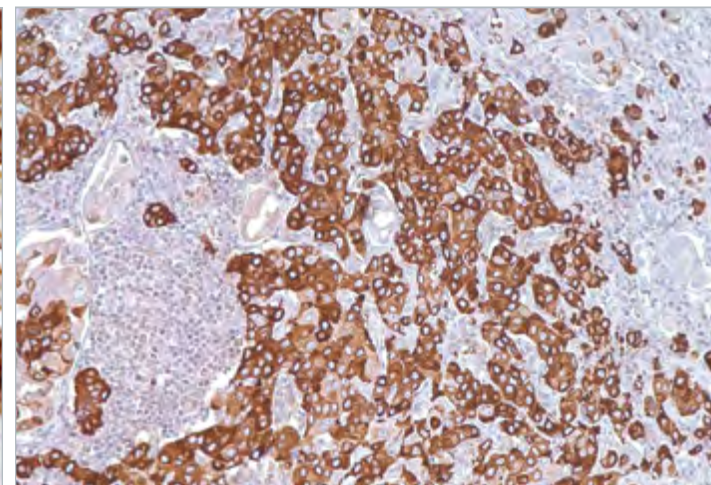
# GCDFP-15 + Mammaglobin Cocktail



GCDFP-15 + Mammaglobin Cocktail on infiltrating ductal carcinoma of the breast.



GCDFP-15 + Mammaglobin Cocktail on breast lobule.



GCDFP-15 + Mammaglobin Cocktail on breast carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** breast, breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- 23A3: IgG<sub>2a</sub>
- 304-1A5: IgG<sub>1</sub>
- 31A5: IgG

## Associated Specialties

- Breast/Gynecological Pathology

## Reference

1. Cohen C, et al. Arch Pathol Lab Med 1993 Mar; 117(3):291-4.
2. Bhargava R, et al. Am J Clin Pathol 2007; 127:103-113.
3. Tornos C, et al. Am J Surg Pathol 2005 Nov; 29(11):1482-9.
4. Takeda Y, et al. Arch Pathol Lab Med 2008 Feb; 132(2):239-43.
5. Liegl B, et al. Histopathology 2007 Mar; 50(4):439-47.
6. Mark A, et al. Cancer Research 1999 July; 59:3028-3031.

## Product Description

Anti-GCDFP-15, mouse monoclonal (23A3), and anti-mammaglobin, mouse monoclonal (304-1A5) and rabbit monoclonal (31A5), is an antibody cocktail. GCDFP-15 is a 15 kDa glycoprotein which is localized in the apocrine metaplastic epithelium lining breast cysts and in apocrine glands in the axilla, vulva, eyelid, and ear canal. Mammaglobin (10 kDa) is a breast-associated glycoprotein distantly related to secretoglobin family that includes human uteroglobin and lipophilin.<sup>1-6</sup>

## Ordering Information

**Clone: 23A3 + 304-1A5 & 31A5**  
Mouse/Rabbit Cocktail

**Volume** ..... **Part No.**

1 ml, predilute ..... 906H-07

7 ml, predilute ..... 906H-08

## Designations



IVD



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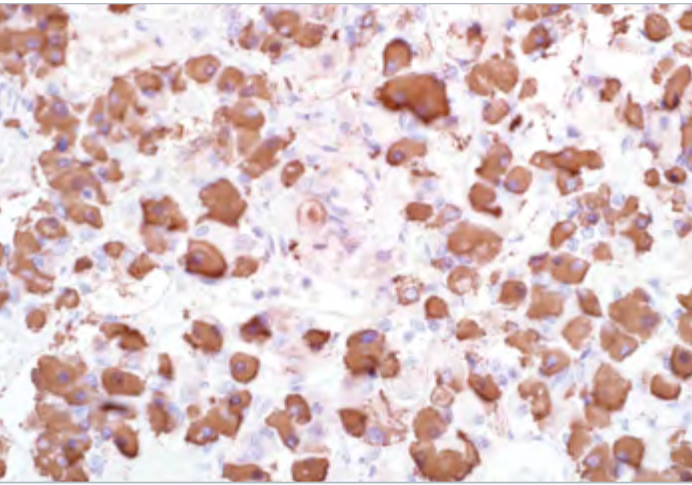


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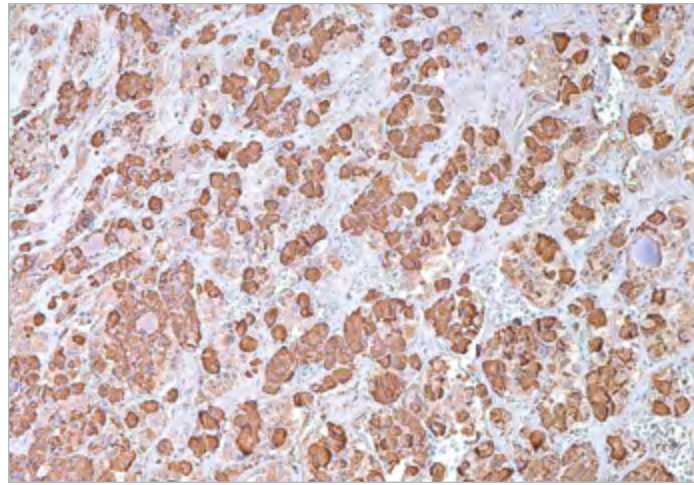


RUO

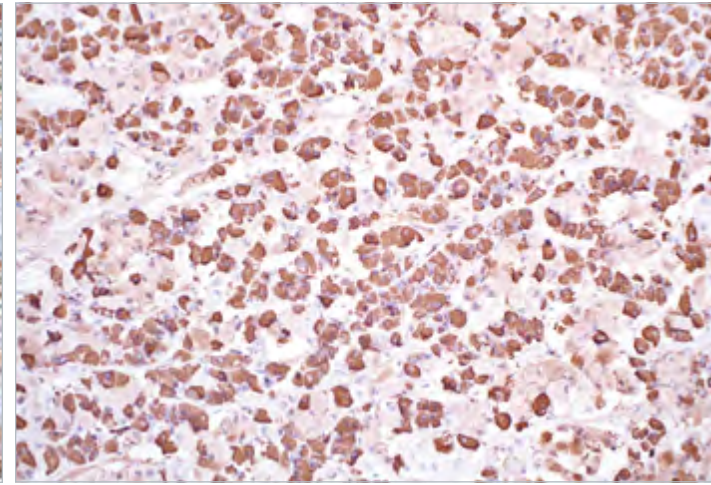




GH (EP267) on pituitary adenoma.



Anti-GH (polyclonal) exhibits cytoplasmic staining in GH-producing cells of the pituitary gland.



GH (EP267) on pituitary adenoma.

### Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pituitary

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

### Associated Specialties

- Anatomic/Surgical Pathology
- Neuropathology

### Reference

1. Fukaya T, et al. Cancer. 1980; 45:1603.
2. Kovacs K, et al. Virch Arch Pathol Anat. 1982; 395:59-68.
3. Cunha KS, et al. J Clin Pathol. 2003; 56:758-63.
4. Chopin LK, et al. Growth Horm IGF Res. 2002; 12:126-36.
5. Matsuno A, et al. Pathol Res Pract. 2001; 197:13-20.
6. Garcia-Caballero T, et al. Endocrine. 2000; 12:265-71.

### Product Description

Pituitary growth hormone (GH) plays a crucial role in stimulating and controlling the growth, metabolism and differentiation of many mammalian cell types by modulating the synthesis of multiple mRNA species. These effects are mediated by the binding of GH to its membrane-bound receptor, GHR, and involve a phosphorylation cascade that results in the modulation of numerous signaling pathways. GH is synthesized by acidophilic or somatotrophic cells of the anterior pituitary gland. Human growth hormone contains 191 amino acid residues with two disulfide bridges. Anti-GH is a useful marker in classification of pituitary tumors and the study of pituitary disease (acromegaly).<sup>1-3</sup> It reacts with GH-producing cells. Growth hormone receptors have been found in various non-pituitary cells, including that from hepatocellular carcinoma and various benign and malignant cutaneous lesions.<sup>4-6</sup>

### Ordering Information

#### Clone: EP267

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	208R-14
0.5 ml, concentrate.....	208R-15
1 ml, concentrate .....	208R-16
1 ml, predilute .....	208R-17
7 ml, predilute .....	208R-18

#### Alternate Clones Available

- Rabbit Polyclonal

Contact us for more information.

#### Designations



IVD



IVD



IVD



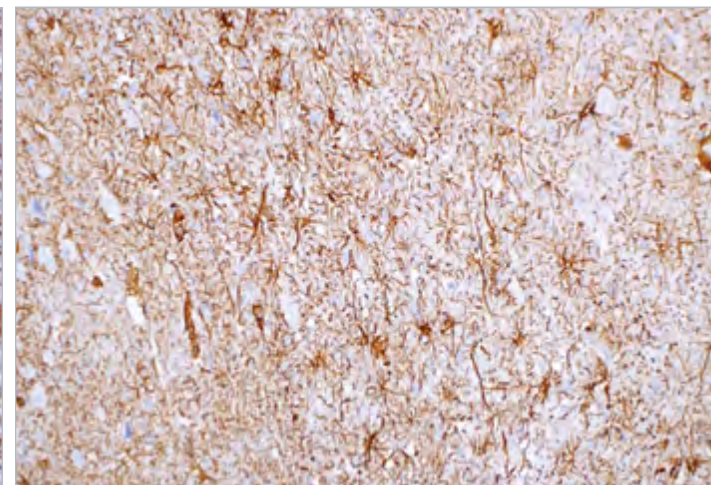
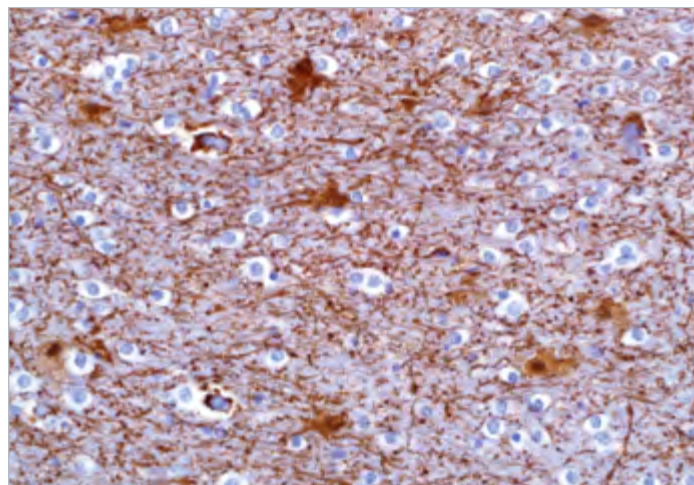
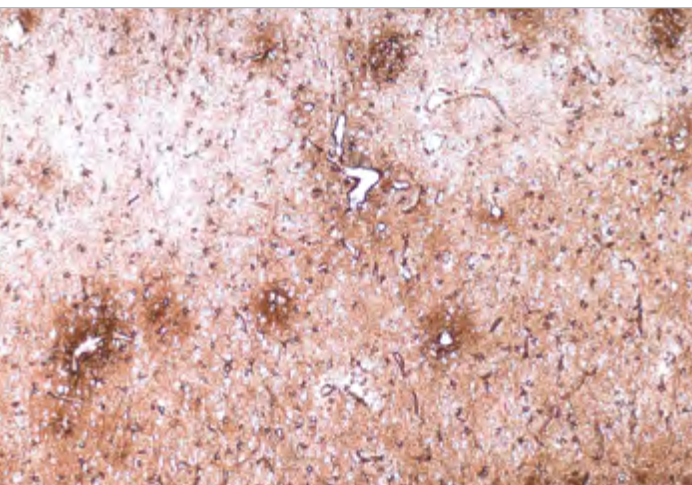
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# Glial Fibrillary Acidic Protein



GFAP (EP672Y) demonstrates a strong and diffuse, cytoplasmic staining reaction in astrocytes, oligodendrocytes, neurons and glia of the CNS.

GFAP (SP78) on brain.

GFAP (SP78) labels astrocytes, oligodendrocytes, neurons and glia of the central nervous system.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** brain

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

GFAP

## Associated Specialties

● Neuropathology

## Associated Panels

- Retroperitoneal Lesions. . . . . 290
- Neuroid Skin Lesions . . . . . 293
- Brain: CNS Tumors 1 . . . . . 300
- Brain: CNS Tumors 2 . . . . . 301
- Meningiomas from Histologic Mimics . . . . . 301
- Retroperitoneal Neoplasms . . . 301

## Reference

1. Choi BH, et al. Science. 1984; 223:407-409.
2. Jessen KR, et al. J Neurosci. 1983; 3:2206-2218.
3. Kawahara E, et al. Am J Surg Pathol. 1988; 12:115-20.

## Product Description

Anti-glial fibrillary acidic protein (GFAP) antibody detects astrocytes, Schwann cells, satellite cells, enteric glial cells, and some groups of ependymal cells. This marker is mainly used to distinguish neoplasms of astrocytic origin from other neoplasms in the central nervous system.<sup>1-3</sup>

## Panel Quick View

### Retroperitoneal Lesions

	GFAP	Chromogranin A	CD99	Neurofilament	NSE	PGP 9.5	S-100	Synaptophysin
Neuroblastoma	-/+	+	-	+	+	+	-	+
Ganglioneuroblastoma	+	+	-	+	+	+	+	+
Ganglioneuroma	+	+	-	+	+	+	+	+
Leiomyosarcoma	-	-	-	-	-/+	-/+	-	-
Rhabdomyosarcoma	-	-	-	-	-	+	-	-
Synovial Sarcoma	-	-	+/-	-	-	-	-/+	-

### Brain: CNS Tumors 2

	GFAP	CK Cocktail	EMA	INI-1	NGFR	Neurofilament	PR	S-100	Synaptophysin	Vimentin
Astrocytoma	+	-	-	+	+	-	-	+	-	+
Glioblastoma	+	-	-	+	-	-	-	+	-	+
Oligodendroglioma	-	-	-	+	-	-	-	+	-	+
Ependymoma	+	- (+ AE1 & AE3)	-	+	+	-	-	+	-	-/+
Choroid Plexus Carcinoma	-/+	+	-	+	-	-	-	+	+	+/-
Central Neurocytoma	-	-	-	+	+	-	-	-	+	-
Neuroblastoma	+/-	-	-	+	+	+	-	+/-	+	+
Pineocytoma	-	-	-	+	-	-	-	-	+	-
Meningioma	-	-	+	+	-	-	+	-	-	+
Schwannoma	+	-	-	+	+	-	-	+	-	+
Rhabdoid Tumors	-	+	+	-	-	+/-	-	+/-	+/-	+
Metastatic Carcinoma	-	+	+	+	-	-	-/+	-	-	-/+

## Ordering Information

### Clone: EP672Y

Rabbit Monoclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 258R-14

0.5 ml, concentrate . . . . . 258R-15

1 ml, concentrate . . . . . 258R-16

1 ml, predilute . . . . . 258R-17

7 ml, predilute . . . . . 258R-18

### Alternate Clones Available

• Rabbit Monoclonal, SP78

Contact us for more information.

### Designations



IVD



IVD



IVD

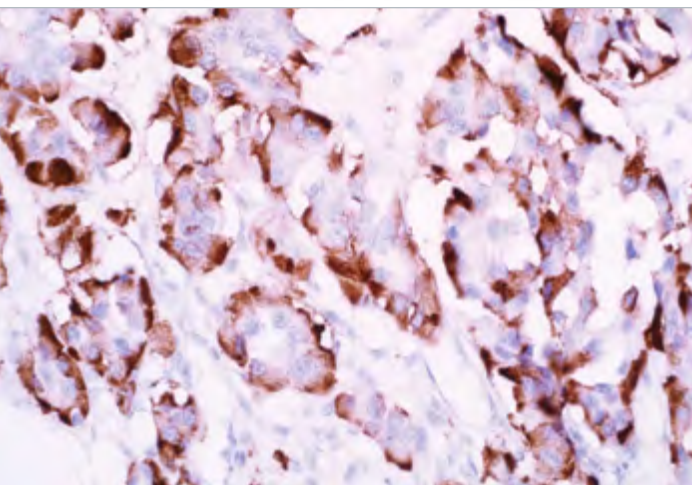


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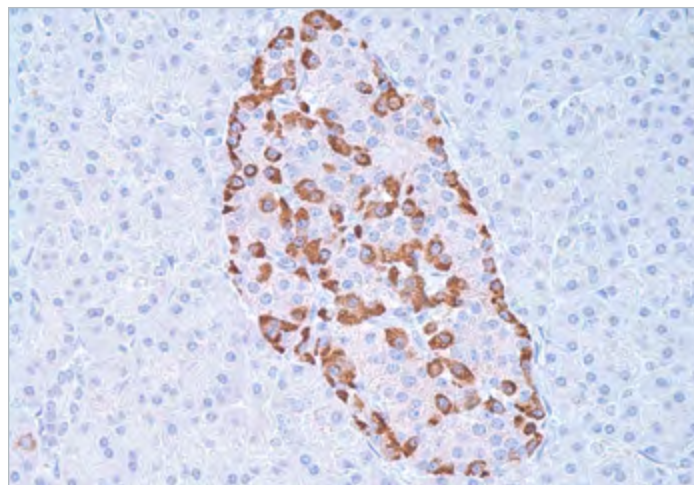
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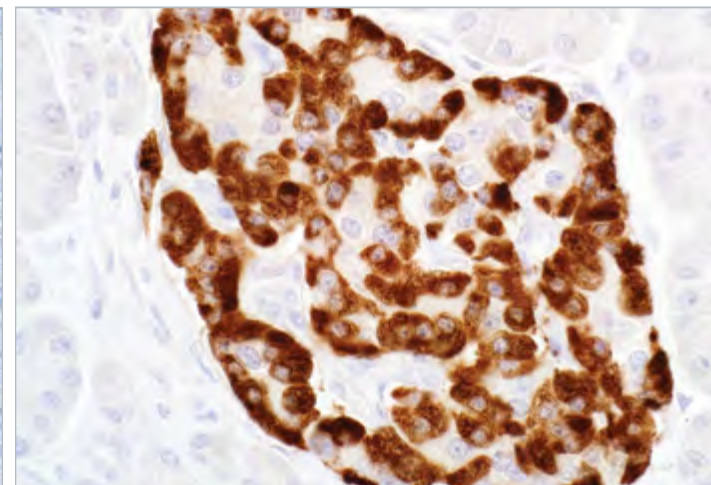
# Glucagon



Glucagon (EP74) on pancreatic neuroendocrine tumor.



Glucagon (polyclonal) on pancreas.



Glucagon (polyclonal) reveals a strong and cytoplasmic staining in the islet cells of Langerhans.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreas

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Dabbs DJ. Diagnostic Immunohistochemistry Theranostic and Genomic Applications. Third Ed. Philadelphia, PA, US: Elsevier Saunders, 2010. Print. p. 321.
2. Hamid QA, et al. Histopathology. 1986; 10:119-133.
3. Rosai J. Rosai and Ackerman's Surgical Pathology. 10th Ed. Milan, Italy: Elsevier Mosby, 2011. Print. p. 1030-31.

## Product Description

The normal islets of Langerhans (pancreas) contain four major cell types, 15-20% of which are alpha cells which produce glucagon.<sup>1</sup> Alpha cell tumors can be divided into two distinct types; those associated with glucagonoma syndrome<sup>2</sup> (necrolytic migratory erythema, diabetes, anemia, stomatitis, weight loss, venous thromboses, diarrhea, and sometimes psychiatric disturbances), and those which are not. Those associated with the syndrome tend to be large and solitary and there is a high incidence of malignancy. Those glucagonomas not associated with the syndrome tend to be multiple and small and are nearly always benign.<sup>3</sup> Immunohistochemically, the two types of glucagonomas are reactive to the glucagon antibody, though occasionally only weakly.

## Ordering Information

### Clone: EP74

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	259R-14
0.5 ml, concentrate.....	259R-15
1 ml, concentrate .....	259R-16
1 ml, predilute .....	259R-17
7 ml, predilute .....	259R-18

### Alternate Clones Available

• Rabbit Polyclonal

Contact us for more information.

### Designations



IVD



IVD



IVD



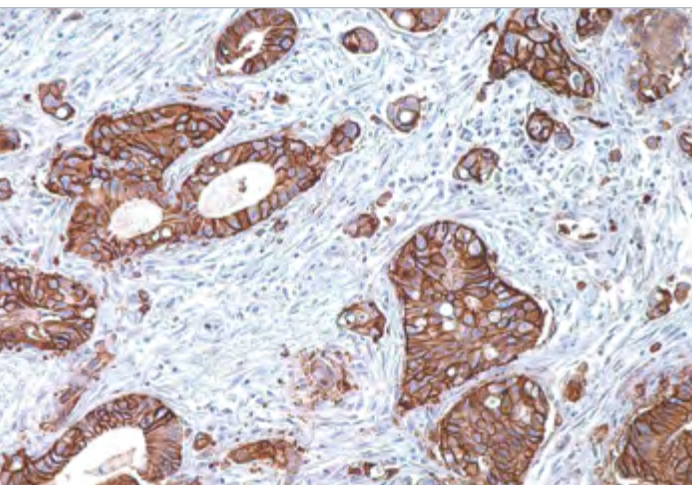
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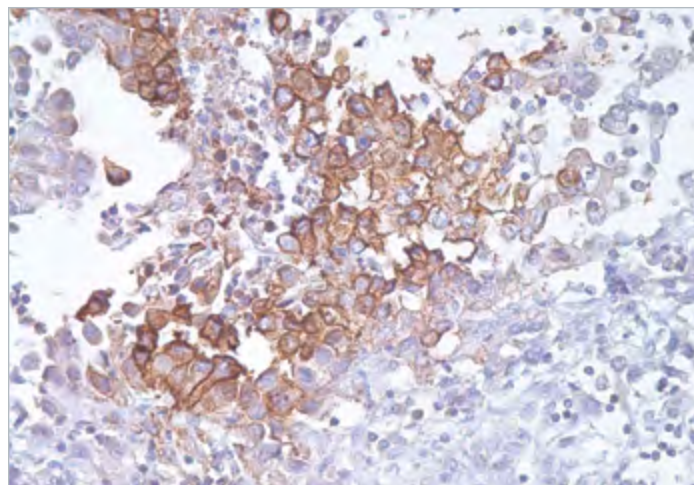
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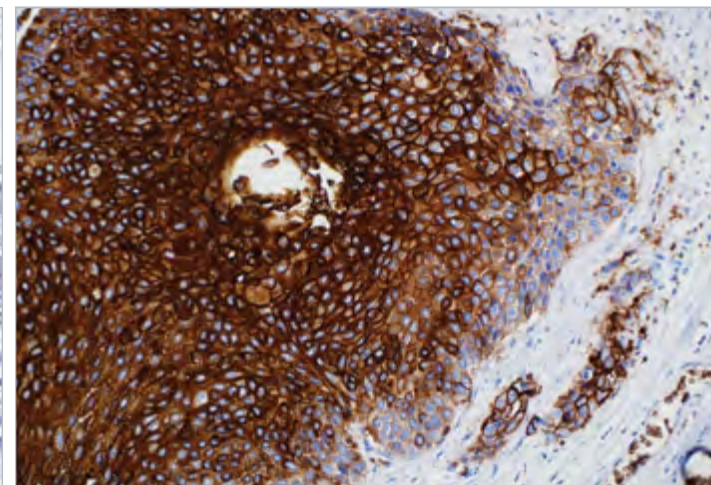
# GLUT1



GLUT1 is strongly expressed in colorectal carcinoma cells.



GLUT1 (polyclonal) on pleura.



GLUT1 (polyclonal) on esophageal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** colorectal carcinoma, malignant mesothelioma

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

● Cytopathology

● Pulmonary Pathology

## Associated Panels

● Epithelioid Cell Neoplasms. . . . 288

● Spindle Cell Lesions . . . . . 290

● Thymus . . . . . 290

## Reference

1. Kato Y, et al. Mod Pathol. 2007; 20:215-20.
2. Acurio A, et al. Mod Pathol. 2008; 21:334A.
3. Afify A, et al. Acta Cytol. 2005; 49:621-6.

## Product Description

Glucose transporter type I (GLUT1), a prototype member of GLUT superfamily, is a membrane-associated erythrocyte glucose transport protein.<sup>1</sup> It is a major glucose transporter in the mammalian blood-brain barrier, and also mediates glucose transport in endothelial cells of the vasculature, adipose tissue, and cardiac muscle.<sup>1</sup> GLUT1 is detectable in many human tissues including those of colon, lung, stomach, esophagus, and breast.<sup>1</sup> GLUT1 is overexpressed in malignant cells and in a variety of tumors that include the breast, pancreas, cervix, endometrium, lung, mesothelium, colon, bladder, thyroid, bone, soft tissues, and oral cavity.<sup>1</sup> Immunohistochemical detection of GLUT1 has been shown to discriminate between reactive mesothelium and malignant mesothelioma in more than one study.<sup>1-3</sup>

## Panel Quick View

Spindle Cell Lesions								
	GLUT1	SM Actin	CD34	CD99	Claudin 1	Desmin	EMA	S-100
Perineurioma	+	+/-	+	+	+	-	+	-
Neurofibroma	-	-	-	-	+	-	-/+	+
Schwannoma	-	-	-	-	-	-	-	+

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	355A-14
0.5 ml, concentrate . . . . .	355A-15
1 ml, concentrate . . . . .	355A-16
1 ml, predilute . . . . .	355A-17
7 ml, predilute . . . . .	355A-18

### Designations



IVD



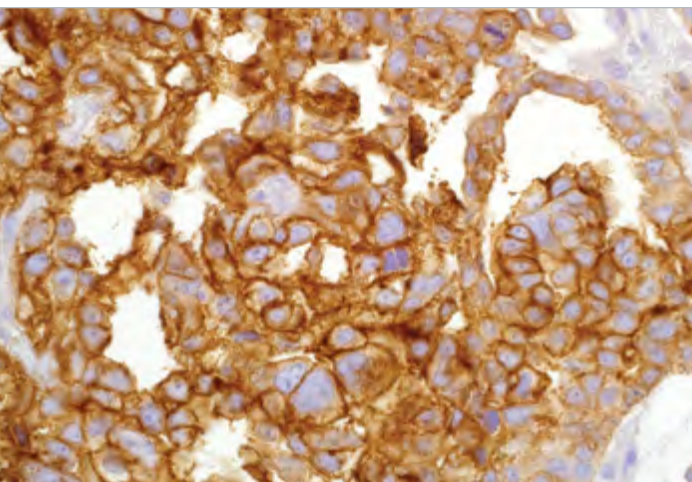
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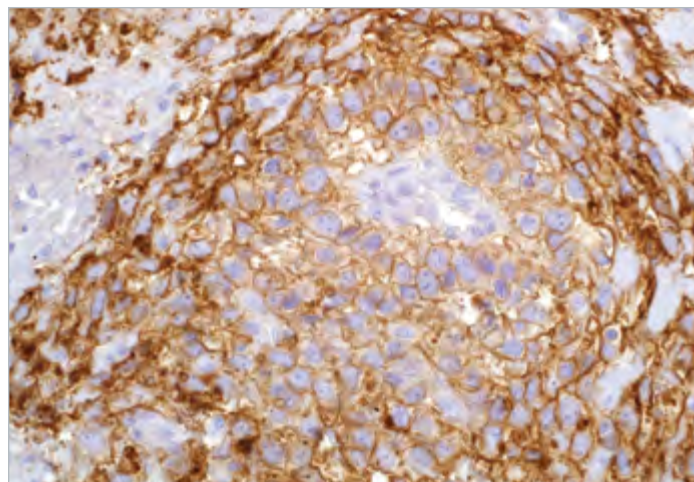
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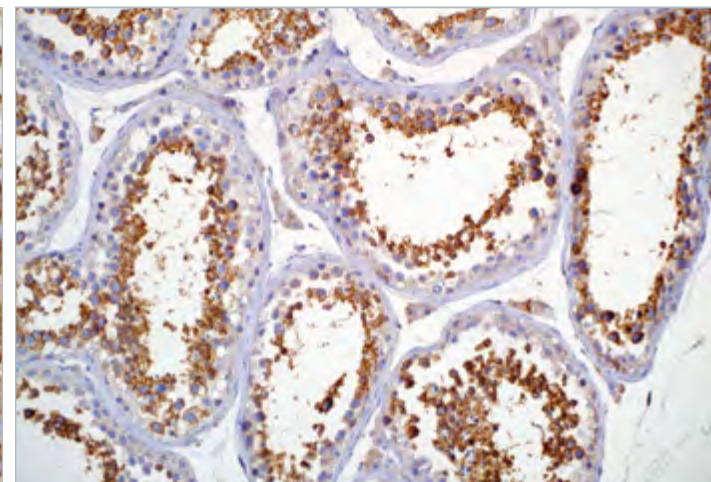
RUO



Yolk sac tumor cells express GLUT3 protein in the membrane.



GLUT3 (polyclonal) on ovary.



GLUT3 (polyclonal) on normal testis.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** embryonal carcinoma, yolk sac tumor

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Genitourinary (GU) Pathology

## Reference

- Haber RS, et al. Endocrinology. 1993; 132:2538.
- Howitt BE, et al. Appl Immunohistochem Mol Morphol. 2013; 21:401.

## Product Description

Glucose transporter membrane 3 (GLUT3) is known as a solute carrier family 2 (facilitated glucose transporter) member 3 and represents a membrane bound glucose transporter. In one study scientists, using immunoprecipitation and western blot technologies, detected GLUT3 expression in spermatozoa of testis and brain but not in other types of tissue.<sup>1</sup> In-house research via immunohistochemistry confirmed GLUT3 expression in testis/spermatozoa, but no GLUT3 was detected in brain. In a study conducted by Howitt BE et. al. anti-GLUT3 demonstrated membranous staining of seminoma cells in 44 cases (65%) of total 67 specimens.<sup>2</sup> In addition, anti-GLUT3 labeled embryonal carcinoma (20/20) and yolk sac tumor (8/8) with 100% sensitivity.<sup>2</sup> GLUT3 is not expressed in non-germ cell tumors such as Leydig cell tumor and adenomatoid tumor.<sup>2</sup> Spermatocytic seminoma, choriocarcinoma, and immature teratoma are also negative for GLUT3.<sup>2</sup> Therefore, anti-GLUT3 is a very useful IHC marker to include in a panel for identification of germ cell tumors.

## Panel Quick View

Germ Cell Neoplasms										
	GLUT3	CD30	CD117	CK Cocktail	Oct-4	PLAP	D2-40	SALL4	SOX-2	Vimentin
Seminoma/Dysgerminoma	+	-	+	-/+	+	+	+	+	-	-
Embryonal Carcinoma	+	+	+/-	+	+	+	+/-	+	+	+
Yolk Sac Tumor	+	-	+/-	+	-	+/-	-	+	-	+
Choriocarcinoma	-	-	+	+	-	-/+	-	+	-	+
Spermatocytic Seminoma	-	-	-	-	-	-	-	+	-	-
Mature Teratoma	+	-	-	+	-	-	-	+	+/-	+
Immature Teratoma	-	-	+/-	-/+	-	+/-	-	+	+	+

## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

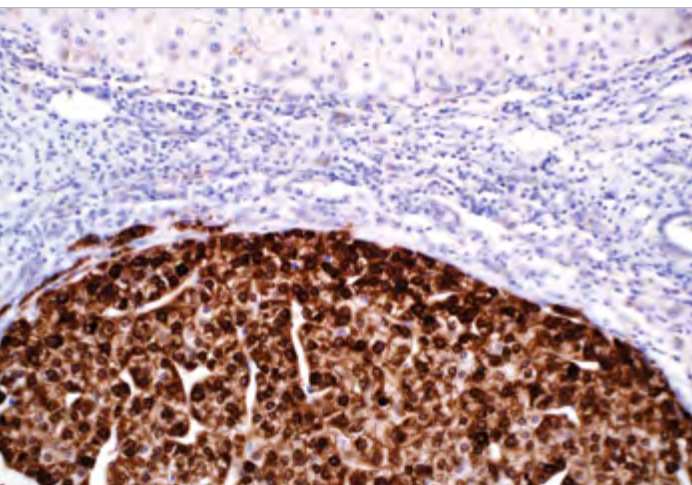
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0.5 ml, concentrate . . . . . 413A-15  
1 ml, concentrate . . . . . 413A-16  
1 ml, predilute . . . . . 413A-17  
7 ml, predilute . . . . . 413A-18

## Designations

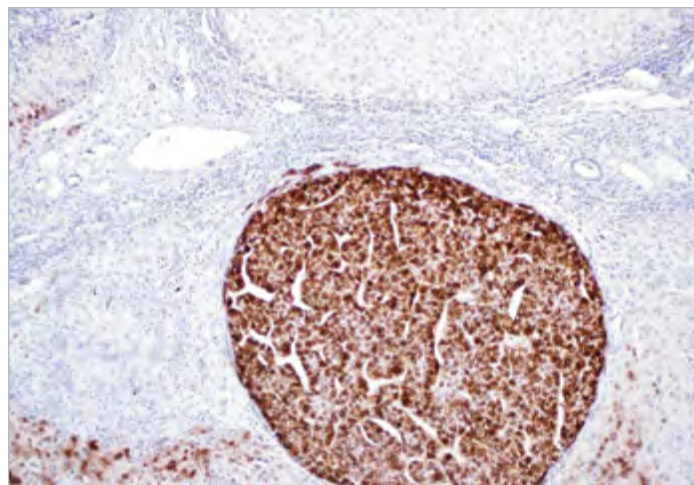
 IVD  IVD  IVD  RUO



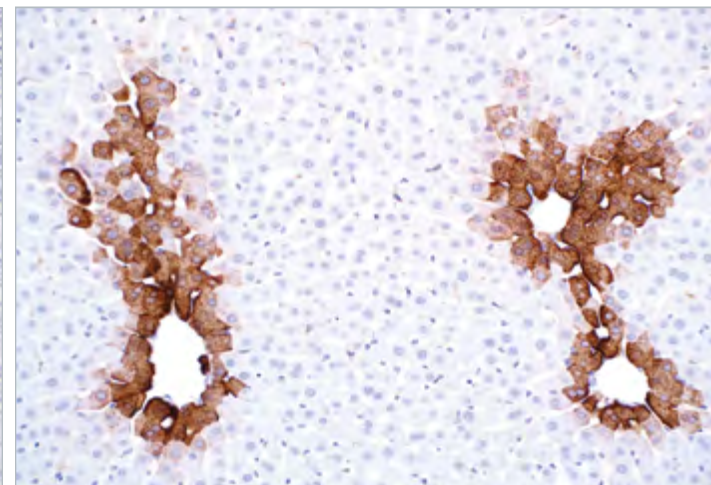
# Glutamine Synthetase



Glutamine Synthetase (GS-6) strongly stains hepatocellular carcinoma cells in a cytoplasmic pattern.



Glutamine Synthetase (GS-6) on liver.



Glutamine Synthetase (GS-6) on liver.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** hepatocellular carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Synonyms and Abbreviations

GS

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Reference

1. Di Tommaso L, et al. Hepatology. 2007; 45:725-734.
2. Bioulac-Sage P et al. Liver International. 2009; 3:459-465.
3. Shafizideh N, Kakar S. Adv Anat Pathol. 2011; 18: 438-445.
4. Bioulac-Sage, P et al. Seminars in Liver Disease. 2011; 31:91-103.
5. Bioulac-Sage, P et al. Am J Surg Pathol. 2012; 36:1691-1699.
6. Lagana S, et al. Appl Immunohistochem Mol Morphol. 2013; 21:170-76.

## Product Description

Glutamine synthetase (GS) catalyzes the synthesis of glutamine from glutamate and ammonia in the mammalian liver. In normal liver, GS expression is seen in pericentral hepatocytes, but not in mid-zonal or periportal hepatocytes.<sup>1</sup> Glutamine, the end product of GS activity, is the major energy source of tumor cells.<sup>1</sup> Based on findings from experimental hepatocarcinogenesis, GS positive tumor cells are believed to be derived from GS positive hepatocytes.<sup>1</sup> Thus, anti-GS has been suggested as a marker for hepatocellular carcinoma (HCC).<sup>1</sup> GS immunoreactivity has been seen in a majority of HCC (37 of 53 cases, 70%), including 7 of 10 cases of early HCC (70%) and 12 of 22 (59%) for low-grade HCC.<sup>1</sup> In nonmalignant nodules, GS overexpression was only seen in 3 high grade dysplastic nodules (HGDN,13.6%). In these cases, GS overexpression was restricted to 11.5%-50% of hepatocytes, whereas in HCC the majority of cases (28 of 53, 53%), including early HCC (60%), showed diffuse immunostaining (>50% tumor cells). Overall, the sensitivity, specificity, and positive and negative predictive values of anti-GS for HCC detection were 69.8%, 94.2%, 92.5%, and 75.4%, respectively. A panel composed of antibodies against HSP70, GPC3, and GS has been proposed to be very useful in distinguishing between dysplastic and early malignant hepatocellular nodules arising in cirrhosis. The "all positive" phenotype is restricted to approximately half of early HCC to well-differentiated HCC but has never been reported in dysplastic lesions, whereas the reverse phenotype, "all negative", has been shown to be a feature of the majority of HGDN and of all low-grade dysplastic nodules.<sup>1</sup>

Staining of hepatocellular lesions with anti-GS antibody have been useful in the differential diagnosis of focal nodular hyperplasia (FNH), hepatic adenoma (HCA),<sup>2</sup> and dysplastic nodules, and low-grade hepatocellular carcinoma.<sup>3-6</sup> In the case of FNH, GS stains in a characteristic "map-like" pattern, thus differentiating it from HCA, in which GS staining is usually absent, but may occasionally be present at the border of the lesion or around the veins inside the tumor.<sup>4,5</sup>

## Panel Quick View

Neoplasms	GS	Arginase-1	CK 7	CK 19	GATA3	GPC-3	HSA	S100P
Well Differentiated HCC	+	+	-/+	-/+	-	-	+	-
Moderately Differentiated HCC	+	+	-/+	-/+	-	-/+	+	-
Poorly Differentiated HCC	+	+	-/+	-/+	-	+	+	-
Hepatic Adenoma	-	+	+/-	-/+	-	-	+	-
Hepatic Dysplastic Nodule	-	+	+/-	-/+	-	-	+	-
Intrahepatic Cholangiocarcinoma	-	-	+	+	-	-	-	-
Pancreatic Ductal Carcinoma	-	-	-/+	-/+	-	-	-	+

## Ordering Information

### Clone: GS-6

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	389M-14
0.5 ml, concentrate	389M-15
1 ml, concentrate	389M-16
1 ml, predilute	389M-17
7 ml, predilute	389M-18

### Designations



IVD



IVD

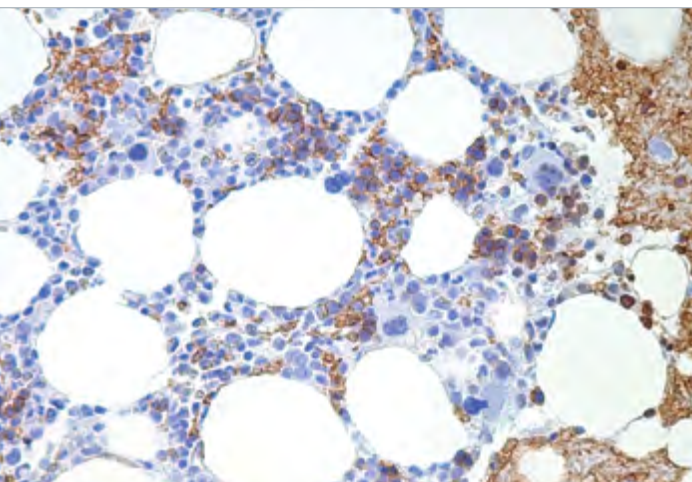


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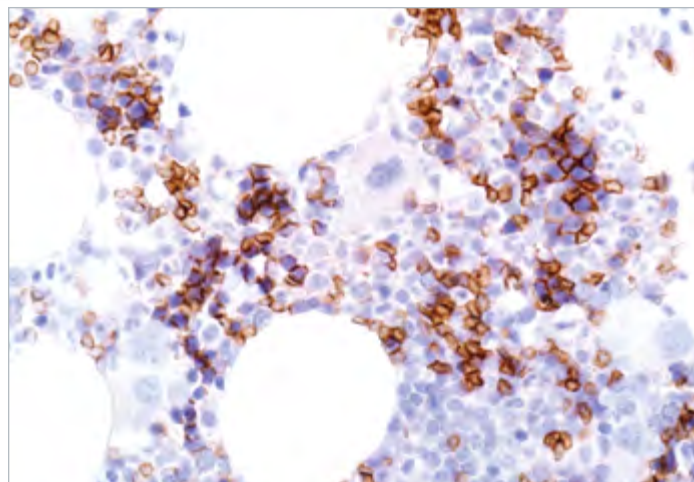


RUO

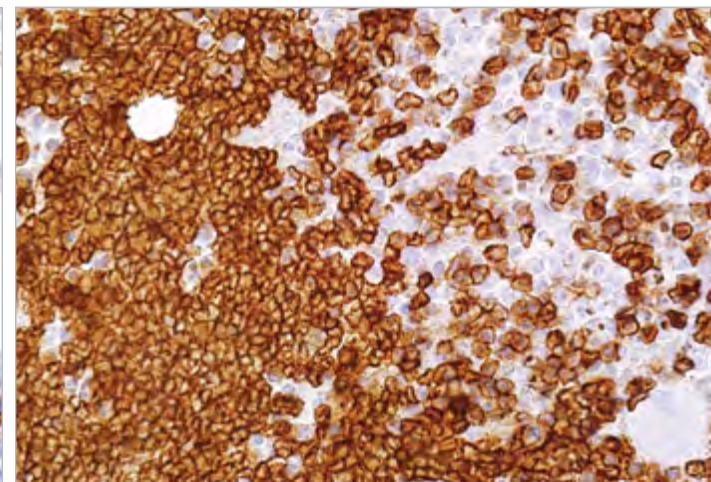
# Glycophorin A



Glycophorin A (GA-R2) reveals erythroid precursors and mature red blood cells in a membranous pattern in the bone marrow.



Glycophorin A (GA-R2) on bone marrow.



Glycophorin A (GA-R2) on bone marrow clot.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>/k

## Synonyms and Abbreviations

GPA

## Associated Specialties

● Hematopathology

## Associated Panels

● Erythroid ..... 297

## Reference

1. Rollins-Raval MA, et al. Am J Clin Pathol. 2012; 137(1):30-8.
2. Dong HY, et al. A. Am J Surg Pathol. 2011; May:723-32.
3. Sadahira Y, et al. J Clin Pathol. 1999; 52:919-21.
4. Chang CC, et al. Am J Clin Pathol. 2000; 114:807-11.

## Product Description

Glycophorins A (GPA) and B (GPB) are major sialoglycoproteins of the human erythrocyte membrane which bear the antigenic determinants for the MN and SU blood groups. Glycophorins span the membrane and present their amino-terminal end to the extracellular surface of the human erythrocyte. The genetic array of expressed glycophorin surface antigens on erythrocytes defines the blood group phenotype of the individual. GPA is the carrier of blood group M and N specificities, while GPB accounts for S and U specificities. GPA and GPB provide the cells with a large mucin-like surface and it has been suggested this provides a barrier to cell fusion thus minimizing aggregation between red blood cells in the circulation. Anti-glycophorin A has been used to characterize erythroid cell development and in the diagnosis of erythroid leukemias.<sup>1-4</sup>

## Panel Quick View

Erythroid	Glycophorin A	CD71	Hemoglobin A	Spectrin
Erythroid Hyperplasia	+	+	+	+
Erythroid Hypoplasia	+	+	+	+
Acute Erythroid Leukemia	+	+	+	+
Extramedullary Hematopoiesis	+	+	+	+
Mature Erythrocytes	+	-	+	+

## Ordering Information

### Clone: GA-R2

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	260M-14
0.5 ml, concentrate	260M-15
1 ml, concentrate	260M-16
1 ml, predilute	260M-17
7 ml, predilute	260M-18

### Designations



IVD



IVD



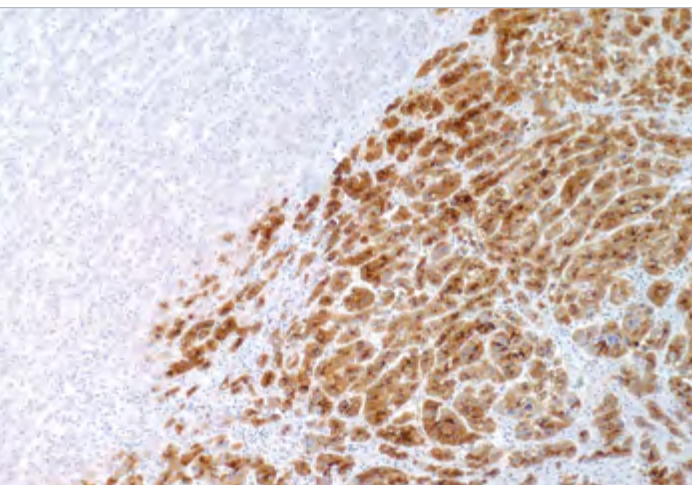
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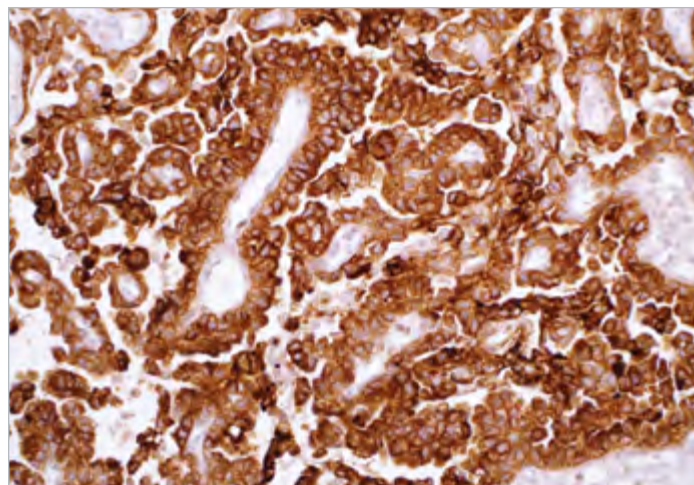
RUO



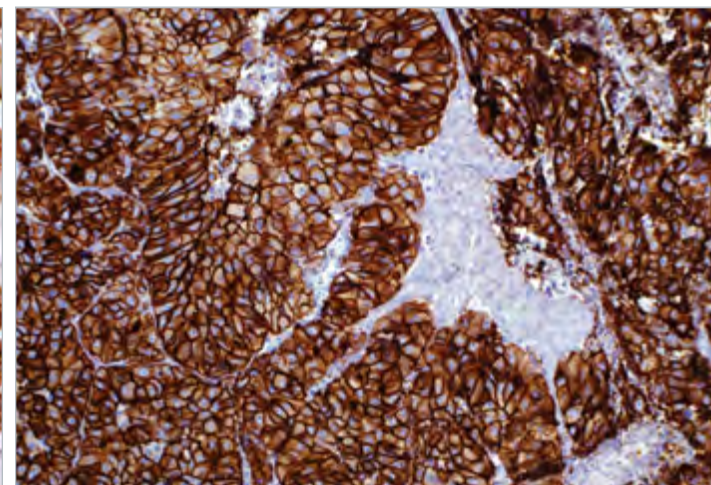
# Glypican-3



Glypican-3 (1G12) displays a diffuse and cytoplasmic staining pattern in the neoplastic cells of hepatocellular carcinoma.



Glypican-3 (1G12) on yolk sac tumor.



Glypican-3 (1G12) on hepatocellular carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** hepatocellular carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** Ig<sub>1</sub>

## Synonyms and Abbreviations

GPC-3

## Associated Specialties

- Gastrointestinal (GI) Pathology
- Anatomic/Surgical Pathology

## Associated Panels

- Liver: Malignant vs. Benign... 288
- Liver Neoplasm... 288
- Germ Cell Tumors... 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma... 295

## Reference

1. Capurro M, et al. Gastroenterology. 2003; 125:89-97.
2. Coston WMP, et al. Am J Surg Pathol. 2008; 32:433-44.
3. Kandil D, et al. Cancer. 2007; 111:316-22.
4. Zynger DL, et al. Hum Pathol. 2008; 39:224-30.
5. Kandil DH, et al. Adv Anat Pathol. 2009; 16:125-129.
6. Zynger DL, et al. Am J Surg Pathol. 2006; 30:1570-1575.

## Product Description

Glypican-3 (GPC-3) is a glycosylphosphatidyl inositol-anchored membrane protein, which may also be found in a secreted form. Recently, GPC-3 was identified to be a useful tumor marker for the diagnosis of hepatocellular carcinoma (HCC),<sup>1-3</sup> hepatoblastoma,<sup>4</sup> melanoma, testicular germ cell tumors, and Wilms' tumor.<sup>5-6</sup> In patients with HCC, GPC-3 was over expressed in neoplastic liver tissue and elevated in serum, but was undetectable in normal liver, benign liver, and the serum of healthy donors.<sup>1</sup> GPC-3 expression was also found to be higher in HCC liver tissue than in cirrhotic liver or liver with focal lesions such as dysplastic nodules and areas of hepatic adenoma (HA) with malignant transformation.<sup>2</sup> In the context of testicular germ cell tumors, GPC-3 expression is up-regulated in certain histologic subtypes, specifically yolk sac tumors and choriocarcinoma.<sup>5-6</sup> A high level of GPC-3 expression has also been found in some types of embryonal tumors, such as Wilms' tumor and hepatoblastoma, with a low or undetectable expression in normal adjacent tissue.<sup>5</sup> Together these studies indicate that GPC-3 is an important tumor marker.

## Panel Quick View

Liver: Malignant vs. Benign									
	GPC-3	AFP	Arginase-1	CD34	mCEA	pCEA	Hep Par-1	p53	TTF-1
Hepatocellular Carcinoma	+	-/+	+	+	-	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+		-	-	+	+	+	-
Benign Liver Nodules	-	-	+	-	-	-	+	-	+ (cytoplasmic)

Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma									
	GPC-3	AFP	CD117	EMA	hPL	Inhibin	Oct-4	PLAP	Vimentin
Seminoma	-	-	+	-	-	-	+	+	+
Embryonal Carcinoma	-	-	-	-	-	-	+	+	-
Choriocarcinoma	+	-	-	+	+	-	-	+	-/+
Yolk Sac Tumor	+	+	-	-	-	-	-	+	-
Somatic Carcinoma	-	-	-	+	-	-	-	-	-
Granulosa Cell Tumor	-	-	-	-	-	+	-	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	+	-	-	-	-	-

## Ordering Information

### Clone: 1G12

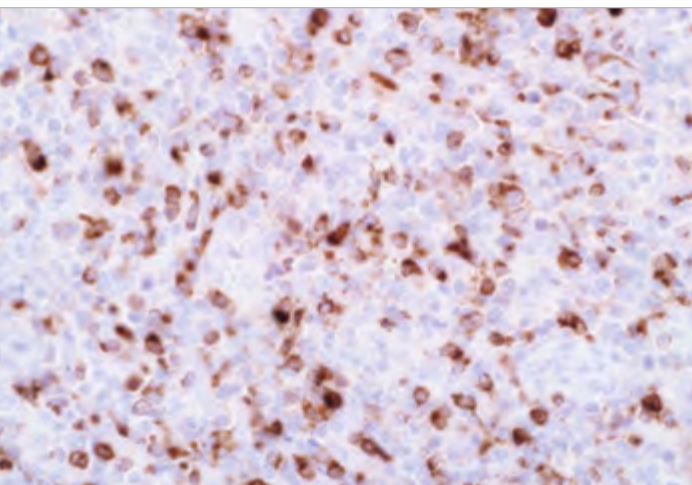
### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	261M-94
0.5 ml, concentrate	261M-95
1 ml, concentrate	261M-96
1 ml, predilute	261M-97
7 ml, predilute	261M-98
25 ml, predilute	261M-90

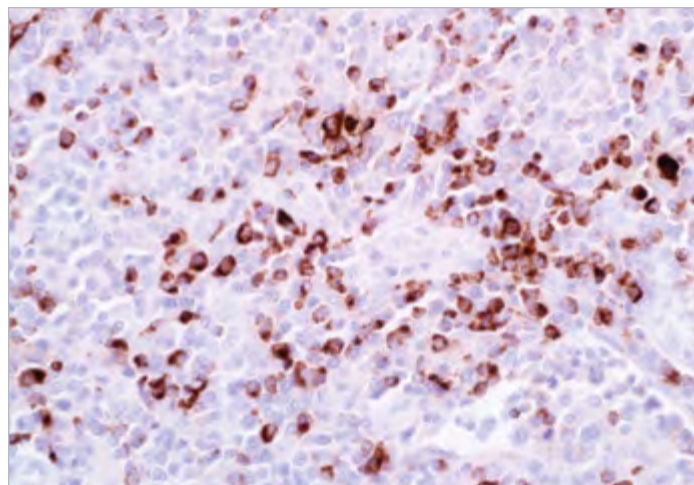
### Designations

 IVD	 IVD	 IVD	 RUO
-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

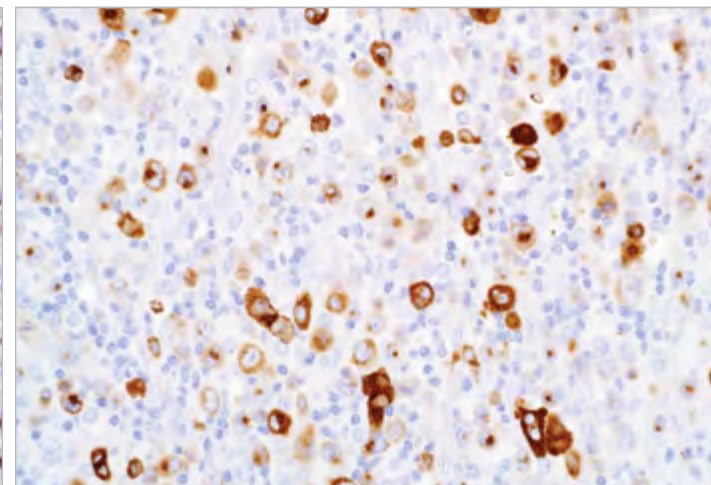
# Granzyme B



Granzyme B (EP230) on lymph node.



Rabbit monoclonal anti-granzyme B, EP230, demonstrates cytoplasmic granzyme B granules in angioimmunoblastic T-cell lymphoma.



Granzyme B (polyclonal) labels in a granular/cytoplasmic pattern for NK/T-cell lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** spleen, anaplastic large cell lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** EP230: IgG

## Associated Specialties

- Hematopathology

## Associated Panels

- Hodgkin vs. Non-Hodgkin Lymphomas ..... 297
- NK Cell Leukemia/Lymphoma . 299
- Lymphomas ..... 299
- Lymphomas ..... 299
- T-cell Lymphomas ..... 300

## Reference

1. Kummer JA, et al. Clin Exp Immunol. 1995; 100:164-72.
2. Oudejans JJ, et al. Am J Pathol. 1996; 148:233-40.
3. Kato N, et al. Am J Dermatopathol. 2003; 25:142-7.
4. Liu J, et al. J Dermatol. 2003; 30:735-41.

## Product Description

Granzymes are serine proteases which are stored in specialized lytic granules of cytotoxic T-lymphocytes and in natural killer cells.<sup>1</sup> Anti-granzyme B has been useful in the identification of natural killer/T-cell lymphoma, as well as anaplastic large cell lymphoma.<sup>2-4</sup>

## Panel Quick View

Hodgkin vs. Non-Hodgkin Lymphomas										
	Gran-zyme B	ALK	BCL6	CD15	CD30	CD79a	EMA	Fascin	MUM1	PU.1
Anaplastic Large Cell Lymphoma	+	+	+/-	-	+	-	+	-	-	-
Angioimmunoblastic T-cell Lymphoma	-	-	+	-	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	-	-	-	+	+	-	-	+	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-	-	+	-	-	+	+	-	-/+	+
T-cell Rich B-cell Lymphoma	-	-	+	-	-	+/-	-/+	-	+	-
T-cell Rich LBCL	-	-	+	-	-	+	-	-	+	-

T-cell Lymphomas										
	Gran-zyme B	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45RO	PD-1
Angioimmunoblastic Lymphoblastic	-	+	+	+	+	+	-	+	+	+
Subcutaneous Panniculitis-Like	+/-	+/-	+	+/-	+	+	+/-	+	+	-
NK/T-cell Lymphoma	+	+	+	-	+	-/+	-	-	-/+	-
Cutaneous Mycosis Fungoides	+	+	+	+	-	+	-	-	-	-/+

## Ordering Information

### Clone: EP230

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	262R-14
0.5 ml, concentrate	262R-15
1 ml, concentrate	262R-16
1 ml, predilute	262R-17
7 ml, predilute	262R-18

### Clone: polyclonal

Rabbit Polyclonal

Volume	Part No.
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0.5 ml, concentrate	262A-15
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1 ml, predilute	262A-17
7 ml, predilute	262A-18

## Designations



IVD



IVD



IVD



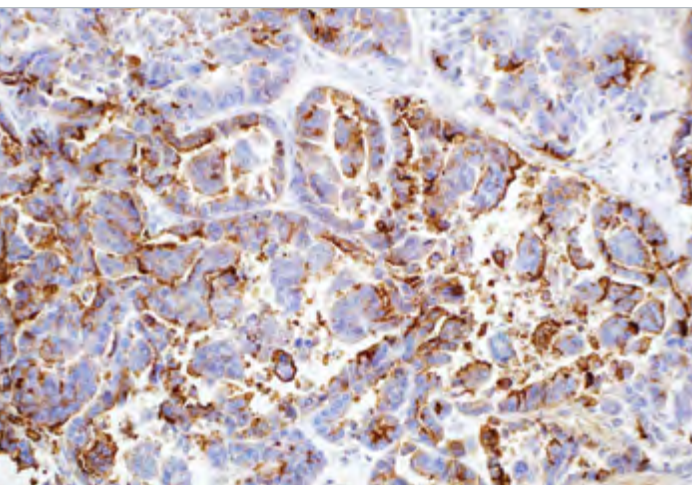
RUO

**CELL MARQUE**

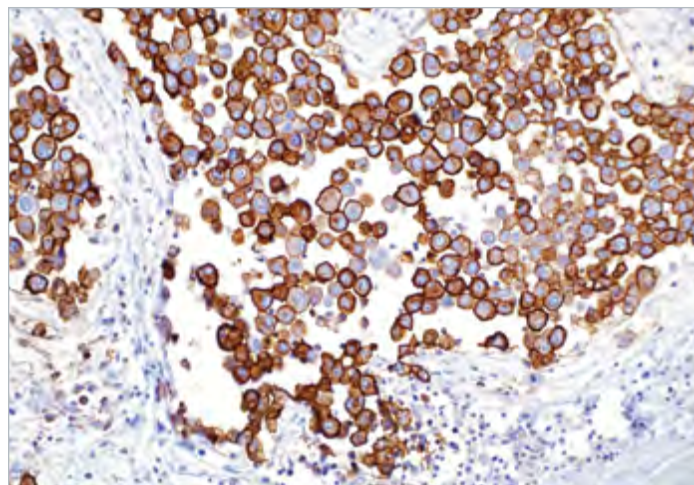
**RabMab®**  
Technology from Abcam



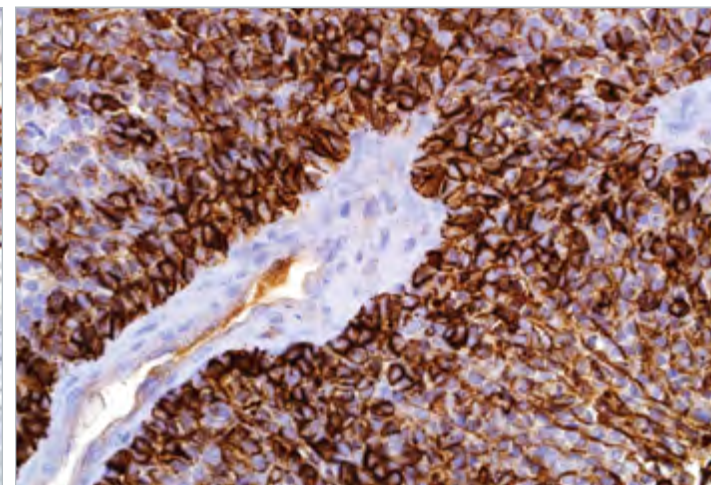
# HBME-1



HBME-1 on pleura.



HBME-1 monoclonal reveals a cytoplasmic/membranous and diffuse staining in epithelioid mesothelioma.



HBME-1 on malignant thyroid.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** mesothelioma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM/k

## Synonyms and Abbreviations

Mesothelial Cell

## Associated Specialties

● Head/Neck Pathology

● Cytopathology

## Associated Panels

● Carcinomas . . . . . 287

● Thyroid: Malignant vs. Benign . 291

● Lung Adenocarcinoma vs. Mesothelioma . . . . . 302

● Pleura: Adenocarcinoma vs.

Mesothelioma . . . . . 302

## Reference

1. Coli A, et al. J Exp Clin Cancer Res. 2007; 26:221-7.
2. Cabibi D, et al. Thyroid. 2007; 17:603-7.
3. Torregrossa L, et al. Hum Pathol. 2007; 38:1482-8.
4. Barroeta JE, et al. Endocr Pathol. 2006; 17:225-34.

## Product Description

Anti-HBME-1 has been demonstrated to label mesothelial cells, both benign and malignant (malignant mesothelioma) and thus has been used in distinguishing mesothelioma from adenocarcinomas of various origins. More recently this antibody has been used to distinguish thyroid carcinomas (both follicular and papillary) from benign thyroid lesions.

## Panel Quick View

Thyroid: Malignant vs. Benign							
	HBME-1	Calcitonin	CK 19	Galectin-3	p27	Thyroglobulin	TTF-1
Papillary Carcinoma	+	-	+	+	-/+	+	+
Follicular Carcinoma	+/-	-	-	+	-	+	+
Medullary Carcinoma	+	+	+	-	+/-	-	+
Benign Thyroid	-	-	-	-	+	+	+

Pleura: Adenocarcinoma vs. Mesothelioma										
	HBME-1	Caldesmon	Calretinin	CEA	CK 5&6	Ep-CAM	E-cadherin	D2-40	TAG-72	TTF-1
Adenocarcinoma	-	-	-	+	-	+	+	-	+	+
Mesothelioma	+	+	+	-	+	-	-	+	-	-

## Ordering Information

### Clone: HBME-1

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	283M-14
0.5 ml, concentrate . . . . .	283M-15
1 ml, concentrate . . . . .	283M-16
1 ml, predilute . . . . .	283M-17
7 ml, predilute . . . . .	283M-18

### Designations



IVD



IVD

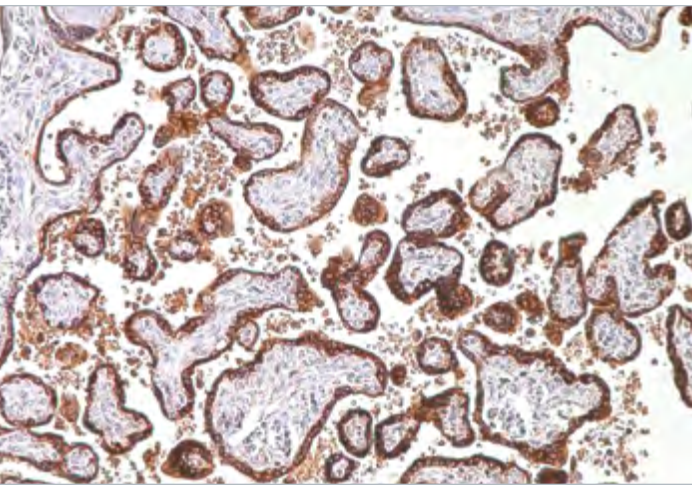


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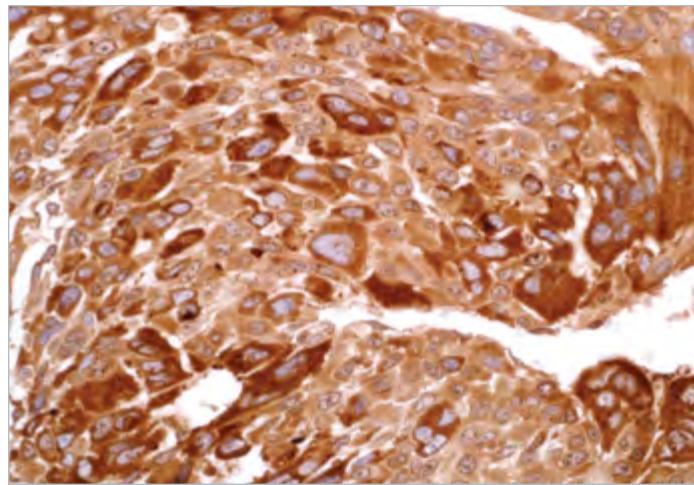


RUO

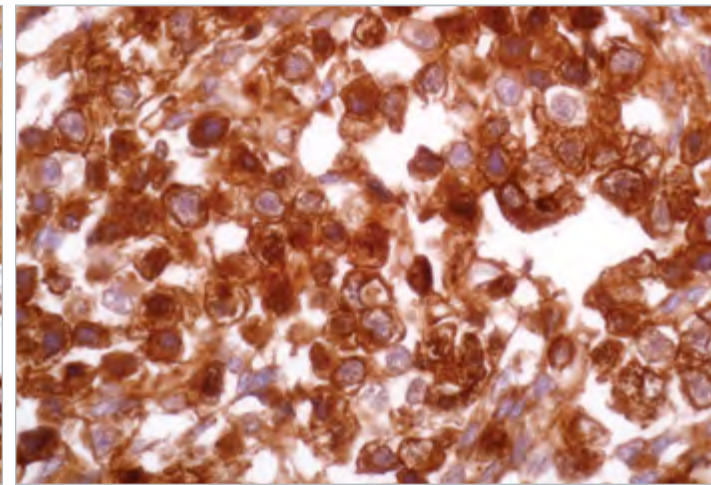




*hCG (polyclonal) on placenta.*



*hCG (polyclonal) shows cytoplasmic hCG expression in the neoplastic cells of choriocarcinoma.*



*hCG (polyclonal) on choriocarcinoma.*

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** placenta

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Placental Trophoblastic Cells . . .292
- Placental Trophoblastic Proliferations . . . . .292
- Uterus: Trophoblastic Proliferations . . . . .292
- Germ Cell Tumors. . . . .295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma. . . . .295

## Reference

1. Morrish DW, et al. J Histochem Cytochem. 1987; 35:39-101.
2. Kurman RJ, et al. Cancer. 1976; 38:2404-2419.
3. Kurman RJ, et al. Int J Gyn Pathol. 1984; 3:101-12.
4. Boucher LD, et al. Human Pathol. 1995; 26:1201-6.

## Product Description

hCG is a protein secreted in large quantities by normal trophoblasts; the antibody detects cells and tumors of trophoblastic origin such as choriocarcinoma. Large cell carcinoma and adenocarcinoma of lung demonstrate hCG positivity in 90% and 60% of cases respectively. 20% of squamous cell lung carcinomas are positive for hCG. hCG expression by non-trophoblastic tumors may indicate aggressive behavior since it has been observed that hCG may play a role in the host response to a given tumor.

## Panel Quick View

	1st Trimester		2nd Trimester		3rd Trimester	
	hCG	hPL	hCG	hPL	hCG	hPL
Cytotrophoblast	-	-	-	-	-	-
Intermediate Trophoblast	1-24%	25-49%	-/+	50-74%	1-24%	1-49%
Syncytiotrophoblast	>75%	1-24%	25-49%	50-74%	1-24%	>75%

	hCG	CK OSCAR	hPL	p57	PLAP	Vimentin
Partial Mole	-/+	+	-/+	+	+	-
Complete Mole	+	+	-/+	-	-/+	-
Choriocarcinoma	+	+	-/+	-	-/+	-/+
Placental Site Tumor	+/-	+	+	+	+	+

	hCG	CD30	CD117	AFP	D2-40	GPC-3	EMA	Inhibin	Oct-4	PLAP
Seminoma	-	-	+	-	+	-	-	-	+	+
Embryonal Carcinoma	-	+	-	-	-	-	-	-	+	+
Choriocarcinoma	+	-	-	-	-	+	+	-	-	+
Yolk Sac Tumor	-	-	-	+	-	+	-	-	-	+
Somatic Carcinoma	-	-	-	-	-/+	-	+	-	-	-
Granulosa Cell Tumor	-	-	-	-	+/-	-	-	+	-	-
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	+	-	+	-	-	-

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

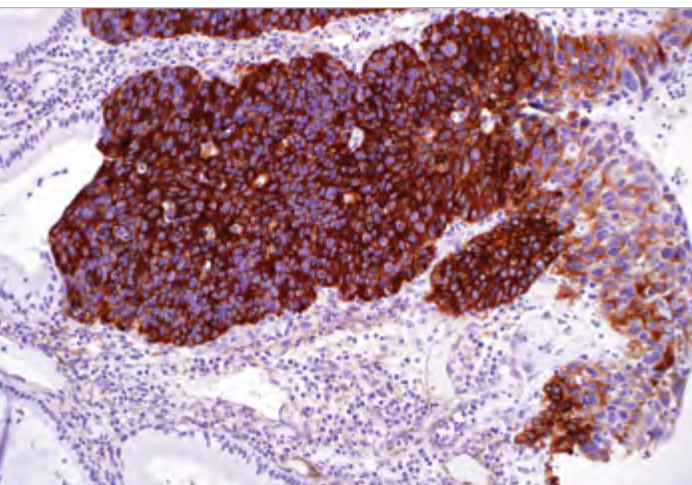
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	234A-14
0.5 ml, concentrate . . . . .	234A-15
1 ml, concentrate . . . . .	234A-16
1 ml, predilute . . . . .	234A-17
7 ml, predilute . . . . .	234A-18

### Designations

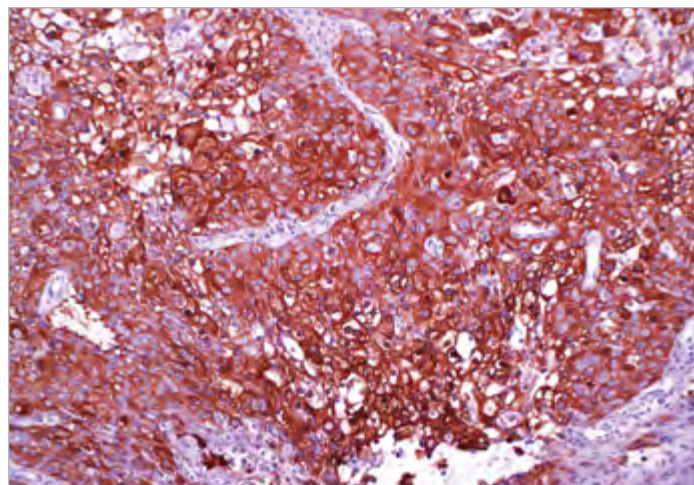




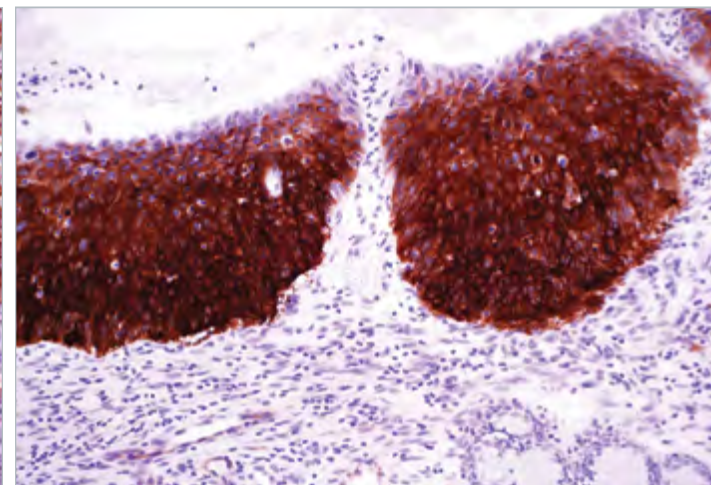
# Heat Shock Protein 27



High grade cervical intraepithelial neoplasia (CIN III) demonstrates strong diffuse and cytoplasmic expression of heat shock protein 27.



Heat Shock Protein 27 (G3.1) on uterine cervix.



Heat Shock Protein 27 (G3.1) on uterine cervix.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** cervical intraepithelial neoplasm, cervical squamous cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

HSP27

## Associated Specialties

● Breast/Gynecological Pathology

## Reference

- Tozawa-Ono A, et al. Human Cell. 2012; 25:24-28.

## Product Description

Heat shock protein 27 (HSP27) is part of the heat shock protein family. HSP27 is overexpressed in cervical intraepithelial neoplasia (CIN) and squamous cell carcinoma of the cervix using immunohistochemistry techniques.<sup>1</sup> In a recent study, HSP27 expression was demonstrated in 47% of CIN I, 75% of CIN II, 92% of CIN III, and 100% of cervical squamous cell carcinomas (SCC); whereas parallel comparison study for p16 IHC detection demonstrated p16 expression in 47% of CIN I, 67% of CIN II, 92% of CIN III and 75% of cervical squamous cell carcinoma.<sup>1</sup> Positive staining for both HSP27 and p16 was observed in 6% of normal cervical tissues and in 19% of CIN I, 18% of CIN II, 85% of CIN III, and 75% of SCC specimens. When both anti-HSP27 and anti-p16 were assessed using IHC, both the sensitivity and specificity were improved.<sup>1</sup> In conclusion, anti-HSP27 immunohistochemistry is a useful tool for the identification of CIN and cervical squamous cell carcinoma, and is a good complement to anti-p16.<sup>1</sup>

## Panel Quick View

Cervical Squamous Cell Neoplasms			
	HSP27	p16	Stathmin
CIN I	+/-	+/-	-/+
CIN II	+/-	+/-	+/-
CIN III	+	+	+
Squamous Cell Carcinoma	+	+	+

## Ordering Information

### Clone: G3.1

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	398M-14
0.5 ml, concentrate	398M-15
1 ml, concentrate	398M-16
1 ml, predilute	398M-17
7 ml, predilute	398M-18

### Designations



IVD



IVD

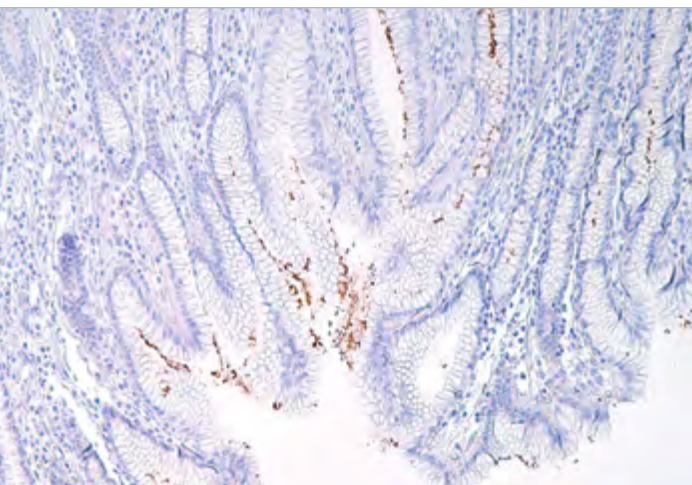


IVD

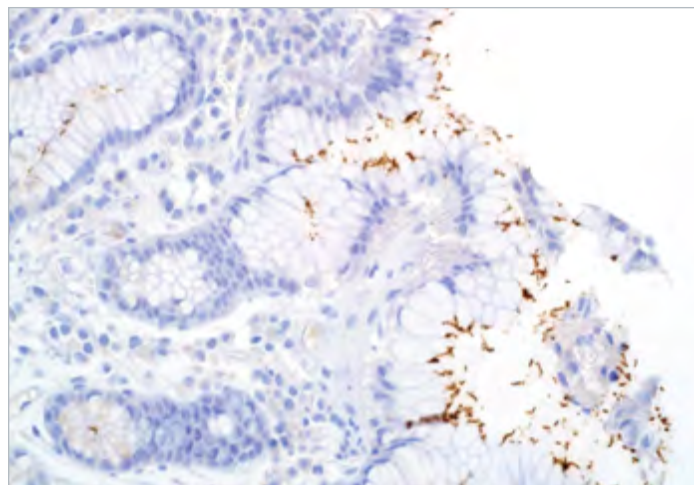


RUO

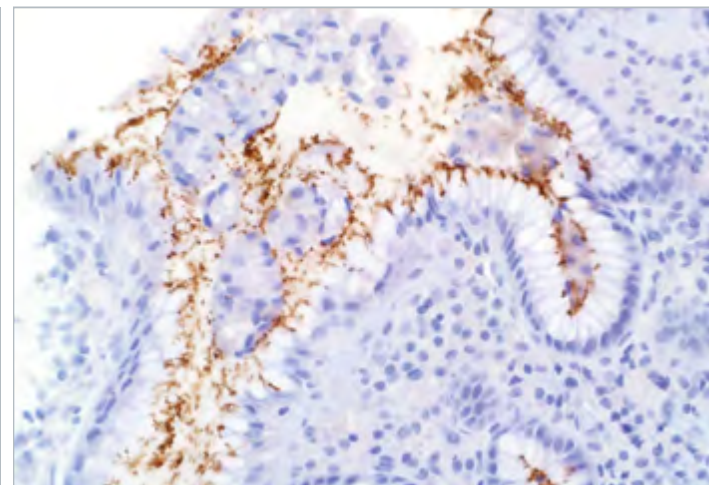
# Helicobacter pylori



*H. pylori* (polyclonal) on stomach.



*H. pylori* (polyclonal) on stomach.



*H. pylori* (polyclonal) shows numerous *H. pylori* microorganisms in the gastric biopsy.

## Product Specifications

**Reactivity** paraffin

**Visualization** cell wall

**Control** *H. pylori* infected stomach tissue

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

*H. pylori*

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Jhala NC, et al. Am J Clin Pathol. 2003; 119:101-107.
2. Shimizu T, et al. Helicobacter. 1996; 1:197-206.
3. Toulaymat M, et al. Arch Pathol Lab Med. 1999; 123:778-81.

## Product Description

*Helicobacter pylori* is strongly associated with inflammation of the stomach and is also implicated in the development of gastric malignancy, peptic ulcers, and gastric lymphomas in humans. *Helicobacter pylori* can exist in a number of locations: in the mucus, attached to epithelial cells, or inside of vacuoles in epithelial cells, where it produces adhesions that bind to membrane-associated lipids and carbohydrates in or on epithelial cells.<sup>1-3</sup>

The most reliable method for detecting *H. pylori* infection is a biopsy during endoscopy histologic examination and detection by immunohistochemistry. Immunohistochemical staining of *H. pylori* on the surface of gastric mucosa is a valuable tool for identification of *H. pylori* infections.<sup>1-3</sup>

## Ordering Information

### Clone: polyclonal

### Rabbit Polyclonal

Volume	Part No.
0.1 ml, concentrate	215A-74
0.5 ml, concentrate	215A-75
1 ml, concentrate	215A-76
1 ml, predilute	215A-77
7 ml, predilute	215A-78
25 ml, predilute	215A-70

### Designations



IVD



IVD



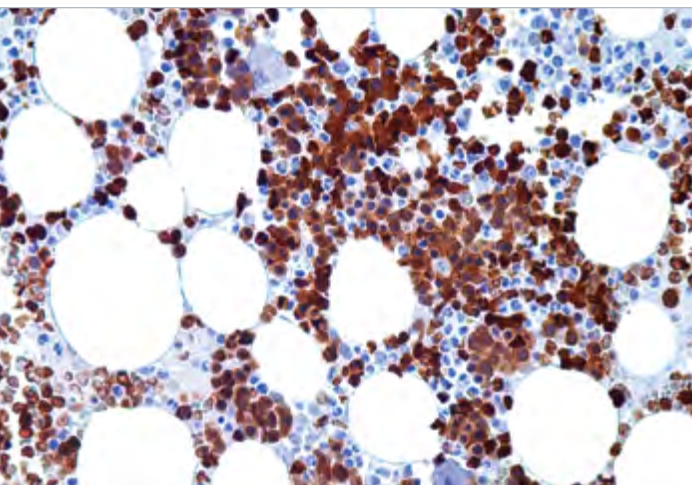
IVD



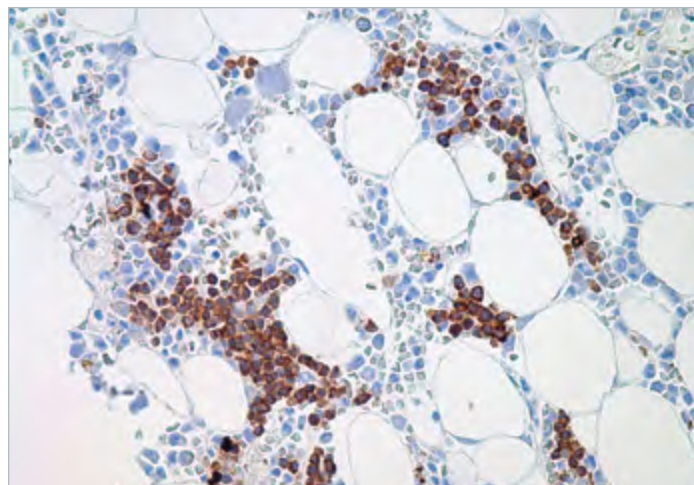
RUO



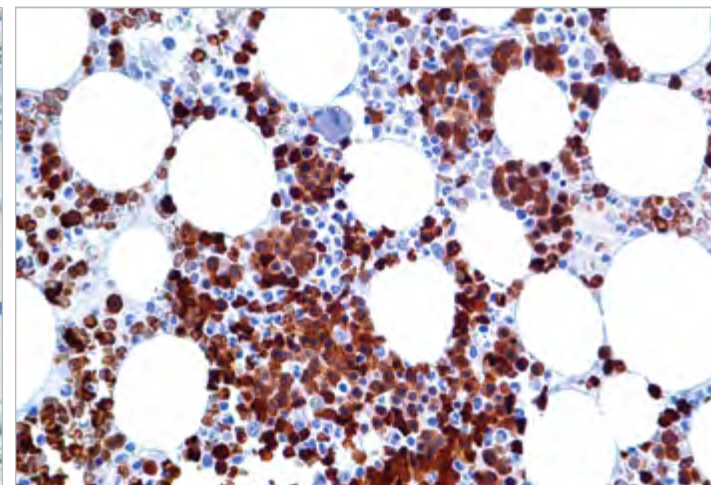
# Hemoglobin A



Hemoglobin A (EPR3608) finds hemoglobin A protein in the cytoplasm of mature red cells and erythroid precursors in the bone marrow.



Hemoglobin A (EPR3608) on bone marrow.



Hemoglobin A (EPR3608) on bone marrow.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** bone marrow, spleen

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Hematopathology

## Associated Panels

- Erythroid ..... 297
- Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders ..... 300

## Reference

- O'Malley DP, et al. Mod Pathol. 2005; 18:1550-1561.
- Dunphy CH, et al. Appl Immunohistochem Mol Morphol. 2005; 15:154-159.

## Product Description

Hemoglobin alpha chain belongs to the globin family and is involved in oxygen transport from the lung to the various peripheral tissues. Hemoglobin A is comprised of two alpha chains and two beta chains, whereas hemoglobin A2 is comprised of two alpha chains and two delta chains.<sup>1</sup> Immunohistochemical localization of hemoglobin is excellent as an erythroid marker for the detection of immature, dysplastic, and megaloblastic erythroid cells in myeloproliferative disorders, such as erythroleukemia. In contrast, myeloid cells, lymphoid cells, plasma cells, histiocytes, and megakaryocytes stain negative with anti-hemoglobin A. Anti-hemoglobin A, combined with antibodies against CD34, CD117, CD68, and MPO can be helpful in distinguishing between reactive extramedullary hematopoiesis and that seen in neoplastic myeloid disorders in spleen.<sup>2</sup>

## Panel Quick View

### Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders

	Hemoglobin A	CD34	CD68	CD117	MPO
Chronic Myelogenous Leukemia	-	-/+	+	+/-	+
Chronic Idiopathic Myelofibrosis	-	+/-		-/+	+
Myelodysplastic Syndrome	-	+		-/+	
Myelodysplastic/Myeloproliferative Disorders	-	-	+	-	+
Mastocytosis	-	-		+	+
Erythroid Disorders	+	-	-/+	-	+/-
Splenic Lymphoma	-	-		-	-/+
Acute Myeloid Leukemia	-	+	+	+	+
Polycythemia Vera	+	+		+	

## Ordering Information

**Clone: EPR3608**

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	360R-14
0.5 ml, concentrate.....	360R-15
1 ml, concentrate .....	360R-16
1 ml, predilute .....	360R-17
7 ml, predilute .....	360R-18

## Designations



IVD



IVD



IVD

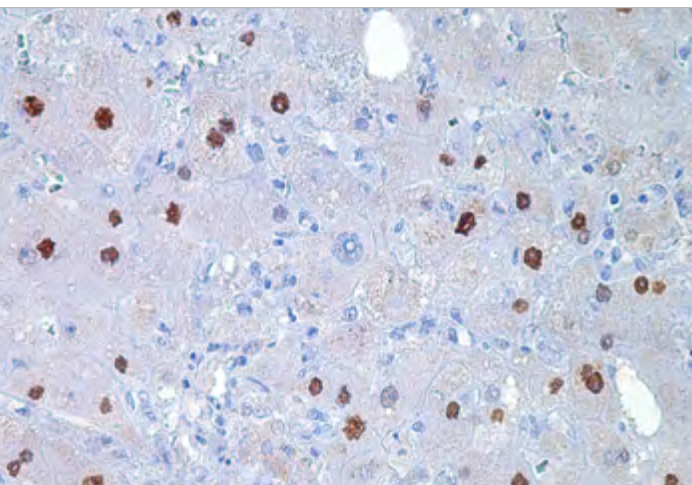


RUO

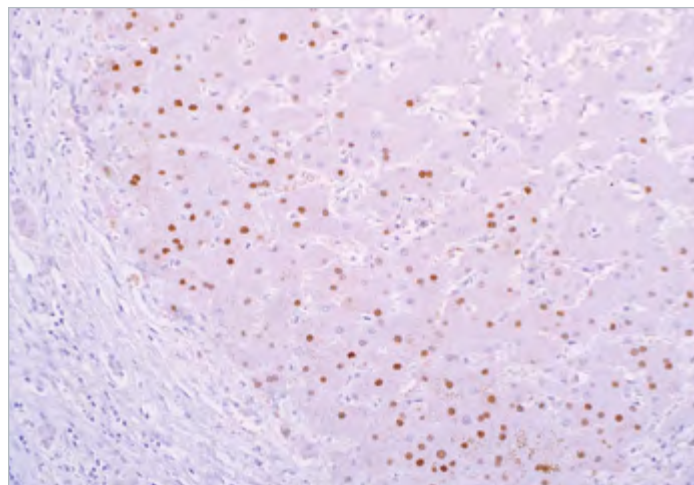
**CELL MARQUE**

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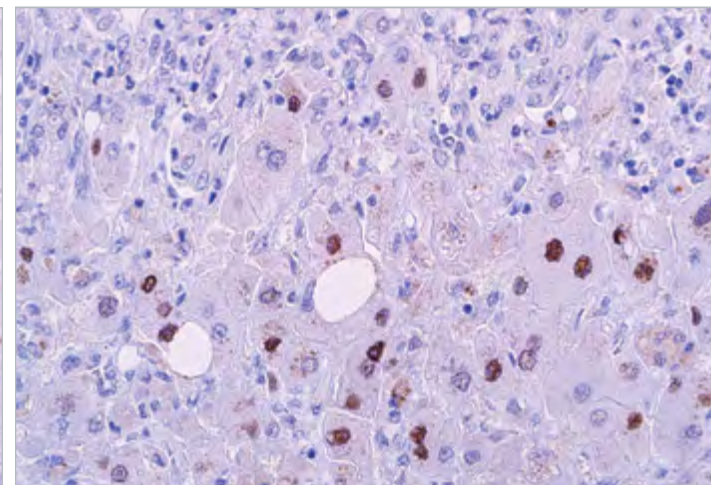
# Hepatitis B Virus Core Antigen



Hepatitis B Virus Core Antigen (polyclonal)



Hepatitis B Virus Core Antigen (polyclonal)



Hepatitis B Virus Core Antigen (polyclonal)

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** hepatitis b infected tissue

**Stability** up to 36 mo. at 2-8°C

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

**Volume . . . . .Part No.**

0.1 ml, concentrate . . . . .216A-14 (ASR)

0.5 ml, concentrate . . . . .216A-15 (ASR)

1 ml, concentrate . . . . .216A-16 (ASR)

1 ml, predilute . . . . .216A-17 (ASR)

7 ml, predilute . . . . .216A-18 (ASR)

## Designations



ASR<sup>†</sup>



IVD



RUO



RUO

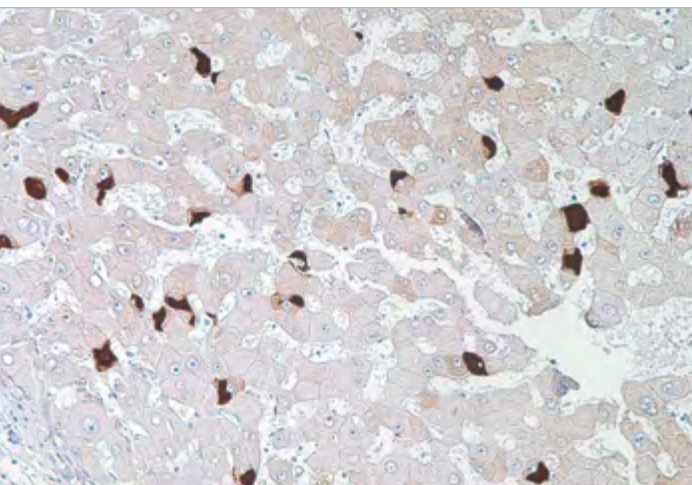
*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

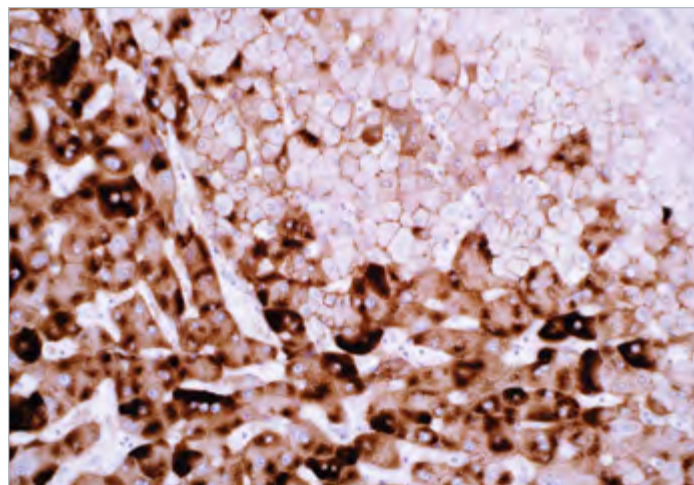
*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*



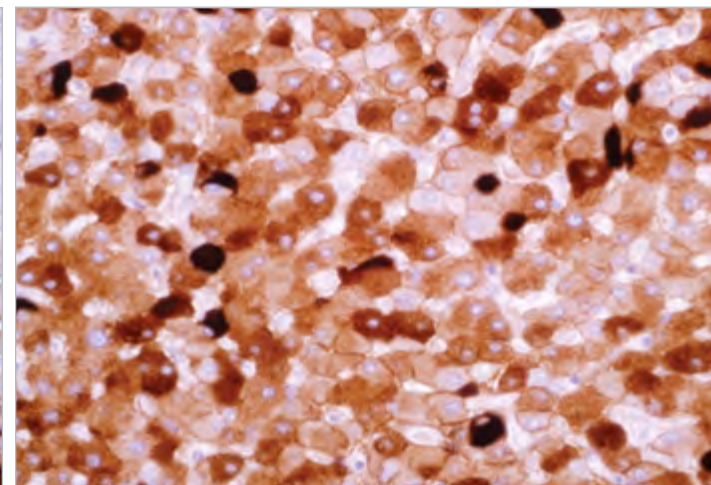
# Hepatitis B Virus Surface Antigen



Hepatitis B Virus Surface Antigen (S1-210)



Hepatitis B Virus Surface Antigen (S1-210)



Hepatitis B Virus Surface Antigen (S1-210)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** hepatitis b infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: S1-210

Mouse Monoclonal

#### Volume .....Part No.

0.1 ml, concentrate....217M-14 (ASR)

0.5 ml, concentrate....217M-15 (ASR)

1 ml, concentrate .....217M-16 (ASR)

1 ml, predilute .....217M-17 (ASR)

7 ml, predilute .....217M-18 (ASR)

### Designations



ASR<sup>†</sup>



IVD



RUO



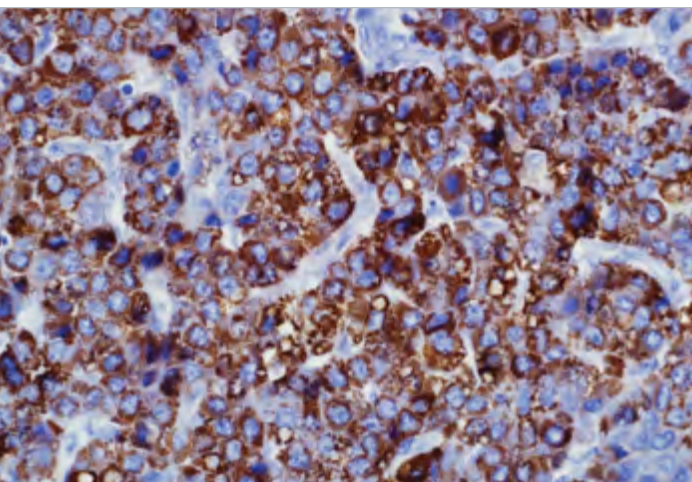
RUO

*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

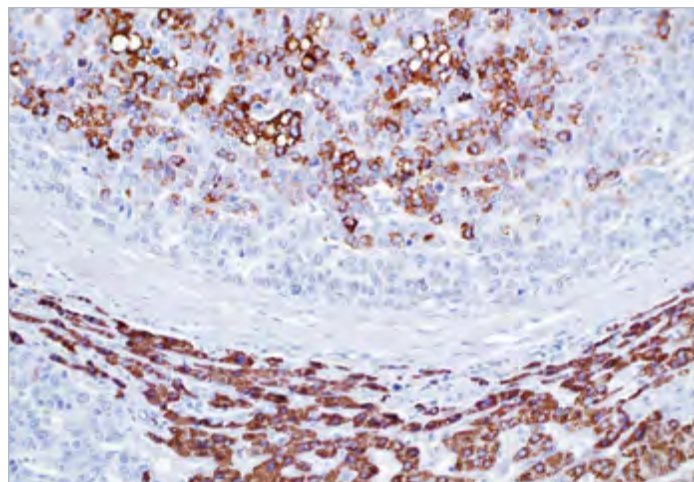
*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*

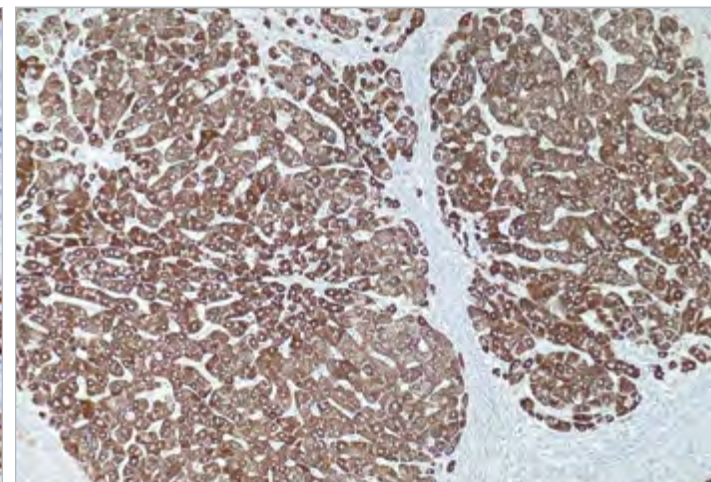
# Hepatocyte Specific Antigen (Hep Par-1)



Hepatocellular carcinoma shows a strong, diffuse and granular expression of hepatocyte specific antigen.



Hepatocyte Specific Antigen (OCH1E5) on liver.



Hepatocyte Specific Antigen (OCH1E5) on liver.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** liver  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

Hep Par-1

## Associated Specialties

- Anatomic/Surgical Pathology
- Gastrointestinal (GI) Pathology

## Associated Panels

- Carcinomas.....286
- Liver: Malignant vs. Benign....288
- Liver Neoplasm.....288

## Reference

1. Minervini MI, et al. Mod Pathol. 1997; 10:686-692.
2. Fasano M, et al. Mod Pathol. 1998; 11:934-938.
3. Tsui WMS, et al. Am J Surg Pathol. 1999; 23:34-48.
4. Wiczyorek T, et al. Am J Clin Pathol. 2002; 118:911-21.
5. Chu PG, et al. Am J Surg Pathol. 2002; 26:978-88.
6. Maitra A, et al. Am J Clin Pathol. 2001; 115:689-94.

## Product Description

Anti-hepatocyte specific antigen, also known as anti-Hep Par-1, recognizes both benign and malignant liver-derived tissues including such tumors as hepatoblastoma, hepatocellular carcinoma, and hepatic adenoma. It recognizes both normal adult and fetal liver tissue. The typical pattern is a granular cytoplasmic staining. This antibody is useful in differentiating hepatocellular carcinomas with adenoid features from adenocarcinomas, either primary in the liver or metastatic lesions to the liver. In labeling hepatoblastoma, it is useful in differentiating this entity from other small round cell tumors.

## Panel Quick View

Liver: Malignant vs. Benign										
	Hep Par-1	A1AT	AFP	Arginase-1	CD34	mCEA	pCEA	GPC-3	p53	TTF-1
Hepatocellular Carcinoma	+	-/+	-/+	+	+	-	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+	+		-	-	+	+	+	-
Benign Liver Nodules	+	+/-	-	+	-	-	-	-	-	+ (cytoplasmic)

## Ordering Information

**Clone: OCH1E5**  
 Mouse Monoclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate . . . . . 264M-94  
 0.5 ml, concentrate . . . . . 264M-95  
 1 ml, concentrate . . . . . 264M-96  
 1 ml, predilute . . . . . 264M-97  
 7 ml, predilute . . . . . 264M-98  
 25 ml, predilute . . . . . 264M-90

## Alternate Clones Available

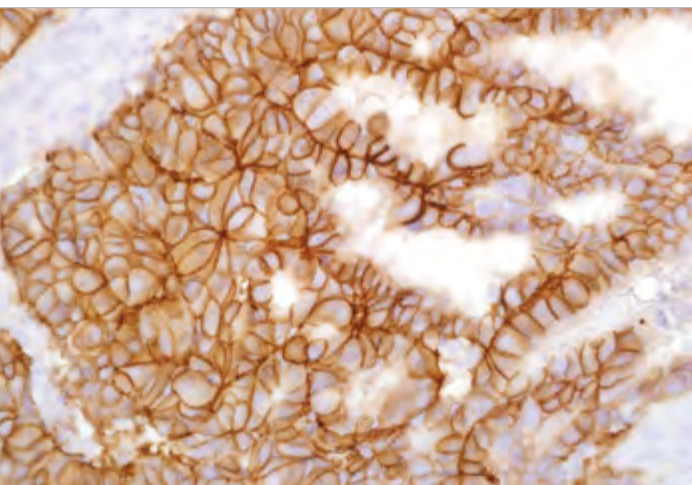
- Rabbit Monoclonal, EP265
- Contact us for more information.

## Designations

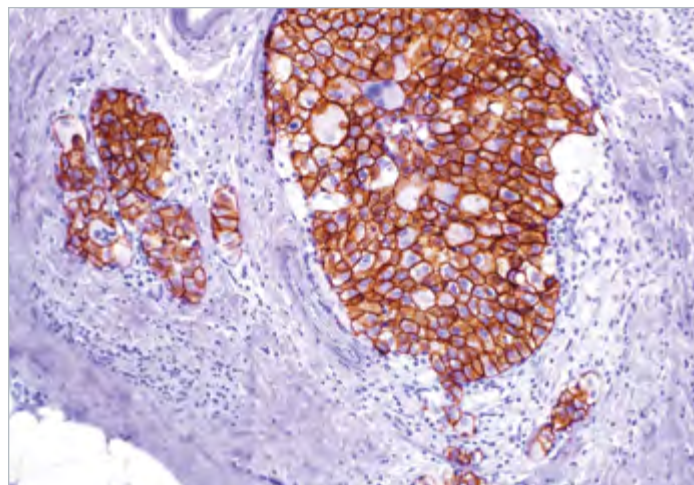




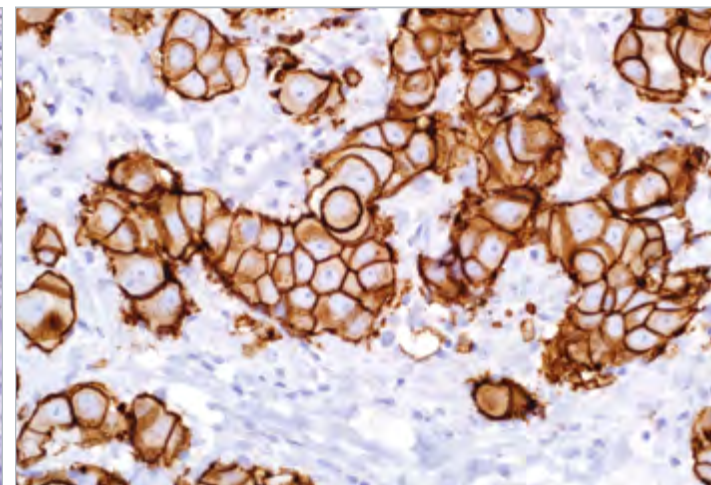
# Her2/Neu



Her2/Neu (EP3)



Her2/Neu (EP3)



Her2/Neu (SP3)

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP3: IgG
- SP3: IgG<sub>1</sub>

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: EP3

Rabbit Monoclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 237R-24 (ASR)

0.5 ml, concentrate . . . . . 237R-25 (ASR)

1 ml, concentrate . . . . . 237R-26 (ASR)

1 ml, predilute . . . . . 237R-27 (ASR)

7 ml, predilute . . . . . 237R-28 (ASR)

25 ml, predilute . . . . . 237R-20 (ASR)

### Clone: SP3

Rabbit Monoclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 237R-14 (ASR)

0.5 ml, concentrate . . . . . 237R-15 (ASR)

1 ml, concentrate . . . . . 237R-16 (ASR)

1 ml, predilute . . . . . 237R-17 (ASR)

7 ml, predilute . . . . . 237R-18 (ASR)

### Designations



ASR†



IVD



IVD



RUO

†Analyte Specific Reagent: Analytical and performance characteristics are not established.

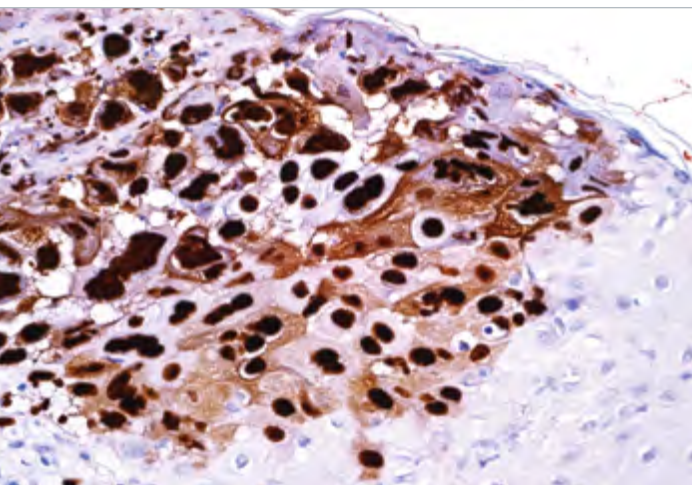
For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.

For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.

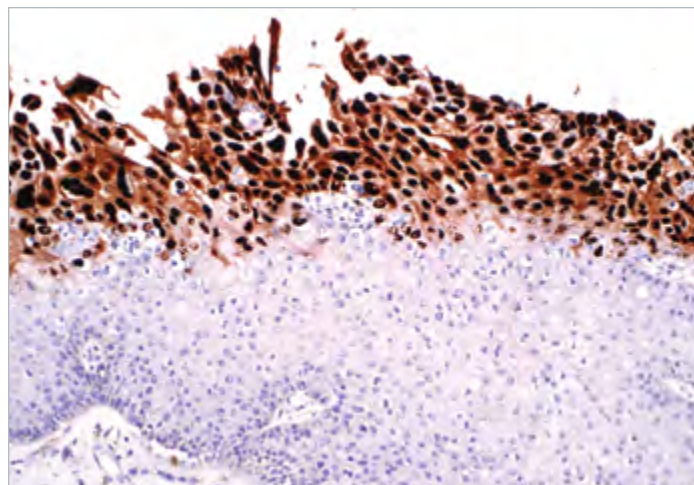
 **CELL MARQUE**

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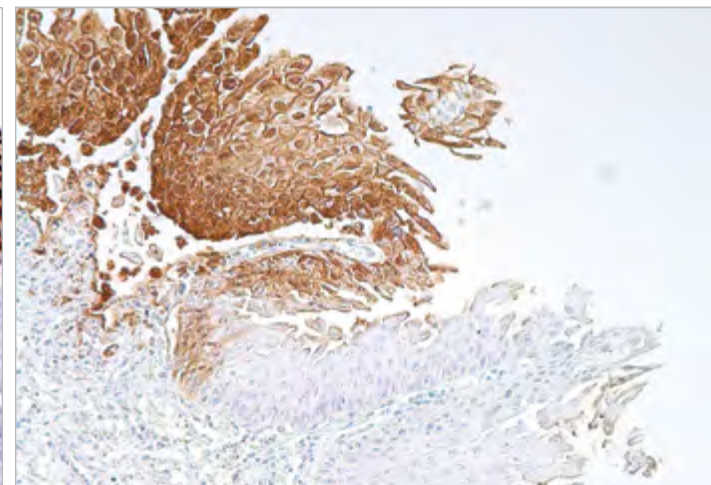
# Herpes Simplex Virus I



Herpes Simplex Virus I (10A3)



Herpes Simplex Virus I (10A3)



Herpes Simplex Virus I (polyclonal)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** HSV Infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype**

• 10A3: IgG<sub>1</sub>

## Synonyms and Abbreviations

HSV I

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: 10A3

Mouse Monoclonal

#### Volume .....Part No.

0.1 ml, concentrate....361M-14 (ASR)

0.5 ml, concentrate....361M-15 (ASR)

1 ml, concentrate .....361M-16 (ASR)

1 ml, predilute .....361M-17 (ASR)

7 ml, predilute .....361M-18 (ASR)

### Clone: polyclonal

Rabbit Polyclonal

#### Volume .....Part No.

0.1 ml, concentrate....361A-14 (ASR)

0.5 ml, concentrate....361A-15 (ASR)

1 ml, concentrate .....361A-16 (ASR)

1 ml, predilute .....361A-17 (ASR)

7 ml, predilute .....361A-18 (ASR)

## Designations



ASR<sup>†</sup>



IVD



IVD



RUO

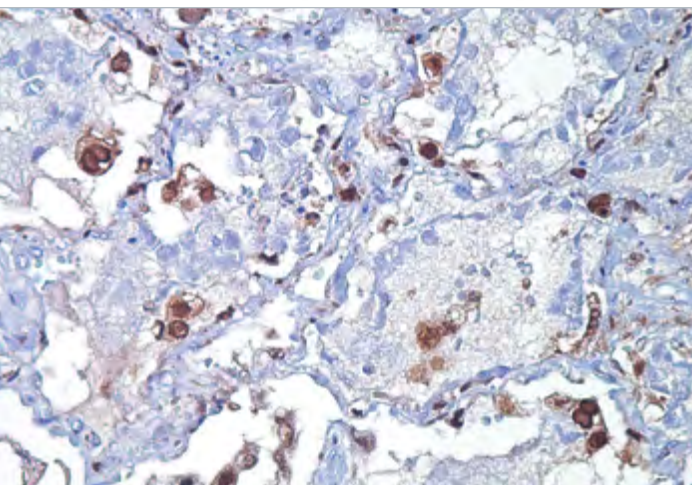
*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

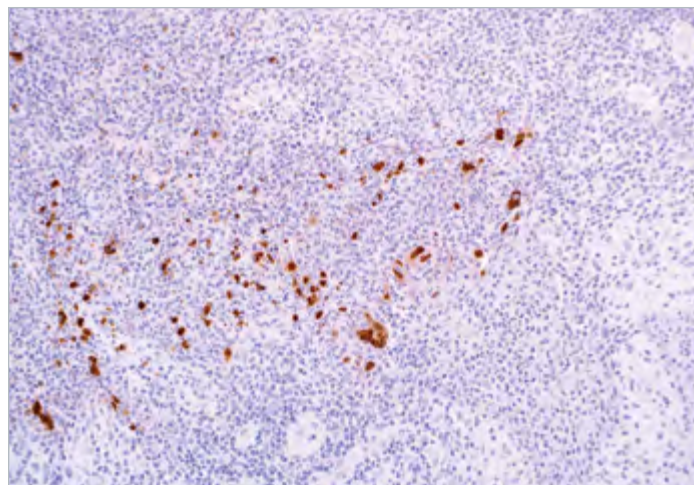
*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*



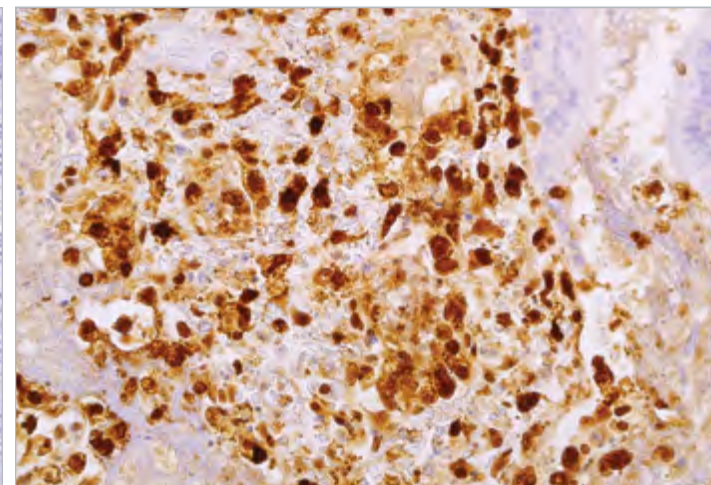
# Herpes Simplex Virus II



Herpes Simplex Virus II (polyclonal)



Herpes Simplex Virus II (polyclonal)



Herpes Simplex Virus II (polyclonal)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** HSV II infected tissue

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

HSV II

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

#### Volume . . . . .Part No.

0.1 ml, concentrate . . . . .362A-14 (ASR)

0.5 ml, concentrate . . . . .362A-15 (ASR)

1 ml, concentrate . . . . .362A-16 (ASR)

1 ml, predilute . . . . .362A-17 (ASR)

7 ml, predilute . . . . .362A-18 (ASR)

#### Designations



ASR<sup>†</sup>



IVD



IVD

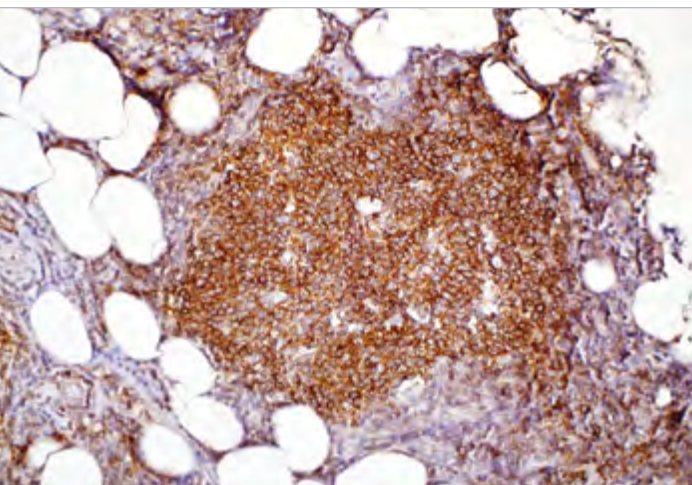


RUO

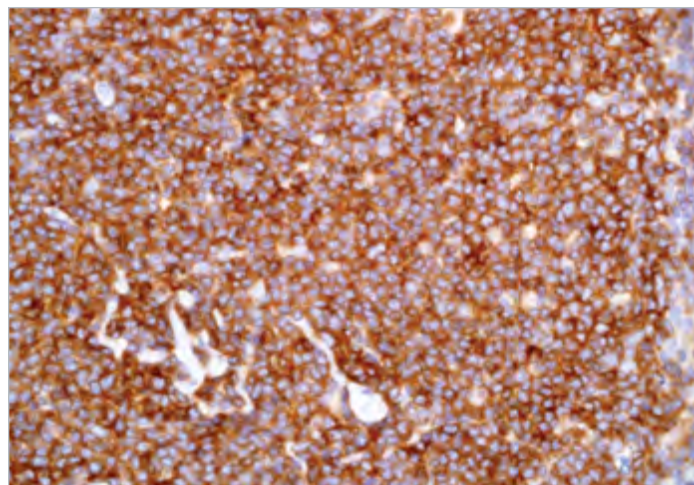
*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

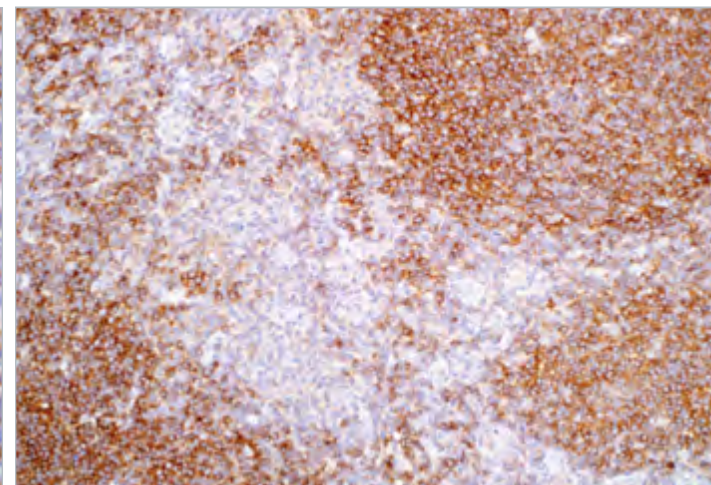
*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*



Follicular lymphoma cells demonstrate strong cytoplasmic HGAL expression.



HGAL (MRQ-49) on lymph node.



HGAL (MRQ-49) on lymph node.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

● Mature B-cell Lymphomas . . . 299

## Reference

1. Natkunam Y, et al. Blood. 2005; 105:3979-3986.
2. Natkunam Y, et al. Blood. 2007; 109:298-305.
3. Younes SF, et al. Am J Surg Pathol. 2010; 34:1266-1276.
4. Higgins RA, et al. Arch Pathol Lab Med. 2008; 132:441-446.

## Product Description

Human germinal center-associated lymphoma (HGAL) protein is specifically expressed in the cytoplasm of germinal center B-cells, but is absent in mantle and marginal zone B-cells and in the interfollicular and paracortical regions in normal tonsils and lymph nodes.<sup>1</sup> Its high degree of specificity for germinal center B-cells makes anti-HGAL an ideal marker for the detection of germinal center-derived B-cell lymphomas. Anti-HGAL has the highest overall sensitivity of detecting follicular lymphoma (FL) and in detecting the interfollicular and diffuse components of FL compared with antibodies against BCL2, LMO2, CD10, and BCL6. The addition of anti-HGAL to the immunohistologic panel is beneficial in the work-up of nodal and extranodal B-cell lymphomas, and the efficacy of anti-HGAL in detecting the follicular, interfollicular, and diffuse components of FL is of particular value in the setting of variant immunoarchitectural patterns.<sup>2,3,4</sup>

## Panel Quick View

Mature B-cell Lymphomas									
	HGAL	ANXA1	BCL2	CD5	CD10	CD20	CD23	LMO2	Cyclin D1
Follicular Lymphoma	+	-	+/-	-	+/-	+	-	+	-
Diffuse Large B-cell Lymphoma	+	-	+	-/+	+/-	+	-	+	-
Small Lymphocytic Lymphoma	-	-	+	+	-	+	+	-	-
Mantle Cell Lymphoma	-	-	+	+	-	+	-	-	+
Marginal Zone Lymphoma	-	-	+	-	-	+	-	-	-

## Ordering Information

### Clone: MRQ-49

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	375M-94
0.5 ml, concentrate	375M-95
1 ml, concentrate	375M-96
1 ml, predilute	375M-97
7 ml, predilute	375M-98

### Designations



IVD



IVD



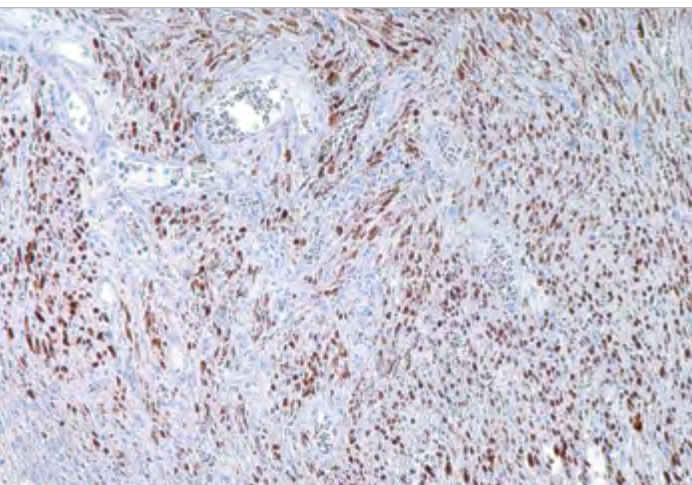
IVD



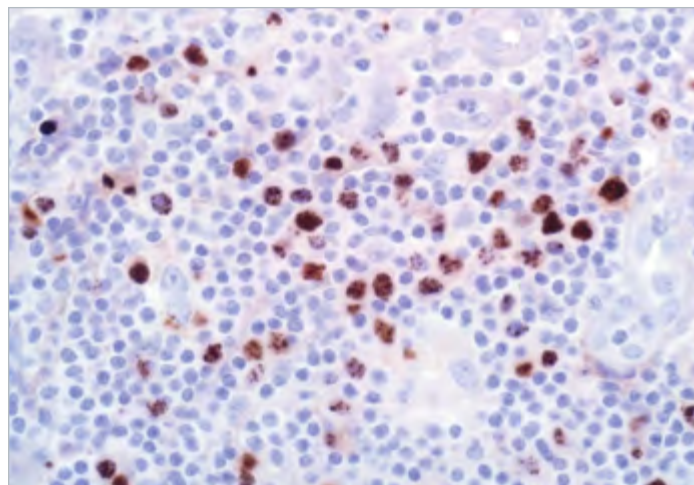
RUO



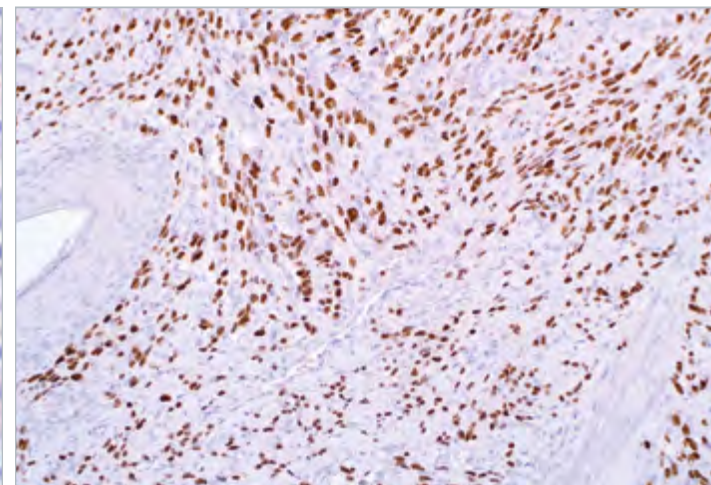
# HHV-8



Kaposi sarcoma cells show nuclear expression of human herpes virus-8 detected by anti-HHV-8.



HHV-8 (13B10) on lymph node.



HHV-8 (13B10) on Kaposi sarcoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** Kaposi sarcoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Soft Tissue Pathology

## Associated Panels

● Skin: Spindle Cell Tumors . . . . .294  
 ● Lymphoma . . . . .298  
 ● Vascular Tumors . . . . .303

## Reference

1. Corbellino M, et al. AIDS Res Hum Retroviruses. 1996; 12:651-7.
2. Katano H, et al. Am J Pathol. 1999; 155:47-52.
3. Katano H, et al. J Med Virol. 1999; 59:346-55.
4. Katano H, et al. Mod Pathol. 2000; 13:77-85.
5. Kaaya E, et al. Med Oncol. 2000; 17:325-32.
6. Katano H, et al. J Hum Virol. 2001; 4:96-102.
7. Komatsu T, et al. Viral Immunol. 2001; 14:311-7.
8. Ryan P, et al. J Clin Pathol. 2002; 55:619-22.
9. Schwartz EJ, et al. Am J Surg Pathol. 2003; 27:1546-50.
10. Boulanger E, et al. Am J Hematol. 2004; 76:88-91.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Human herpesvirus type 8 (HHV-8) is the likely etiological agent of Kaposi's sarcoma (KS). HHV-8 DNA sequences have been found in KS lesions, primary effusion lymphoma, and multicentric Castleman's disease via polymerase chain reaction and *in situ* hybridization. Latent nuclear antigen (LNA-1, LNA, LANA-1), also known as ORF73, is a 222- or 234 kD protein that is consistently expressed in HHV-8 infected cells. Anti-HHV-8 labels the latent nuclear antigen protein via immunohistochemistry.

## Panel Quick View

Skin: Spindle Cell Tumors										
	HHV-8	MS Actin	SM Actin	CD10	CD34	Collagen IV	Factor VIII	FLI-1	NGFR	D2-40
Angiosarcoma	-	-	-	-	+	+/-	+	+	-	+/-
Atypical Fibroxanthomas	-	+	+	+	-	-	-	-	-	-
DF-FH	-	-	-	+	-	-	-	-	-	-
DF-SP	-	-	-	+/-	+	-	-	-	+	-
Glomus Tumor	-	+	+	-	+/-	+	-	-	-	-
Hemangioma	-	-	+	-	+	+	+	+	-	-
Hemangiopericytoma	-	-	-	-	+	-	-	+	-	-
Kaposi's Sarcoma	+	-	+	-	+	+/-	+	+	-	+
Kaposiform Hemangioendothelioma	-	-	-	-	+	-	-	+	-	-
Peripheral Nerve Sheath	-	+	-	-	-	+	-	-	+	+
Smooth Muscle	-	+	+	-	-	-	-	-	-	-
Solitary Fibrous Tumor	-	-	-	-	+	-	-	-/+	-	-
Spindle Cell Melanoma	-	-	-	-	-	-	-	+	+	+
Spindle Squamous Cell Carcinoma	-	-	-	-	-	-	-	-	-	+
Squamous Cell Carcinoma	-	-	-	-	-	-	-	-	-	+

## Ordering Information

**Clone: 13B10**  
 Mouse Monoclonal

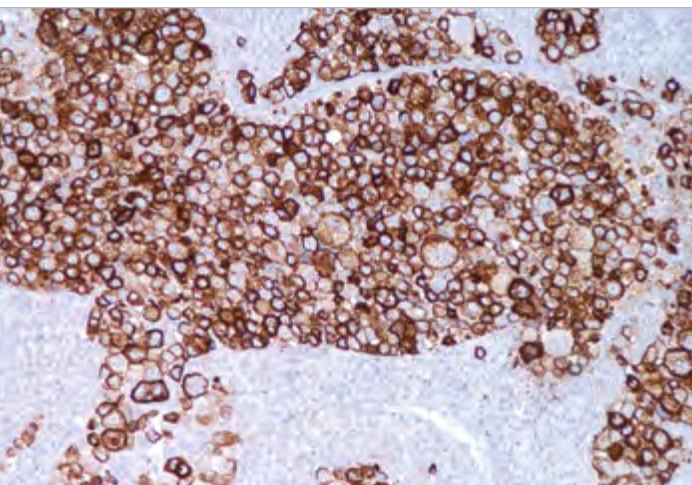
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 0.5 ml, concentrate . . . . .265M-15  
 1 ml, concentrate . . . . .265M-16  
 1 ml, predilute . . . . .265M-17  
 7 ml, predilute . . . . .265M-18

## Designations

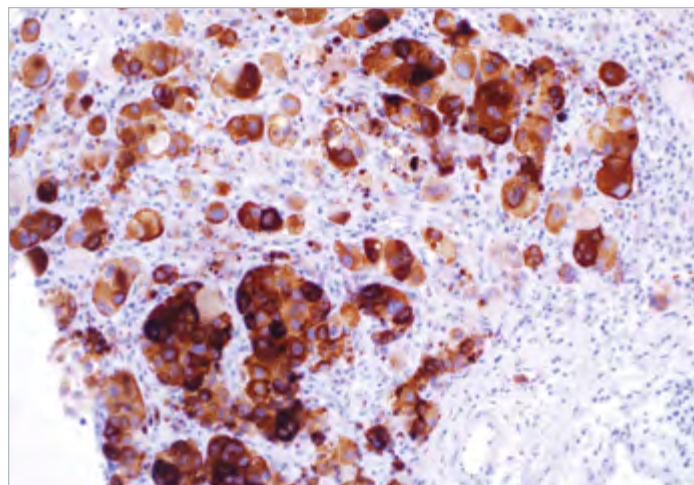
 IVD  IVD  IVD  RUO



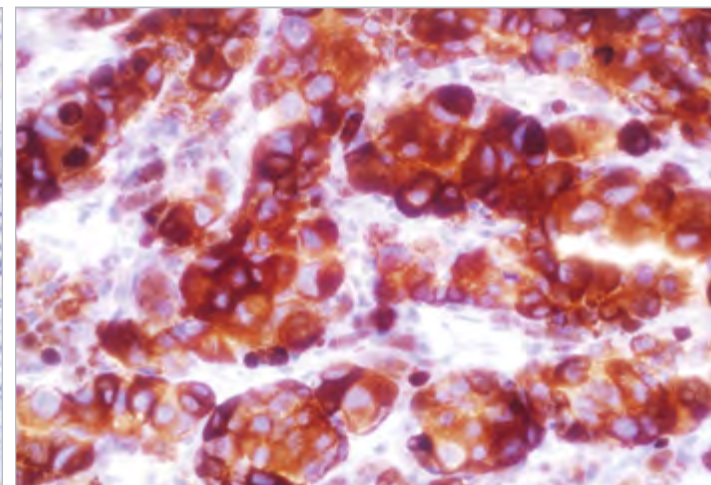
# HMB-45



HMB-45 expression is found in the cytoplasm of the melanoma cells by anti-HMB-45.



HMB-45 on melanoma.



HMB-45 on melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** melanoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

Melanoma

## Associated Specialties

● Dermatopathology

## Associated Panels

- Epithelioid Cell Neoplasms... 288
- Lymph Node ..... 289
- PEComa ..... 290
- Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290
- Melanomas ..... 293
- Melanotic Lesions ..... 293
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Soft Tissue Neoplasms ..... 302

## Reference

1. Gown AM, et al. A J Path. 1986; 123:195.
2. Wick MR, et al. Arch Path Lab. 1988; 112:616.
3. Leong ASY, et al. Surg Path. 1989; 2:137.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

This antibody gives a qualitative assessment of malignant melanoma, which can be extremely difficult to diagnose. Metastatic amelanotic melanoma can often be confused with a variety of poorly differentiated carcinomas, large cell lymphomas, and sarcomas. It is also difficult to differentiate melanoma from spindle cell carcinomas and various types of mesenchymal neoplasms. Melanoma antibody stains fetal and neonatal melanocytes, junctional and blue nevus cells, and malignant melanocytes. Typically, a keratin negative, vimentin rich neoplasm, that immunoreacts with antibody to S-100 protein and this melanoma antibody is, with rare exception, a melanoma.

## Panel Quick View

PEComa									
	HMB-45	SM Actin	Caldesmon	Calponin	CD63	CD68	Desmin	MART-1	S-100
Angiomyolipoma	+	+	+	+	+	+	-	+	-
Lymphangiomyomatosis	+	+	+	+	+	-	-	+	-
Extrapulmonary Clear Cell Tumor	+	+	-	-	+	-	-	+	+
Primary Cutaneous PEComa	+	-/+	-	-	+	+/-	-	+	-
Pulmonary Clear Cell Sugar Tumor	+	-	-	-	+	+/-	-	+	+/-

Melanotic Lesions										
	HMB-45	CD63	Factor XIIIa	KBA.62	MART-1	MiTF	PNL2	S-100	SOX-10	Tyrosinase
Adrenal Cortical	-	-	-	-	+	-	-	+	-	-
Adult Melanocytes	-	+	-	+	+	+	+	+	+	+
Angiomyolipoma	+	+	-	-	+	+	+	+	-	-
Dermatofibroma	-	-	+	-	-	-	-	-	-	-
Interdermal Nevus	-	-	-	+	+	+	+	+	-	+
Intranodal Nevus Cells	-	-	-	+	+	+	+	+	-	+
Junctional Nevus	+	-	-	+	+	+	+	+	-	+
Metastatic Melanoma	+	+	-	+	+	+	+	+	+	+
Primary Melanoma	+	+	-	+	+	+	+	+	+	+
Spindle Cell Melanoma	+	+	-	+	+	+	+	+	+	+

## Ordering Information

**Clone: HMB-45**  
Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	282M-94
0.5 ml, concentrate.....	282M-95
1 ml, concentrate .....	282M-96
1 ml, predilute .....	282M-97
7 ml, predilute .....	282M-98

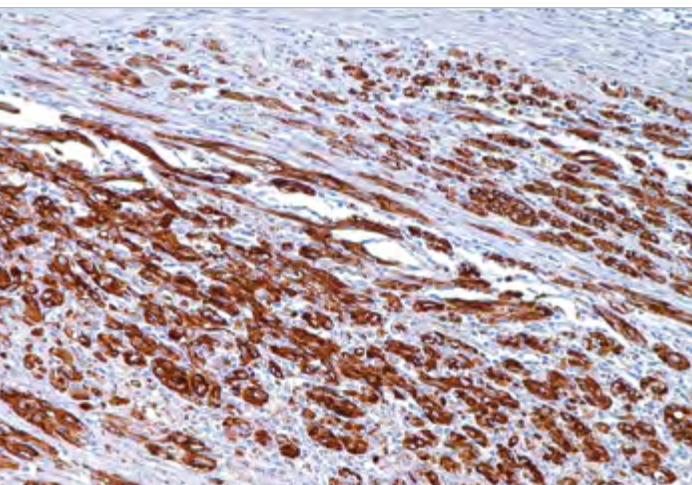
## Designations



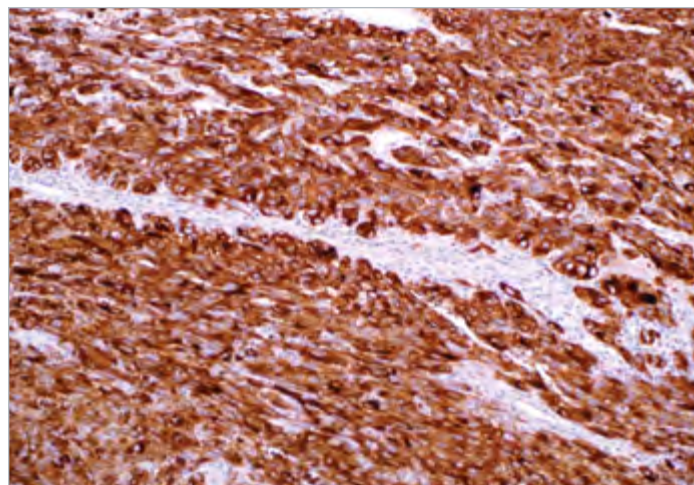
IVD IVD IVD RUO



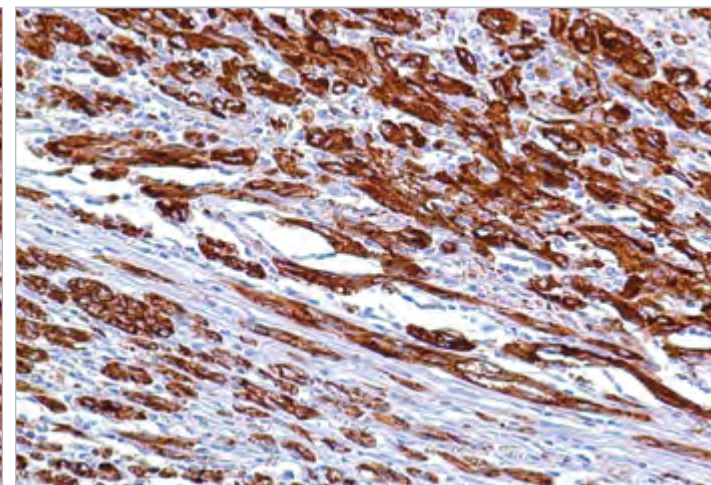
# HMB-45 + MART-1 (Melan A) + Tyrosinase



Metastatic malignant melanoma is stained in a cytoplasmic pattern by anti-melanoma cocktail.



Melanoma cocktail on melanoma.



Melanoma cocktail on metastatic malignant melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** skin, melanoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k + IgG<sub>1</sub> + IgG<sub>2a</sub>

## Synonyms and Abbreviations

Melanoma Cocktail

Pan-Melanoma

## Associated Specialties

● Dermatopathology

## Reference

1. Orchard G. Br J Biomed Sci. 2002; 59:196-202.
2. Gupta D, et al. Am J Surg Pathol. 2002; 26:1450-7.
3. Prasad ML, et al. Am J Surg Pathol. 2001; 25:782-7.
4. de Vries TJ, et al. J Pathol. 2001; 193:13-20.
5. Yaziji H, et al. In J Surg Pathol. 2003; 11:11-5.
6. Shidham VB, et al. BMC Cancer. 2003; 3:15.
7. Perez RP, et al. Hum Pathol. 2000; 31:1381-8.
8. Hoang MP, et al. J Cutan Pathol. 2001; 28:400-6.
9. Baisden BL, et al. Am J Surg Pathol. 2000; 24:1140-6.
10. Vaggelli L, et al. Tumori. 2000; 86:346-8.

## Product Description

Anti-Melanoma (HMB-45) identifies immature melanosomes. It shows greater specificity for malignant melanomas and metastatic melanomas. MART-1 (also known as Melan A) is a melanocyte differentiation antigen. It is present in melanocytes of normal skin and retina, nevi and in more than 85% of melanomas. Tyrosinase is an enzyme integral in the process of melanin synthesis, and found in 85% to 90% of malignant melanomas. Given these statistics, this cocktail is ideally suited to detection of melanomas and melanocytic lesions.

## Ordering Information

**Clone: HMB-45 + A103 + T311**

Mouse Cocktail

**Volume . . . . . Part No.**

1 ml, predilute . . . . . 904H-07

7 ml, predilute . . . . . 904H-08

25 ml, predilute . . . . . 904H-00

## Designations



IVD



IVD



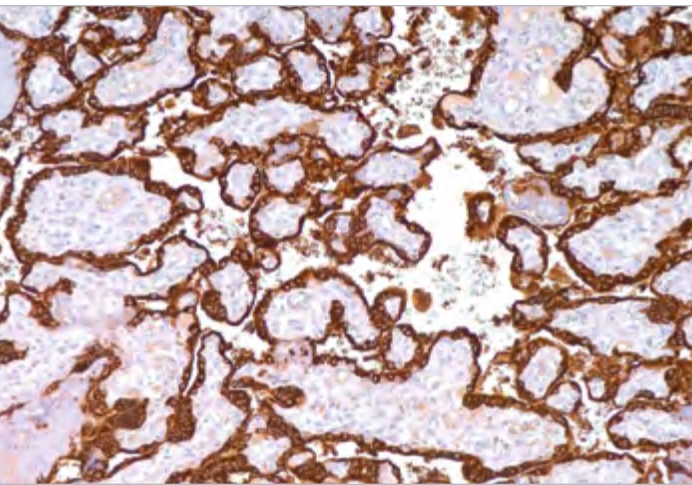
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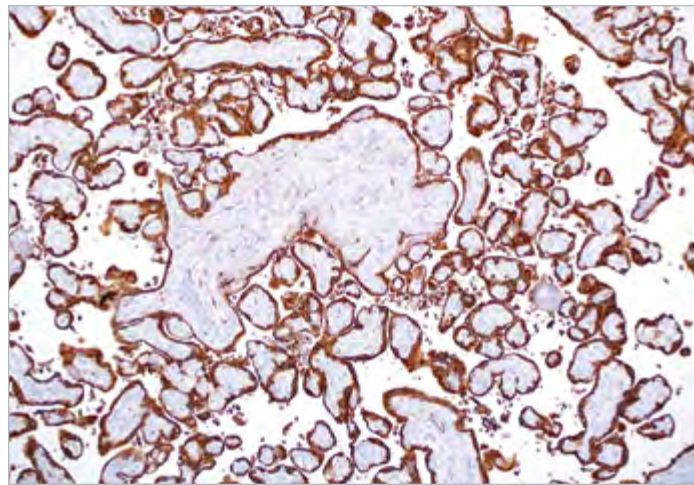
RUO



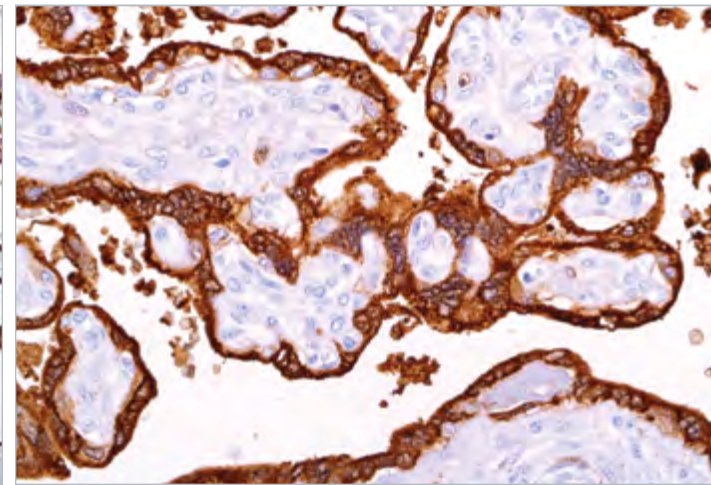
# Human Placental Lactogen (hPL)



Human Placental Lactogen (hPL) (polyclonal) highlights trophoblastic cells in the placenta.



Human Placental Lactogen (hPL) (polyclonal) on placenta.



Human Placental Lactogen (hPL) (polyclonal) on placenta.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** placenta

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Placental Trophoblastic Cells . . . 292
- Placental Trophoblastic Proliferations . . . . . 292
- Uterus: Trophoblastic Proliferations . . . . . 292
- Germ Cell Tumors. . . . . 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma. . . . 295

## Reference

1. Shih IM, et al. Am J Surg Pathol. 2004; 28:1177-83.
2. Ulbright TM, et al. Am J Surg Pathol. 1997; 21:282-288.

## Product Description

Human placental lactogen (hPL), also previously known as 'human chorionic somatomammotropin', is a 22 kD protein with partial homology to growth hormone. hPL is first detectable in the maternal serum in the fifth week of gestation and reaches a plateau by the thirty-fourth week. hPL has been demonstrated by immunochemistry in the syncytiotrophoblastic cells of choriocarcinoma. A rare variant of trophoblastic tumor has been reported in the testis with resemblance to uterine placental site trophoblastic tumor. It consists purely of intermediate trophoblasts which are diffusely positive for hPL and focally for  $\beta$ -hCG.

## Panel Quick View

	1st Trimester		2nd Trimester		3rd Trimester	
	hPL	hCG	hPL	hCG	hPL	hCG
Cytotrophoblast	-	-	-	-	-	-
Intermediate Trophoblast	25-49%	1-24%	50-74%	-/+	1-49%	1-24%
Syncytiotrophoblast	1-24%	>75%	50-74%	25-49%	>75%	1-24%

	hPL	CK OSCAR	hCG	p57	PLAP	Vimentin
Partial Mole	-/+	+	-/+	+	+	-
Complete Mole	-/+	+	+	-	-/+	-
Choriocarcinoma	-/+	+	+	-	-/+	-/+
Placental Site Tumor	+	+	+/-	+	+	+

	hPL	AFP	CD30	CD117	EMA	GPC-3	Inhibin	Oct-4	PLAP	Vimentin
Seminoma	-	-	-	+	-	-	-	+	+	+
Embryonal Carcinoma	-	-	+	-	-	-	-	+	+	-
Choriocarcinoma	+	-	-	-	+	+	-	-	+	-/+
Yolk Sac Tumor	-	+	-	-	-	+	-	-	+	-
Somatic Carcinoma	-	-	-	-	+	-	-	-	-	-
Granulosa Cell Tumor	-	-	-	-	-	-	+	-	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	+	-	-	-	-	-

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

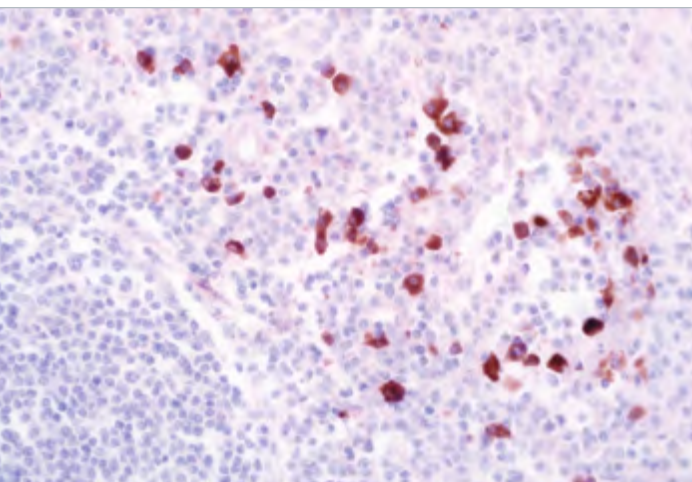
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0.5 ml, concentrate . . . . .	266A-15
1 ml, concentrate . . . . .	266A-16
1 ml, predilute . . . . .	266A-17
7 ml, predilute . . . . .	266A-18

## Designations

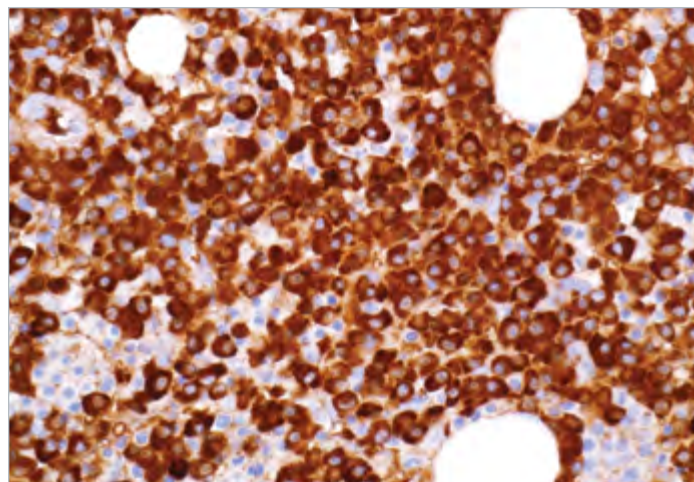


IVD IVD IVD RUO

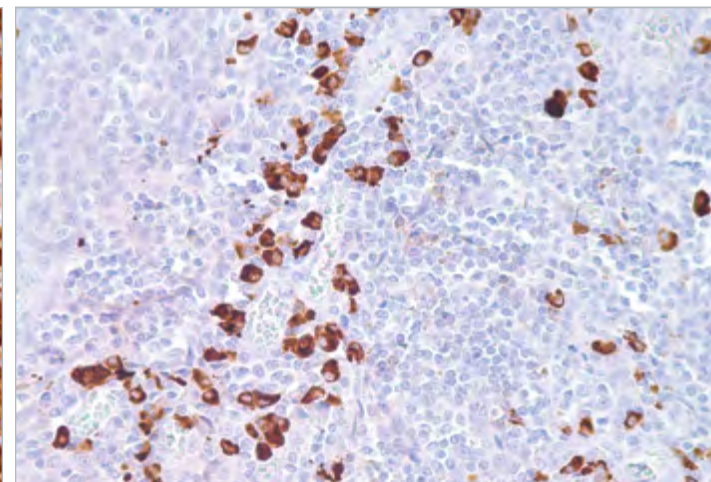




IgA (EP170) on tonsil.



IgA (polyclonal) reveals cytoplasmic expression of IgA protein in plasma cell myeloma.



IgA (polyclonal) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● Immunoglobulin, Heavy and Light Chain .....298

## Reference

1. Ansari NA, et al. Asian Pac J Cancer Prev. 2007; 8:593-6.
2. Leong AS, et al. Manual of diagnostic antibodies for Immunohistology. London: Greenwich Medical Media Ltd. 1999. p 217-19.
3. Shao H, et al. Am J Surg Pathol. 2010; 34:1425-35.

## Product Description

Immunoglobulin A (IgA) plays a critical role in mucosal immunity. It is present in the mucosal secretions such as tears, saliva, colostrum, intestinal juice, vaginal fluid, and secretions from the prostate and respiratory epithelium, and represents a key first line of defense against invasion by inhaled and ingested pathogens at the vulnerable mucosal surfaces. It is also found in small amounts in blood. Because it is resistant to degradation by enzymes, secretory IgA can survive in harsh environments such as the digestive and respiratory tracts, to provide protection against microbes that multiply in body secretions. It is useful when identifying multiple myeloma and plasmacytomas.<sup>1-3</sup>

## Panel Quick View

Immunoglobulin, Heavy and Light Chain						
	IgA	IgD	IgG	IgM	Kappa	Lambda
Cutaneous Lymphoma	-	-	-	-	+/-	-/+
Myeloma	+	-/+	+	-/+	+/-	-/+
Diffuse LBCL	-	-	+	+	+/-	-/+
Marginal Zone Lymphoma	-	-/+	-	+	+/-	-/+
SLL/CLL	-	+	-	+	+/-	-/+

## Ordering Information

### Clone: EP170

Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 267R-14  
 0.5 ml, concentrate ..... 267R-15  
 1 ml, concentrate ..... 267R-16  
 1 ml, predilute ..... 267R-17  
 7 ml, predilute ..... 267R-18

### Alternate Clones Available

• Rabbit Polyclonal

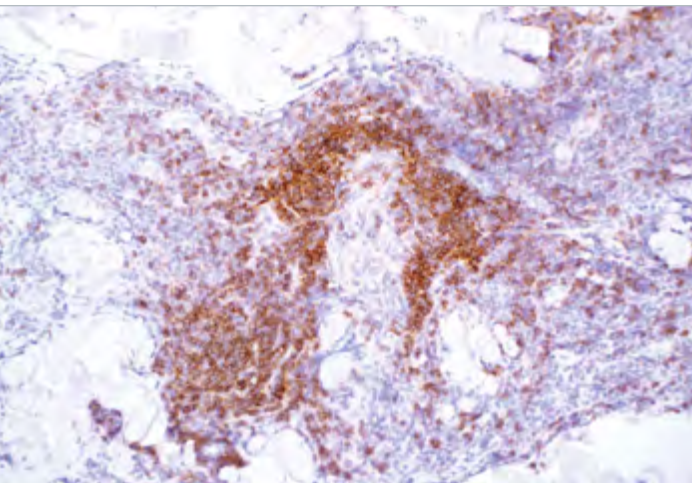
Contact us for more information.

### Designations

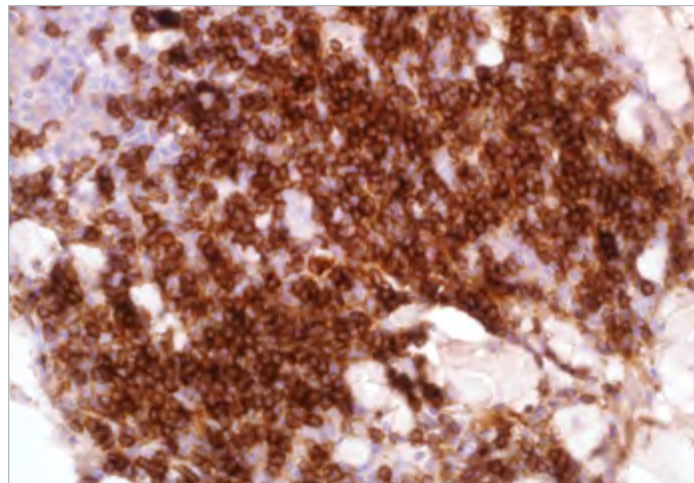
 IVD     IVD     IVD     RUO

 **CELL MARQUE**

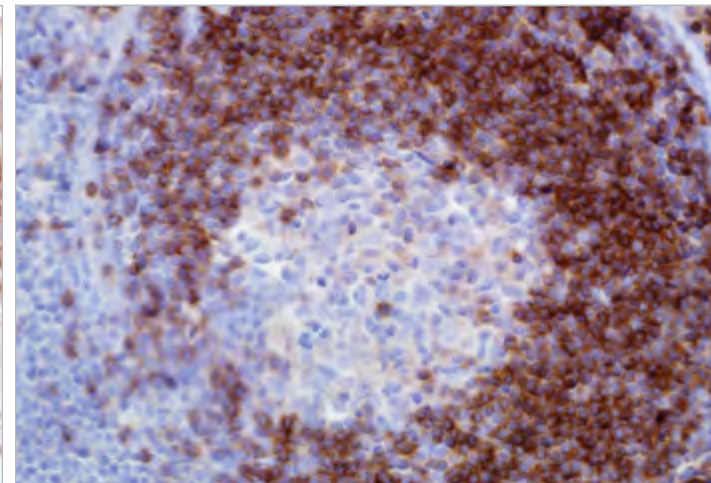
 **RabMab®**  
 Technology from Abcam



IgD (EP173) on skin marginal zone lymphoma.



Strong cytoplasmic expression of IgD protein is found in cutaneous marginal zone lymphoma by polyclonal anti-IgD.



IgD (polyclonal) on lymph node.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296  
 ● Immunoglobulin, Heavy and Light Chain ..... 298

## Reference

1. Prakash S, et al. Am J Surg Pathol. 2006; 30:585-92.
2. Sohani A, et al. Am J surg Pathol. 2011; 35:1666-78.
3. Kluin, PM, et al. J Pathol. 2015; 236:302-14.
4. Pandey S, et al. Oncology (Williston Park). 2013; 27:798-803.

## Product Description

The monoclonal antibody against IgD reacts with immunoglobulin D delta chains. In tonsil and lymph node, immunohistochemical staining for IgD immunoglobulin heavy chain is usually used to highlight the tonsil and nodal architecture since the IgD antibody stains mantle zone cells in secondary follicles and mantle cells in primary follicles.<sup>1</sup> It has been reported that IgD can be detected in the surface/cytoplasm of neoplastic cells of common small B lymphoid cell lymphomas, such as small lymphocytic lymphoma, mantle cell lymphoma, marginal zone lymphoma (especially splenic marginal zone lymphoma), and follicular lymphoma.<sup>1-2</sup> IgD expression in L & P cells of nodular lymphocyte predominant Hodgkin lymphoma has been seen in subsets of cases (27% to 71.4%).<sup>1-3</sup> The IgD positive L & P cells are usually located in the extrafollicular area with a relatively T-cell-rich background<sup>1-3</sup> IgD expression is rarely seen in T-cell rich B-cell lymphoma. Studies have demonstrated that Reed-Sternberg cells of classic Hodgkin lymphoma were negative for IgD.<sup>1-3</sup> IgD multiple myeloma is a rare bone marrow plasma cell dyscrasia and can be identified by the IgD antibody, especially when a dry tap is encountered.<sup>4</sup>

## Panel Quick View

B-cell Lymphomas										
	IgD	ANXA1	BCL2	BCL6	CD10	CD23	CD79a	Cyclin D1	MUM1	p27
Burkitt Lymphoma	-	-	-	+	+	-	+	-	-	-
CLL/SLL	+	-	+	-	-	+	+	-	+	+
Diffuse Large Cell Lymphoma	-	-	+	+/-	-/+	-	+	-	+/-	-
Follicular	+	-	+	+	+	-	+	-	-	+
Hairy Cell Leukemia	-	+	+	-	-	-	+	+ (weak) /-		-
Lymphoplasmacytic	-	-	+	-	-	-	+	-	+	+
Mantle Cell	+	-	+	-	-	-	+	+	-	+
Marginal Zone BCL	-/+	-	+	-	-	-	+	-	+	+

Immunoglobulin, Heavy and Light Chain						
	IgD	IgA	IgG	IgM	Kappa	Lambda
Cutaneous Lymphoma	-	-	-	-	+/-	-/+
Myeloma	-/+	+	+	-/+	+/-	-/+
Diffuse LBCL	-	-	+	+	+/-	-/+
Marginal Zone Lymphoma	-/+	-	-	+	+/-	-/+
SLL/CLL	+	-	-	+	+/-	-/+

## Ordering Information

**Clone: EP173**  
 Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 268R-14  
 0.5 ml, concentrate ..... 268R-15  
 1 ml, concentrate ..... 268R-16  
 1 ml, predilute ..... 268R-17  
 7 ml, predilute ..... 268R-18

## Alternate Clones Available

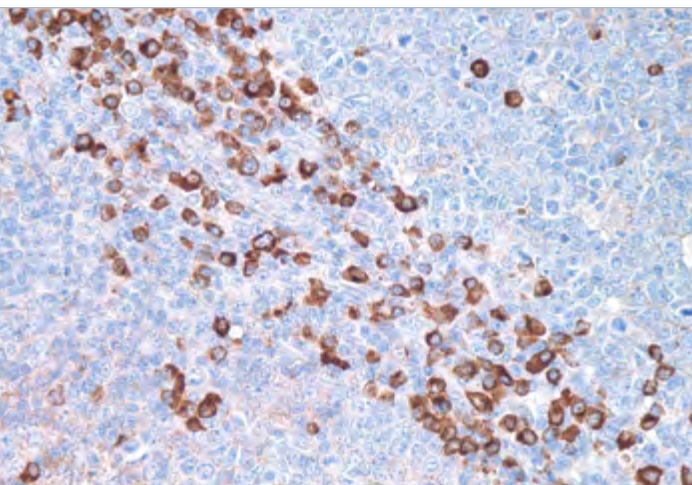
• Rabbit Polyclonal  
 Contact us for more information.

## Designations

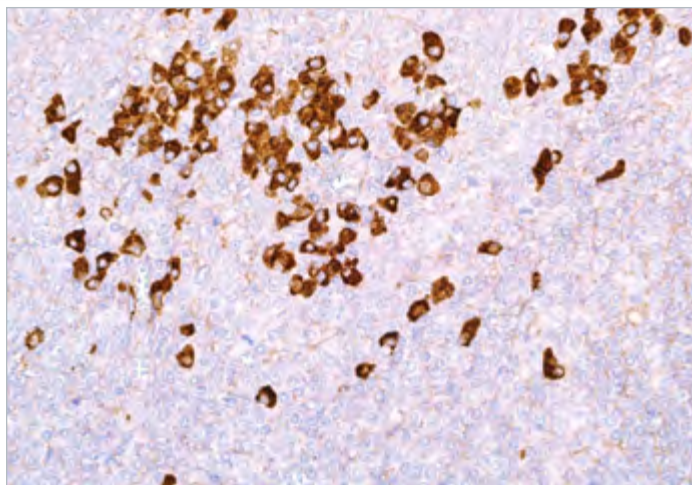
 IVD  IVD  IVD  RUO

**CELL MARQUE**  
  
 Technology from Abcam

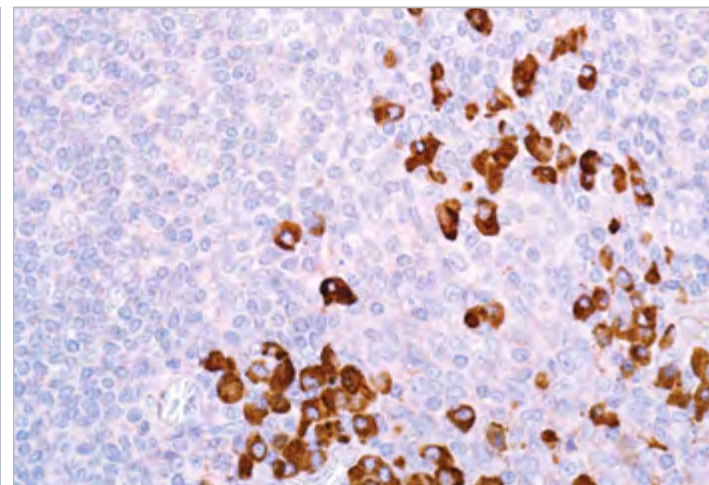




IgG (polyclonal) shows IgG containing plasma cells in the tonsil with a cytoplasmic pattern.



IgG (polyclonal) on tonsil.



IgG (polyclonal) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

- Hematopathology
- Anatomic/Surgical Pathology

## Associated Panels

- Immunoglobulin, Heavy and Light Chain .....298

## Reference

1. Arnold A, et al. New Eng J Med. 1983; 309:1593-1599.
2. Leong AS, et al. Geenwich Medical Media Ltd. 1999; 217-219.
3. Ando K, et al. Intern Med. 2000; 39:170-5.
4. Taylor CR. Arch Path Lab Med. 1978; 102:113-121.
5. Warnake R, et al. Masson Publishing USA. 1981; 203-221.

## Product Description

Anti-IgG reacts with surface immunoglobulin IgG gamma chains. This antibody is useful when identifying leukemias, plasmacytomas, and B-cell lineage derived Hodgkin lymphomas. Due to the restricted expression of heavy and light chains in these diseases, demonstration of B-cell lymphomas is possible with clonal gene rearrangement studies.<sup>1-5</sup>

## Panel Quick View

Immunoglobulin, Heavy and Light Chain						
	IgG	IgA	IgD	IgM	Kappa	Lambda
Cutaneous Lymphoma	-	-	-	-	+/-	-/+
Myeloma	+	+	-/+	-/+	+/-	-/+
Diffuse LBCL	+	-	-	+	+/-	-/+
Marginal Zone Lymphoma	-	-	-/+	+	+/-	-/+
SLL/CLL	-	-	+	+	+/-	-/+

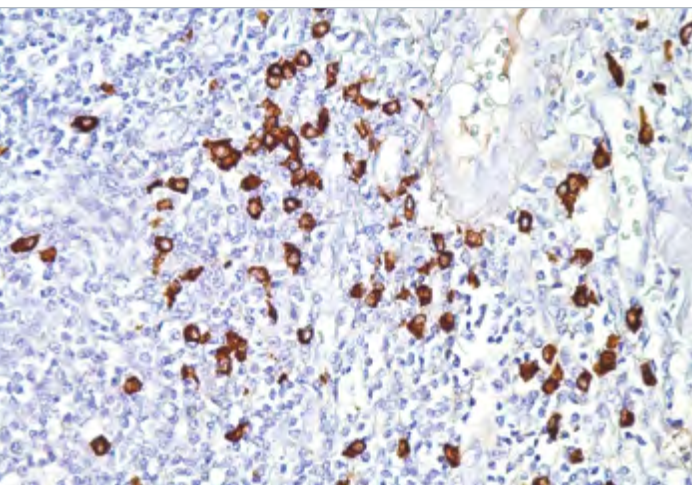
## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

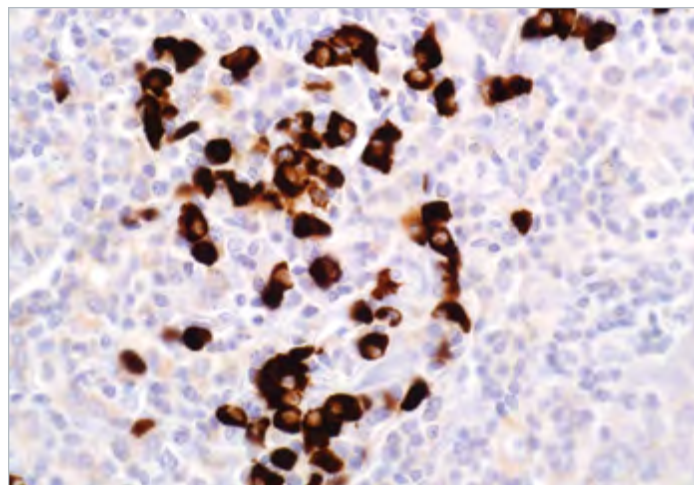
**Volume** ..... **Part No.**  
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 0.5 ml, concentrate ..... 269A-15  
 1 ml, concentrate ..... 269A-16  
 1 ml, predilute ..... 269A-17  
 7 ml, predilute ..... 269A-18

## Designations

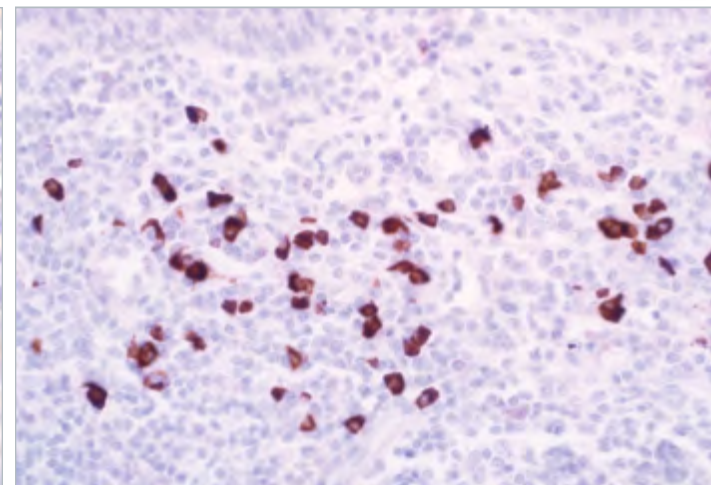
 IVD     IVD     IVD     RUO



IgG4 (MRQ-44) stains IgG4 containing plasma cells in a cytoplasmic reaction.



IgG4 (MRQ-44) on lymph node, plasma cells.



IgG4 (EP138) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP138: IgG
- MRQ-44: IgG<sub>1</sub>/k

## Associated Specialties

- Gastrointestinal (GI) Pathology
- Anatomic/Surgical Pathology

## Reference

1. Sakata N, et al., Am J Surg Pathol. 2008; 32:553-9.
2. Dhobale S, et al., J Clin Rheumatol. 2009; 15:354-7.
3. Li Y, et al., Pathol Int. 2009; 59:636-41.
4. Cheuk W, et al., Am J Surg Pathol. 2009; 33:1058-64.
5. Deshpande V, et al., Mod Pathol. 2009; 22:1287-95.
6. Sato Y, et al., Mod Pathol. 2009; 22: 589-99.
7. Koyabu M et al., J Gastroenterol. 2010; 45:732-41.
8. Kamisawa T, et al., World J Gastroenterol. 2009; 21:2357-60.

## Product Description

IgG4-related sclerosing disease has been recognized as a systemic disease entity characterized by an elevated serum IgG4 level, sclerosing fibrosis, and diffuse lymphoplasmacytic infiltration with the presence of many IgG4-positive plasma cells. Clinical manifestations are apparent in the pancreas, bile duct, gall bladder, lacrimal gland, salivary gland, retroperitoneum, kidney, lung, breast, thyroid, and prostate. Immunohistochemical analyses in the case of IgG4-related sclerosing disease not only exhibit significantly more than normal IgG4-positive plasma cells in affected tissues but also significantly higher IgG4/IgG ratios (typically > 30%).<sup>1-8</sup>

## Ordering Information

### Clone: EP138

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	367R-14
0.5 ml, concentrate	367R-15
1 ml, concentrate	367R-16
1 ml, predilute	367R-17
7 ml, predilute	367R-18

### Clone: MRQ-44

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	367M-14
0.5 ml, concentrate	367M-15
1 ml, concentrate	367M-16
1 ml, predilute	367M-17
7 ml, predilute	367M-18

## Designations



IVD



IVD



IVD

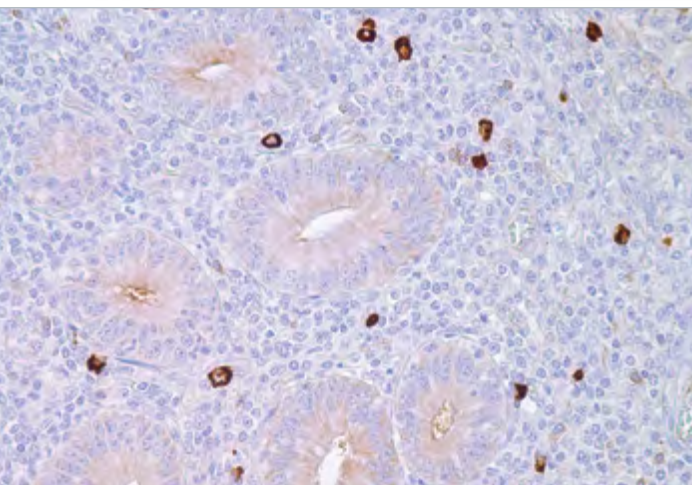


RUO

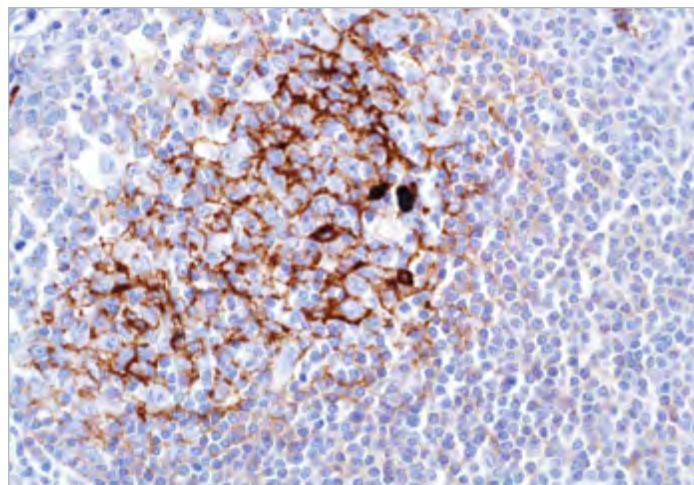
 CELL MARQUE

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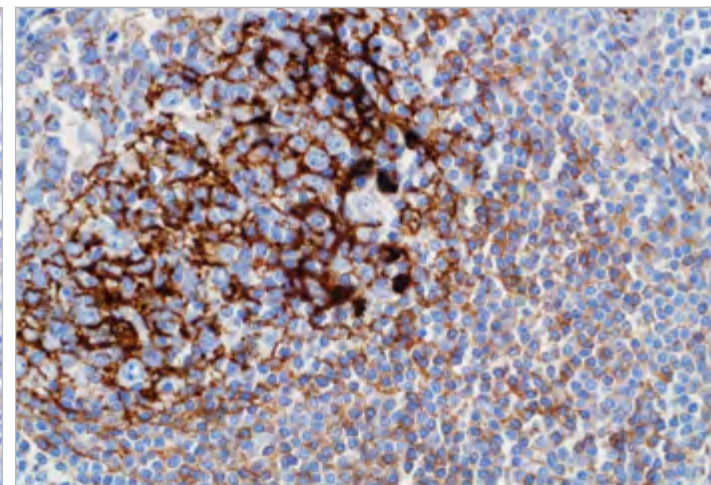




IgM (polyclonal) on endometrium.



IgM (polyclonals) highlights follicular dendritic cells, plasma cells, and some mantle zone cells.



IgM (polyclonal) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

● Hematopathology

## Associated Panels

● Immunoglobulin, Heavy and Light Chain ..... 298

## Reference

1. Arnold A, et al. New Eng J Med. 1983; 309:1593-1599.
2. Leong AS, et al. Geenwich Medical Media Ltd. 1999; 217-219.
3. Hertel BF, et al. New Eng J Med. 1980; 302:1293-1297.
4. Taylor CR. Arch Path Lab Med. 1978; 102:113-121.
5. Warnake R, et al. Masson Publishing USA. 1981; 203-221.
6. de Boer CJ, et al. Ann Oncol. 1997; 8:109-17.
7. Kojima M, et al. APMIS. 2002; 110:875-80.
8. Pambuccian SE, et al. Am J Surg Pathol. 1997; 21:179-86.

## Product Description

Anti-IgM antibody reacts with surface immunoglobulin IgM mu chains. IgM is one of the predominant surface immunoglobulins on B-lymphocytes. This antibody is useful when identifying lymphomas, plasmacytomas, and B-cell lineage derived Hodgkin lymphomas. Due to the restricted expression of heavy and light chains in these diseases, demonstration of B-cell lymphomas is possible with clonal gene rearrangement studies.

## Panel Quick View

Immunoglobulin, Heavy and Light Chain						
	IgM	IgA	IgD	IgG	Kappa	Lambda
Cutaneous Lymphoma	-	-	-	-	+/-	-/+
Myeloma	-/+	+	-/+	+	+/-	-/+
Diffuse LBCL	+	-	-	+	+/-	-/+
Marginal Zone Lymphoma	+	-	-/+	-	+/-	-/+
SLL/CLL	+	-	+	-	+/-	-/+

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 270A-14  
 0.5 ml, concentrate ..... 270A-15  
 1 ml, concentrate ..... 270A-16  
 1 ml, predilute ..... 270A-17  
 7 ml, predilute ..... 270A-18

### Designations



IVD



IVD



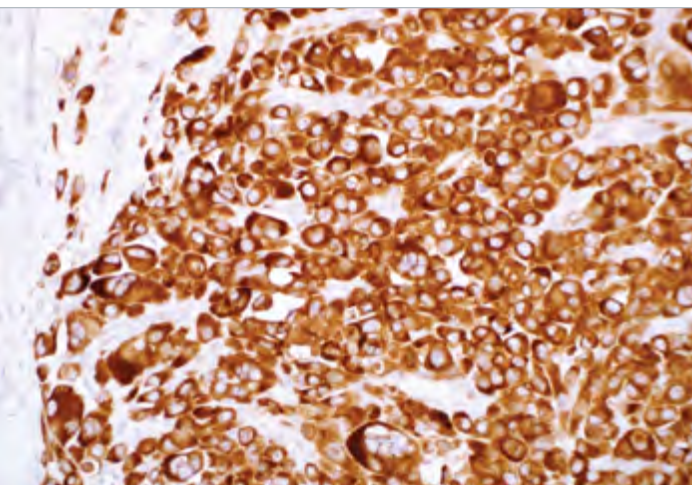
IVD



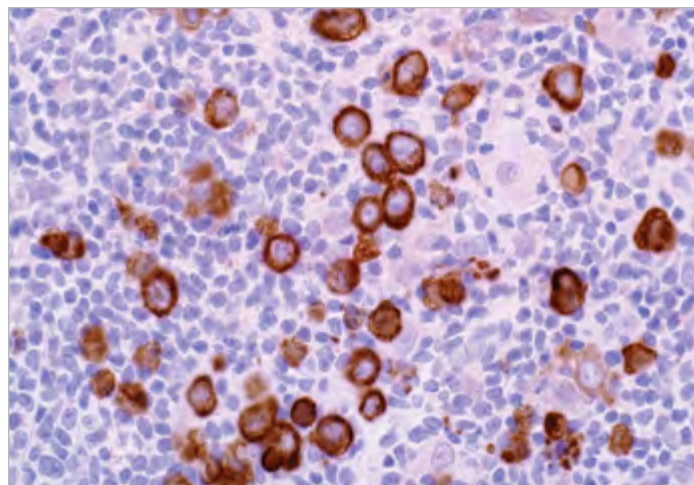
RUO



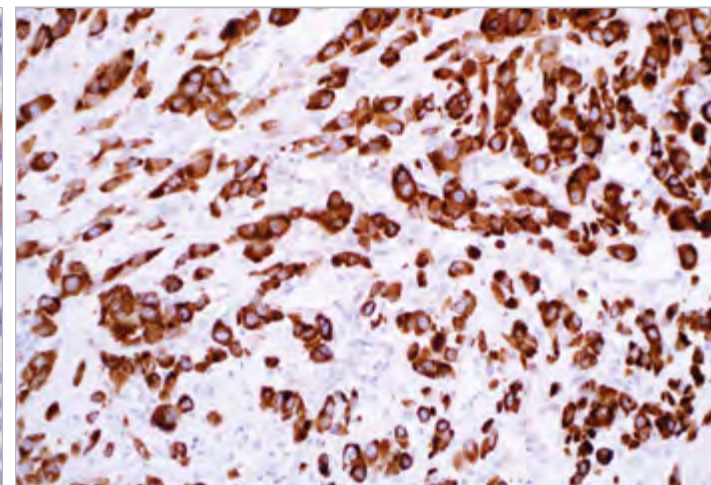
# IMP3



Cytoplasmic labelling by IMP3 (EP286) on pancreatic ductal adenocarcinoma.



IMP3 (EP286) on nodular lymphocyte predominant Hodgkin lymphoma.



IMP3 (EP286) shows strong cytoplasmic expression of IMP3 protein in invasive pancreatic ductal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** pancreatic ductal adenocarcinoma, placenta

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Cytopathology
- Anatomic/Surgical Pathology
- Hematopathology

## Associated Panels

- Lymphomas ..... 299

## Reference

- Schaeffer DF, et al. BMC Cancer. 2010; 10:59.
- Wachter D, et al. AM J Surg Pathol. 2011; 35:873-877.

## Product Description

Insulin-like growth factor II mRNA binding protein 3 (IMP3) is an oncofetal RNA-binding protein that regulates targets such as insulin-like growth factor-2 and beta-actin. IMP3 expression is at its highest during embryogenesis and silenced in normal human tissues (fibroblasts, lymphocytes, and testes are exceptions).<sup>1</sup> IMP3 plays a major role in early embryogenesis involving the development of the intestine, thymus, pancreas, and kidneys.<sup>2</sup> IMP3 mRNA transcript and protein have been demonstrated in high levels in pancreatic cancer tissues but not in benign lesions of the pancreas, chronic pancreatitis, or normal pancreatic tissues.<sup>1</sup> In a study of IMP3 being used to distinguish between pancreatic ductal adenocarcinoma from chronic sclerosing pancreatitis, IMP3 was found to have high sensitivity and specificity for pancreatic ductal adenocarcinoma and detected pancreatic ductal adenocarcinoma metastases.<sup>2</sup> IMP3 expression has also been found in a variety of other human cancers including renal cell carcinoma, adenocarcinoma of the uterine cervix, endometrial carcinoma, adenocarcinoma of the esophagus, malignant melanoma, Merkel cell carcinoma, urothelial carcinoma, neuroendocrine carcinoma of the lung, adenocarcinoma of the pancreas, and triple negative breast cancer.<sup>1,2</sup>

## Panel Quick View

Carcinomas and Neoplasms with Epithelioid Morphology (Features)								
	IMP3	CK OSCAR	CK 7	CK20	BRST-2	Hep Par-1	RCC	TTF-1
Hepatocellular Carcinoma	+	-	-	-	-	+	-	+ (cytoplasmic)
Renal Cell Carcinoma	+	+	-	-	-	-	+	-
Thyroid Carcinoma	+	+	+	-	-	-	-	+
Triple Negative Breast Carcinoma	+/-	+	+	-	+/-	-	-	-
Lung Adenocarcinoma	+	+	+	-	-	-	-	+
Colorectal Adenocarcinoma	+	+	-	+	-	-	-	-
Ovarian Carcinoma	+	+	+	-	-	-	-	-
Pancreatic Ductal Adenocarcinoma	+	+	+	-	-	-	-	-
Gastric Carcinoma	+	+	+	-	-	-	-	-
Endometrial Adenocarcinoma	+/-	+	+	-	-	-	-	-
Urothelial Carcinoma	+	+/-	+/-	+/-	-	-	-	-
Melanoma	+	-	-	-	-	-	-	-
Mesothelioma	+	+	+	-	-	-	-	-

## Ordering Information

**Clone: EP286**

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	433R-14
0.5 ml, concentrate	433R-15
1 ml, concentrate	433R-16
1 ml, predilute	433R-17
7 ml, predilute	433R-18

## Designations

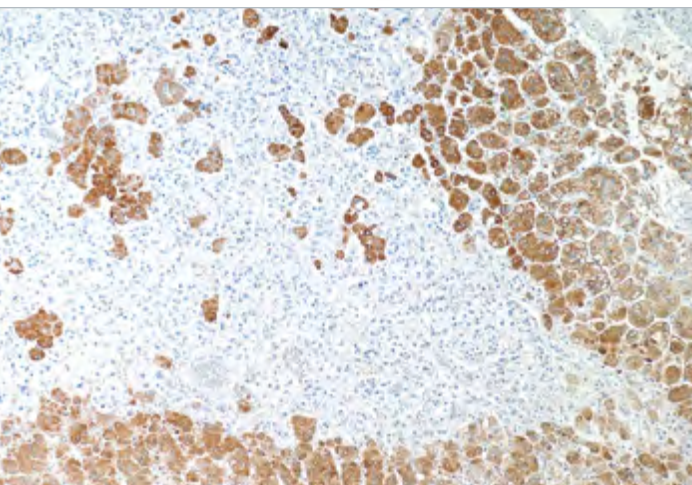


**CELL MARQUE**

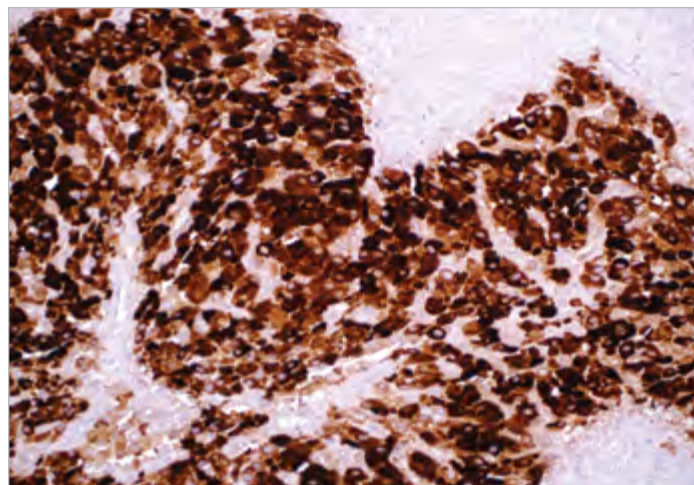
**RabMab®**  
Technology from Abcam



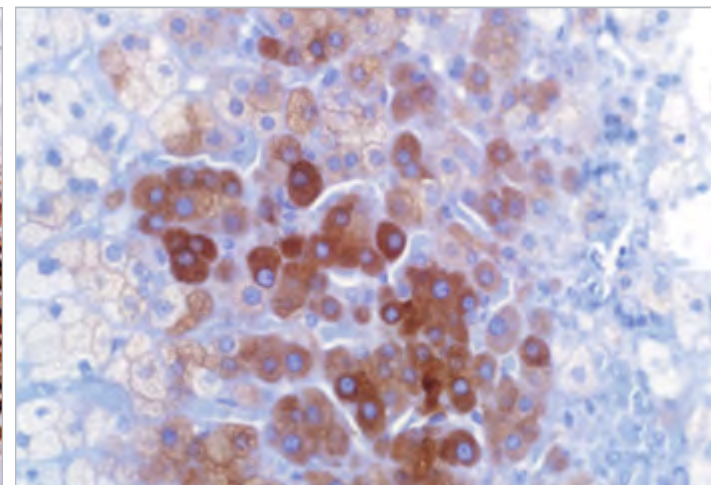
# Inhibin, alpha



Granulosa cells in the ovary are strongly highlighted by Inhibin, alpha (R1) with cytoplasmic staining.



Inhibin, alpha (R1) on corpus luteum, ovary.



Inhibin, alpha (R1) on adrenal gland.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** adrenal cortex

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Adrenal Tumors. . . . . 286
- Sex Cord Stromal Tumors . . . . . 292
- Germ Cell Tumors. . . . . 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma. . . . . 295
- Renal Cell Carcinoma vs. Hemangioblastoma. . . . . 296

## Reference

1. Munro LM, et al. J Endocrinol. 1999; 161:341-7.
2. Fetsch PA, et al. Cancer. 1999; 87:168-72.
3. McCluggage WG. Histopathology. 2002; 40:309-26.
4. Stewart CJ, et al. Histopathology. 1997; 31:67-74.
5. Yamashita K, et al. Am J Obstet Gynecol. 1997; 177:1450-7.
6. McCluggage WG, et al. Am J Surg Pathol. 1998; 22:615-9.
7. Kommos F, et al. Mod Pathol. 1998; 11:656-64.
8. Matias-Guiu X, et al. Hum Pathol. 1998; 29:840-5.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-inhibin alpha is an antibody against a peptide hormone which has demonstrated utility in the differentiation between adrenal cortical tumors and renal cell carcinoma.<sup>1,2</sup> Sex cord stromal tumors<sup>3-9,11,13</sup> of the ovary as well as trophoblastic tumors<sup>10,12</sup> also demonstrate cytoplasmic positivity with this antibody. This antibody has been used to make the differential diagnosis of intrauterine vs. ectopic pregnancy in endometrial curettings.<sup>12</sup>

## Panel Quick View

Adrenal Tumors						
	Inhibin, alpha	Calretinin	CD56	Chromogranin A	MART-1	Synaptophysin
Pheochromocytoma	-	-	+	+	-	+
Adrenocortical Carcinoma	+	+	+	-	+	-/+
Adrenocortical Adenoma	+	+	+	-	+	-/+

Sex Cord Stromal Tumors							
	Inhibin	Calretinin	CD99	CK 7	EMA	MART-1	Vimentin
Granulosa Cell Tumors	+	+	+	-	-	+	+
Sertoli-Leydig Cell Tumors	+	+	+	+	-	+	+
Gynandroblastoma	+	+	-/+				+
Gonadoblastomas	+	+	+	-	-	-	+

Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma										
	Inhibin	AFP	CD30	CD117	EMA	GPC-3	hPL	Oct-4	PLAP	Vimentin
Seminoma	-	-	-	+	-	-	-	+	+	+
Embryonal Carcinoma	-	-	+	-	-	-	-	+	+	-
Choriocarcinoma	-	-	-	-	+	+	+	-	+	-/+
Yolk Sac Tumor	-	+	-	-	-	+	-	-	+	-
Somatic Carcinoma	-	-	-	-	+	-	-	-	-	-
Granulosa Cell Tumor	+	-	-	-	-	-	-	-	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	+	-	-	-	-	-

## Ordering Information

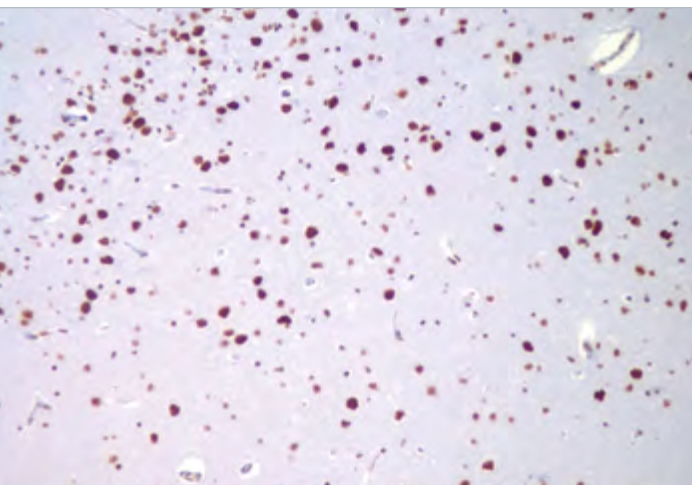
### Clone: R1

### Mouse Monoclonal

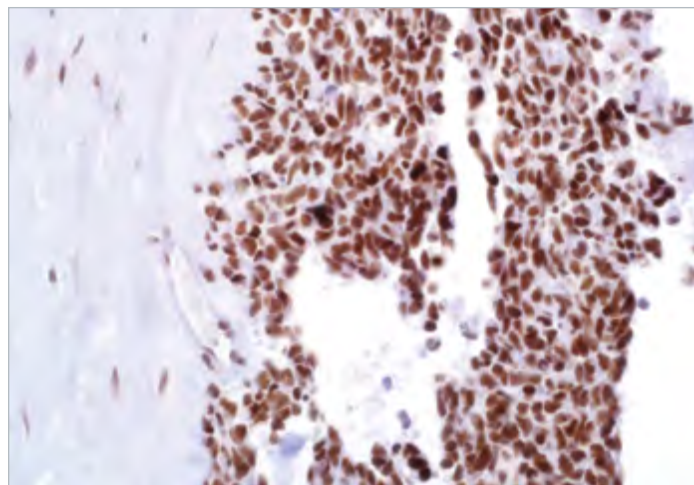
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	271M-14
0.5 ml, concentrate . . . . .	271M-15
1 ml, concentrate . . . . .	271M-16
1 ml, predilute . . . . .	271M-17
7 ml, predilute . . . . .	271M-18

### Designations

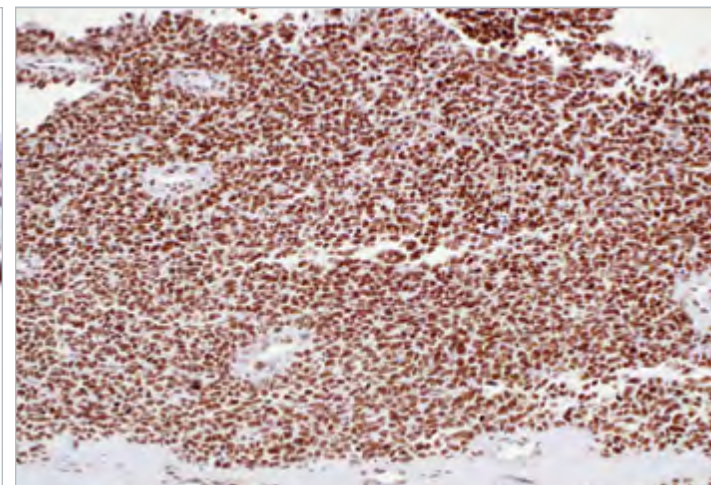




INI-1 (MRQ-27) shows nuclear reaction in neuronal cells in the brain.



INI-1 (MRQ-27) on soft tissue.



INI-1 (MRQ-27) on primitive neuroectodermal tumor.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** brain, endothelial cells, astrocytoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Pediatric Pathology

## Associated Panels

- Epithelioid Cell Neoplasms. . . . . 288
- Brain: CNS Tumors 2 . . . . . 301
- Muscle Malignant Tumors. . . . . 302
- Small Blue Round Cell Tumors. 302
- Soft Tissue Tumor. . . . . 303

## Reference

1. Bourdeaut F, et al. J Pathol. 2007; 211:323-30.
2. Fowler DJ, et al. Fetal Pediatr Pathol. 2006; 25:159-68.
3. Haberler C, et al. Am J Surg Pathol. 2006; 30:1462-8.

## Product Description

The INI-1 gene, which encodes a functionally uncharacterized protein component of the hSWI/SNF chromatin remodeling complex, is often mutated or deleted in malignant rhabdoid tumor (MRT). Two isoforms of INI-1 that differ by the variable inclusion of amino acids are potentially produced by differential RNA splicing.

The morphology of MRTs can present challenges in differential diagnosis. The overall survival of MRTs relative to its potential mimics [medulloblastoma, supratentorial primitive neuroectodermal tumors (sPNETs)] is quite low, and thus differentiation from these other tumors is desirable. Lack of nuclear labeling by anti-INI-1 is characteristic of MRT. The majority of medulloblastomas and sPNETs are labeled by anti-INI-1. MRTs also originate from the kidney and soft tissues.<sup>1-3</sup>

## Panel Quick View

Brain: CNS Tumors 2										
	INI-1	CK Cocktail	EMA	GFAP	NGFR	Neuro-filament	PR	S-100	Synap-tophysin	Vimen-tin
Astrocytoma	+	-	-	+	+	-	-	+	-	+
Glioblastoma	+	-	-	+	-	-	-	+	-	+
Oligodendroglioma	+	-	-	-	-	-	-	+	-	+
Ependymoma	+	(+ AE1 & AE3)	-	+	+	-	-	+	-	-/+
Choroid Plexus Carcinoma	+	+	-	-/+	-	-	-	+	+	+/-
Neuroblastoma	+	-	-	+/-	+	+	-	+/-	+	+
Pineocytoma	+	-	-	-	-	-	-	-	+	-
Meningioma	+	-	+	-	-	-	+	-	-	+
Rhabdoid Tumors	-	+	+	-	-	+/-	-	+/-	+/-	+

Small Blue Round Cell Tumors										
	INI-1	MS Actin	CD57	CD99	CK Cocktail	FLI-1	Myo-genin	Myo-globin	Vimen-tin	WT1
Rhabdomyosarcoma	+	+	-	-	-	-	+	+	+	-
PNET/ES	+	-	+	+	-/+	+	-	-	+	-
DSRCT	+	-	+/-	-	+	+	-	-	+	+
Medulloblastoma	+	-	+	-	-	-	-	-	-	-

## Ordering Information

**Clone: MRQ-27**  
Mouse Monoclonal

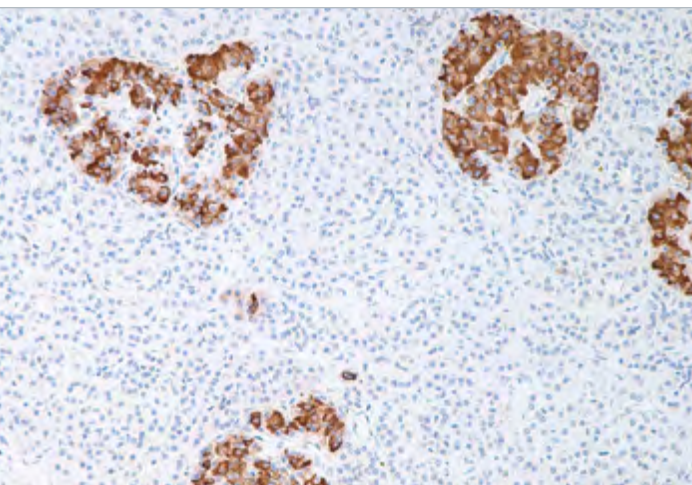
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 1 ml, concentrate . . . . . 272M-16  
 1 ml, predilute . . . . . 272M-17  
 7 ml, predilute . . . . . 272M-18

## Designations

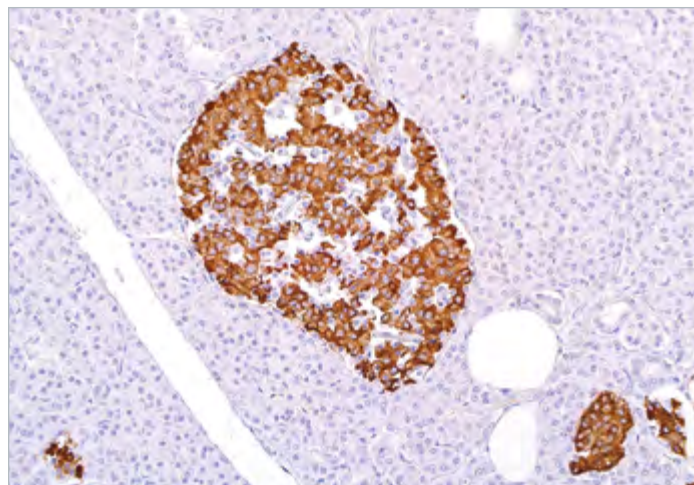
 IVD     IVD     IVD     RUO



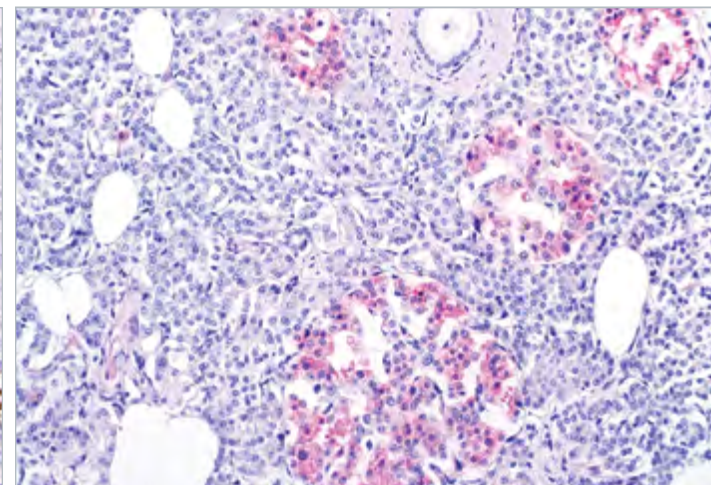
# Insulin



Pancreatic islet cells express insulin in a cytoplasmic pattern.



Insulin (polyclonal) on pancreas.



Insulin (polyclonal) on pancreas.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreas

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Akagi T, et al. Cancer. 1981; 47:417-424.
2. Scully RE, et al. N Eng J Med. 1983; 308:30-37.
3. Erlandsen SL. Williams and Wilkins Baltimore. 1980; 140-155.
4. Friesen SR. N Eng J Med. 1982; 306:580-590.
5. Jorda M, et al. Arch Pathol Lab Med. 2003; 127:196-9.
6. Letizia C, et al. Eur J Endocrinol. 2001; 144:517-20.
7. Govindarajan M, et al. Diabetes Res Clin Pract. 2001; 51:29-38.
8. Azzoni C, et al. Virchows Arch. 1998; 433:495-504.
9. Lubensky IA, et al. Am J Pathol. 1998; 153:223-31.

## Product Description

Insulin is a 51-amino acid polypeptide composed of A and B chains connected through the C-peptide. Insulin is one of the major regulatory hormones of intermediate metabolism throughout the body. The biological actions of this hormone involve integration of carbohydrate, protein, and lipid metabolism. Insulin enhances membrane transport of glucose, amino acids, and certain ions. It also promotes glycogen storage, formation of triglycerides, and synthesis of proteins and nucleic acids. Immunohistochemical investigations have localized insulin in the beta cells of pancreatic islets of Langerhans. Deficiency of insulin results in diabetes mellitus, one of the leading causes of morbidity and mortality in the general population. Insulin is also present in tumors of beta cell origin such as insulinoma. Anti-insulin staining in the cytoplasm of tumors is the most reliable indication of functional insulinomas.

## Ordering Information

### Clone: polyclonal

### Guinea Pig Polyclonal

Volume	Part No.
0.1 ml, concentrate	273A-14
0.5 ml, concentrate	273A-15
1 ml, concentrate	273A-16
1 ml, predilute	273A-17
7 ml, predilute	273A-18

### Designations



IVD



IVD



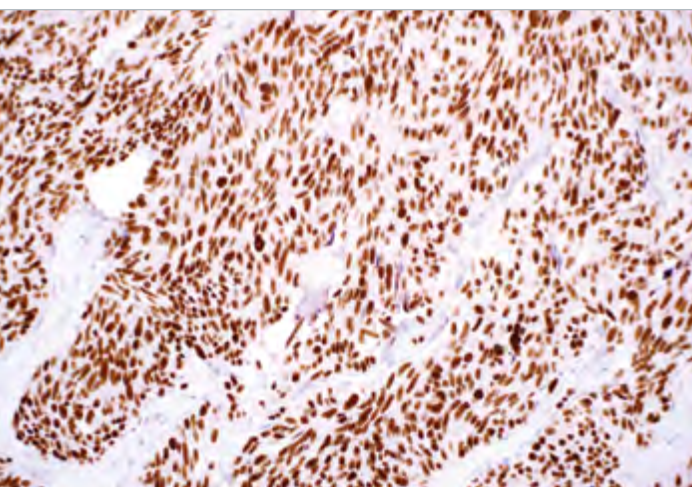
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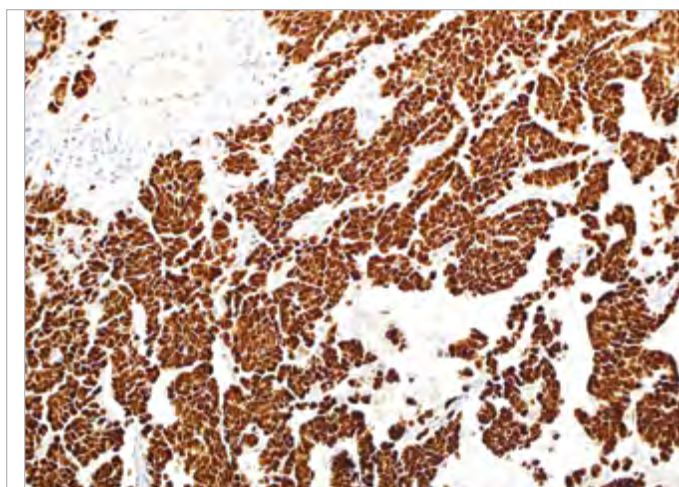
RUO



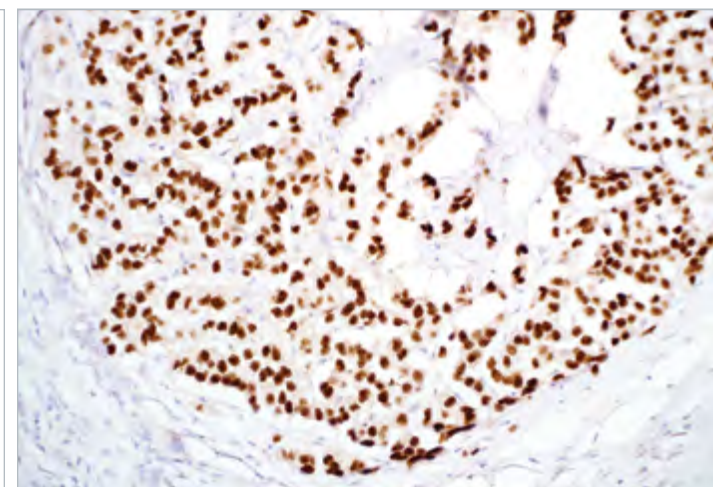
# Islet-1



Islet-1 (EP283) on medullary thyroid carcinoma.



Islet-1 (EP283) on small cell lung carcinoma.



Islet-1 (EP283) on pancreatic neuroendocrine tumor.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** pancreas

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Gastrointestinal (GI) Pathology
- Anatomic/Surgical Pathology

## Reference

1. Schmitt A, et al. Am J Surg Pathol. 2008; 32:420-425.
2. Koo J, et al. Modern Pathology. 2012; 25:893-901.
3. Agaimy A, et al. Modern Pathology. 2013; 1-9.

## Product Description

Islet-1, a human insulin gene enhancer-binding protein, is a transcription factor involved in the differentiation of the neuroendocrine pancreatic cells.<sup>1-3</sup> Islet-1 plays an important role in the embryogenesis and differentiation of the insulin producing pancreatic beta cells within the islets of Langerhans.<sup>3</sup> Neuroendocrine tumors can arise from a variety of primary sites, most commonly in the bronchopulmonary system, gastrointestinal (GI) tract, and pancreas.<sup>2</sup> Neuroendocrine tumors of the GI tract and pancreas tend to be slow growing and indolent, and may metastasize to the liver before it is detected.<sup>2</sup> Islet-1 exhibits strong nuclear staining in the islets of normal pancreas and tumor cells of the pancreatic neuroendocrine tumor.<sup>1-3</sup> Islet-1 has been shown to be a reliable marker for the detection of primary and metastatic pancreatic neuroendocrine neoplasms.<sup>1-3</sup>

## Panel Quick View

Neuroendocrine Neoplasms									
NET origins	Islet-1	Calcitonin	CDX-2	CK Cocktail	NF	PAX-8	SATB2	TTF-1	Vimentin
Thyroid	+	+		+	-	+	-	+	-
Lung, PD	+	-	-	+	-	-	-	+	-
Lung, WD/MD	-		-	+	-	-	-	+	-
Stomach	-		-	+	-	-	-	-	-
Duodenum	+		-	+	-	+	-	-	-
Pancreas	+		-	+	-	+	+	-	-
Jejunioileum	-		+	+	-	-	+	-	-
Appendix	-	-	+	+	-	-	+	-	-
Colon	-	-	-	+	-		+	-	-
Rectum	+	-	-	+	-	+	+	-	-
Ovary		-	-/+	+	-			-	-
Skin	+	-		+	-	+		-	-
Paraganglioma/ pheochromocytoma	+	-	-	-	+			-	+

## Ordering Information

**Clone: EP283**

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	431R-14
0.5 ml, concentrate	431R-15
1 ml, concentrate	431R-16
1 ml, predilute	431R-17
7 ml, predilute	431R-18

## Designations



IVD



IVD



IVD

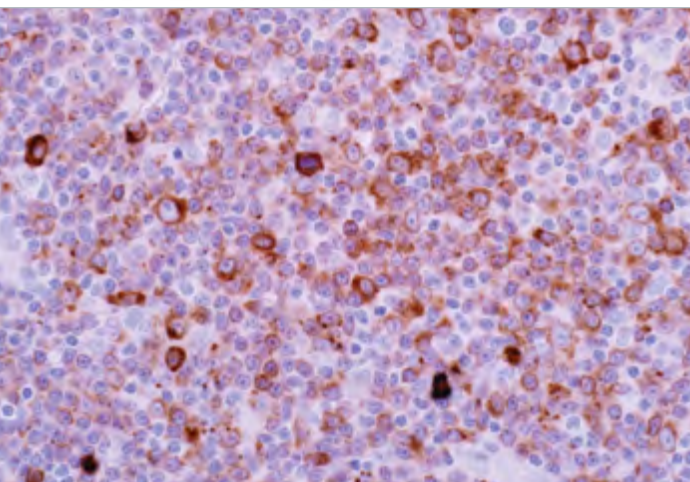


RUO

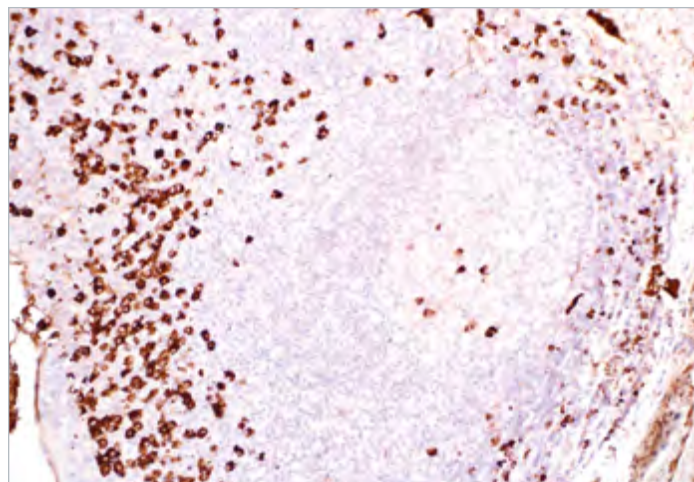
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

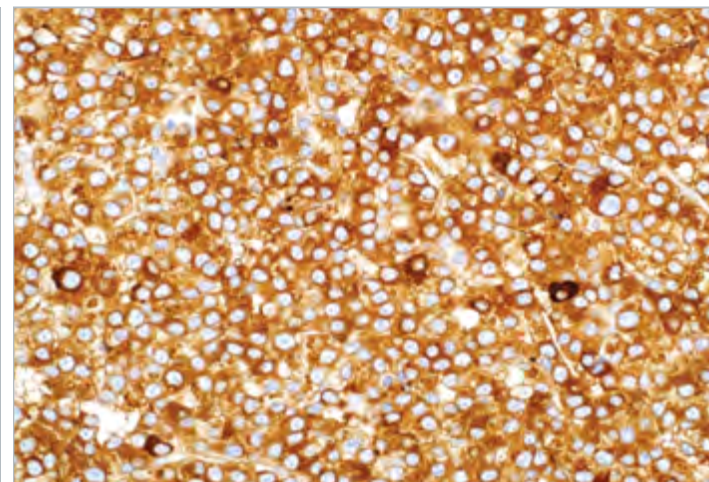




Rabbit monoclonal anti-kappa, EP171, identifies cytoplasmic kappa light chain expression in the neoplastic cells of small lymphocytic lymphoma.



Kappa (EP171) on tonsil.



Kappa (L1C1) on plasmacytoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP171: IgG
- L1C1: IgG<sub>1</sub>/k

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Immunoglobulin, Heavy and Light Chain ..... 298

## Reference

1. Ashton-Key M, et al. Histopathology. 1996; 29:525-31.
2. Kurtin PJ, et al. Am J Clin Pathol. 1999; 112:319-29.
3. Abbondanzo SL, et al. Ann Diagn Pathol. 1999; 3:318-27.

## Product Description

Anti-kappa detects surface immunoglobulin on normal and neoplastic B-cells. In paraffin-embedded tissue, anti-kappa exhibits strong staining of kappa-positive plasma cells and cells that have absorbed exogenous immunoglobulins. When dealing with B-cell neoplasms, the determination of light chain ratios remains the centerpiece. Most B-cell lymphomas express either kappa or lambda light chains, whereas reactive proliferations display a mixture of kappa and lambda positive cells. If only a single light chain type is detected, a lymphoproliferative disorder exists.<sup>1-3</sup>

## Panel Quick View

B-cell Lymphomas										
	Kappa	ANXA1	BCL2	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	Lambda
Burkitt Lymphoma	+/-	-	-	+	-	+	-	+	-	-/+
CLL/SLL	+/-	-	+	-	+	-	+	+	-	-/+
Diffuse Large Cell Lymphoma	+/-	-	+	+/-	-/+	-/+	-	+	-	-/+
Follicular	+/-	-	+	+	-	+	-	+	-	-/+
Hairy Cell Leukemia	+/-	+	+	-	-	-	-	+	+(weak) /-	-/+
Lymphoplasmacytic	+/-	-	+	-	-	-	-	+	-	-/+
Mantle Cell	+/-	-	+	-	+	-	-	+	+	-/+
Marginal Zone	+/-	-	+	-	-	-	-	+	-	-/+

## Immunoglobulin, Heavy and Light Chain

	Kappa	IgA	IgD	IgG	IgM	Lambda
Cutaneous Lymphoma	+/-	-	-	-	-	-/+
Myeloma	+/-	+	-/+	+	-/+	-/+
Diffuse LBCL	+/-	-	-	+	+	-/+
Marginal Zone Lymphoma	+/-	-	-/+	-	+	-/+
SLL/CLL	+/-	-	+	-	+	-/+

## Ordering Information

### Clone: EP171

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	274R-14
0.5 ml, concentrate	274R-15
1 ml, concentrate	274R-16
1 ml, predilute	274R-17
7 ml, predilute	274R-18

### Clone: L1C1

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	274M-94
0.5 ml, concentrate	274M-95
1 ml, concentrate	274M-96
1 ml, predilute	274M-97
7 ml, predilute	274M-98
25 ml, predilute	274M-90

## Designations



IVD



IVD



IVD

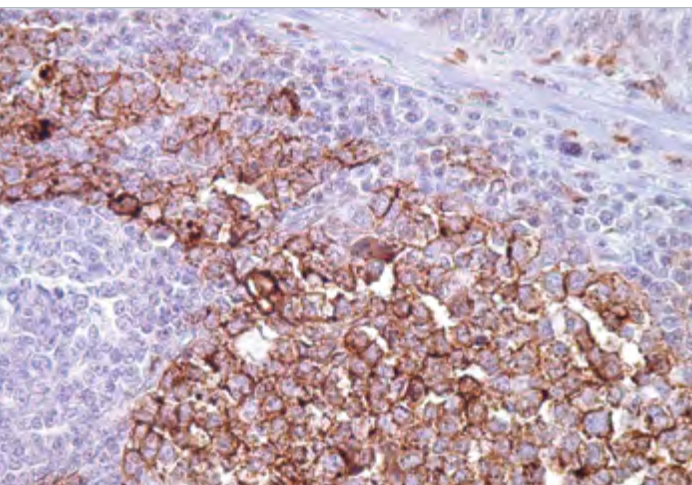


RUO

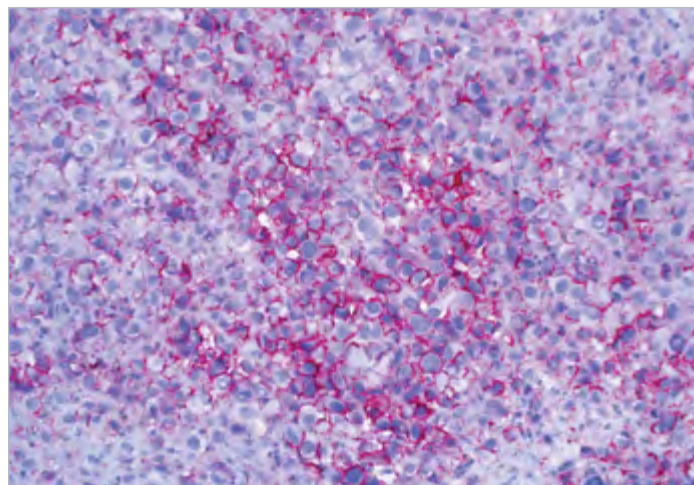
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

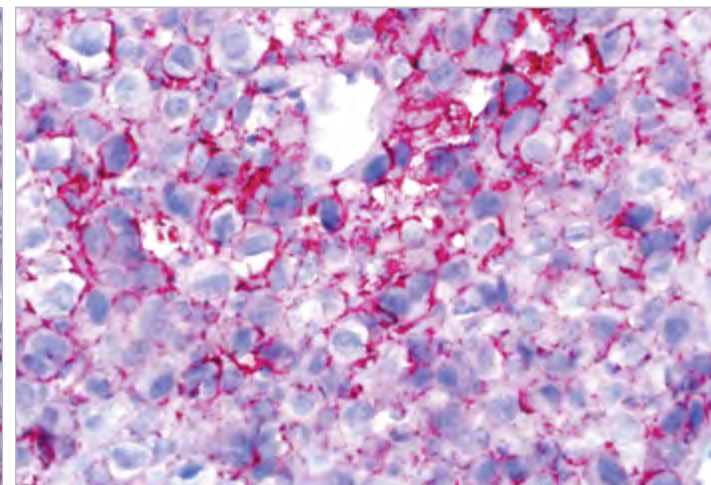




KBA.62 on skin.



KBA.62 on skin.



Anti-KBA.62 shows immunoreactivity in melanoma cells.

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** melanoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

Melanoma Associated Antigen

## Associated Specialties

● Dermatopathology

## Associated Panels

● Melanotic Lesions ..... 293

## Reference

1. Kocan P, et al. Cesk Patol. 2004; 40:50-6.
2. Pagès C, et al. Hum Pathol. 2008; 39:1136-1142.
3. Cohen-Knafo E, et al. J Clin Pathol. 1995; 48:826-831.
4. Kaufmann O, et al. Mod Pathol. 1998; 11:740-6.

## Product Description

Anti-KBA.62 (Melanoma Associated Antigen) is a novel anti-melanoma antibody. Studies thus far have shown a similar sensitivity to melanocytic proliferations as that seen with S-100 protein staining, which is somewhat higher than that seen with anti-HMB-45. This has been confirmed by one study on a series of 215 sentinel lymph nodes. Moreover, anti-KBA.62 identified 6 patients (3%) who had confirmed sentinel lymph node metastasis but stained negative using anti-HMB-45. In this setting, the resolution appears to be higher than S-100 protein in that the staining pattern (membranous) is quite distinct. Interestingly, most cases of desmoplastic and spindle cell melanomas show strongly positive results with anti-KBA.62, unlike that seen with other melanocyte markers. It should be noted that anti-KBA.62 will label occasional endothelial cells which can serve as an internal positive control. A small percentage of well-differentiated squamous cell carcinomas of the skin (and lung) have also been noted to stain with this antibody; however, the poorly-differentiated forms of carcinoma do not, thus resolving a greater practical problem in differential diagnosis. Anti-KBA.62 is a useful additional marker for melanoma, specifically in desmoplastic/spindle cell cases and in the context of micrometastasis in sentinel lymph node.

## Panel Quick View

Melanotic Lesions	KBA.62	CD63	Factor XlIIa	HMB-45	MART-1	MITF	PNL2	S-100	Tyrosinase
Adrenal Cortical	-	-	-	-	+	-	-	+	-
Adult Melanocytes	+	+	-	-	+	+	+	+	+
Angiomyolipoma	-	+	-	+	+	+	+	+	-
Dermatofibroma	-	-	+	-	-	-	-	-	-
Interdermal Nevus	+	-	-	-	+	+	+	+	+
Intranodal Nevus Cells	+	-	-	-	+	+	+	+	+
Junctional Nevus	+	-	-	+	+	+	+	+	+
Metastatic Melanoma	+	+	-	+	+	+	+	+	+
Primary Melanoma	+	+	-	+	+	+	+	+	+
Spindle Cell Melanoma	+	+	-	+	+	+	+	+	+

## Ordering Information

### Clone: KBA.62

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	366M-94
0.5 ml, concentrate.....	366M-95
1 ml, concentrate .....	366M-96
1 ml, predilute .....	366M-97
7 ml, predilute .....	366M-98

### Designations



IVD



IVD

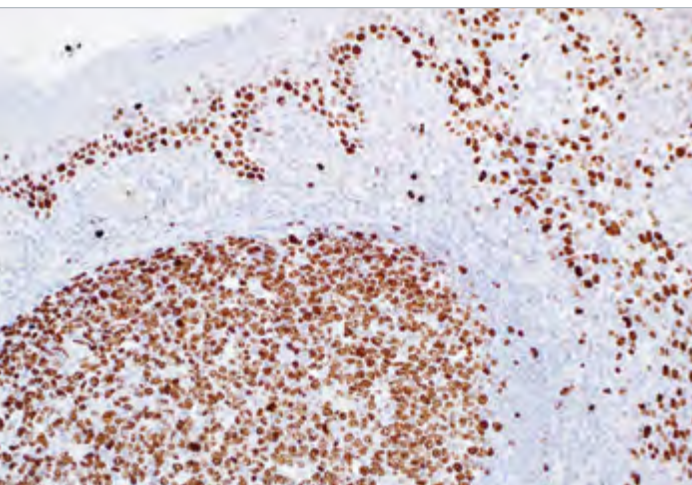


IVD

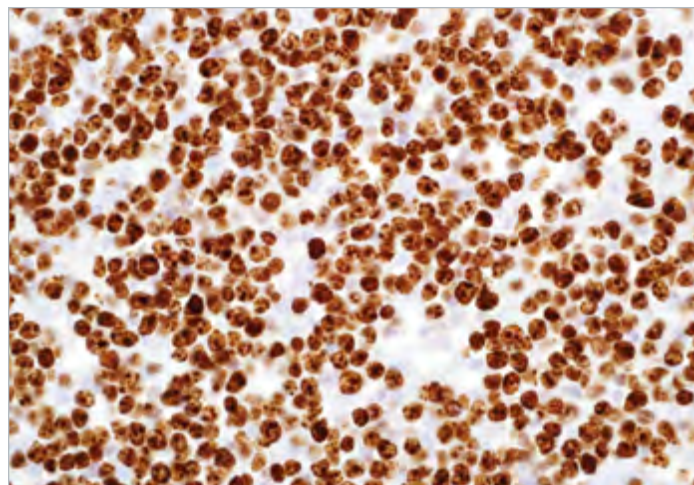


RUO

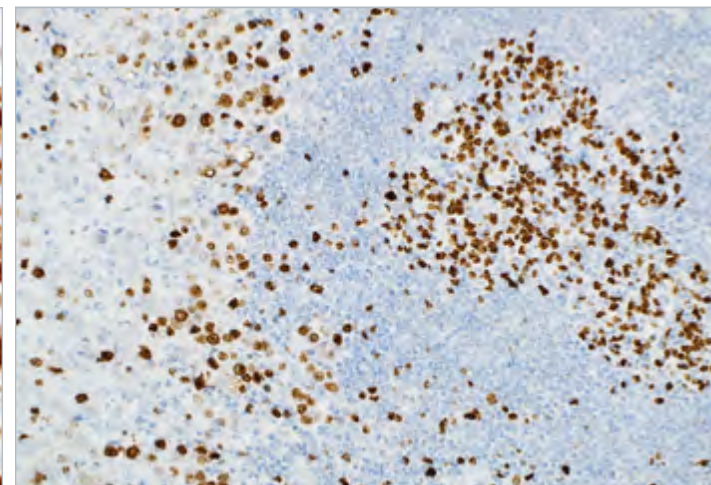




Ki-67 (SP6) on tonsil.



Burkitt lymphoma cells demonstrate nuclear expression of Ki-67 protein in nearly all tumor cells.



Ki-67 (SP6) on metastatic breast carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Comparison of immunoreactivity of PHH3 and Ki-67 in cell cycle 288  
 ● Cervix ..... 291  
 ● Lesions ..... 291  
 ● Bladder: Dysplasia vs. Reactive. 295

## Reference

1. McKeever P, et al. J Neuropathol Exp Neurol. 1998; 57:931-6.
2. Coons SW, et al. Neurosurgery. 1997; 41:878-84.
3. Allegra CJ, et al. J Clin Oncol. 2003; 21:241-50.
4. Pathmanathan N, et al. J Clin Pathol. 2013; 66: 512-6.
5. Swerdlow S, et al. WHO clarifications of tumours of hematopoietic and lymphoid tissues. 4th edition, 2008. P 220.

## Product Description

The Ki-67 antigen is a nuclear, non-histone protein that is present in proliferating cells. In general, Ki-67 is a good marker of proliferating cell populations. Anti-Ki-67 labeling index has been shown to be a good marker to grade neoplasms including: astrocytoma, oligodendroglioma, colon carcinoma, breast carcinoma, lymphoma and sarcoma.<sup>1-5</sup>

## Panel Quick View

Bladder: Dysplasia vs. Reactive						
	Ki-67	CD44	CK 20	CK 5&6	MCM3	p53
Carcinoma- <i>in-situ</i>	+	-	+	-	+	+
Reactive Atypia	+	+	-	+	+	-
Normal Urothelium	-/+	+	+	-/+	-/+	-

Cervix				
	Ki-67	BCL2	CK17	MCM3
Cervical Intraepithelial Neoplasia	+	-	-	+
Tubo-Endometrial Metaplasia	-	+	+	-
Microglandular Hyperplasia	-	-	-	-

## Ordering Information

### Clone: SP6

Rabbit Monoclonal

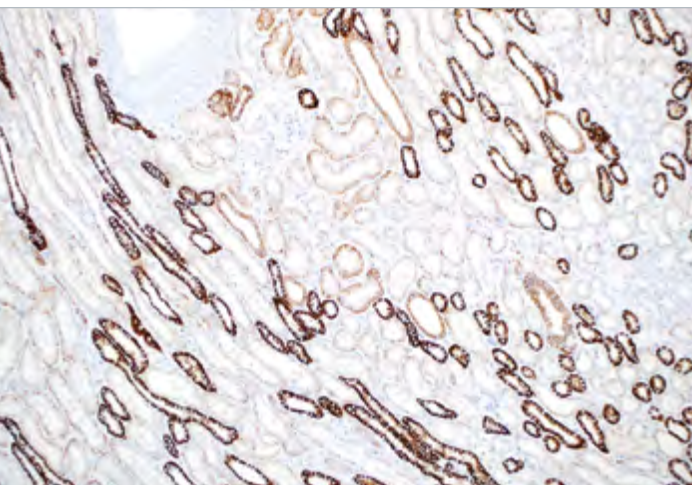
**Volume** ..... **Part No.**  
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 0.5 ml, concentrate ..... 275R-15  
 1 ml, concentrate ..... 275R-16  
 1 ml, predilute ..... 275R-17  
 7 ml, predilute ..... 275R-18  
 25 ml, predilute ..... 275R-10

### Designations

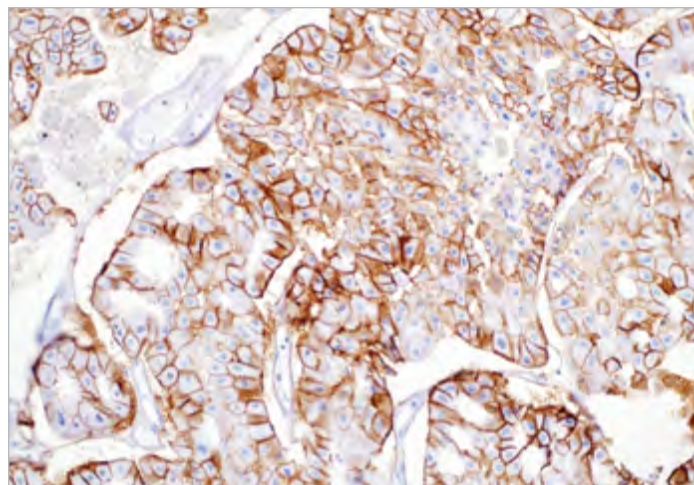


IVD IVD IVD RUO

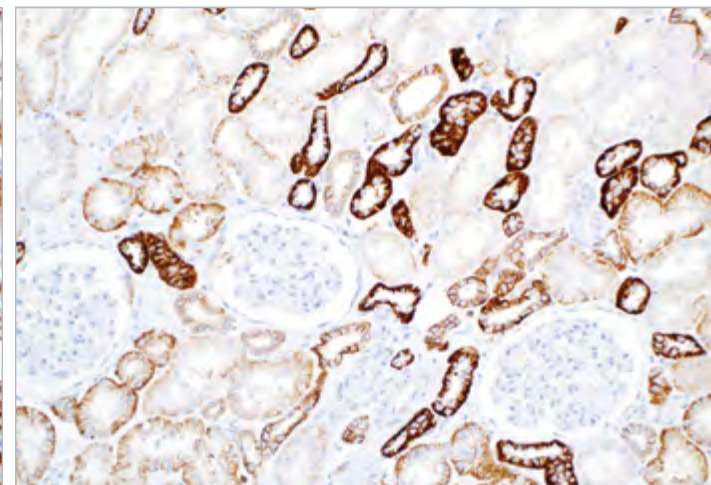
# Ksp-cadherin



Ksp-cadherin (MRQ-33) on kidney.



Ksp-cadherin (MRQ-33) immunoreacts with neoplastic cells of chromophobe RCC in a membranous pattern.



Ksp-cadherin (MRQ-33) on kidney.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** kidney

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

Cadherin 16

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas. . . . . 295

● Kidney: Renal Epithelial Tumors . . . . . 295

## Reference

1. Mazal PR, et al. Hum Pathol. 2005; 36:22-8.
2. Shen SS, et al. Mod Pathol. 2005; 18:933-40.
3. Thedieck C, et al. Br J Cancer. 2005; 92:2010-7.

## Product Description

Kidney-specific cadherin (Ksp-cadherin) is a novel, kidney-specific member of the cadherin family of cell adhesion molecules. Within the kidney, Ksp-cadherin is found exclusively in the basolateral membrane of renal tubular epithelial cells and collecting duct cells, and not in glomeruli, renal interstitial cells, or blood vessels. Different cadherins, including E-cadherin, cadherin-6, and N-cadherin, have been investigated in renal cell cancers, demonstrating possible correlations of tumor dedifferentiation and the presence of lymph node metastasis with loss of cadherins. Mazal et al. investigated the utility of using Ksp-cadherin to distinguish chromophobe renal cell carcinoma from oncocytoma. He found a membranous pattern of staining in 96% of 30 chromophobe carcinomas, and in only 6% of 31 oncocytomas leading them to conclude that this is a useful antibody in differentiating these two lesions. Shen et al., on the other hand, found Ksp-cadherin positivity in 100% of 13 chromophobe RCCs, and 95% of 20 oncocytomas.

## Panel Quick View

Kidney: Renal Epithelial Tumors								
	Ksp-cadherin	CD10	CD117	Ep-CAM	Parvalbumin	PAX-2	RCC	Vimentin
Clear Cell RCC	-	+	-	-	-	+	+	+
Chromophobe RCC	+	-/+	+/-	+	+	+	-/+	-
Papillary RCC	-/+	+	+		-		+	+
Oncocytoma	+/-	+/-	+	-	+	+	-	-

## Ordering Information

**Clone: MRQ-33**  
Mouse Monoclonal

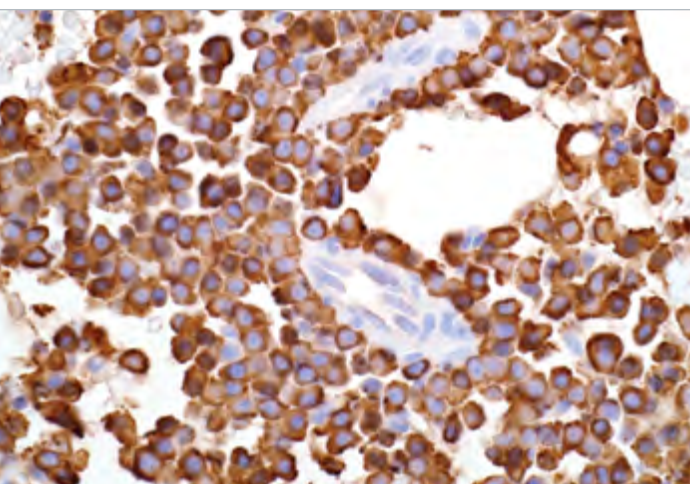
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0.5 ml, concentrate . . . . .	276M-95
1 ml, concentrate . . . . .	276M-96
1 ml, predilute . . . . .	276M-97
7 ml, predilute . . . . .	276M-98

## Designations

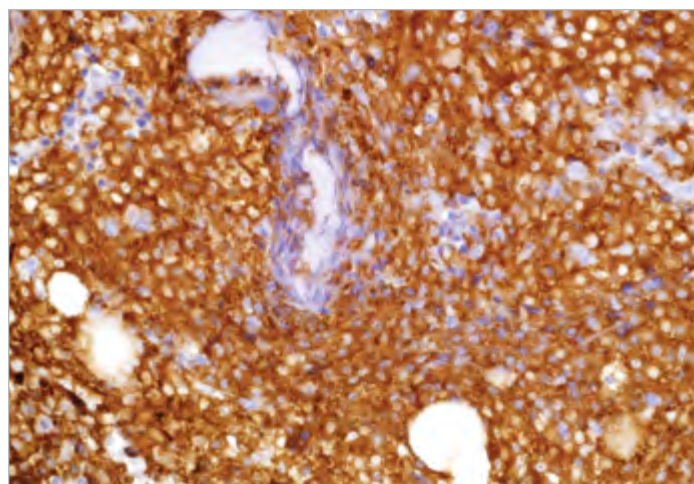
 IVD	 IVD	 IVD	 RUO
-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------



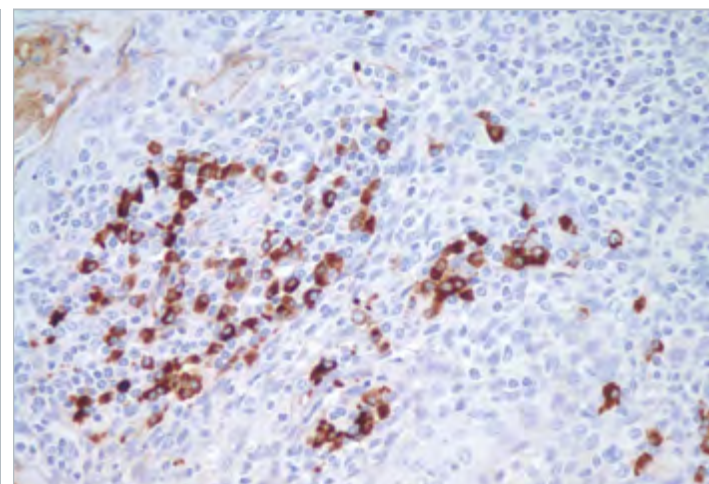
# Lambda



Rabbit monoclonal anti-lambda, EP172, demonstrates strong and cytoplasmic immunoreaction in plasma cell myeloma.



Lambda (Lamb14) on bone marrow.



Lambda (Lamb14) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP172: IgG
- Lamb14: IgG<sub>2a</sub>

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Immunoglobulin, Heavy and Light Chain ..... 298

## Reference

1. Abbondanzo SL. Ann Diagn Pathol. 1999; 3:318-27.
2. Kurtin PJ, et al. Am J Clin Pathol. 1999; 112:319-29.
3. Ashton-Key M, et al. Histopathology. 1996; 29:525-31.

## Product Description

Anti-lambda detects surface immunoglobulin on normal and neoplastic B-cells. Anti-lambda staining is seen in B-cell follicles of human lymphoid tissue. When dealing with B-cell neoplasms, the determination of light chain ratios remains helpful. Most B-cell lymphomas express either kappa or lambda light chains, whereas reactive proliferations display a mixture of kappa and lambda positive cells. If only a single light chain type is detected, a lymphoproliferative disorder is very likely.<sup>1-3</sup>

## Panel Quick View

B-cell Lymphomas										
	Lambda	ANXA1	BCL2	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	Kappa
Burkitt Lymphoma	-/+	-	-	+	-	+	-	+	-	+/-
CLL/SLL	-/+	-	+	-	+	-	+	+	-	+/-
Diffuse Large Cell Lymphoma	-/+	-	+	+/-	-/+	-/+	-	+	-	+/-
Follicular	-/+	-	+	+	-	+	-	+	-	+/-
Hairy Cell Leukemia	-/+	+	+	-	-	-	-	+	+(weak) /-	+/-
Lymphoplasmacytic	-/+	-	+	-	-	-	-	+	-	+/-
Mantle Cell	-/+	-	+	-	+	-	-	+	+	+/-
Marginal Zone	-/+	-	+	-	-	-	-	+	-	+/-

## Immunoglobulin, Heavy and Light Chain

	Lambda	IgA	IgD	IgG	IgM	Kappa
Cutaneous Lymphoma	-/+	-	-	-	-	+/-
Myeloma	-/+	+	-/+	+	-/+	+/-
Diffuse LBCL	-/+	-	-	+	+	+/-
Marginal Zone Lymphoma	-/+	-	-/+	-	+	+/-
SLL/CLL	-/+	-	+	-	+	+/-

## Ordering Information

### Clone: EP172

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	.....277R-14
0.5 ml, concentrate	.....277R-15
1 ml, concentrate	.....277R-16
1 ml, predilute	.....277R-17
7 ml, predilute	.....277R-18

### Clone: Lamb14

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	.....277M-94
0.5 ml, concentrate	.....277M-95
1 ml, concentrate	.....277M-96
1 ml, predilute	.....277M-97
7 ml, predilute	.....277M-98
25 ml, predilute	.....277M-90

## Designations



IVD



IVD



IVD

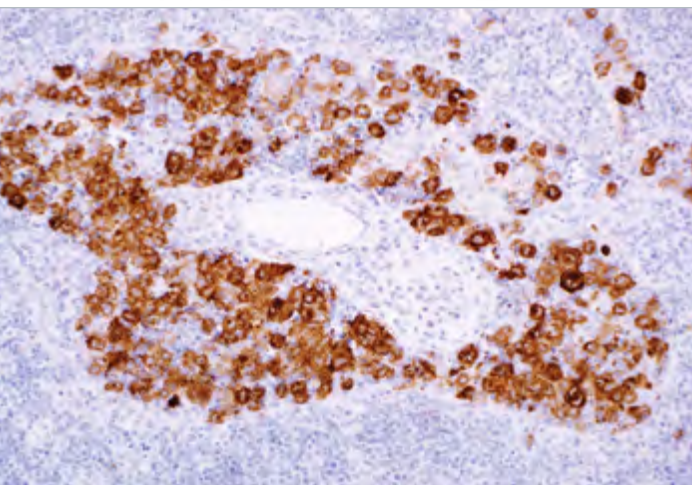


RUO

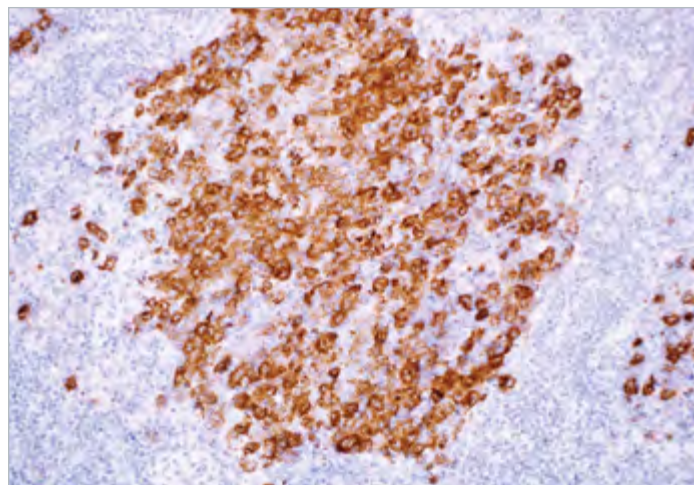
**CELL MARQUE**

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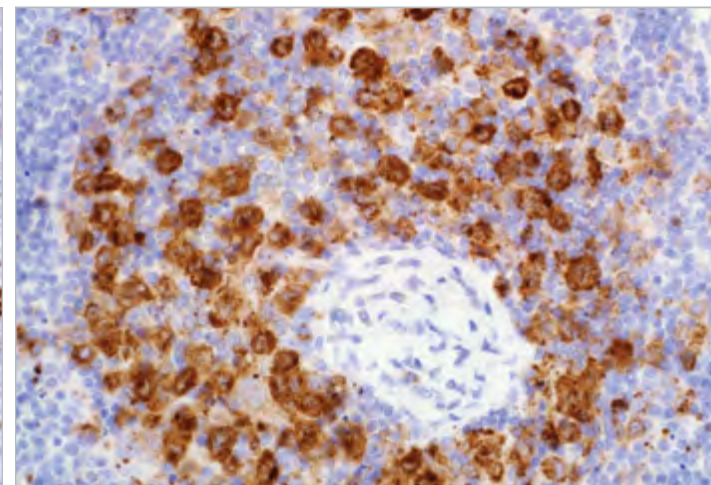
# Langerin



Langerin (12D6) reveals a cytoplasmic and perinuclear Golgi reaction in Langerhans cell histiocytosis.



Langerin (12D6) on lymph node.



Langerin (12D6) on Langerhans cell histiocytosis.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** Langerhans cell histiocytosis

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>/k

## Associated Specialties

- Hematopathology
- Pediatric Pathology

## Associated Panels

- Histiocytic/Dendritic Cell Lesions. . . . . 297

## Reference

1. Lau SK, et al. Am J Surg Pathol. 2008; 32:615-619.
2. Demellawy DE, et al. Pathology. 2015; 4:294-301.
3. Park L, et al. J Cutan Med Surg. 2012; 1:45-9.

## Product Description

Langerin is a type II transmembrane C-type lectin associated with the formation of Birbeck granules in Langerhans cells. The demonstration of langerin immunoreactivity is considered an adjunct or alternative to CD1a antigen expression as evidence to aid in the diagnosis of Langerhans cell histiocytosis. Evaluation of langerin expression is valuable in circumstances where a diagnosis of Langerhans cell histiocytosis is suspected, but cannot be confirmed due to lack of CD1a immunoreactivity. A panel of antibodies against CD1a, langerin, CD21, CD23, CD35 and S-100 is very useful in the distinction of Langerhans cell histiocytosis, histiocytic sarcoma, interdigitating dendritic cell sarcoma, follicular dendritic cell sarcoma, disseminated juvenile xanthogranuloma, and Rosai-Dorfman disease (sinus histiocytosis with massive lymphadenopathy).<sup>1-3</sup>

## Panel Quick View

Histiocytic/Dendritic Cell Lesions									
	Langerin	CD1a	CD21	CD23	CD35	CD163	CD68	Lysozyme	S100
Langerhans Cell Histiocytosis	+	+	-	-	-	+	+	+/-	+
Rosai-Dorfman Disease	-	-	-	-	-	+	+	+	+
Follicular Dendritic Cell Sarcoma	-	-	+	+	+	+/-	+/-	-	-
Interdigitating Dendritic Cell Sarcoma	-	-	-	-	-	+/-	+	+	+
Histiocytic Sarcoma	-	-	-	-	-	+	+	+	+/-
Juvenile Disseminated Xanthogranuloma	-	-	-	-	-	+	+	+	+/-

## Ordering Information

### Clone: 12D6

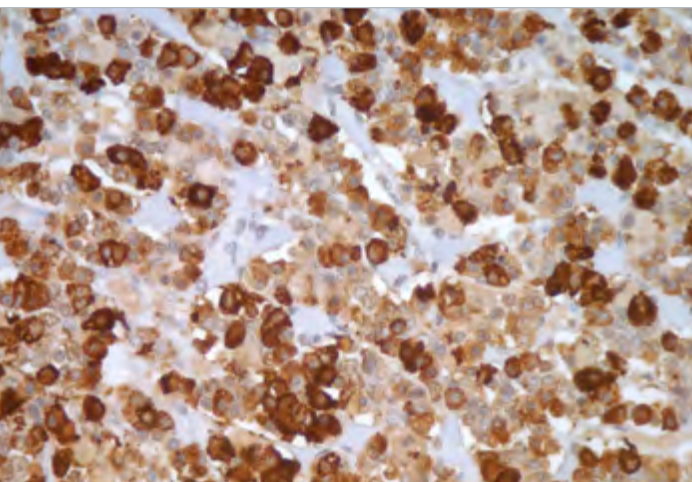
Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	392M-14
0.5 ml, concentrate	392M-15
1 ml, concentrate	392M-16
1 ml, predilute	392M-17
7 ml, predilute	392M-18

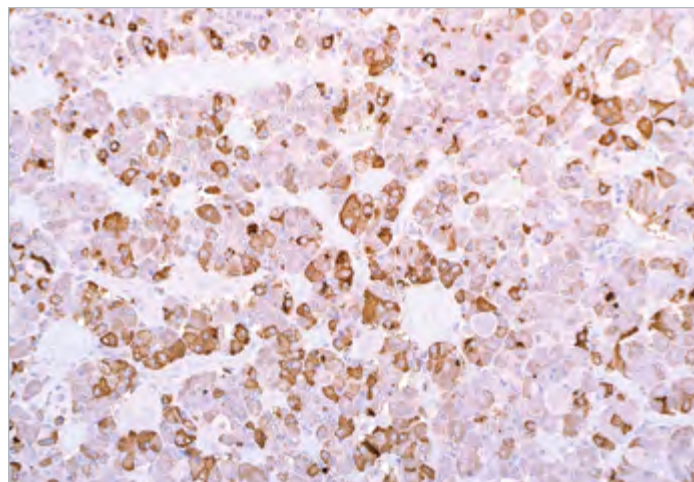
### Designations

			
IVD	IVD	IVD	RUO

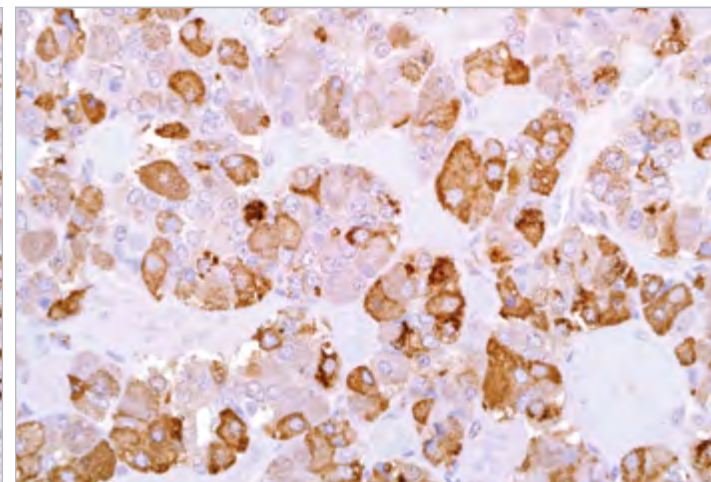




LH (polyclonal) shows cytoplasmic positivity in pituitary gland.



LH (polyclonal) on pituitary.



LH (polyclonal) on pituitary.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pituitary

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

Luteinizing Hormone

## Associated Specialties

- Anatomic/Surgical Pathology
- Neuropathology

## Reference

1. La Rosa S, et al. Virchows Arch. 2000; 437:264-9.
2. Saccomanno K, et al. J Clin Endocrinol Metab. 1994; 78:1103-7.
3. Kovalic JJ, et al. J Neurooncol. 1993; 16:227-32.
4. Felix I, et al. Hum Pathol. 1991; 22:719-21.
5. Sano T, et al. Virchows Arch A Pathol Anat Histopathol. 1990; 417:361-7.

## Product Description

Luteinizing hormone (LH) is a glycoprotein. Each monomeric unit is a sugar-like protein molecule; two of these make the full, functional protein. Its structure is similar to the other glycoproteins, follicle-stimulating hormone (FSH), thyroid-stimulating hormone (TSH), and human chorionic gonadotropin (hCG). The protein dimer contains 2 polypeptide units, labeled alpha and beta subunits that are connected by two bridges. The alpha subunits of LH, FSH, TSH, and hCG are identical, and contain 92 amino acids. The beta subunits vary. LH has a beta subunit of 121 amino acids (LHB) that confers its specific biologic action and is responsible for interaction with the LH receptor. This beta subunit contains the same amino acids in sequence as the beta subunit of hCG and both stimulate the same receptor; however, the hCG beta subunit contains an additional 24 amino acids and the hormones differ in the composition of their sugar moieties. The gene for the alpha subunit is located at chromosome 6q12.21. The luteinizing hormone beta subunit gene is localized in the LHB/CGB gene cluster at chromosome 19q13.32. In contrast to the alpha gene activity, beta LH subunit gene activity is restricted to the pituitary gonadotropic cells. It is regulated by the gonadotropin releasing hormone from the hypothalamus. Inhibin, activin, and sex hormones do not affect genetic activity for the beta subunit production of LH. In both males and females, LH is essential for reproduction. Mutations in this gene are associated with hypogonadism which is characterized by infertility and pseudohermaphroditism.

Anti-LH is a useful marker in classification of pituitary tumors and the study of pituitary disease. It reacts with LH-producing cells (gonadotrophs).

## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

Volume .....	Part No.
0.1 ml, concentrate.....	209A-14
0.5 ml, concentrate.....	209A-15
1 ml, concentrate .....	209A-16
1 ml, predilute .....	209A-17
7 ml, predilute .....	209A-18

## Designations



IVD



IVD

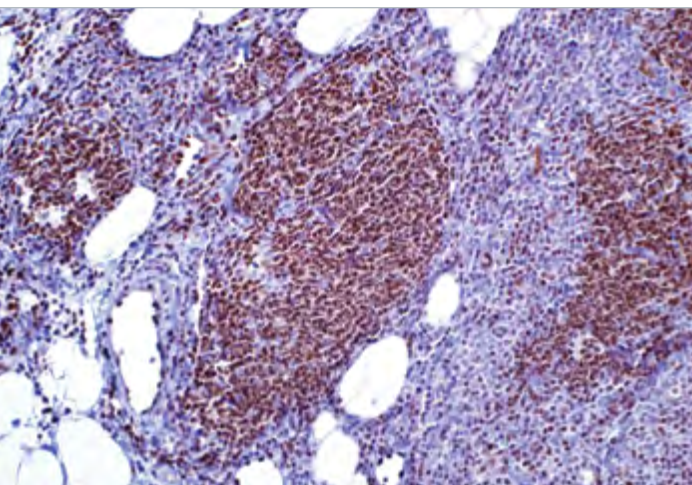


IVD

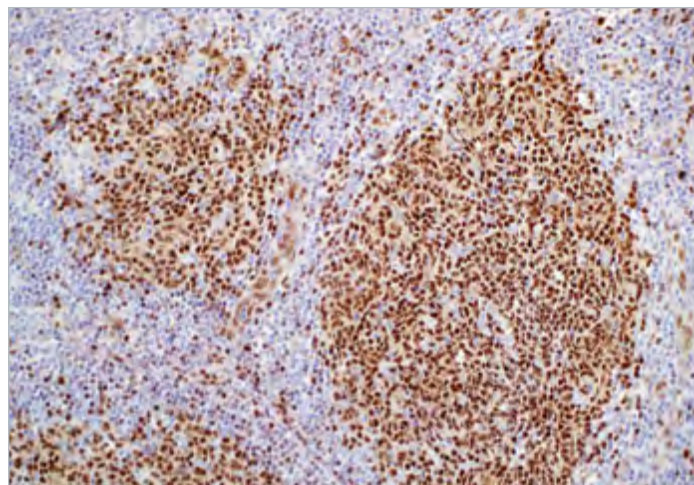


RUO

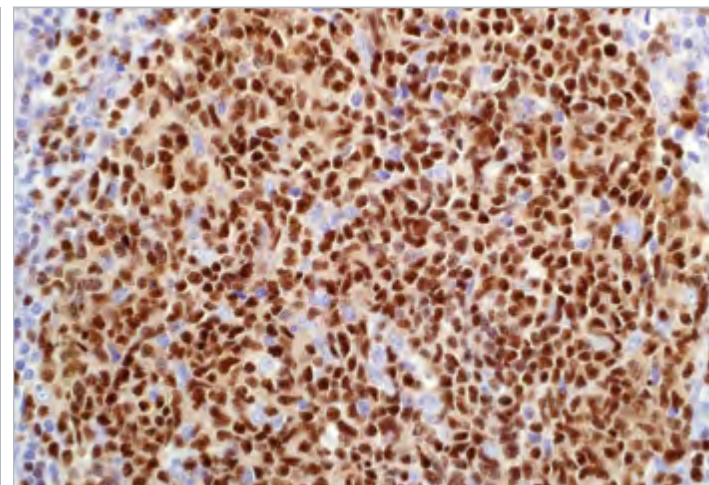




LMO2 (SP51) demonstrates nuclear positivity in follicular lymphoma cells.



LMO2 (SP51) on lymph node.



LMO2 (SP51) on lymph node.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil, follicular lymphoma, diffuse large B-cell lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● Mature B-cell Lymphomas . . . 299

## Reference

1. Younes SF, et al. Am J Surg Pathol. 2010; 34:1266-76.

## Product Description

LMO2 is expressed in normal germinal center B-cells and in a subset of lymphomas derived from those cells in addition to bone marrow hematopoietic precursors and endothelial cells. LMO2 protein expression has also been shown to play an important role in the diagnosis of diffuse large B-cell lymphomas, regardless of rituximab treatment. It also plays a role in angiogenesis and hematopoiesis. It is weakly expressed in mantle zone B-cells but not in mantle cell or marginal zone lymphomas. SF Younes et al. Have demonstrated LMO2 expression in 70% of follicular lymphomas. These data suggest that anti-LMO2 is a useful adjunct in the diagnosis of follicular lymphoma (FL). As LMO2 appears not to be down regulated in higher grade FL or the interfollicular and diffuse components of FL, its utility in variant immunoarchitectural patterns of FL and in cases that lack CD10 and BCL2, is similar to that of HGAL. One advantage of LMO2 is its crisp nuclear localization that allows for easier interpretation than diffuse cytoplasmic staining pattern.<sup>1</sup>

## Panel Quick View

Mature B-cell Lymphomas								
	LMO2	ANXA1	BCL2	CD5	CD10	CD20	CD23	HGAL
Follicular Lymphoma	+	-	+/-	-	+/-	+	-	+
Diffuse Large B-cell Lymphoma	+	-	+	-/+	+/-	+	-	+
Small Lymphocytic Lymphoma	-	-	+	+	-	+	+	-
Mantle Cell Lymphoma	-	-	+	+	-	+	-	-
Marginal Zone Lymphoma	-	-	+	-	-	+	-	-

## Ordering Information

### Clone: SP51

Rabbit Monoclonal

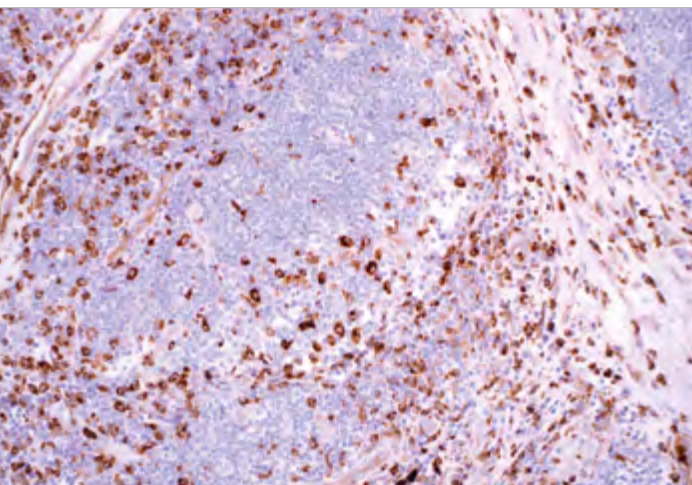
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	370R-14
0.5 ml, concentrate . . . . .	370R-15
1 ml, concentrate . . . . .	370R-16
1 ml, predilute . . . . .	370R-17
7 ml, predilute . . . . .	370R-18

### Designations

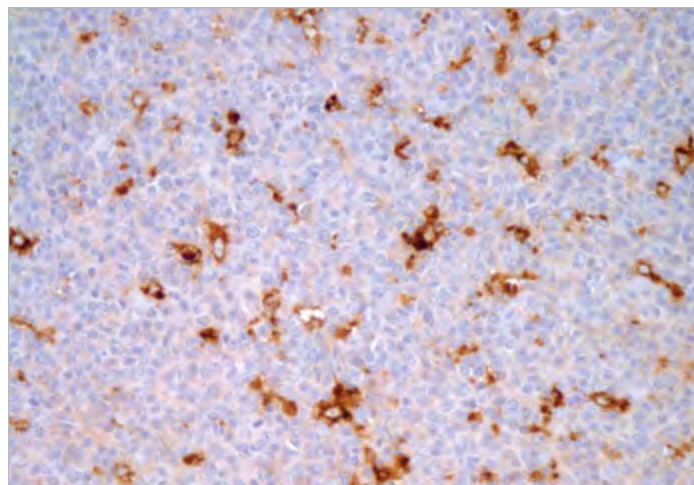
			
IVD	IVD	IVD	RUO



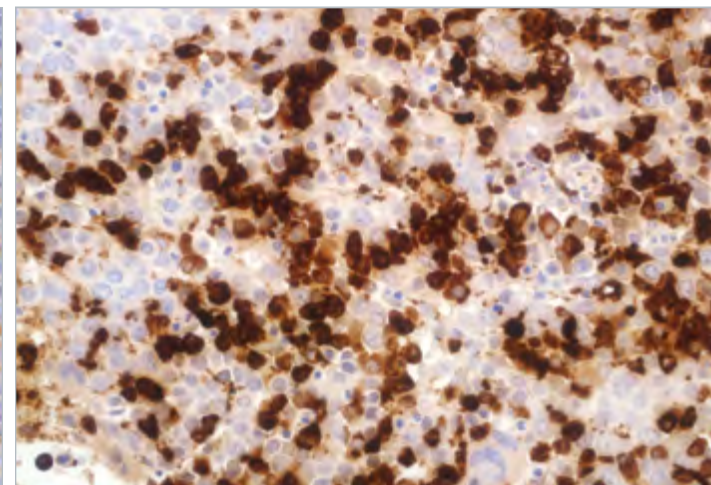
# Lysozyme



Lysozyme (EP134) on lymph node.



Lysozyme (polyclonal) expression is found in macrophages.



Lysozyme (EP134) on acute myeloid leukemia.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- Lymph Node ..... 289
- Histiocytic/Dendritic Cell Lesions. . . . . 297
- Histiocytic Neoplasms / Histiocytic Lesions. . . . . 297
- Histiocytic Proliferation ..... 297

## Reference

1. Leong AS-Y, et al. Manual of Diagnostic antibodies for Immunohistochemistry. London: Greenwich Medical Media Ltd. 1999. Print. P. 162-168.
2. Krugliak L, et al. Am J Hematol. 1986; 21:99-109.
3. Delaflor-Weiss E, et al. Acta Cytol. 1999; 43:1124-30.

## Product Description

Anti-lysozyme stains myeloid cells, histiocytes, granulocytes, macrophages, and monocytes. It is an important marker that may demonstrate the myeloid or monocytic nature of acute leukemia. The restrictive nature of anti-lysozyme staining suggests that lysozyme may be synthesized predominantly in reactive histiocytes rather than in resting, unstimulated phagocytes. Anti-lysozyme may aid in the identification of histiocytic neoplasias, large lymphocytes, and classifying lymphoproliferative disorders.<sup>1-3</sup>

## Panel Quick View

Lymph Node	Lysozyme	CD1a	CD21/CD35	CD68	PD-1	S-100
Reactive Histiocytosis	+	-	-	+	-	-
Langerhans Cell Histiocytosis	+	+	-	+	-	+
Sinus Histiocytosis with Massive Lymphadenopathy	+	-	-	+	-	+
Follicular Dendritic Cell Sarcoma	-	+/-	+	-	-	-
Dermatopathic Lymphadenitis	+	+	-	-	-	+

Histiocytic Neoplasms / Histiocytic Lesions	Lysozyme	CD3	CD4	CD20	CD45	CD68	CD163	Factor XIIIa
Histiocytic Neoplasms	+	-	+	-	+	+	+	+

## Ordering Information

**Clone: EP134**  
Rabbit Monoclonal

**Volume . . . . . Part No.**  
0.1 ml, concentrate . . . . . 278R-14  
0.5 ml, concentrate . . . . . 278R-15  
1 ml, concentrate . . . . . 278R-16  
1 ml, predilute . . . . . 278R-17  
7 ml, predilute . . . . . 278R-18

### Alternate Clones Available

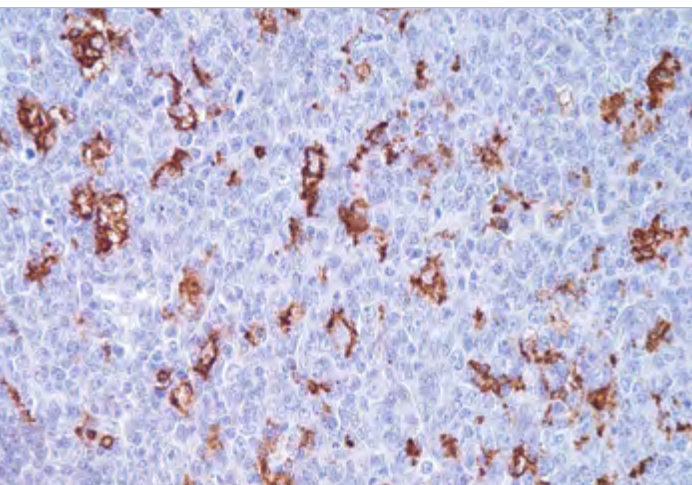
• Rabbit Polyclonal  
Contact us for more information.

### Designations

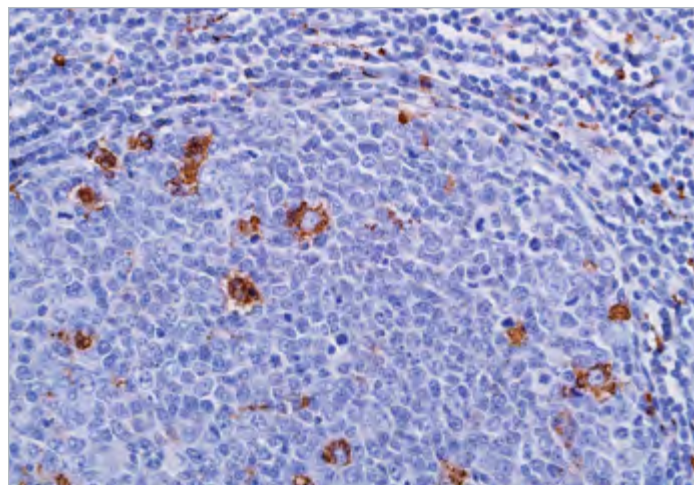
 IVD     IVD     IVD     RUO



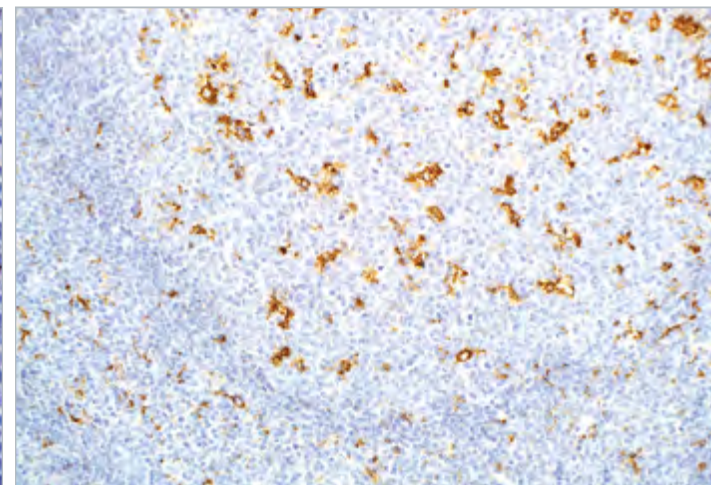
# Macrophage



Macrophage (HAM-56) detects HAM-56 expression in a cytoplasmic pattern in macrophages.



Macrophage (HAM-56) on appendix.



Macrophage (HAM-56) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM/k

## Synonyms and Abbreviations

HAM-56

## Associated Specialties

● Hematopathology

## Associated Panels

● Histiocytic Proliferation . . . . . 297

## Reference

1. Gown AM, et al. Am J Pathol. 1986; 125:191-207.
2. Alpers CE, et al. Am J Pathol. 1989; 92:662-665.
3. Bosman C, et al. J Pediatr Hematol Oncol. 1999; 21:31-7.
4. Soini Y, et al. Pathol Res Pract. 1990; 186:759-67.

## Product Description

Anti-macrophage (HAM-56) reacts with tingible macrophages, interdigitating macrophages of lymph nodes and tissue macrophages, e.g. Kupffer cells of the liver and alveolar macrophages of the lung. The antibody also stains a subpopulation of endothelial cells, most prominently those of the capillaries and smaller blood vessels. Anti-HAM-56 antibody reacts with monocytes, but is unreactive with B and T-lymphocytes.

## Panel Quick View

Histiocytic Proliferation							
	HAM-56	CD1a	CD68	Factor XIIIa	Lysozyme	S-100	Vimentin
Juvenile Xanthogranuloma	+	-	+	+	+	-	+
Langerhans Cell Histiocytosis	+	+	+	-	+	+	+
Dermatofibroma	-	-	+	+	-	-	+

## Ordering Information

### Clone: HAM-56

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	279M-14
0.5 ml, concentrate . . . . .	279M-15
1 ml, concentrate . . . . .	279M-16
1 ml, predilute . . . . .	279M-17
7 ml, predilute . . . . .	279M-18

### Designations



IVD



IVD



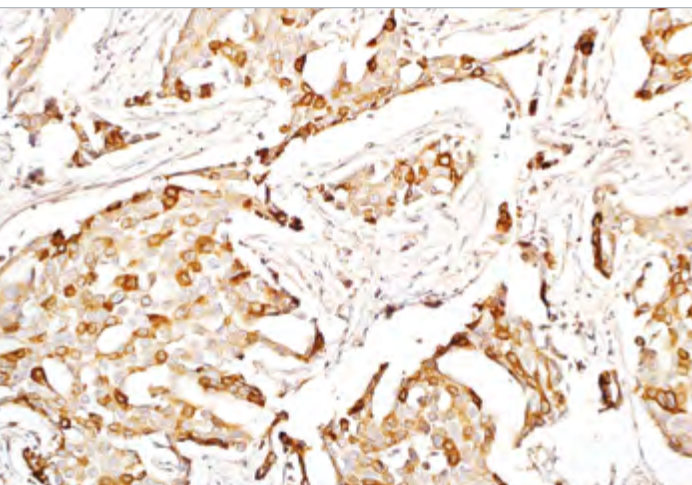
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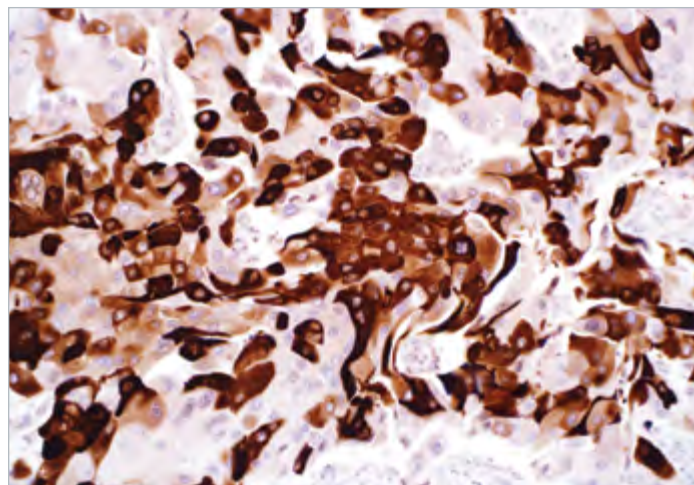
RUO



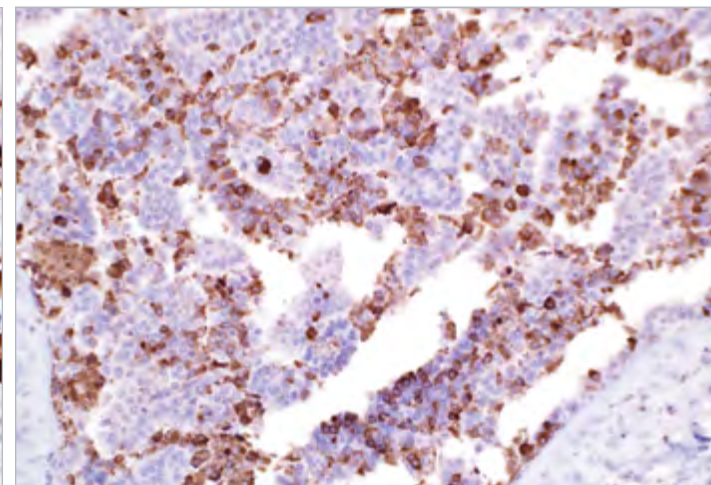
# Mammaglobin



Mammaglobin (EP249) on breast.



Rabbit monoclonal anti-mammaglobin, EP249, reveals a diffuse and strong cytoplasmic reaction in invasive ductal carcinoma of the breast.



Mammaglobin (EP249) on breast.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Breast/Gynecological Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Micropapillary Carcinomas... 289
- Breast Lesion ..... 291

## Reference

- Watson MA, et al. Cancer Res. 1999; 59:3028-3031.
- Fleming TP, et al. Ann N Y Acad Sci. 2000; 923:78-89.
- Han JH, et al. Arch Pathol Lab Med. 2003; 127:1330-1334.
- Bhargava R, et al. Am J Clin Pathol. 2007; 127:103-13.
- Sasak E, et al. Mod Pathol. 2007; 20:208-14.
- Wang Z, et al. Int J Clin Exp Pathol. 2009; 2:384-9.

## Product Description

Mammaglobin (10 kD) is a breast-associated glycoprotein distantly related to secretoglobulin family that includes human uteroglobin and lipophilin. Mammaglobin mRNA is present in high levels in human breast cancer cell lines, which has been shown to be a sensitive marker of breast cancer.<sup>1,2,3</sup> When combined with other breast-restricted markers such as GCDFP-15, an overall sensitivity for breast carcinoma of 84% has been achieved.<sup>4</sup> Anti-mammaglobin can also be used to determine breast origin in the setting of metastatic carcinoma.<sup>5,6</sup>

## Panel Quick View

Breast vs. Lung vs. Prostate Carcinoma								
	Mamma-globin	AR	ER/PR	BRST-2	Napsin A	NKX3.1	PSA	TTF-1
Breast Carcinoma	+	-	+	+	-	-	-	-
Lung Carcinoma	-	-	-	-	+	-	-	+
Prostate Carcinoma	-	+	-	-	-	+	+	-

Carcinoma: Differential Diagnosis							
	Mamma-globin	AR	BCA-225	ER/PR	BRST-2	NKX3.1	PSA/PSAP
Salivary Duct Carcinoma	-	+	+	-	+	-	-
Breast Carcinoma	+	+	+	+/+	+	-	-
Prostate Carcinoma	-	+	-	-	-	+	+
Lung Carcinoma	-	-	+/-	+/-	-	-	-

Breast Lesion					
	Mammaglobin	CK 34βE12	E-cadherin	BRST-2	p120
Lobular	+	+	-	+	+
Ductal	+	-	+	+	+

## Ordering Information

### Clone: EP249

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	280R-24
0.5 ml, concentrate	280R-25
1 ml, concentrate	280R-26
1 ml, predilute	280R-27
7 ml, predilute	280R-28

### Alternate Clones Available

- Rabbit Monoclonal, 31A5
- Contact us for more information.

### Designations



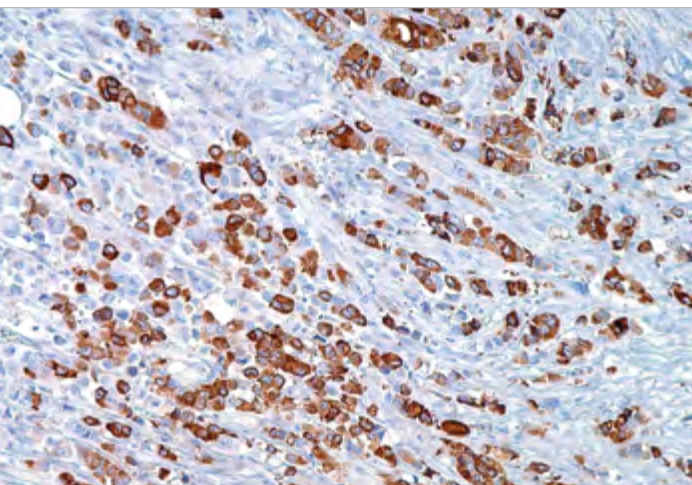
IVD IVD IVD RUO

**CELL MARQUE**

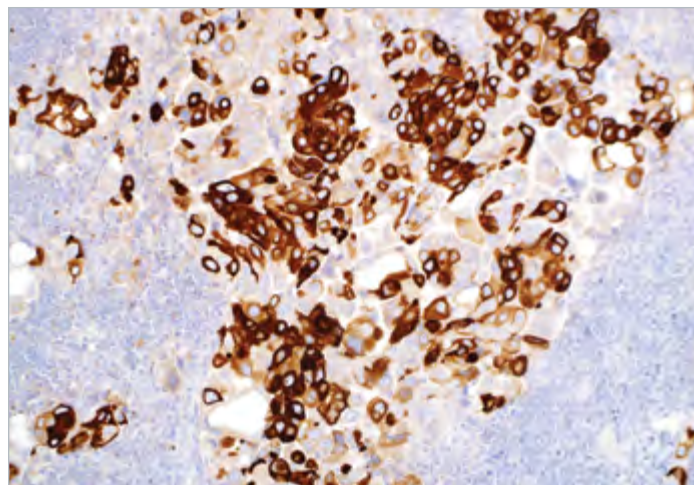
**RabMAB®**  
Technology from Abcam



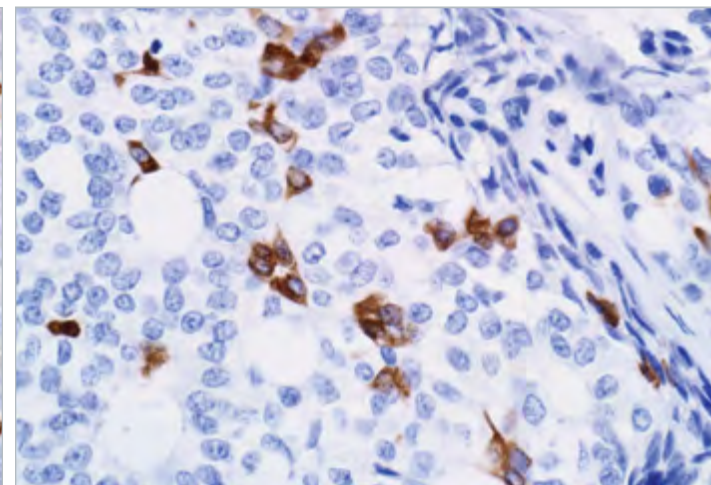
# Mammaglobin Cocktail



Mammaglobin Cocktail (304-1A5 & 31A5) stains mammaglobin protein in the cytoplasm of the breast carcinoma cells.



Mammaglobin Cocktail (304-1A5 & 31A5) on breast.



Mammaglobin Cocktail (304-1A5 & 31A5) on lymph node.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub> & IgG

## Associated Specialties

● Breast/Gynecological Pathology

## Associated Panels

● Breast vs. Lung vs. Prostate

Carcinoma ..... 286

● Carcinoma: Differential Diagnosis

..... 286

● Micropapillary Carcinomas... 289

● Breast Lesion ..... 291

## Reference

1. Watson MA, et al. Cancer Research. 1999; 59:3028-3031.
2. Fleming TP, et al. Ann N Y Acad Sci. 2000; 923:78-89.
3. Han JH, et al. Arch Pathol Lab Med. 2003; 127:1330-1334.
4. Bhargava R, et al. Am J Clin Pathol. 2007; 127:103-113.
5. Sasak E, et al. Mod Pathol. 2007; 20:208-14.
6. Wang Z, et al. Int J Clin Exp Pathol. 2009; 2:384-9.

## Product Description

Mammaglobin (10 kD) is a breast-associated glycoprotein distantly related to secretoglobin family that includes human uteroglobin and lipophilin. Mammaglobin mRNA is present in high levels in human breast cancer cell lines, which has been shown to be a sensitive marker of breast cancer.<sup>1,2,3</sup> When combined with other breast-restricted markers such as GCDPF-15, an overall sensitivity for breast carcinoma of 84% has been achieved.<sup>4</sup> Anti-mammaglobin can also be used to determine breast origin in the setting of metastatic carcinoma.<sup>5,6</sup>

## Panel Quick View

Breast vs. Lung vs. Prostate Carcinoma								
	Mamma-globin	AR	ER/PR	BRST-2	Napsin A	NKX3.1	PSA	TTF-1
Breast Carcinoma	+	-	+	+	-	-	-	-
Lung Carcinoma	-	-	-	-	+	-	-	+
Prostate Carcinoma	-	+	-	-	-	+	+	-

Carcinoma: Differential Diagnosis							
	Mamma-globin	AR	BCA-225	ER/PR	BRST-2	NKX3.1	PSA/PSAP
Salivary Duct Carcinoma	-	+	+	-	+	-	-
Breast Carcinoma	+	+	+	+/+	+	-	-
Prostate Carcinoma	-	+	-	-	-	+	+
Lung Carcinoma	-	-	+/-	+/-	-	-	-

Breast Lesion					
	Mammaglobin	CK 34βE12	E-cadherin	BRST-2	p120
Lobular	+	+	-	+	+
Ductal	+	-	+	+	+

## Ordering Information

**Clone: 304-1A5 & 31A5**  
Mouse/Rabbit Cocktail

**Volume** ..... **Part No.**  
0.1 ml, concentrate ..... 280C-14  
0.5 ml, concentrate ..... 280C-15  
1 ml, concentrate ..... 280C-16  
1 ml, predilute ..... 280C-17  
7 ml, predilute ..... 280C-18

## Designations



IVD



IVD



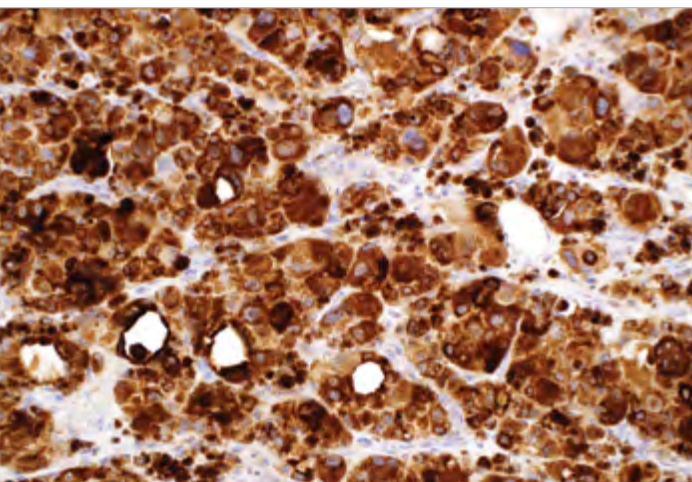
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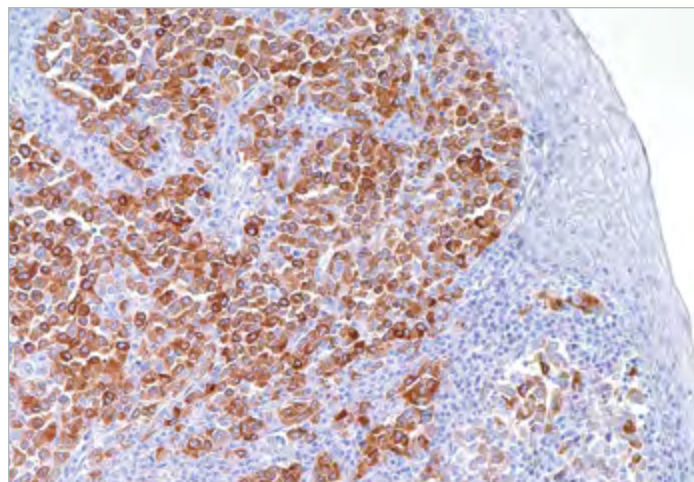
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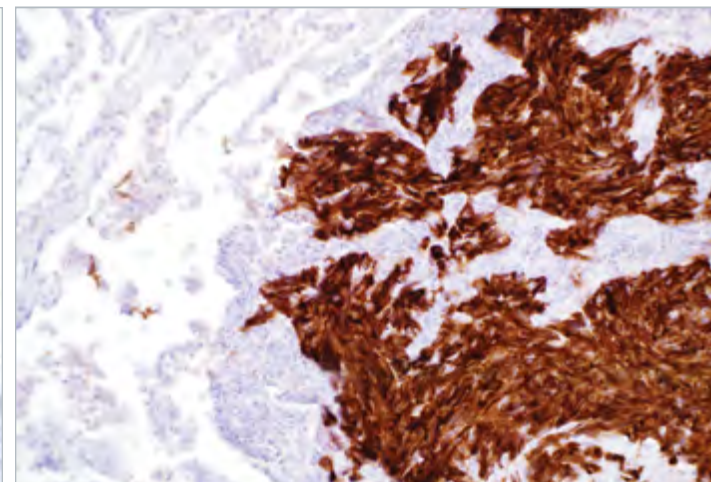
# MART-1 (Melan A)



MART-1 (A103) demonstrates a diffuse and strong cytoplasmic reaction in melanoma cells.



Anti-MART-1 (M2-7C10) demonstrates strong cytoplasmic reaction in this metastatic melanoma.



MART-1 (M2-7C10) on melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** melanoma, skin

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- A103: IgG<sub>1</sub>
- M2-7C10: IgG<sub>2b</sub>/k

## Synonyms and Abbreviations

Melan A

## Associated Specialties

- Dermatopathology

## Associated Panels

- Adrenal Tumors.....286
- Lymph Node .....289
- PEComa.....290
- Sex Cord Stromal Tumors .....292
- Cutaneous Lesion .....292
- Melanotic Lesions .....293

## Reference

1. Kageshita T, et al. J Immunother. 1997; 20:460-5.
2. Fetsch PA, et al. Cancer. 1999; 87:37-42.
3. Bergman R, et al. J Am Acad Dermatol. 2000; 42:496-500.
4. Orosz Z. Histopathology. 1999; 34:517-25.
5. Yaziji H, et al. In J Surg Pathol. 2003; 11:11-5.
6. Mocellin S, et al. J Immunother. 2001; 24:447-58.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

MART-1 (also known as Melan A) is a melanocyte differentiation antigen. It is present in melanocytes of normal skin, retina, nevi, and in more than 85% of melanomas. This antibody is very useful in establishing the diagnosis of metastatic melanomas.

## Panel Quick View

Adrenal Tumors	MART-1	Calretinin	CD56	Chromogranin A	Inhibin, alpha	Synaptophysin
Pheochromocytoma	-	-	+	+	-	+
Adrenocortical Carcinoma	+	+	+	-	+	-/+
Adrenocortical Adenoma	+	+	+	-	+	-/+

PEComa	MART-1	SM Actin	Caldesmon	Calponin	CD63	CD68	Desmin	HMB-45	S-100
Angiomyolipoma	+	+	+	+	+	+	-	+	-
Lymphangiomyomatosis	+	+	+	+	+	-	-	+	-
Extrapulmonary Clear Cell Tumor	+	+	-	-	+	-	-	+	+
Primary Cutaneous PEComa	+	-/+	-	-	+	+/-	-	+	-
Pulmonary Clear Cell Sugar Tumor	+	-	-	-	+	+/-	-	+	+/-

Melanotic Lesions	MART-1	CD63	Factor XIIIa	HMB-45	MiTF	S-100	SOX-10	Tyrosinase
Adrenal Cortical	+	-	-	-	-	+	-	-
Adult Melanocytes	+	+	-	-	+	+	+	+
Angiomyolipoma	+	+	-	+	+	+	+	+/-
Dermatofibroma	-	-	+	-	-	-	-	-
Interdermal Nevus	+	-	-	-	+	+	+	+
Intranodal Nevus Cells	+	-	-	-	+	+	+	+
Junctional Nevus	+	-	-	+	+	+	+	+
Metastatic Melanoma	+	+	-	+	+	+	+	+
Primary Melanoma	+	+	-	+	+	+	+	+
Spindle Cell Melanoma	+	+	-	+	+	+	+	+

## Ordering Information

### Clone: A103

Mouse Monoclonal

**Volume ..... Part No.**

0.1 ml, concentrate.....281M-84

0.5 ml, concentrate.....281M-85

1 ml, concentrate .....281M-86

1 ml, predilute .....281M-87

7 ml, predilute .....281M-88

### Clone: M2-7C10

Mouse Monoclonal

**Volume ..... Part No.**

0.1 ml, concentrate.....281M-94

0.5 ml, concentrate.....281M-95

1 ml, concentrate .....281M-96

1 ml, predilute .....281M-97

7 ml, predilute .....281M-98

25 ml, predilute .....281M-90

## Designations



IVD



IVD



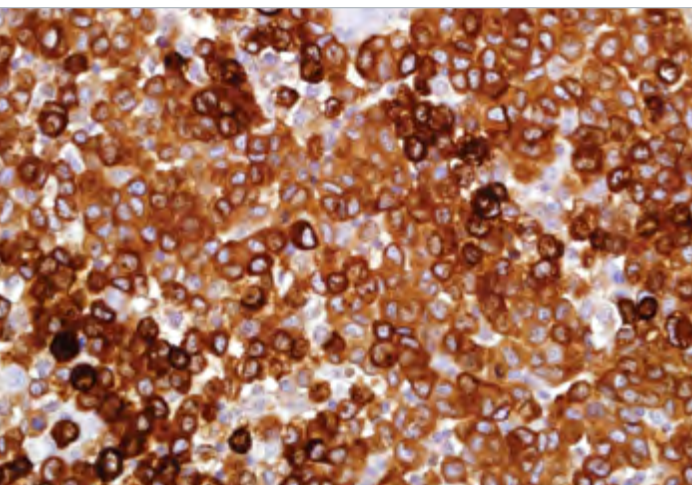
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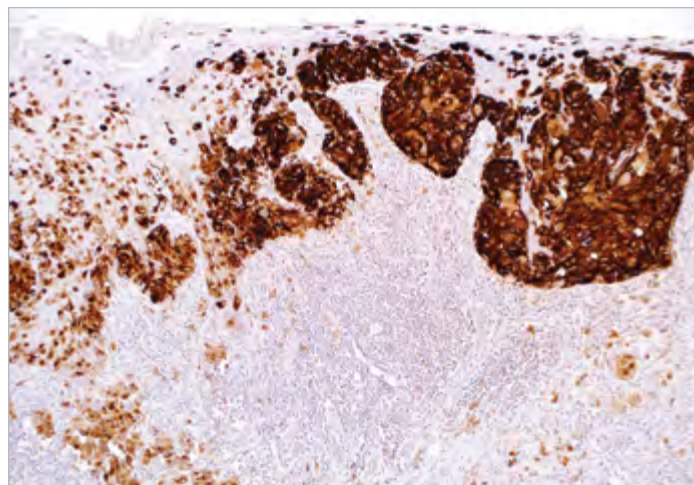
RUO



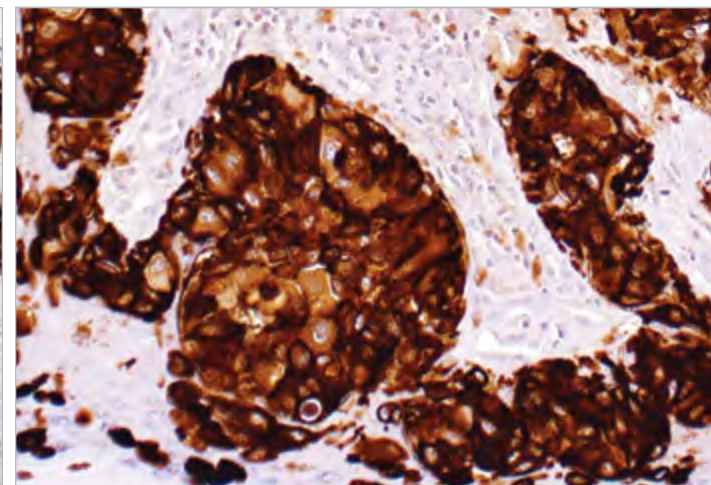
# MART-1 (Melan A) + Tyrosinase



MART-1 (Melan A) + Tyrosinase (M2-7C10 + T311) on melanoma.



MART-1 (Melan A) + Tyrosinase (M2-7C10 + T311) on melanoma.



MART-1 (Melan A) + Tyrosinase (M2-7C10 + T311) on melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** normal skin, melanoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>/k + IgG<sub>2a</sub>

## Associated Specialties

● Dermatopathology

## Reference

1. Orchard G. Br J Biomed Sci. 2002; 59:196-202.
2. Gupta D, et al. Am J Surg Pathol. 2002; 26:1450-7.
3. Prasad ML, et al. Am J Surg Pathol. 2001; 25:782-7.
4. de Vries TJ, et al. J Pathol. 2001; 193:13-20.
5. Yaziji H, et al. In J Surg Pathol. 2003; 11:11-5.
6. Shidham VB, et al. BMC Cancer. 2003; 3:15.
7. Perez RP, et al. Hum Pathol. 2000; 31:1381-8.
8. Hoang MP, et al. J Cutan Pathol. 2001; 28:400-6.

## Product Description

MART-1 (also known as Melan A) is a melanocyte differentiation antigen. It is present in melanocytes of normal skin and retina, nevi and in more than 85% of melanomas. Tyrosinase is an enzyme integral in the process of melanin synthesis, and found in 85% to 90% of malignant melanomas. Given these statistics, this cocktail is ideally suited to detection of melanomas and melanocytic lesions.

## Ordering Information

**Clone: M2-7C10 + T311**  
Mouse Cocktail

**Volume . . . . . Part No.**  
1 ml, predilute . . . . . 903H-07  
7 ml, predilute . . . . . 903H-08

## Designations



IVD



IVD

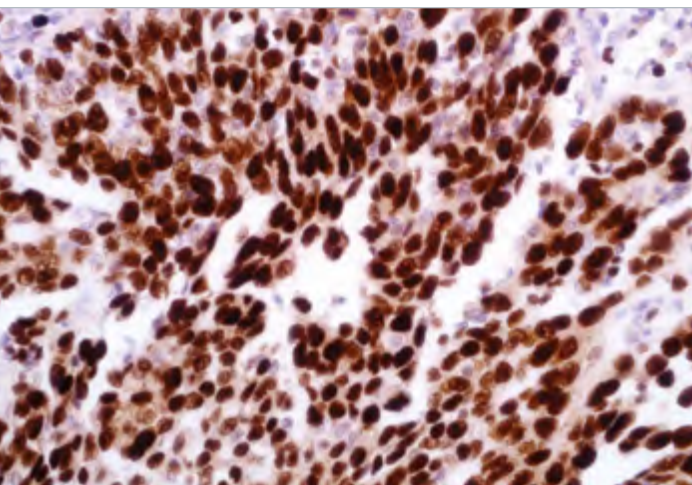


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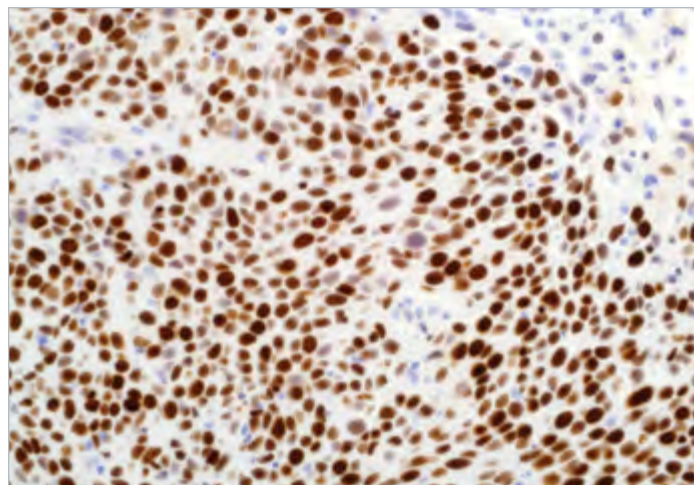


RUO

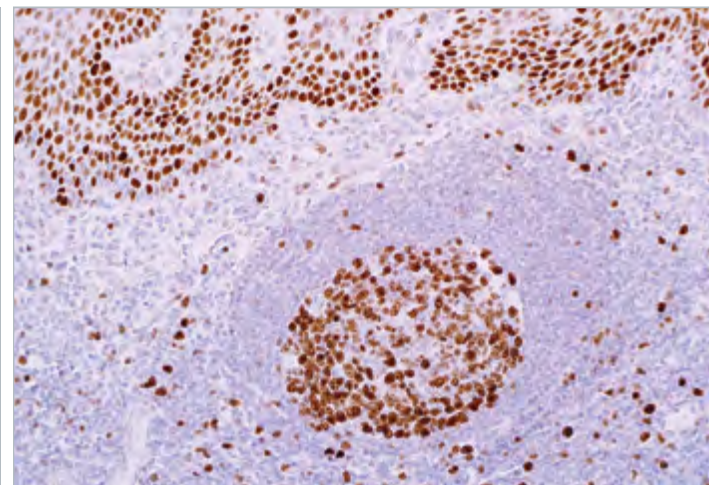




Nuclear staining by MCM3 (EP202) on cervical squamous cell carcinoma.



MCM3 (EP202) on cervical squamous cell carcinoma.



MCM3 (EP202) on tonsil.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** tonsil  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

- Head/Neck Pathology
- Anatomic/Surgical Pathology

## Associated Panels

- Cervix ..... 291
- Bladder: Dysplasia vs. Reactive. 295

## Reference

1. Lee YS, et al. Experimental and Molecular Pathology. 2010; 88:138-142.
2. Gambichler T, et al. J Am Acad Dermatol. 2009; 60:808-813.
3. Musahl C, et al. Experimental Cell Research. 1998; 241:260-264.
4. Das M, et al. Hindawi Publishing Corporation. 2014; 10:1-11.
5. Tye BK, et al. The Journal of Biological Chemistry. 2000; 275:34833-34836.
6. Endl E, et al. Journal of Pathology. 2001; 195:457-462.
7. Lei M, et al. Journal of Cell Science. 2001; 114:1447-1454.

## Product Description

MCM3, minichromosome maintenance protein 3, belongs to the MCM family of highly conserved group of DNA-binding proteins known to have a role in the initiation and regulation of DNA replication during the cell cycle.<sup>1-7</sup> MCM3 expression is up-regulated in proliferating cells and absent in terminally differentiated cells. Like Ki-67, MCM3 marks proliferating cells. In a study performed by Endl E., et al., Ki-67 and MCM3 double staining was performed on human tonsil showing that MCM3 stains proliferating cells like Ki-67, and in addition marks cells present in the intermediate layer of epithelium (which are typically negative for Ki-67). Both Ki-67 and MCM3 are not detectable in differentiated cells.<sup>6</sup> However, unlike Ki-67, MCM3 protein down-regulation is delayed. This suggests that Ki-67 may be expressed during a shorter interval of the cell cycle than MCM3. Anti-MCM3 may be a more reliable proliferation marker than anti-Ki-67.<sup>1</sup>

## Panel Quick View

Cervix				
	MCM3	BCL2	CK17	Ki-67
Cervical Intraepithelial Neoplasia	+	-	-	+
Tubo-Endometrial Metaplasia	-	+	+	-
Microglandular Hyperplasia	-	-	-	-

Bladder: Dysplasia vs. Reactive						
	MCM3	CD44	CK 20	CK 5&6	Ki-67	p53
Carcinoma- <i>in-situ</i>	+	-	+	-	+	+
Reactive Atypia	+	+	-	+	+	-
Normal Urothelium	-/+	+	+	-/+	-/+	-

## Ordering Information

**Clone: EP202**  
 Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	435R-14
0.5 ml, concentrate.....	435R-15
1 ml, concentrate .....	435R-16
1 ml, predilute .....	435R-17
7 ml, predilute .....	435R-18

## Designations

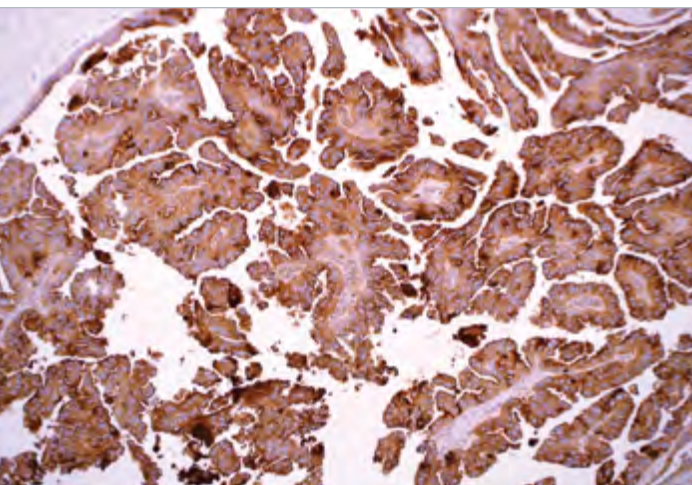


**CELL MARQUE**

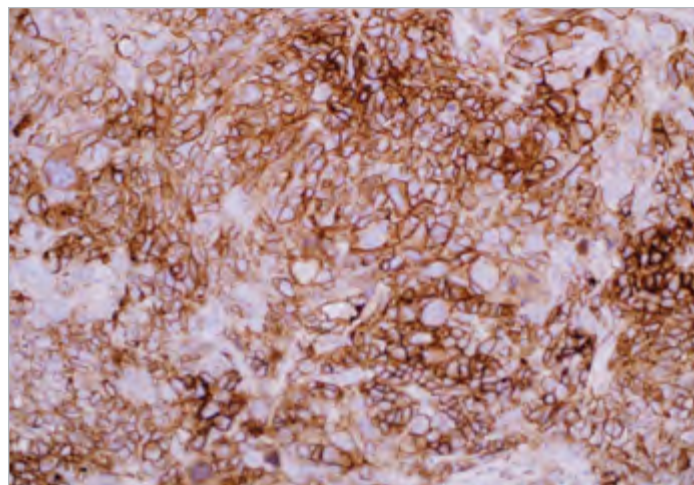
**RabMab®**  
 Technology from Abcam



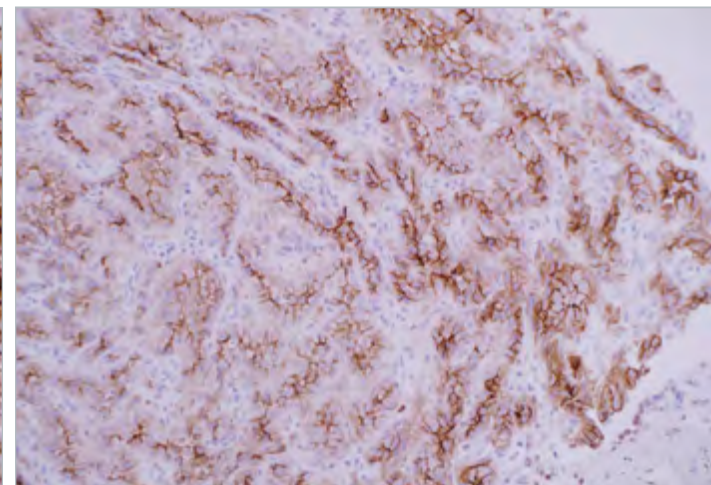
# Mesothelin



Mesothelioma is labeled in a cytoplasmic pattern by mesothelin.



Mesothelin (EP140) on mesothelioma.



Mesothelin (EP140) on mesothelioma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** mesothelioma, ovarian carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Pulmonary Pathology
- Anatomic/Surgical Pathology
- Cytopathology

## Reference

1. Hassan R, et al. Eur J Cancer. 2008; 44:46-53
2. Ordóñez NG. Mod Pathol. 2003; 16:192-7.
3. Hassan R, et al. Am J clin Pathol. 2005; 124:838-45.
4. Gnemmi V, et al. Anal Quant Cytopathol Histopathol. 2013; 35:157-62.
5. Ordóñez NG. Hum Pathol. 2004; 35:697-710.
6. Leroy X, et al. Histopathology. 2007; 51:874-6.

## Product Description

Mesothelin is a 40 kDa glycosyl-phosphatidylinositol-anchored glycoprotein cleaved from a 71kDa precursor protein encoded by the human mesothelin gene. Mesothelin is present on the surface of normal mesothelial cells.<sup>1</sup> Although the function of mesothelin is unknown, it is overexpressed in a wide variety of cancers including mesothelioma, pancreatic ductal adenocarcinoma, and ovarian carcinoma.<sup>1-6</sup> Mesothelin has proven to be a valuable marker for pancreatic ductal adenocarcinoma due to its strong reactivity in tumor tissue and absence in normal pancreas.<sup>1,3-4</sup> Metastatic renal cell carcinoma can present clinical patterns that mimic primary mesothelioma, pancreatic ductal adenocarcinoma, and ovarian carcinoma.<sup>2,4-6</sup> Mesothelin has demonstrated utility in the differential diagnosis between these primary tumors and corresponding metastatic renal cell carcinoma within the context of an antibody panel.<sup>4-6</sup>

## Panel Quick View

Lesions	Mesothelin	Calretinin	CEA	CK 5&6	E-cadherin	Ep-CAM	D2-40	Vimentin	WT-1
Mesothelioma	+	+	-	+	-	-	+	+	+
Adenocarcinoma	-	-	+	-	+	+	-	-	-

## Ordering Information

**Clone: EP140**

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate .....	439R-14
0.5 ml, concentrate .....	439R-15
1 ml, concentrate .....	439R-16
1 ml, predilute .....	439R-17
7 ml, predilute .....	439R-18

## Designations



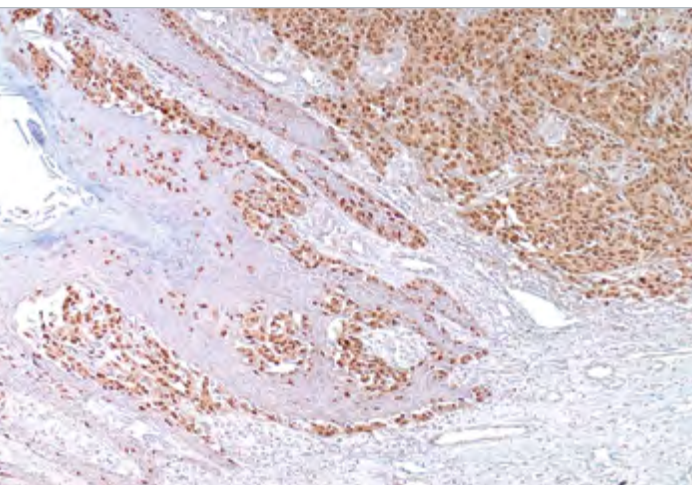
IVD IVD IVD RUO

**CELL MARQUE**

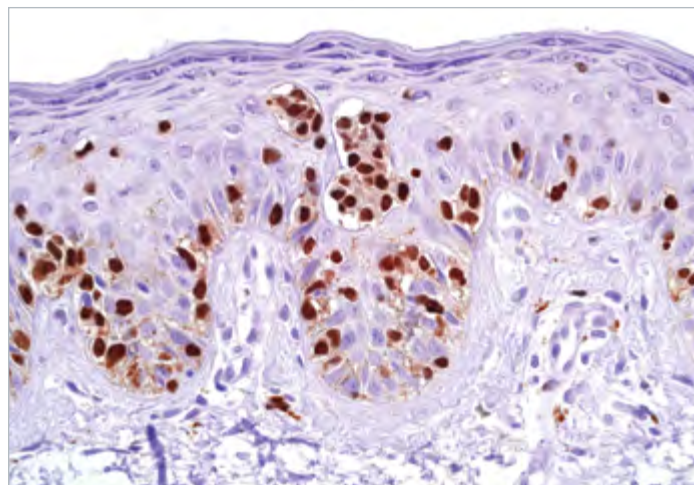
**RabMAb®**  
Technology from Abcam



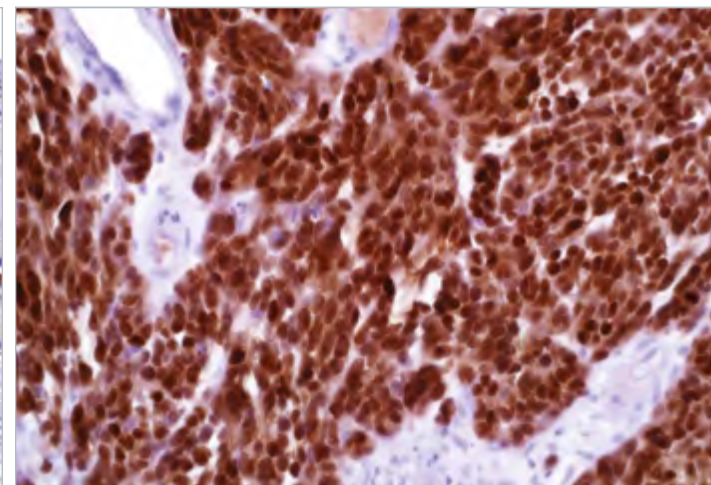
# Microphthalmia Transcription Factor (MiTF)



Anti-MiTF labels the nucleus and cytoplasm of tumor cells in melanoma.



MiTF (C5/D5) on melanoma.



MiTF (C5/D5) on melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** melanoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub> & IgG<sub>2</sub>

## Synonyms and Abbreviations

MiTF

## Associated Specialties

● Dermatopathology

## Associated Panels

● Melanotic Lesions ..... 293

## Reference

- Liegl B, et al. Am J Surg Pathol. 2008; 32:608-14.
- Righi A, et al. Int J Surg Pathol. 2008; 16:16-20.
- Weinreb I, et al. Virchows Arch. 2007; 450:463-70.
- Ohsie SJ, et al. J Cutan Pathol. 2008; 35:433-44.
- Hornick JL, et al. Am J Surg Pathol. 2008; 32:493-501.

## Product Description

Microphthalmia transcription factor (MiTF) is a transcription factor implicated in pigmentation, bone development and in mast cells. Various forms of MiTF exist ranging from 50-70 kD in size. This antibody targets the 52-56 kD range. This antibody has been useful in identifying malignant melanoma, and distinguishing mast cell lesions from lesions of myeloid derivation. A relatively rare class of tumors known as PEComas (tumors showing perivascular epithelioid cell differentiation) express MiTF in a high percentage of cases (~90%).

## Panel Quick View

Melanotic Lesions	MiTF	CD63	Factor XIIIa	HMB-45	MART-1	S-100	SOX-10	Tyrosinase
Adrenal Cortical	-	-	-	-	+	+	-	-
Adult Melanocytes	+	+	-	-	+	+	+	+
Angiomyolipoma	+	+	-	+	+	+	+	+/-
Dermatofibroma	-	-	+	-	-	-	-	-
Interdermal Nevus	+	-	-	-	+	+	+	+
Intranodal Nevus Cells	+	-	-	-	+	+	+	+
Junctional Nevus	+	-	-	+	+	+	+	+
Metastatic Melanoma	+	+	-	+	+	+	+	+
Primary Melanoma	+	+	-	+	+	+	+	+
Spindle Cell Melanoma	+	+	-	+	+	+	+	+

## Ordering Information

**Clone: C5/D5**

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	284M-94
0.5 ml, concentrate.....	284M-95
1 ml, concentrate .....	284M-96
1 ml, predilute .....	284M-97
7 ml, predilute .....	284M-98
25 ml, predilute .....	284M-90

## Designations



IVD



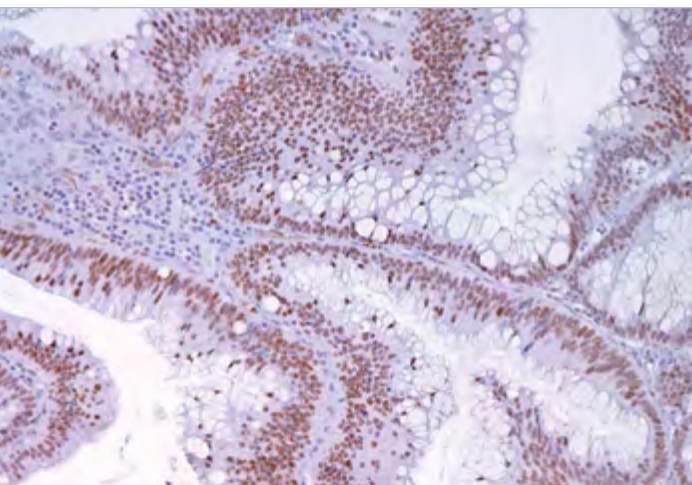
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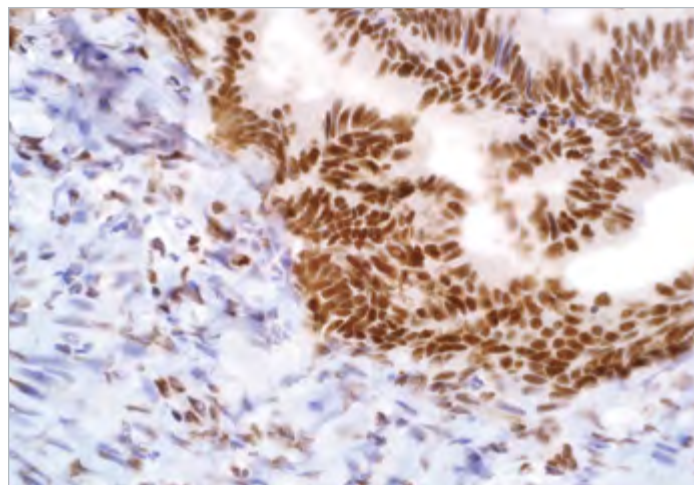
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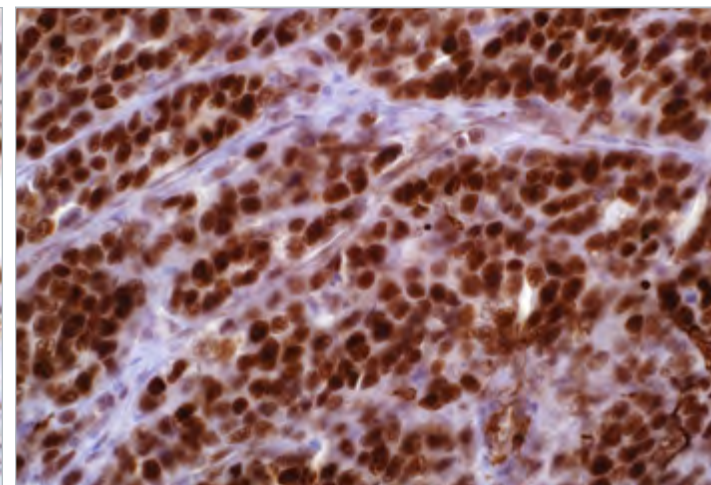
RUO



Nuclear staining by anti-MLH1 on colon tubular adenoma.



MLH1 (G168-728) on tissue microarray, colorectal carcinoma.



MLH1 (G168-728) on colorectal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** colon, colon carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Reference

1. Wright CL, et al. Am J Surg Pathol. 2003; 27:1393-1406.
2. Brueckl WM, et al. Anticancer Research. 2003; 23:1773-1778.
3. Rigau V, et al. Arch Pathol Lab Med. 2003; 127:694-700.
4. Renkonen E, et al. J Clin Oncol. 2003; 21:3629-3637.
5. Hoedema R, et al. The American Surgeon. 2003; 69:387-92.
6. Christensen M, et al. Cancer. 2002; 95:2422-30.
7. Wahlberg SS, et al. Cancer Research. 2002; 62:3485-3492.
8. Lanza G, et al. Modern Pathology. 2002; 15: 741-749.

## Product Description

MLH1 is a mismatch repair protein that is deficient in a high proportion of patients with microsatellite instability (MSI-H). It has been suggested that the deficiencies in DNA mismatch repair protein(s) can be seen in some malignancies such as hereditary nonpolyposis colorectal cancer (HNPCC) and endometrial cancer. Anti-MLH1 may be useful in identification of MLH1 protein in variety of normal and neoplastic tissues and identification of loss of MLH1 in tumors with MSI genotype.<sup>1-8</sup> Anti-MLH1 is best utilized in an IHC panel that includes anti-MSH6, anti-MSH2, and anti-PMS2.

## Ordering Information

**Clone: G168-728**  
Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	285M-14
0.5 ml, concentrate	285M-15
1 ml, concentrate	285M-16
1 ml, predilute	285M-17
7 ml, predilute	285M-18
25 ml, predilute	285M-10

## Designations



IVD



IVD

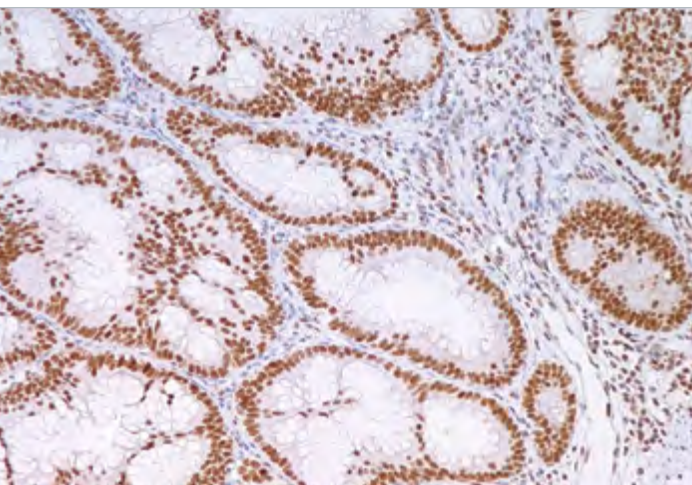


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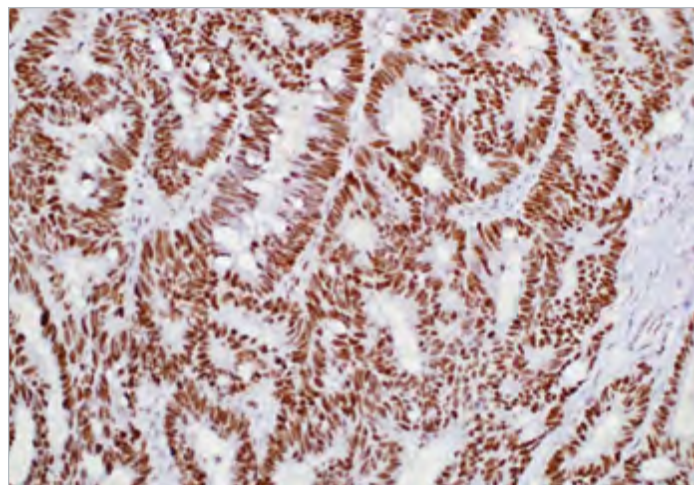


RUO

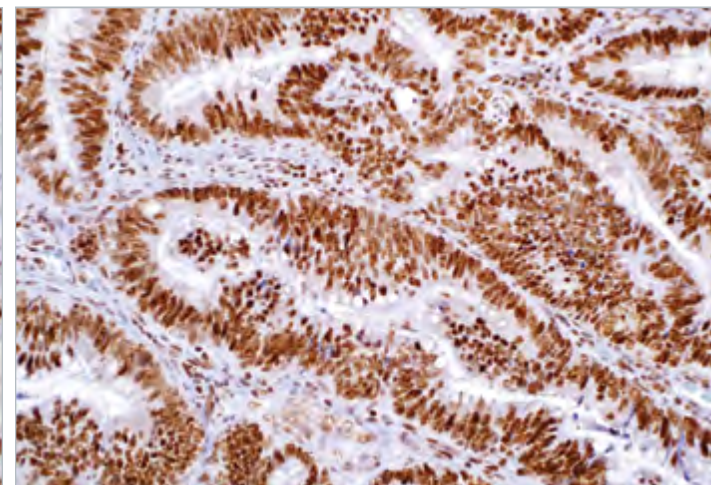




Anti-MSH2 positively labels well differentiated colon adenocarcinoma in a nuclear pattern.



MSH2 (G219-1129) on colorectal carcinoma.



MSH2 (G219-1129) on colorectal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** colon mucosa, colon carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Reference

1. Wright CL, et al. Am J Surg Pathol. 2003; 27:1393-1406.
2. Brueckl WM, et al. Anticancer Research. 2003; 23:1773-1778.
3. Rigau V, et al. Arch Pathol Lab Med. 2003; 127:694-700.
4. Renkonen E, et al. J Clin Oncol. 2003; 21:3629-3637.
5. Hoedema R, et al. The American Surgeon. 2003; 69:387-92.
6. Christensen M, et al. Cancer. 2002; 95:2422-30.
7. Wahlberg SS, et al. Cancer Research. 2002; 62:3485-3492.
8. Lanza G, et al. Modern Pathology. 2002; 15:741-749.

## Product Description

MSH2 is a mismatch repair protein which is deficient in a high proportion of patients with microsatellite instability (MSI-H). It has been suggested that the deficiencies in DNA mismatch repair protein(s) can be seen in some malignancies such as hereditary nonpolyposis colorectal cancer (HNPCC) and endometrial cancer. Anti-MSH2 may be useful in identification of MSH2 protein in variety of normal and neoplastic tissues and identification of loss of MSH2 in tumors with MSI genotype.<sup>1-8</sup> Anti-MSH2 is best utilized in an IHC panel that includes anti-MLH1, anti-MSH6, and anti-PMS2.

## Ordering Information

**Clone: G219-1129**  
Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	286M-14
0.5 ml, concentrate	286M-15
1 ml, concentrate	286M-16
1 ml, predilute	286M-17
7 ml, predilute	286M-18
25 ml, predilute	286M-10

## Designations



IVD



IVD

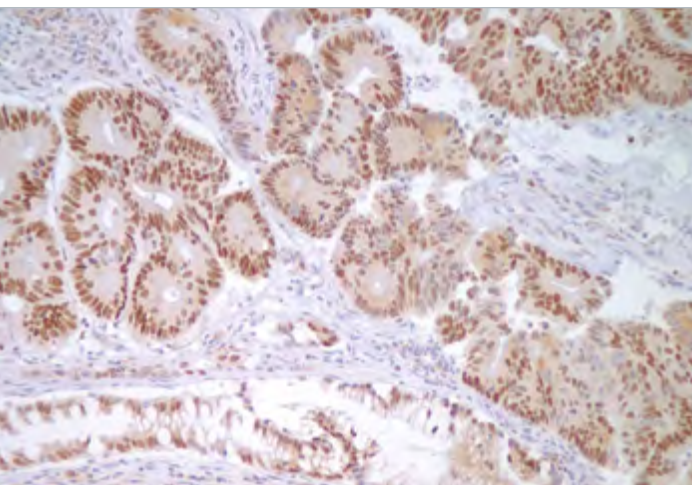


IVD

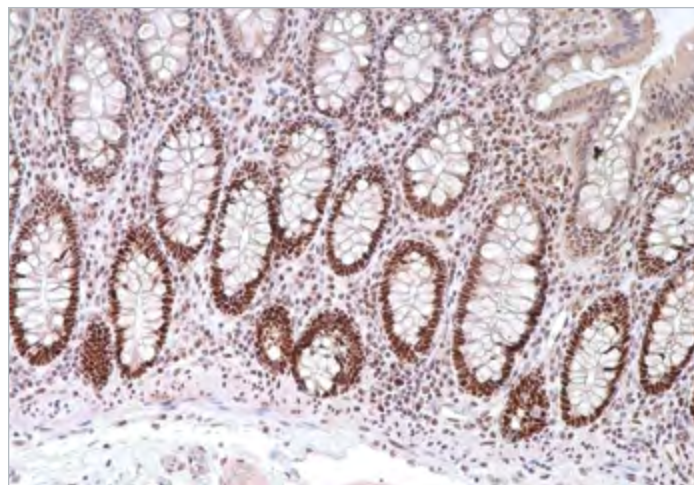


RUO

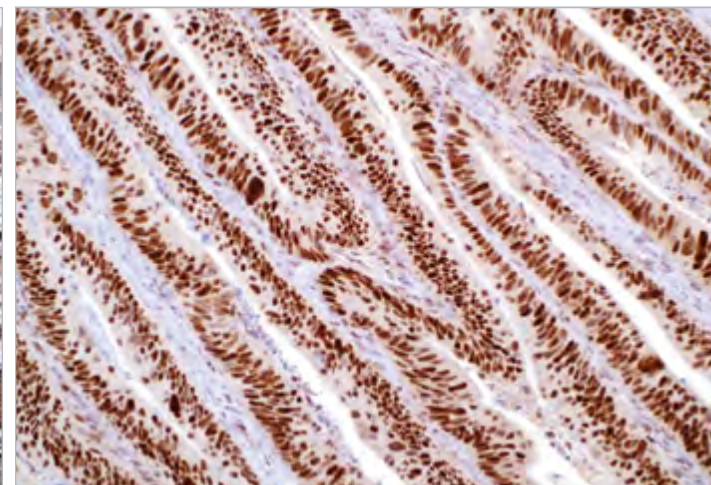




Nuclear staining by MSH6 (44) on well differentiated colon adenocarcinoma.



MSH6 (44) on colon.



MSH6 (44) on colorectal carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** colon, colon carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Reference

1. Lagerstedt Robinson K, et al. J Natl Cancer Inst. 2007; 99:291-9.
2. Niessen RC, et al. Gut. 2006; 55:1781-8.
3. Hansen TP, et al. Appl Immunohistochem Mol Morphol. 2006; 14:115-21.
4. Lawes DA, et al. Br J Cancer. 2005; 93:472-7.
5. Stormorken AT, et al. J Clin Oncol. 2005; 23:4705-12.
6. Rigau V, et al. Arch Pathol Lab Med. 2003; 127:694-700.

## Product Description

MSH6 is a mismatch repair gene which is deficient in a high proportion of patients with microsatellite instability (MSI-H). This finding is associated with the autosomal dominant condition known as hereditary non-polyposis colorectal cancer (HNPCC). The anti-MSH6 antibody is useful in screening patients and families for this condition. Colon cancers that are microsatellite unstable have a better prognosis than their microsatellite stable counterparts.

## Ordering Information

**Clone: 44**  
Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	287M-14
0.5 ml, concentrate	287M-15
1 ml, concentrate	287M-16
1 ml, predilute	287M-17
7 ml, predilute	287M-18
25 ml, predilute	287M-10

### Alternate Clones Available

• Rabbit Monoclonal, SP93  
Contact us for more information.

### Designations



IVD



IVD

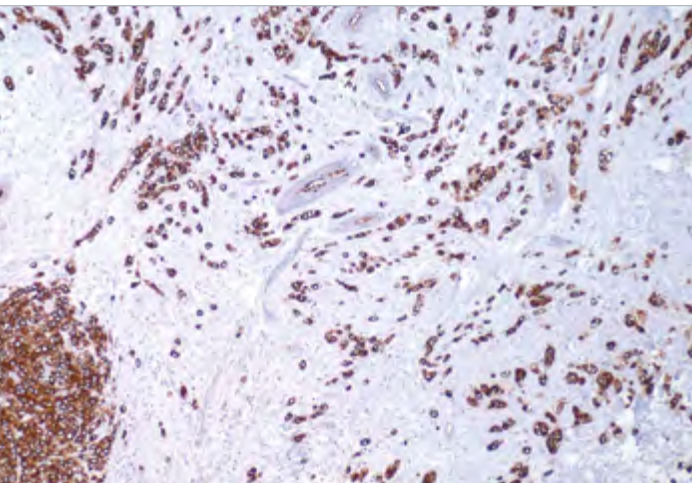


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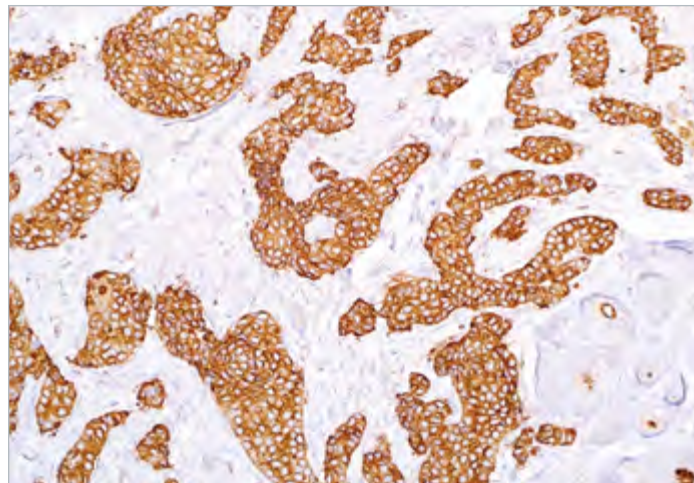


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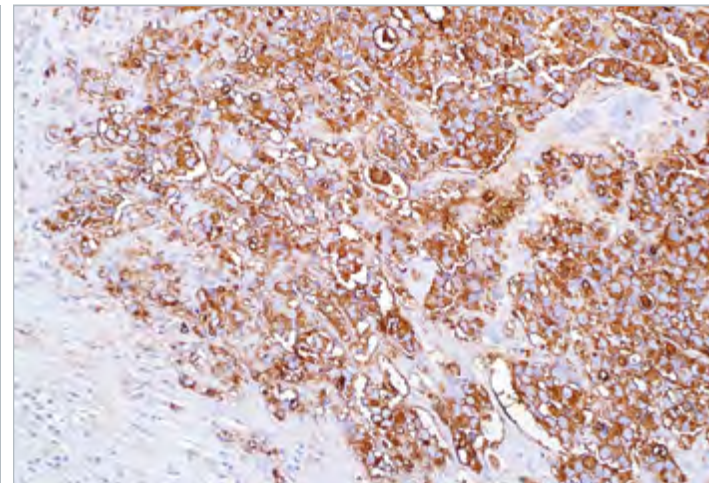




Infiltrating ductal breast carcinoma is positively expressed in a cytoplasmic pattern by MUC1 (MRQ-17).



MUC1 (MRQ-17) on breast carcinoma.



MUC1 (MRQ-17) on pancreatic ductal adenocarcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** breast, colon, associated adenocarcinomas  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Associated Panels

● Mucin Expression in Neoplasms . . . . . 289  
 ● Mucins Expression in Organs . . 290  
 ● Thymus . . . . . 290  
 ● Ampullary Cancer . . . . . 294

## Reference

- Chaves P, et al. Dis Esophagus. 2005; 18:383-7.
- Leteurre E, et al. World J Gastroenterol. 2006; 12:3324-31.
- Mino-Kenudson M, et al. Arch Pathol Lab Med. 2007; 131:86-90.
- Mizoshita T, et al. Histol Histopathol. 2007; 22:251-60.
- O'Connell FP, et al. Arch Pathol Lab Med. 2005; 129:338-47.

## Product Description

Mucins are high molecular weight glycoproteins which constitute the major component of the mucus layer that protects the gastric epithelium from chemical and mechanical aggressions. In humans, at least 14 mucin genes have been identified that code for the mucin proteins. They are designated as MUC1, MUC2, MUC3, MUC4, MUC5AC, MUC5B, MUC6, MUC7, MUC8, MUC9, MUC11, MUC12, MUC13, and MUC16.

The heterogeneous pattern of mucin expression, including the expression of the intestinal mucin MUC2, may provide new insights into the differentiation pathways of gastric carcinoma. Pinto-de-Sousa et al. have shown in a comprehensive study of gastric carcinomas evaluated for expression of several mucins (MUC1, MUC2, MUC5AC and MUC6) that: (1) mucin expression is associated with tumor type (MUC5AC with diffuse and infiltrative carcinomas and MUC2 with mucinous carcinomas) but not with the clinico-biological behavior of the tumors; and (2) mucin expression is associated with tumor location (MUC5AC with antrum carcinomas and MUC2 with cardia carcinomas), indirectly reflecting differences in tumor differentiation according to tumor location.

The following generalities apply to the patterns of MUC1 expression: apical surfaces of most epithelial cells in breast, GI, respiratory, and GU tracts.

## Panel Quick View

Mucin Expression in Neoplasms				
	MUC1	MUC2	MUC5AC	MUC6
Pancreatic Adenocarcinoma	+	-	+	-
Cervical Adenocarcinoma	+	-	+	-
Paget Extramammary	+	-	+	-
Cholangiocarcinoma	+	-	+/-	-
Breast Carcinoma	+	-	-	-
Endometrial Carcinoma	+	-	-	-
Barrett Esophagus	+	+	+	-
Breast Colloid Carcinoma	+	+	-	+

Mucins Expression in Organs					
	MUC1	MUC2	MUC4	MUC5AC	MUC6
Stomach	+	-	+	+	+
Small Intestine	-	+	-	-	+
Colon	-	+	-	-	-
Pancreas	+	-	-	-	+

## Ordering Information

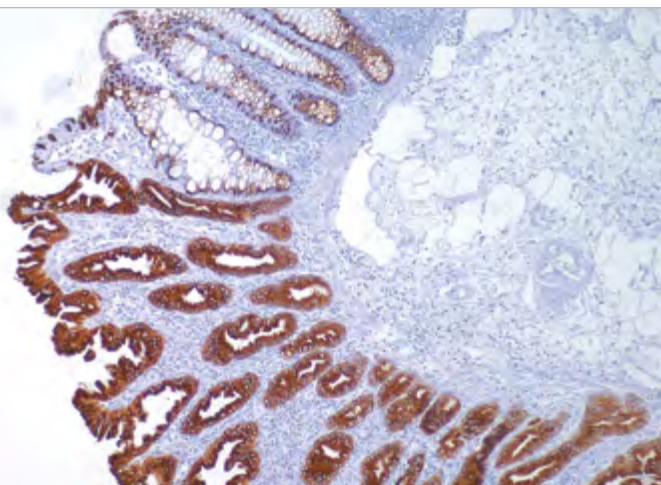
**Clone: MRQ-17**  
 Mouse Monoclonal

**Volume . . . . . Part No.**  
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 0.5 ml, concentrate . . . . . 290M-15  
 1 ml, concentrate . . . . . 290M-16  
 1 ml, predilute . . . . . 290M-17  
 7 ml, predilute . . . . . 290M-18

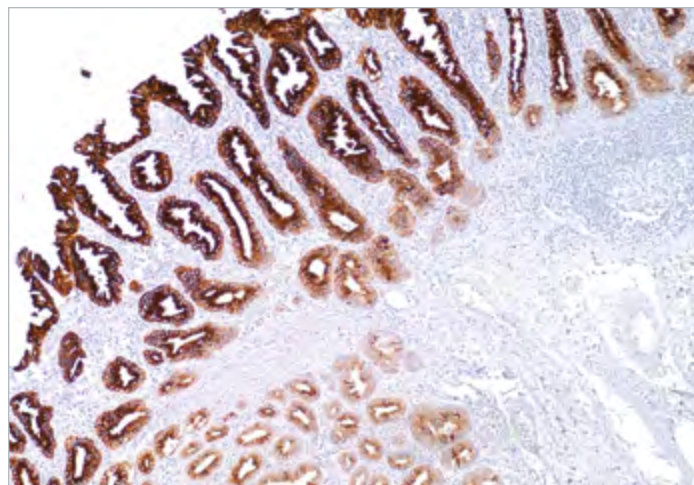
## Designations

 IVD  IVD  IVD  RUO

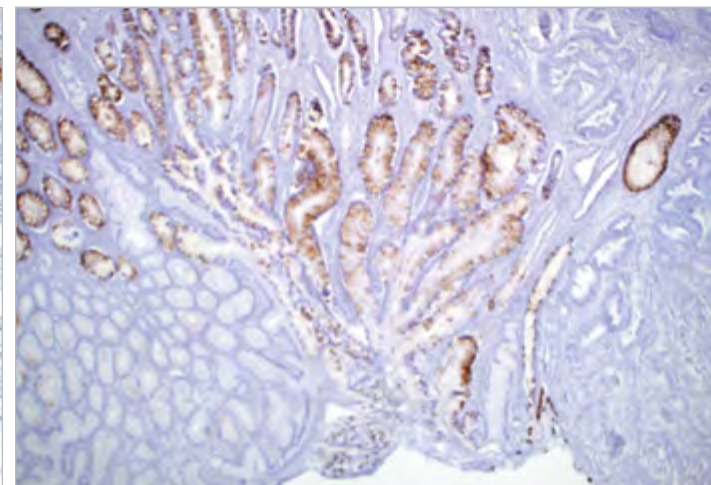




MUC2 (MRQ-18) labels hyperplastic colon polyp.



MUC2 (MRQ-18) on colon.



MUC2 (MRQ-18) on intestinal metaplasia in stomach.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** colon  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Associated Panels

● Mucin Expression in Neoplasms... 289  
 ● Mucins Expression in Organs... 290  
 ● Ampullary Cancer... 294

## Reference

- Chaves P, et al. Dis Esophagus. 2005; 18:383-7.
- Leteurre E, et al. World J Gastroenterol. 2006; 12:3324-31.
- Mino-Kenudson M, et al. Arch Pathol Lab Med. 2007; 131:86-90.
- Mizoshita T, et al. Histol Histopathol. 2007; 22:251-60.
- O'Connell FP, et al. Arch Pathol Lab Med. 2005; 129:338-47.
- Park SY, et al. Arch Pathol Lab Med. 2007; 131:1561-7.
- Rakha EA, et al. Mod Pathol. 2005; 18:1295-304.

## Product Description

Mucins are high molecular weight glycoproteins which constitute the major component of the mucus layer that protects the gastric epithelium. The heterogeneous pattern of mucin expression, including the expression of the intestinal mucin MUC2, may provide new insights into the differentiation pathways of gastric carcinoma. Pinto-de-Sousa et al. have shown, in a comprehensive study of gastric carcinomas evaluated for expression of several mucins (MUC1, MUC2, MUC5AC and MUC6), that: (1) mucin expression is associated with tumor type (MUC5AC with diffuse and infiltrative carcinomas and MUC2 with mucinous carcinomas) but not with the clinico-biological behavior of the tumors; and (2) mucin expression is associated with tumor location (MUC5AC with antrum carcinomas and MUC2 with cardia carcinomas), indirectly reflecting differences in tumor differentiation according to tumor location.

The following generalities apply to the patterns of MUC2 expression: Specifically expressed in goblet cells of the small intestine & colon; colonic carcinomas – 65%, gastric carcinomas – 42%. MUC2 is rarely expressed outside of the GI tract with exceptions of mucinous carcinoma of breast and clear cell-type carcinomas of the ovary.

## Panel Quick View

Mucin Expression in Neoplasms					
	MUC2	MUC1	MUC5AC	MUC6	
Salivary Duct ACA	+	-	-	+	
Colon Carcinoma, Signet Ring	+	-	-	-	
Prostate Carcinoma	+/-	-	-	-	
Pan Intraductal Pap Ca	+	-	+	+	
Adrenocortical Carcinoma	-	-	-	-	
Breast Carcinoma	-	+	-	-	
Endometrial Carcinoma	-	+	-	-	
Appendiceal Adenocarcinoma	+	-	+	-	
Barrett Esophagus	+	+	+	-	
Breast Colloid Carcinoma	+	+	-	+	

Mucins Expression in Organs					
	MUC2	MUC1	MUC4	MUC5AC	MUC6
Stomach	-	+	+	+	+
Small Intestine	+	-	-	-	+
Colon	+	-	-	-	-
Pancreas	-	+	-	-	+

## Ordering Information

**Clone: MRQ-18**  
 Mouse Monoclonal

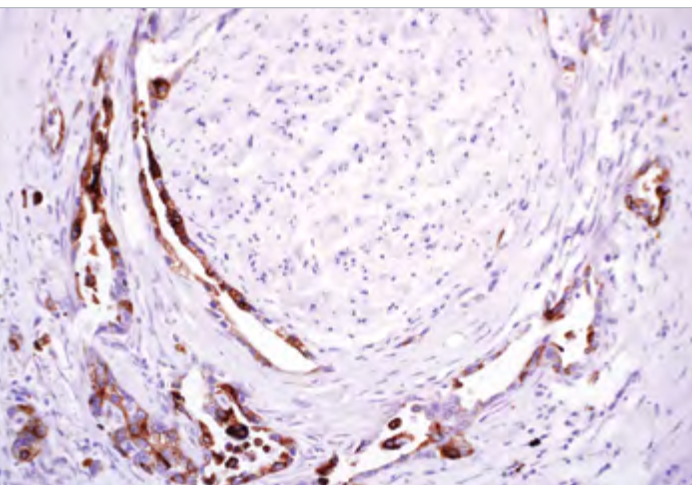
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 0.5 ml, concentrate..... 291M-15  
 1 ml, concentrate ..... 291M-16  
 1 ml, predilute ..... 291M-17  
 7 ml, predilute ..... 291M-18

## Designations

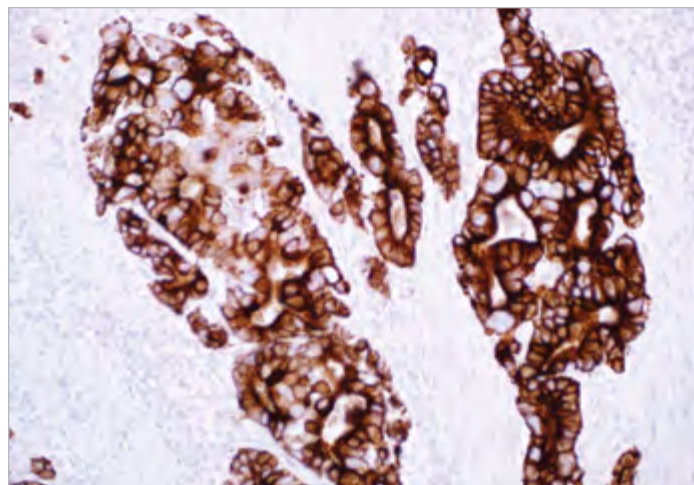
 IVD     IVD     IVD     RUO



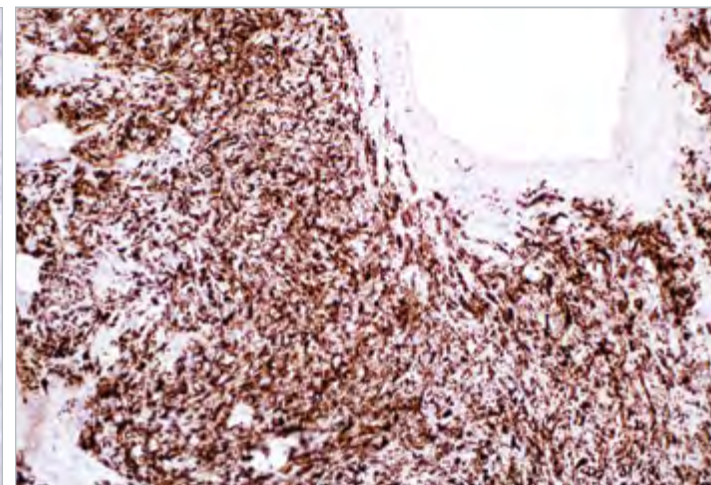
# MUC4



Infiltrating adenocarcinoma of stomach surrounding nerve is labeled by anti-MUC4.



MUC4 (8G7) on gastric adenocarcinoma.



MUC4 (8G7) on low-grade fibromyxoid sarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreatic ductal adenocarcinoma, colon, colorectal adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Soft Tissue Pathology
- Gastrointestinal (GI) Pathology

## Associated Panels

- Mucins Expression in Organs . . 290
- Pancreas / Pancreatic Tumors . . 294

## Reference

1. Moniaux N, et al. J Histochem Cytochem. 2004; 52:253.
2. Moniaux, N, et al. Br J Cancer 2004;91:1633.
3. Yonezawa S, et al. Hepatobiliary Pancreat Sci. 2010; 17:108.
4. Doyle LA, et al. Am J Surg Pathol. 2011; 35:733.
5. Doyle LA, et al. Am J Surg Pathol. 2012; 36:1444.

## Product Description

Mucin 4 (MUC4) is a transmembranous glycoprotein. MUC4 is expressed in the cytoplasm of certain epithelial surfaces, such as colonic, breast, and lung epithelia.<sup>1</sup> An abnormal expression of MUC4 has been reported in various carcinomas of the colon, pancreas, breast, and ovaries.<sup>2</sup> MUC4 is highly expressed in the vast majority of human pancreatic neoplasms, such as intraductal papillary mucinous neoplasia of the pancreas, pancreatic intraepithelial neoplasms and pancreatic ductal adenocarcinoma; however, it is not detected in the normal pancreas or in chronic pancreatitis.<sup>1-3</sup> MUC4 is not expressed in normal bile ducts, but it can be overexpressed in intrahepatic cholangiocarcinoma and bile duct cholangiocarcinoma.<sup>3</sup> MUC4 overexpression has been reported in low-grade fibromyxoid sarcoma (LGFMS).<sup>4</sup> In this study a large cohort of LGFMS, all with FUS gene rearrangement confirmed by FISH, showed cytoplasmic staining for MUC4, usually in a strong and diffuse manner.<sup>4</sup> Similarly, strong, diffuse cytoplasmic staining for MUC4 was identified in 78% (32/41) of cases of sclerosing epithelioid fibrosarcoma.<sup>5</sup> MUC4 expression is also detected in the glandular component of biphasic synovial sarcomas (90%).<sup>5</sup> Focal staining, usually interpreted as only scattered cells, was also seen in a subset of ossifying fibromyxoid tumors (29%), epithelioid GISTs (20%) and myoepithelial carcinomas (10%); whereas all other epithelioid soft tissue tumors, including clear cell sarcoma, epithelioid sarcoma, epithelioid hemangiosarcoma, PEComa and melanoma, were negative. It should be noted that various carcinomas may express MUC4, and therefore additional keratins or lineage-specific markers may be needed to exclude this possibility in some cases.<sup>5</sup>

## Panel Quick View

Soft Tissue Neoplasms and Carcinomas										
	MUC4	SM Actin	CD31	CAM 5.2	CK Cocktail	Desmin	EMA	HMB-45	S-100	TLE1
Epithelioid Sarcoma	-	-/+	-	+	+	-	+	-	-	-
Low-grade Fibromyxoid Sarcoma	+	-	-	-	-	-	+	-	-	-
Rhabdomyosarcoma	-	-/+	-	-	-	+	-	-	-	-/+
Synovial Sarcoma	+/-	-	-	+/-	+	-	+	-	-/+	+
Malignant Peripheral Nerve Sheath Tumor	-	-	-	-	-	-	-/+	-	+/-	-/+
Leiomyosarcoma	-	+	-	+	-	+	-/+	-	-	-
Angiosarcoma	-	-	+	-	+/-	-	-/+	-	-	-
PEComa	-	+	-	+	-	+	-	+	-	-
Sclerosing Epithelioid Fibrosarcoma	+	-	-	-	-	-	-/+	-	-/+	-
Metastatic Carcinoma	variable	-	-	-	+	-	+	-	-	-
Pancreatic Ductal Carcinoma	+	-	-	+	+	-	+	-	-	-

## Ordering Information

**Clone: 8G7**

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	406M-14
0.5 ml, concentrate	406M-15
1 ml, concentrate	406M-16
1 ml, predilute	406M-17
7 ml, predilute	406M-18

## Designations



IVD



IVD

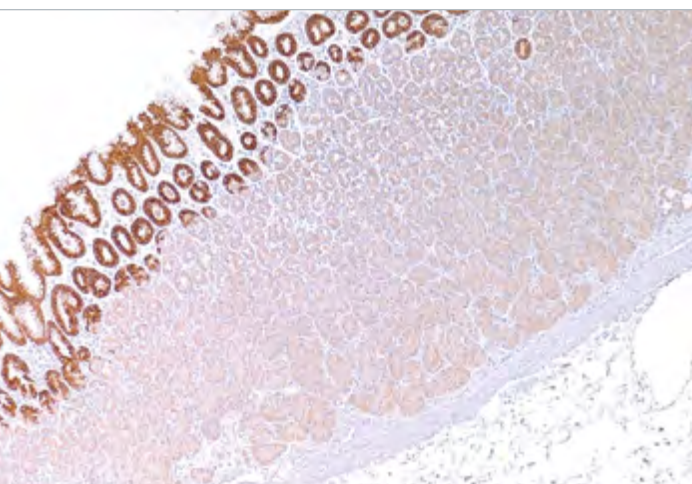


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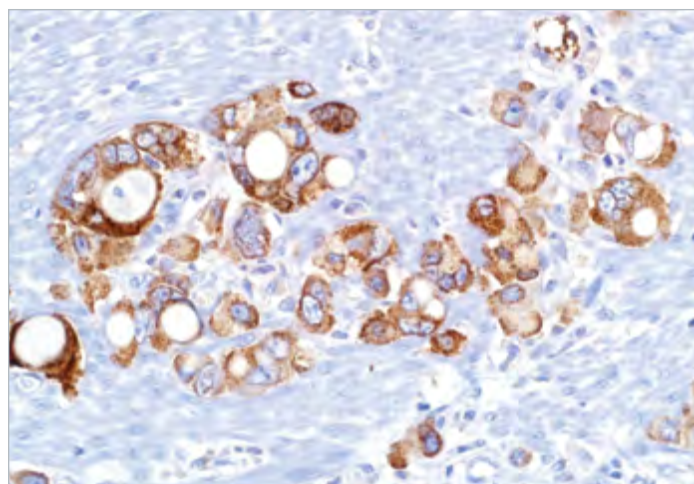


RUO

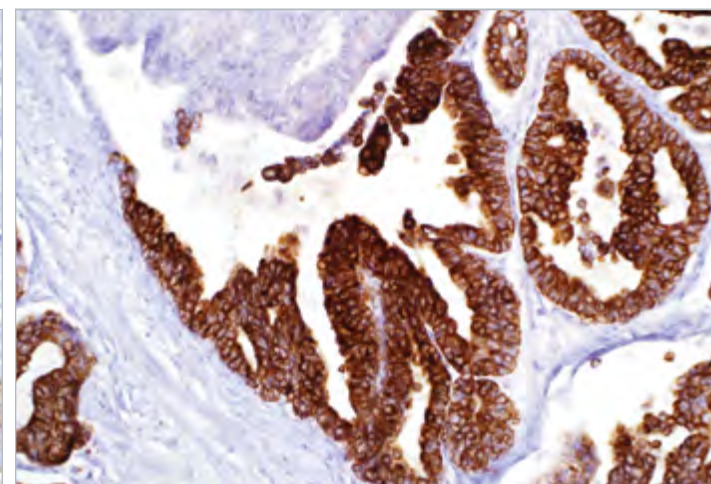
# MUC5AC



Gastric mucosa is labeled by MUC5AC (MRQ-19).



MUC5AC (MRQ-19) on gastric carcinoma.



MUC5AC (MRQ-19) on gastric carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** stomach  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Associated Panels

● Mucin Expression in Neoplasms . . . . . 289  
 ● Mucins Expression in Organs . . 290

## Reference

- Chaves P, et al. Dis Esophagus. 2005; 18:383-7.
- Leteurtre E, et al. World J Gastroenterol. 2006; 12:3324-31.
- Mino-Kenudson M, et al. Arch Pathol Lab Med. 2007; 131:86-90.
- Mizoshita T, et al. Histol Histopathol. 2007; 22:251-60.
- O'Connell FP, et al. Arch Pathol Lab Med. 2005; 129:338-47.
- Park SY, et al. Arch Pathol Lab Med. 2007; 131:1561-7.
- Rakha EA, et al. Mod Pathol. 2005; 18:1295-304.

## Product Description

Mucins are high molecular weight glycoproteins which constitute the major component of the mucus layer that protects the gastric epithelium. The heterogeneous pattern of mucin expression, including the expression of the intestinal mucin MUC2, may provide new insights into the differentiation pathways of gastric carcinoma. Pinto-de-Sousa et al. have shown, in a comprehensive study of gastric carcinomas evaluated for expression of several mucins (MUC1, MUC2, MUC5AC and MUC6), that: (1) mucin expression is associated with tumor type (MUC5AC with diffuse and infiltrative carcinomas and MUC2 with mucinous carcinomas) but not with the clinico-biological behavior of the tumors; and (2) mucin expression is associated with tumor location (MUC5AC with antrum carcinomas and MUC2 with cardia carcinomas), indirectly reflecting differences in tumor differentiation according to tumor location.

The following generalities apply to the patterns of MUC5AC expression: Preferentially expressed in the normal stomach and respiratory tract; esophageal carcinomas – 67%, gastric carcinomas – 58%, colonic carcinomas – 6%-25%, pancreatic ductal carcinomas – 73%, cholangiocarcinomas – 45%, endocervical adenocarcinomas – 70%, endometrial adenocarcinomas – 22%, and lung adenocarcinomas – 14%.

## Panel Quick View

Mucin Expression in Neoplasms					
	MUC5AC	MUC1	MUC2	MUC6	
Pancreatic Adenocarcinoma	+	+	-	-	
Cervical Adenocarcinoma	+	+	-	-	
Paget Extramammary	+	+	-	-	
Cholangiocarcinoma	+/-	+	-	-	
Pan Intraductal Pap Ca	+	-	+	+	
Appendiceal Adenocarcinoma	+	-	+	-	
Barrett Esophagus	+	+	+	-	
Panc. Mucinous Cystic	+	-	-	-	
Breast Colloid Carcinoma	-	+	+	+	

Mucins Expression in Organs					
	MUC5AC	MUC1	MUC2	MUC4	MUC6
Stomach	+	+	-	+	+
Small Intestine	-	-	+	-	+
Colon	-	-	+	-	-
Pancreas	-	+	-	-	+

## Ordering Information

**Clone: MRQ-19**  
 Mouse Monoclonal

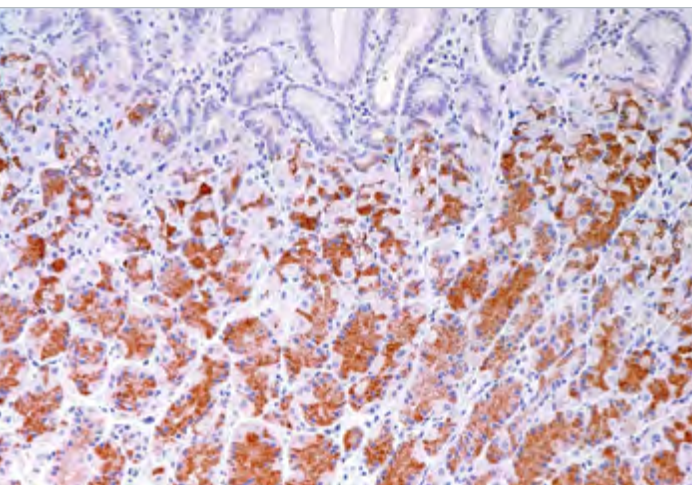
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 0.5 ml, concentrate . . . . . 292M-95  
 1 ml, concentrate . . . . . 292M-96  
 1 ml, predilute . . . . . 292M-97  
 7 ml, predilute . . . . . 292M-98

## Designations

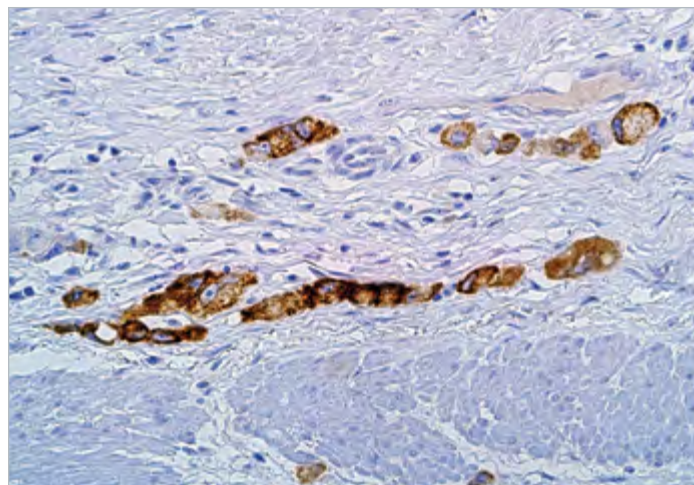
 IVD     IVD     IVD     RUO



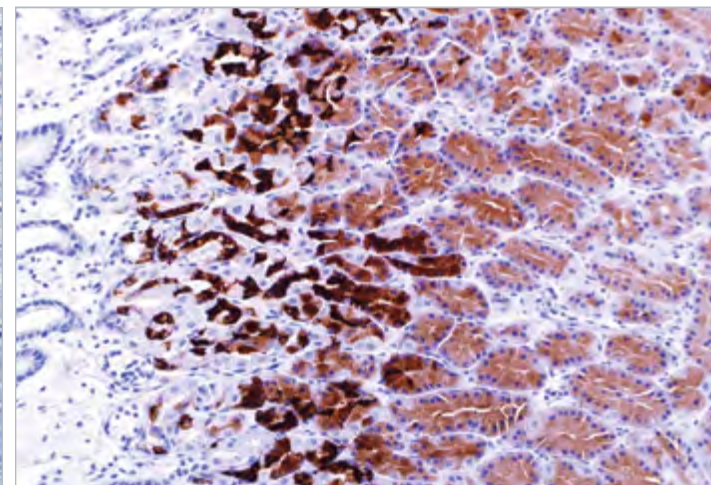
# MUC6



MUC6 (MRQ-20) labels gastric mucosa cytoplasm in the deep crypts.



MUC6 (MRQ-20) on stomach.



MUC6 (MRQ-20) on stomach.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** stomach  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Associated Panels

● Mucin Expression in Neoplasms . . .  
 . . . . . 289  
 ● Mucins Expression in Organs . . 290

## Reference

- Chaves P, et al. Dis Esophagus. 2005; 18:383-7.
- Leteurtre E, et al. World J Gastroenterol. 2006; 12:3324-31.
- Mino-Kenudson M, et al. Arch Pathol Lab Med. 2007; 131:86-90.
- Mizoshita T, et al. Histol Histopathol. 2007; 22:251-60.
- O'Connell FP, et al. Arch Pathol Lab Med. 2005; 129:338-47.
- Park SY, et al. Arch Pathol Lab Med. 2007; 131:1561-7.
- Rakha EA, et al. Mod Pathol. 2005; 18:1295-304.

## Product Description

Mucins are high molecular weight glycoproteins which constitute the major component of the mucus layer that protects the gastric epithelium from chemical and mechanical aggressions. In humans, at least 14 mucin genes have been identified that code for the mucin proteins. They are designated as MUC1, MUC2, MUC3, MUC4, MUC5AC, MUC5B, MUC6, MUC7, MUC8, MUC9, MUC11, MUC12, MUC13 and MUC16.

Mucin genes are expressed in a regulated cell- and tissue-specific manner. The stomach provides a good example of such differential expression of mucin genes. MUC1 is detected in mucous cells of the surface epithelium and neck region of the gastric antrum, as well as in pyloric glands and oxyntic glands of the body region. MUC5AC is highly expressed in foveolar epithelium of both body and antrum, whereas MUC6 protein expression is limited to mucous neck cells of the body and pyloric glands of the antrum. The mucin expression pattern of gastric carcinoma is heterogeneous. It includes mucins normally expressed in gastric mucosa (MUC1, MUC5AC and MUC6) and de novo expression of the intestinal mucin MUC2.

## Panel Quick View

Mucin Expression in Neoplasms					
	MUC6	MUC1	MUC2	MUC5AC	
Pancreatic Adenocarcinoma	-	+	-	+	
Cervical Adenocarcinoma	-	+	-	+	
Cholangiocarcinoma	-	+	-	+/-	
Salivary Duct ACA	+	-	+	-	
Colon Carcinoma, Signet Ring	-	-	+	-	
Pan Intraductal Pap Ca	+	-	+	+	
Breast Carcinoma	-	+	-	-	
Endometrial Carcinoma	-	+	-	-	
Barrett Esophagus	-	+	+	+	
Breast Colloid Carcinoma	+	+	+	-	

Mucins Expression in Organs					
	MUC6	MUC1	MUC2	MUC4	MUC5AC
Stomach	+	+	-	+	+
Small Intestine	+	-	+	-	-
Pancreas	+	+	-	-	-

## Ordering Information

**Clone: MRQ-20**  
 Mouse Monoclonal

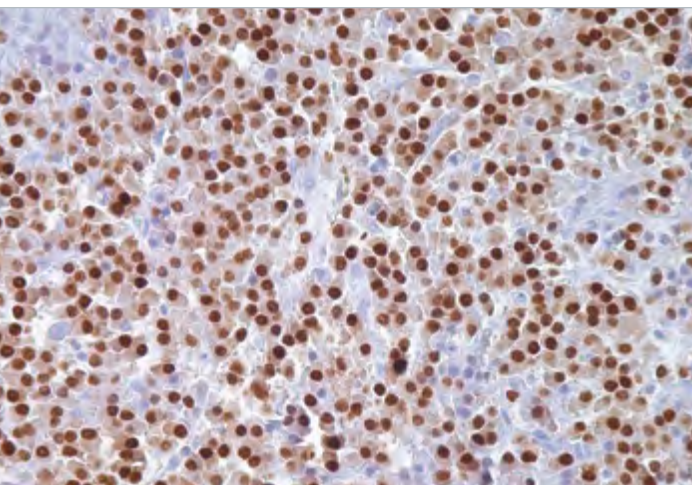
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 0.5 ml, concentrate . . . . . 293M-95  
 1 ml, concentrate . . . . . 293M-96  
 1 ml, predilute . . . . . 293M-97  
 7 ml, predilute . . . . . 293M-98

## Designations

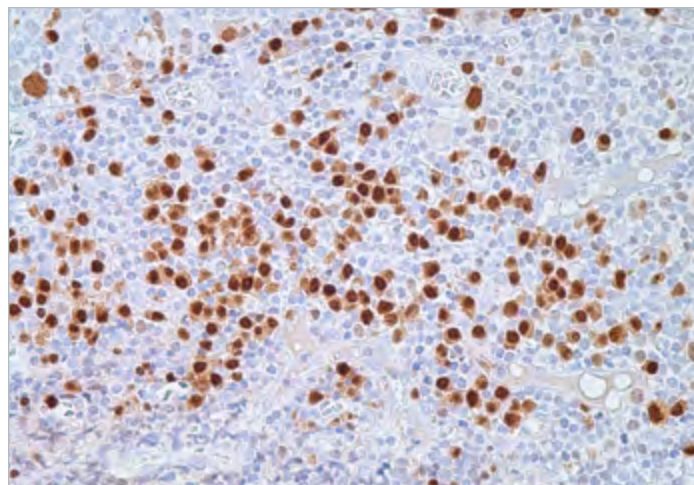
 IVD     IVD     IVD     RUO



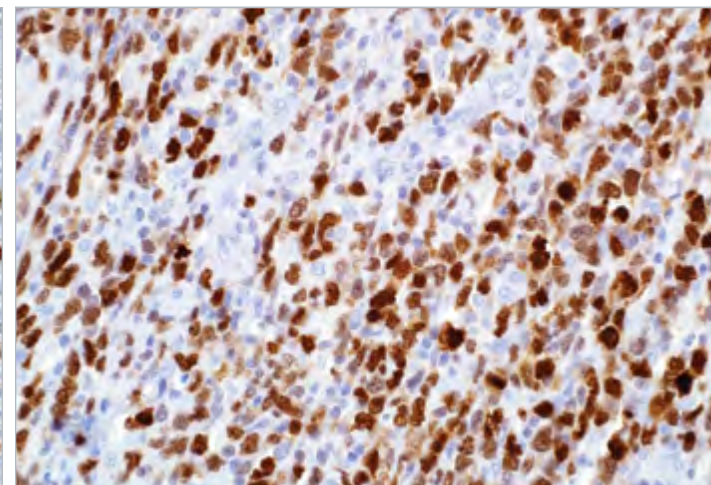
# MUM1



MUM1 (MRQ-43) stains in a nuclear pattern for myeloma cells.



MUM1 (MRQ-43) on tonsil.



MUM1 (MRQ-43) on diffuse large B-cell lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** tonsil, diffuse large B-cell lymphoma, plasmacytoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Hodgkin vs. Non-Hodgkin Lymphomas ..... 297
- Lymphoma ..... 298
- Lymphomas ..... 299
- Plasma Cell Neoplasm and Lymphoproliferative Neoplasms ..... 300

## Reference

1. Falini B, et al. Blood. 2000; 95:2084-92.
2. Grossman A, et al. Genomics. 1996; 37:229-33.
3. Neresh KN. Hematologica. 2007; 92:267-8.
4. Van Imhoff GW, et al. J Clin Oncol. 2006; 34:4135-42.
5. Gualco G, et al. Appl Immunohistochem Mol Morphol. 2010; 18:301-10.
6. Carbone A, et al. Br J Haematol. 2002; 117:366-72.
7. Tsuboi K, et al. Leukemia. 2000; 14:449-56.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

MUM1 (multiple myeloma oncogene-1)/IRF4 (interferon regulatory factor 4) is a 50 kDa protein encoded by MUM1 gene, and a member of the interferon regulatory factor family of transcription factors. MUM1/IRF4 is expressed in the nuclei of plasma cells and a small percentage of germinal center (GC) B-cells located in the "light zone". This antibody stains MUM1 protein, which is expressed in a subset of B-cells in the light zone of the germinal center, plasma cells, activated T-cells, and a wide spectrum of related hematolymphoid neoplasms derived from these cells. Therefore, this antibody is useful for the subclassification of lymphoid malignancies and an excellent marker for Reed-Sternberg cells of classic Hodgkin disease in combination with anti-CD30.

## Panel Quick View

B-cell Lymphomas										
	MUM1	BCL2	BCL6	CD5	CD10	CD20	CD23	Cyclin D1	PU.1	TCL1
Burkitt Lymphoma	-	-	+	-	+	+	-	-		+
CLL/SLL	+	+	-	+	-	+	+	-	+	+
Diffuse Large Cell Lymphoma	+/-	+	+/-	-/+	-/+	+	-	-	+	+
Follicular	-	+	+	-	+	+	-	-	+	+
Mantle Cell	-	+	-	+	-	+	-	+	+	+
Marginal Zone	+	+	-	-	-	+	-	-	+	-

Hodgkin vs. Non-Hodgkin Lymphomas										
	MUM1	ALK	BCL6	CD15	CD30	CD79a	EMA	Fascin	Granzyme B	PU.1
Anaplastic Large Cell Lymphoma	-	+	+/-	-	+	-	+	-	+	-
Hodgkin Lymphoma, Classic	+	-	-	+	+	-	-	+	-	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-/+	-	+	-	-	+	+	-	-	+
T-cell Rich LBCL	+	-	+	-	-	+	-	-	-	-

## Ordering Information

**Clone: MRQ-43**  
Rabbit Monoclonal

**Volume ..... Part No.**  
0.1 ml, concentrate ..... 358R-74  
0.5 ml, concentrate ..... 358R-75  
1 ml, concentrate ..... 358R-76  
1 ml, predilute ..... 358R-77  
7 ml, predilute ..... 358R-78

## Alternate Clones Available

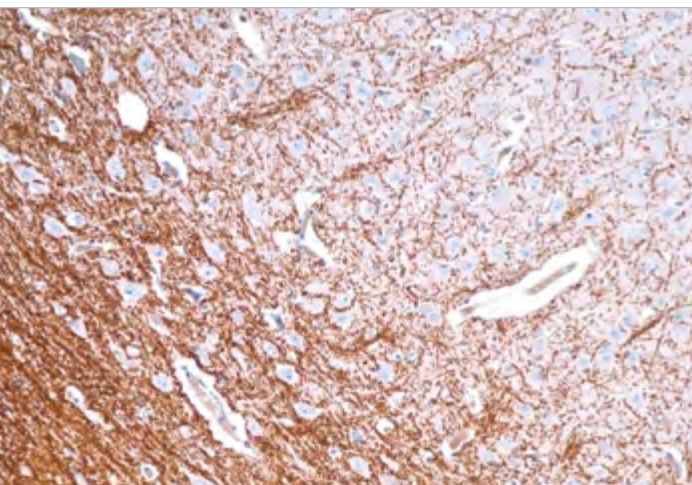
• Mouse Monoclonal, MRQ-8  
Contact us for more information.

## Designations

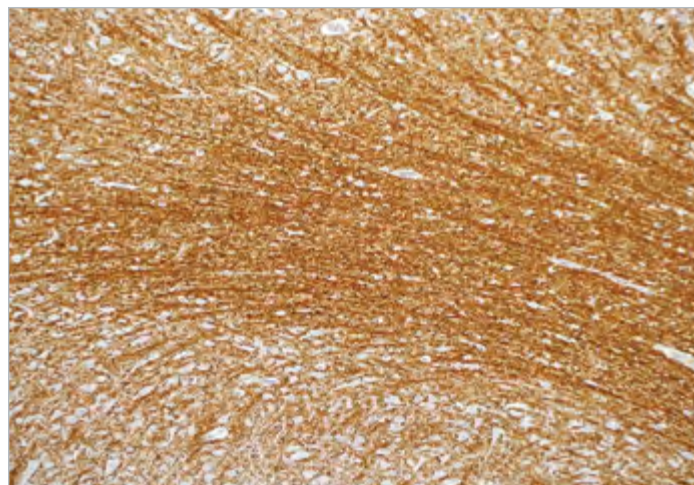
 IVD    IVD    IVD    RUO



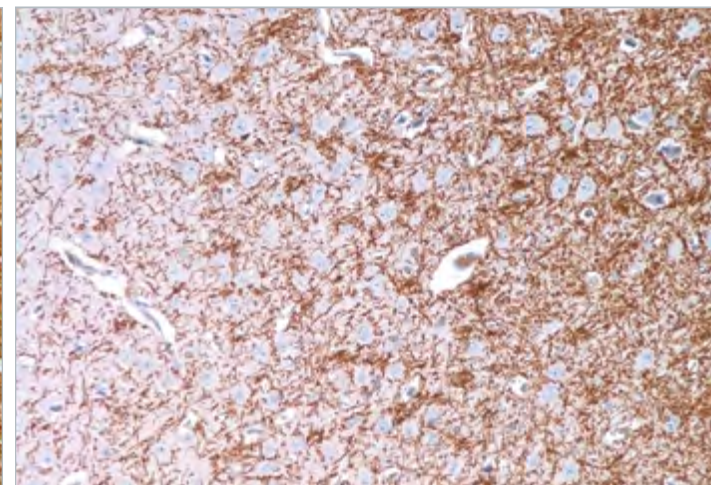
# Myelin Basic Protein



The cerebrum of the brain is stained by anti-myelin basic protein.



Myelin Basic Protein (polyclonal) on cerebellum.



Myelin Basic Protein (polyclonal) on brain.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** brain

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

MBP

## Associated Specialties

● Neuropathology

## Associated Panels

● Neuroid Skin Lesions . . . . . 293

● Retroperitoneal Neoplasms . . . 301

## Reference

1. Martenson RE, et al. J Neurochem. 1981; 36:1543-1560.
2. Uyemura K, et al. Adv Exp Med Biol. 1977; 100:95-11.
3. Buss A, et al. Brain. 2004; 127:34-44.
4. Neuen-Jacob E, et al. Int J Legal Med. 1993; 105:339-50.

## Product Description

Myelin basic protein (MBP) is present in the central and peripheral nervous system, the antibody reacts with soft tissue tumors. MBP has been demonstrated in neuromas, neurofibromas, and neurogenic sarcomas; other spindle cell neoplasms do not stain with this antibody. Immunoreactivity for anti-MBP in granular cell tumors strengthens the concept of a Schwann cell derivation of these lesions. Unlike other nervous system proteins e.g., GFAP and S-100, MBP has not been demonstrated in melanocytes or tumors derived from them.

## Panel Quick View

Neuroid Skin Lesions				
	MBP	CD57	GFAP	S-100
Neuroma	+	+	-	+
Neurotised Nevi	-	-	-	+
Neurofibroma	+	+	-	+

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate . . . . . 295A-14

0.5 ml, concentrate . . . . . 295A-15

1 ml, concentrate . . . . . 295A-16

1 ml, predilute . . . . . 295A-17

7 ml, predilute . . . . . 295A-18

## Designations



IVD



IVD



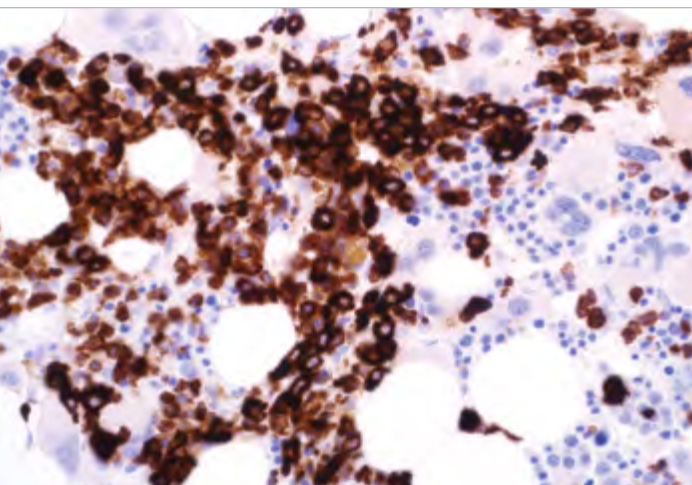
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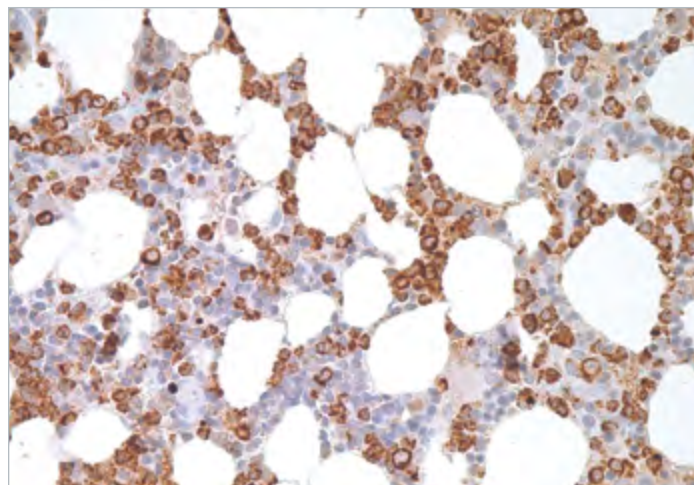
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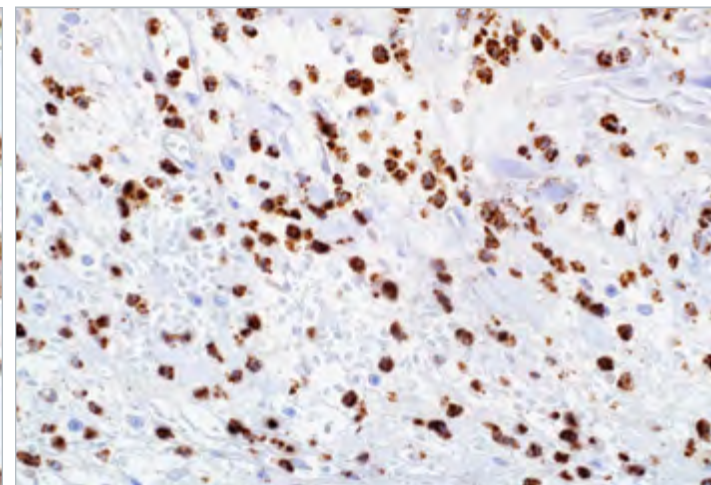
# Myeloperoxidase



Myeloperoxidase (EP151) on myeloproliferative neoplasm bone marrow.



Myelocytes in bone marrow are labeled by polyclonal myeloperoxidase.



Neutrophils in the connective tissue are labeled by Myeloperoxidase (SP72).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

MPO

## Associated Specialties

- Hematopathology

## Associated Panels

- Histiocytic Neoplasms / Histiocytic Lesions..... 297
- Leukemia..... 298
- Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders ..... 300

## Reference

1. Pinkus GS, et al. Mod Pathol. 1991; 4:733-41.
2. Hudock J, et al. Am J Clin Pathol. 1994; 102:55-60.
3. Hamoudi WH, et al. Arch Pathol Lab Med. 2000; 124:315-8.
4. Arber DA, et al. Am J Clin Pathol. 1996; 106:462-8.
5. Chang CC, et al. Am J Clin Pathol. 2000; 114:807-11.
6. Kaleem Z, et al. Am J Clin Pathol. 2001; 115:876-84.
7. Audouin J, et al. Int J Surg Pathol. 2003; 11:271-82.
8. Kojima M, et al. APMIS. 2003; 111:1133-6.

## Product Description

Anti-myeloperoxidase (MPO) detects granulocytes and monocytes in blood and precursors of granulocytes in the bone marrow. This antibody can detect myeloid cell populations of the bone marrow as well as in other sites.<sup>1-8</sup>

## Panel Quick View

Leukemia	MPO	CD13	CD33	CD38	CD71	CD117	CD163
Acute Myeloid Leukemia with Minimal Differentiation	-	+	+	+	-	+	-
Acute Myeloid Leukemia without Maturation	+	+	+	-	-	+	-
Acute Myeloid Leukemia with Maturation	+	+	+	-	-	+	-
Acute Myelomonocytic Leukemia	+	+	+	-	-	+	+
Acute Monoblastic and Monocytic Leukemia	+	+	+	-	-	+/-	+
Acute Erythroid Leukemia	-	-	-	-	+	+/-	-
Acute Megakryoblastic Leukemia	-	+/-	+/-	-	-	-	-
Acute Basophilic Leukemia	-	+	+	-	-	-	-
Acute Panmyelosis with Myelofibrosis	-	+	+	-	-	+	-

## Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders

	MPO	CD34	CD68	CD117	Hemoglobin A
Chronic Myelogenous Leukemia	+	-/+	+	+/-	-
Chronic Idiopathic Myelofibrosis	+	+/-		-/+	-
Myelodysplastic/Myeloproliferative Disorders	+	-	+	-	-
Mastocytosis	+	-		+	-
Erythroid Disorders	+/-	-	-/+	-	+
Splenic Lymphoma	-/+	-		-	-
Acute Myeloid Leukemia	+	+	+	+	-

## Ordering Information

**Clone: EP151**

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	289R-24
0.5 ml, concentrate.....	289R-25
1 ml, concentrate .....	289R-26
1 ml, predilute .....	289R-27
7 ml, predilute .....	289R-28

## Alternate Clones Available

- Rabbit Polyclonal
  - Rabbit Monoclonal, SP72
- Contact us for more information.

## Designations

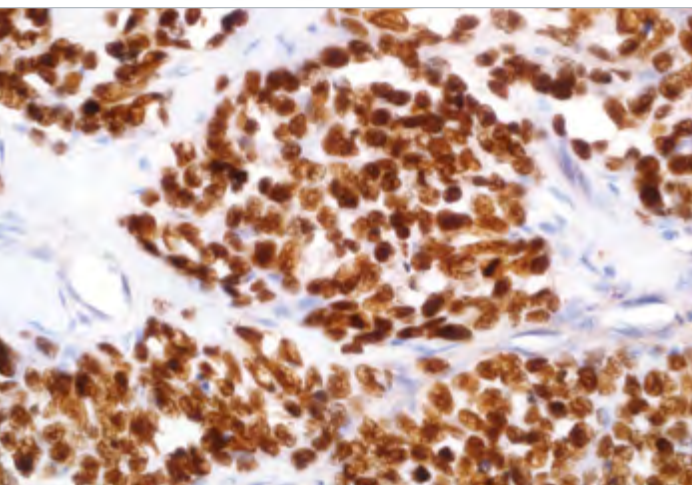


**CELL MARQUE**

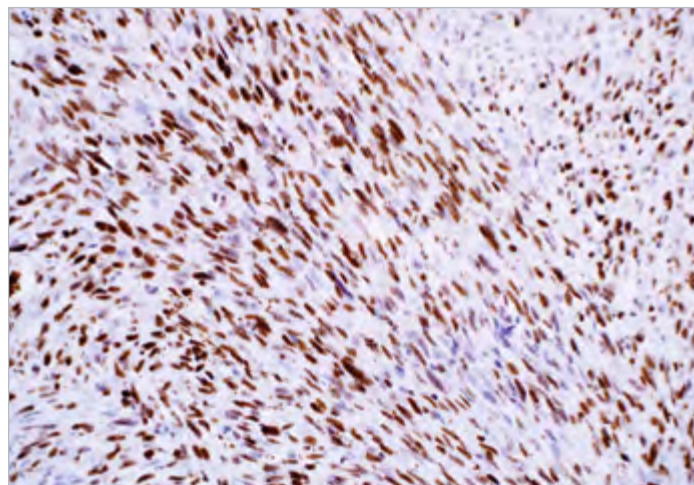
**RabMab®**  
Technology from Abcam



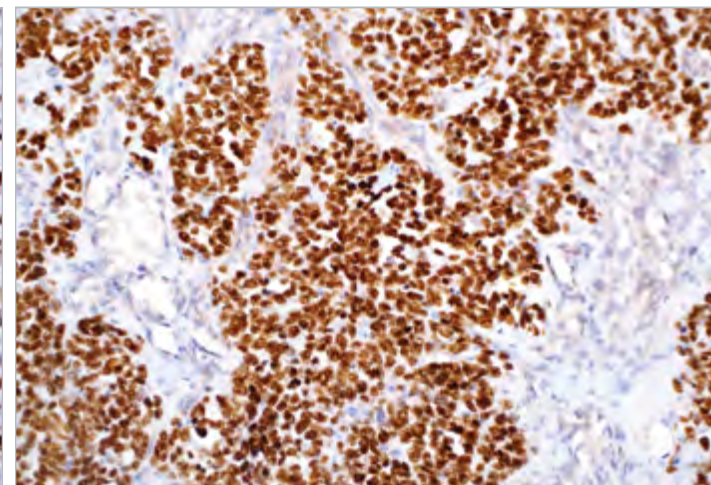
# MyoD1



Rhabdomyosarcoma cells are labeled in a nuclear pattern by MyoD1 (EP212).



MyoD1 (EP212) on rhabdomyosarcoma.



MyoD1 (EP212) on rhabdomyosarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** rhabdomyosarcoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Soft Tissue Pathology
- Pediatric Pathology

## Reference

- Morotti RA, et al. Am J Surg Pathol. 2006; 30:962-968.
- Sebire NJ, et al. J Clin Pathol. 2003; 56:412-416.

## Product Description

Rhabdomyosarcomas (RMS) are the most frequent malignant soft tissue neoplasms of childhood.<sup>1</sup> While better differentiated RMS have cross-striations or rhabdomyoblasts that allow for a confident morphologic diagnosis, less differentiated RMS resemble other small blue round cell tumors.<sup>1</sup> MyoD1, one of the MyoD family of myogenic helix-loop-helix transcription factors, combined with myogenin, plays a role in coordinating the myogenic differentiation pathway from the determination of mesodermal precursors into myoblasts, the differentiation of myoblasts into myotubes, and finally the maturation of myotubes into skeletal myofibers.<sup>2</sup> Normal mature skeletal muscle does not express MyoD1 protein.<sup>1-2</sup> MyoD1 is expressed in myoblasts before differentiation while myogenin has post-differentiation functions.<sup>2</sup> Anti-MyoD1 immunostaining identifies cells committed to myogenesis in their earliest phase, thus, it is a better biomarker for less differentiated RMS.<sup>2</sup> Studies suggest, anti-MyoD1 may be used together with anti-myogenin and anti-desmin as a panel of markers since any RMS is virtually never negative for all three markers simultaneously.<sup>1-2</sup>

## Panel Quick View

Sarcomas and Sarcomatoid Carcinomas									
	MyoD1	MS Actin	SM Actin	CK Cocktail	Desmin	GATA3	Myogenin	PAX-8	SOX-10
Rhabdomyosarcoma	+	+	-	-	+	-	+	-	-
Leiomyosarcoma	-	+	+	-	+	-	-	-	-
Epithelioid Sarcoma	-	-	-	+	-	-	-	-	-
Carcinosarcoma	-	-	-	+	-	-	-	-	-
Malignant Peripheral Nerve Sheath Tumor	-	-	-	-	-	-	-	-	+
Ewing's Sarcoma	-	-	-	-/+	+/-	-	-	-	-
Sarcomatoid Urothelial Carcinoma	-	-	-	+/-	-	+/-	-	-	-
Sarcomatoid Renal Cell Carcinoma	-	-	-	+/-	-	-	-	+	-

## Ordering Information

### Clone: EP212

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	386R-14
0.5 ml, concentrate	386R-15
1 ml, concentrate	386R-16
1 ml, predilute	386R-17
7 ml, predilute	386R-18

### Designations



IVD



IVD



IVD

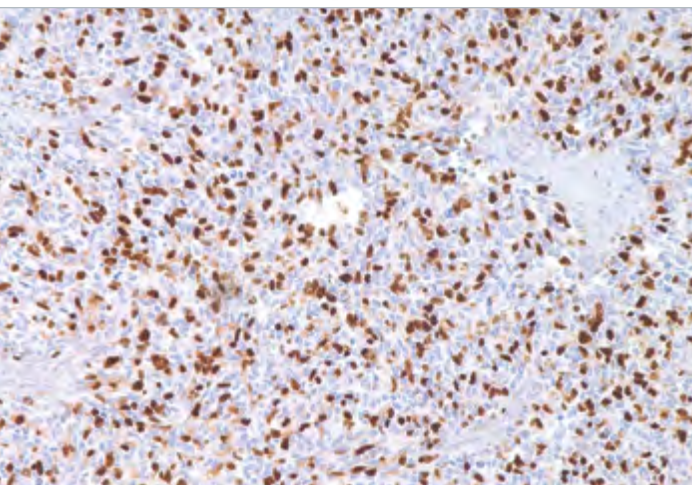


RUO

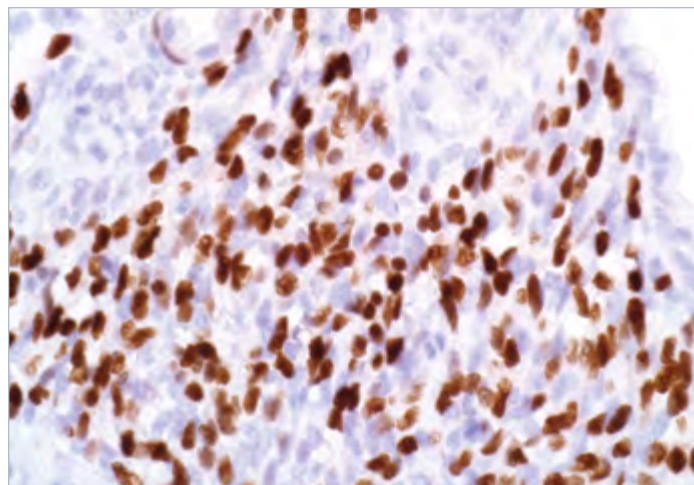
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

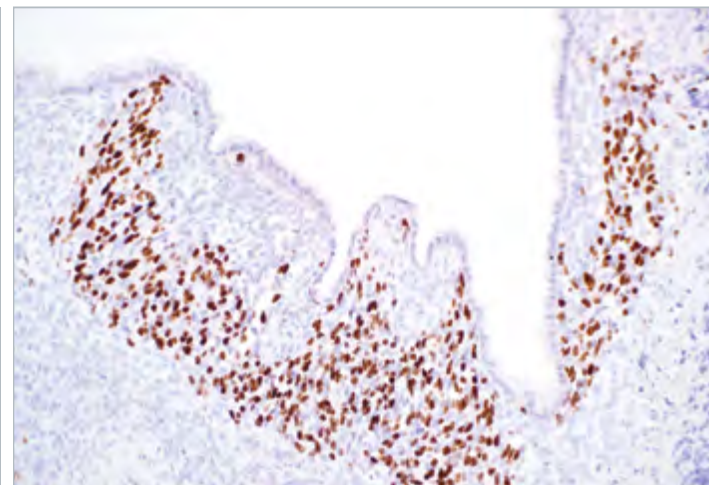
# Myogenin



Nuclear labelling of rhabdomyosarcoma cells by Myogenin (F5D).



Myogenin (F5D) on rhabdomyosarcoma.



Myogenin (F5D) on rhabdomyosarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** rhabdomyosarcoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Soft Tissue Pathology
- Pediatric Pathology

## Associated Panels

- Spindle Cell Tumors.....290
- Muscle Malignant Tumors.....302
- Small Blue Round Cell Tumors.302
- Soft Tissue Sarcoma .....303
- Soft Tissue Tumor.....303

## Reference

1. Miller JB. J Cell Biol. 1990; 111:1149-59.
2. Wang NP, et al. Am J Pathol. 1995; 147:1799-810.
3. Cui S, et al. Pathol Int. 1999; 49:62-8.
4. Cessna MH, et al. Am J Surg Pathol. 2001; 25:1150-7.
5. Furlong MA, et al. Mod Pathol. 2001; 14:595-603.
6. Dias P, et al. Am J Pathol. 2000; 156:399-408.

## Product Description

Anti-myogenin labels the nuclei of myoblasts in developing muscle tissue, and is expressed in tumor cell nuclei of rhabdomyosarcoma and some leiomyosarcomas. Positive nuclear staining may occur in Wilm's tumor.

## Panel Quick View

### Spindle Cell Tumors

	Myogenin	MS Actin	ALK	β-Catenin	Cal-ponin	CD34	CD56	CD117	CK Cocktail	PGP 9.5
Myofibroblastic Tumor	-	+	+	-	+	-	+	-	-	-
Spindle Cell Carcinoma	-	-	-	+/-	-	-	-	-	+	+
Neurofibroma	-	-	-	-	-	-	+	-	-	+
Rhabdomyosarcoma	+	+	-	-	-	-	-	+	-	-
Endometrial Stromal Tumor	-	+	-	+/-	+	-	-	-	-	+
Smooth Muscle	-	+	-	-	+	-	-	-	-	-
Fibromatosis	-	-	-	+	-	-	-	-	-	+
GIST	-	-	-	-	-	+	-	+	-	-
Schwannoma	-	-	-	-	-	-	+	-	-	-
Leiomyosarcoma	-	+	-	-	+	-	+	-	-/+	-
MPNST	-	-	-	-	-	-/+	-	-	-	+

### Small Blue Round Cell Tumors

	Myogenin	MS Actin	SM Actin	CD45	CD57	CD99	CK Cocktail	FLI-1	PGP 9.5	Vimentin
Lymphoblastic Lymphoma	-	-	-	+	-	+	-	+	-	+
Leiomyosarcoma	-	+	+	-	+/-	-	-/+	-	-	+
Rhabdomyosarcoma	+	+	-	-	-	-	-	-	+	+
Neuroblastoma	-	-	-	-	+	-	-	-	+	+
Embryonal Carcinoma	-	-	-	-	+	-	+	-	+	-
PNET/ES	-	-	-	-	+	+	-/+	+	+	+
DSRCT	-	-	-	-	+/-	-	+	+	-	+
Medulloblastoma	-	-	-	-	+	-	-	-	-	-

## Ordering Information

### Clone: F5D

Mouse Monoclonal

**Volume** ..... **Part No.**

0.1 ml, concentrate.....296M-14

0.5 ml, concentrate.....296M-15

1 ml, concentrate .....296M-16

1 ml, predilute .....296M-17

7 ml, predilute .....296M-18

### Alternate Clones Available

- Rabbit Monoclonal, EP162

Contact us for more information.

### Designations



IVD



IVD



IVD



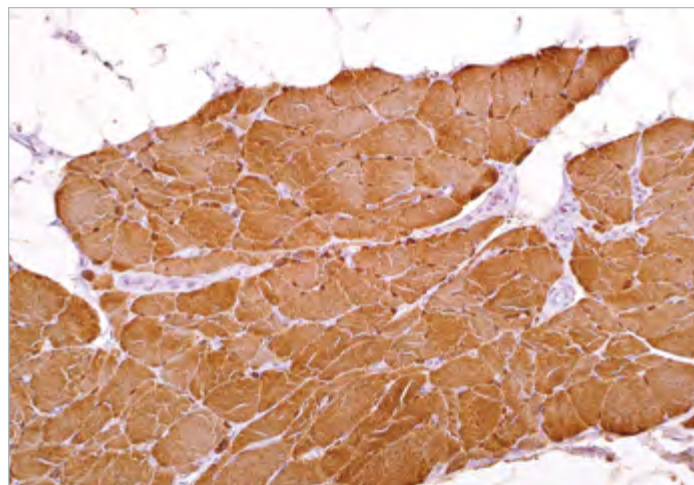
RUO



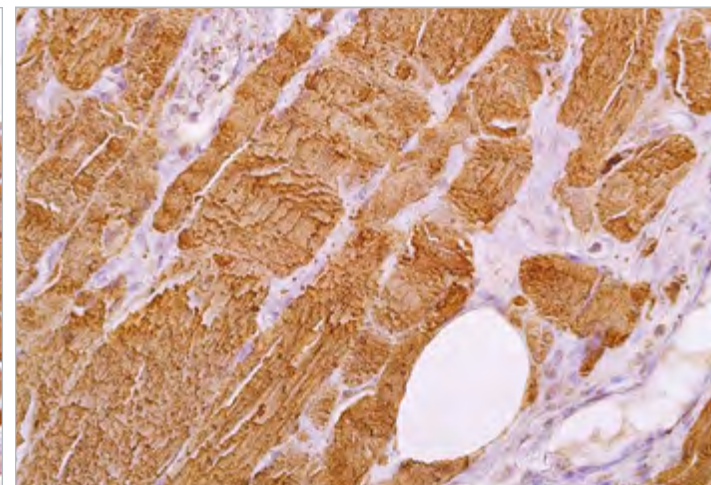
# Myoglobin



Skeletal muscle is positively expressed by anti-myoglobin in a cytoplasmic pattern.



Myoglobin (polyclonal) on skeletal muscle.



Myoglobin (polyclonal) on skeletal muscle.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** skeletal muscle

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

● Soft Tissue Pathology

## Associated Panels

● Muscle Malignant Tumors. . . . 302

● Small Blue Round Cell Tumors. 302

## Reference

1. Mukai K, et al. Am J Surg Pathol. 1979; 3:373-376.
2. Corson JM, et al. Am J Pathol. 1981; 103:384-389.
3. Kindblom LG, et al. Acta Pathol Microbiol Immunol Scand A. 1982; 90:167-74.
4. Brooks JJ, Cancer. 1982; 50:1757-1763.
5. Kahn HJ, et al. Cancer. 1983; 50:1897-1903.
6. Furlong MA, et al. Ann Diagn Pathol. 2001; 5:199-206.
7. Furlong MA, et al. Mod Pathol. 2001; 14:595-603.

## Product Description

Immunostaining with anti-myoglobin provides a specific, sensitive, and practical procedure for the identification of tumors of muscle origin. Since myoglobin is found exclusively in skeletal and cardiac muscle and is not present in any other cells of the human body, it may be used to distinguish rhabdomyosarcoma from other soft tissue tumors. Anti-myoglobin staining is also useful when demonstrating rhabdomyoblastic differentiation in other tumors, e.g. neurogenic sarcomas and malignant mixed mesodermal tumors of the uterus and ovary.

## Panel Quick View

	Myo-globin	MS Actin	SM Actin	CD57	CD99	CK Cocktail	FLI-1	INI-1	Myo-genin	PGP 9.5
Lymphoblastic Lymphoma	-	-	-	-	+	-	+	+	-	-
Leiomyosarcoma	-	+	+	+/-	-	-/+	-	-	-	-
Rhabdomyosarcoma	+	+	-	-	-	-	-	+	+	+
Neuroblastoma	-	-	-	+	-	-	-	+	-	+
Embryonal Carcinoma	-	-	-	+	-	+	-	+	-	+
PNET/ES	-	-	-	+	+	-/+	+	+	-	+
DSRCT	-	-	-	+/-	-	+	+	+	-	-

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

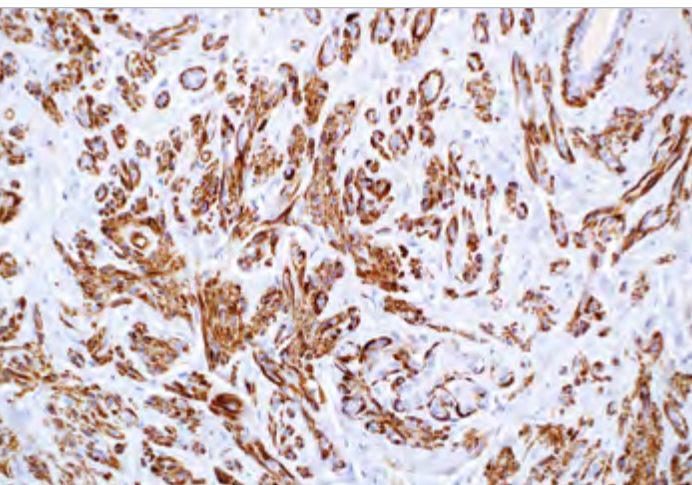
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 0.5 ml, concentrate . . . . . 297A-75  
 1 ml, concentrate . . . . . 297A-76  
 1 ml, predilute . . . . . 297A-77  
 7 ml, predilute . . . . . 297A-78

### Designations

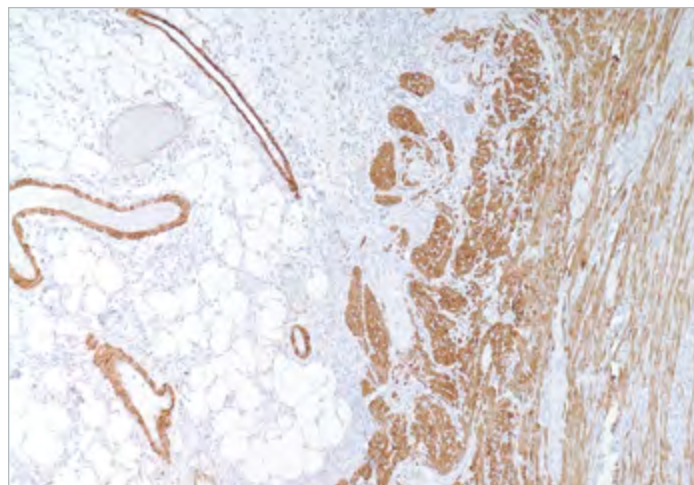
 IVD     IVD     IVD     RUO



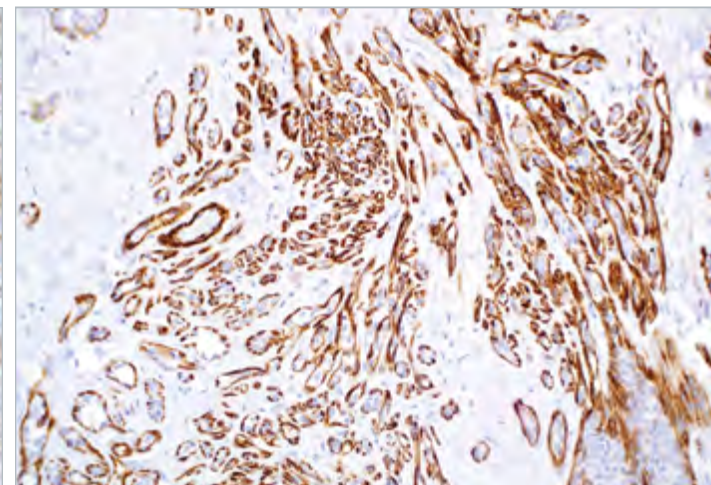
# Myosin, Smooth Muscle



Myoepithelial cells are labeled by Myosin, SM (SMMS-1) in sclerosing adenosis of breast.



Myosin, SM (SMMS-1) on smooth muscle.



Myosin, SM (SMMS-1) on sclerosing adenosis.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** breast

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

SMMS-1

## Associated Specialties

● Breast/Gynecological Pathology

## Associated Panels

● Spindle Cell Tumors. . . . . 290

● Non-invasive Breast Lesions vs. Invasive Ductal Carcinoma . . . . 291

## Reference

1. Werling RW, et al. Am J Surg Pathol. 2003; 27:82-90.
2. Agoff SN, et al. Appl Immunohistochem Mol Morphol. 2001; 9:164-9.
3. Popnikolov NK, et al. Am J Clin Pathol. 2003; 120:161-7.
4. Lazard D, et al. Proc Natl Acad Sci USA. 1993; 90:999-1003.

## Product Description

Smooth Muscle Myosin, heavy chain (SMMS-1) is a cytoplasmic structural protein that is a major component of the contractile apparatus of the smooth muscle cells. SMMS-1 is also a myoepithelium-associated protein. Anti-SMMS-1 is a mouse monoclonal antibody to smooth muscle myosin, heavy chain that reacts with human visceral and vascular smooth muscle cells. The antibody also reacts with human myoepithelial cells. It is very helpful in distinguishing between benign sclerosing breast lesions and infiltrating carcinomas in difficult cases since it strongly stains the myoepithelial layer in the benign lesions while it is negative in the infiltrating carcinomas.<sup>1-4</sup>

## Panel Quick View

Spindle Cell Tumors	SM Myosin	MS Actin	ALK	β-Catenin	Calponin	CD34	CD56	CK Cocktail	DOG1	PGP 9.5
Myofibroblastic Tumor	-	+	+	-	+	-	+	-	-	-
Spindle Cell Carcinoma	-	-	-	+/-	-	-	-	+	-	+
Neurofibroma	-	-	-	-	-	-	+	-	-	+
Rhabdomyosarcoma	-	+	-	-	-	-	-	-	-	-
Endometrial Stromal Tumor	-	+	-	+/-	+	-	-	-	-	+
Smooth Muscle	-	+	-	-	+	-	-	-	-	-
Fibromatosis	-	-	-	+	-	-	-	-	-	+
GIST	-	-	-	-	-	+	-	-	+	-
Schwannoma	-	-	-	-	-	-	+	-	-	-
Leiomyosarcoma	+	+	-	-	+	-	+	-/+	-	-

Non-invasive Breast Lesions vs. Invasive Ductal Carcinoma	SM Myosin	Calponin	CK 5&6	p63
Sclerosing adenosis	+	+	+	+
Breast Carcinoma <i>in-situ</i> (Myoepithelial Cells)	+	+	+	+
Infiltrating Breast Carcinoma	-	-	-	-

## Ordering Information

**Clone: SMMS-1**  
Mouse Monoclonal

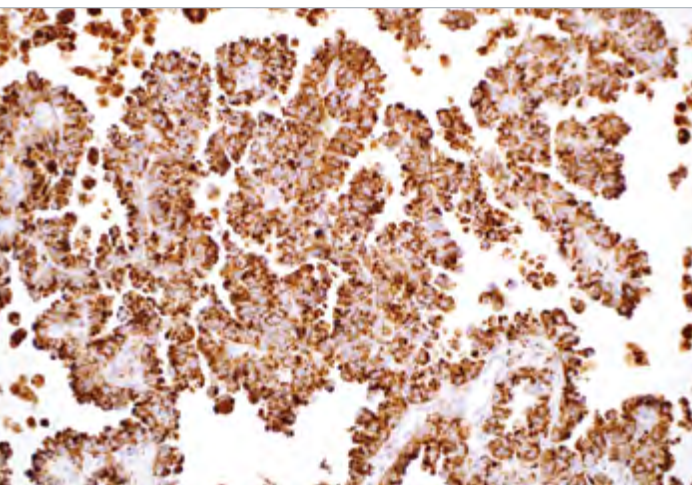
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1 ml, predilute . . . . . 298M-17  
7 ml, predilute . . . . . 298M-18

## Designations

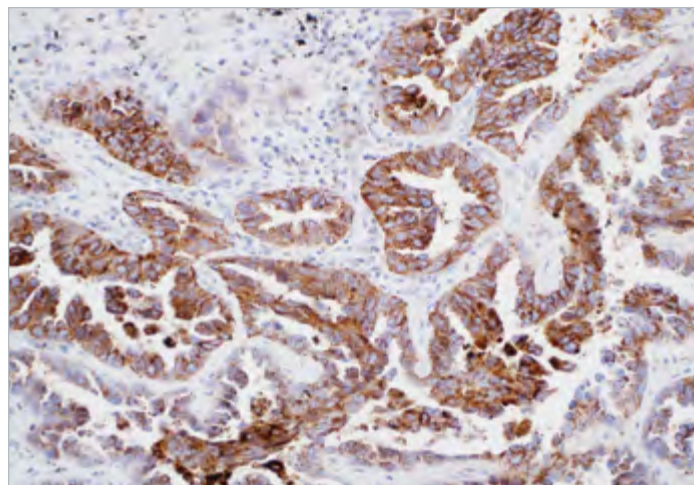
 IVD  IVD  IVD  RUO



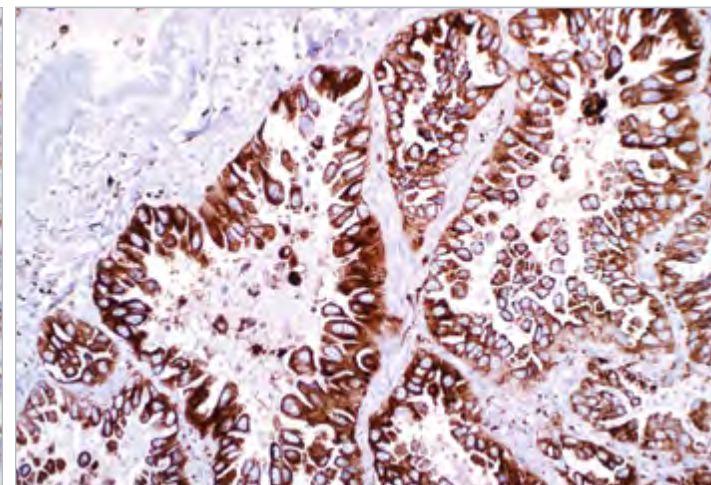
# Napsin A



Napsin A (EP205) on lung adenocarcinoma.



Lung adenocarcinoma tumor cells are stained by Napsin A (MRQ-60).



Napsin A (MRQ-60) on lung adenocarcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** lung adenocarcinoma, kidney, renal cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- EP205: IgG
- MRQ-60: IgG<sub>1</sub>/k

## Associated Specialties

- Pulmonary Pathology
- Cytopathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinomas. .... 287
- Lung Squamous Cell Carcinoma vs. Adenocarcinoma ..... 302
- Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Jagirdar J. Arch Pathol Lab Med. 2008; 132:384-96.
2. Dejimek A, et al. Diagn Cytopathol. 2007; 35:493-7.
3. Inamura K, et al. Am J Surg Pathol. 2005; 29:660-5.
4. Bishop JA, et al. Hum Pathol. 2010; 41:20-5.
5. Ye J, et al. Appl Immunohistochem Mol Morphol. 2011; 19:313-317.

## Product Description

Napsin is a pepsin-like aspartic proteinase, in the A1 clan of the AA clade of proteinases. There are two closely related napsins, napsin A and napsin B. Napsin A is expressed as a single chain protein with the molecular weight of approximately 38 kDa. Immunohistochemical studies revealed high expression levels of napsin A in human lung and kidney but low expression in spleen. Napsin A is expressed in type II pneumocytes and in adenocarcinomas of lung. The high specificity expression of napsin A in adenocarcinomas of lung is useful to distinguish primary lung adenocarcinomas from adenocarcinomas of other organs.<sup>1-5</sup>

## Panel Quick View

Breast vs. Lung vs. Prostate Carcinoma									
	Napsin A	AR	ER/PR	BRST-2	Mammaglobin	NKX3.1	PSA	TTF-1	
Breast Carcinoma	-	-	+	+	+	-	-	-	
Lung Carcinoma	+	-	-	-	-	-	-	+	
Prostate Carcinoma	-	+	-	-	-	+	+	-	

Lung Squamous Cell Carcinoma vs. Adenocarcinoma						
	Napsin A	CK 5&6	Desmocolin3	p63	SOX-2	TTF-1
Lung Adenocarcinoma	+	-	-	-/+	-/+	+
Lung Squamous Cell Carcinoma	-	+	+	+	+	-

Pleura: Adenocarcinoma vs. Mesothelioma										
	Napsin A	Caldesmon	Calretinin	CEA	CK 5&6	Ep-CAM	HBME-1	TAG-72	TTF-1	WT1
Adenocarcinoma	+	-	-	+	-	+	-	+	+	-
Mesothelioma	-	+	+	-	+	-	+	-	-	+

## Ordering Information

### Clone: EP205

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	352R-14
0.5 ml, concentrate	352R-15
1 ml, concentrate	352R-16
1 ml, predilute	352R-17
7 ml, predilute	352R-18

### Clone: MRQ-60

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	352M-94
0.5 ml, concentrate	352M-95
1 ml, concentrate	352M-96
1 ml, predilute	352M-97
7 ml, predilute	352M-98
25 ml, predilute	352M-90

### Alternate Clones Available

- Rabbit Polyclonal
- Contact us for more information.

### Designations

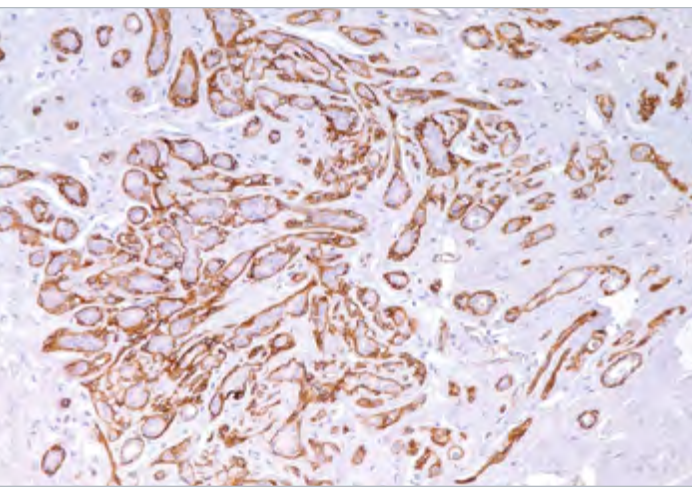


**CELL MARQUE**

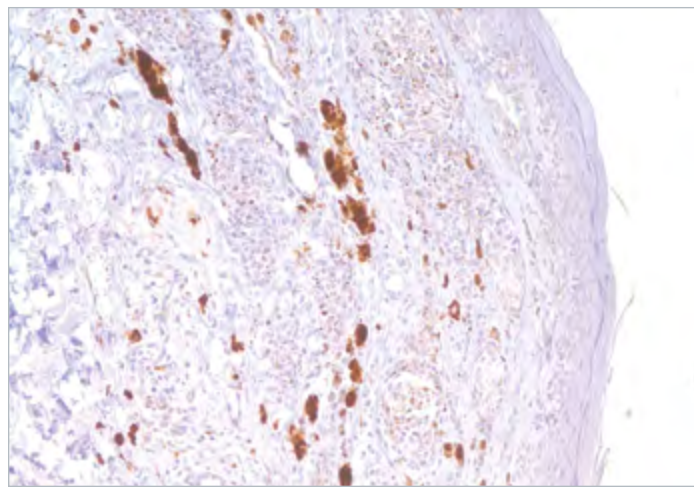
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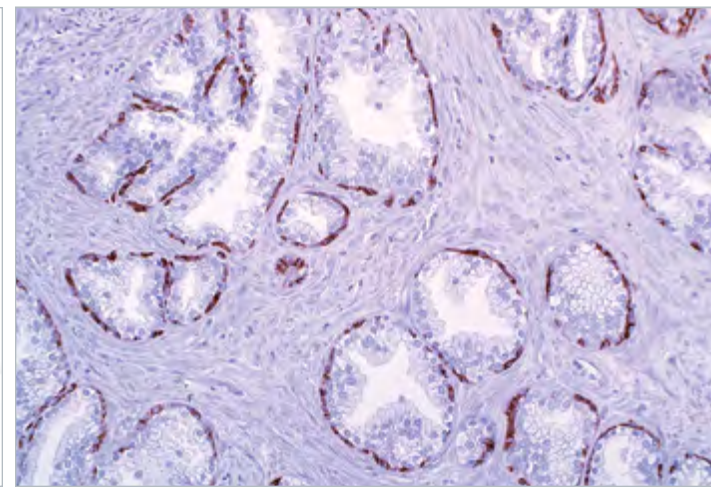
# Nerve Growth Factor Receptor (NGFR)



Anti-NGFR stains myoepithelial cells in sclerosing adenosis of breast.



Nerve Growth Factor Receptor (NGFR) (MRQ-21) on skin.



Nerve Growth Factor Receptor (NGFR) (MRQ-21) on prostate.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** breast  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

NGFR  
 p75

## Associated Specialties

● Dermatopathology

## Associated Panels

- Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290
- Melanotic Lesions ..... 293
- Skin: DF-SP vs. DF-FH ..... 293
- Skin: Spindle Cell Tumors ..... 294
- Brain: CNS Tumors 2 ..... 301

## Reference

1. Laskin WB, et al. Hum Pathol. 2000; 31:1230-41.
2. Lewis Kelso R, et al. Dermatol Surg. 2006; 32:177-83.
3. Liang Y, et al. J Invest Dermatol. 1998; 111:114-8.
4. Liang Y, et al. J Cutan Pathol. 1998; 25:189-98.
5. Liang Y, et al. Arch Dermatol Res. 1999; 291:14-21.

## Product Description

Nerve growth factor receptor (NGFR) is expressed not only in sympathetic and sensory neurons, but also in various neural crest cell or tumor derivatives such as melanocytes, melanomas, neuroblastomas, pheochromocytomas, neurofibromas, and neurotized nevi (type C melanocytes). Anti-NGFR has been shown to be a reliable marker for desmoplastic and neurotropic melanoma. All reported cases of desmoplastic melanomas are positive with this antibody. This staining property of desmoplastic melanoma cells can be useful in diagnosing challenging cases. It is now apparent that expression of NGFR is ubiquitous and not limited to the nervous system, being expressed in mature nonneural cells such as perivascular cells, dental pulp cells, lymphoid follicular dendritic cells, basal epithelium of oral mucosa and hair follicles, prostate basal cells, and myoepithelial cells. Anti-NGFR labels the myoepithelial cells of breast ducts and intralobular fibroblasts of breast ducts and thus is an aid in the diagnosis of malignancy in the breast.

## Panel Quick View

### Skin: Spindle Cell Tumors

	NGFR	CD10	CD34	Collagen IV	Factor XIIIa	FLI-1	D2-40	S-100
Dermatofibroma Fibrous Histiocytoma	-	+	-	-	+	-	-	-
Dermatofibrosarcoma Protuberans	+	+/-	+	-	-	-	-	-
Peripheral Nerve Sheath	+	-	-	+	-	-	+	+/-
Spindle Cell Melanoma	+	-	-	-	-	+	+	+

### Brain: CNS Tumors 2

	NGFR	CK Cocktail	EMA	GFAP	INI-1	Neuro-filament	PR	S-100	Synap-tophysin	Vimen-tin
Astrocytoma	+	-	-	+	+	-	-	+	-	+
Ependymoma	+	(+ AE1 & AE3)	-	+	+	-	-	+	-	-/+
Choroid Plexus Carcinoma	-	+	-	-/+	+	-	-	+	+	+/-
Central Neurocytoma	+	-	-	-	+	-	-	-	+	-
Neuroblastoma	+	-	-	+/-	+	+	-	+/-	+	+
Pineocytoma	-	-	-	-	+	-	-	-	+	-
Meningioma	-	-	+	-	+	-	+	-	-	+
Schwannoma	+	-	-	+	+	-	-	+	-	+
Metastatic Carcinoma	-	+	+	-	+	-	-/+	-	-	-/+

## Ordering Information

### Clone: MRQ-21

### Mouse Monoclonal

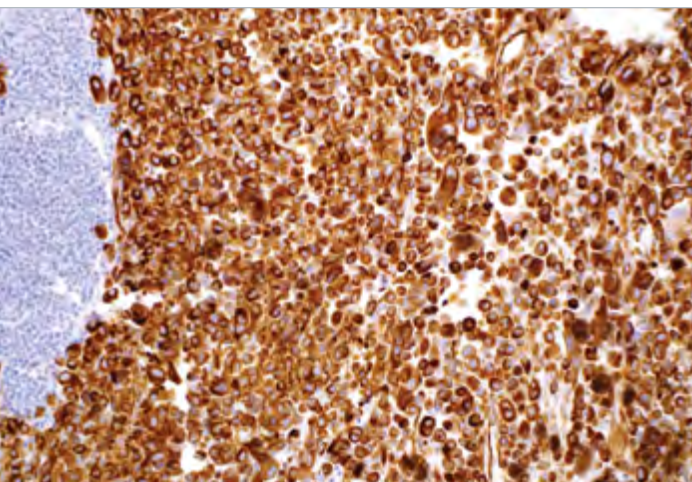
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1 ml, concentrate	304M-16
1 ml, predilute	304M-17
7 ml, predilute	304M-18

### Designations

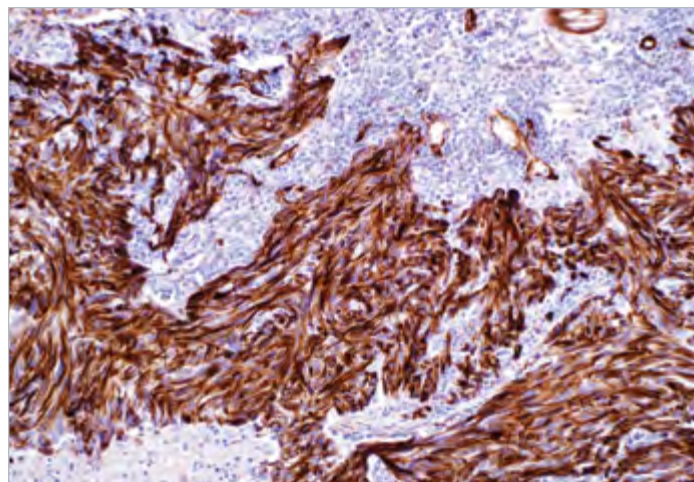


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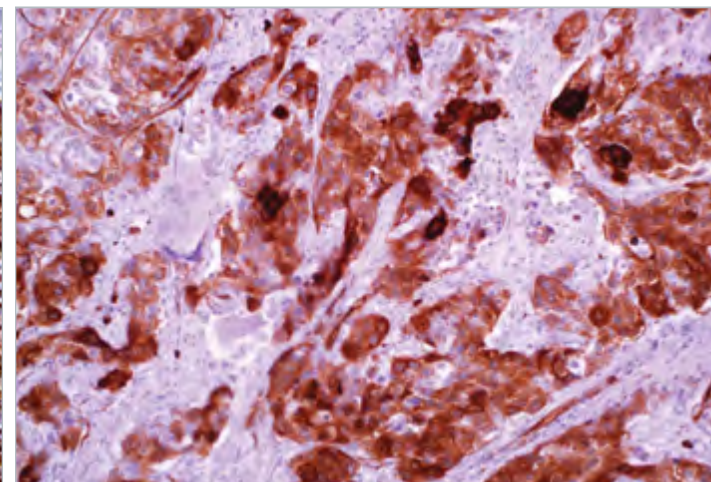




*Nestin (10C2) stains metastatic malignant melanoma.*



*Nestin (10C2) on metastatic melanoma of the lung.*



*Nestin (10C2) on triple negative breast carcinoma.*

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Dermatopathology

## Associated Panels

● Melanomas. .... 293

## Reference

1. Brychtova S, et al. J CutanPathol. 2007; 34:370-375.
2. Kanoh M, et al. Journal of Dermatology. 2010; 37:505-511.
3. Ishiwata T, et al. World J Gastroenterol. 2011; 17:409-418.
4. Li H, et al. Cancer Res. 2007; 67:501-510.

## Product Description

Nestin is a class VI intermediate filament (IF) protein. It has been reported that nestin expression is significantly increased in melanoma and correlated with more advanced stages of the disease.<sup>1</sup> An immunohistochemical analysis identified nestin-positive cells in 84% (35/42) of primary melanoma and 83% (10/12) of metastatic melanoma.<sup>1</sup> Nestin immunoreactivity was also observed in melanoma cells in all (10/10) cases of HMB-45-negative amelanotic and melanotic, non-desmoplastic melanoma.<sup>2</sup> Nestin expression has been reported in tumors of the CNS, including astrocytoma, ependymoma, oligodendroglioma, glioblastoma, and primitive neuroectodermal tumors.<sup>3</sup> Nestin has been detected in human gliomas, including low and high grade, but its expression is observed more frequently in high grade than in low-grade gliomas.<sup>3</sup> Nestin overexpression is seen in carcinomas, including prostatic adenocarcinoma, pancreatic ductal carcinoma, thyroid carcinoma, and in mesenchymal tumors such as GIST and DFSP.<sup>3</sup> Among the breast carcinoma subtypes, nestin is highly expressed in basal breast cancer subtype (ER $\alpha$ -PR-/Her2-) but not in the Her2 subtype (ER $\alpha$ -PR-/Her2+) or luminal epithelial phenotype (ER $\alpha$ + /PR+).<sup>4</sup> Only cytoplasmic staining is considered positive, whereas any nuclear staining is considered as background artifact. In normal skin, nestin is observed in endothelial cells and the bulge area of hair follicles.

## Panel Quick View

Melanomas	Nestin	SOX-10	HMB-45	S100
Desmoplastic Melanoma	+	+	-	+
Spindle Cell Melanoma	+	+	-/+	+
Conventional Melanoma	+	+	+	+

## Ordering Information

### Clone: 10C2

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	388M-14
0.5 ml, concentrate	388M-15
1 ml, concentrate	388M-16
1 ml, predilute	388M-17
7 ml, predilute	388M-18

### Designations



IVD



IVD



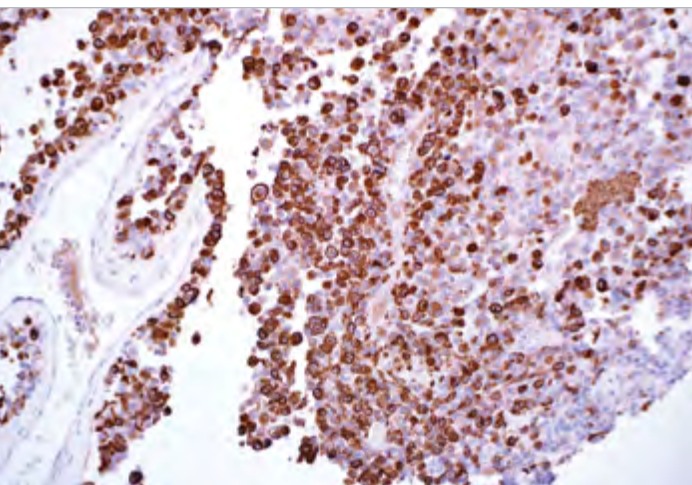
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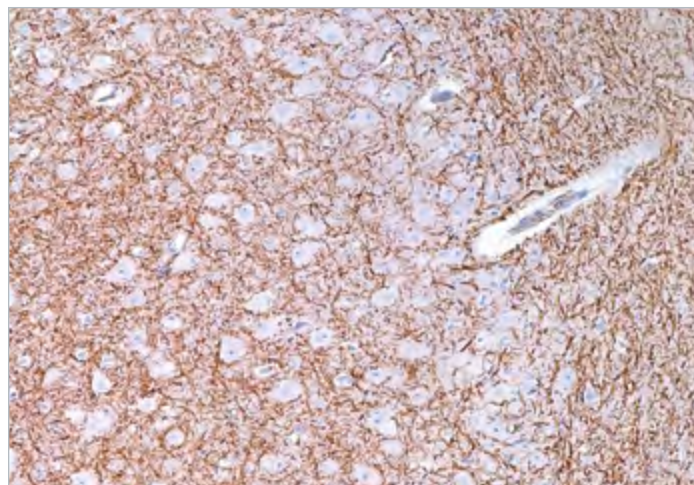
RUO



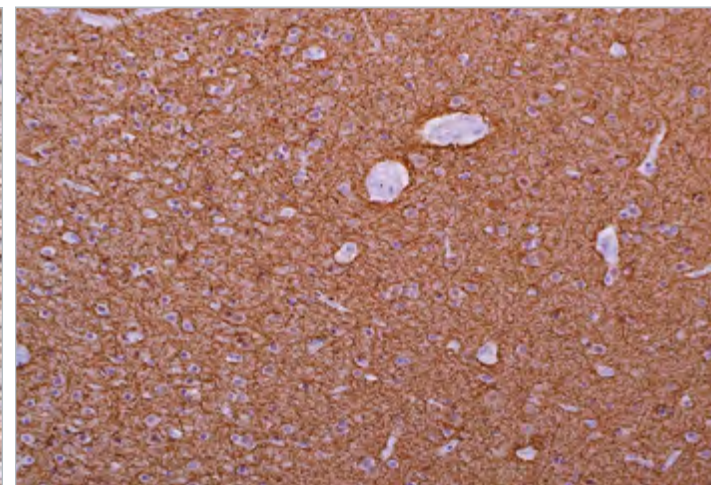
# Neurofilament



Neurofilament (EP79) on glioblastoma.



Neuronal dendritic processes of the brain are labeled by Neurofilament (polyclonal).



Neurofilament (EP79) on brain.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** brain

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Neuropathology

## Associated Panels

- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma . . . . . 289
- Retroperitoneal Lesions. . . . . 290
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Brain: CNS Tumors 2 . . . . . 301
- Retroperitoneal Neoplasms . . . 301

## Reference

1. Leong AS-Y, et al. Manual of Diagnostic antibodies for Immunohistochemistry. London: Greenwich Medical Media Ltd. 1999. Print. P. 162-168.
2. Miettinen M, et al. Lab Invest. 1985; 52:429-36.
3. van Muijen GN, et al. Am J Pathol. 1984; 116:363-9.
4. Trojanowski JQ, et al. N Engl J Med. 1985; 313:101-4.
5. Morrison CD, et al. Semin Diagn Pathol. 2000; 17:204-15.

## Product Description

Immunolabelling of neurofilaments (NF) is employed for study of nerve distribution of normal and abnormal tissues, and neuronal differentiation of neoplasms. NF are found in neuromas, ganglioneuromas, gangliogliomas, ganglioneuroblastomas, neuroblastomas, and retinoblastomas. Neurofilaments are also present in paragangliomas, as well as, adrenal and extra-adrenal pheochromocytomas. Carcinoids, neuroendocrine carcinomas of the skin, and lung small cell carcinoma also express neurofilament.<sup>1-5</sup>

## Panel Quick View

Retroperitoneal Lesions									
	Neurofilament	CD99	Chromogranin A	GFAP	MBP	NSE	PGP 9.5	S-100	Synaptophysin
Neuroblastoma	+	-	+	+/-	-	+	+	-	+
Ganglioneuroblastoma	+	-	+	+	-/+	+	+	+	+
Ganglioneuroma	+	-	+	+	+	+	+	+	+

Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors						
	Neurofilament	CD117	CK 20	Chromogranin A	Synaptophysin	TTF-1
Merkel Cell Carcinoma	+	+	+	+	+	-
Small Cell Carcinoma	-	+/-	-	+	+	+

Brain: CNS Tumors 2										
	Neurofilament	CK Cocktail	EMA	GFAP	INI-1	NGFR	PR	S-100	Synaptophysin	Vimentin
Astrocytoma	-	-	-	+	+	+	-	+	-	+
Glioblastoma	-	-	-	+	+	-	-	+	-	+
Oligodendroglioma	-	-	-	-	+	-	-	+	-	+
Ependymoma	-	(+ AE1 & AE3)	-	+	+	+	-	+	-	-/+
Choroid Plexus Carcinoma	-	+	-	-/+	+	-	-	+	+	+/-
Central Neurocytoma	-	-	-	-	+	+	-	-	+	-
Neuroblastoma	+	-	-	+/-	+	+	-	+/-	+	+
Pineocytoma	-	-	-	-	+	-	-	-	+	-
Meningioma	-	-	+	-	+	-	+	-	-	+
Schwannoma	-	-	-	+	+	+	-	+	-	+
Rhabdoid Tumors	+/-	+	+	-	-	-	-	+/-	+/-	+
Metastatic Carcinoma	-	+	+	-	+	-	-/+	-	-	-/+

## Ordering Information

### Clone: EP79

Rabbit Monoclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate . . . . . 302R-14  
 0.5 ml, concentrate . . . . . 302R-15  
 1 ml, concentrate . . . . . 302R-16  
 1 ml, predilute . . . . . 302R-17  
 7 ml, predilute . . . . . 302R-18

### Alternate Clones Available

• Mouse Monoclonal, 2F11  
 Contact us for more information.

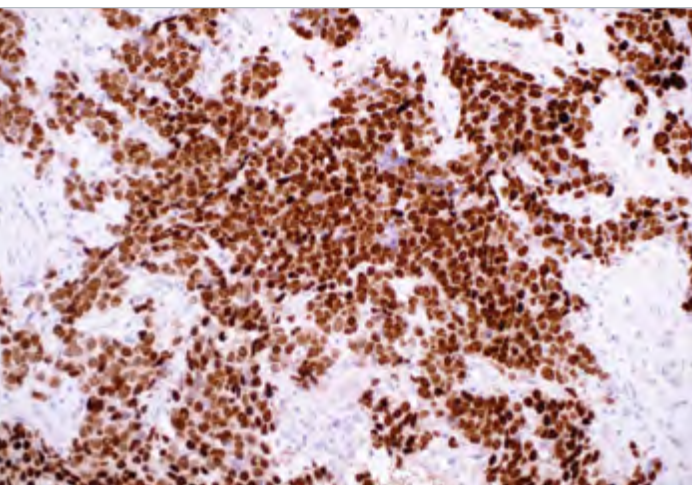
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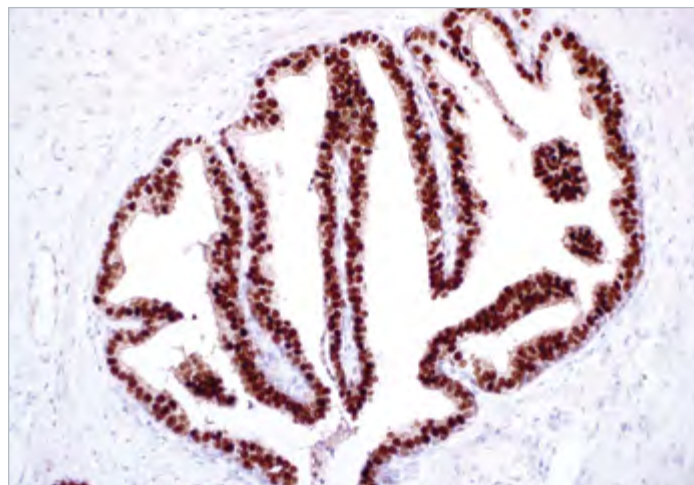
**CELL MARQUE**

**RabMab®**  
 Technology from Abcam

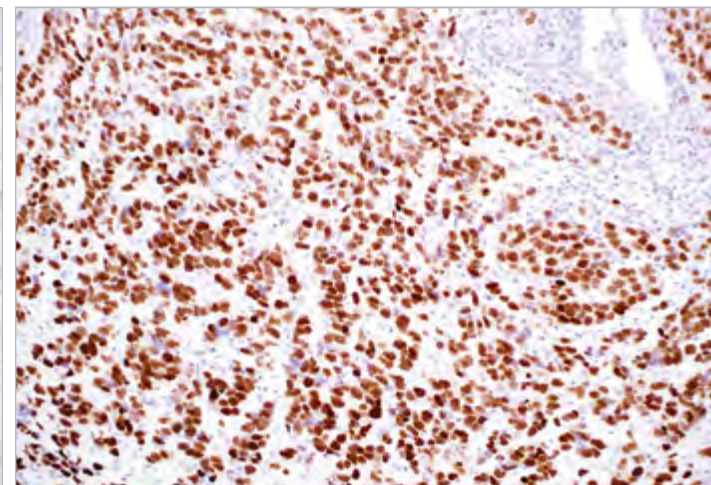




Nuclear labelling by NKX3.1 (EP356) on high-grade prostate carcinoma.



NKX3.1 (EP356) on benign prostate.



NKX3.1 (EP356) on high grade prostate carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** prostate adenocarcinoma, prostate

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Genitourinary (GU) Pathology
- Anatomic/Surgical Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Colon vs. Prostate Adenocarcinoma ..... 287

## Reference

1. Gurel B, et al. Am J Surg Pathol. 2010; 34:1097-1105.
2. Chuang A, et al. Am J Clin Pathol. 2007; 31:1246-55.
3. Asch-Kendrick R, et al. J Clin Pathol. 2014; 67:768-71.

## Product Description

NKX3.1 is a prostate specific androgen-regulated homeobox gene located on chromosome 8.<sup>1,2,3</sup> It is difficult to distinguish between high grade prostate adenocarcinoma and high grade infiltrating urothelial carcinoma using hematoxylin and eosin stained specimens.<sup>2</sup> Current prostate adenocarcinoma markers such as PSA and PSAP are very useful in determining prostate origin of prostate cancer in other sites, but have lower sensitivity when identifying poorly differentiated compared to well differentiated cases.<sup>2</sup> Currently, thrombomodulin and uroplakin are used to identify tumors of urothelial origin; however, their sensitivities are suboptimal.<sup>2</sup> In a study by Gurel et al., nearly all cases of metastatic prostate adenocarcinoma were stained by NKX3.1.<sup>1</sup> NKX3.1-positive prostate carcinoma cells exhibit nuclear staining.<sup>1</sup> In another study conducted by Chuang et al., nearly all cases of urothelial carcinoma were negative for NKX3.1.<sup>2</sup> Lastly, NKX3.1 has also been found to be expressed in invasive ductal carcinomas (IDC) and invasive lobular carcinomas (ILC) of the breast.<sup>3</sup> NKX3.1 expression is limited to ER, PR, and AR positive carcinomas and is more frequently expressed in ILC than IDC.<sup>3</sup> NKX3.1 has a high specificity and sensitivity for prostate adenocarcinomas and can be used to help distinguish between prostate carcinoma and urothelial carcinomas.<sup>1,2</sup>

## Panel Quick View

Prostatic and Urothelial Carcinomas										
	NKX3.1	AR	CK 5&6	ERG	GATA3	p63	P504s	PSA	PSAP	S100P
Prostatic	+	+	-	-/+	-	-	+	+/-	+	-
Urothelial	-	-	+/-	-	+	+	-	-	-	+

Prostate, Lung and Breast Carcinomas								
	NKX3.1	AR	ER/PR	GCFP-15	Mamma-globin	Napsin A	PSA	TTF-1
Prostate	+	+	-	-	+	-	+	-
Breast	-	- (apocrine+)	+	+	+	-	-	-
Lung	-	-	-	-	-	+	-	+

Prostate and Gastrointestinal Tract Carcinomas									
	NKX3.1	AR	Arginase-1	CA 19-9	CDX-2	CK20	pCEA	PSA	S100P
Prostatic	+	+	-	-	-	-	-	+	-
Gastrointestinal	-	-	-	+	+	+	+	-	-/+
Pancreatic	-	-	-	+	-	+	+	-	+
Hepatocellular	-	-	+	-	-	-	+	-	+/-

## Ordering Information

### Clone: EP356

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	441R-14
0.5 ml, concentrate	441R-15
1 ml, concentrate	441R-16
1 ml, predilute	441R-17
7 ml, predilute	441R-18
25 ml, predilute	441R-10

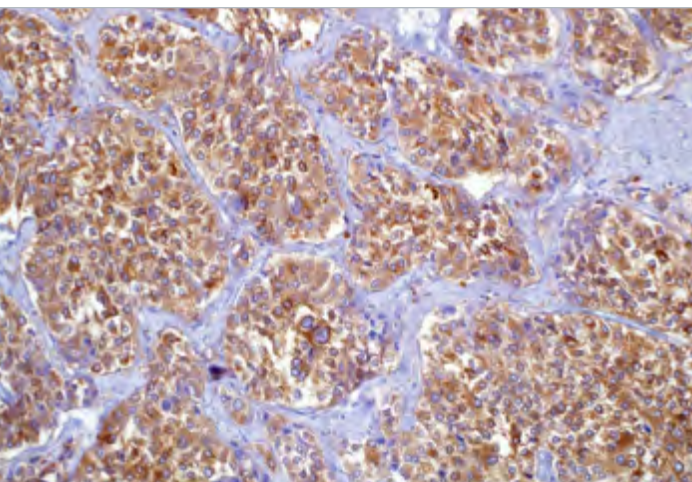
### Designations

			
IVD	IVD	IVD	RUO

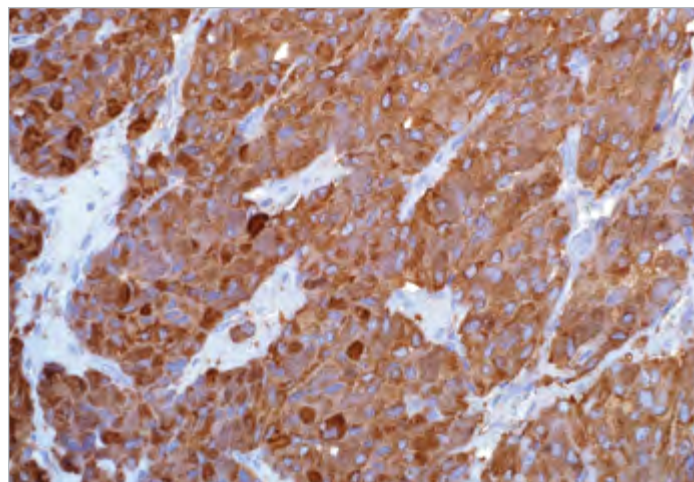
**CELL MARQUE**

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Technology from Abcam

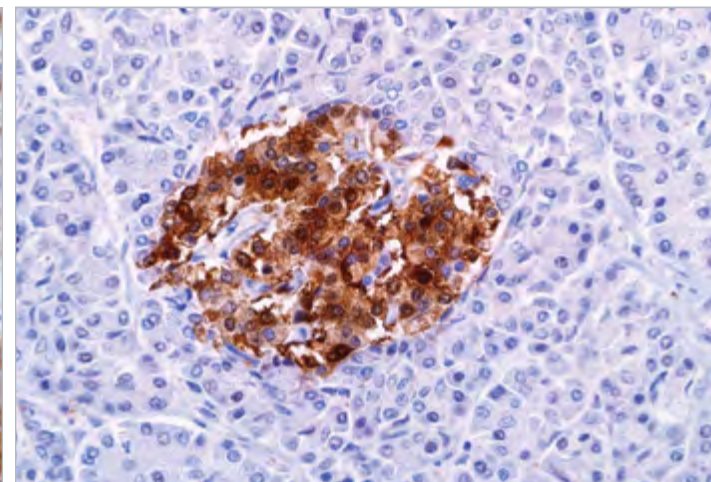




NSE (MRQ-55) expresses pancreatic neuroendocrine tumors in a cytoplasmic pattern.



NSE (MRQ-55) on pancreatic neuroendocrine tumor.



NSE (MRQ-55) on pancreas.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreas, carcinoid tumor

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Retroperitoneal Lesions . . . . . 290

● Retroperitoneal Neoplasms . . . 301

## Reference

1. Wick MR, et al. American Journal of Clinical Pathology. 1983; 29:703-7.
2. Venores SA, et al. Archives of Pathology and Laboratory Medicine. 1984; 108:536-40.
3. Leong AS-Y, et al. Pathology. 1986; 18:393-9.
4. Cooper EH. International Journal of Biological Markers. 1994; 9:205-10.
5. Loenard N, et al. Gut. 1995; 37:763-5.

## Product Description

Neuron-specific enolase (NSE) is the glycolytic isoenzyme of the enolase gamma-gamma dimer specifically detected in neurons of neuroendocrine cells, and their corresponding tumors.<sup>1,2</sup> In addition, NSE has been demonstrated immunohistochemically in the non-neoplastic cells of the pituitary, peptide secreting tissues, pinealocytes, neuroendocrine cells of the lung, thyroid, parafollicular cells, adrenal medulla, islets of Langerhans, Merkel cells of the skin<sup>3</sup>, and melanocytes. Anti-NSE immunostaining is also positive in normal striated muscle, hepatocytes and, to a lesser extent, smooth muscle.<sup>4</sup> Anti-NSE is a useful marker to identify peripheral nerves.<sup>5</sup> When used for the identification of neuroendocrine differentiation, it is necessary that it be employed in a panel with more specific markers such as anti-synaptophysin, anti-chromogranin, and anti-neurofilament.

## Panel Quick View

Retroperitoneal Lesions								
	NSE	Chromogranin A	CD99	GFAP	Neurofilament	PGP 9,5	S-100	Synaptophysin
Neuroblastoma	+	+	-	-/+	+	+	-	+
Ganglioneuroblastoma	+	+	-	+	+	+	+	+
Ganglioneuroma	+	+	-	+	+	+	+	+
Leiomyosarcoma	-/+	-	-	-	-	-/+	-	-
Rhabdomyosarcoma	-	-	-	-	-	+	-	-
Synovial Sarcoma	-	-	+/-	-	-	-	-/+	-

## Ordering Information

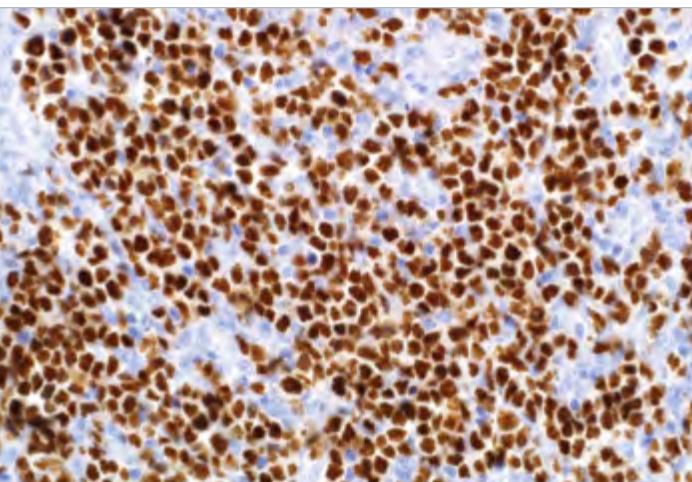
**Clone: MRQ-55**  
Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	306M-24
0.5 ml, concentrate . . . . .	306M-25
1 ml, concentrate . . . . .	306M-26
1 ml, predilute . . . . .	306M-27
7 ml, predilute . . . . .	306M-28

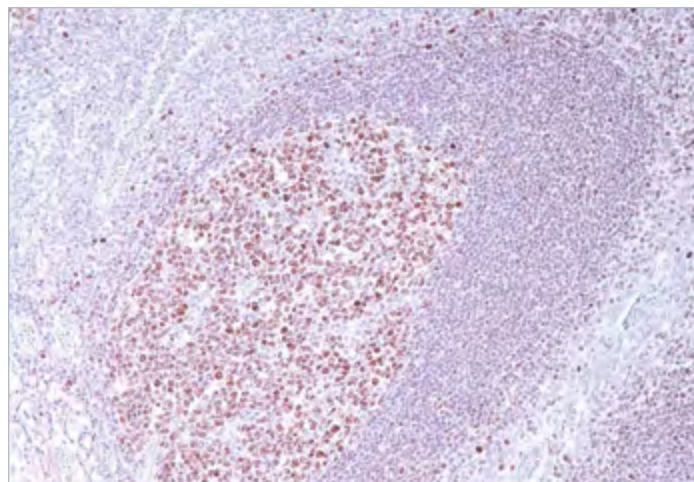
## Designations

			
IVD	IVD	IVD	RUO

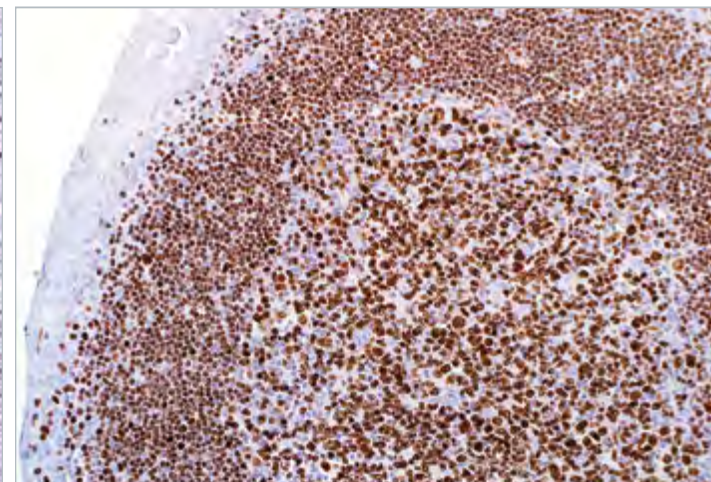




Lymphoma cells are expressed in diffuse large B-cell lymphoma in a nuclear reaction by Oct-2 (MRQ-2).



Oct-2 (MRQ-2) on tonsil.



Oct-2 (MRQ-2) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296

● Hodgkin vs. Non-Hodgkin Lymphomas ..... 297

## Reference

1. Browne P, et al. Am J Clin Pathol. 2003; 120:767-77.
2. Garcia-Cosio M, et al. Mod Pathol. 2004; 17:1531-8.
3. Gibson SE, et al. Am J Clin Pathol. 2006; 126:916-24.
4. Hallermann C, et al. J Am Acad Dermatol. 2007; 56:588-97.

## Product Description

Oct-2 is a transcription factor of the POU homeo-domain family that binds to the Ig gene octamer sites, regulating B-cell-specific genes. These are involved in proliferation and differentiation and despite the scarce evidence for Oct-2 expression in T-cells, it has been shown that this factor participates in transcriptional regulation during T-cell activation. Oct-2 activity is dependent on phosphorylation and alternative splicing, although it seems that the level of its expression can be used as a marker of B-cell lineage and differentiation. The following show high levels of Oct-2 expression: germinal center B-cells, mantle B-cells, monocytoid B-cells, and plasma cells. Various lymphomas are also positive for this marker including the following: B-chronic lymphocytic leukemia, mantle cell lymphoma, follicular lymphoma, marginal zone lymphoma, plasmacytoma, Burkitt lymphoma, diffuse large cell lymphoma, diffuse large B-cell lymphoma, T-cell rich B-cell lymphoma, nodular lymphocyte predominant Hodgkin lymphoma, classic Hodgkin lymphoma. Several studies of Oct-2 expression have shown a low level expression in pre-B, T-cell, myelomonocytic, and epithelial cell lines, whereas all mature B-cell lines display high levels of expression. Analysis of Oct-2 expression in primary Hodgkin lymphoma (HLs) and cell lines derived from it showed that the tumor cells analyzed had high levels of expression and activity, suggesting a common B-cell origin for all types of HLs.

## Panel Quick View

B-cell Lymphomas										
	Oct-2	BCL6	CD5	CD10	CD20	CD23	CD79a	Cyclin D1	PU.1	TCL1
CLL/SLL	+	-	+	-	+	+	+	-	+	+
Diffuse Large Cell Lymphoma	+	+/-	-/+	-/+	+	-	+	-	+	+
Follicular	+	+	-	+	+	-	+	-	+	+
Mantle Cell	+	-	+	-	+	-	+	+	+	+
Marginal Zone	+	-	-	-	+	-	+	-	+	-

Hodgkin vs. Non-Hodgkin Lymphomas										
	Oct-2	BCL6	CD15	CD30	CD79a	EMA	Fascin	Gran-zyme B	MUM1	PU.1
Hodgkin Lymphoma, Classic	-	-	+	+	-	-	+	-	+	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	+	+	-	-	+	+	-	-	-/+	+
T-cell Rich B-cell Lymphoma	+	+	-	-	+/-	-/+	-	-	+	-
T-cell Rich LBCL	+	+	-	-	+	-	-	-	+	-

## Ordering Information

### Clone: MRQ-2

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	308M-14
0.5 ml, concentrate	308M-15
1 ml, concentrate	308M-16
1 ml, predilute	308M-17
7 ml, predilute	308M-18

### Designations



IVD



IVD

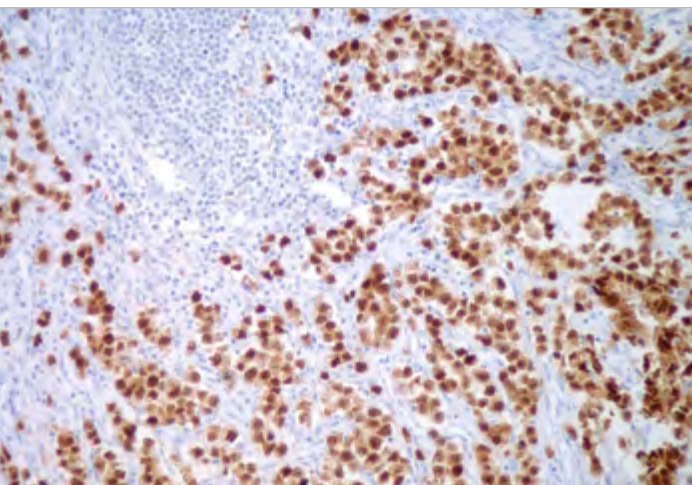


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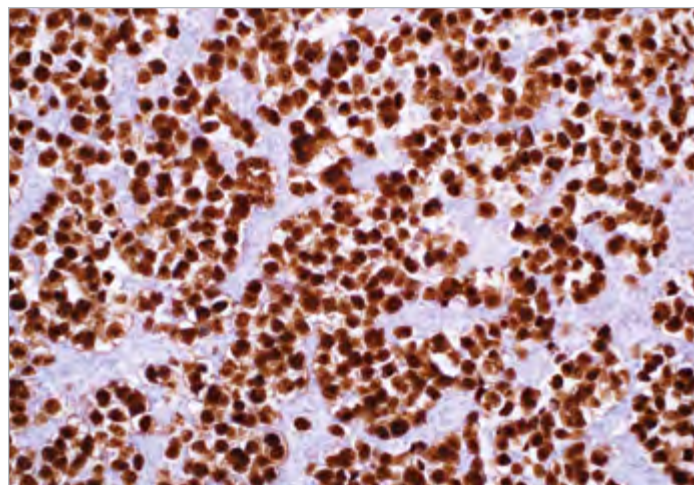


RUO

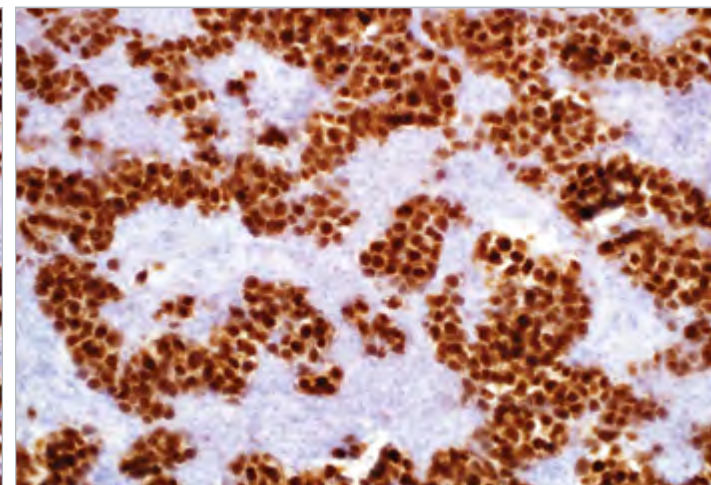




Oct-4 (MRQ-10) labels seminoma cells in a nuclear pattern.



Oct-4 (MRQ-10) on seminoma.



Oct-4 (MRQ-10) on seminoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** seminoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

Oct 3/4

## Associated Specialties

● Genitourinary (GU) Pathology

## Associated Panels

● Germ Cell Tumors..... 295

● Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma..... 295

## Reference

1. Baker PM, et al. Int J Gynecol Pathol. 2005; 24:39-55.
2. Biermann K, et al. Histopathology. 2006; 49:290-7.
3. Cheng CJ, et al. J Biomed Sci. 2007; 14:797-807.
4. Cools M, et al. J Clin Endocrinol Metab. 2006; 91:2404-13.

## Product Description

Oct-4 is a transcription factor that maintains and regulates pluripotency in embryonic stem and germ cells. Anti-Oct-4 has shown a very high sensitivity and specificity in seminoma/dysgerminoma, embryonal carcinoma, and the germ cell component of gonadoblastoma by nuclear immunostaining. Clear cell carcinoma may enter the differential diagnosis of dysgerminoma as both may grow in nests or tubules, contain clear cells, and have a prominent inflammatory infiltrate (lymphocytes in dysgerminoma and plasma cells in clear cell carcinoma). In one study that looked at anti-Oct-4 staining in clear cell carcinomas, 4 of 14 tumors were found to be focally positive. In another study, 49 endometrioid carcinomas were Oct-4 negative. Rarely dysgerminoma may have a morphologic appearance that overlaps with sex cord-stromal tumors, especially poorly differentiated Sertoli cell tumors. In two studies however, all sex cord-stromal tumors of the testis and granulosa cell tumors of the ovary were Oct-4 negative.

## Panel Quick View

Germ Cell Tumors										
	Oct-4	AFP	CD30	CD117	EMA	GPC-3	hPL	Inhibin	PLAP	Vimentin
Seminoma (Seminoma/Dysgerminoma)	+	-	-	+	-	-	-	-	+	+
Embryonal Carcinoma	+	-	+	-	-	-	-	-	+	-
Choriocarcinoma	-	-	-	-	+	+	+	-	+	-/+
Yolk Sac Tumor	-	+	-	-/+	-	+	-	-	-/+	-
Granulosa Cell Tumor	-	-	-	-	-	-	-	+	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	+	-	-	-	-	-
Mature Teratoma	-	+/-	-	-	+	-	-/+		+/-	+
Immature Teratoma	-	-	-	+/-	+	-	-/+		-	+
Carcinoid	-	-	-	-	-	-	-	-	-	+

## Ordering Information

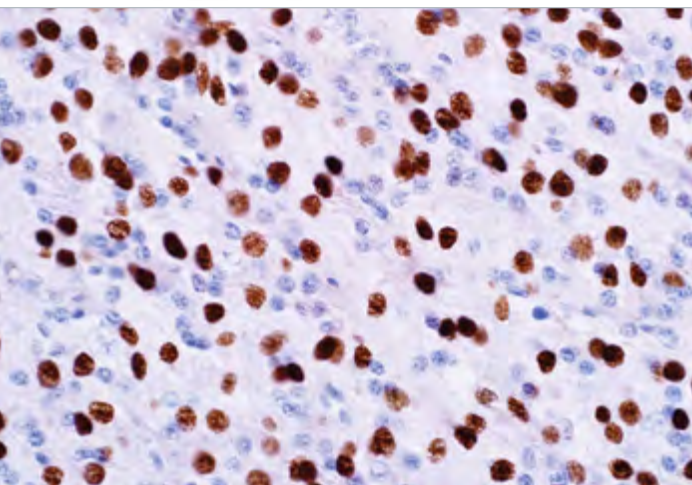
**Clone: MRQ-10**  
Mouse Monoclonal

**Volume . . . . . Part No.**  
0.1 ml, concentrate . . . . . 309M-14  
0.5 ml, concentrate . . . . . 309M-15  
1 ml, concentrate . . . . . 309M-16  
1 ml, predilute . . . . . 309M-17  
7 ml, predilute . . . . . 309M-18

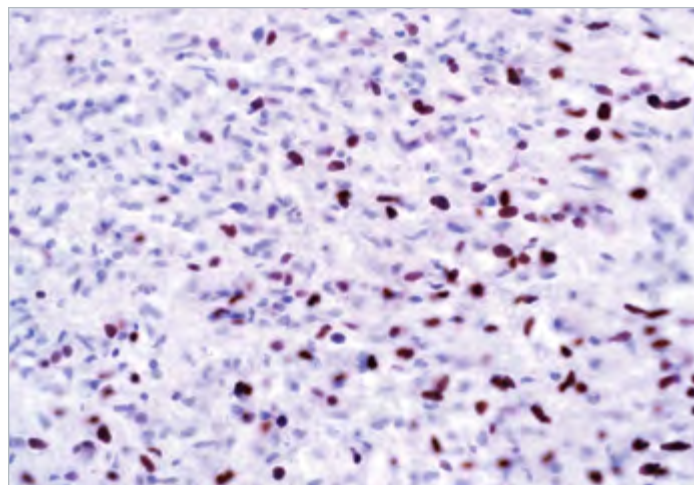
## Designations

 IVD  IVD  IVD  RUO

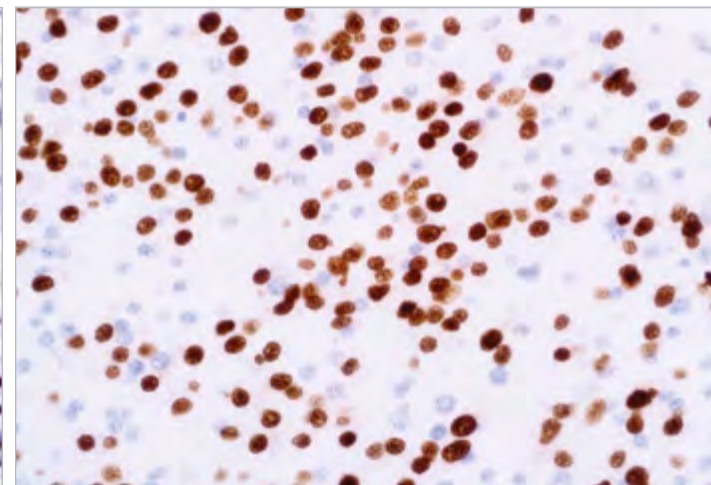




Olig2 (211F1.1) labels nuclear tumor cells in oligodendroglioma of brain.



Olig2 (211F1.1) on schwannoma.



Olig2 (EP112) on oligodendroglioma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** astrocytoma

**Stability** up to 36 mo. at 2-8°C

**Isotype**

• 211F1.1: IgG<sub>2a</sub>/k

• EP112: IgG

## Associated Specialties

● Neuropathology

## Associated Panels

● Brain: CNS Tumors 1 ..... 300

## Reference

1. Mokhtari K, et al. Neuropathol Appl Neurobiol. 2005; 31:62-9.
2. OteroJJ, et al. Journal of Neuro-Oncology. 2011; 104:423-438.

## Product Description

Olig2, a basic helix-loop-helix transcription factor, is involved in oligodendroglial specification. Olig2 expression has been reported in most glial tumors, such as oligodendrogliomas and astrocytomas.<sup>1,2</sup> More than half of glioblastomas are weakly positive for Olig2. No Olig2 expression has been found in the non-glial tumors including neuroepithelial tumors, ependymomas, subependymomas, medulloblastomas, and nonneuroepithelial tumors, such as CNS lymphomas, meningiomas, schwannomas, atypical teratoid/rhabdoid tumor, and haemangioblastomas.<sup>1,2</sup> In order to characterize cellular subtypes that constitute astrocytomas, oligoastrocytomas and oligodendrogliomas, double labeling of Olig2 and GFAP has been performed which identified two phenotypically distinct tumor populations. The first is Olig2+/GFAP- which has an oligodendroglial morphology, corresponding to pure oligodendrogliomas that contain only oligodendroglial cells; the second is Olig2-/GFAP+ which has an astrocytic phenotype, including not only oligoastrocytomas, but also WHO astrocytomas.<sup>1,2</sup>

## Panel Quick View

Brain: CNS Tumors 1						
	Olig2	CK Cocktail	EMA	GFAP	S-100	Vimentin
Astrocytoma	+/-	-	-	+	+	+
Oligodendrocytoma	+	-	-	-	-	+
Glioblastoma	+	+	-	+/-	+	+
Ependymoma	-	+	-	+/-	+	-
Meningioma	+/-	-	+	+/-	-/+	+

## Ordering Information

### Clone: 211F1.1

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	387M-14
0.5 ml, concentrate	387M-15
1 ml, concentrate	387M-16
1 ml, predilute	387M-17
7 ml, predilute	387M-18

### Clone: EP112

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	387R-14
0.5 ml, concentrate	387R-15
1 ml, concentrate	387R-16
1 ml, predilute	387R-17
7 ml, predilute	387R-18

## Designations



IVD



IVD



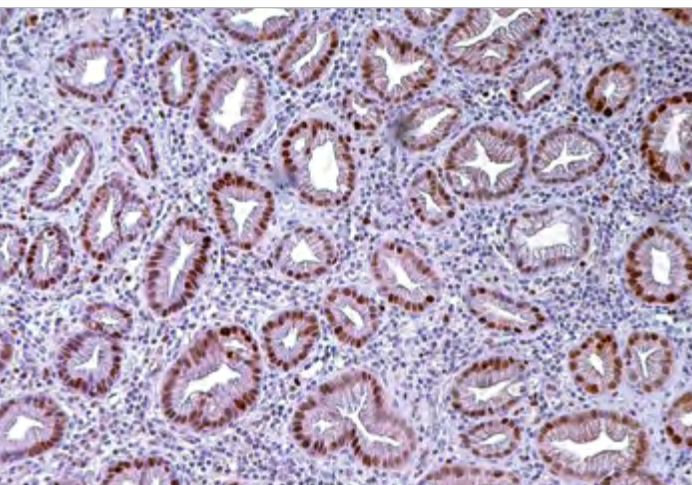
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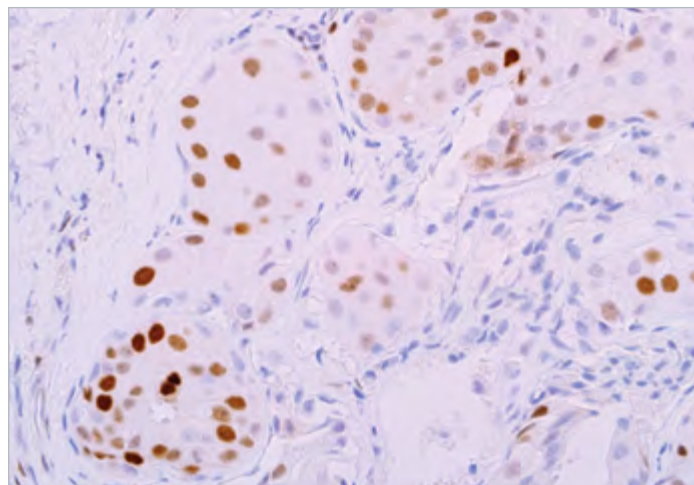
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**CELL MARQUE**

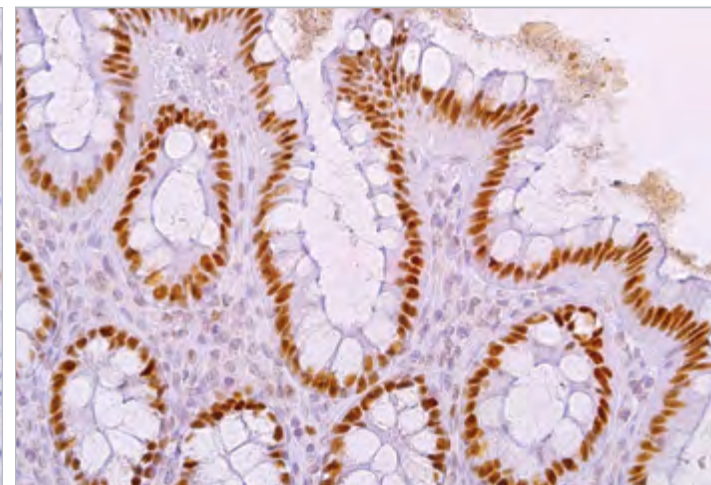
**RabMab®**  
Technology from Abcam



Anti-p21 labels nuclei of many epithelial cells and lymphocytes in colon mucosa.



p21<sup>WAF1</sup> (DCS-60.2) on breast carcinoma.



p21<sup>WAF1</sup> (DCS-60.2) on colon mucosa.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** colon

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

- Anatomic/Surgical Pathology

## Reference

1. DiGiuseppe JA, et al. Am J Pathol. 1995; 147:884-8.
2. Yoshitito Gomyo, et al. Cancer. 1997; 79:2067-2072.
3. Ikeguchi M, et al. Dig Dis Sci. 1998; 43:964-70.
4. Marone M, et al. Leuk Lymphoma. 2003; 43:51-7.
5. Kwon MS, et al. Pathol Res Pract. 2006; 202:849-56.
6. Elettra Merola, et al. J Cell Physi. 2006; 207:512-519.
7. Yoo J, et al. J Korean Med Sci. 2007; 22:318-25.
8. Tamura M, et al. Ann Thorac Cardiovasc Surg. 2007; 13:9-14.

## Product Description

p21 is a nuclear 21kD protein, a product of WAF1/CIP1 gene. It is a cyclin-dependent kinase inhibitor 1A (p21, Cip1), also known as CDKN1A, which in humans is encoded by the CDKN1A gene located on chromosome (6p21.2). It is a constituent of a large complex of nuclear proteins, including cyclins, cyclin dependent kinases, and PCNA. Cell cycle progression is regulated by cyclins and their cognate Cdk. p21 inhibits the activity of each member of the cyclin/Cdk family. The expression of this gene acts as an inhibitor of the cell cycle during G1 phase and is tightly controlled by the tumor suppressor protein p53. Normal cells generally display a rather intense nuclear p21 expression. Loss of p21 expression has been associated with poor prognosis in several carcinomas (gastric carcinoma, non-small cell lung carcinoma, thyroid carcinoma).

## Ordering Information

### Clone: DCS-60.2

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	421M-14
0.5 ml, concentrate	421M-15
1 ml, concentrate	421M-16
1 ml, predilute	421M-17
7 ml, predilute	421M-18

### Designations



IVD



IVD

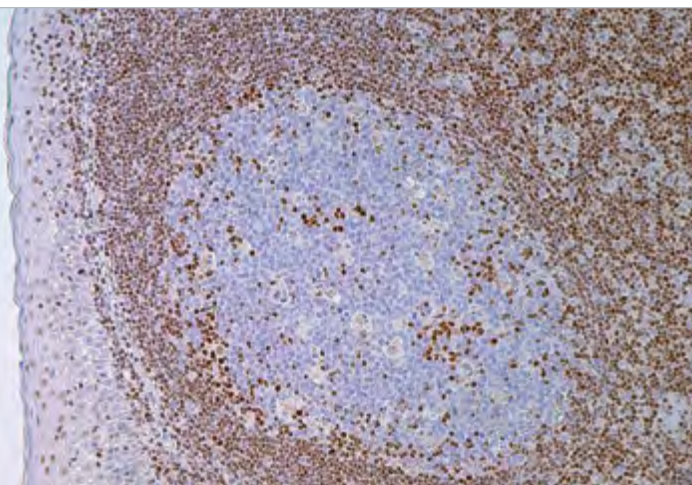


IVD

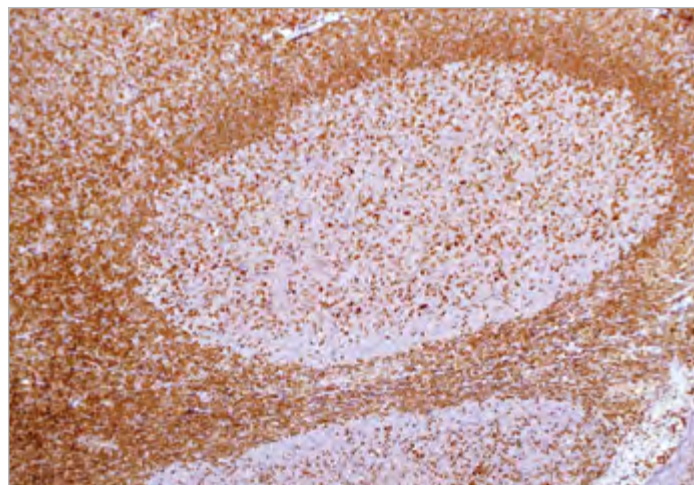


RUO

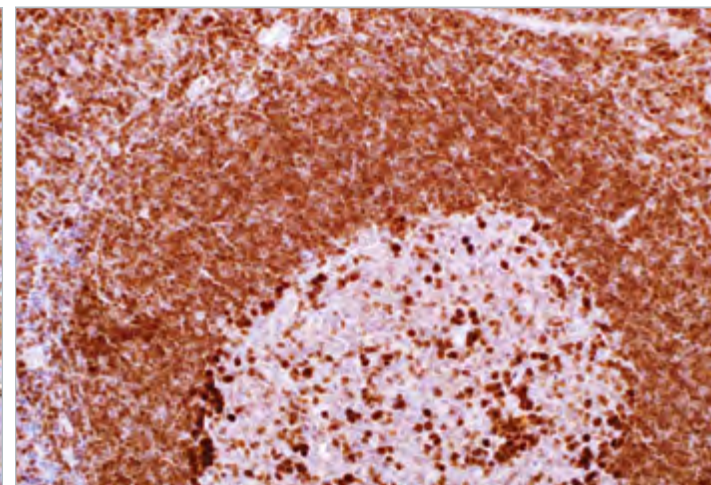




p27 (SX53G8) labels the nuclei of most mature lymphocyte in the paracortical and intracortical region, as well as squamous epithelial nuclei.



p27<sup>Kip1</sup> (SX53G8) on tonsil.



p27<sup>Kip1</sup> (SX53G8) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Thyroid: Malignant vs. Benign . 291

● Lesions . . . . . 291

● B-cell Lymphomas . . . . . 296

## Reference

- Lloyd RV, et al. Am J Pathol. 1999; 154:313-323.
- Migita T, et al. Cancer. 2002; 94:973-9.
- Haitel A, et al. Urology. 2001; 58:477-481.
- Tan P, et al. Cancer Research. 1997; 57:1259-1263.
- Esposito V, et al. Cancer Research. 1997; 57:3381-3385.
- Khoo ML, et al. J Clin Endocrinol Metab. 2002; 87:1814-1818.
- Huang LW, et al. Gynecologic Oncology. 2002; 85:524-528.
- Khoo ML, et al. Arch Otolaryngol Head Neck Surg. 2002; 128:253-257.
- Ribal MJ, et al. Anticancer Res. 2003; 23:5101-6.
- Freedland SJ, et al. Urology. 2003; 61:1187-92.
- Armengol C, et al. J Hepatol. 2003; 38:591-7.

## Product Description

p27 is a cyclin-dependent kinase inhibitor which regulates progression from G1 to S phase by binding and inhibiting cyclin-dependent kinases. Low p27 expression has been associated with unfavorable prognosis in renal cell carcinoma, colon carcinoma, small breast carcinomas, nonsmall-cell lung carcinoma, hepatocellular carcinoma, multiple myeloma, lymph node metastases in papillary carcinoma of the thyroid, and more aggressive phenotype in carcinoma of the cervix.

## Panel Quick View

Thyroid: Malignant vs. Benign							
	p27	Calcitonin	CK 19	Galectin-3	HBME-1	Thyro-globulin	TTF-1
Papillary Carcinoma	-/+	-	+	+	+	+	+
Follicular Carcinoma	-	-	-	+	+/-	+	+
Medullary Carcinoma	+/-	+	+	-	+	-	+
Benign Thyroid	+	-	-	-	-	+	+

## Ordering Information

### Clone: SX53G8

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	427M-94
0.5 ml, concentrate . . . . .	427M-95
1 ml, concentrate . . . . .	427M-96
1 ml, predilute . . . . .	427M-97
7 ml, predilute . . . . .	427M-98

### Designations



IVD



IVD

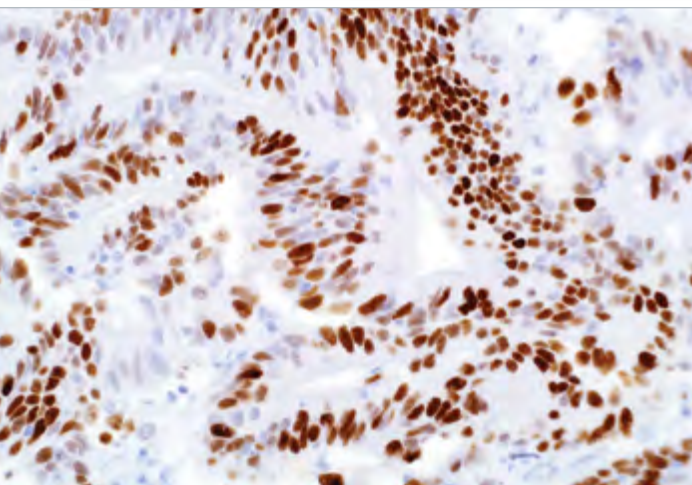


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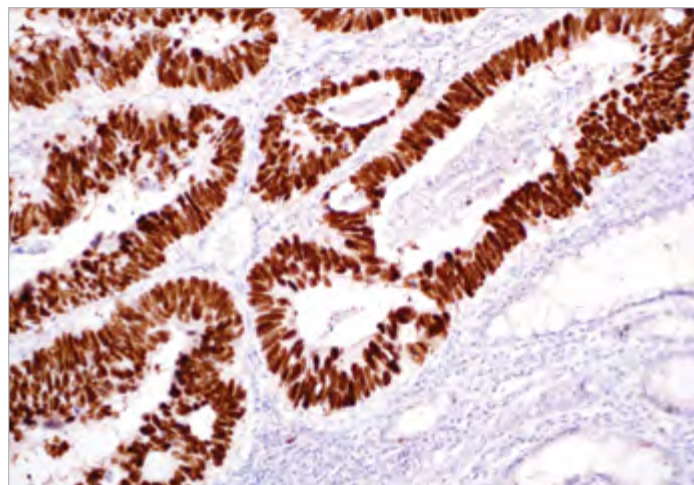


RUO

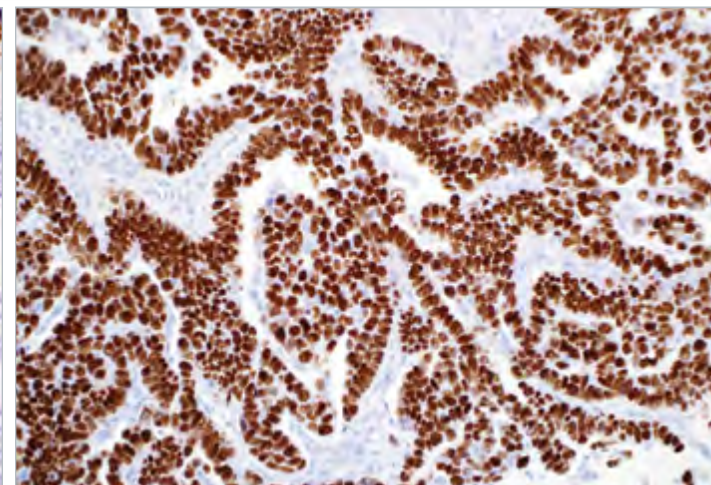




Nuclear staining of tumor cells by p53 (SP5) in colon adenocarcinoma.



p53 (SP5) on colorectal carcinoma.



p53 (SP5) on ovarian carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** colon carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Liver: Malignant vs. Benign. . . . 288

● Bladder: Dysplasia vs. Reactive. 295

## Reference

1. Moore BE, et al. Applied Immunohistochemistry and Molecular Morphology. 2001; 9:203-206.
2. Mauri FA, et al. Int J Oncol. 1999; 15:1137-47.
3. Caffo O, et al. Clin Cancer Res. 1996; 2:1591-9.
4. Bebenek M, et al. Anticancer Res. 1998; 18:619-23.
5. Midulla C, et al. Anticancer Res. 1999; 19:4033-7.
6. Dabbs DJ. Diagnostic Immunohistochemistry. Third Edition. Saunders. 2006.
7. Zeng ZS, et al. J Clin Oncol. 1994; 12:2043-50.
8. Quinlan DC, et al. Cancer Res. 1992; 52:4828-31.
9. Korshunov A, et al. J Neurol Sci. 2000; 177:72-82.

## Product Description

Anti-p53 tumor suppressor protein antibody recognizes a 53 kDa phosphoprotein, identified as p53 suppressor gene product. It reacts with the mutant as well as wild type p53, although significant accumulation of the mutant form of p53 protein due to longer half-life is the basis for the test using the IHC technique.<sup>6</sup> Quantitation of nuclear staining with this antibody has been shown to be a factor in breast carcinoma<sup>2-5</sup>, lung carcinoma<sup>8</sup>, colorectal<sup>7</sup> carcinoma, urothelial carcinoma, and ependymoma.<sup>9</sup> p53 positivity has also been used to differentiate uterine serous carcinoma from endometrioid carcinoma as well as to detect intratubular germ cell neoplasia.<sup>1</sup>

## Panel Quick View

Liver: Malignant vs. Benign									
	p53	A1AT	AFP	CD34	mCEA	pCEA	GPC-3	Hep Par-1	TTF-1
Hepatocellular Carcinoma	+	-/+	-/+	+	-	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+	+	-	-	+	+	+	-
Benign Liver Nodules	-	+/-	-	-	-	-	-	+	+ (cytoplasmic)

Bladder: Dysplasia vs. Reactive				
	p53	CD44	CK 20	Ki-67
Carcinoma- <i>in-situ</i>	+	-	+	+
Reactive Atypia	-	+	-	+
Normal Urothelium	-	+	+	-/+

## Ordering Information

### Clone: SP5

### Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	453R-14
0.5 ml, concentrate . . . . .	453R-15
1 ml, concentrate . . . . .	453R-16
1 ml, predilute . . . . .	453R-17
7 ml, predilute . . . . .	453R-18

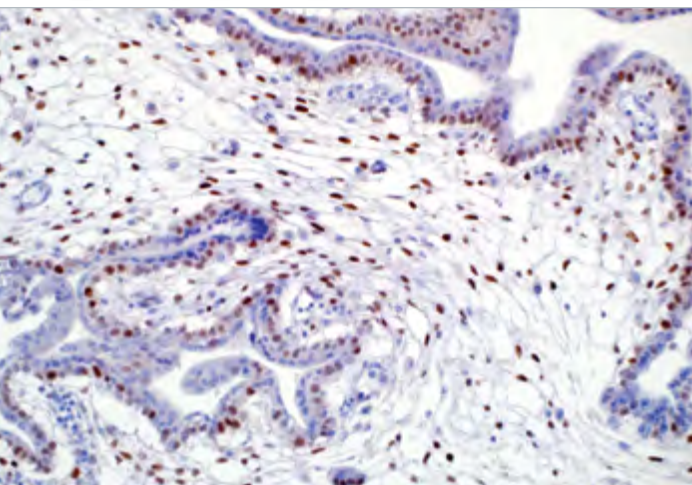
### Alternate Clones Available

• Mouse Monoclonal, DO7  
Contact us for more information.

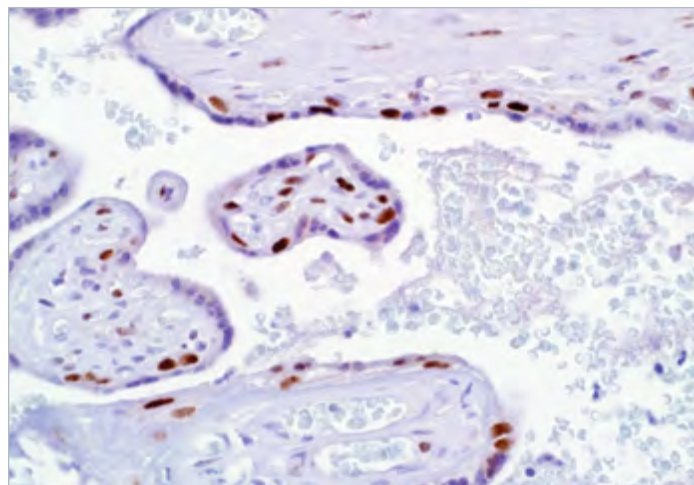
### Designations

 IVD	 IVD	 IVD	 RUO
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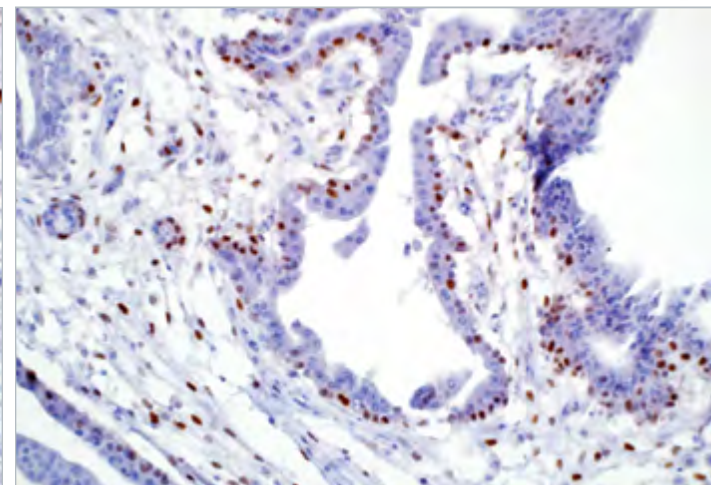




A nuclear reaction in partial mole labels cytotrophoblastic cells by anti-p57.



p57 (Kp10) on placenta.



p57 (Kp10) on partial mole.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** placenta

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>/k

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Placental Trophoblastic Proliferations .....292
- Uterus: Trophoblastic Proliferations .....292

## Reference

1. Kihara M, et al. J Reprod Med. 2005; 50:307-12.
2. Romaguera RL, et al. Fetal Pediatr Pathol. 2004; 23:181-90.
3. Marjoniemi VM. Pathology. 2004; 36:109-19.
4. Jun SY, et al. Histopathology. 2003; 43:17-25.

## Product Description

Anti-p57 has been used as an aid in discriminating complete hydatidiform mole (CHM) (no nuclear labeling of cytotrophoblasts or stromal cells) from partial hydatidiform mole (PHM) (nuclear staining of both cytotrophoblasts and stromal cells) and hydropic abortion. In normal placenta, cytotrophoblast, syncytio trophoblast, and stromal cells are labeled with this antibody. Intervillous trophoblastic islands demonstrate nuclear labeling in all entities and serve as an internal control.<sup>1-4</sup>

## Panel Quick View

Uterus: Trophoblastic Proliferations						
	p57	CK Cocktail	hCG	hPL	PLAP	Vimentin
Partial Mole	+	Strong, diffuse	Weak, diffuse	Weak, diffuse	+	-
Complete Mole	-	Strong, diffuse	Strong, diffuse	Weak, focal	Weak, focal	-
Choriocarcinoma	-	Strong, diffuse	Strong, diffuse	Weak, focal	Weak, focal	-/+
Placental Site Tumor		Strong, diffuse	Strong, focal	Strong, diffuse	Strong, diffuse	Strong, diffuse

## Ordering Information

### Clone: Kp10

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	457M-94
0.5 ml, concentrate.....	457M-95
1 ml, concentrate .....	457M-96
1 ml, predilute .....	457M-97
7 ml, predilute .....	457M-98

### Designations



IVD



IVD

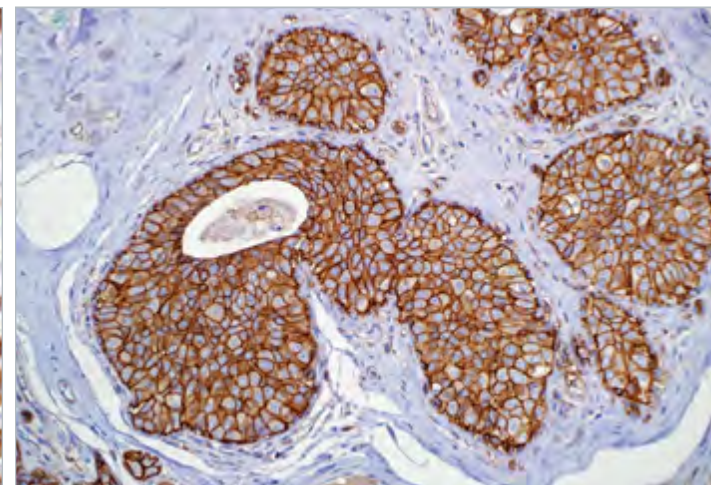
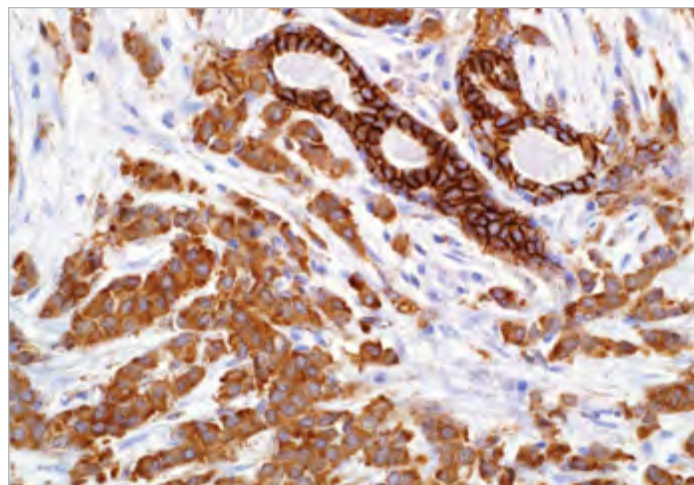
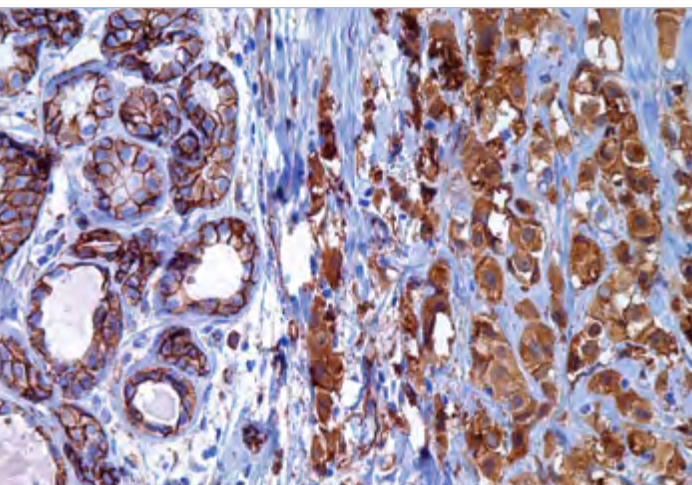


IVD



RUO

# p120 Catenin



On the right, p120 catenin (MRQ-5) is strongly positive for invasive lobular carcinoma. On the left, p120 stains membranous for normal ducts.

p120 Catenin (MRQ-5) on invasive lobular carcinoma, breast.

p120 Catenin (MRQ-5) on ductal carcinoma in situ, breast.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** lobular breast carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Breast/Gynecological Pathology

## Associated Panels

● Breast Lesion ..... 291

## Reference

1. Reynolds AB, et al. *Oncogene*. 1992; 7:2439-2445.
2. Thoreson MA, et al. *Mol Cell Biol*. 1994; 14:8333-8342.
3. Sarrio D, et al. *Oncogene*. 2004; 23:3272-83.
4. Dabbs DJ, et al. *Am J Surg Pathol*. 2007; 31:427-437.
5. Jawhari AW, et al. *J Pathol*. 1999; 189:180-5.
6. Bellovon DI, et al. *Cancer Res*. 2005; 65:10938-45.

## Product Description

p120 catenin is encoded on chromosome 11q11. Alpha-catenin and beta-catenin bind to the intracellular domain of E-cadherin while p120 catenin binds E-cadherin at a juxta-membrane site.<sup>1</sup> The complex stabilizes tight junctions. In the cell, p120 catenin localized to the E-cadherin/catenins cell adhesion complex, directly associates with cytoplasmic C-terminus of E-cadherin and may similarly interact with other cadherins.<sup>2</sup> A deficiency of E-cadherin results in the intracytoplasmic accumulation of p120 catenin. Lobular carcinoma of the breast shows intracytoplasmic accumulation of p120 catenin while ductal carcinoma shows reduced membrane p120 catenin without cytoplasmic accumulation.<sup>3,4</sup> In gastric and colonic carcinoma, strong cytoplasmic p120 catenin is associated with discohesive infiltrative morphology.<sup>5,6</sup>

## Panel Quick View

Breast Lesion	p120	CK 34βE12	E-cadherin	BRST-2	Mammaglobin
Lobular	+ (cytoplasmic)	+	-	+	+
Ductal	+ (membranous)	-	+	+	+

## Ordering Information

### Clone: MRQ-5

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate .....	420M-14
0.5 ml, concentrate .....	420M-15
1 ml, concentrate .....	420M-16
1 ml, predilute .....	420M-17
7 ml, predilute .....	420M-18
25 ml, predilute .....	420M-10

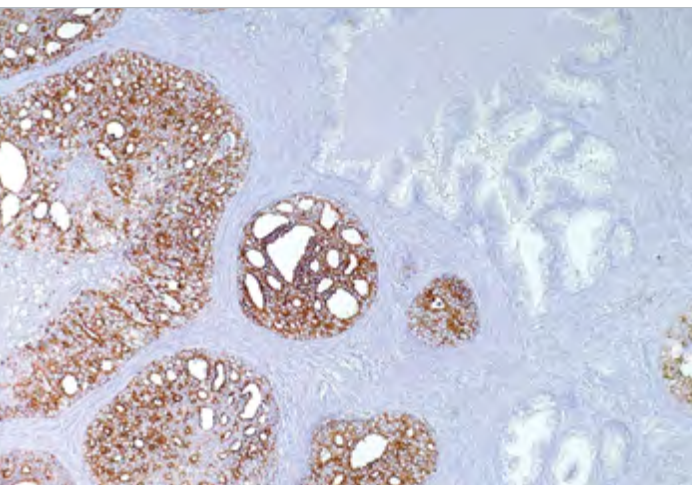
### Designations



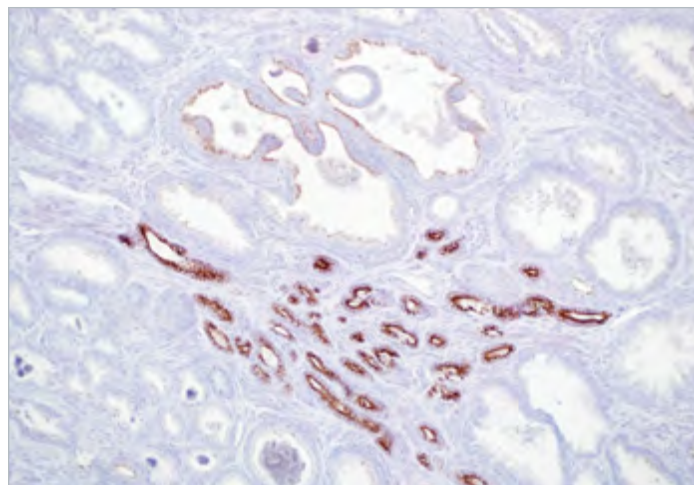
IVD IVD IVD RUO



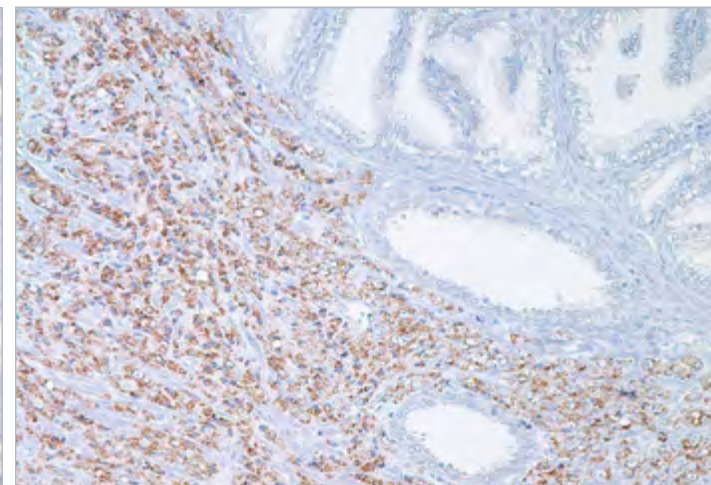
# P504s



P504s (13H4)



P504s (13H4)



P504s (13H4)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

AMACR

Racemase

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: 13H4

Rabbit Monoclonal

#### Volume .....Part No.

0.1 ml, concentrate....504R-14 (ASR)

0.5 ml, concentrate....504R-15 (ASR)

1 ml, concentrate .....504R-16 (ASR)

1 ml, predilute .....504R-17 (ASR)

7 ml, predilute .....504R-18 (ASR)

25 ml, predilute .....504R-10 (ASR)

#### Designations



ASR<sup>†</sup>



RUO



RUO



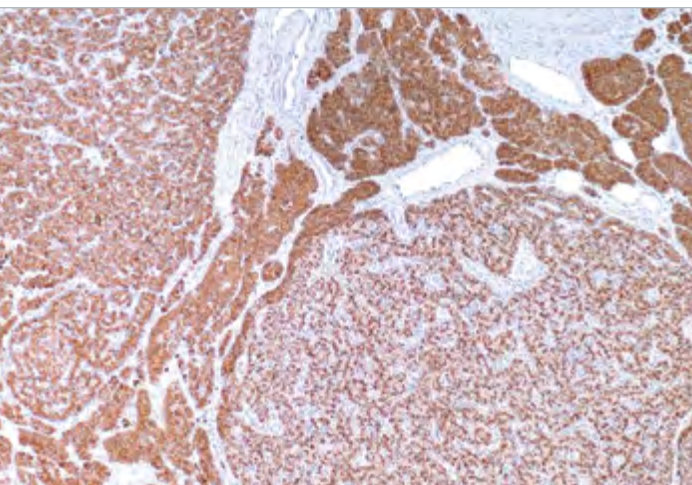
RUO

*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

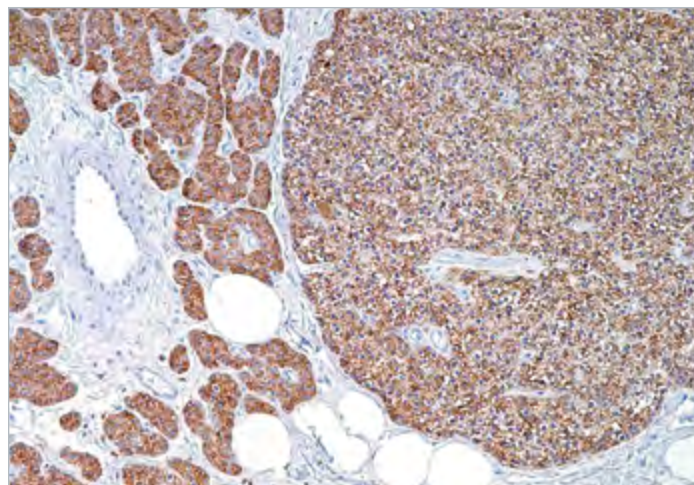
*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*



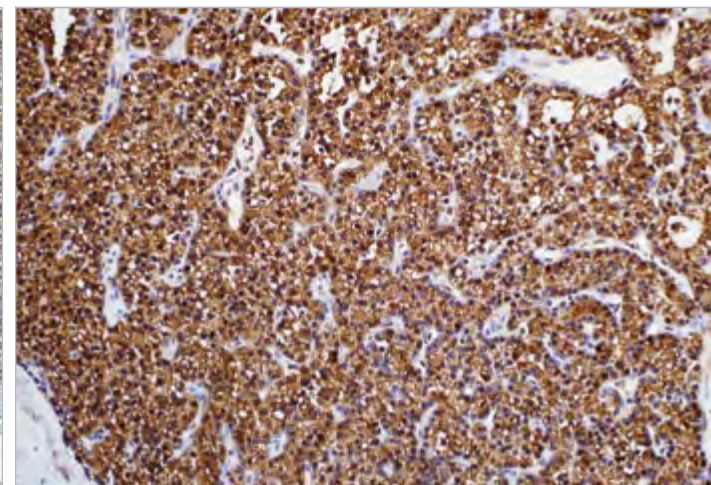
# Parathyroid Hormone (PTH)



Anti-PTH labels hyperplastic parathyroid glands in a cytoplasmic pattern.



Parathyroid Hormone (PTH) (MRQ-31) on hyperplastic parathyroid gland.



Parathyroid Hormone (PTH) (MRQ-31) on hyperplastic parathyroid gland.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** parathyroid tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Synonyms and Abbreviations

PTH

## Associated Specialties

● Head/Neck Pathology

## Associated Panels

● Differential Diagnosis of Parathyroid Tumors . . . . . 288

● Differential Diagnosis of Parathyroid vs. Thyroid Tumors. 296

## Reference

1. Aldinger KA, et al. Cancer. 1982; 49:388-97.
2. Brown EM. Mineral Electrolyte Metal. 1982; 8:130-50.
3. Chen HL, et al. Journal of Biology and Chemistry. 2002; 277:19374-81.
4. Habener JF, et al. Physiology Reviews. 1984; 64:985-1053.
5. Murphy MN, et al. Cancer. 1986; 58:2468-76.
6. Permanetter W, et al. American Journal of Surgical Pathology. 1983; 7:535-46.
7. Wick MR, et al. Seminars in Diagnostic Pathology 1997; 14:183-202.

## Product Description

Surgical pathologists are familiar with the ability of parathyroid proliferations to assume a variety of histological guises, posing difficulty to categorize any given lesion as hyperplastic, adenomatous, or carcinomatous in nature. This is usually resolved with macroscopic appearance of the remaining parathyroid glands as assessed by the surgeon. The role of the surgical pathologist is to identify the lesion as parathyroid in nature and to assess whether it is normocellular or hypercellular. Although easily accomplished in the majority of instances, rare examples of parathyroid hyperplasia/adenoma showing a follicular/trabecular arrangement may cause concern over the alternative diagnosis of a thyroid adenoma. This becomes more pertinent when the parathyroid lesion abuts into the thyroid gland or lies within the thyroid capsule. Immunostaining for thyroglobulin and parathyroid hormone (PTH) is especially useful to resolve the problem.

Anti-PTH is also useful to distinguish parathyroid hyperplasia/neoplasms from thyroid and metastatic neoplasms although the pathologist is typically aware of the preoperative hypercalcemic status. Occasionally when the surgeon does not supply this information, PTH immunohistochemistry is essential. Even more problematic are situations in which clear cell parathyroid carcinomas are nonsecretory without an abnormality in mineral metabolism. In such situations, metastatic renal cell carcinoma or metastatic clear cell carcinoma of the lung is evident warranting PTH immunohistochemistry to arrive at the correct diagnosis. The other instance in which PTH antibodies are useful is in the consideration of parathyroid carcinomas located primarily in the anterior mediastinum (intrathymically). In this situation, distinction from primary thymic metastatic carcinomas, non-Hodgkin lymphoma, and germ cell tumors is necessary.

## Panel Quick View

Differential Diagnosis of Parathyroid Tumors						
	PTH	Chromogranin A	Synaptophysin	S-100	TTF-1	Calcitonin
Parathyroid Tumors	+	+	+	-	-	-
Follicular Cell Tumors	-	-	-	+/-	+	-
Medullary Thyroid Carcinoma	-	+	+	-	+	+

## Ordering Information

**Clone: MRQ-31**  
Mouse Monoclonal

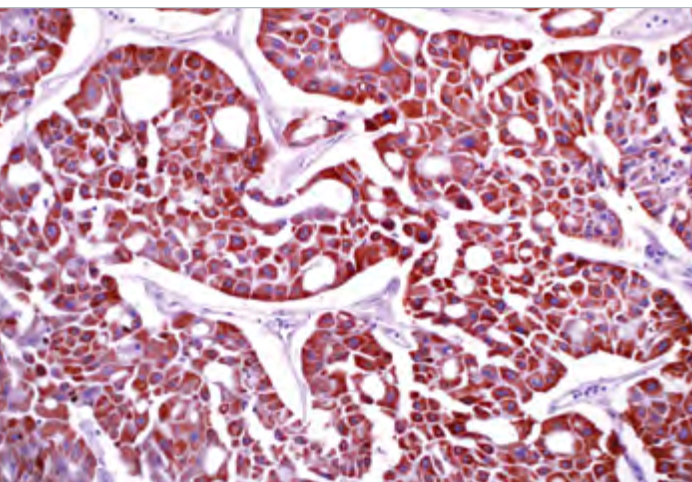
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1 ml, concentrate . . . . . 310M-26  
1 ml, predilute . . . . . 310M-27  
7 ml, predilute . . . . . 310M-28

## Designations

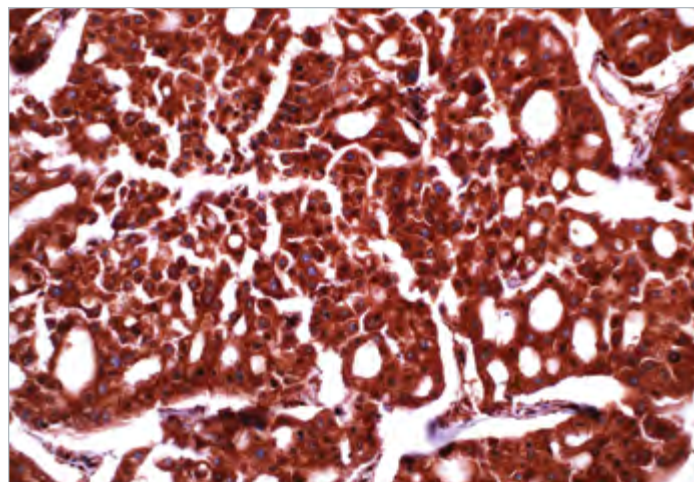
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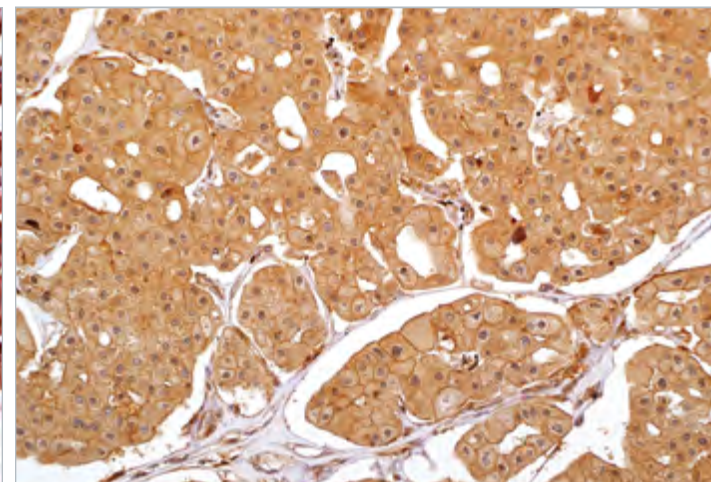
# Parvalbumin



Parvalbumin (2E11) is expressed in tumor cells of chromophobe renal cell carcinoma in a cytoplasmic pattern.



Parvalbumin (2E11) on chromophobe renal cell carcinoma.



Parvalbumin (2E11) on chromophobe renal cell carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** chromophobe renal cell carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Kidney: Renal Epithelial Tumors ...  
 .....295

## Reference

1. Adley BP, et al. Anal Quant Cytol Histol. 2006; 28: 228-36.
2. Young AN, et al. Am J Surg Pathol. 2003; 27:199-205.
3. Martignoni G, et al. Mod Pathol. 2001; 1:760-67.
4. Teresa P, et al. Diagn Cytopathol. 2012;40:56-61.

## Product Description

Parvalbumin is a calcium-binding protein that regulates cytosolic calcium homeostasis.<sup>1-2</sup> Tissue types that express this protein have been reported in the muscle, brain, neuroendocrine organs, and kidney.<sup>1-2</sup> In normal kidney, parvalbumin has been shown to be limited to the distal tubular and collecting duct cells (the intercalated cells).<sup>1-3</sup> Parvalbumin is strongly expressed in almost all primary, as well as metastatic, chromophobe renal cell carcinoma (RCC) (100%) and oncocytoma (69%), but is essentially negative in other types of RCCs, such as clear cell RCC and papillary RCC.<sup>1-4</sup> This limited expression has been considered in keeping with the putative histogenesis of chromophobe RCC and oncocytoma from the distal portion of the nephron and may facilitate in their differential diagnoses.<sup>1-4</sup>

## Panel Quick View

Kidney and Urothelial Neoplasms								
	Parvalbumin	CD10	CD117	Ksp-cadherin	PAX-2	PAX-8	RCC	TFE3
Clear Cell RCC	-	+	-	-/+	+	+	+	-
Papillary RCC	-	+	-	-/+	+	+	+	-
Chromophobe RCC	+	+/-	+	+	+	+	+/-	-
Oncocytoma	+	+/-	+	+	+	+	-	-
Sarcomatoid RCC			+/-		-	-/+	-/+	-
Collecting Duct Carcinoma	+	+/-	+/-	-	+/-	+	-	-
Xp11 Translocation RCC		+		+	+/-	+	+	+

## Ordering Information

### Clone: 2E11

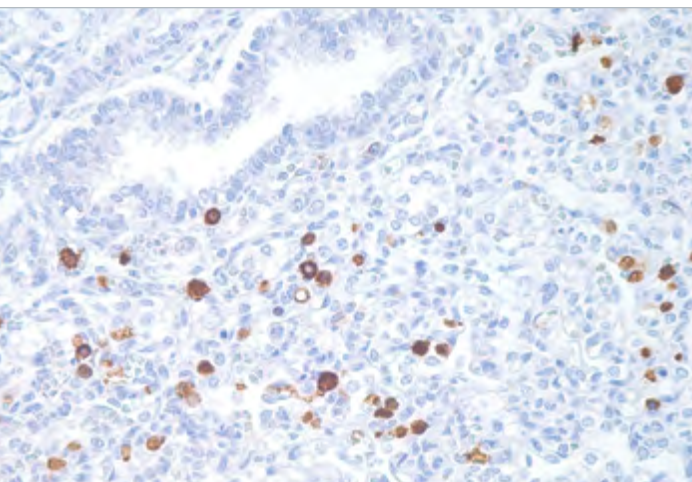
### Mouse Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 396M-14  
 0.5 ml, concentrate ..... 396M-15  
 1 ml, concentrate ..... 396M-16  
 1 ml, predilute ..... 396M-17  
 7 ml, predilute ..... 396M-18

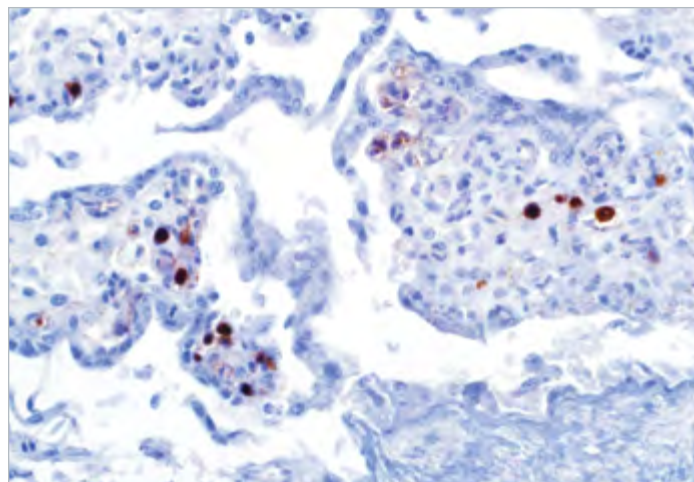
### Designations

 IVD  IVD  IVD  RUO

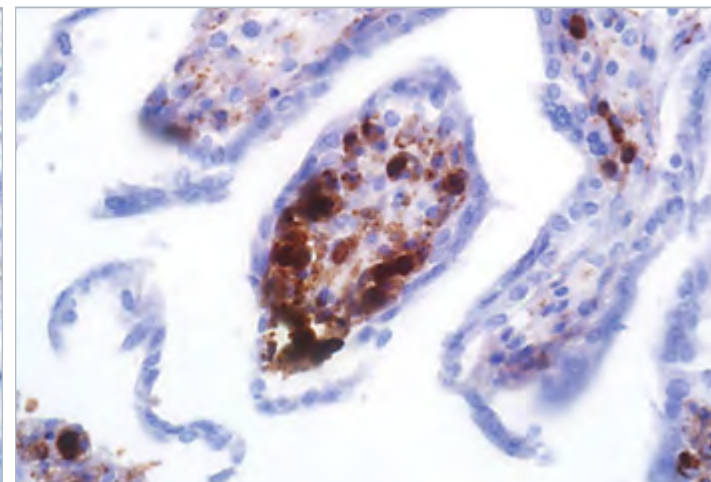
# Parvovirus B19



Parvovirus B19 (R92F6)



Parvovirus B19 (R92F6)



Parvovirus B19 (R92F6)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** parvovirus infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: R92F6

Mouse Monoclonal

#### Volume .....Part No.

0.1 ml, concentrate....218M-14 (ASR)

0.5 ml, concentrate....218M-15 (ASR)

1 ml, concentrate .....218M-16 (ASR)

1 ml, predilute .....218M-17 (ASR)

7 ml, predilute .....218M-18 (ASR)

#### Designations



ASR<sup>†</sup>



IVD



IVD



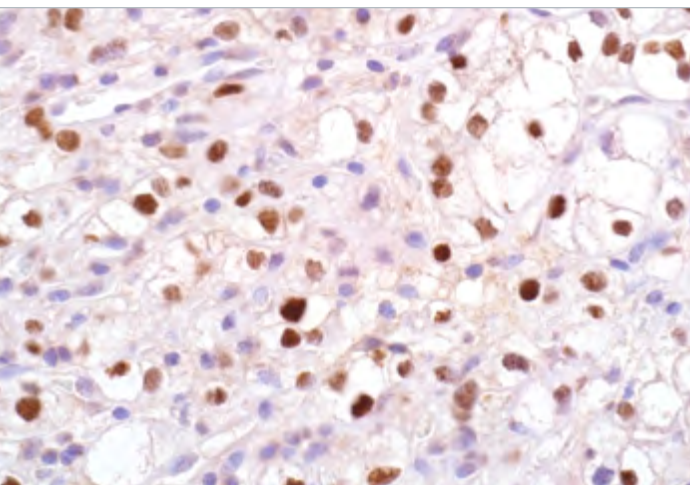
RUO

*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

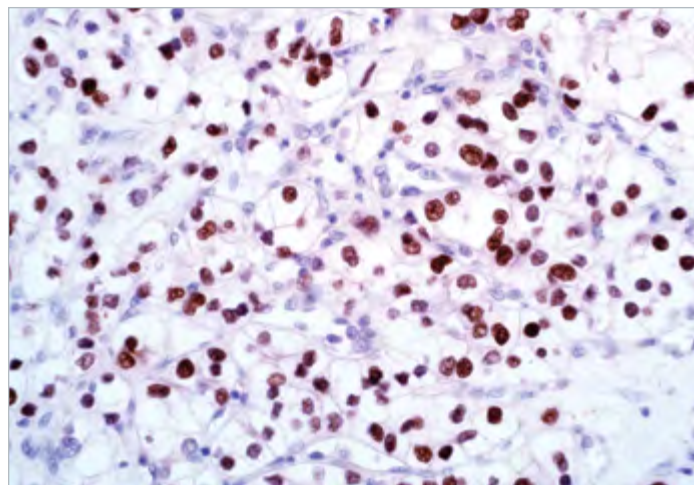
*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*

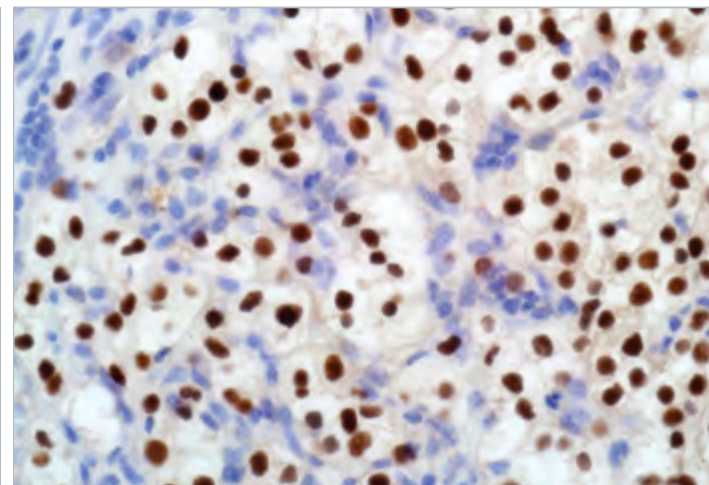




PAX-2 (EP235) on renal cell carcinoma.



PAX-2 (EP235) on renal cell carcinoma.



PAX-2 (EP235) on renal cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** renal cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Kidney: Renal Epithelial Tumors ... 295
- Prostate Lesions ... 296
- Renal Cell Carcinoma vs. Hemangioblastoma ... 296

## Reference

- Gnarra JR, et al. Cancer Res. 1995; 55:4092-8.
- Mazal PR, et al. Mod Pathol. 2005; 4:535-40.
- Chivukula M, et al. Int J Gynecol Pathol. 2009; 28:570-8.

## Product Description

PAX-2 is a homegene strongly expressed during kidney development. PAX-2 gene is expressed in the metanephric mesenchyma after ureter bud induction and is a key factor for the mesenchyma-epithelium conversion. Animals transgenic for PAX-2 have severe renal abnormalities and cysts but no solid tumoral features. The oncogenic potential of the PAX gene family has been reported *in vitro* with transformation of cell cultures and *in vivo* with cell injections in nude mice. Gnarra et al. showed PAX-2 expression in renal carcinoma cell lines and underlined its potential role in cell proliferation in these lines.<sup>1</sup> Mazal et al. demonstrated PAX-2 nuclear expression in 88% of clear cell renal cell carcinomas (RCC) as well as 18% of papillary RCC, and 13% of chromophobe RCCs.<sup>2</sup> More recently, Chivukula et al. demonstrated utility in distinguishing ovarian serous papillary carcinoma (anti-PAX-2 positive) from breast carcinoma (anti-PAX-2 negative).<sup>3</sup>

## Panel Quick View

Kidney: Renal Epithelial Tumors									
	PAX-2	CD10	CD117	Ep-CAM	Ksp-cad-herin	Parvalbumin	RCC	S100A1	Vimentin
Clear Cell RCC	+	+	-	-	-	-	+	+	+
Chromophobe RCC	+	-/+	+	+	+	+	-/+	-	-
Papillary RCC		+	+		-/+	-	+	+	+
Oncocytoma	+	+/-	+	-	+/-	+	-	+	-

\*Thrombomodulin

Prostate Lesions								
	PAX-2	CK 34βE12	CK 7	p63	P504s	PSA/PSAP	TBM*	URO III
Prostate Carcinoma	-	-	-	-	+	+	-	-
Urothelial Carcinoma	-	+	+	+	-	-	+	+
Nephrogenic Adenoma	+	+/-	+	-	+	-	-	-

## Ordering Information

**Clone: EP235**

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	311R-14
0.5 ml, concentrate	311R-15
1 ml, concentrate	311R-16
1 ml, predilute	311R-17
7 ml, predilute	311R-18

## Designations

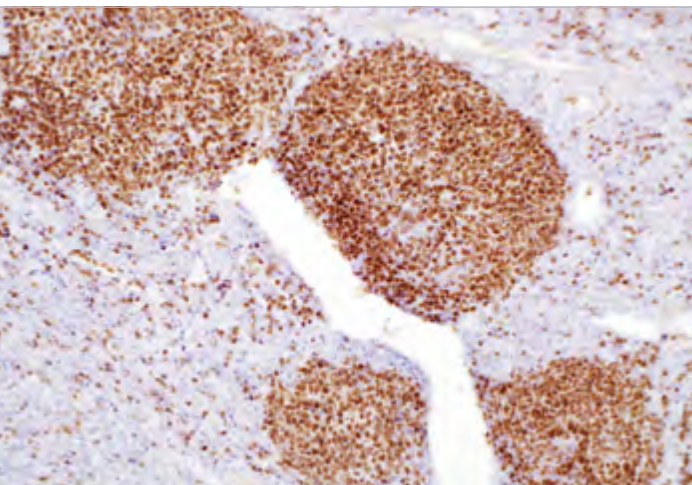


IVD IVD IVD RUO

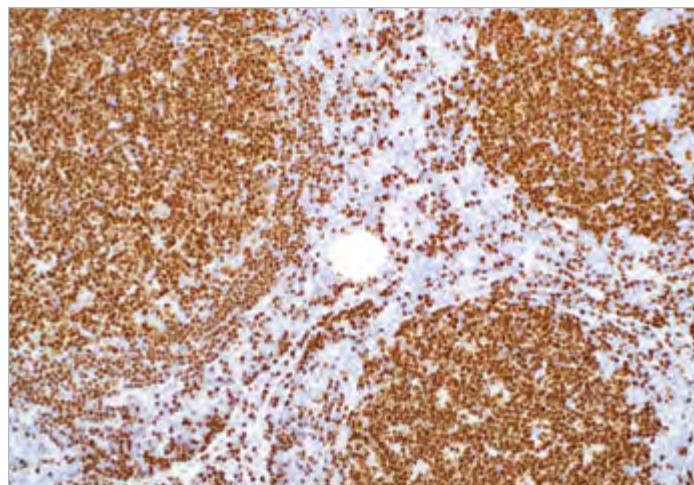
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

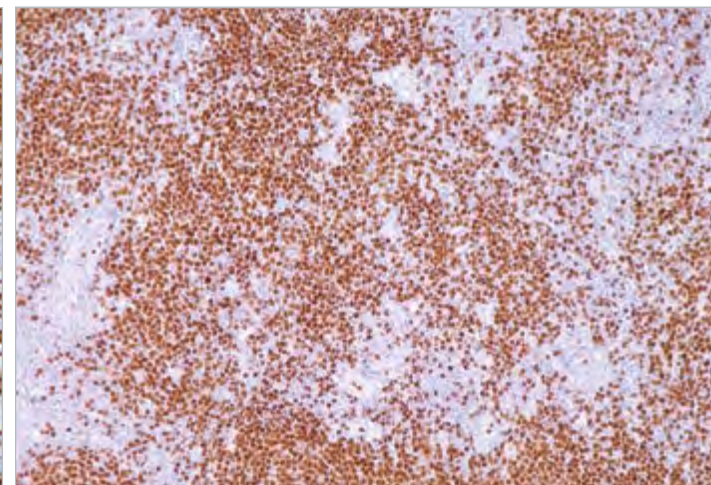




PAX-5 (24) on follicular lymphoma.



Nuclear labelling of germinal center and mantle zone cells by PAX-5 (EP156) on hyperplastic lymph node.



PAX-5 (SP34) on mucosa associated lymphoid tissue (MALT) lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- 24: IgG<sub>1</sub>
- EP156: IgG

## Synonyms and Abbreviations

BSAP

## Associated Specialties

- Hematopathology

## Associated Panels

- B-cell Lymphomas ..... 296
- Lymphoblastic Lymphomas, BCL vs. TCL ..... 298
- Lymphoma ..... 298
- Lymphomas ..... 299

## Reference

1. Torlakovic E, et al. Am J Surg Pathol. 2002; 26:1343-50.
2. Willenbrock K, et al. Lab Invest. 2002; 82:1103-9.
3. Falini B, et al. Blood. 2002; 99:409-26.
4. Schwering I, et al. Blood. 2003; 101:1505-12.

## Product Description

PAX-5 encodes for B-cell-specific activator protein (BSAP), a marker for B-cells, including B-lymphoblastic neoplasms and maturation stage. It is found in most cases of mature and precursor B-cell non-Hodgkin lymphomas/leukemias. In approximately 97% of cases of classic Hodgkin lymphoma, Reed-Sternberg cells express PAX-5.<sup>4</sup> PAX-5 is not detected in multiple myeloma and solitary plasmacytoma, making it useful for such differentiation.<sup>1,3</sup> Diffuse large B-cell lymphomas do express PAX-5, save for those with terminal B-cell differentiation. T-cell neoplasms do not stain with anti-PAX-5. There is a strong association with CD20 expression.<sup>1-4</sup>

## Panel Quick View

B-cell Lymphomas										
	PAX-5	ANXA1	BCL2	BCL6	CD20	CD23	CD79a	Cyclin D1	p27	TCL1
Burkitt Lymphoma	+	-	-	+	+	-	+	-	-	+
CLL/SLL	+	-	+	-	+	+	+	-	+	+
Diffuse Large Cell Lymphoma	+	-	+	+/-	+	-	+	-	-	+
Follicular	+	-	+	+	+	-	+	-	+	+
Hairy Cell Leukemia	+	+	+	-	+	-	+	+(weak) /-	-	+
Lymphoplasmacytic		-	+	-	+	-	+	-	+	+
Malt Lymphoma			+	-/+	+	-	+	-		+
Mantle Cell	+	-	+	-	+	-	+	+	+	+
Marginal Zone	+	-	+	-	+	-	+	-		-
Marginal Zone BCL	+	-	+	-	+	-	+	-	+	-
Splenic Marginal Zone	-	-	+	-		-	+	-		-

Lymphoblastic Lymphomas, BCL vs. TCL										
	PAX-5	CD1a	CD3	CD5	CD7	CD10	CD19	CD20	CD117	TdT
Lymphoblastic BCL	+	-	-	-	-	+/-	+	+/-	-	+
Lymphoblastic TCL	-	+/-	+	+/-	+	+	-	-	-	+

## Ordering Information

### Clone: 24

Mouse Monoclonal

**Volume ..... Part No.**

1 ml, predilute ..... 312M-17

7 ml, predilute ..... 312M-18

### Clone: EP156

Rabbit Monoclonal

**Volume ..... Part No.**

0.1 ml, concentrate ..... 312R-24

0.5 ml, concentrate ..... 312R-25

1 ml, concentrate ..... 312R-26

1 ml, predilute ..... 312R-27

7 ml, predilute ..... 312R-28

25 ml, predilute ..... 312R-20

### Alternate Clones Available

- Rabbit Monoclonal, SP34

Contact us for more information.

### Designations



IVD



IVD



IVD

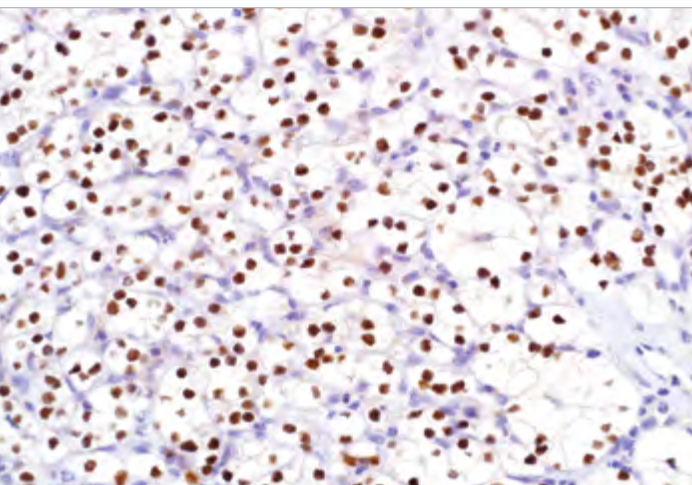


RUO

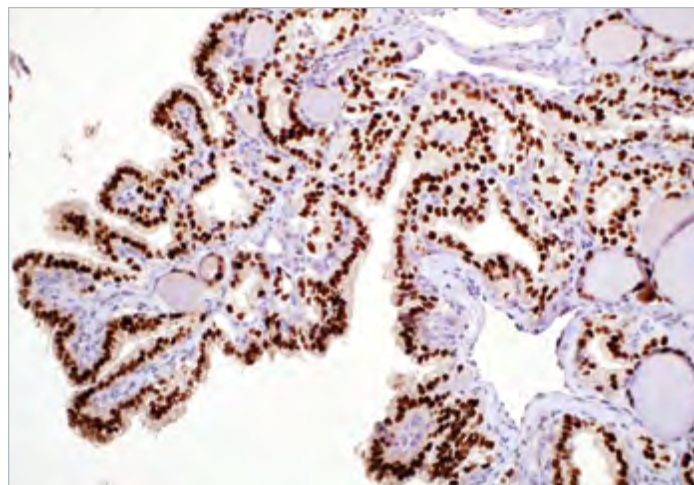
**CELL MARQUE**

**RabMab®**  
Technology from Abcam

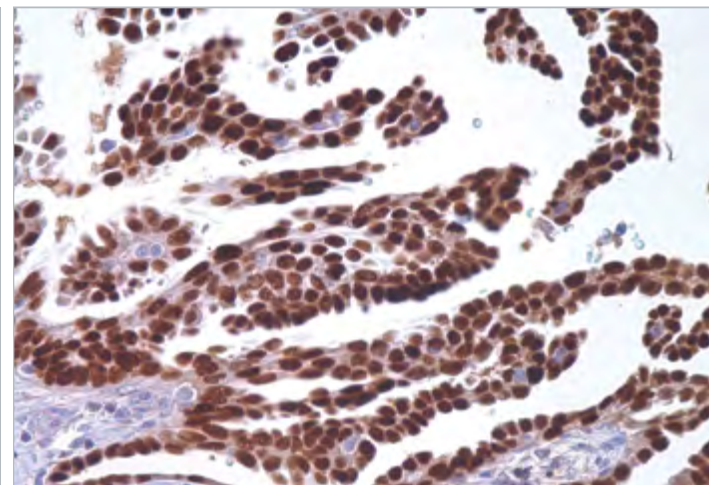




PAX-8 (MRQ-50) labels the tumor nuclei in clear cell renal cell carcinoma.



PAX-8 (MRQ-50) on papillary thyroid carcinoma.



PAX-8 (polyclonal) on ovarian carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** ovarian carcinoma (non-mucinous carcinoma), thyroid carcinoma, renal cell carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Carcinomas. . . . . 287  
 ● Differential Diagnosis of Parathyroid Tumors. . . . . 288  
 ● Micropapillary Carcinomas. . . . . 289  
 ● Ovarian Carcinomas . . . . . 292  
 ● Differential Diagnosis of Parathyroid vs. Thyroid Tumors. 296

## Reference

1. Tamara L, et al. Am J Surg Pathol. 2009; 33:1037-41.
2. Daisuke N, et al. Mod Pathol. 2008; 21:192-200.
3. Nikiforova MN, et al. Am J Surg Pathol. 2002; 26:1016-23.
4. Marques AR, et al. J Clin Endocrinol Metab. 2002; 87:3947-52.
5. Tina DP, et al. J Bio Chem. 2003; 278:3395-3402.
6. Zhang P, et al. Pathol Int. 2006; 56:240-245.
7. Bowen NJ, et al. Gynecol Oncol. 2007; 104:331-7.

## Product Description

This protein is a member of the paired box (PAX) family of transcription factors. Members of this gene family typically encode proteins which contain a paired box domain, an octapeptide, and a paired-type homeodomain. This nuclear protein is involved in thyroid follicular cell development and expression of thyroid-specific genes. Mutations in this gene have been associated with thyroid dysgenesis, thyroid follicular carcinomas, and atypical thyroid adenomas. PAX-8 is expressed in the thyroid (and associated carcinomas), non-ciliated mucosal cells of the fallopian tubes, and simple ovarian inclusion cysts, but not normal ovarian surface epithelial cells. PAX-8 is expressed in a high percentage of ovarian serous, endometrioid, and clear cell carcinomas, but only rarely in primary ovarian mucinous adenocarcinomas. Studies have also found PAX-8 expression in renal tubules as well as renal cell carcinoma, nephroblastoma, and seminoma. A study by Tong et al. showed that 98% of clear cell RCCs, 90% of papillary RCCs, and 95% of oncocytomas were positive for anti-PAX-8 with frequencies of positivity that are similar to anti-PAX-2. Therefore, anti-PAX-8 may be used as an additional immunohistochemical marker for renal epithelial tumors. Normal lung and lung carcinomas do not express PAX-8. Similarly, the absence of expression of PAX-8 in breast and other non-GYN carcinomas other than those primary to the thyroid indicates that anti-PAX-8 is an important new marker of ovarian cancer and a useful marker for the differential diagnoses in lung and neck tumors, or tumors at distant sites where primary lung carcinoma, breast carcinoma or thyroid carcinoma are possibilities. Anti-PAX-8, combined with organ system-specific markers such as anti-uroplakin III, anti-mammaglobin, and anti-TTF-1, can collectively serve as a very useful panel to determine the primary site of invasive micropapillary ovarian carcinomas from invasive carcinomas arising from bladder, lung, and breast.<sup>1-9</sup>

## Panel Quick View

Micropapillary Carcinomas										
	PAX-8	URO III	CK 20	CK 7	CK, HMW	ER	Mammaglobin	WT1	TTF-1	EMA
Bladder	-	+	+/-	+	+	-	-	-	-	-
Breast	-	-	-	+	-	+	+/-	-	-	+
Lung	-	-	-	+	-	-	-	-	+	+
Ovary	+	-	-	+	+	+	-	+	-	-

Ovarian Carcinomas				
	PAX-8	CA-125	CEA	WT1
Ovarian CA, Serous	+	+	+	+
Ovarian CA, Mucinous	-	-	-	-
Ovarian CA, Endometrioid	+	+	-	-
Ovarian CA, Clear Cell	+	+	-	-

## Ordering Information

**Clone: MRQ-50**  
 Mouse Monoclonal

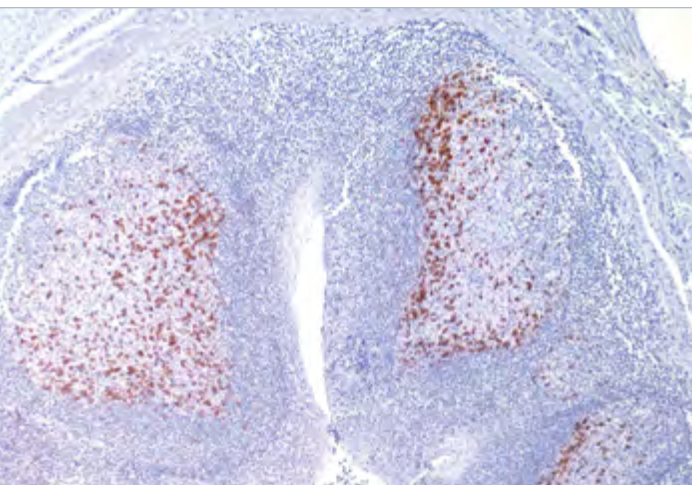
**Volume . . . . . Part No.**  
 0.1 ml, concentrate. . . . . 363M-14  
 0.5 ml, concentrate. . . . . 363M-15  
 1 ml, concentrate . . . . . 363M-16  
 1 ml, predilute . . . . . 363M-17  
 7 ml, predilute . . . . . 363M-18  
 25 ml, predilute . . . . . 363M-10

## Alternate Clones Available

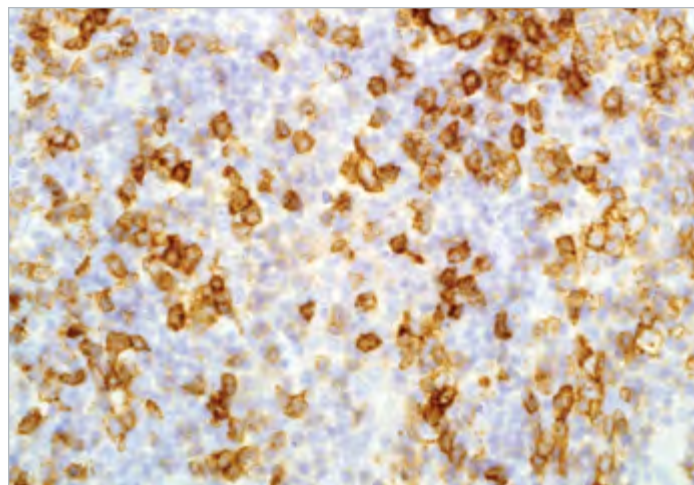
• Rabbit Polyclonal  
 Contact us for more information.

## Designations

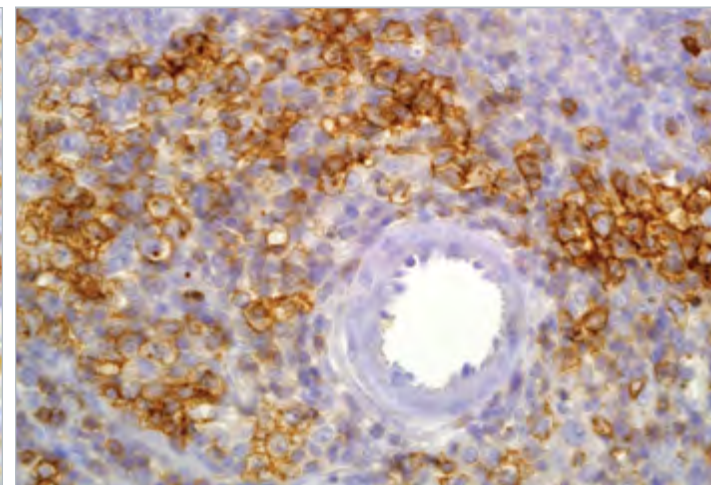
 IVD     IVD     IVD     RUO



Scattered germinal center cells labeled with PD-1 (NAT105).



PD-1 (NAT105) on angioimmunoblastic T-cell lymphoma.



PD-1 (NAT105) on angioimmunoblastic T-cell lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** lymph node, tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymph Node ..... 289

● B-cell Lymphomas ..... 296

● T-cell Lymphomas ..... 300

## Reference

1. Bolstad AI, et al. Arthritis Rheum. 2003; 48:174-85.
2. Dorfman DM, et al. Am J Surg Pathol. 2006; 30:802-10.
3. Hamanishi J, et al. Proc Natl Acad Sci USA. 2007; 104:3360-5.
4. Iwai Y, et al. Immunol Lett. 2002; 83:215-20.
5. Kobayashi M, et al. J Rheumatol. 2005; 32:2156-63.
6. Konishi J, et al. Clin Cancer Res. 2004; 10:5094-100.
7. Mataka N, et al. Am J Gastroenterol. 2007; 102:302-12.

## Product Description

Programmed death-1 (PD-1) is expressed on activated T-cells, B-cells, and myeloid cells. Anti-PD-1 is a marker of angioimmunoblastic lymphoma and suggests a unique cell of origin for this neoplasm. Unlike CD10 and BCL6, PD-1 is expressed by few B-cells, so anti-PD-1 may be a more specific and useful diagnostic marker in angioimmunoblastic lymphoma. In addition, PD-1 expression provides evidence that angioimmunoblastic lymphoma is a neoplasm derived from germinal center-associated T-cells. PD-1 expression in angioimmunoblastic lymphoma lends further support to this model of T-cell oncogenesis, in which specific subtypes of T-cells may undergo neoplastic transformation and result in specific distinct histologic, immunophenotypic, and clinical subtypes of T-cell neoplasia.

## Panel Quick View

Lymph Node	PD-1	CD1a	CD21/CD35	Lysozyme	S-100
Reactive Histiocytosis	-	-	-	+	-
Langerhans Cell Histiocytosis	-	+	-	+	+
Sinus Histiocytosis with Massive Lymphadenopathy	-	-	-	+	+
Follicular Dendritic Cell Sarcoma	-	+/-	+	-	-
Dermatopathic Lymphadenitis	-	+	-	+	+

T-cell Lymphomas	PD-1	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45	CD45RO
Angioimmunoblastic Lymphoblastic	+	+	+	+	+	+	-	+	+	+
Subcutaneous Panniculitis-Like	-	+	+	-	+	+	+/-	-	+	+
NK/T-cell Lymphoma	-	+	+	-	-	-/+	-	-	+	-/+
Cutaneous	-/+	+	+	+	+	+	-	-	+	-
Peripheral, NOS	-	+	+	+/-	+/-	+/-	-/+	+	+	+
Mycosis Fungoides	-	+	+	+	+	-	-	+	+	+

## Ordering Information

### Clone: NAT105

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	315M-94
0.5 ml, concentrate	315M-95
1 ml, concentrate	315M-96
1 ml, predilute	315M-97
7 ml, predilute	315M-98

### Designations



IVD

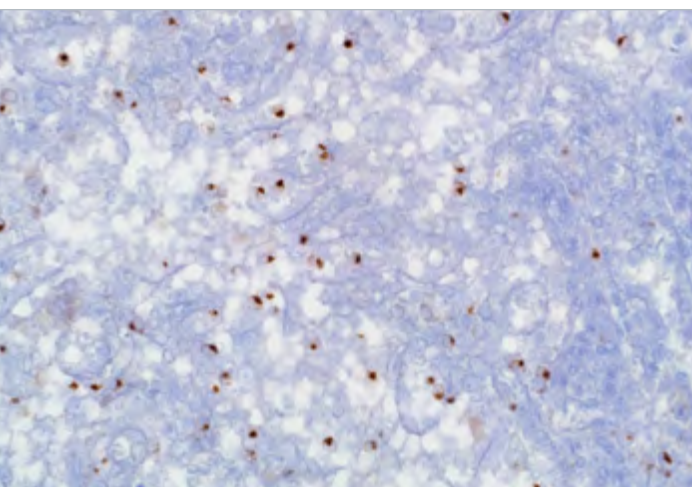
IVD

IVD

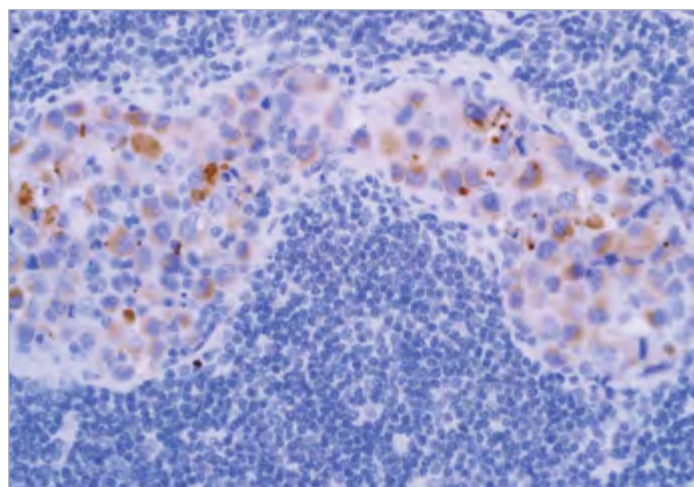
RUO



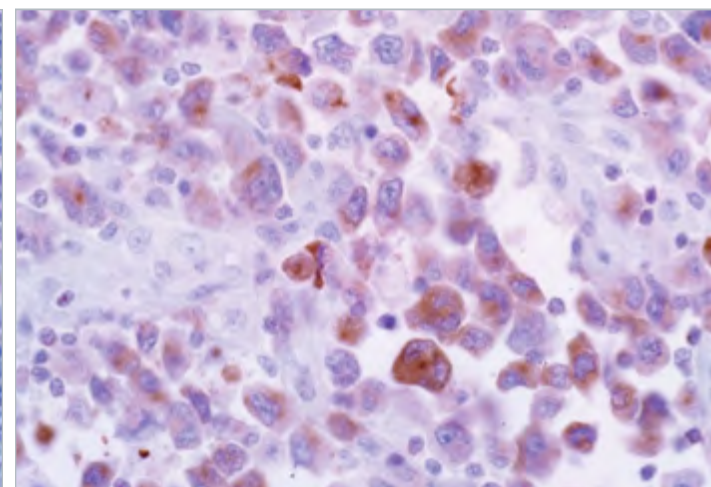
# Perforin



Anti-perforin expresses punctate cytoplasmic staining in NK/regulatory T-cells of the spleen.



Perforin (MRQ-23) on anaplastic large cell lymphoma.



Perforin (MRQ-23) on anaplastic large cell lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** spleen

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● NK Cell Leukemia/Lymphoma . 299

● Lymphomas ..... 299

● T-cell Lymphomas ..... 300

## Reference

1. Chu PG, et al. Ann Diagn Pathol. 1999; 3:104-33.
2. Bittmann I, et al. Virchows Arch. 2004; 445:375-81.
3. d'Amore ES, et al. Pediatr Dev Pathol. 2007; 10:181-91.

## Product Description

Perforin is a pore-forming protein that leads to osmotic lysis of the target cells and subsequently enables granzymes to enter the target cells and activate apoptosis, the cell death program. The expression of perforin is upregulated in activated CD8+ T-cells, but in NK cells the expression is constitutively very high and stable. Perforin expression can also be stimulated in some activated CD4+ T-cells. Although some investigators report a cytolytic potential of CD4+ T-cells, it appears more likely that CD8+ T-cells are the major effector population in Th1-associated inflammatory skin diseases. The role of perforin-mediated cytotoxicity has been demonstrated in various autoimmune diseases. *In vitro* and *in vivo* studies suggest that the cytotoxicity of CTLs may be mediated by cytotoxic granules in certain inflammatory diseases in humans. In addition, it seems that T-cell cytotoxicity against keratinocytes is mediated by perforin in some inflammatory skin diseases. Other authors suggest that perforin may have a dual role in alloimmune response (organ transplant applications). In one regard, it has a cytolytic function in acute rejection and, in contrast, it may be responsible for downregulating both CD4- and CD8-mediated alloimmune response.

## Panel Quick View

T-cell Lymphomas	Perforin	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45RO	PD-1
Angioimmunoblastic		+	+	+	+	+	-	+	+	+
Lymphoblastic		+/-	+	+/-	+	+	+/-	+	+	-
Subcutaneous Panniculitis-Like	+	+	+	-	+	+	+/-	-	+	-
NK/T-cell Lymphoma	+	+	+	-	-	-/+	-	-	-/+	-
Cutaneous	+	+	+	+	-	+	-	-	-	-/+
Peripheral, NOS		+	+	+/-	+/-	+/-	-/+	+	+	-
Mycosis Fungoides	-	+	+	+	+	-	-	+	+	-

## Ordering Information

### Clone: MRQ-23

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	316M-14
0.5 ml, concentrate.....	316M-15
1 ml, concentrate .....	316M-16
1 ml, predilute .....	316M-17
7 ml, predilute .....	316M-18

### Designations



IVD



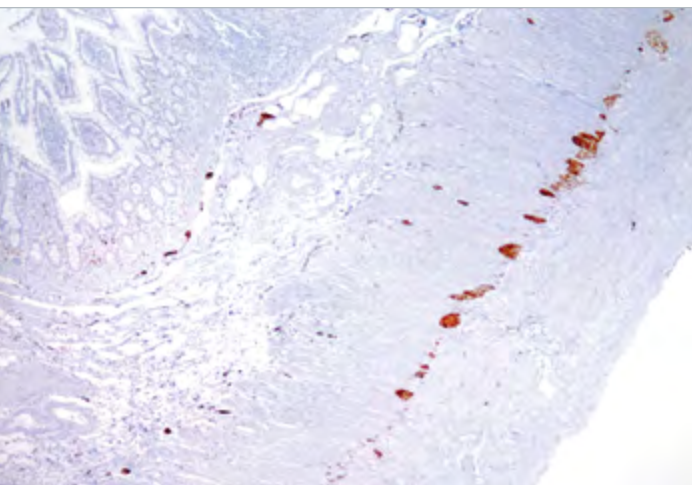
IVD



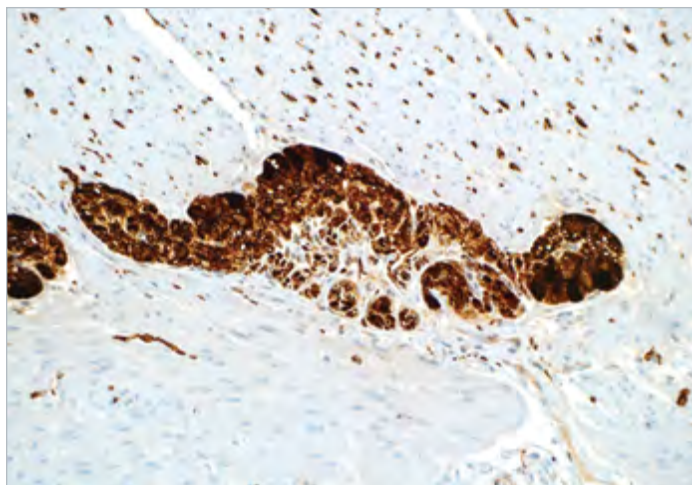
IVD



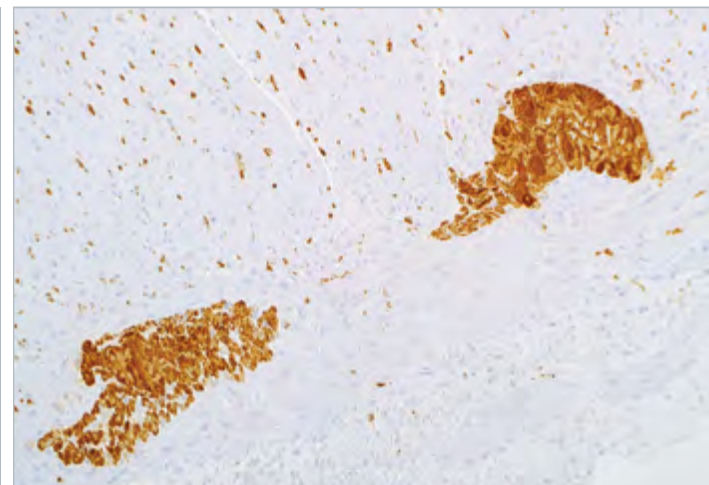
RUO



Auerbach plexus of nerve tissue is labeled by PGP 9.5 (polyclonal) on small bowel tissue.



PGP 9.5 (polyclonal) stains ganglion cells in Auerbach plexus.



PGP 9.5 (polyclonal) on colon wall.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** nerve tissue

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

UCHL-1

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Retroperitoneal Lesions. . . . . 290
- Spindle Cell Tumors. . . . . 290
- Pancreas / Pancreatic Tumors . 294
- Retroperitoneal Neoplasms . . . 301
- Muscle Malignant Tumors. . . . . 302
- Small Blue Round Cell Tumors. 302
- Soft Tissue Tumor. . . . . 303

## Reference

1. Campbell LK, et al. Mod Pathol. 2003; 16:963-9.
2. Bassotti G, et al. J Clin Pathol. 2005; 58:973-7.
3. Mahalingam M, et al. J Cutan Pathol. 2001; 28:282-6.
4. Mahalingam M, et al. J Cutan Pathol. 2006; 33:51-6.

## Product Description

Protein gene product 9.5 (PGP 9.5), also known as ubiquitin carboxyl-terminal hydrolase-1 (UCHL-1), is a 27 kDa protein originally isolated from whole brain extracts.<sup>1</sup> Although PGP 9.5 expression in normal tissues was originally felt to be strictly confined to neurons and neuroendocrine cells,<sup>2</sup> it has been subsequently documented in distal renal tubular epithelium, spermatogonia, Leydig cells, oocytes, melanocytes, prostatic secretory epithelium, ejaculatory duct cells, epididymis, mammary epithelial cells, Merkel cells, and dermal fibroblasts.<sup>1</sup> A plethora of mesenchymal neoplasms have demonstrated PGP 9.5 expression.<sup>1,3,4</sup>

## Panel Quick View

Retroperitoneal Lesions							
	PGP 9.5	Chromogranin A	GFAP	Neurofilament	NSE	S-100	Synaptophysin
Neuroblastoma	+	+	-/+	+	+	-	+
Ganglioneuroblastoma	+	+	+	+	+	+	+
Ganglioneuroma	+	+	+	+	+	+	+

Spindle Cell Tumors										
	PGP 9.5	MS Actin	SM Actin	β-Catenin	BCL2	Calponin	CD56	CK Cocktail	EMA	S-100
Spindle Cell Carcinoma	+	-	-	+/-	-	-	-	+	+/-	-
Neurofibroma	+	-	-	-	+	-	+	-	-	+
Endometrial Stromal Tumor	+	+	+	+/-	-	+	-	-	-	-
Fibromatosis	+	-	+	+	-	-	-	-	-	-

Small Blue Round Cell Tumors									
	PGP 9.5	MS Actin	CD57	CD99	CK Cocktail	FLI-1	Myogenin	Myoglobin	Vimentin
Rhabdomyosarcoma	+	+	-	-	-	-	+	+	+
Neuroblastoma	+	-	+	-	-	-	-	-	+
Embryonal Carcinoma	+	-	+	-	+	-	-	-	-
PNET/ES	+	-	+	+	-/+	+	-	-	+

## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

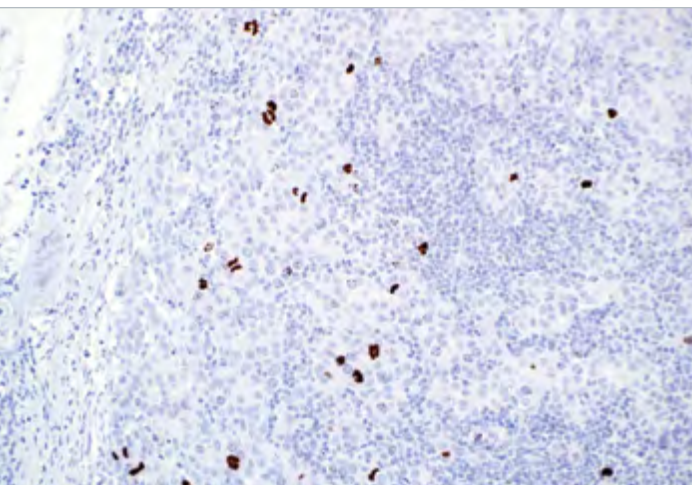
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	318A-14
0.5 ml, concentrate . . . . .	318A-15
1 ml, concentrate . . . . .	318A-16
1 ml, predilute . . . . .	318A-17
7 ml, predilute . . . . .	318A-18

## Designations

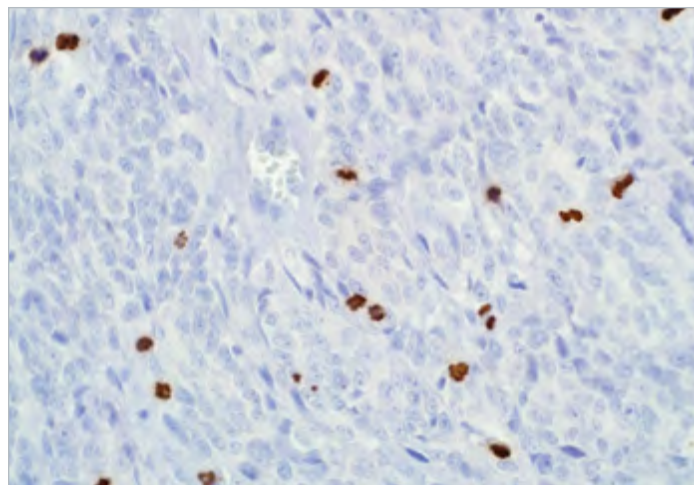




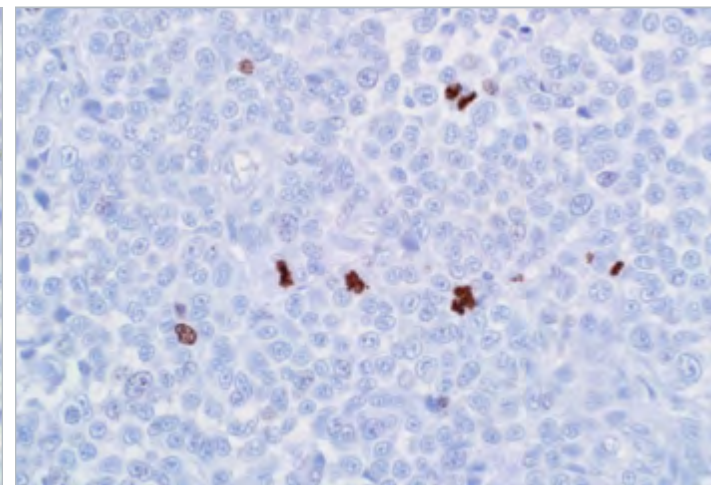
# Phosphohistone H3 (PHH3)



Mitotic figures labeled by Phosphohistone H3 (polyclonal).



PHH3 (polyclonal) on melanoma.



PHH3 (polyclonal) on melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

## Synonyms and Abbreviations

PHH3

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Comparison of immunoreactivity of PHH3 and Ki-67 in cell cycle 288

## Reference

1. Gurley LR, et al. Eur J Biochem. 1978; 84:1-15.
2. Hendzel MJ, et al. J Biol Chem. 1998; 273:24470-8.
3. Colman H, et al. Am J Surg Pathol. 2006; 30:657-64.
4. Nasr MR, et al. Am J Dermatopathol. 2008; 30:117-22.
5. Kim YJ, et al. Am J Clin Pathol. 2007; 128:118-25.

## Product Description

Phosphohistone H3 (PHH3) is a core histone protein, which together with other histones, forms the major protein constituents of the chromatin in eukaryotic cells. In mammalian cells, phosphohistone H3 is negligible during interphase but reaches a maximum for chromatin condensation during mitosis.<sup>1</sup> Immunohistochemical studies showed anti-PHH3 specifically detected the core protein histone H3 only when phosphorylated at serine 10 or serine 28. Studies have also revealed no phosphorylation on the histone H3 during apoptosis.<sup>2</sup> Therefore, PHH3 can serve as a mitotic marker to separate mitotic figures from apoptotic bodies and karyorrhectic debris, which may be a very useful tool in diagnosis of tumor grades, especially in CNS, skin, gyn., soft tissue, and GIST.<sup>3,4,5</sup>

## Panel Quick View

Comparison of immunoreactivity of PHH3 and Ki-67 in cell cycle		
Cell Cycle	PHH3	Ki-67
G0 phase	-	-
Interphase		
G1 phase	-	+
S phase	-	+
G2 phase	-	+
Mitosis phase		
Prophase	+	+
Metaphase	+	+
Anaphase	+	+
Telophase	+	+

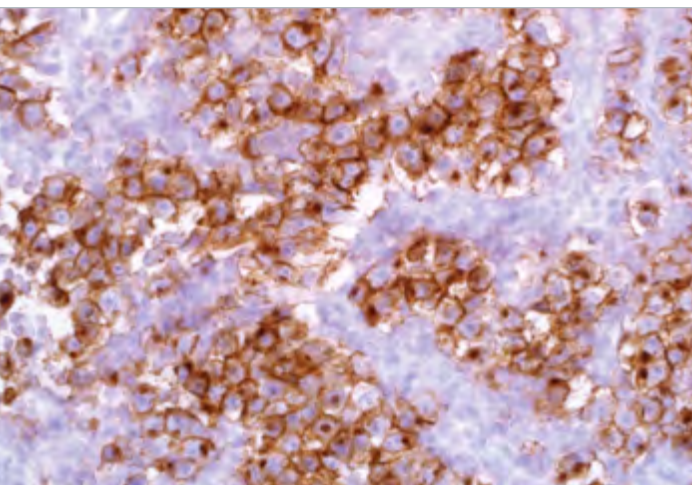
## Ordering Information

**Clone: polyclonal**  
Rabbit Polyclonal

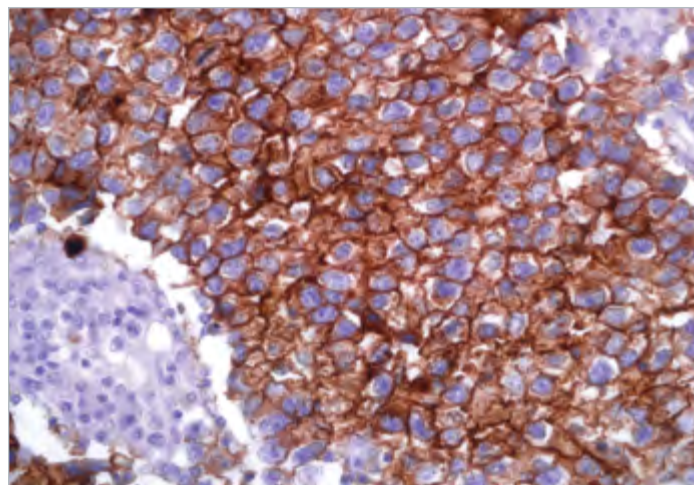
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0.5 ml, concentrate . . . . . 369A-15  
1 ml, concentrate . . . . . 369A-16  
1 ml, predilute . . . . . 369A-17  
7 ml, predilute . . . . . 369A-18  
25 ml, predilute . . . . . 369A-10

## Designations

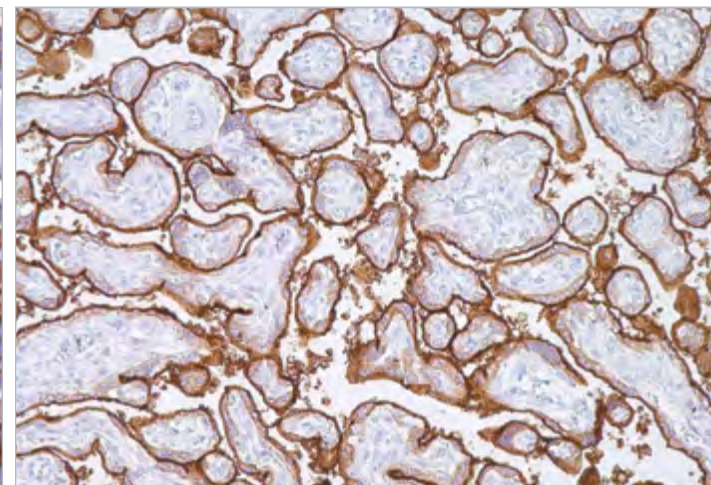
 IVD  IVD  IVD  RUO



Tumor cells on classical seminoma of testis express cytoplasmic staining of anti-PLAP.



PLAP (SP15) on seminoma.



PLAP (SP15) on placenta.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** placenta

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Placental Trophoblastic Proliferations ..... 292
- Uterus: Trophoblastic Proliferations ..... 292
- Germ Cell Tumors ..... 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma. .... 295

## Reference

- Jacobsen GK, et al. Acta Path Microbiol Immuno Scand Sect A. 1984; 92:323-329.
- Paiva J, et al. Am J Pathol. 1984; 111:156-165.
- Burke AP, et al. Hum Path. 1988; 19:663-670.
- Manivel JC, et al. Am J Surg Pathol. 1987; 11:21-29.
- Wick MR, et al. Hum Path. 1987; 18:946-954.
- Saad RS, et al. Appl Immunohistochem Mol Morphol. 2003; 11:107-12.
- Goldsmith JD, et al. Am J Surg Pathol. 2002; 26:1627-33.
- Lösch A, et al. Acta Obstet Gynecol Scand. 1996; 75:753-6.

## Product Description

Anti-PLAP immunoreacts with germ cell tumors and can discriminate between these and other neoplasms. Somatic neoplasms e.g. breast, gastrointestinal, prostatic, and urinary cancers may also immunoreact with antibodies to PLAP. Anti-PLAP positivity in conjunction with anti-keratin negativity favors seminoma over carcinoma. Germ cell tumors are usually anti-keratin positive, but they regularly fail to stain with anti-EMA, whereas most carcinomas stain with anti-EMA. Anti-PLAP has been useful in the diagnosis of gestational trophoblastic disease. This antibody has shown cross-reaction with human intestinal alkaline phosphatase.

## Panel Quick View

Uterus: Trophoblastic Proliferations						
	PLAP	CK Cocktail	hCG	hPL	p57	Vimentin
Partial Mole	+	Strong, diffuse	Weak, diffuse	Weak, diffuse	+	-
Complete Mole	Weak, focal	Strong, diffuse	Strong, diffuse	Weak, focal	-	-
Choriocarcinoma	Weak, focal	Strong, diffuse	Strong, diffuse	Weak, focal	-	-/+
Placental Site Tumor	Strong, diffuse	Strong, diffuse	Strong, focal	Strong, diffuse		Strong, diffuse

Germ Cell Tumors										
	PLAP	AFP	CD30	CD117	EMA	GPC-3	hPL	Inhibin	Oct-4	Vimentin
Seminoma (Seminoma/Dysgerminoma)	+	-	-	+	-	-	-	-	+	+
Embryonal Carcinoma	+	-	+	-	-	-	-	-	+	-
Choriocarcinoma	+	-	-	-	+	+	+	-	-	-/+
Yolk Sac Tumor	-/+	+	-	-/+	-	+	-	-	-	-
Granulosa Cell Tumor	-	-	-	-	-	-	-	+	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	+	-	-	-	-	-
Mature Teratoma	+/-	+/-	-	-	+	-	-/+		-	+
Immature Teratoma	-	-	-	+/-	+	-	-/+		-	+
Carcinoid	-	-	-	-	-	-	-	-	-	+

## Ordering Information

### Clone: SP15

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	321R-14
0.5 ml, concentrate.....	321R-15
1 ml, concentrate .....	321R-16
1 ml, predilute .....	321R-17
7 ml, predilute .....	321R-18

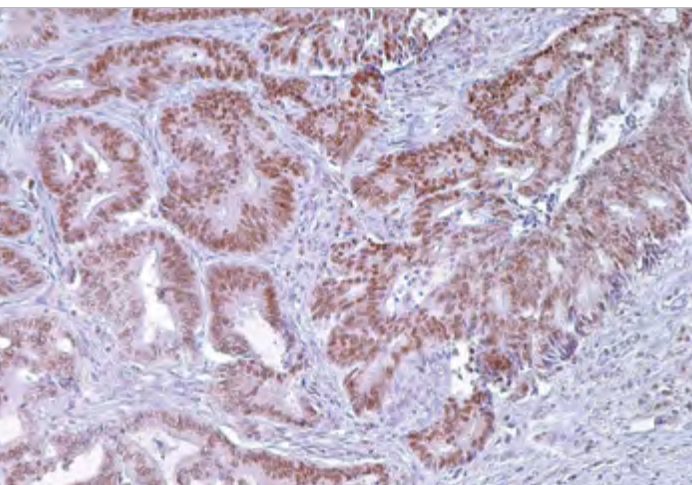
### Alternate Clones Available

- Mouse Monoclonal, NB10
- Contact us for more information.

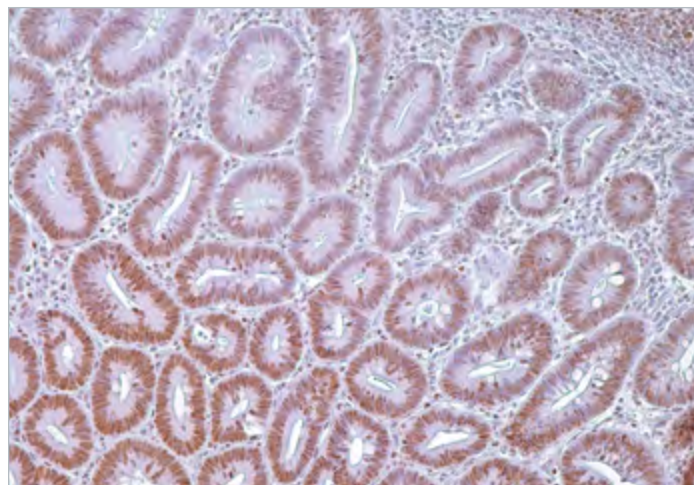
### Designations



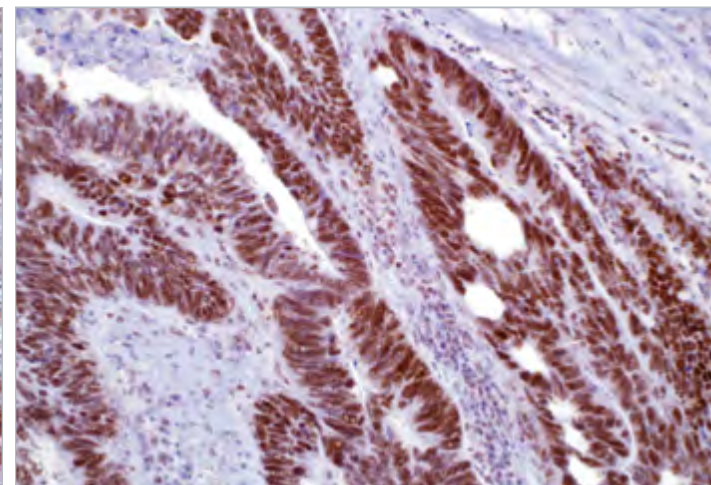




Nuclear labelling of carcinoma cells by PMS2 (EPR3947) on colon adenocarcinoma.



PMS2 (EPR3947) on colon adenoma.



PMS2 (EPR3947) on adenocarcinoma of colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** colon

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Reference

1. Gologan A, et al. Clin Lab Med. 2005; 25:179-96.
2. Lagerstedt Robinson K, et al. J Natl Cancer Inst. 2007; 99:291-9.
3. Hendriks YM, et al. Gastroenterology. 2006; 130:312-22.
4. Truninger K, et al. Gastroenterology. 2005; 128:1160-71.
5. Hampel H, et al. N Engl J Med. 2005; 352:1851-60.
6. Warusavitarne J, et al. Int J Colorectal Dis 2007; 22:739-748.
7. Gill S, et al. Clin Cancer Res. 2005; 11:6466.

## Product Description

PMS2 is a mismatch repair protein that is deficient in a high proportion of patients with microsatellite instability (MSI-H). It has been suggested that the deficiencies in DNA mismatch repair protein(s) can be seen in some malignancies such as hereditary nonpolyposis colorectal cancer (HNPCC) and endometrial cancer. Anti-PMS2 may be useful in identification of PMS2 protein in variety of normal and neoplastic tissues and identification of loss of MLH1 in tumors with MSI genotype.<sup>1-7</sup> Anti-PMS2 is best utilized in an IHC panel that includes anti-MSH6, anti-MSH2, and anti-MLH1.

## Ordering Information

### Clone: EPR3947

Rabbit Monoclonal

**Volume** ..... **Part No.**

1 ml, predilute ..... 288R-17

7 ml, predilute ..... 288R-18

25 ml, predilute ..... 288R-10

### Alternate Clones Available

- Mouse Monoclonal, MRQ-28
- Contact us for more information.

### Designations



IVD



IVD



IVD

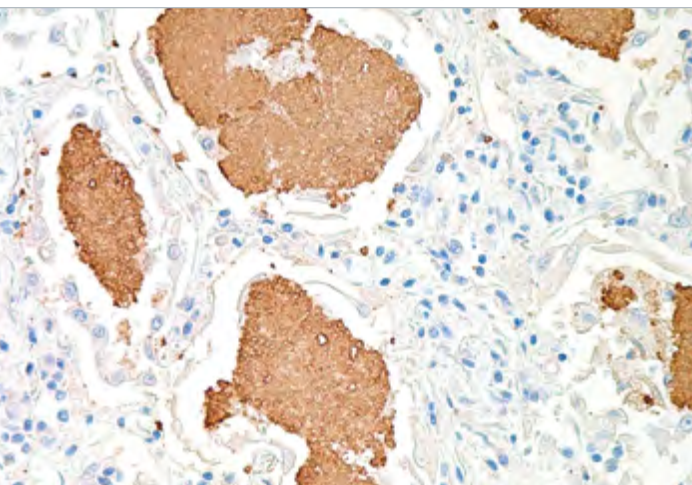


RUO

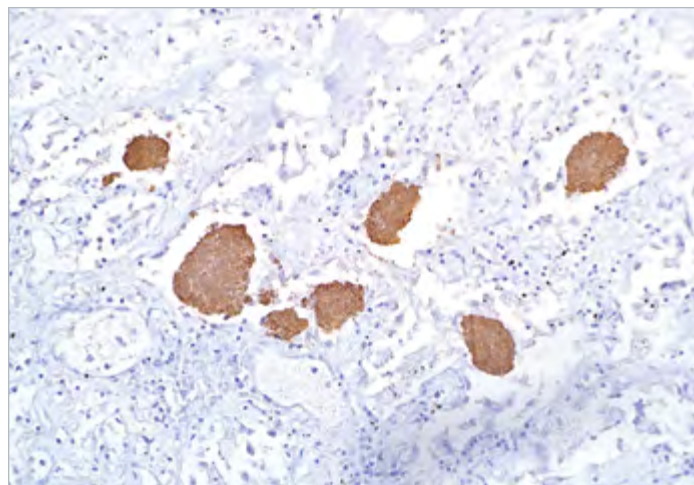
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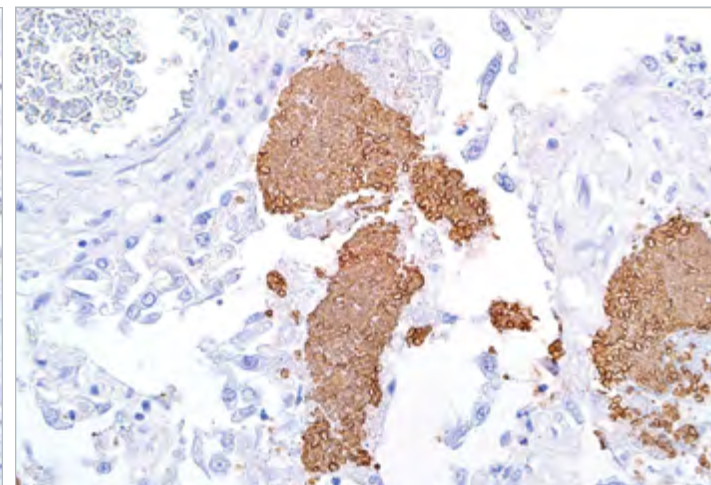
# Pneumocystis jiroveci (carinii)



*Pneumocystis jiroveci (carinii)* (3F6)



*Pneumocystis jiroveci (carinii)* (3F6)



*Pneumocystis jiroveci (carinii)* (3F6)

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** P. jiroveci infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgM/k

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

**Clone: 3F6**

Mouse Monoclonal

**Volume . . . . . Part No.**

0.1 ml, concentrate. . . . . 219M-14 (ASR)

0.5 ml, concentrate. . . . . 219M-15 (ASR)

1 ml, concentrate . . . . . 219M-16 (ASR)

1 ml, predilute . . . . . 219M-17 (ASR)

7 ml, predilute . . . . . 219M-18 (ASR)

## Designations



ASR<sup>†</sup>



IVD



IVD



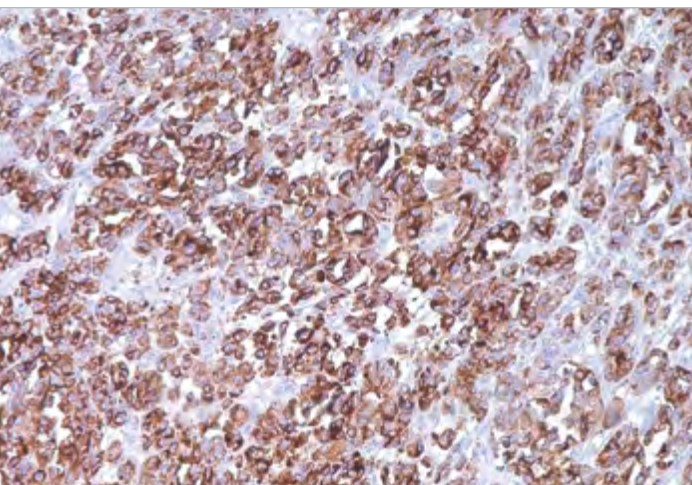
RUO

<sup>†</sup>Analyte Specific Reagent: Analytical and performance characteristics are not established.

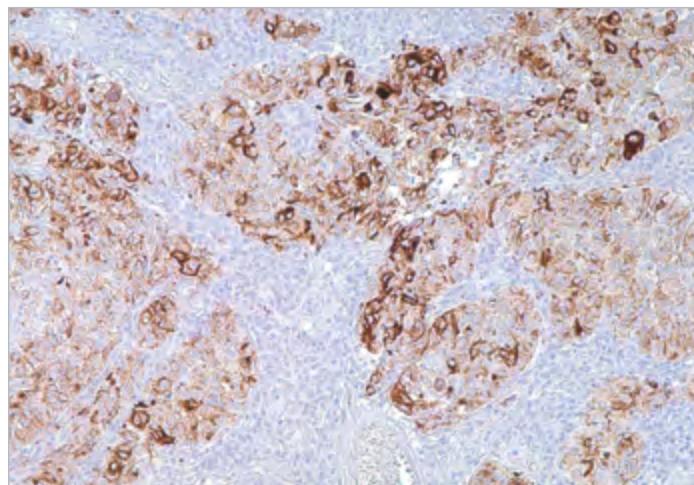
For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.

For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.

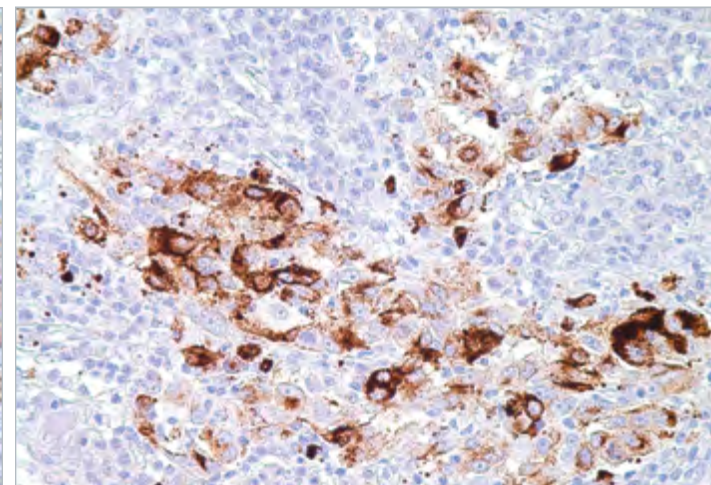




Melanoma tumor cells are stained by the PNL2 antibody in a cytoplasmic pattern.



PNL2 on metastatic melanoma.



PNL2 on metastatic melanoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** melanoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

Melanoma Associated Antigen

## Associated Specialties

● Dermatopathology

## Associated Panels

- Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290
- Melanotic Lesions ..... 293

## Reference

1. Philippe Rochoaix, et al. Mod Pathol. 2003; 16:481-490.
2. Klaus J, et al. Am J Surg Pathol. 2005; 29:400-406.
3. Morris LG, et al. Head Neck. 2008; 30:771-775.
4. Zhe X, et al. J Histo and Cyto. 2004; 52:1537-1542.

## Product Description

Anti-PNL2 is a novel monoclonal antibody, which has recently been introduced as an immunohistochemical reagent to stain melanocytes and tumors derived therefrom. Anti-PNL2 yields a strong cytoplasmic staining of skin and oral mucosal melanocytes, and staining of granulocytes when used at high concentration. Anti-PNL2 labels intraepidermal nevi while the dermal component of compound nevi are largely non-reactive with anti-PNL2. Antibodies against PNL2, MART-1 (Melan-A) and HMB-45 stain most clear cell sarcoma cells and a few cells in angiomyolipomas and lymphangioliomyomatosis. Non-melanocytic lesions found to be positive with this marker include PEComas and melanotic schwannoma. Anti-PNL2 is a useful antibody for the identification of melanomas and clear cell sarcomas. Differential diagnosis is aided by the results from a panel of antibodies, including antibodies against HMB-45, MART-1, Tyrosinase, and MiTF. The differential diagnosis between benign nevi and malignant melanoma is sometimes difficult, and malignant melanoma may mimic other neoplasms, such as undifferentiated carcinoma, sarcoma or large cell lymphoma. Anti-PNL2 may be most useful because of its high sensitivity for metastatic melanoma (87%), as opposed to 76% for anti-HMB-45 and 82% for anti-MART-1. Furthermore, anti-PNL2, combined with antibodies against S-100 and HMB-45 is a highly sensitive and specific marker for mucosal melanoma.

## Panel Quick View

Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor						
	PNL2	Collagen IV	HMB-45	NGFR	S-100	Tyrosinase
Spindle Cell Melanoma	+	-	+	+	+	+
PNST (Peripheral Nerve Sheath Tumor)	-	+	+	+	+	+
Adrenal Adenoma		+	+	-/+	+	+

Melanotic Lesions										
	PNL2	CD63	Factor XIIIa	HMB-45	KBA.62	MART-1	MiTF	S-100	Tyrosinase	WT1
Adrenal Cortical	-	-	-	-	-	+	-	+	-	
Adult Melanocytes	+	+	-	-	+	+	+	+	+	
Angiomyolipoma	+	+	-	+	-	+	+	+	+/-	
Dermatofibroma	-	-	+	-	-	-	-	-	-	
Interdermal Nevus	+	-	-	-	+	+	+	+	+	+/-
Intranodal Nevus Cells	+	-	-	-	+	+	+	+	+	
Junctional Nevus	+	-	-	+	+	+	+	+	+	+/-
Metastatic Melanoma	+	+	-	+	+	+	+	+	+	+
Primary Melanoma	+	+	-	+	+	+	+	+	+	+
Spindle Cell Melanoma	+	+	-	+	+	+	+	+	+	+

## Ordering Information

**Clone: PNL2**  
**Mouse Monoclonal**

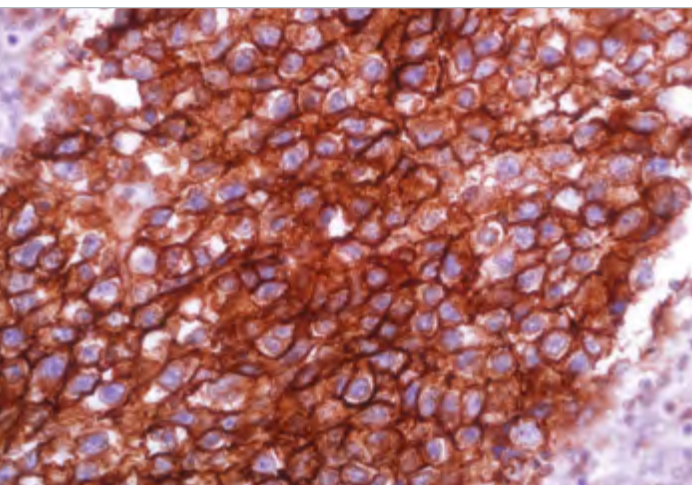
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 0.5 ml, concentrate ..... 365M-95  
 1 ml, concentrate ..... 365M-96  
 1 ml, predilute ..... 365M-97  
 7 ml, predilute ..... 365M-98

## Designations

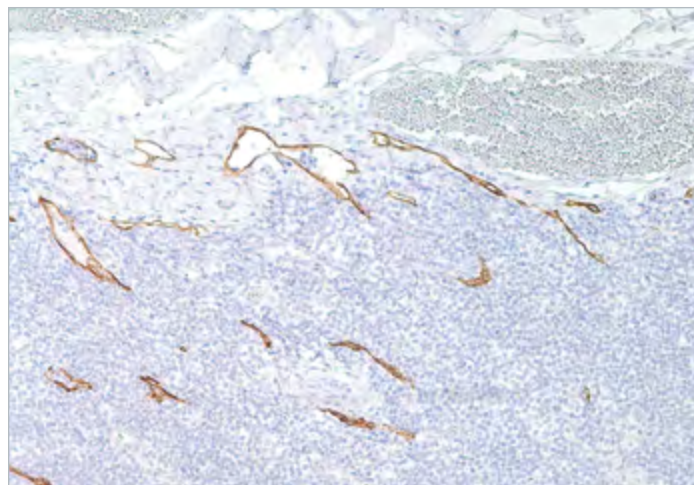
 IVD  IVD  IVD  RUO



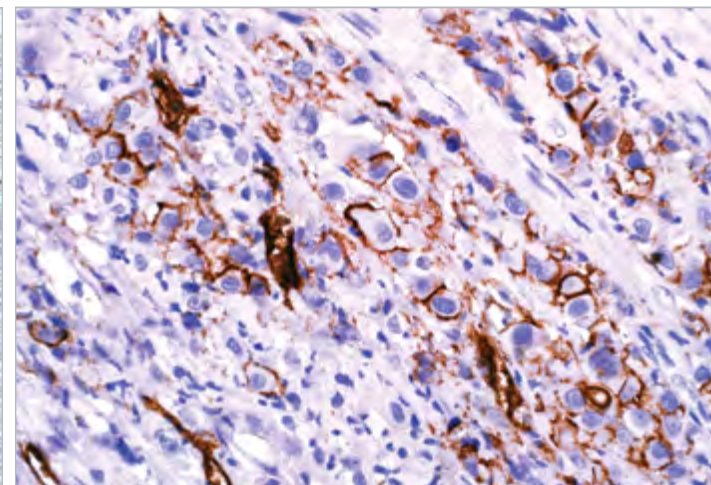
# Podoplanin



Abundant cytoplasmic labelling on seminoma by Podoplanin (D2-40).



Podoplanin (D2-40) on tonsil.



Podoplanin (D2-40) on mesothelioma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Synonyms and Abbreviations

D2-40

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Skin: Spindle Cell Tumors . . . . . 294
- Germ Cell Tumors . . . . . 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma . . . . . 295
- Renal Cell Carcinoma vs. Hemangioblastoma . . . . . 296
- Lung Adenocarcinoma vs. Mesothelioma . . . . . 302
- Pleura: Adenocarcinoma vs. Mesothelioma . . . . . 302
- Vascular Tumors . . . . . 303

## Reference

1. Ordonez N. Adv Anat Pathol. 2006; 13:83-8.
2. Niakosari F, et al. Arch Dermatol. 2005; 141:440-4.
3. Galambos C, et al. Pediatr Dev Pathol. 2005; 8:191-9.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Podoplanin is a transmembrane mucoprotein (38kD) recognized by the D2-40 monoclonal antibody.<sup>1</sup> Podoplanin is selectively expressed in lymphatic endothelium<sup>1-6</sup> as well as lymphangiomas,<sup>7</sup> Kaposi sarcomas,<sup>6,8</sup> and in a subset of angiosarcomas with probable lymphatic differentiation. Recent studies have also shown podoplanin to be a highly sensitive and relatively specific marker for epithelioid mesothelioma. Therefore, it can be used in a panel to distinguish mesotheliomas or mesothelial cells from pulmonary carcinomas.<sup>1,9,10</sup>

## Panel Quick View

Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma							
	D2-40	CD117	CK Cocktail	EMA	Oct-4	PLAP	Vimentin
Seminoma	+	+	-	-	+	+	+
Embryonal Carcinoma	-	-	+	-	+	+	-
Choriocarcinoma	-	-	+	+	-	+	-/+
Yolk Sac Tumor	-	-	+	-	-	+	-
Somatic Carcinoma	-/+	-	+	+	-	-	-
Granulosa Cell Tumor	+/-	-	-	-	-	-	+
Hypercalcaemic Small Cell Carcinoma	+	-	+	+	-	-	-

Renal Cell Carcinoma vs. Hemangioblastoma			
	D2-40	CD10	CK Cocktail
Metastatic RCC	-	+	+
Hemangioblastoma	+	-	-

Pleura: Adenocarcinoma vs. Mesothelioma										
	D2-40	Caldesmon	Calretinin	CEA	CK 5&6	Ep-CAM	HBME-1	TAG-72	TTF-1	WT1
Adenocarcinoma	-	-	-	+	-	+	-	+	+	-
Mesothelioma	+	+	+	-	+	-	+	-	-	+

## Ordering Information

**Clone: D2-40**  
Mouse Monoclonal

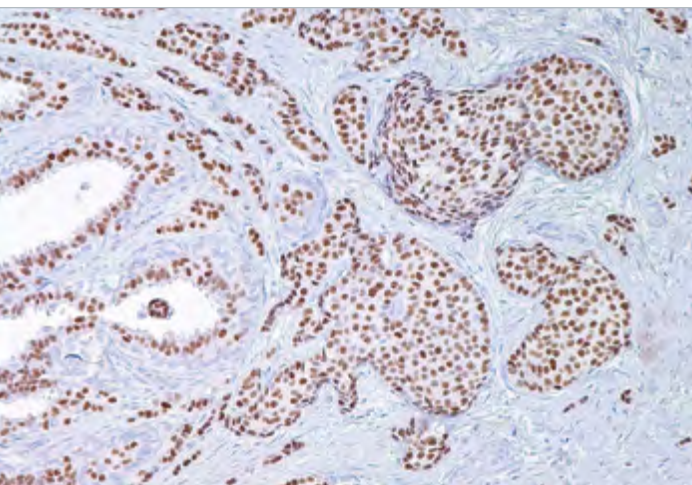
Volume . . . . .	Part No.
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0.5 ml, concentrate . . . . .	322M-15
1 ml, concentrate . . . . .	322M-16
1 ml, predilute . . . . .	322M-17
7 ml, predilute . . . . .	322M-18
25 ml, predilute . . . . .	322M-10

## Designations

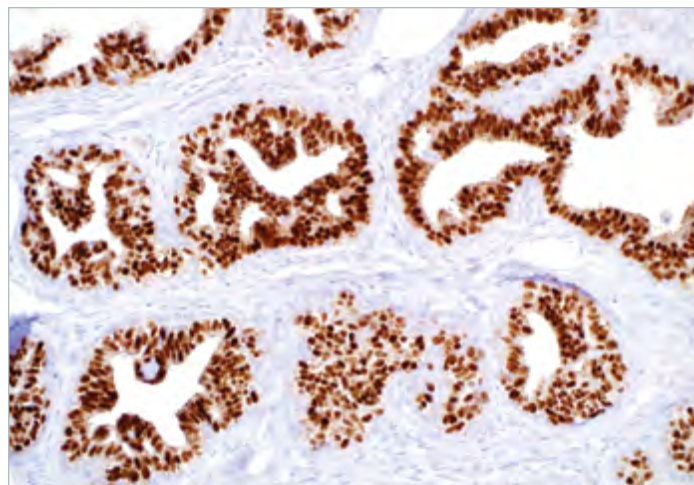




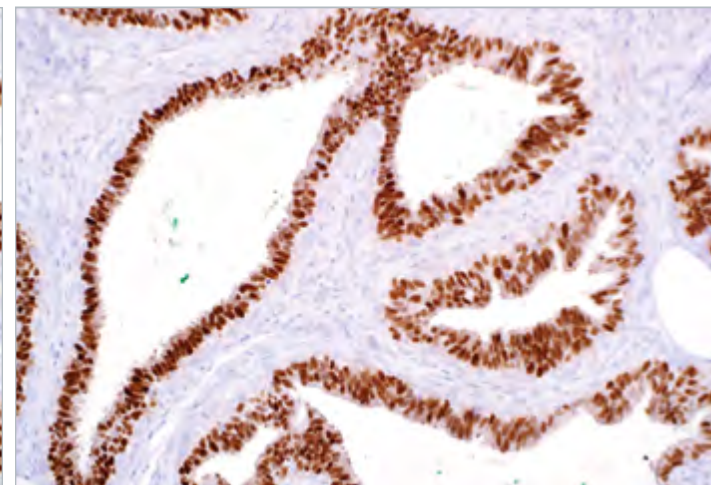
# Progesterone Receptor



Progesterone Receptor (Y85)



Progesterone Receptor (Y85)



Progesterone Receptor (SP42)

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** breast, breast carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

PR

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: Y85

Rabbit Monoclonal

#### Volume . . . . .Part No.

0.1 ml, concentrate . . . 323R-14 (ASR)  
0.5 ml, concentrate . . . 323R-15 (ASR)  
1 ml, concentrate . . . . 323R-16 (ASR)  
1 ml, predilute . . . . . 323R-17 (ASR)  
7 ml, predilute . . . . . 323R-18 (ASR)  
25 ml, predilute . . . . . 323R-10 (ASR)

#### Alternate Clones Available

• Rabbit Monoclonal, SP42  
Contact us for more information.

#### Designations



ASR†



IVD



IVD



RUO

†Analyte Specific Reagent: Analytical and performance characteristics are not established.

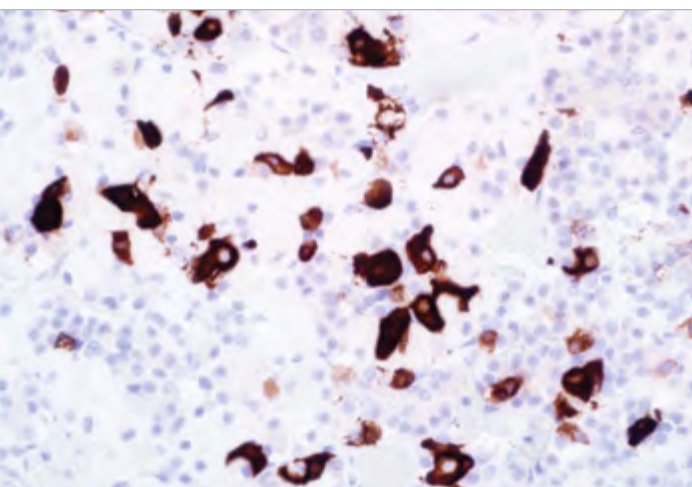
For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.

For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.

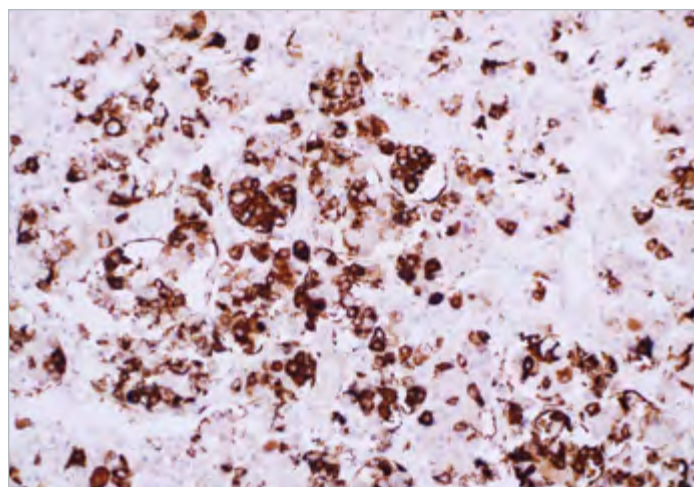
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 **RabMab**<sup>®</sup>  
Technology from Abcam

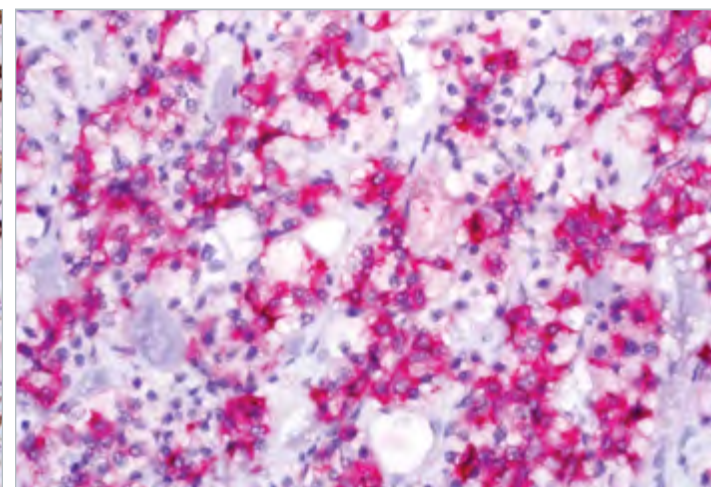
# Prolactin



*Prolactin (EP193) on pituitary.*



*Prolactin (EP193) on pituitary.*



*Prolactin (EP193) on pituitary adenoma.*

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pituitary



**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

PRL

## Associated Specialties

-  Anatomic/Surgical Pathology
-  Neuropathology

## Reference

1. Asa SL, et al. Arch Pathol Lab Med. 1982; 106:360-3.
2. Duello TM, et al. Amer J Anat. 1980; 158:463-9.
3. Minniti G, et al. Surg Neurol. 2002; 57:99-103.
4. Popadic A, et al. Surg Neurol. 1999; 51:47-54.
5. Nevalainen MT, et al. J Clin Invest. 1997; 99:618-2.

## Product Description

Prolactin (PRL) is a single-chain polypeptide of 226 amino acids with a molecular weight of about 24 kD. PRL plays a role in multiple processes including cell growth, reproduction, and immune function.<sup>1</sup> The pituitary hormone PRL is involved in tumorigenesis in rodents and humans. PRL promotes proliferation, survival, and migration of cancer cells acting via the PRL receptor.<sup>5</sup> Anti-prolactin is a useful marker in classification of pituitary tumors and the study of pituitary disease as it reacts with prolactin-producing cells.<sup>2-4</sup> Such prolactin-producing cells can also be found in prostate epithelium.<sup>5</sup>

## Ordering Information

**Clone: EP193**  
Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	210R-14
0.5 ml, concentrate	210R-15
1 ml, concentrate	210R-16
1 ml, predilute	210R-17
7 ml, predilute	210R-18

### Alternate Clones Available

- Rabbit Polyclonal

Contact us for more information.

### Designations



IVD



IVD



IVD

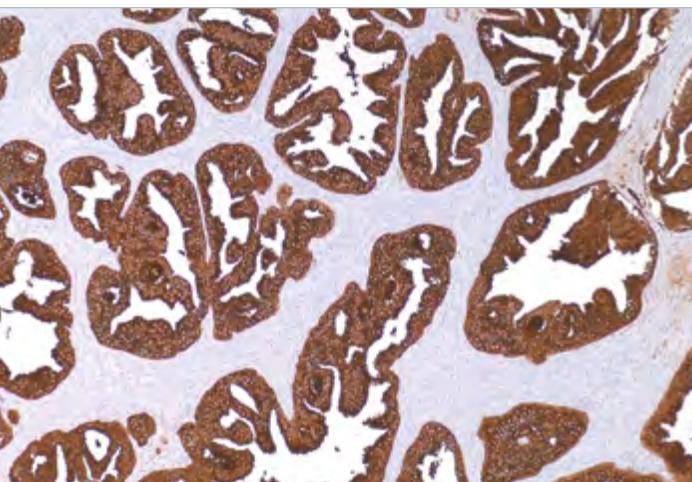


RUO

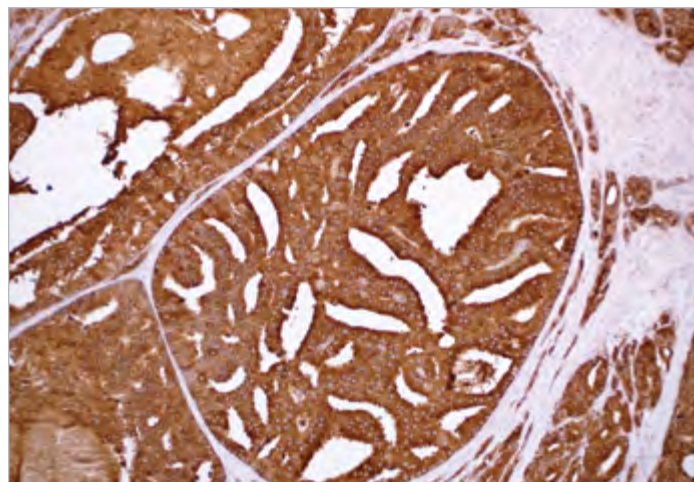
 **CELL MARQUE**

 **RabMab**<sup>®</sup>  
Technology from Abcam

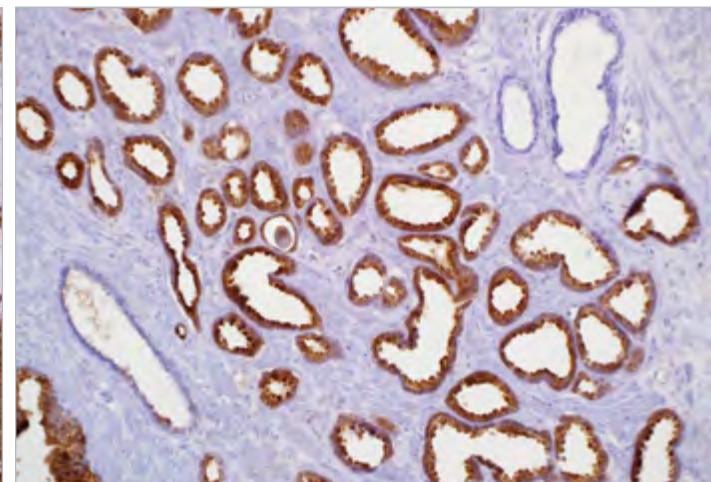




Benign prostate gland epithelial cells are labeled with PSA (ER-PR8).



PSA (ER-PR8) on prostate carcinoma.



PSA (ER-PR8) on prostate carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate, prostate carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology
- Genitourinary (GU) Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Colon vs. Prostate Adenocarcinoma ..... 287
- Prostate Lesions ..... 296
- Prostate: Malignant vs. Benign . 296

## Reference

1. Polascik TJ, et al. J Urol. 1999; 162:293.
2. Stenman UH, et al. Semin Cancer Biol. 1999; 9:83-93.
3. Alanen KA, et al. Path Res Pract. 1996; 192:233-237.
4. Varma M, et al. Histopathology. 2005; 47:1-16.

## Product Description

Prostate-Specific Antigen (PSA) is a 33 kDa protein primarily produced by the prostatic epithelium and the epithelial lining of the periurethral glands.<sup>1</sup> PSA is strongly expressed in both normal and neoplastic prostatic tissue. Although PSA can be considered prostate-specific, PSA and/or PSA gene expression has been detected at low levels in some extra-prostatic tissues such as normal breast tissue, breast tumors, endometrium, adrenal neoplasms and renal cell carcinomas.<sup>1,2,3</sup> Anti-PSA is most useful in determining the prostatic origin of carcinomas in non-prostate tissues (metastatic disease) using IHC techniques. This product is best used in conjunction with a panel of antibodies as, up to 27% of prostate carcinoma cases (predominantly poorly differentiated carcinomas) can be negative for this marker.<sup>4</sup>

## Panel Quick View

Breast vs. Lung vs. Prostate Carcinoma					
	PSA	BRST-2	Mammaglobin	Napsin A	TTF-1
Breast Carcinoma	-	+	+	-	-
Lung Carcinoma	-	-	-	+	+
Prostate Carcinoma	+	-	-	-	-

Colon vs. Prostate Adenocarcinoma						
	PSA	CA 19-9	CDX-2	CEA	CK 20	P504s
Colon Adenocarcinoma	-	+	+	+	+	+
Prostate Adenocarcinoma	+	-	-	-	-	+

Prostate: Malignant vs. Benign								
	PSA	AR	CK 34βE12	CK 5&6	CK 14	p63	P504s	PSAP
Prostate Carcinoma	+	+	-	-	-	-	+	+
Benign Prostate	+	+	+	+	+	+	-/+	+

## Ordering Information

### Clone: ER-PR8

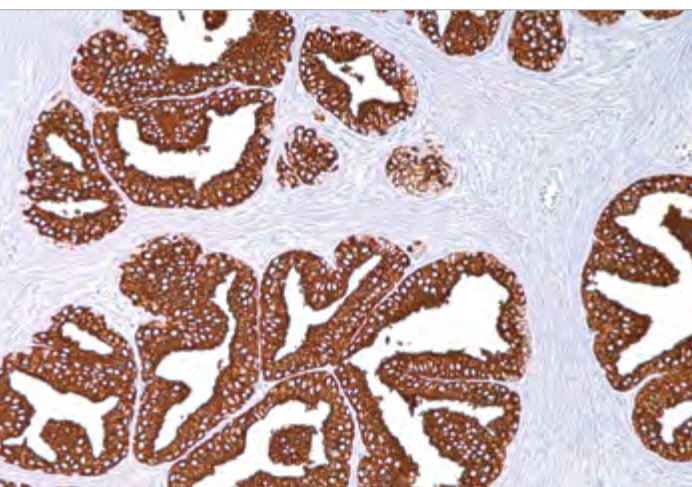
### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	324M-14
0.5 ml, concentrate.....	324M-15
1 ml, concentrate .....	324M-16
1 ml, predilute .....	324M-17
7 ml, predilute .....	324M-18

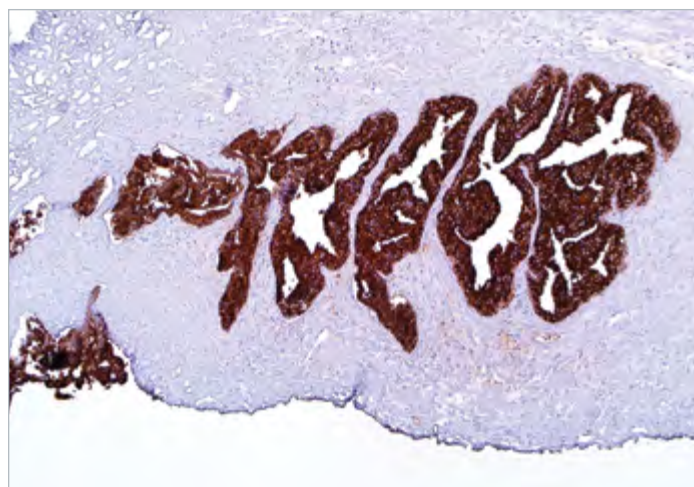
### Designations

			
IVD	IVD	RUO	RUO

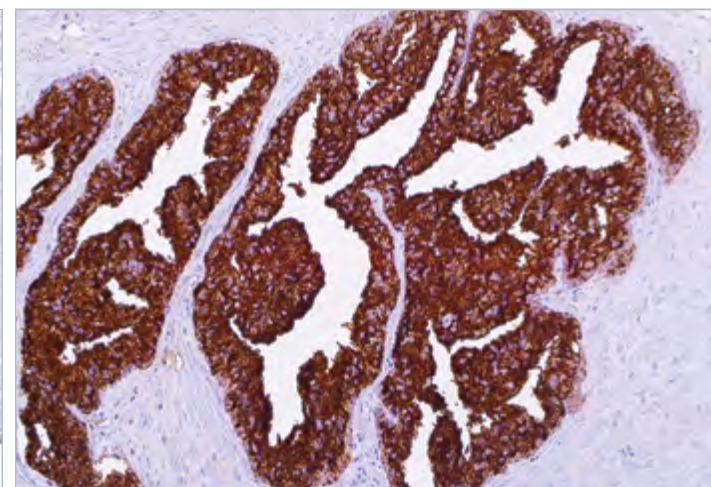




Benign prostate glandular cells are labeled by PSAP (PASE/4LJ).



PSAP (PASE/4LJ) on prostate.



PSAP (PASE/4LJ) on prostate.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** prostate, prostate adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Anatomic/Surgical Pathology
- Genitourinary (GU) Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Prostate Lesions ..... 296
- Prostate: Malignant vs. Benign . 296

## Reference

1. Ansari MA, et al. Am J Clin Path. 1981; 76:94-98.
2. Nadji M, et al. Ann NY Acad Sci. 1982; 390:133-141.
3. Kimura N, et al. Virchows Arch A Pathol Anat Histopathol. 1986; 410:247-251.
4. Kidwai N, et al. Breast Cancer Res. 2004; 6:R18-23.
5. Kuroda N, et al. Pathol Int. 1999; 49:457-61.
6. Elgamal AA, et al. Urology. 1994; 44:84-90.
7. Gatalica Z, et al. Appl Immunohistochem Mol Morphol. 2000; 8:158-61.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-PSAP reacts with prostatic acid phosphatase in the glandular epithelium of normal and hyperplastic prostate, carcinoma of the prostate, and metastatic cells of prostatic carcinoma. This marker may be helpful in pinpointing the site of origin in cases of metastatic carcinoma of the prostate, and is considered a more sensitive marker than PSA. However, it also offers less specificity. Nevertheless, PSAP complements PSA in the right clinical context.

## Panel Quick View

Carcinoma: Differential Diagnosis							
	PSAP	AR	BCA-225	ER/PR	BRST-2	Mamma-globin	PSA
Salivary Duct Carcinoma	-	+	+	-	+	-	-
Breast Carcinoma	-	+(apocrine)	+	+/+	+	+	-
Prostate Carcinoma	+	+	-	-	-	-	+
Lung Carcinoma	-	-	+/-	+/-	-	-	-

Prostate Lesions									
	PSAP	CK 34βE12	CK 7	PAX-2	p63	P504s	PSA	TBM*	URO III
Prostate Carcinoma	+	-	-	-	-	+	+	-	-
Urothelial Carcinoma	-	+	+	-	+	-	-	+	+
Nephrogenic Adenoma	-	+/-	+	+	-	+	-	-	-

\*Thrombomodulin

Prostate: Malignant vs. Benign								
	PSAP	AR	CK 34βE12	CK 5&6	CK 14	p63	P504s	PSA
Prostate Carcinoma	+	+	-	-	-	-	+	+
Benign Prostate	+	+	+	+	+	+	-/+	+

## Ordering Information

### Clone: PASE/4LJ

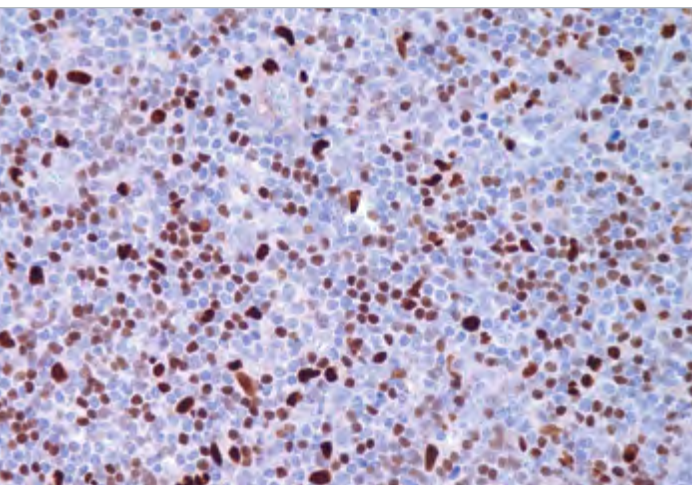
### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	326M-14
0.5 ml, concentrate.....	326M-15
1 ml, concentrate .....	326M-16
1 ml, predilute .....	326M-17
7 ml, predilute .....	326M-18

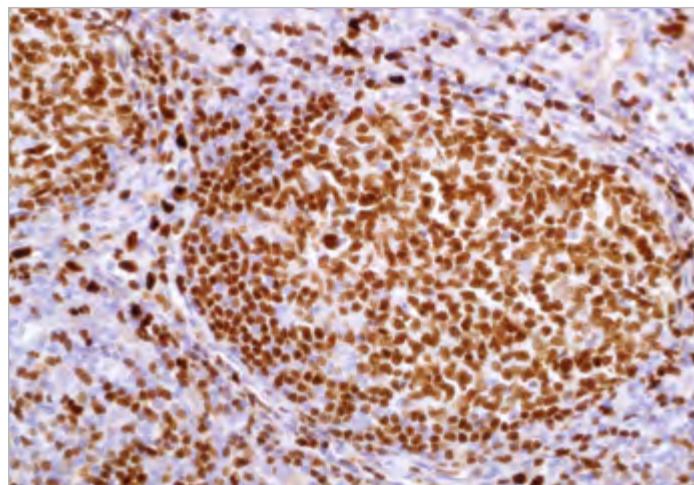
### Designations

			
IVD	IVD	IVD	RUO

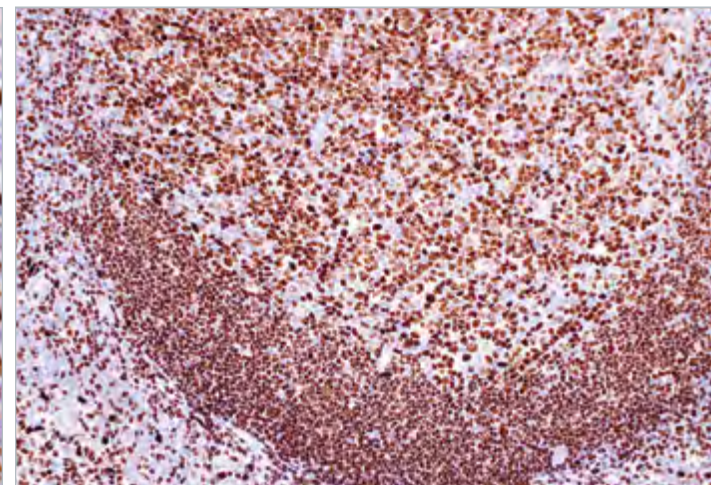




Nuclear labelling of B-cell lymphoma cells by PU.1 (EPR3158Y).



PU.1 (EPR3158Y) on follicular lymphoma.



PU.1 (EPR3158Y) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296

● Hodgkin vs. Non-Hodgkin

Lymphomas ..... 297

## Reference

1. Hoefnagel JJ, et al. Mod Pathol. 2006; 19:1270-6.
2. Hromas R, et al. Blood. 1993; 82:2998-3004.
3. Loddenkemper C, et al. J Pathol. 2004; 202:60-9.

## Product Description

PU.1 is a transcription factor that has been shown to be important for normal B-cell development. PU.1 belongs to the ETS family of transcription factors. It is expressed in the myeloid lineage and in immature as well as mature B-lymphocytes, with the exception of plasma cells. PU.1 is essential during early B-cell differentiation. The absence of PU.1 results in total block of B-cell development at the pre-pro stage. Very little is known about PU.1 function in later stages of B-cell development. PU.1 does not seem to play a role in the end-stage of B-cell development and is not expressed in plasma cells. PU.1 exerts an important role in the regulation of the expression of crucial B-cell proteins, such as immunoglobulin (Ig) genes, and CD20 and its putative binding sites were also identified in the promoters of CD79, CD10, and CD22. PU.1 binds to the 3' enhancer region of both the Ig kappa and lambda light chain genes and it also regulates the immunoglobulin heavy chain genes through the intron enhancer region.<sup>1-2</sup>

PU.1 is expressed in germinal center B-cells and mantle B-cells. Various lymphomas are also positive for this marker including the following: B-chronic lymphocytic leukemia, mantle cell lymphoma, follicular lymphoma, marginal zone lymphoma, Burkitt lymphoma, diffuse large cell lymphoma, diffuse large B-cell lymphoma, T-cell rich B-cell lymphoma, and nodular lymphocyte predominant Hodgkin lymphoma.<sup>3</sup>

## Panel Quick View

B-cell Lymphomas										
	PU.1	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	MUM1	Oct-2	TRAcP
Burkitt Lymphoma		+	-	+	-	+	-	-	-	-
CLL/SLL	+	-	+	-	+	+	-	+	+	-
Diffuse Large Cell Lymphoma	+	+/-	-/+	-/+	-	+	-	+/-	+	-
Follicular	+	+	-	+	-	+	-	-	+	-
Hairy Cell Leukemia		-	-	-	-	+	+ (weak) /-		+ (weak) /-	+
Lymphoplasmacytic		-	-	-	-	+	-	+	-	-
Mantle Cell	+	-	+	-	-	+	+	-	+	-
Marginal Zone	+	-	-	-	-	+	-	+	+	+/-

Hodgkin vs. Non-Hodgkin Lymphomas										
	PU.1	ALK	BCL6	CD15	CD30	CD79a	EMA	Fascin	Gran-zyme B	MUM1
Anaplastic Large Cell Lymphoma	-	+	+/-	-	+	-	+	-	+	-
Hodgkin Lymphoma, Classic	-	-	-	+	+	-	-	+	-	+
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	+	-	+	-	-	+	+	-	-	+/-
T-cell Rich LBCL	-	-	+	-	-	+	-	-	-	+

## Ordering Information

**Clone: EPR3158Y**

Rabbit Monoclonal

**Volume ..... Part No.**

0.1 ml, concentrate ..... 328R-14

0.5 ml, concentrate ..... 328R-15

1 ml, concentrate ..... 328R-16

1 ml, predilute ..... 328R-17

7 ml, predilute ..... 328R-18

## Designations



IVD



IVD



IVD



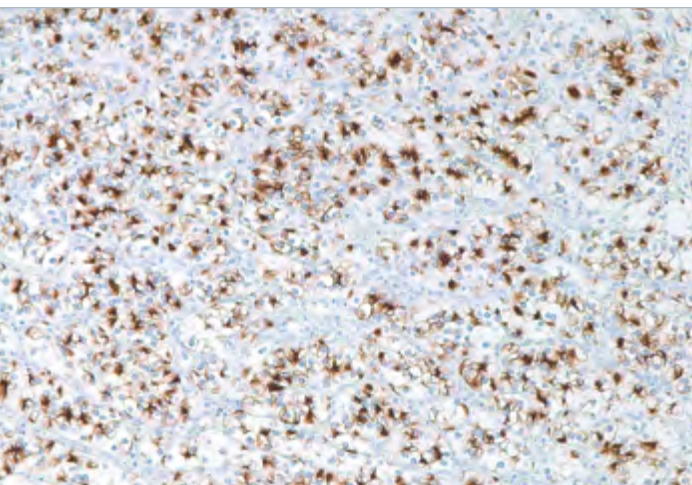
RUO

**CELL MARQUE**

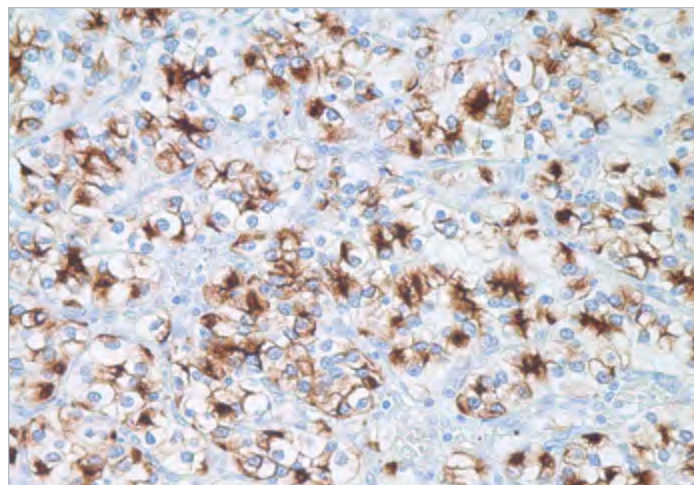
**RabMab®**  
Technology from Abcam



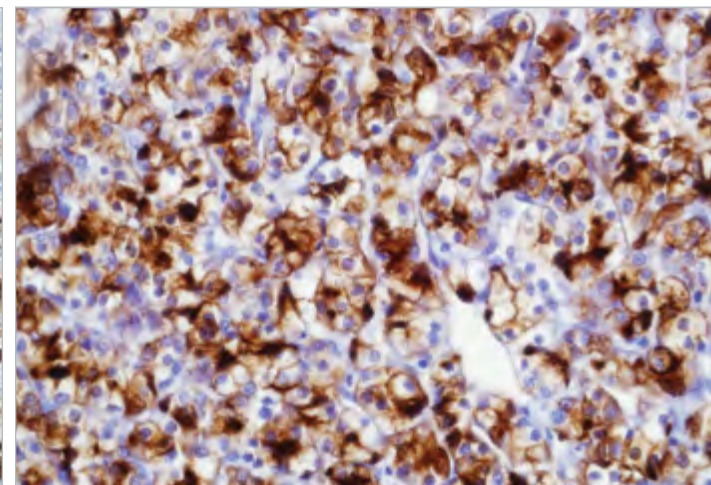
# Renal Cell Carcinoma



Renal cell carcinoma tumor cells are labeled in a cytoplasmic pattern by anti-renal cell carcinoma.



Renal Cell Carcinoma (PN-15) on clear cell type.



Renal Cell Carcinoma (PN-15) clear cell type, renal cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** renal cell carcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

RCC

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas . . . . . 286
- Carcinomas . . . . . 295
- Kidney: Renal Epithelial Tumors . . . . . 295

## Reference

1. McGregor DK, et al. Am J Surg Pathol. 2001; 25:1485-1492.
2. Avery AK, et al. Am J Surg Pathol. 2000; 24:203-210.
3. Gokden N, et al. Appl Immunohistochem Mol Morphol. 2003; 11:116-9.

## Product Description

Anti-renal cell carcinoma (RCC) recognizes a 200 kD glycoprotein localized in the brush border of the proximal renal tubule. This antibody immunoreacts with approximately 90% of primary RCC and approximately 85% of metastatic RCC. Other tumors that may react with this antibody are parathyroid adenoma and an occasional breast carcinoma.<sup>1</sup> Nephroblastoma, oncocytoma,<sup>2</sup> mesoblastic nephroma, transitional cell carcinoma, and angiomyolipoma are not labeled with this antibody.<sup>1-3</sup>

## Panel Quick View

Kidney: Renal Epithelial Tumors								
	RCC	CD10	CD117	Ep-CAM	Ksp-cad-herin	Parvalbumin	PAX-2	Vimentin
Clear Cell RCC	+	+	-	-	-	-	+	+
Chromophobe RCC	-/+	-/+	+	+	+	+	+	-
Papillary RCC	+	+	+	-	-/+	-	-	+
Oncocytoma	-	+/-	+	-	+/-	+	+	-

## Ordering Information

### Clone: PN-15

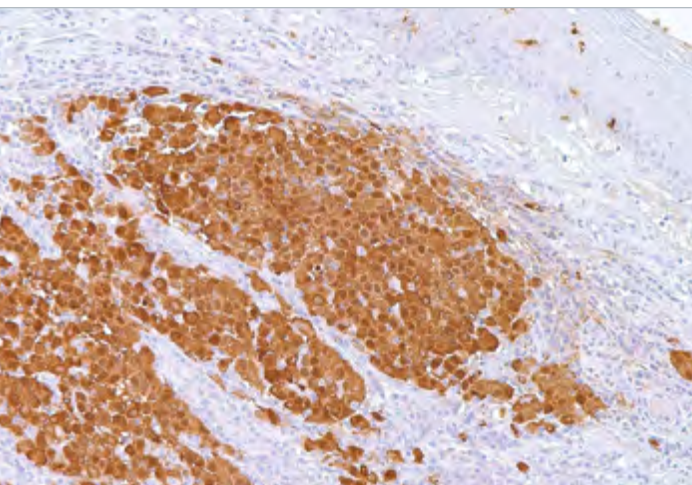
Mouse Monoclonal

Volume . . . . .	Part No.
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0.5 ml, concentrate . . . . .	329M-95
1 ml, concentrate . . . . .	329M-96
1 ml, predilute . . . . .	329M-97
7 ml, predilute . . . . .	329M-98
25 ml, predilute . . . . .	329M-90

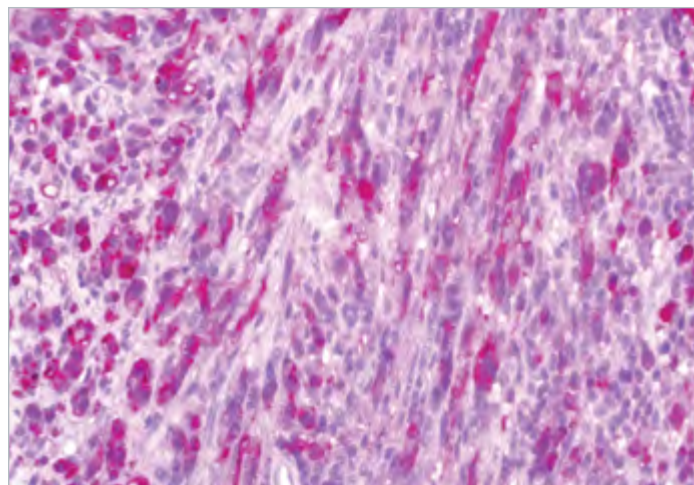
### Designations



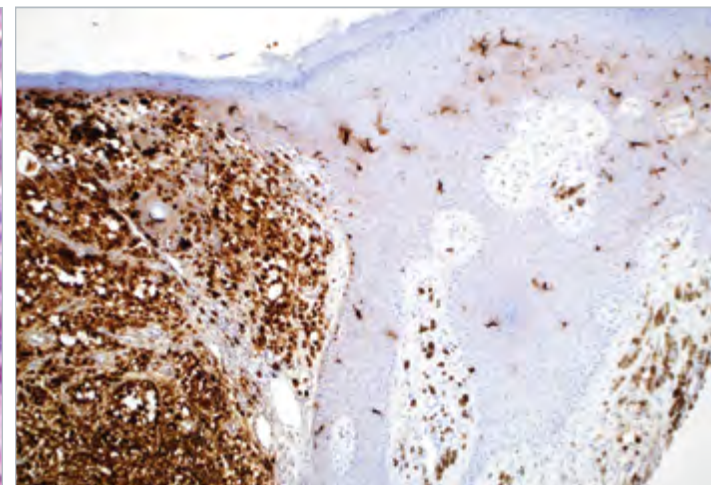




Cytoplasmic labelling by S-100 (4C4.9) on melanoma tumor cells.



S-100 (4C4.9) on melanoma.



S-100 (4C4.9) on melanoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic, nuclear  
**Control** melanoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Dermatopathology

## Associated Panels

- Lymph Node ..... 289
- Retroperitoneal Lesions..... 290
- Spindle Cell Tumors..... 290
- PEComa ..... 290
- Cutaneous Lesion ..... 292
- Neuroid Skin Lesions ..... 293
- Melanotic Lesions ..... 293
- Skin Adnexal Tumors ..... 293
- Skin: DF-SP vs. DF-FH ..... 293
- Skin: Spindle Cell Tumors ..... 294
- Histiocytic/Dendritic Cell Lesions...  
..... 297
- Brain: CNS Tumors 1 ..... 300
- Brain: CNS Tumors 2 ..... 301
- Retroperitoneal Neoplasms ... 301
- Soft Tissue Neoplasms ..... 302
- Soft Tissue Sarcoma ..... 303
- Soft Tissue Tumor..... 303

## Reference

1. Nakajima T, et al. Ad J Surg Path. 1982; 6:715-727.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

S-100 protein has been found in normal melanocytes, Langerhans cells, histiocytes, chondrocytes, lipocytes, skeletal and cardiac muscle, Schwann cells, epithelial and myoepithelial cells of the breast, salivary and sweat glands, as well as in glial cells.<sup>1,2,6</sup> Neoplasms derived from these cells also express S-100 protein, albeit non-uniformly.<sup>1-4</sup> A large number of well differentiated tumors of the salivary gland, adipose and cartilaginous tissue,<sup>3</sup> and Schwann cell-derived tumors express S-100 protein. Almost all malignant melanomas and cases of histiocytosis X are positive for S-100 protein.<sup>4,5</sup> Despite the fact that S-100 protein is an ubiquitous substance, its demonstration is of great value in the identification of several neoplasms, particularly melanomas.<sup>1-6</sup>

## Panel Quick View

Lymph Node	S-100	CD1a	CD68	Lysozyme
Langerhans Cell Histiocytosis	+	+	+	+
Sinus Histiocytosis with Massive Lymphadenopathy	+	-	+	+
Dermatopathic Lymphadenitis	+	+	-	+

Melanotic Lesions	S-100	CD63	HMB-45	MART-1	MiTF	NGFR	SOX-10	Tyrosinase	WT1
Angiomyolipoma	+	+	+	+	+		+	+/-	
Interdermal Nevus	+	-	-	+	+	+	+	+	+/-
Junctional Nevus	+	-	+	+	+	+	+	+	+/-
Primary Melanoma	+	+	+	+	+	-	+	+	+
Spindle Cell Melanoma	+	+	+	+	+	+	+	+	+

Brain: CNS Tumors 2	S-100	CK Cocktail	GFAP	INI-1	NGFR	Vimentin
Astrocytoma	+	-	+	+	+	+
Glioblastoma	+	-	+	+	-	+
Ependymoma	+	- (+ AE1 & AE3)	+	+	+	-/+
Schwannoma	+	-	+	+	+	+

## Ordering Information

### Clone: 4C4.9

Mouse Monoclonal

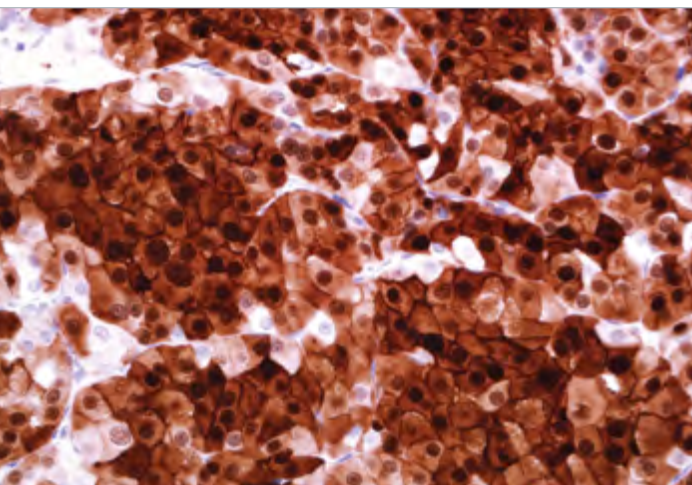
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0.5 ml, concentrate.....	330M-15
1 ml, concentrate .....	330M-16
1 ml, predilute .....	330M-17
7 ml, predilute .....	330M-18
25 ml, predilute .....	330M-10

## Designations

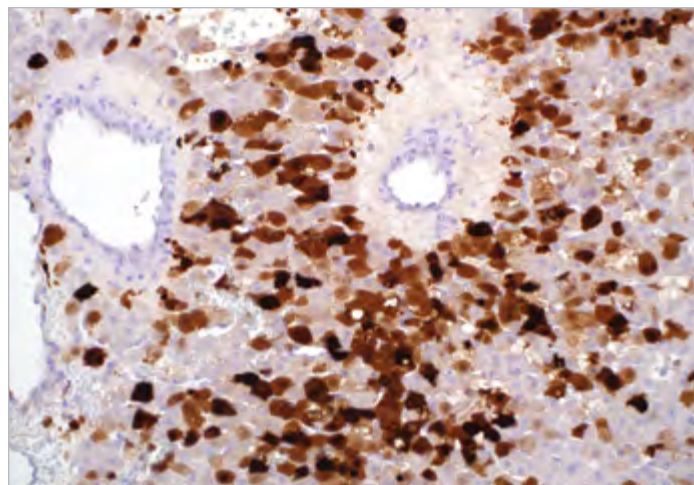


IVD IVD IVD RUO

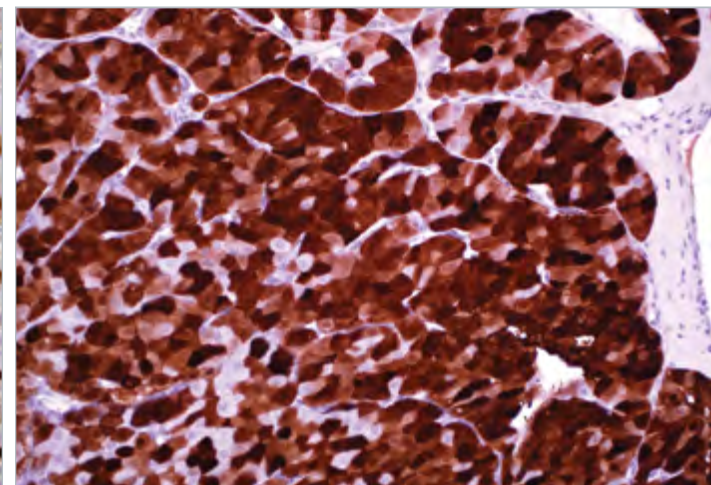
# S100A1



Renal oncocytoma tumor cells are labeled by anti-S100A1 in a cytoplasmic and nuclear pattern.



S100A1 (EP184) on renal oncocytoma.



S100A1 (EP184) on renal oncocytoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** renal oncocytoma, kidney

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Kidney: Renal Epithelial Tumors ...  
.....295

## Reference

- Zimmer DA, et al. Brain Res Bull. 1995; 37:417-429.
- Rocca PC, et al. Mod Pathol. 2007; 20:722-728.
- Li, G et al., Histopathology. 2007; 50:642-647.

## Product Description

S100A1 is a member of S-100 protein family of calcium binding proteins.<sup>1</sup> S100A1 is very useful in the identification of renal cell carcinoma (RCC).<sup>2-3</sup> Published literature indicates that 93% of renal oncocytomas reacted positively by anti-S100A1. Most of them showed both cytoplasmic and nuclear immunostaining with moderate-to-strong intensity. S100A1 immunostaining was also observed in 73% of clear cell RCCs. Anti-S100A1 detected 94% of papillary RCCs.<sup>2</sup> This study also demonstrated that 94% of chromophobe RCCs showed no labeling by anti-S100A1. Therefore, anti-S100A1 is very useful in the differentiation of renal oncocytoma from chromophobe RCC as well as distinguishing clear cell RCC from chromophobe RCC.<sup>2</sup> S100A1 is detected in normal renal tissue and expressed in both the nuclei and the cytoplasm of the cells lining proximal tubules, loops of Henle, and collecting ducts. The glomerular components are negative. S100A1 is also expressed by skeletal muscle and myocardium; and specific cytoplasmic expression is found in follicular dendritic cells of lymph nodes.<sup>2</sup>

## Panel Quick View

Kidney Neoplasms	S100A1	CA IX	CD10	CD117	CK 7	Ksp-cadherin	p504s	Parvalbumin	RCC	Vimentin
Clear Cell RCC	+	+	+	-/+	-/+	-/+	+	-	+	+
Chromophobe RCC	-	-	-/+	+	+	+	-	+	-/+	-
Papillary RCC	+	+	+	-	+	-/+	+	-	+	+
Renal Oncocytoma	+	-	+/-	+	-/+	+	-	+	-	-

## Ordering Information

**Clone: EP184**

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	408R-14
0.5 ml, concentrate	408R-15
1 ml, concentrate	408R-16
1 ml, predilute	408R-17
7 ml, predilute	408R-18

## Designations



IVD



IVD



IVD



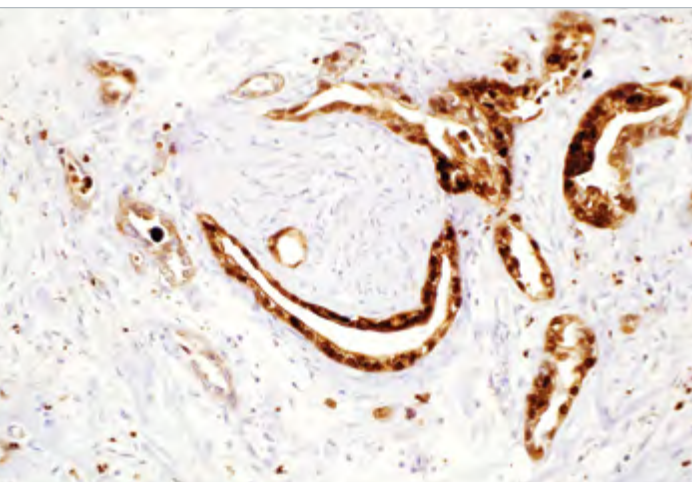
RUO

**CELL MARQUE**

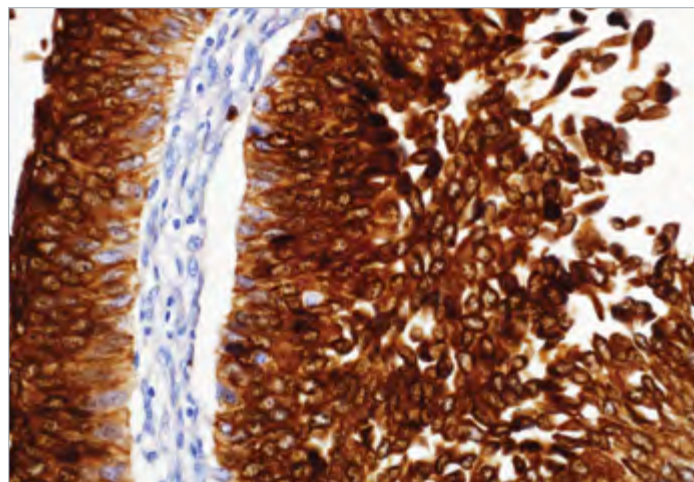
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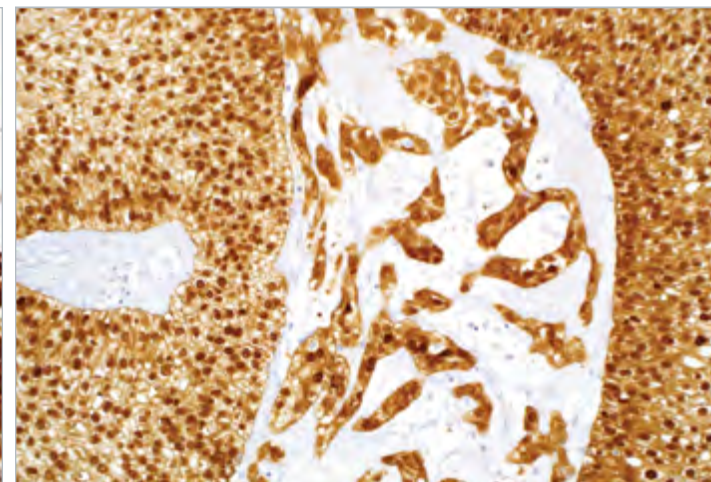
# S100P



S100P (16/f5) labels both cytoplasmic and nuclear for tumor cells in pancreatic ductal adenocarcinoma.



S100P (16/f5) on transitional cell carcinoma, renal pelvis.



S100P (16/f5) on transitional cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** pancreatic ductal adenocarcinoma, urothelial carcinoma, placenta

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Carcinomas. . . . . 287
- Pancreas / Pancreatic Tumors . 294
- Carcinomas. . . . . 295

## Reference

1. Lin F, et al. Am J Surg Pathol. 2008; 32:78-91.
2. Deng HB, et al. Am J Clin Pathol. 2008; 129:81-8.
3. Crnogorac-Jurcovic T, et al. J Pathol. 2003; 201:63-74.
4. Nakata K, et al. Human Pathol. 2010; 41:824-31.
5. Higgins JP, et al. AJSP. 2007; 31:673-80.
6. Levy M, et al. Human Pathology. 2010; 41:1210-1219.

## Product Description

S100P is a member of the S-100 family of proteins. The family is expressed in a wide range of cells and is thought to play a role in cell cycle progression and in differentiation. S100P was initially identified in the placenta at rather high levels. Anti-S100P with nuclear or nuclear/ cytoplasmic immunoreactivity can be seen in essentially 100% of pancreatic ductal adenocarcinoma in pancreatic resection, and fine needle aspiration biopsy specimens. Anti-S100P displays no staining in the benign pancreatic ducts and acinar glands. S100P has been detected in the cells of virtually all intraductal papillary mucinous neoplasms tested. S100P is clearly expressed in the invasive component of intraductal papillary mucinous neoplasms (100%), including perineural, lymphatic, and minimal invasion. Biopsies of bile ducts with primary adenocarcinomas (90%) have exhibited strong nuclear and cytoplasmic staining for anti-S100P, with none of the 32 benign biopsies exhibiting anti-S100P immunoreactivity. An immunohistochemical panel including anti-S100P can be helpful in distinguishing adenocarcinoma from reactive epithelial changes on challenging bile duct biopsies. The detection of S100P expression may help distinguish urothelial carcinomas from other genitourinary neoplasms that enter into the differential diagnosis.<sup>1-6</sup>

## Panel Quick View

Carcinomas										
	S100P	Arginase-1	CA IX	Cadherin-17	CDX-2	GATA3	HBME-1	Napsin A	PAX-8	TTF-1
Breast Carcinoma	-	-	+	-	-	+	-	-	-	-
Lung Adenocarcinoma	-	-	-	-	-	-	-	+	-	+
Thyroid Carcinoma	-	-	-	-	-	-	+	-	+	+
Gastric Adenocarcinoma	-	-	+/-	-/+	+	-	-	-	-	-
Colon Adenocarcinoma	-	-	+/-	+	+	-	-	-	-	-
Pancreatic Ductal Carcinoma	+	-	+/-	-/+	+	-	-	-	-	-
Hepatocellular Carcinoma	-	+	-	-	-	-	-	-	-	-
Urothelial Carcinoma	+	-	-	-	-	+	-	-	-	-
Renal Cell Carcinoma	-	-	+	-	-	-	-	-/+	+	-

Pancreas / Pancreatic Tumors								
	S100P	CDX-2	Chromogranin A	CK 7	Maspin	pVHL	SMAD4	Synaptophysin
Ductal Adenocarcinoma	+	-	-	+	+	-	-	-
Pancreatic Adenocarcinoma	-	-	-	-	-	-	-	-
Pancreatic Endocrine Tumor	-	-	+	-	-	-	-	+
Acinar Cell Carcinoma	-	-	-	-	-	-	-	-
Pancreatic Ducts	-	-	-	+	-	+	+	-

## Ordering Information

**Clone: 16/f5**

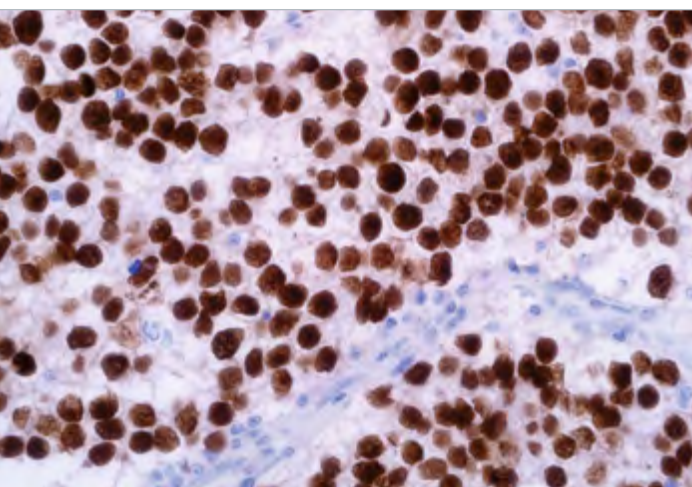
Mouse Monoclonal

Volume . . . . .	Part No.
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0.5 ml, concentrate . . . . .	376M-95
1 ml, concentrate . . . . .	376M-96
1 ml, predilute . . . . .	376M-97
7 ml, predilute . . . . .	376M-98

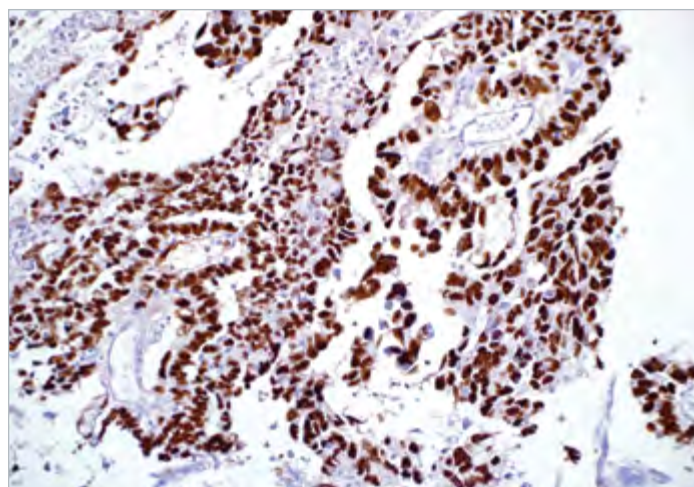
## Designations

			
IVD	IVD	IVD	RUO

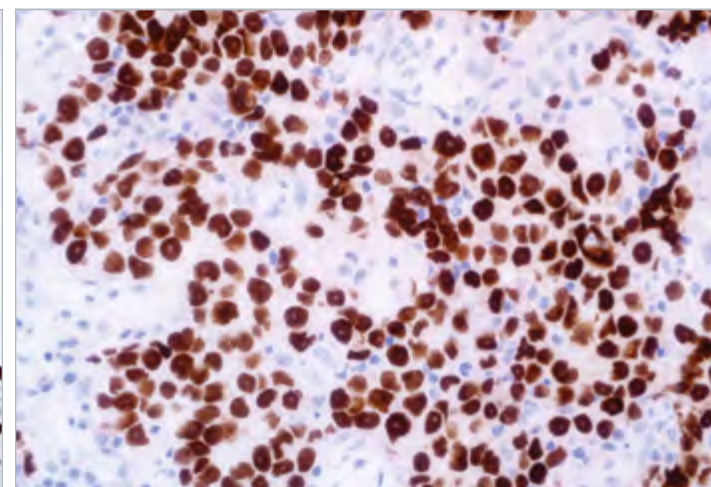




Anti-SALL4 labels the nuclei of seminoma tumor cells.



SALL4 (6E3) on embryonal carcinoma.



SALL4 (6E3) on seminoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** seminoma, dysgerminoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Germ Cell Tumors.....295

## Reference

1. Cui W, et al. Mod Pathol. 2006; 19:1585-1592.
2. Cao D, et al. Am J Surg Pathol. 2009; 33:894-904.
3. Cao D, et al. Am J Surg Pathol. 2009; 33:1065-1077.

## Product Description

SALL4 is a zinc finger transcription factor. Anti-SALL4 demonstrates 100% sensitivity and stains more than 90% tumor cells in all intratubular germ cell neoplasia<sup>1-3</sup>, seminomas/dysgerminomas, embryonal carcinomas, and yolk sac tumor (YST) (both pediatric and postpubertal). Anti-SALL4 also stains most cases of teratoma and the mononucleated trophoblastic cells in choriocarcinomas. In contrast, non-germ cell tumors show no anti-SALL4 staining. Most non-testicular tumors from various organs and sites are negative for anti-SALL4, though an occasional carcinoma or sarcoma may show weak anti-SALL4 staining in less than 25% of tumor cells. In normal testicular tissue, positive, weak anti-SALL4 staining is observed in spermatogonia. In addition, a few (<5%) primary spermatocytes showed dot-like weak anti-SALL4 staining.<sup>1-2</sup> Secondary spermatocytes, spermatids, spermatozoa, and Sertoli cells are negative for anti-SALL4.<sup>1-2</sup> Leydig cells, rete testis, epididymis, spermatic cord fibroblasts, blood vessels, and hematopoietic cells are negative for anti-SALL4.

## Panel Quick View

Germ Cell Tumors										
	SALL4	AFP	CD30	CD117	GPC-3	hCG	Oct-4	PLAP	SOX-2	Synap-tophysin
Seminoma (Seminoma/Dysgerminoma)	+	-	-	+	-	-	+	+	-	-
Embryonal Carcinoma	+	-	+	-	-	-	+	+	+	-
Choriocarcinoma	-	-	-	-	+	+	-	+	-	-
Yolk Sac Tumor	+	+	-	-/+	+	-	-	-/+	-	-
Granulosa Cell Tumor	-	-	-	-	-	-	-	-	-	-
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	-	-	-	-	-	-
Mature Teratoma	-	+/-	-	-	-	-	-	+/-	+/-	-
Immature Teratoma	+/-	-	-	+/-	-	+/-	-	-	+	-
Carcinoid	-	-	-	-	-	-	-	-	-	+

## Ordering Information

### Clone: 6E3

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	385M-14
0.5 ml, concentrate.....	385M-15
1 ml, concentrate .....	385M-16
1 ml, predilute .....	385M-17
7 ml, predilute .....	385M-18

### Designations



IVD



IVD

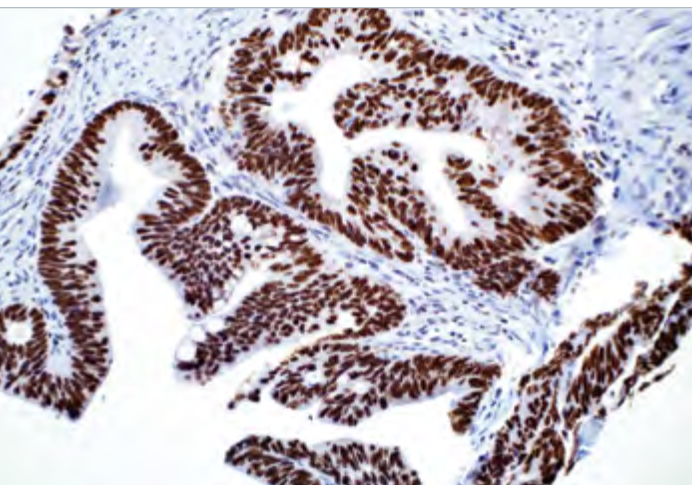


IVD

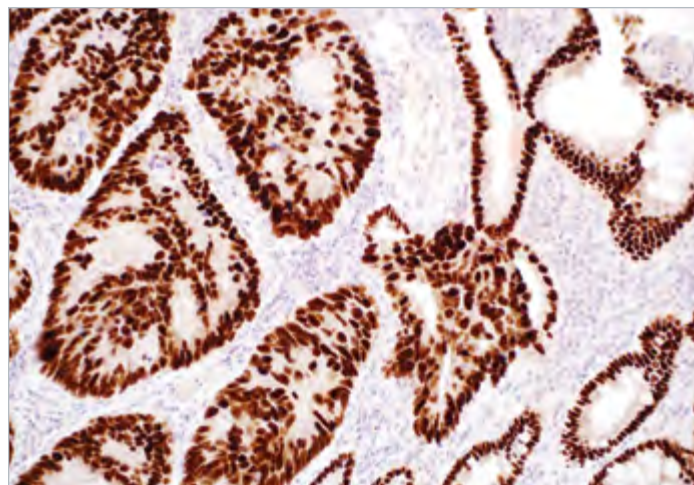


RUO

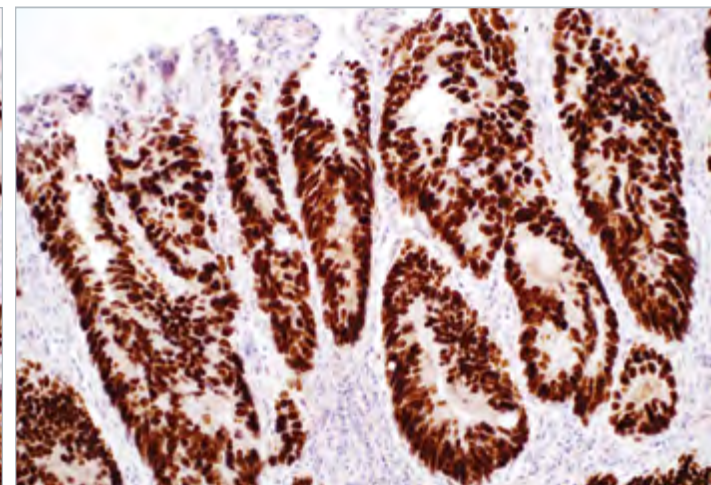




Nuclear expression by anti-SATB2 is highlighted on colorectal carcinoma.



SATB2 (EP281) on colorectal carcinoma.



SATB2 (EP281) on colorectal carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** colon adenocarcinoma, colon  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Gastrointestinal (GI) Pathology

## Associated Panels

● Colon vs. Ovarian Carcinoma . . . 287

## Reference

- Mangnusso K, et al. Am J Surg Pathol. 2011; 35:937-948.
- Lin F, et al. Arch Pathol Lab Med. 2014; 138:1015-26.
- Li Z, et al. Mod Pathol. 2013; 26:164A.
- Conner JR, et al. Histopathology. 2013; 63:182-193.
- Dragomir A, et al. Am J Clin Pathol. 2014; 141:630-38.

## Product Description

Special AT-rich sequence-binding protein 2 (SATB2) is a recently described marker that functions as a nuclear matrix-associated transcription factor. It has been reported that SATB2, in combination with CK 20, could identify almost all colorectal carcinomas,<sup>1</sup> including poorly differentiated colorectal carcinomas.<sup>2</sup> Upper gastrointestinal (GI) carcinomas and pancreatic ductal carcinomas are usually negative for SATB2,<sup>1</sup> and ovarian carcinomas, lung adenocarcinomas, and adenocarcinomas from other origin are rarely positive for SATB2.<sup>1,2</sup> Therefore, SATB2 is a good marker for identifying a carcinoma of colorectal origin when working on a tumor of unknown primary.<sup>1,2,5</sup> Another potential utility of SATB2 is to identify neuroendocrine neoplasms/carcinomas of the left colon and rectum because SATB2 is usually negative in other neuroendocrine neoplasms of the GI tract, pancreas, and lung.<sup>3</sup> More recently, it has been shown in literature that SATB2 is a sensitive marker for tumors with osteoblastic differentiation.<sup>4</sup>

## Panel Quick View

Neoplasm	SATB2	Cadherin-17	CDX-2	CK 7	CK 20	GATA3	Hep Par-1	Napsin A	P504s	S100P
Colorectal Adenocarcinoma	+	+	+	-	+	-	-	-	-	-
Gastric Adenocarcinoma	-	-	+	+/-	+/-	-	-	-	-	-
Pancreatic Ductal Adenocarcinoma	-	-	-/+	+	+	-	-	-	-	+
Hepatocellular Carcinoma	-	-	-	-	-	-	+	-	-	-
Lung Adenocarcinoma	-	-	-	+	-	-	-	+	-	-
Breast Carcinoma	-	-	-	+	-	+	-	-	-	-
Prostatic Adenocarcinoma	-	-	-	-	-	-	-	-	+	-
Urothelial Carcinoma	-	-	-	+	+	+	-	-	-	+
Ovarian Carcinoma	-	-	-	-/+	+/-	-	-	-	-	-
Esophageal Adenocarcinoma	-/+	+	+/-	+/-	+/-	-	-	-	-	-
Gastrointestinal Stromal Tumor	-	-	-	-	-	-	-	-	-	-

## Ordering Information

### Clone: EP281

Rabbit Monoclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate . . . . . 384R-14  
 0.5 ml, concentrate . . . . . 384R-15  
 1 ml, concentrate . . . . . 384R-16  
 1 ml, predilute . . . . . 384R-17  
 7 ml, predilute . . . . . 384R-18  
 25 ml, predilute . . . . . 384R-10

### Designations

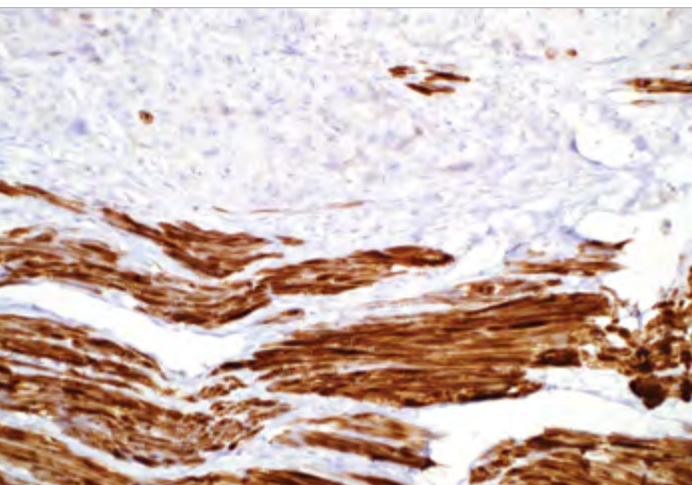
 IVD  IVD  IVD  RUO

 CELL MARQUE

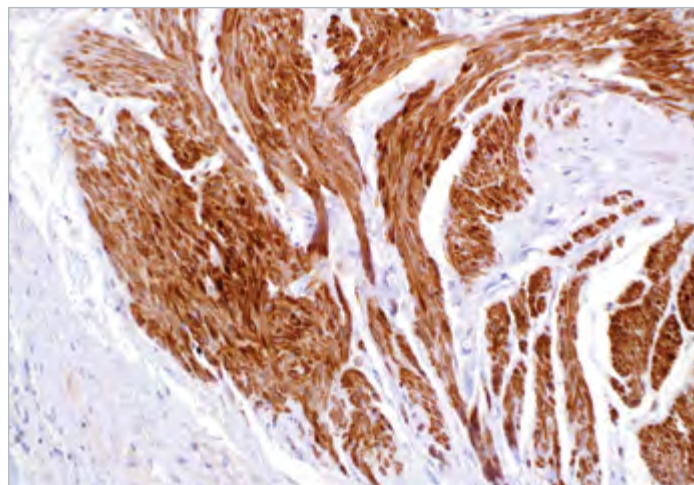
 RabMab®  
 Technology from Abcam



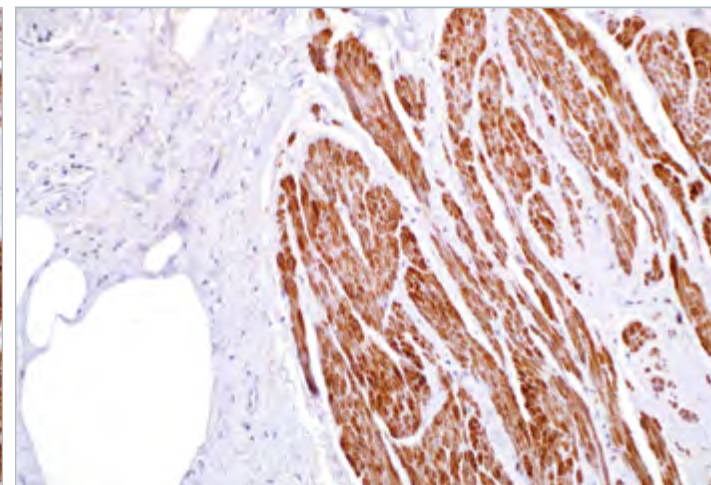
# Smoothelin



Smooth muscle of muscularis propria on the bladder wall are labeled by Smoothelin (R4A).



Smoothelin (R4A) on bladder.



Smoothelin (R4A) on bladder.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** bladder

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

- Genitourinary (GU) Pathology

## Associated Panels

- Bladder: Dysplasia vs. Reactive . 295

## Reference

1. Kramer J, et al. J Mol Med. 1999; 77:294-8.
2. van der Loop FT, et al. J Cell Biol. 1996; 134:401-411.
3. Maake C, et al. J Urol. 2006; 175:1152-1157.
4. Jimenez RE, et al. Adv Anat Pathol. 2000; 7:13-25.
5. Kuijpers KA, et al. Eur Urol. 2007; 52:1213-21.
6. Paner GP, et al. Am J Surg Pathol. 2009; 33:91-8.
7. Paner GP, et al. Am J Surg Pathol. 2010; 34:792-9.
8. Council L, et al. Mod Pathol. 2009; 22:639-650.
9. Coco DP, et al. Am J Surg Pathol. 2009; 33:1795-801.

## Product Description

Smoothelin is a constituent of the smooth muscle cell cytoskeleton protein exclusively found in differentiated smooth muscle cells (SMC). Cells with SMC-like characteristics, such as myofibroblasts and myoepithelial cells, as well as skeletal and cardiac muscle do not contain smoothelin.<sup>1,2</sup> To distinguish bladder muscularis mucosae (MM) from muscularis propria (MP) muscle bundles is crucial for accurate staging of bladder carcinoma. Strong smoothelin expression is nearly exclusively observed in muscularis propria. Therefore, the staining pattern of MP (strongly positive) and MM (negative or weakly positive) makes this technique an attractive diagnostic tool for the sometimes difficult task of staging bladder urothelial carcinoma, such as in transurethral resection specimens of urinary bladder tumors.<sup>3-8</sup> Differentiating between smooth muscle tumors and other mesenchymal neoplasms of the GI tract can be challenging in small biopsies. Anti-smoothelin immunostaining can be helpful in differentiating benign (+) from malignant smooth muscle tumors (-), and other mimics(-).<sup>9</sup>

## Panel Quick View

Bladder Tissue	Smoothelin	MS Actin	SM Actin	Calponin
Muscularis Mucosae	-	+	+	+
Muscularis Propria	+	+	+	+

## Ordering Information

### Clone: R4A

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	377M-14
0.5 ml, concentrate	377M-15
1 ml, concentrate	377M-16
1 ml, predilute	377M-17
7 ml, predilute	377M-18

### Designations



IVD



IVD



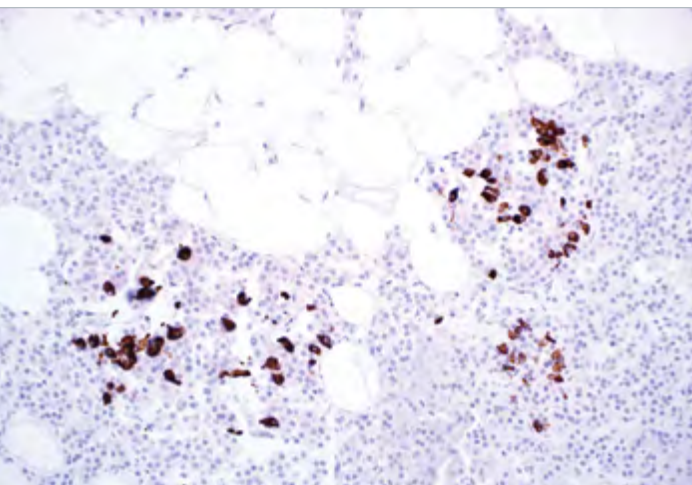
IVD



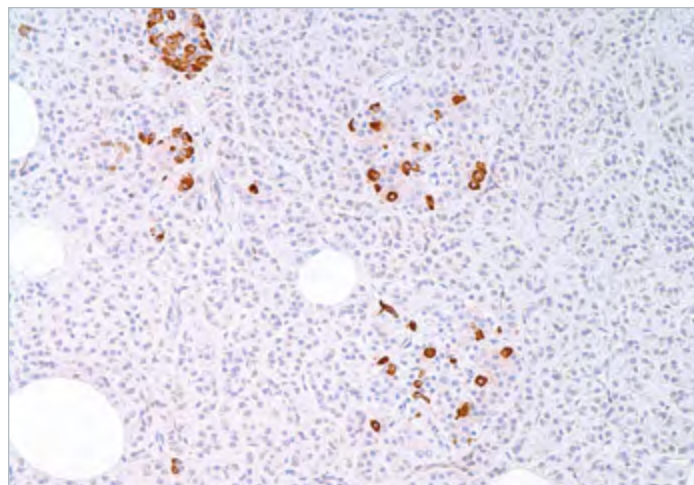
RUO



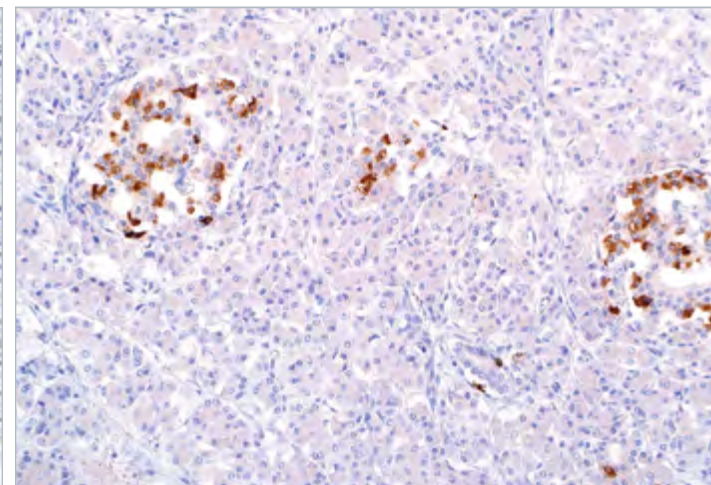
# Somatostatin



Somatostatin (EP130) on pancreas.



Delta cells in pancreatic islets are labeled by Somatostatin (polyclonal).



Somatostatin (polyclonal) on pancreas.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreas

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Anatomic/Surgical Pathology

## Reference

1. Krejs GJ. Scand J Gastroenterol Suppl. 1986; 119:47-53.
2. Tzaneva MA. Acta Histochem. 2003; 105:191-201.
3. Krejs GJ, et al. N Eng J Med. 1979; 301:285-92.
4. Friesen, SR. N Eng J Med. 1982; 306:580-90.
5. Kanavaros P, et al. Histol Histopathol. 1990; 5:325-8.
6. Chejfec G, et al. N Ultrastruct Pathol. 1992; 16:537-45.

## Product Description

Somatostatin is a peptide hormone widely distributed throughout the body and is an important regulator of endocrine and nervous system function. Somatostatin can also be found in gastrointestinal and bronchopulmonary endocrine cells, thymic endocrine cells, and thyroid C-cells. Anti-somatostatin is a useful marker of D-cells of pancreatic islet cells.<sup>1,2</sup> D-cells identification can be used to identify hyperplasia of the pancreatic islets of Langerhans and tumors arising from these cells. Anti-somatostatin recognizes somatostatin-containing cells in pancreatic tumors, islet cell hyperplasia, and islet cells originating in pancreatic ductules.<sup>3-7</sup>

## Ordering Information

### Clone: EP130

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	332R-14
0.5 ml, concentrate	332R-15
1 ml, concentrate	332R-16
1 ml, predilute	332R-17
7 ml, predilute	332R-18

### Alternate Clones Available

• Rabbit Polyclonal

Contact us for more information.

### Designations



IVD



IVD



IVD

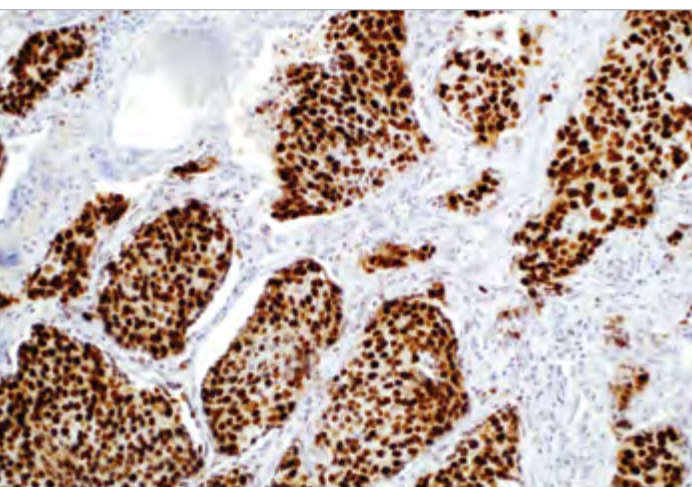


RUO

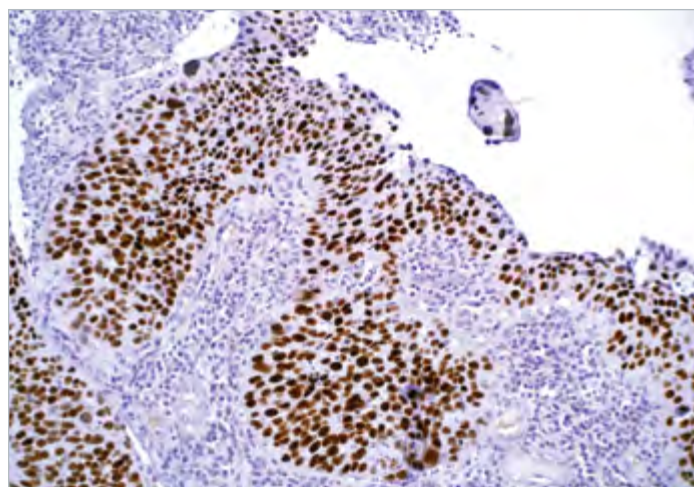
 CELL MARQUE

 RabMab®  
Technology from Abcam

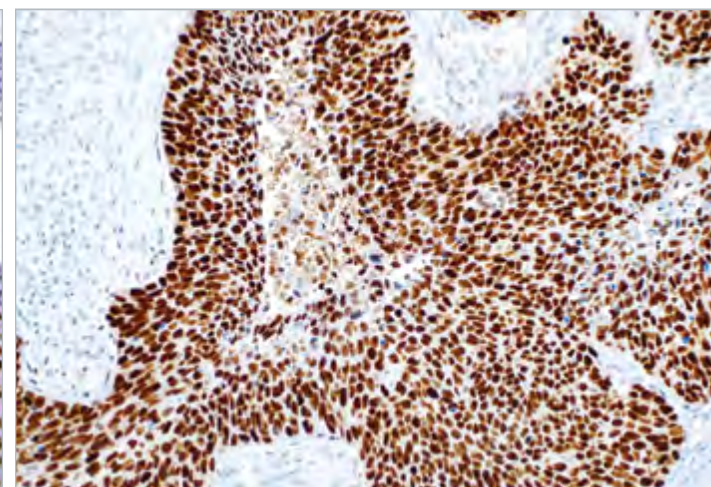




Squamous cell carcinoma of lung is expressed by SOX-2 (SP76) in a nuclear pattern.



SOX-2 (SP76) on skin squamous cell carcinoma.



SOX-2 (SP76) on squamous cell carcinoma of lung.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** lung squamous carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Pulmonary Pathology

## Associated Panels

● Germ Cell Tumors.....295  
 ● Lung Squamous Cell Carcinoma vs. Adenocarcinoma .....302

## Reference

- Sholl LM, et al. Appl Immunohistochem Mol Morphol. 2010; 18:55-61.
- Tsuta K, et al. J Thorac Oncol. 2011; 6:1190-99.
- Gopalan A, et al. Mod Pathol. 2009; 22:1066-74.

## Product Description

It has been reported that anti-SOX-2 antibody recognizes lung squamous cell carcinoma (LSCC). A recent study<sup>1</sup> has demonstrated that extensive anti-SOX-2 staining was seen in over 90% of LSCC and largely paralleled p63 expression. Extensive anti-SOX-2 staining was seen in 21% of lung adenocarcinomas (LACA), including cases that were anti-p63-negative or only anti-p63 focally-positive. However, another recent study showed only 4.5% of LACA is positive for anti-SOX-2 expression.<sup>2</sup> In a study by Sholl et al, 29% of LACA cases exhibited at least focal p63 expression.<sup>1</sup> Combined p63 and SOX-2 expression was seen in 94% of LSCC and 12% of LACA with a statistically significant difference (P<0.0001) versus p63 alone. This study also showed that anti-CK5&6 had a good sensitivity but poor specificity for LSCC. Combined anti-CK5&6 and anti-p63 positivity was seen in 93% of LSCC and 24% of LACA. Anti-CK5&6+/anti-p63+/anti-SOX-2+ was detected in 93% of LSCC and only 9% of LACA. These results indicate that the sensitivity of anti-p63 is equally high but its specificity is similarly variable; it was seen at least focally in close to 30% of LACA. When used together, anti-p63+/anti-SOX-2+ applied to the same tumor cell population is >90% specific for LSCC. Anti-SOX-2 produced moderate-to-intense staining in all 50 cases of embryonal carcinoma components. The only other component that showed reactivity was the primitive neuroectodermal component in 11 of 14 (79%) of immature teratomas. In each of these positive staining foci, the staining varied from moderate-to-strong. Yolk sac tumor, seminoma, mature teratoma, choriocarcinoma, and intratubular germ cell neoplasia, unclassified (IGCNU) were uniformly negative, as were all the non-neoplastic parenchymal and stromal structures.<sup>3</sup>

## Panel Quick View

Germ Cell Tumors						
	SOX-2	CD30	CD117	Oct-4	PLAP	SALL4
Seminoma (Seminoma/Dysgerminoma)	-	-	+	+	+	+
Embryonal Carcinoma	+	+	-	+	+	+
Choriocarcinoma	-	-	-	-	+	-
Yolk Sac Tumor	-	-	-/+	-	-/+	+
Granulosa Cell Tumor	-	-	-	-	-	-
Hypercalcaemic Small Cell Carcinoma	-	-	-	-	-	-
Mature Teratoma	+/-	-	-	-	+/-	-
Immature Teratoma	+	-	+/-	-	-	+/-
Carcinoid	-	-	-	-	-	-

Lung Squamous Cell Carcinoma vs. Adenocarcinoma				
	SOX-2	Napsin A	p63	TTF-1
Lung Adenocarcinoma	-/+	+	-/+	+
Lung SQ Carcinoma	+	-	+	-

## Ordering Information

### Clone: SP76

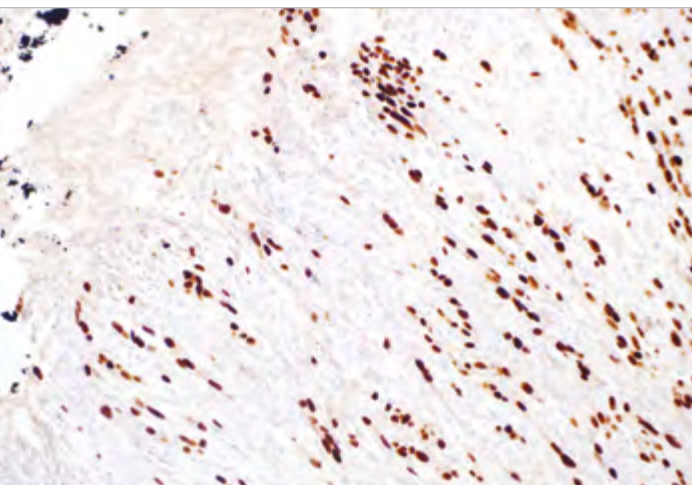
Rabbit Monoclonal

**Volume** ..... **Part No.**  
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 0.5 ml, concentrate.....371R-15  
 1 ml, concentrate .....371R-16  
 1 ml, predilute .....371R-17  
 7 ml, predilute .....371R-18  
 25 ml, predilute .....371R-10

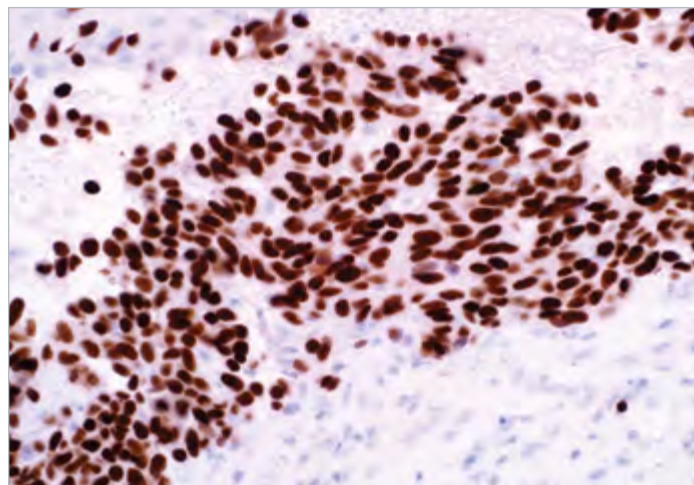
### Designations

 IVD     IVD     IVD     RUO

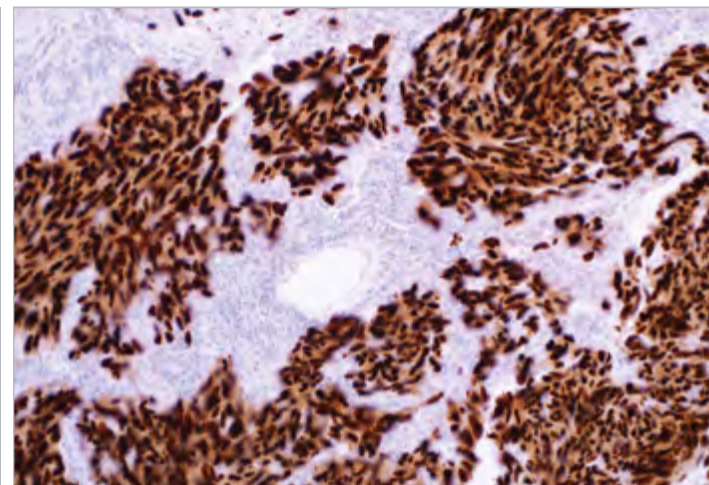




Malignant melanoma demonstrates nuclear staining by SOX-10 (EP268).



SOX-10 (EP268) on desmoplastic melanoma.



SOX-10 (EP268) on lung metastatic melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** melanoma, skin melanocytes

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

- Dermatopathology

## Associated Panels

- Lymph Node ..... 289
- Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290
- Cutaneous Lesion ..... 292
- Melanomas. .... 293
- Melanotic Lesions ..... 293

## Reference

1. Kelsch RN. BioEssays. 2006; 28:788.
2. Nonaka D, et al. Am J Surg Pathol. 2008; 32:1291-1298.
3. Chorny JA, et al. Am J Dermatopathol. 2002; 24:309.
4. Robson A, et al. Histopathology. 2001; 38:135.
5. Longacre T, et al. Am J Surg Pathol. 1996; 20:1489.
6. Ramos-Herberth FI, et al. J Cutan Pathol. 2010; 37:944-952.

## Product Description

Sry-related HMG-BOX gene 10 (SOX-10) is a nuclear transcription factor that participates in neural crest development and in the specification and differentiation of cells of melanocytic lineage.<sup>1</sup> It has been recently shown to be a sensitive marker of melanoma, including conventional, spindled, and desmoplastic subtypes.<sup>2</sup> SOX-10 was expressed by metastatic melanomas in sentinel lymph nodes, but not by other lymph node components such as dendritic cells which usually express S-100 protein. Anti-SOX-10 has been shown to be superior to all other immunostains in detecting residual invasive and *in situ* melanoma.<sup>1-5</sup> Anti-SOX-10 is also a useful marker in detecting both the *in situ* and invasive components of desmoplastic melanoma.<sup>6</sup> It is known that the commonly used melanoma markers, anti-HMB-45 and anti-Melan-A, are poorly expressed in desmoplastic melanomas<sup>5</sup> while it has been reported that anti-SOX-10 was moderately to strongly expressed in almost all desmoplastic melanomas.<sup>2</sup> SOX-10 is diffusely expressed in schwannomas and neurofibromas. SOX-10 presence was not identified in any other mesenchymal and epithelial tumors except for myoepitheliomas and diffuse astrocytomas.<sup>2</sup>

## Panel Quick View

Lymph Node	SOX-10	CK Cocktail	HMB-45	MART-1	S-100
Metastatic Melanoma	+	-	+	+	+
Nevus Cell	+	-	+	+	+
Interdigitating Dendritic Cells	-	-	-	-	+

Cutaneous Lesion	SOX-10	CK Cocktail	HMB-45	S-100	MART-1
Conventional Melanoma	+	-/+	+	+	+
Desmoplastic Melanoma	+	-	-	+/-	-
Squamous Cell Carcinoma	-	+	-	-/+	-
Basal Cell Carcinoma	-	+	-	-	-
Merkel Cell Carcinoma	-	+	-	-/+	-

## Ordering Information

### Clone: EP268

Rabbit Monoclonal

Volume	Part No.
0.1 ml, concentrate	383R-14
0.5 ml, concentrate	383R-15
1 ml, concentrate	383R-16
1 ml, predilute	383R-17
7 ml, predilute	383R-18
25 ml, predilute	383R-10

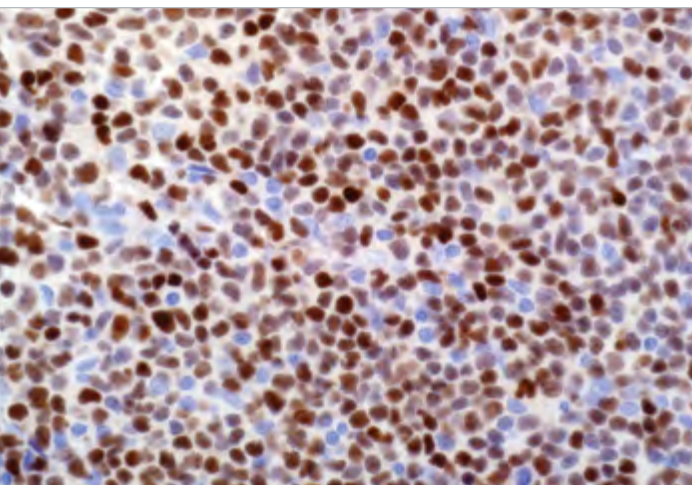
### Alternate Clones Available

- Rabbit Polyclonal
- Contact us for more information.

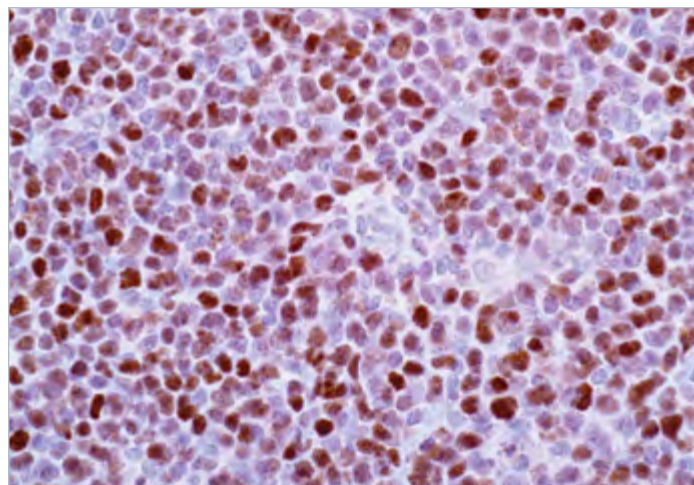
### Designations



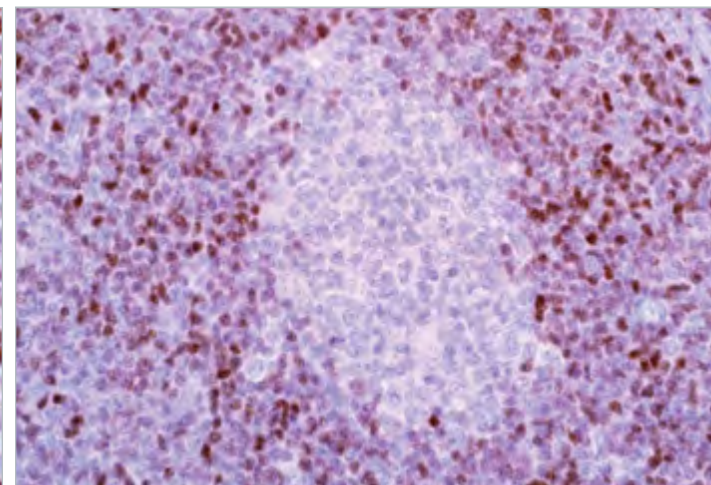




Nuclear labelling of mantle cell lymphoma by SOX-11 (MRQ-58).



SOX-11 (MRQ-58) on mantle cell lymphoma.



SOX-11 (MRQ-58) on mantle cell lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** mantle cell lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymphomas ..... 299

● Non-Hodgkin Lymphomas... 299

## Reference

1. Salaverria I, et al. Haematologica. 2006; 91:11-6.
2. Fu K, et al. Blood. 2005; 106:4315-21.
3. Katzenberger T, et al. Br J Haematol. 2008; 142:538-50.
4. Mozos A, et al. Haematologica. 2009; 94:1555-1562.
5. Wlodarska I, et al. Blood. 2008; 111:5683-90.
6. Hargrave M, et al. Dev Dyn. 1997; 210: 79-86.
7. Lee CJ, et al. J Neurooncol. 2002; 57: 201-14.
8. Weigle B, et al. Oncol Rep. 2005; 13:139- 44.
9. Zeng W, et al. Am J Surg Pathol. 2012; 36:214-219.

## Product Description

Mantle cell lymphoma (MCL) accounts for 5% to 10% of mature B-cell neoplasms and is an aggressive disease genetically characterized by overexpression of cyclin D1, an important regulator of the G1/S phase of the cell cycle, due to the specific translocation t(11;14)(q13;q32). Cyclin D1 overexpression is the hallmark of MCL. However, approximately 5%-10% of MCLs lack cyclin D1 expression and may be misdiagnosed by overreliance on cyclin D1 IHC. Recently, SOX-11 protein expression in MCL has been investigated by immunohistochemistry. Two studies have evaluated SOX-11 expression in MCL and found strong nuclear expression of SOX-11 in almost all cyclin D1-positive MCL (93%-100%). In all 13 cases of cyclin D1-negative MCL, SOX-11 was strongly expressed. The authors also found that blastoid variant of MCL can be differentiated from CD5+ diffuse large B-cell lymphoma (DLBCL), which was negative for SOX-11. In summary, nuclear protein expression of SOX-11 is highly associated with cyclin D1-positive and negative MCL. The detection of this transcription factor is a useful biomarker for identifying true cyclin D1-negative MCL. SOX-11 IHC is of value in further defining pathologic features of CD5+ DLBCL. Routine use of SOX-11 in cases of suspected CD5+ DLBCL might help identify additional cases of cyclin D1-negative blastoid MCL. SOX-11 can also be detected in some BL, LBL and T-PLL, although the different morphological and phenotypic features of these malignancies allow differentiation from cyclin D1-negative MCL.

## Panel Quick View

Non-Hodgkin Lymphomas						
	SOX-11	CD5	CD10	CD20	CD23	Cyclin D1
MCL	+	+	-	+	-	+
FL	-	-	+	+	-	-
SLL/CLL	-	+	-	+	+	-
MZL	-	-	-	+	-	-
LBL	+	-	+/-	+	-	-
BL	-/+	-	-	+	-	-
CD5+ DLBCL	-	+	+	+	-	-
Blastoid Variant MCL	+	+	-	+	-	+

## Ordering Information

### Clone: MRQ-58

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	382M-14
0.5 ml, concentrate	382M-15
1 ml, concentrate	382M-16
1 ml, predilute	382M-17
7 ml, predilute	382M-18
25 ml, predilute	382M-10

### Designations



IVD



IVD



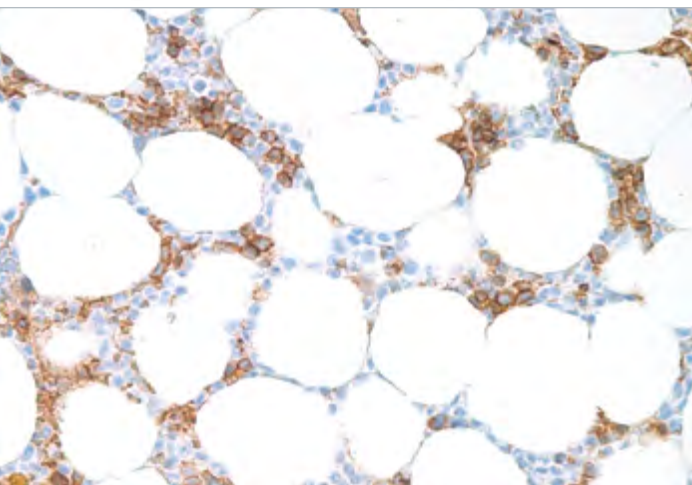
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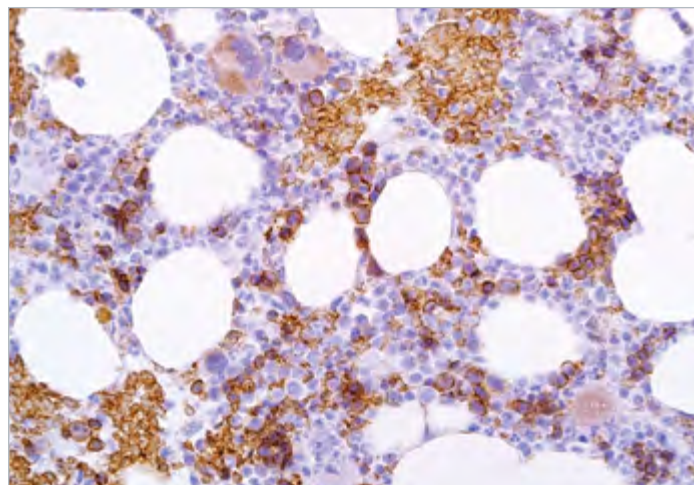
RUO



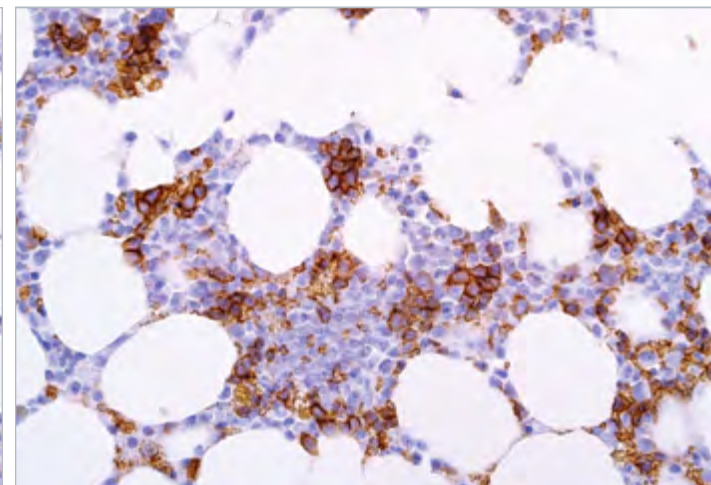
# Spectrin



*Spectrin (RBC2/3D5) labels red blood cell precursors with a membranous pattern.*



*Spectrin (RBC2/3D5) on bone marrow.*



*Spectrin (RBC2/3D5) on bone marrow.*

## Product Specifications

**Reactivity** paraffin

**Visualization** membranous

**Control** bone marrow

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Hematopathology

## Associated Panels

● Erythroid ..... 297

## Reference

1. Sadahira Y, et al. J Clin Pathol. 1999; 52: 919-21.
2. Nehls V, et al. Am J Pathol. 1993; 142:1565-73.
3. Muller M, et al. J Vet Med A Physiol Pathol Clin Med. 2001; 48:51-7.
4. Terada N, et al. J Anat. 1997; 190:397-404.

## Product Description

Spectrin is a cytoskeletal protein which is found in muscles, red blood cells and red cell precursors. Anti-Spectrin antibody is useful in the diagnosis of erythroid leukemias.

## Panel Quick View

Erythroid				
	Spectrin	CD71	Glycophorin A	Hemoglobin A
Erythroid Hyperplasia	+	+	+	+
Erythroid Hypoplasia	+	+	+	+
Acute Erythroid Leukemia	+	+	+	+
Extramedullary Hematopoiesis	+	+	+	+
Mature Erythrocytes	+	-	+	+

## Ordering Information

### Clone: RBC2/3D5

Mouse Monoclonal

**Volume** ..... **Part No.**

0.1 ml, concentrate ..... 333M-14

0.5 ml, concentrate ..... 333M-15

1 ml, concentrate ..... 333M-16

1 ml, predilute ..... 333M-17

7 ml, predilute ..... 333M-18

### Designations



IVD



IVD

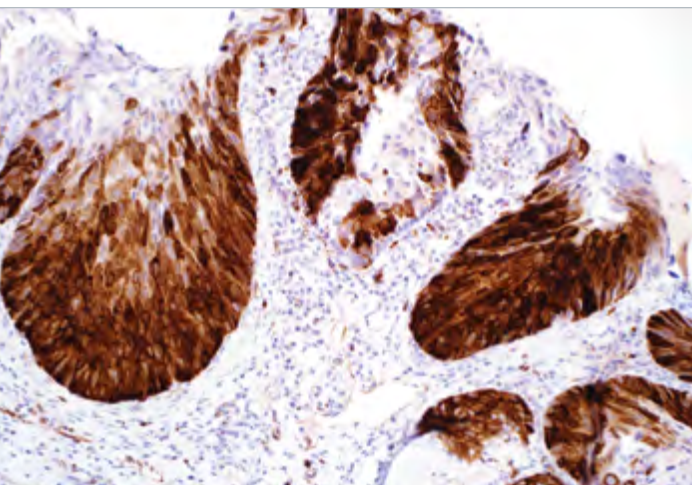


IVD

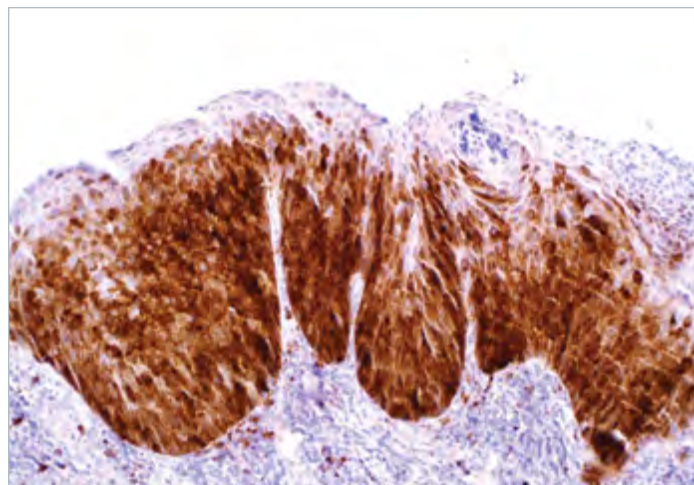


RUO

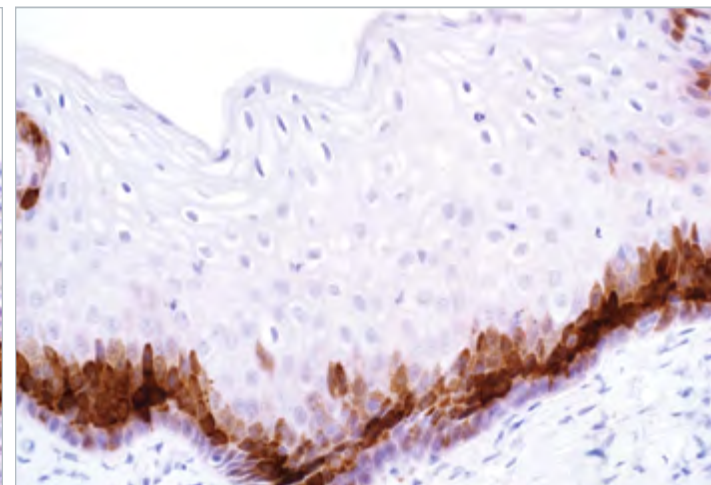
# Stathmin



Stathmin (SP49) labels in a cytoplasmic pattern the dysplastic cervical epithelium.



Stathmin (SP49) on cervical intraepithelial neoplasia III.



Stathmin (SP49) on cervical intraepithelial neoplasia I.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil, cervical intraepithelial neoplasia-high grade

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

Oncoprotein 18

Stathmin-1

## Associated Specialties

- Breast/Gynecological Pathology
- Cytopathology

## Associated Panels

- Lesions.....291

## Reference

1. Syrjanen KJ. Eur J ObstetGynecol Reprod Biol. 1996; 65:45- 53.
2. Belletti B, et al. Expert OpinTher Targets. 2011; 15:1249-1266.
3. Howitt BE, et al. Am J SurgPathol. 2013; 37:89-97.

## Product Description

The distinction between high grade cervical intraepithelial neoplasia (CIN II/III) from low-grade cervical intraepithelial neoplasia (CIN I) is clinically significant with treatment recommendations linked specifically to risk of cancer or CIN III outcome.<sup>1</sup> CIN I will progress into invasive carcinoma in <1% of cases and is typically managed with papanicolaou smear follow-up, whereas CIN II/III has a 5% to 20% risk of progression<sup>1</sup> and is usually treated with an excisional procedure (loop electrosurgical excision procedure or cone biopsy).<sup>1</sup> Stathmin, also referred to as stathmin-1 and oncoprotein18, is a ubiquitous microtubule-destabilizing protein shown to be important during mitosis and has been implicated as a regulator of cell motility and migration.<sup>2</sup> Recent studies<sup>3</sup> show anti-stathmin is positive in 24/82 (29%) CINs with differential expression based on the grade of the lesion as 5/56 (9%) CIN I, 5/11 (45%) CIN II, and 14/15 (93%) CIN III; whereas, anti-p16 staining of the same cases was immuno-reactive in 66/83 (80%) CINs, including 40/56 (71%) CIN I, 11/11 (100%) CIN II, and 15/16 (94%) CIN III.<sup>3</sup> Anti-stathmin shows similar sensitivity for CIN III to anti-p16 (93% vs 94%) although it drops off for CIN II (73% vs 96%). The specificity of anti-stathmin for both CIN II/III (94%) and CIN III (89%) is higher than that of anti-p16 (44% and 39%, respectively). Anti-stathmin stains basal layer of normal benign ectocervix. A well-oriented fragment of cervix tissue would increase the accuracy of diagnosis. In conclusion, based on recent studies, anti-stathmin has a higher specificity relative to anti-p16; therefore, anti-stathmin has major potential as a diagnostic marker in CIN classification over anti-p16.<sup>3</sup>

## Panel Quick View

Lesions	Stathmin	Ki-67	p16	p27
CIN I	-	+	+	-
CIN II	+/- (45%)	+	+	+
CIN III	+	+	+	+
Invasive Squamous Carcinoma	+	+	+	+
Endocervical Adenocarcinoma <i>in situ</i>	+	+/-	+	+
Endocervical Carcinoma	+	+	+	+
Benign Ectocervical Mucosa	-(Basal layer +)	-/+	Few +	-/+
Benign Endocervical Tissue	-	-	-	-

## Ordering Information

**Clone: SP49**

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	394R-14
0.5 ml, concentrate.....	394R-15
1 ml, concentrate .....	394R-16
1 ml, predilute .....	394R-17
7 ml, predilute .....	394R-18

## Designations



IVD



IVD

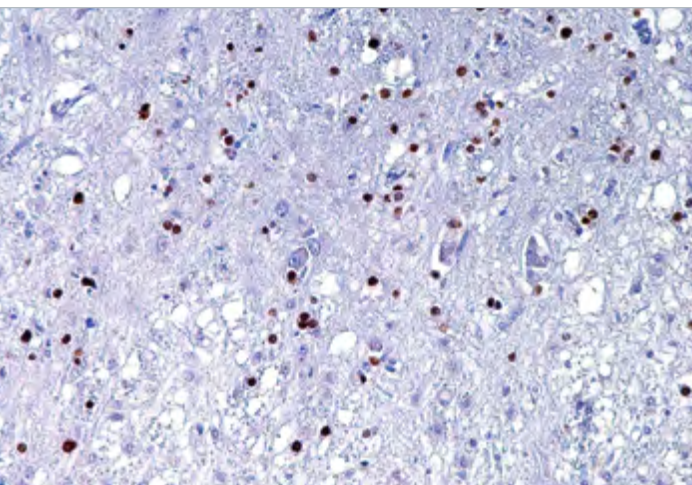


IVD

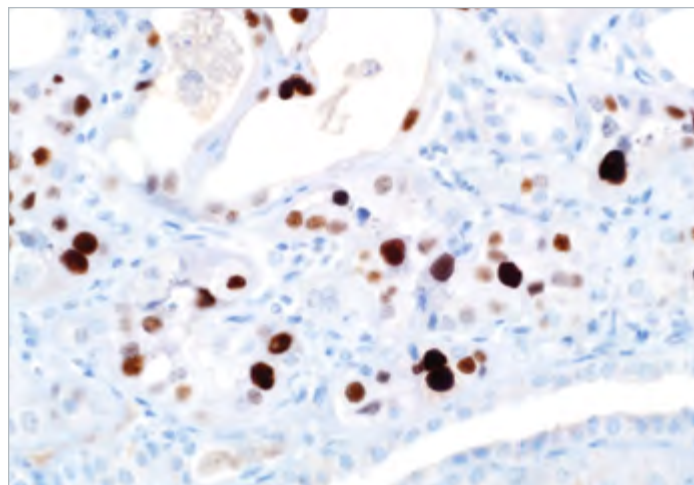


RUO

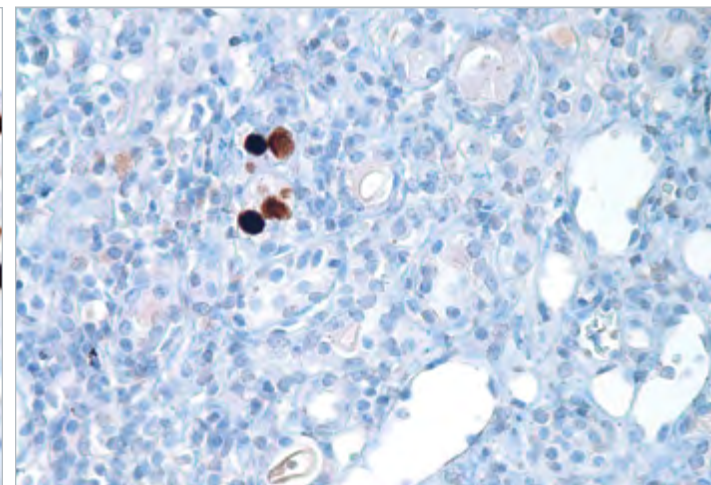




SV40 (MRQ-4)



SV40 (MRQ-4)



SV40 (MRQ-4)

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** SV40 infected tissue

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: MRQ-4

Mouse Monoclonal

#### Volume . . . . .Part No.

0.1 ml, concentrate . . . . .351M-14 (ASR)

0.5 ml, concentrate . . . . .351M-15 (ASR)

1 ml, concentrate . . . . .351M-16 (ASR)

1 ml, predilute . . . . .351M-17 (ASR)

7 ml, predilute . . . . .351M-18 (ASR)

#### Designations



ASR<sup>†</sup>



IVD



IVD



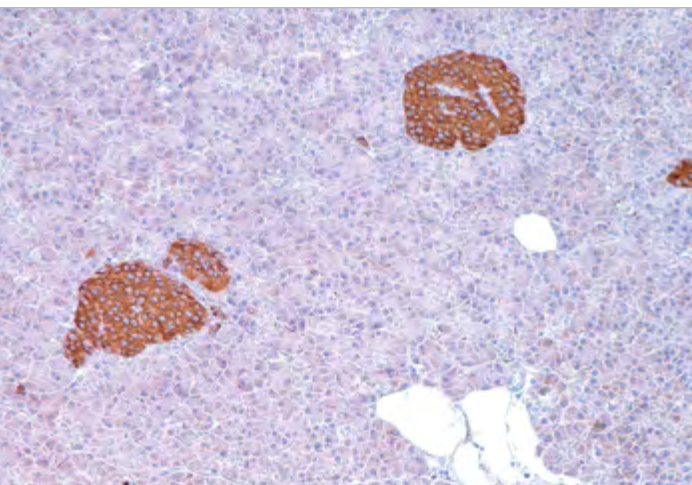
RUO

*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

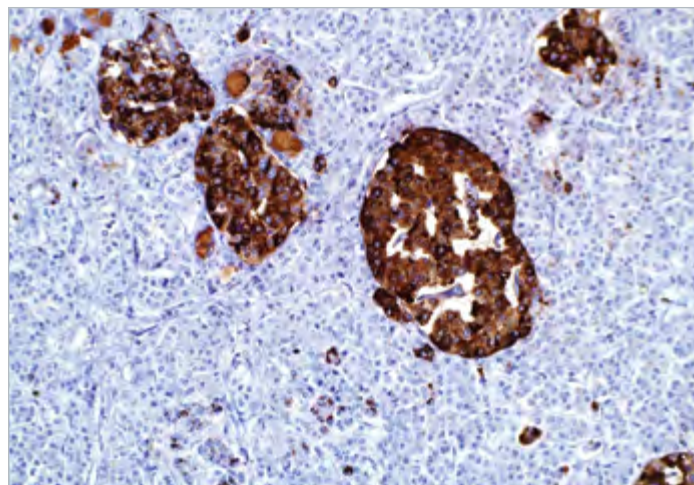
*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*

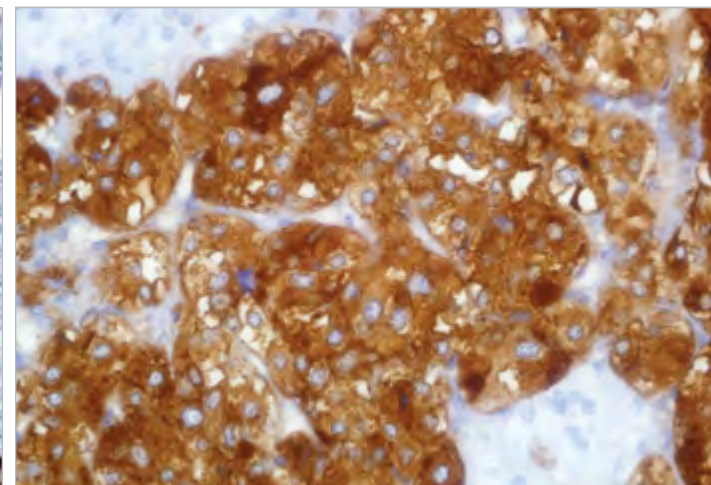
# Synaptophysin



Pancreatic islet cells are labeled in the cytoplasm by Synaptophysin (MRQ-40).



Synaptophysin (MRQ-40) on pancreas.



Synaptophysin (MRQ-40) on adrenal gland.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pancreatic islet cells

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

- Adrenal Tumors. . . . . 286
- Differential Diagnosis of Parathyroid Tumors. . . . . 288
- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma. . . . . 289
- Retroperitoneal Lesions. . . . . 290
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Pancreas / Pancreatic Tumors . 294
- Germ Cell Tumors. . . . . 295
- Differential Diagnosis of Parathyroid vs. Thyroid Tumors. 296
- Brain: CNS Tumors 2 . . . . . 301
- Retroperitoneal Neoplasms . . . 301

## Reference

1. Navone F, et al. J Cell Biol. 1986; 103:2511-2527.
2. Wiedenmann B, et al. Cell 1985; 41:1017-1028.
3. Kayser K, et al. Path Res Pract. 1988; 183:412-417.
4. Son EI, et al. Pathol Int. 2003; 53:67-73.
5. Conner MG, et al. Ann Diagn Pathol. 2002; 6:345-8.

## Product Description

Anti-synaptophysin reacts with neuroendocrine cells of human adrenal medulla, carotid body, skin, pituitary, thyroid, lung, pancreas, and gastrointestinal mucosa. This antibody identifies normal neuroendocrine cells and neuroendocrine neoplasms. Diffuse, finely granular, cytoplasmic staining is observed, which probably correlates with the distribution of the antigen within neurosecretory vesicles. The expression of synaptophysin is independent of the presence of NSE or other neuroendocrine markers. Anti-synaptophysin is an independent, broad-range marker of neural and neuroendocrine differentiation.<sup>1-9</sup>

## Panel Quick View

Adrenal Tumors						
	Synaptophysin	Calretinin	CD56	Chromogranin A	Inhibin, alpha	MART-1
Pheochromocytoma	+	-	+	+	-	-
Adrenocortical Carcinoma	-/+	+	+	-	+	+
Adrenocortical Adenoma	-/+	+	+	-	+	+

Pancreas / Pancreatic Tumors						
	Synaptophysin	β-Catenin	CD10	CD56	Chromogranin A	PGP 9.5
Ductal Adenocarcinoma / Ductal Carcinoma	-	+/-	+/-	-	-	
Pancreatic Adenocarcinoma	-	-	+/-	-	-	
Pancreatic Endocrine Tumor	+				+	
Acinar Cell Carcinoma	-	+	+/-	-	-	
Pancreatoblastoma	-	+	-	+	+	-
Neuroendocrine Tumor	+	+	-	+	+	+
Solid Pseudopapillary Tumor	+	+	+	+	-	
Islet Cells	+	+	-	+	+	
Pancreatic Ducts	-	-	-	-	-	

Brain: CNS Tumors 2									
	Synaptophysin	CK Cocktail	EMA	GFAP	INI-1	NGFR	Neurofilament	S-100	Vimentin
Central Neurocytoma	+	-	-	-	+	+	-	-	-
Neuroblastoma	+	-	-	+/-	+	+	+	+/-	+
Pineocytoma	+	-	-	-	+	-	-	-	
Metastatic Carcinoma	-	+	+	-	+	-	-	-	-/+

## Ordering Information

### Clone: MRQ-40

Rabbit Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	336R-94
0.5 ml, concentrate. . . . .	336R-95
1 ml, concentrate . . . . .	336R-96
1 ml, predilute . . . . .	336R-97
7 ml, predilute . . . . .	336R-98

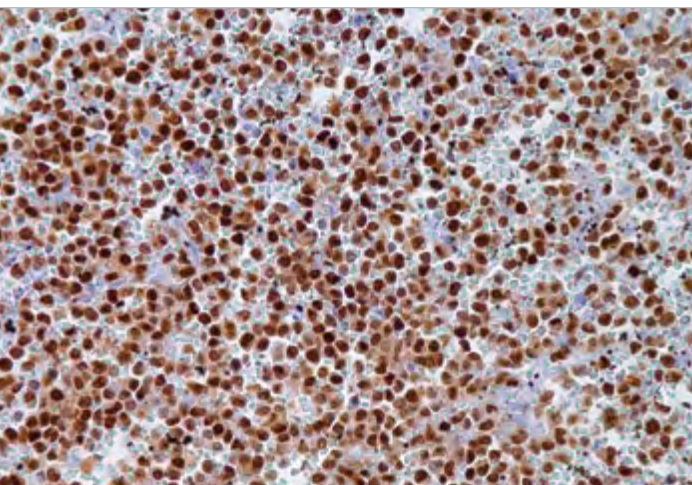
### Alternate Clones Available

- Rabbit Polyclonal
- Contact us for more information.

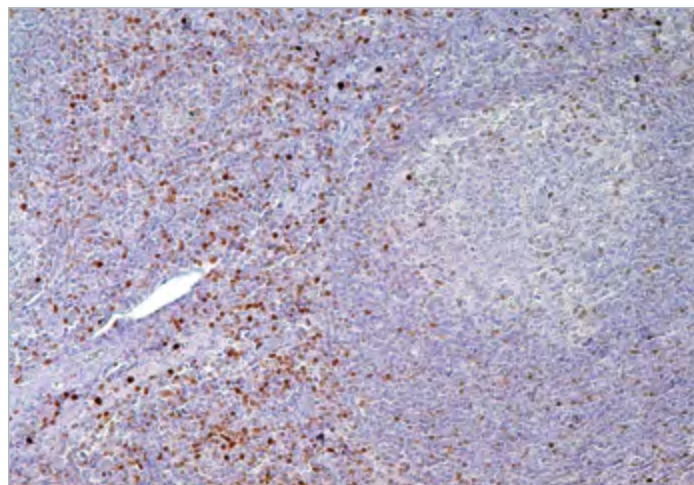
### Designations



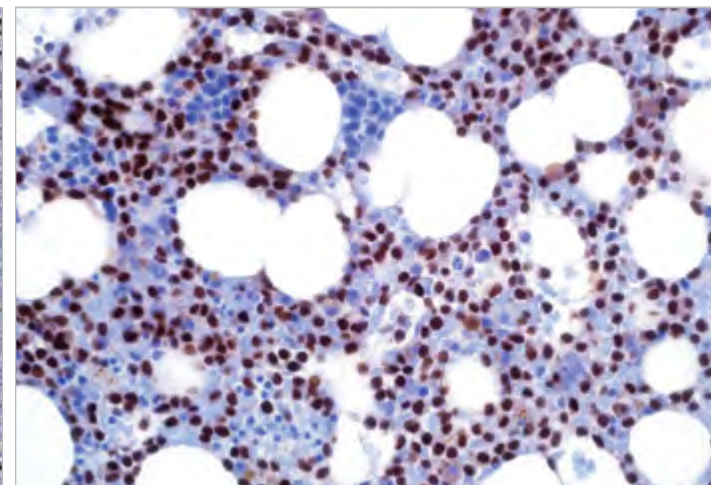




T-bet (MRQ-46) labels the nuclei of hairy cell leukemia cells.



T-bet (MRQ-46) on tonsil.



T-bet (MRQ-46) on hairy cell leukemia.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** tonsil, hairy cell leukemia  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296  
 ● Mature B-cell Neoplasms. .... 299

## Reference

1. Szabo SJ, et al. Cell. 2000; 100:665-69.
2. Zhang WX, et al. Genomics. 2001; 70:41-8.
3. Johrens K, et al. Am J Surg Pathol. 2007; 31:1181-1185.
4. Atayar C, et al. Am J Pathol. 2005; 166:127-134.
5. Dorfman DM, et al. Am J Clin Pathol. 2004; 122:292-297.
6. Harashima A, et al. Leuk Res. 2005; 29:841-8.
7. Marafioti T, et al. Am J Pathol. 2003; 162:861-871.

## Product Description

T-bet, a T-box transcription factor, is expressed in CD4+ T-lymphocytes committed to T-helper (T<sub>h</sub>)<sub>1</sub> T-cell development from naïve T-helper precursor cells (T<sub>h</sub>p) and redirects T<sub>h</sub>2 T-cells to T<sub>h</sub>1 development. Anti-T-bet is a marker of mature T-cells and is expressed at very low levels in T<sub>h</sub>p cells and is absent in precursor T-lymphoblastic leukemia/lymphoma cells. Scattered small lymphocytes in the interfollicular T-cell zone of reactive lymphoid tissue, including tonsil, lymph node, and spleen exhibited nuclear staining for anti-T-bet, with no anti-T-bet staining observed in germinal centers or mantle or marginal zones. T-bet is expressed in a significant subset of B-cell lymphoproliferative disorders, particularly at an early stage of B-cell development (precursor B-cell lymphoblastic leukemia/lymphoblastic lymphoma), and B-cell neoplasms derived from mature B-cells, including CLL/SLL, marginal zone lymphoma, and hairy cell leukemia. In contrast, B-cell neoplasms derived from pre-germinal center or germinal center B-cells, including mantle cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, and Burkitt lymphoma are negative for anti-T-bet. Therefore, anti-T-bet should serve as a useful marker for the diagnosis and subtyping of B-cell and T-cell lymphoproliferative disorders.<sup>1-7</sup>

## Panel Quick View

B-cell Lymphomas									
	T-bet	BCL2	BCL6	CD10	CD23	CD79a	Cyclin D1	IgD	MUM1
Burkitt Lymphoma	-	-	+	+	-	+	-	-	-
CLL/SLL	+/-	+	-	-	+	+	-	+	+
Diffuse Large Cell Lymphoma	-	+	+/-	-/+	-	+	-	-	+/-
Follicular	-	+	+	+	-	+	-	+	-
Hairy Cell Leukemia	+	+	-	-	-	+	+ (weak) /-	-	
Lymphoplasmacytic	+	+	-	-	-	+	-	-	+
Mantle Cell	-	+	-	-	-	+	+	+	-
Marginal Zone BCL	+	+	-	-	-	+	-	-/+	+

## Ordering Information

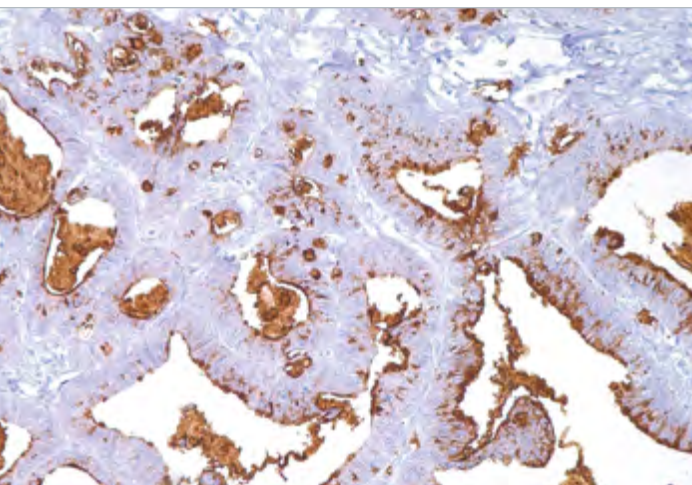
**Clone: MRQ-46**  
 Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate ..... 368R-74  
 0.5 ml, concentrate ..... 368R-75  
 1 ml, concentrate ..... 368R-76  
 1 ml, predilute ..... 368R-77  
 7 ml, predilute ..... 368R-78

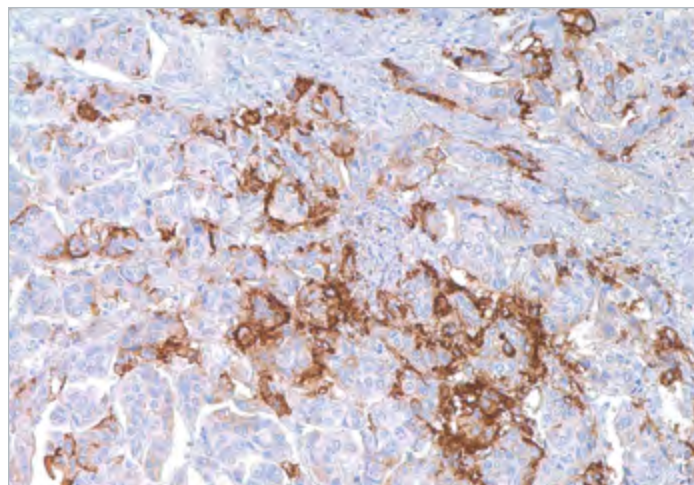
## Designations

 IVD     IVD     IVD     RUO

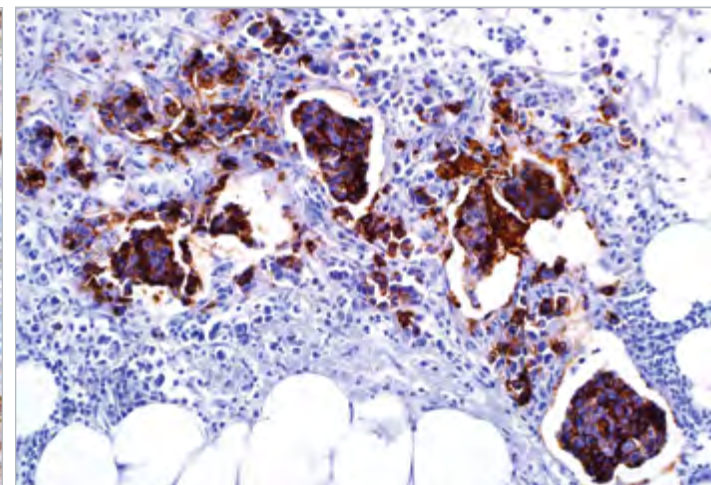




TAG-72 (B72.3) labels the cytoplasm of colon adenocarcinoma in a somewhat variable fashion.



TAG-72 (B72.3) on adenocarcinoma.



TAG-72 (B72.3) on metastatic adenocarcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** lung adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Synonyms and Abbreviations

BRST-3

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Lung Adenocarcinoma vs. Mesothelioma ..... 302

● Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Thor A, et al. Cancer Res. 1986; 46:3118.
2. Osteen KG, et al. In J Gynecol Pathol. 1992; 11:216-20.
3. Johnston WW, et al. Hum Pathol. 1986; 17:501-513.
4. Lundy J, et al. Ann Surg. 1986; 203:399-402.
5. Kline TS, et al. Cancer. 1989; 63:2253-2256.
6. Chhieng DC, et al. Hum Pathol. 2003; 34:1016-21.
7. Ordonez NG. Am J Surg Pathol. 1998; 22:1203-14.
8. Ordóñez NG. Am J Surg Pathol. 2003; 27:1031-51.

## Product Description

Anti-TAG-72 recognizes a high molecular weight glycoprotein that is present in human adenocarcinomas and in lesser amounts, non-neoplastic tissues.<sup>1-6</sup> It has also been found to be useful to distinguish between mesothelioma and adenocarcinoma.<sup>7-8</sup>

## Panel Quick View

Pleura: Adenocarcinoma vs. Mesothelioma										
	TAG-72	Caldes-mon	Cal-retinin	CEA	CK 5&6	Ep-CAM	E-cad-herin	HBME-1	D2-40	TTF-1
Adenocarcinoma	+	-	-	+	-	+	+	-	-	+
Mesothelioma	-	+	+	-	+	-	-	+	+	-

## Ordering Information

### Clone: B72.3

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	337M-84
0.5 ml, concentrate.....	337M-85
1 ml, concentrate .....	337M-86
1 ml, predilute .....	337M-87
7 ml, predilute .....	337M-88

### Designations



IVD



IVD

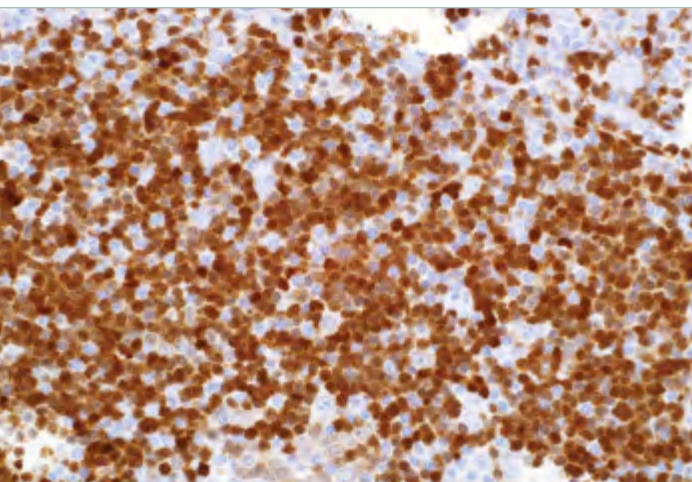


IVD

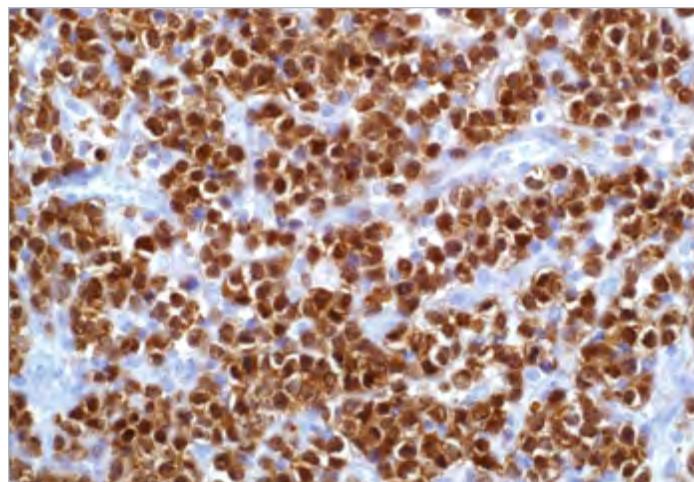


RUO





Nuclear labelling of Burkitt lymphoma by TCL1 (MRQ-7).



TCL1 (MRQ-7) on Burkitt lymphoma.



TCL1 (MRQ-7) on tonsil.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, nuclear

**Control** tonsil, B-cell lymphoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296

● c-Myc in DLBCL ..... 297

● T-cell Lymphomas ..... 300

## Reference

- Narducci MG, et al. Cancer Research. 2000; 60:2095-2100.
- Roos J, et al. Pathobiology. 2001; 69:59-66.
- Pescarmona E, et al. Histopathology. 2006; 49:343-8.
- Rodig SJ, et al. Am J Surg Patho. 2008; 32:113-122.
- Nakayama I, et al. Pathol Int. 2000; 50:191-9.
- Pekarsky Y, et al. Oncogene. 2001; 20:5638-43.
- Pekarsky Y, et al. Hematol Oncol Clin North Am. 2004; 18:863-79.
- Takizawa J, Suzuki R, et al., Jpn J Cancer Res. 1998 89(7):712-8.
- Roberta B, et al. Proc Natl Acad Sci USA. 2002; 99:6955-6960.
- Herling M, et al. Leukemia. 2006; 20:280-5.

## Product Description

T-cell leukemia/lymphoma protein 1 (TCL1, TCL1A, p14TCL1) is a 14 kDa product of the TCL1 gene that is involved in T-cell prolymphocytic leukemia (T-PLL). TCL1 protein is normally found in the nucleus and cytoplasm of lymphoid lineage cells during early embryogenesis. Chromosomal translocations may lead to overexpression of TCL1, resulting in T-cell leukemia and B-cell lymphoma. TCL1 binds to a novel site in the pleckstrin homology (PH) domain, resulting in activation and nuclear translocation of Akt by overexpressed TCL1 which may promote an anti-apoptotic response; this may normally serve to promote growth during development but may lead to malignancy when TCL1 is overexpressed. TCL1 is expressed in differentiated B-cells under both reactive and neoplastic conditions, antigen committed B-cells, and in germinal center B-cells. TCL1 is down-regulated in the latest stage of B-cell differentiation. TCL1 is overexpressed in Burkitt lymphoma, the majority of AIDS-related non-Hodgkin lymphoma-designated immunoblastic plasmacytoid lymphoma, lymphoblastic lymphoma, chronic lymphocytic leukemia, mantle cell lymphoma, follicular lymphoma, diffuse large B-cell lymphoma, and primary cutaneous B-cell lymphoma. Therefore, the most useful application of anti-TCL1 is the discrimination of B-cell lymphomas from T-cell lymphomas, CD30+ anaplastic large cell lymphomas, multiple myeloma, and marginal zone B-cell lymphoma.

## Panel Quick View

B-cell Lymphomas										
	TCL1	ANXA1	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	MUM1	PAX-5
Burkitt Lymphoma	+	-	+	-	+	-	+	-	-	+
CLL/SLL	+	-	-	+	-	+	+	-	+	+
Diffuse Large Cell Lymphoma	+	-	+/-	-/+	-/+	-	+	-	+/-	+
Follicular	+	-	+	-	+	-	+	-	-	+
Hairy Cell Leukemia	+	+	-	-	-	-	+	+ (weak) /-	-	+
Lymphoplasmacytic	+	-	-	-	-	-	+	-	+	-
Malt Lymphoma	+	-	+/-	-	-	-	+	-	-	-
Mantle Cell	+	-	-	+	-	-	+	+	-	+
Marginal Zone	-	-	-	-	-	-	+	-	+	+
Splenic Marginal Zone	-	-	-	-	-	-	+	-	+/-	-

T-cell Lymphomas										
	TCL1	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45RO	PD-1
NK/T-cell Lymphoma	+	+	+	-	-	-/+	-	-	-/+	-

## Ordering Information

**Clone: MRQ-7**  
Mouse Monoclonal

**Volume ..... Part No.**  
0.1 ml, concentrate ..... 357M-14  
0.5 ml, concentrate ..... 357M-15  
1 ml, concentrate ..... 357M-16  
1 ml, predilute ..... 357M-17  
7 ml, predilute ..... 357M-18

## Designations



IVD



IVD

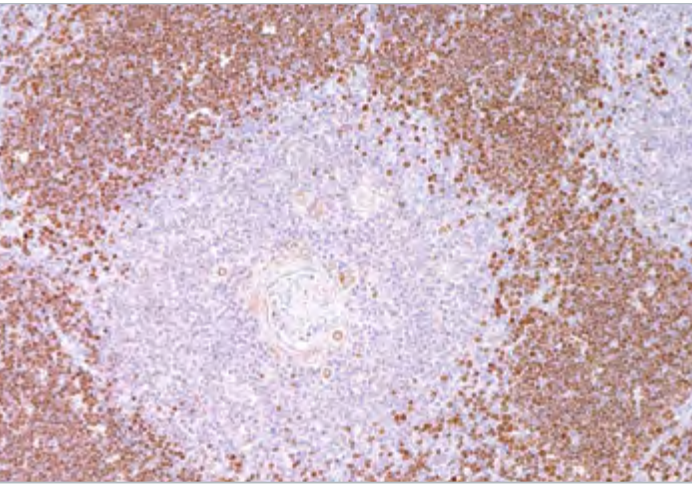


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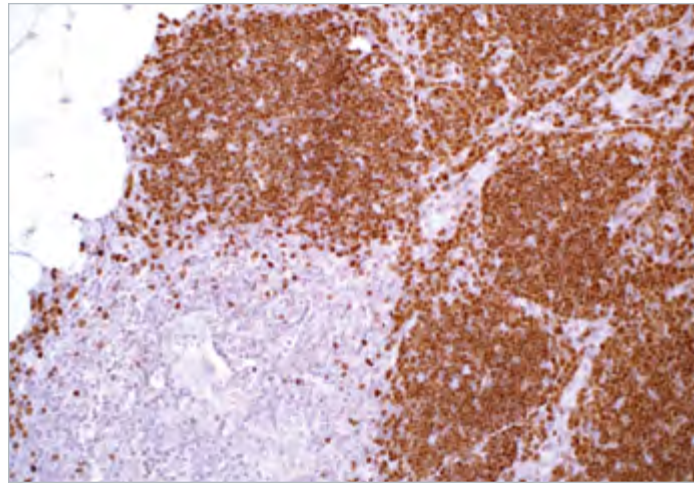


RUO

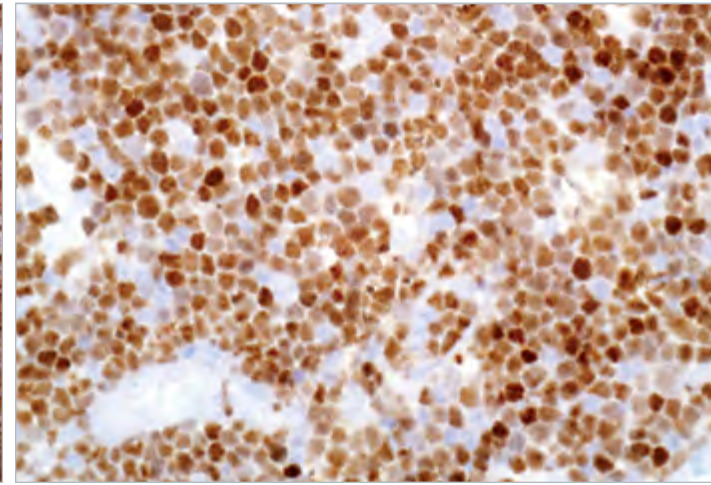




Cortical thymocytes are labeled with TdT (polyclonal).



TdT (polyclonal) on thymus cortex medulla.



TdT (polyclonal) on lymphoblastic lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** thymus

**Stability** up to 36 mo. at 2-8°C

## Associated Specialties

● Hematopathology

## Associated Panels

● Lymphoblastic Lymphomas, BCL vs. TCL.....298

## Reference

1. Elias JM. ASCP Press. 1990; 312-316
2. Arber DA, et al. Am J Clin Pathol. 1996; 106:462-8.
3. Orazi A, et al. Mod Pathol. 1994; 7:582-6.
4. Suzumiya J, et al. J Pathol. 1997; 182:86-91.
5. Mathewson RC, et al. Pediatr Pathol Lab Med. 1997; 17:835-44.
6. Ozdemirli M, et al. Mod Pathol. 2001; 14:1175-82.
7. Stauchen JA, et al. Int J Surg Pathol. 2003; 11:21-4.
8. Lucas DR, et al. Am J Clin Pathol. 2001; 115:933-4.
9. Soslow RA, et al. Hum Pathol. 1997; 28:1158-65.
10. Arber DA, et al. Am J Clin Pathol. 1996;106:462-8.

## Product Description

Anti-TdT antibody labels normal cortical thymocytes and primitive lymphocytes. Anti-TdT antibody detects an enzyme found in the nucleus of normal hematopoietic cells, normal cortical thymocytes and in the cytoplasm of megakaryocytes of the bone marrow. TdT expression is seen in over 90% of acute lymphoblastic lymphoma/leukemia (ALL) cases with the exception of pre-B-cell ALL. TdT expression is not seen in normal mature T- or B-lymphocytes. Anti-TdT is positive for approximately one third of all cases of chronic myeloid leukemia, making it a good indicator of better response to chemotherapy.

## Panel Quick View

Lymphoblastic Lymphomas, BCL vs. TCL										
	TdT	CD1a	CD3	CD5	CD7	CD10	CD19	CD20	CD117	PAX-5
Lymphoblastic BCL	+	-	-	-	-	+/-	+	+/-	-	+
Lymphoblastic TCL	+	+/-	+	+/-	+	+	-	-	-	-

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate.....338A-74  
 0.5 ml, concentrate.....338A-75  
 1 ml, concentrate .....338A-76  
 1 ml, predilute .....338A-77  
 7 ml, predilute .....338A-78

### Designations



IVD



IVD

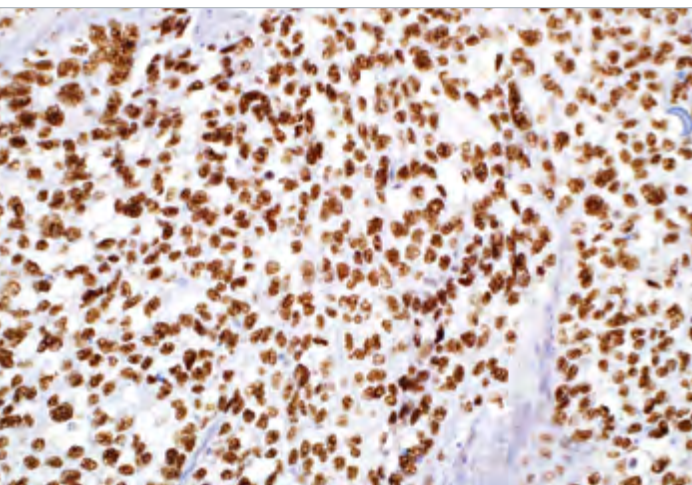


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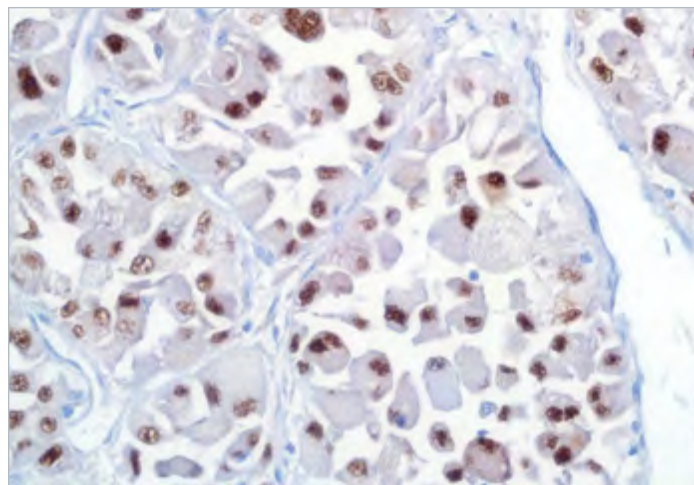


RUO

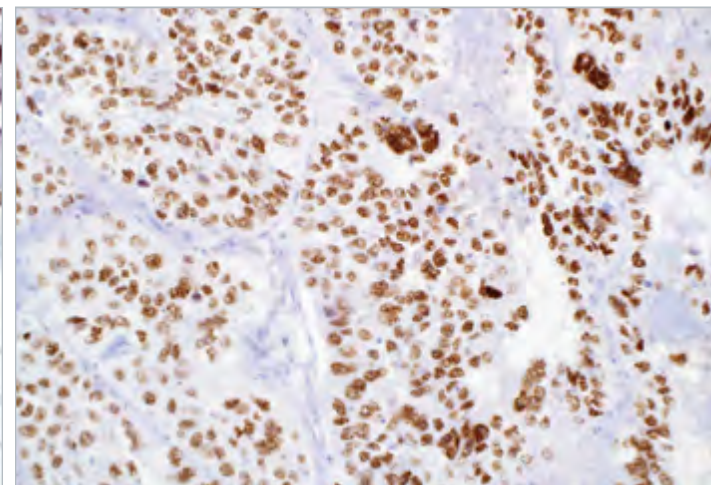




Xp11 translocated renal cell carcinoma labeled by TFE3 (MRQ-37).



TFE3 (MRQ-37) on alveolar soft part sarcoma.



TFE3 (MRQ-37) on renal cell carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** nuclear  
**Control** testis, melanoma, Xp11.2 translocation renal cell carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Associated Specialties

● Pediatric Pathology

## Associated Panels

● Epithelioid Cell Neoplasms... 288  
 ● Carcinomas... 295  
 ● Soft Tissue Neoplasms... 302  
 ● Soft Tissue Sarcoma... 303  
 ● Soft Tissue Tumor... 303

## Reference

1. Argani P, et al. Am J Clin Pathol. 2006; 126:332-334.
2. Argani P, et al. Am J SurgPathol. 2003; 27:750-761.
3. Argani P, et al. Clin Lab Med. 2005; 25:363-378.
4. Lazar AJ, et al. Histopathology. 2009; 55:750-755.

## Product Description

Xp11 translocation renal cell carcinomas (RCC) are a recently recognized subset of RCC, characterized by chromosome translocations involving the Xp11.2 break point and resulting in gene fusions involving the TFE3 transcription factor gene that maps to this locus.<sup>1</sup> Xp11 translocation RCC represents the most common type of RCC in children, but is less frequent on a percentage basis in adults.<sup>2</sup> Morphologically, these neoplasms frequently show papillary architecture and clear cytoplasm, and frequently have associated psammoma bodies. Immunohistochemically, these neoplasms under-expresses epithelial markers such as anti-cytokeratin and anti-epithelial membrane antigen (anti-EMA) compared with typical adult type RCC. The most sensitive and specific immunohistochemical marker for the Xp11 translocation RCC is nuclear labeling of TFE3 protein, which reflects over-expression of the resulting fusion proteins relative to native TFE3.<sup>3</sup> Alveolar soft part sarcoma (ASPS) is an uncommon soft tissue sarcoma of undertain differentiation. It presents in younger patients, often in the extremities. Despite relatively high rates of metastasis, patients often experience prolonged survival in the metastatic setting relative to others. The hallmark of ASPS is a chromosomal rearrangement at 17q25 and Xp11.2 engendering an ASPSCR1-TFE3 fusion gene responsible for an aberrant transcription factor presumably enabling pathogenesis.<sup>4</sup> This aberrant chimeric transcription factor retains the N-terminal DNA binding domain encoded by TFE3 while the ASPSCR1 encoded portion probably provides domain(s) modulating gene expression.<sup>4</sup> The presence of this 'super-activated' transcription factor may induce the expression of numerous molecules contributing to ASPS diagnosis, progression, and metastasis.<sup>4</sup>

## Panel Quick View

Carcinomas								
	TFE3	CD10	CD117	CK 7	CK, HMW	Ksp-cad-herin	RCC	S100P
Xp11 Tr RCC	+	+		-/+		+	+	-
Clear Cell RCC	-	+	-	-/+	-	-/+	+	-
Papillary RCC	-	+	-	+	+/-	-/+	+	-
Chromophobe RCC	-	+/-	+	+	-	+	+	-
Oncocytoma	-	+	+	-/+	-/+	+	-	-
Urothelial Carcinoma	-	+	+/-	+	+/-	-	-	+

## Ordering Information

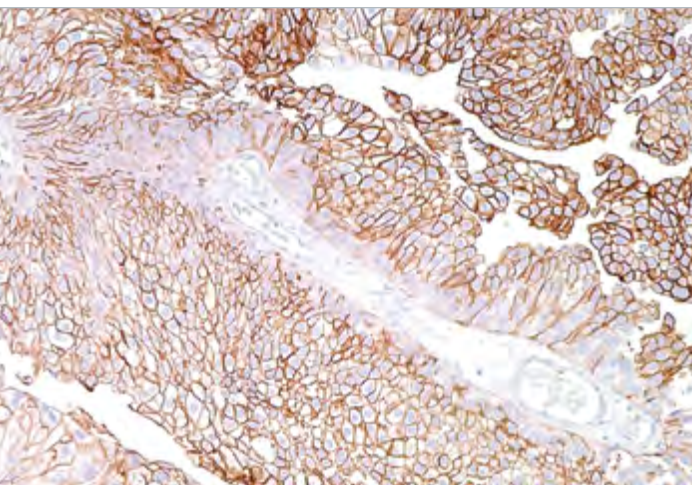
**Clone: MRQ-37**  
 Rabbit Monoclonal

**Volume** ..... **Part No.**  
 0.1 ml, concentrate..... 354R-14  
 0.5 ml, concentrate..... 354R-15  
 1 ml, concentrate ..... 354R-16  
 1 ml, predilute ..... 354R-17  
 7 ml, predilute ..... 354R-18

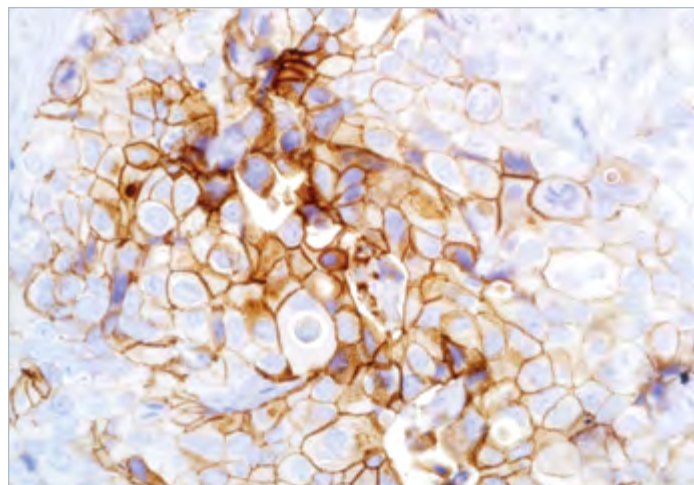
## Designations

 IVD     IVD     IVD     RUO

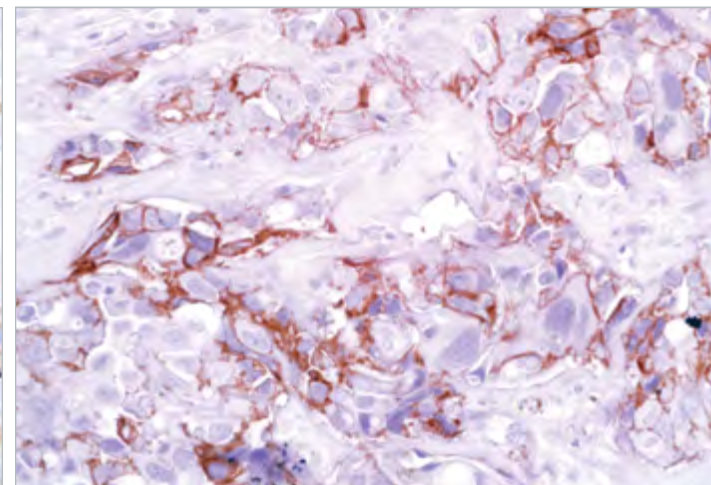
# Thrombomodulin



Membranous labelling of urothelial transitional cell carcinoma by Thrombomodulin (1009).



Thrombomodulin (1009) on transitional cell carcinoma.



Thrombomodulin (1009) on transitional cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** bladder, mesothelioma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Prostate Lesions ..... 296

● Pleura: Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Acebo E, et al. *Histology and Histopathology*. 2001; 16:1031-6.
2. Appleton MAC, et al. *Histopathology*. 1996; 29:153-7.
3. Attanoos RL, et al. *Histopathology*. 1996; 29:209-15.
4. Attanoos RL, et al., *Histopathology* 2001; 39:584-8.
5. Attanoos RL, et al. *Histopathology*. 2002; 41:42-9.
6. Brown R W, et al. *Human Pathology*. 1993; 24:347-54
7. Collins CL, et al. *American Journal of Pathology*. 1992; 141:827-33.
8. Doglioni C, et al. *American Journal of Surgical Pathology*. 1996; 20:1037-46.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Thrombomodulin is a transmembrane glycoprotein composed of 575 amino acids (molecular weight 75 kD) with natural anticoagulant properties. It is normally expressed by a restricted number of cells, such as endothelial and mesothelial cells. In addition, synovial lining and syncytiotrophoblasts of human placenta also express thrombomodulin. Several immunohistochemical endothelial markers are currently available and anti-thrombomodulin serves as another such marker, staining blood and lymphatic channels consistently. Anti-thrombomodulin has demonstrated positivity in 100% of benign vascular tumors (pyogenic granuloma and hemangioma) and 94% of malignant vascular tumors (Kaposi's sarcoma, angiosarcoma, and epithelioid hemangioendothelioma). Hence, anti-thrombomodulin serves as a sensitive marker for lymphatic endothelial cells and their tumors.<sup>1-2</sup> There has also been recent interest in the use of anti-thrombomodulin as an immunohistochemical marker for mesothelial cells and malignant mesotheliomas.<sup>3-8</sup> Anti-thrombomodulin is immunohistochemically expressed in a variety of other tumors including squamous cell carcinomas of the lung, synovial sarcoma, transitional cell carcinoma, renal cell carcinomas and thymomas.<sup>9,10</sup>

## Panel Quick View

Prostate Lesions								
	TBM*	CK 34βE12	CK 7	PAX-2	p63	P504s	PSA/PSAP	URO III
Prostate Carcinoma	-	-	-	-	-	+	+	-
Urothelial Carcinoma	+	+	+	-	+	-	-	+
Nephrogenic Adenoma	-	+/-	+	+	-	+	-	-

Pleura: Adenocarcinoma vs. Mesothelioma										
	TBM*	Caldesmon	Calretinin	CEA	CK 5&6	Ep-CAM	E-cadherin	HBME-1	TAG-72	TTF-1
Adenocarcinoma	-	-	-	+	-	+	+	-	+	+
Mesothelioma	+	+	+	-	+	-	-	+	-	-

\*Thrombomodulin

## Ordering Information

**Clone: 1009**

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	339M-14
0.5 ml, concentrate.....	339M-15
1 ml, concentrate .....	339M-16
1 ml, predilute .....	339M-17
7 ml, predilute .....	339M-18

## Designations



IVD



IVD



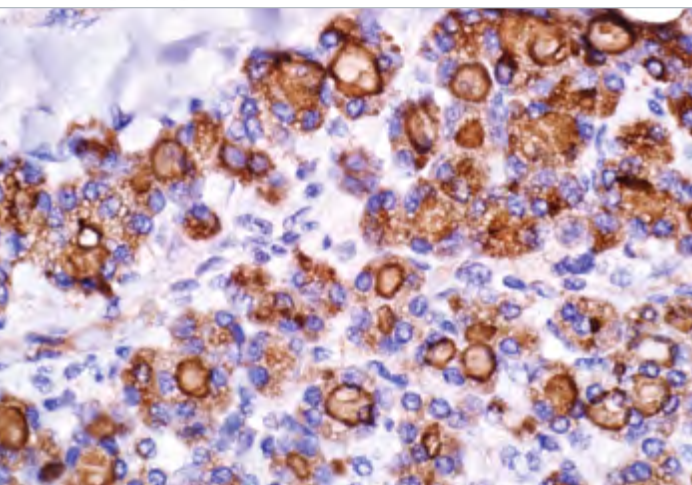
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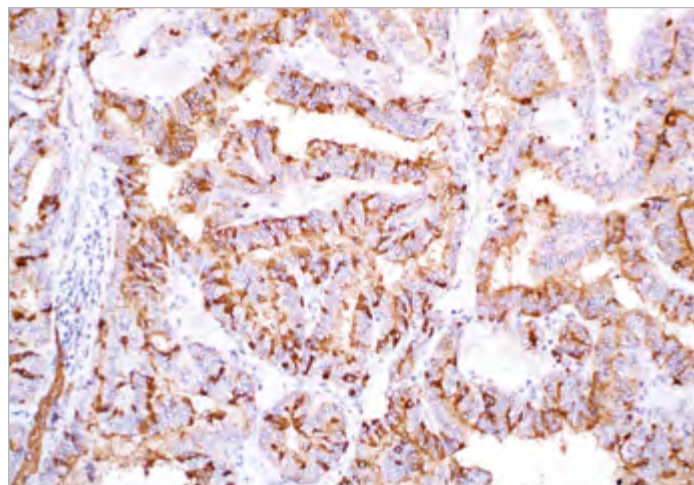
RUO



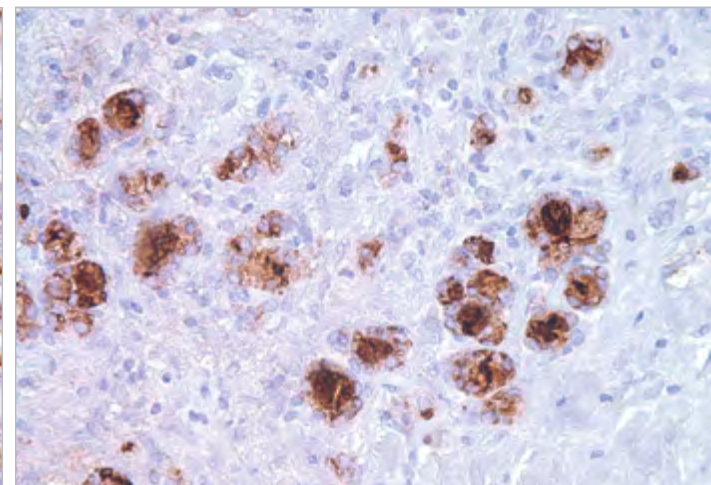
# Thyroglobulin



Thyroglobulin (2H11 + 6E1) on follicular thyroid carcinoma.



Thyroglobulin (2H11 + 6E1) on papillary thyroid carcinoma.



Thyrocytes are labeled by Thyroglobulin (MRQ-41).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** thyroid

**Stability** up to 36 mo. at 2-8°C

**Isotype**

• 2H11 + 6E1: IgG<sub>1</sub>/k

• MRQ-41: IgG<sub>1</sub>

## Associated Specialties

● Head/Neck Pathology

## Associated Panels

● Thyroid: Malignant vs. Benign . 291

## Reference

1. Bellet D, et al. J Clin Endocrin Metab. 1983; 56:530-533.
2. Heffess CS, et al. Cancer. 2002; 95:1869-78.
3. Bejarano PA, et al. Appl Immunohistochem Mol Morphol. 2000; 8:189-94.
4. Judkins AR, et al. Hum Pathol. 1999; 30:1373-6.
5. Hammer SP. Hum Pathol. 1998; 29:1393-402.

## Product Description

Thyroglobulin is the glycoprotein precursor of the iodinated thyroid hormones thyroxine (T4) and triiodothyronine (T3). Thyroglobulin is obtained from the thyroid gland and exhibits the general properties of the globulins. Human thyroglobulin (hTG) is a high molecular weight glycoprotein (605 kDa) found in the thyroid follicular cells. It plays a central role in the uptake, incorporation, and regulated biosynthesis of thyroid hormones. Anti-thyroglobulin reacts with human thyroglobulin as demonstrated by a single band of immunoblotting in a lysate of human thyroid tissue. The vast majority of follicular carcinomas of the thyroid will give positive immunoreactivity for anti-thyroglobulin even though sometimes only focally. Poorly differentiated carcinomas of the thyroid are frequently anti-thyroglobulin negative. Adenocarcinomas of other-than-thyroid origin do not react with this antibody. This antibody is useful in identification of thyroid carcinoma of the papillary and follicular types. Presence of thyroglobulin in metastatic lesions establishes the thyroid origin of tumor. Anti-thyroglobulin, combined with anti-calcitonin, can identify medullary carcinomas of the thyroid. Furthermore, anti-thyroglobulin, combined with anti-TTF-1, can be a reliable marker to differentiate between primary thyroid and lung neoplasms.

## Panel Quick View

Thyroid: Malignant vs. Benign						
	Thyroglobulin	Calcitonin	CK 19	Galectin-3	HBME-1	TTF-1
Papillary Carcinoma	+	-	+	+	+	+
Follicular Carcinoma	+	-	-	+	+/-	+
Medullary Carcinoma	-	+	+	-	+	+
Benign Thyroid	+	-	-	-	-	+

## Ordering Information

### Clone: 2H11+6E1

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	340M-14
0.5 ml, concentrate	340M-15
1 ml, concentrate	340M-16
1 ml, predilute	340M-17
7 ml, predilute	340M-18

### Clone: MRQ-41

Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	340M-94
0.5 ml, concentrate	340M-95
1 ml, concentrate	340M-96
1 ml, predilute	340M-97
7 ml, predilute	340M-98

## Designations



IVD



IVD



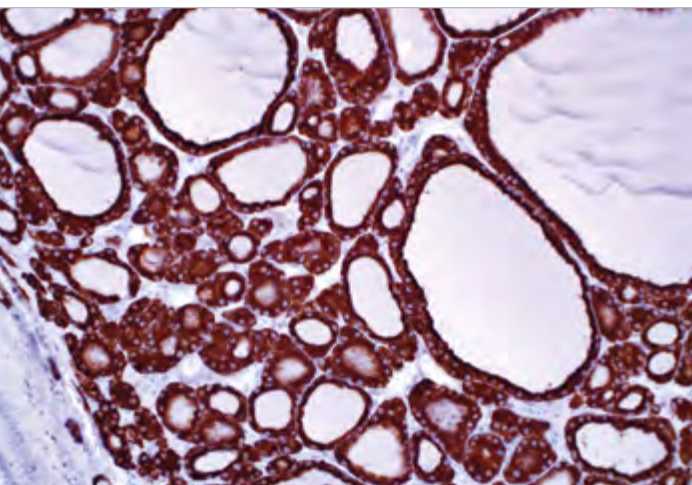
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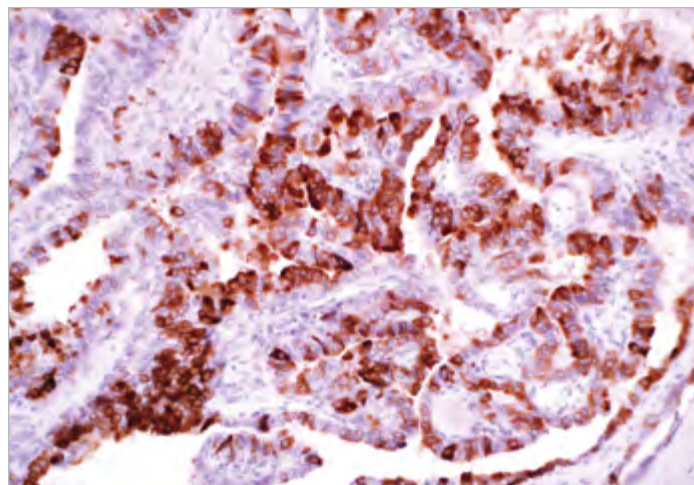
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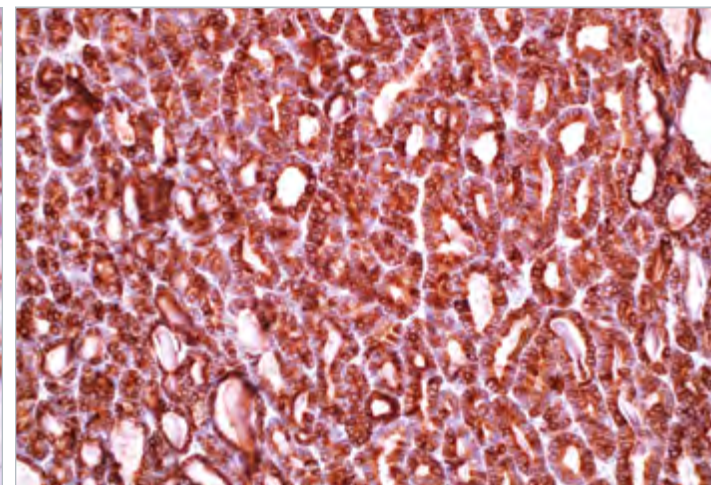
# Thyroid Peroxidase



Follicular variant of papillary thyroid carcinoma is labeled by Thyroid Peroxidase (EP159).



Thyroid Peroxidase (EP159) on papillary thyroid carcinoma.



Thyroid Peroxidase (EP159) on follicular thyroid carcinoma.

## Product Specifications

**Reactivity** paraffin  
**Visualization** cytoplasmic  
**Control** thyroid, papillary thyroid carcinoma  
**Stability** up to 36 mo. at 2-8°C  
**Isotype** IgG

## Synonyms and Abbreviations

TPO

## Associated Specialties

● Head/Neck Pathology

## Reference

1. Weber KB, et al. Am J Clin Pathol. 2004; 122:524-531.
2. Yousaf U, et al. Clin Endocrinol. 2008; 68: 996-1001.
3. Savin S, et al. Hum Pathol. 2008; 39:1656-1663.
4. Paunovic V, et al. APMIS. 2012; 120:368-379.

## Product Description

Thyroid peroxidase (TPO) is a thyroid-specific enzyme involved in the synthesis of thyroid hormone. TPO can be detected in formalin-fixed, paraffin-embedded tissues of normal thyroid, thyroid carcinoma of papillary and follicular type.<sup>1-3</sup> Depending on different series of studies, the sensitivity of TPO for carcinoma of the thyroid has been reported between 44% and 100%, while specificity ranges between 68% and 100%.<sup>1-3</sup> Studies indicate that anti-thyroid peroxidase, anti-HBME-1, anti-galectin-3, and anti-CK 19, together may form a useful immunohistochemical panel for identification of thyroid carcinoma of papillary and follicular types.<sup>1-4</sup>

## Panel Quick View

Carcinomas from Thyroid and Other Sites										
	TPO	CEA	Chromo-granin A	CK 19	Galec-tin-3	HBME-1	PAX-8	Synapto-physin	Thyro-globulin	TTF-1
Normal Thyroid Follicles	+	-	-	-	-/+	-/+	+	-	+	+
Follicular Thyroid Carcinoma	+	-	-	-/+	-/+	-/+	+	+/-	+	+
Papillary Thyroid Carcinoma	+	-	-	+	+	+	+	+/-	+	+
Medullary Thyroid Carcinoma	-	+	+	-/+	-/+	-/+	-	+	-	+
Renal Cell Carcinoma	-	-/+	-	-	-	-	+	-	-	-
Breast Carcinoma	-	+/-	-	-	-	-	-	-	-	-
Colorectal Adenocarcinoma	-	+	-	-	-	-	-	-	-	-
Lung Adenocarcinoma	-	+	-	-	-	-	-	-	-	+

## Ordering Information

**Clone: EP159**  
 Rabbit Monoclonal

**Volume . . . . . Part No.**  
 0.1 ml, concentrate . . . . . 409R-14  
 0.5 ml, concentrate . . . . . 409R-15  
 1 ml, concentrate . . . . . 409R-16  
 1 ml, predilute . . . . . 409R-17  
 7 ml, predilute . . . . . 409R-18

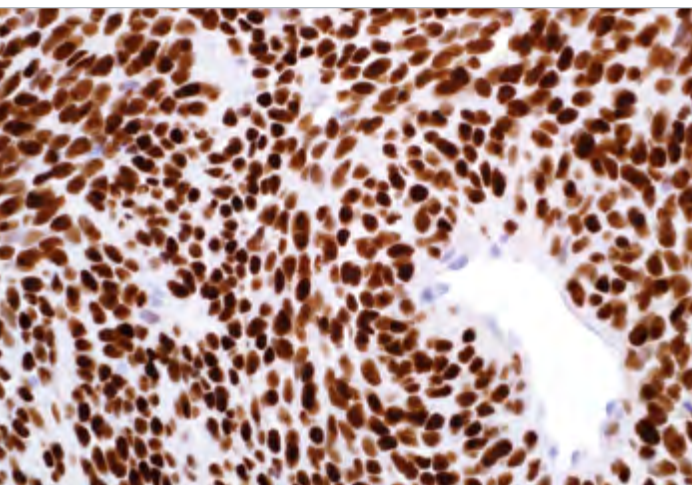
## Designations

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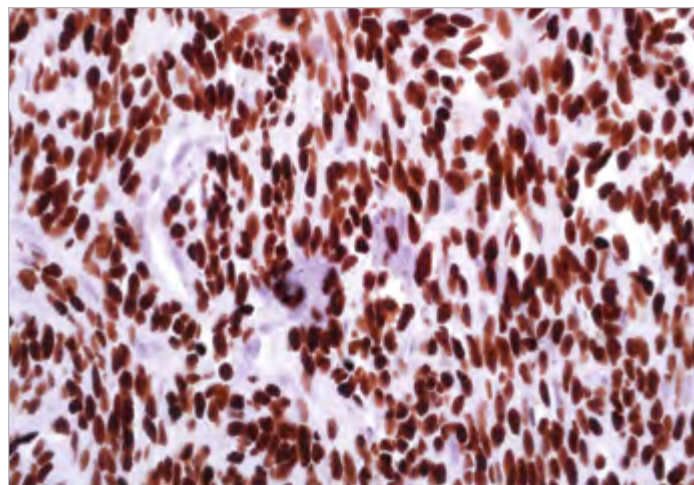
 CELL MARQUE

 RabMab®  
 Technology from Abcam

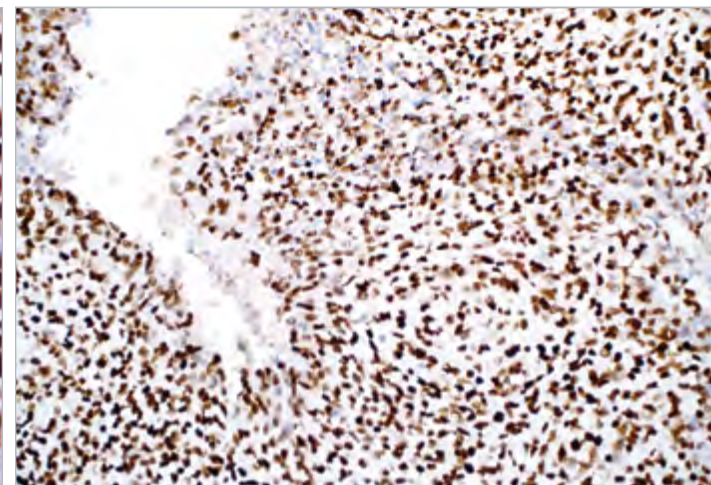




TLE1 (1F5) labels the nuclei in tumor cells of synovial sarcoma.



TLE1 (1F5) on synovial sarcoma.



TLE1 (1F5) on synovial sarcoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** synovial sarcoma

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Soft Tissue Pathology

## Associated Panels

● Soft Tissue Sarcoma ..... 303

● Soft Tissue Tumor..... 303

## Reference

1. Jagdis A, et al. Am J Surg Pathol. 2009; 33:1743-1751.

## Product Description

Transducin-like enhancer of split 1 (TLE1) gene is a member of the TLE gene family and involved in control of hematopoiesis, neuronal, and terminal epithelial differentiation.<sup>1</sup> By immunohistochemistry in formalin-fixed, paraffin-embedded tissues, TLE1 expression (nuclear staining) has been found in 35 of 35 molecularly confirmed synovial sarcoma cases, and was rare to absent in the 73 other soft tissue tumors examined (positive staining was found only in 1 of 43 malignant peripheral nerve sheath tumors and 1 pleomorphic sarcoma).<sup>1</sup> Anti-TLE1 was more sensitive and specific for synovial sarcoma than other currently available immunohistochemical markers including BCL2, epithelial membrane antigen (EMA) and cytokeratins, and had a positive predictive value of 92% and a negative predictive value of 100% in this clinical setting.<sup>1</sup> TLE1 overexpression by immunohistochemistry is a highly sensitive and specific biomarker for the diagnosis of synovial sarcoma in the group of otherwise unclassifiable high-grade sarcomas.<sup>1</sup>

## Panel Quick View

Soft Tissue Neoplasms	TLE1	BCL2	CD34	CK Cocktail	EMA
Synovial sarcoma	+	+	-	+	+
Malignant peripheral nerve sheath tumor	-	-/+	-	-	-
Dermatofibrosarcoma protuberans	-	-/+	+	-	-
Ewing sarcoma (PNET)	-	+/-	-	-	+/-
Rhabdomyosarcoma	-	-	-	-	-

## Ordering Information

### Clone: 1F5

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	401M-14
0.5 ml, concentrate.....	401M-15
1 ml, concentrate .....	401M-16
1 ml, predilute .....	401M-17
7 ml, predilute .....	401M-18

### Designations



IVD



IVD

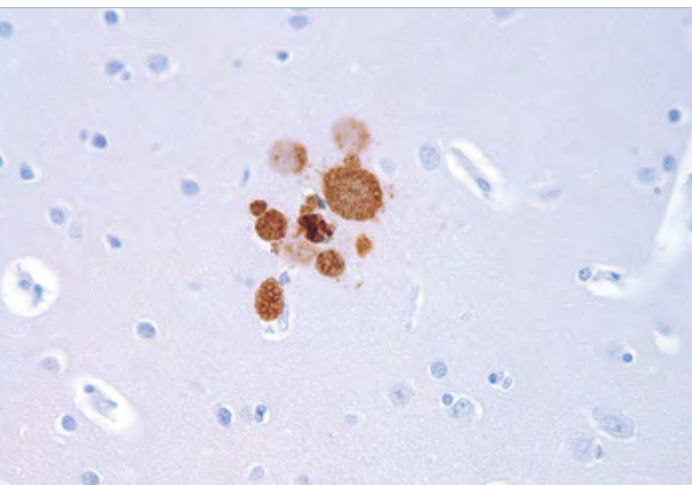


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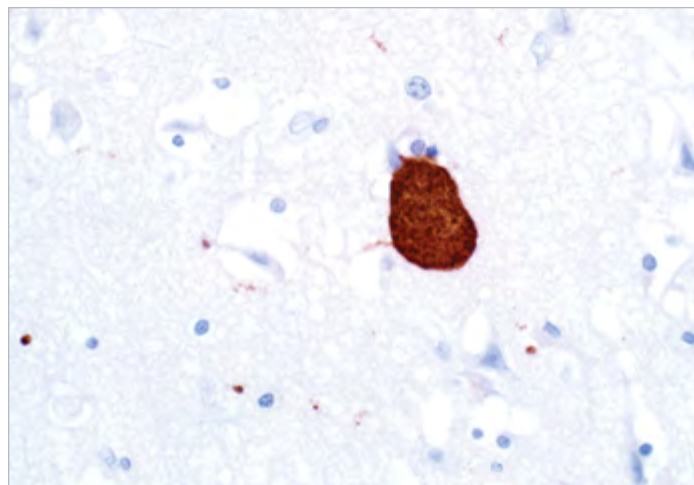


RUO

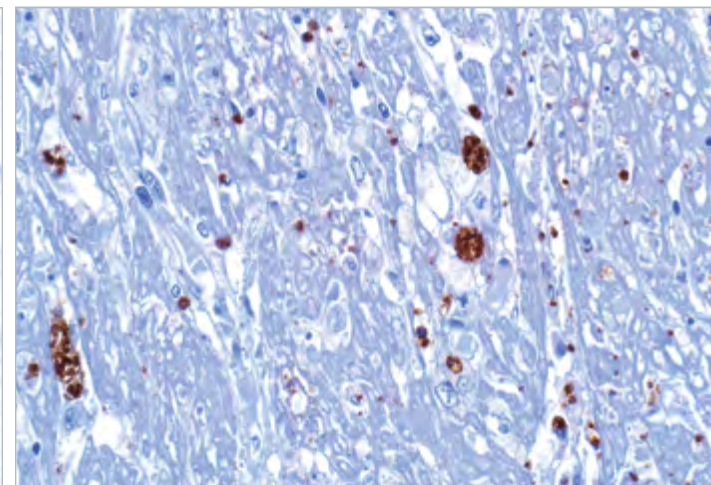
# Toxoplasma gondii



*Toxoplasma gondii* (polyclonal)



*Toxoplasma gondii* (polyclonal)



*Toxoplasma gondii* (polyclonal)

## Product Specifications

**Reactivity** paraffin

**Visualization** cell wall

**Control** *Toxoplasma gondii* infected tissue

**Stability** up to 36 mo. at 2-8°C

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

### Clone: polyclonal

Rabbit Polyclonal

#### Volume . . . . .Part No.

0.1 ml, concentrate . . . . .220A-14 (ASR)

0.5 ml, concentrate . . . . .220A-15 (ASR)

1 ml, concentrate . . . . .220A-16 (ASR)

1 ml, predilute . . . . .220A-17 (ASR)

7 ml, predilute . . . . .220A-18 (ASR)

#### Designations



ASR<sup>†</sup>



IVD



RUO



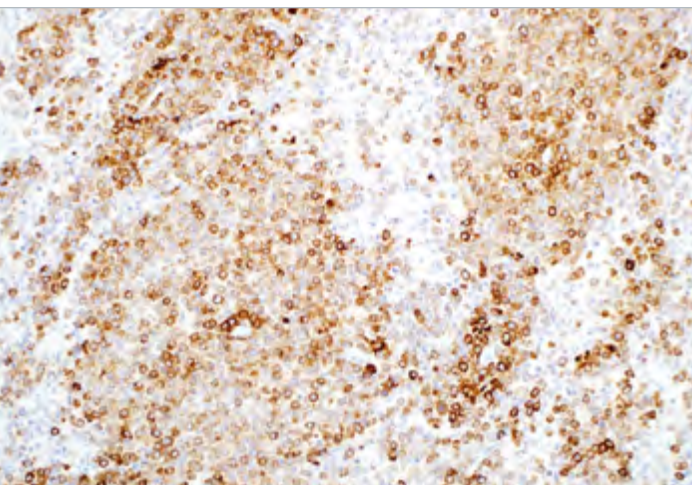
RUO

*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

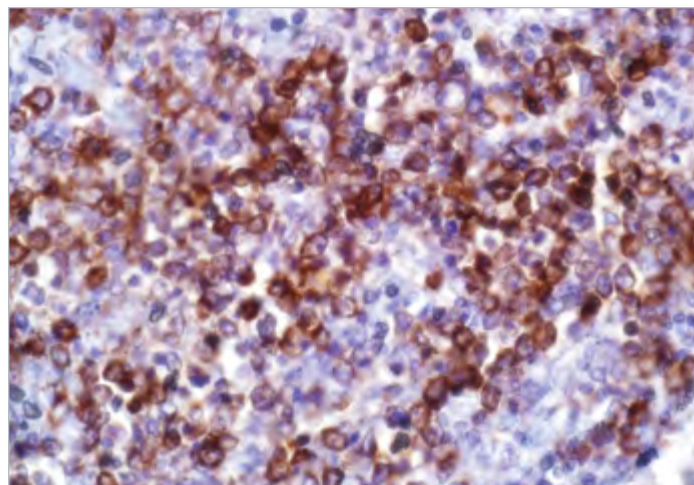
*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*

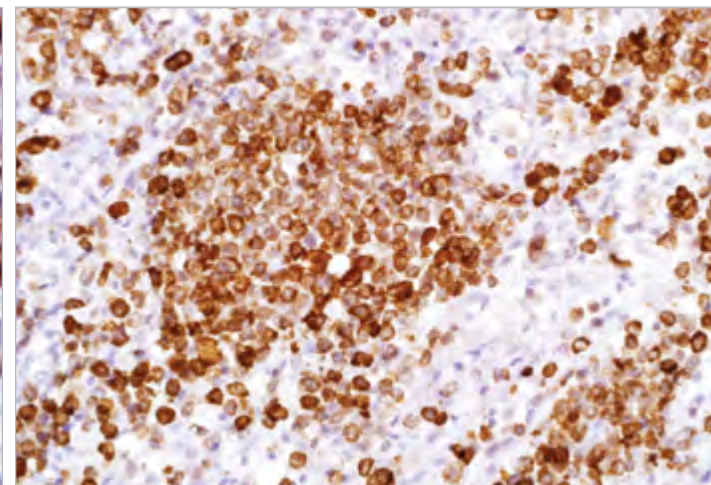




The cytoplasm of hairy cell leukemia cells are labeled by anti-TRAcP.



TRAcP (9C5) on marginal zone lymphoma.



TRAcP (9C5) on spleen, hairy cell leukemia.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** hairy cell leukemia

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2b</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas . . . . . 296

● Mature B-cell Neoplasms. . . . . 299

## Reference

1. Janckila AJ, et al. Blood. 1995; 85:2839-44.
2. Yaziji H, et al. Am J Clin Pathol. 1995; 104:397-402.
3. Janckila AJ, et al. J Histochem Cytochem. 1996; 44:235-44.
4. Janckila AJ, et al. Hybridoma. 1997; 16:175-82.
5. Hoyer JD, et al. Am J Clin Pathol. 1997; 108:308-15.
6. Janckila AJ, et al. Biotech Histochem. 1998; 73:316-24.

## Product Description

Tartrate resistant acid phosphatase (TRAcP) is a basic, iron-binding protein with high activity towards phosphoproteins, ATP and 4 nitrophenyl phosphate.<sup>1-4</sup> Expression of TRAcP is reported to be increased in the spleen and monocytes of individuals with Gaucher's disease, splenocytes and circulating white cells of individuals with hairy cell leukemia (HCL), spleens of individuals with Hodgkin disease, and the sera of individuals undergoing active bone turnover.<sup>1-3</sup> Elevated levels are also reported to be associated with various B-cell and T-cell leukemias and lymphomas, placental decidual cells, syncytiotrophoblasts, and some macrophages distributed throughout maternal and embryonic tissues.<sup>1-4</sup> The histochemical identification of HCL via tartrate-resistant acid phosphatase assay has been a standard for over two decades. Anti-TRAcP labels the cells of HCL with a high degree of sensitivity and specificity. Worthy also of mention in this regard are anti-annexin A1 and anti-CD11c. Other cells stained with anti-TRAcP are tissue macrophages and osteoclasts, which also express abundant TRAcP activity.<sup>1-5</sup>

## Panel Quick View

B-cell Lymphomas										
	TRAcP	BCL2	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	IgD	MUM1
Burkitt Lymphoma	-	-	+	-	+	-	+	-	-	-
CLL/SLL	-	+	-	+	-	+	+	-	+	+
Diffuse Large Cell Lymphoma	-	+	+/-	-/+	-/+	-	+	-	-	+/-
Follicular	-	+	+	-	+	-	+	-	+	-
Hairy Cell Leukemia	+	+	-	-	-	-	+	+ (weak) /-	-	
Lymphoplasmacytic	-	+	-	-	-	-	+	-	-	+
Malt Lymphoma		+	-/+		-	-	+	-		-
Mantle Cell	-	+	-	+	-	-	+	+	+	-
Marginal Zone	+/-	+	-	-	-	-	+	-	+	+
Marginal Zone BCL	+/-	+	-	-	-	-	+	-	-/+	+
Splenic Marginal Zone		+	-	-	-	-	+	-		+/-

## Ordering Information

### Clone: 9C5

### Mouse Monoclonal

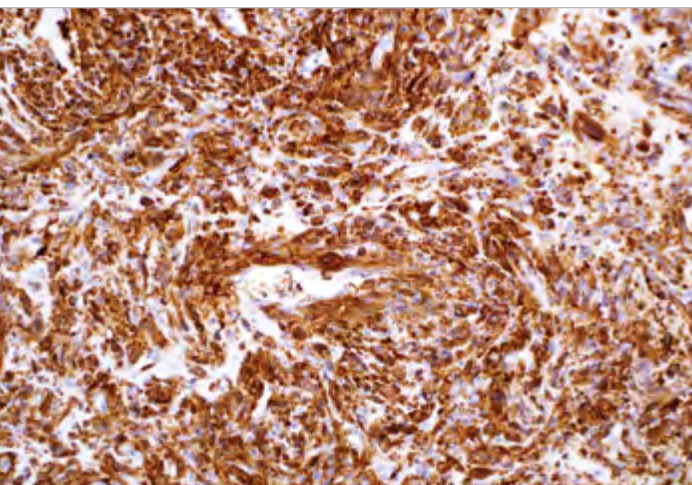
Volume . . . . .	Part No.
0.1 ml, concentrate . . . . .	341M-94
0.5 ml, concentrate . . . . .	341M-95
1 ml, concentrate . . . . .	341M-96
1 ml, predilute . . . . .	341M-97
7 ml, predilute . . . . .	341M-98

### Designations

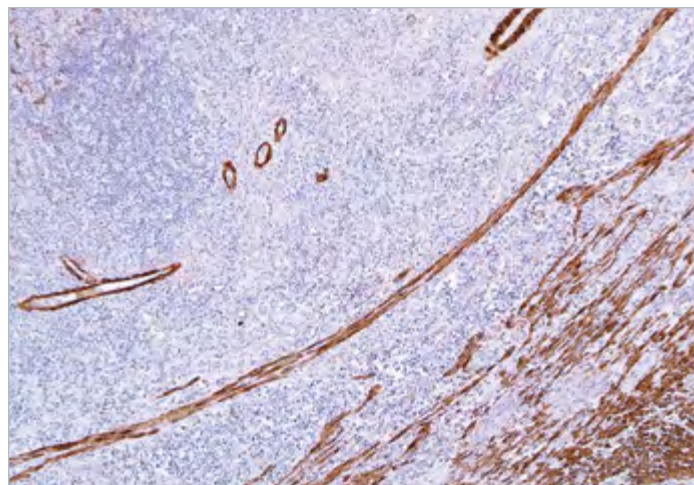
 IVD	 IVD	 IVD	 RUO
-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------



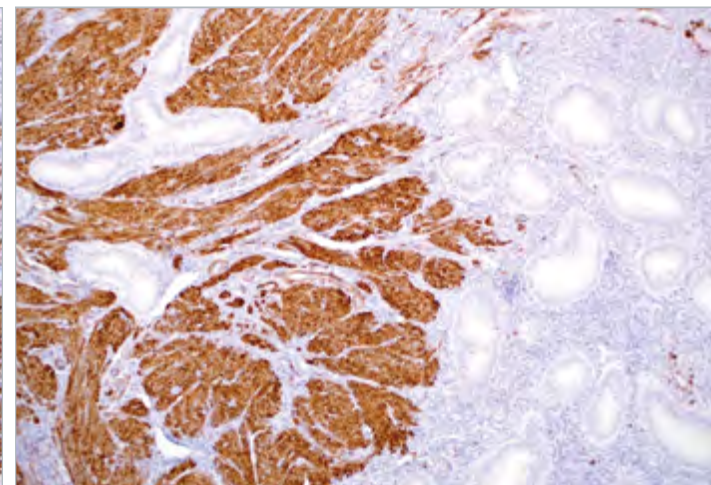
# Transgelin



Transgelin (2A10C2) labels smooth muscle elements in leiomyosarcoma.



Transgelin (2A10C2) on appendix.



Transgelin (2A10C2) on uterus.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** leiomyoma, smooth muscle tumors

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Soft Tissue Pathology

## Reference

1. Assinder SJ, et al. Int. Journal of Biochemistry and Cell Biology. 2009; 41:482-486.
2. Robin YM, et al. Modern Pathology. 2013; 4:502-10.
3. Pérot G, et al. Modern Pathology. 2014; 6:840-850.

## Product Description

Transgelin is a shape change sensitive 22-25 kDa actin cross-linking/gelling protein of the calponin family localized to the cell membrane and cytoplasm as a novel regulator of MMP-9 expression.<sup>1</sup> Recent evidence suggests that transgelin may act as a tumor suppressor; for example, expression can be lost in prostate, breast and colon cancers which is consistent with suppression of the metallo matrix protease-9 (MMP-9) by transgelin, whereas MMP-9 is upregulated in these common cancers.<sup>1</sup> This protein is ubiquitous to vascular and visceral smooth muscle and is considered an early marker of smooth muscle differentiation and may be an early and sensitive marker for the onset of transformation.<sup>2</sup> Transgelin can be found in fibroblasts, smooth muscle and some epithelium where expression is likely driven by TGF-beta1.<sup>3</sup> In some cases differentiating smooth muscle within malignant lesions can be challenging, therefore use of myogenic markers such as transgelin may serve to define smooth muscle differentiation in soft tissue tumors.<sup>1-3</sup>

## Panel Quick View

Hematopoietic and Lymphoid Cell Neoplasms										
	Trans-gelin	SM Actin	Cal-ponin	Caldes-mon	Desmin	DOG1	MyoD1	Myo-genin	S-100	TLE1
Leiomyosarcoma	+	+	+	+	+	-	-	+/-	-	-
Rhabdomyosarcoma	-	-/+	-	-	+	-	+	+	-	-
Synovial Sarcoma	-	-	+/-	-	-	-	-	-	-	+
Gastrointestinal stromal tumor	-	-	+/-	+/-	+/-	+	-	-	-	-
Schwannoma	-	-	-	-	-	-	-	-	+	-
Malignant Peripheral Nerve Sheath Tumor	+	-	-	-	-	-	-	-	+ focal	-/+

## Ordering Information

### Clone: 2A10C2

### Mouse Monoclonal

Volume	Part No.
0.1 ml, concentrate	423M-14
0.5 ml, concentrate	423M-15
1 ml, concentrate	423M-16
1 ml, predilute	423M-17
7 ml, predilute	423M-18

### Designations



IVD



IVD



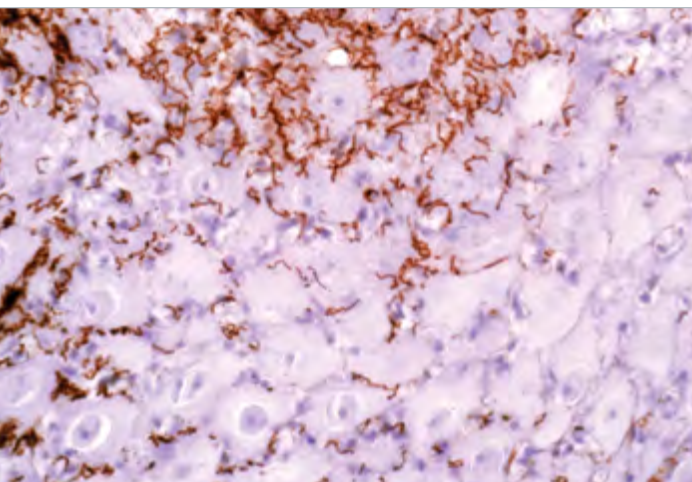
IVD



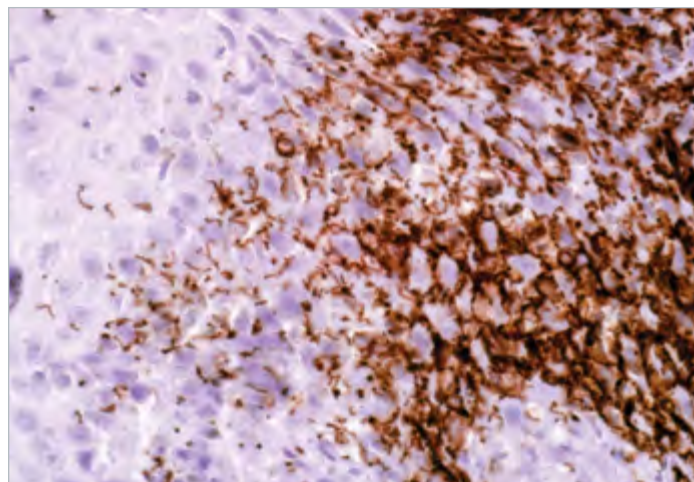
RUO



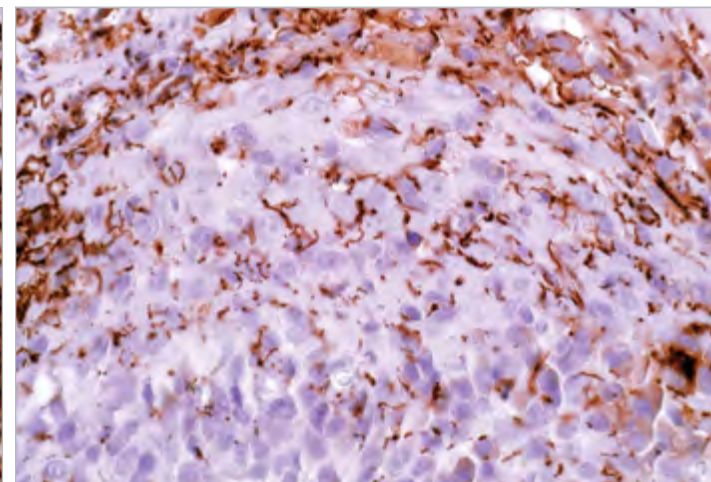
# Treponema pallidum



*Treponema pallidum* (polyclonal)



*Treponema pallidum* (polyclonal)



*Treponema pallidum* (polyclonal)

## Product Specifications

**Reactivity** paraffin

**Visualization** microorganism

**Control** treponema pallidum infected tissue

**Stability** up to 36 mo. at 2-8°C

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

**Clone: polyclonal**

Rabbit Polyclonal

**Volume . . . . .Part No.**

0.1 ml, concentrate . . . . .397A-14 (ASR)

0.5 ml, concentrate . . . . .397A-15 (ASR)

1 ml, concentrate . . . . .397A-16 (ASR)

1 ml, predilute . . . . .397A-17 (ASR)

7 ml, predilute . . . . .397A-18 (ASR)

## Designations



ASR<sup>†</sup>



IVD



IVD



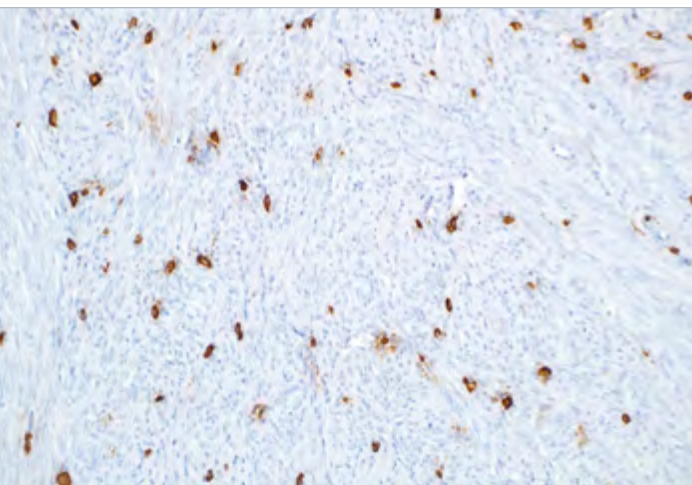
RUO

*†Analyte Specific Reagent: Analytical and performance characteristics are not established.*

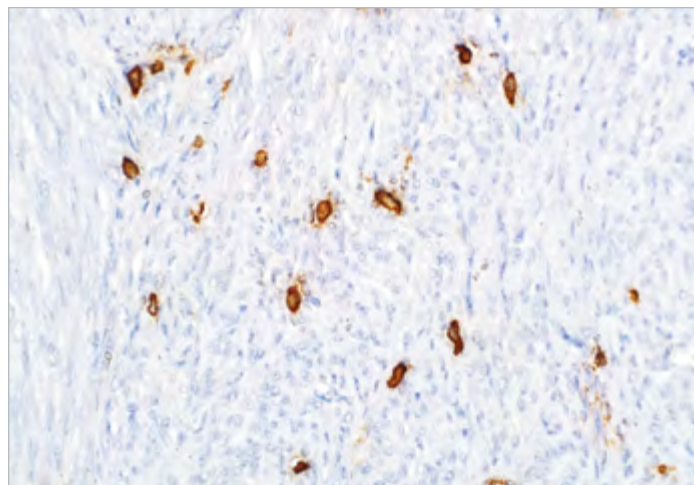
*For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.*

*For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.*

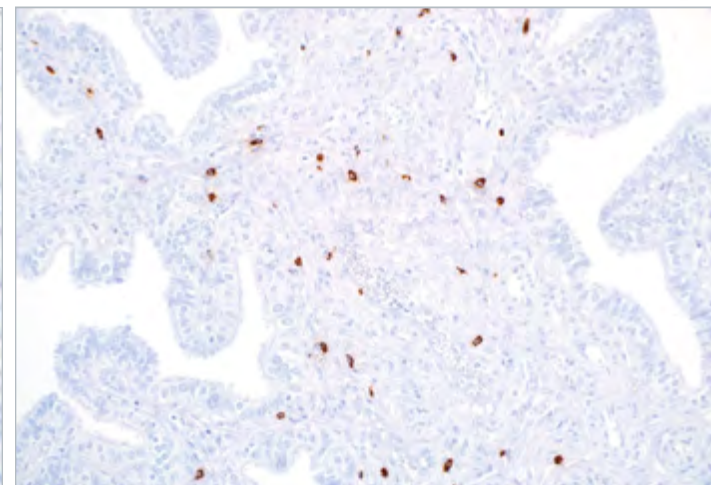
# Tryptase



Mast cells are labeled by anti-tryptase in leiomyoma.



Tryptase (G3) on leiomyoma.



Tryptase (G3) on fallopian tube.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** uterus

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>

## Associated Specialties

● Anatomic/Surgical Pathology

## Associated Panels

● Mastocytosis ..... 299

## Reference

1. Fiorucci L, et al. Cell Mol Life Sci. 2004; 61:1278-95.
2. Li CY. Leuk Res. 2001; 25:537-41.
3. Jordan JH, et al. Hum Pathol. 2001; 32:545-52.
4. Gordon LK, et al. Clin Immunol. 2000; 94:42-50.
5. Aoki M, et al. Int Arch Allergy Immunol. 2003; 130:216-23.
6. Roberts IS, et al. J Clin Pathol. 2000; 53:858-62.
7. Ghott A, et al. Am J Surg Pathol. 2003; 27:1013-9.

## Product Description

Tryptases constitute a subfamily of trypsin-like proteinases, stored in the mast cell secretory granules and basophils. Upon cellular activation, these enzymes are released into the extracellular environment. Anti-tryptase is a good marker for mast cells, basophils, and their derivatives.

## Panel Quick View

Mastocytosis	Tryptase	CD2	CD25	CD117	CD163
Systemic Mastocytosis	+	+	+	+	-
Mast Cell Leukemia	+	+	+	+	-
Reactive Mast Cells	+	-	-	+	+

## Ordering Information

### Clone: G3

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	342M-14
0.5 ml, concentrate.....	342M-15
1 ml, concentrate .....	342M-16
1 ml, predilute .....	342M-17
7 ml, predilute .....	342M-18

### Designations



IVD



IVD

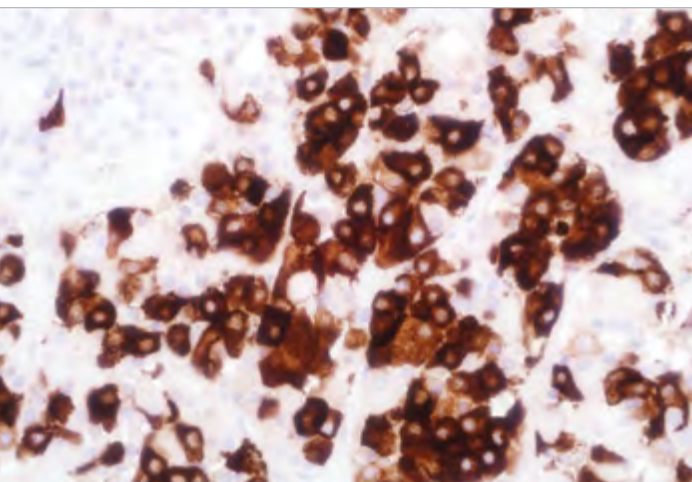


IVD

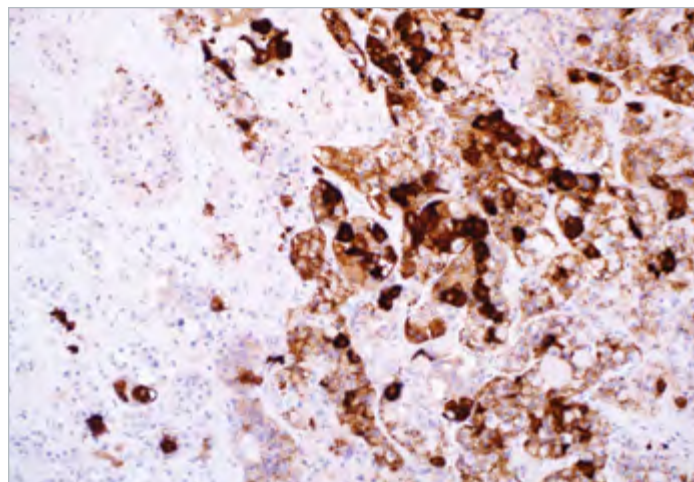


RUO

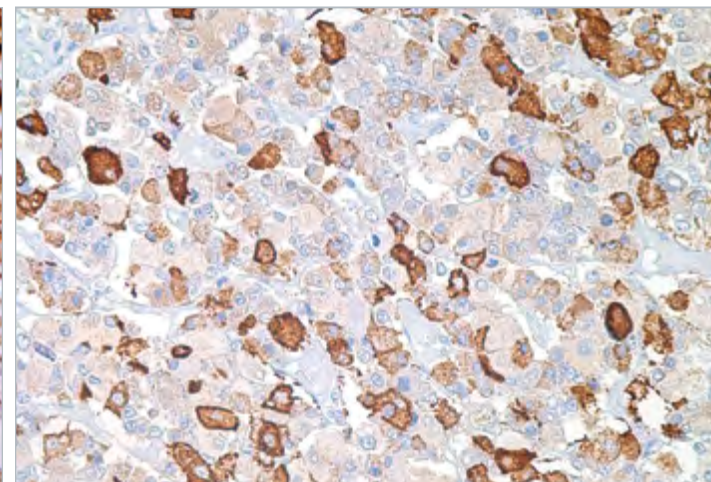




TSH (EP254) on pituitary.



TSH (EP254) on pituitary.



Cells in adenohypophysis are labeled by TSH (polyclonal).

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** pituitary

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

Thyrotropin

## Associated Specialties

- Anatomic/Surgical Pathology
- Neuropathology

## Reference

1. Batanero E, et al. Brain Behav Immun. 1992; 6:249-64.
2. Sanno N, et al. J Clin Endocrinol Metab. 1995; 80:2518-22.
3. La Rosa S, et al. Virchows Arch. 2000; 437:264-9.
4. Kuauya N, et al. J Clin Endocrinol Metab. 1990; 71:1103-11.
5. Clore JN, et al. Am J Med Sci. 1988; 295:3-5.

## Product Description

Thyroid-stimulating hormone (also known as TSH or thyrotropin) is a peptide hormone synthesized and secreted by thyrotrope cells in the anterior pituitary gland which regulate the endocrine function of the thyroid gland. TSH is a glycoprotein and consists of two subunits, the alpha and the beta subunit, which are non-covalently bound to one another. The alpha subunit of TSH is also present in two other pituitary glycoprotein hormones: Follicle stimulating hormone (FSH) and luteinizing hormone (LH) and, in primates, in the placental hormone chorionic gonadotropin (hCG). Each of these hormones also has a unique beta subunit, which provides receptor specificity. In other words, TSH is composed of alpha subunit bound to the TSH beta subunit, and TSH associates only with its own receptor. Free alpha and beta subunits have essentially no biological activity. Anti-TSH reacts with TSH-producing cells (thyrotrophs), and is a useful marker in classification of pituitary tumors and the differential identification of primary and metastatic tumors in the pituitary gland.<sup>1-5</sup>

## Ordering Information

**Clone: EP254**  
Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	211R-14
0.5 ml, concentrate.....	211R-15
1 ml, concentrate .....	211R-16
1 ml, predilute .....	211R-17
7 ml, predilute .....	211R-18

### Alternate Clones Available

- Rabbit Polyclonal

Contact us for more information.

### Designations



IVD



IVD



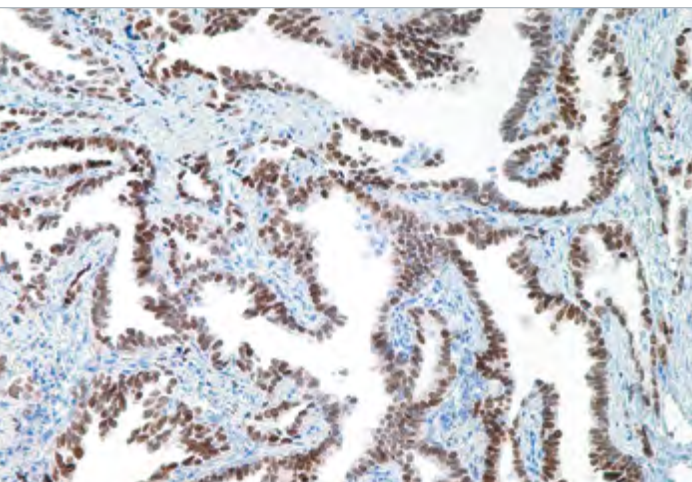
IVD



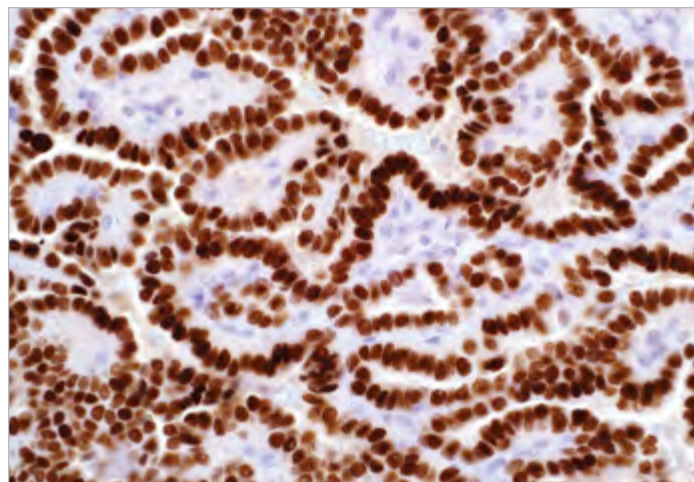
RUO

 **CELL MARQUE**

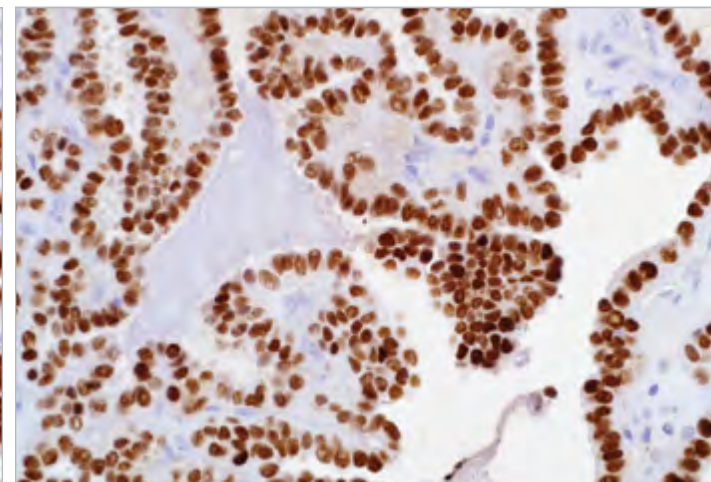
 **RabMab**<sup>®</sup>  
Technology from Abcam



Nuclear labelling of lung adenocarcinoma by TTF-1 (8G7G3/1).



TTF-1 (8G7G3/1) on papillary thyroid carcinoma.



TTF-1 (8G7G3/1) on papillary thyroid carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** lung adenocarcinoma

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- 8G7G3/1: IgG<sub>1</sub>
- EP229: IgG

## Associated Specialties

- Anatomic/Surgical Pathology
- Pulmonary Pathology

## Associated Panels

- Breast vs. Lung vs. Prostate Carcinoma ..... 286
- Carcinoma: Differential Diagnosis ..... 286
- Liver: Malignant vs. Benign... 288
- Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma ..... 289
- Micropapillary Carcinomas... 289
- Thyroid: Malignant vs. Benign . 291
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Lung Squamous Cell Carcinoma vs. Adenocarcinoma ..... 302
- Lung Adenocarcinoma vs. Mesothelioma ..... 302

## Reference

1. Bejarano PA, et al. Mod Pathol. 1996; 9:445-52.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-TTF-1 (Thyroid Transcription Factor 1) is useful in differentiating primary adenocarcinoma of the lung from metastatic carcinomas originating in the organs rather than thyroid<sup>1-2</sup>, germ cell tumors<sup>3</sup>, and malignant mesothelioma.<sup>4-5</sup> It can also be used to differentiate small cell lung carcinoma from lymphoid infiltrates.<sup>6</sup> TTF-1 labeling is also seen in thyroid and thyroid-derived tumors.<sup>7</sup> TTF-1 immunostaining is useful in the differentiation between pulmonary and nonpulmonary origin of adenocarcinomas in malignant effusions.<sup>8</sup> TTF-1 staining is very reliable in discerning whether a brain metastasis has arisen from a pulmonary or nonpulmonary site, particularly when dealing with adenocarcinomas and large-cell carcinomas.<sup>9</sup>

## Panel Quick View

### Breast vs. Lung vs. Prostate Carcinoma

	TTF-1	BRST-2	Mammaglobin	Napsin A	PSA
Breast Carcinoma	-	+	+	-	-
Lung Carcinoma	+	-	-	+	-
Prostate Carcinoma	-	-	-	-	+

### Liver: Malignant vs. Benign

	TTF-1	A1AT	AFP	CD34	mCEA	pCEA	GPC-3	Hep Par-1	p53
Hepatocellular Carcinoma	+ (cytoplasmic)	-/+	-/+	+	-	+	+	+	+
Hepatoblastoma	-	+	+	-	-	+	+	+	+
Benign Liver Nodules	+ (cytoplasmic)	+/-	-	-	-	-	-	+	-

### Thyroid: Malignant vs. Benign

	TTF-1	Calcitonin	CK 19	Galectin-3	HBME-1	Thyroglobulin
Papillary Carcinoma	+	-	+	+	+	+
Follicular Carcinoma	+	-	-	+	+/-	+
Medullary Carcinoma	+	+	+	-	+	-
Benign Thyroid	+	-	-	-	-	+

### Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma

	TTF-1	CD117	CEA	Chromogranin A	CK 20	E-cadherin	Neurofilament	Synaptophysin
Merkel Cell Carcinoma	-	+	-	+	+	+	+	+
Lung Small Cell Carcinoma	+	+/-	-	-	-	-	-	+

## Ordering Information

### Clone: 8G7G3/1

Mouse Monoclonal

**Volume** ..... **Part No.**

0.1 ml, concentrate ..... 343M-94

0.5 ml, concentrate ..... 343M-95

1 ml, concentrate ..... 343M-96

1 ml, predilute ..... 343M-97

7 ml, predilute ..... 343M-98

25 ml, predilute ..... 343M-90

### Clone: EP229

Rabbit Monoclonal

**Volume** ..... **Part No.**

0.1 ml, concentrate ..... 343R-14

0.5 ml, concentrate ..... 343R-15

1 ml, concentrate ..... 343R-16

1 ml, predilute ..... 343R-17

7 ml, predilute ..... 343R-18

## Designations



IVD



IVD



IVD



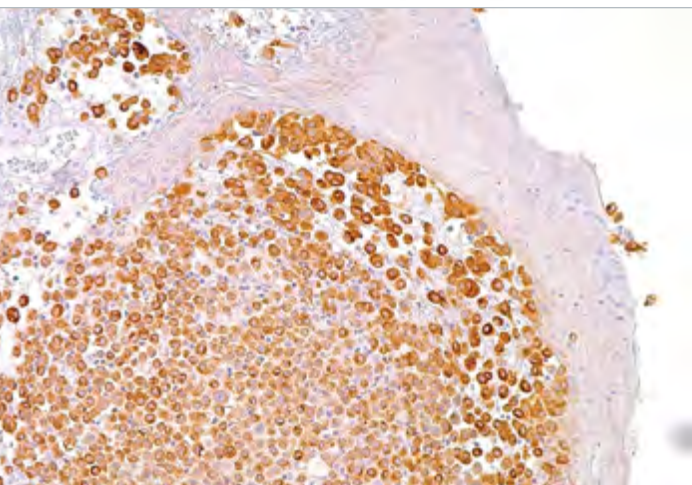
RUO

**CELL MARQUE**

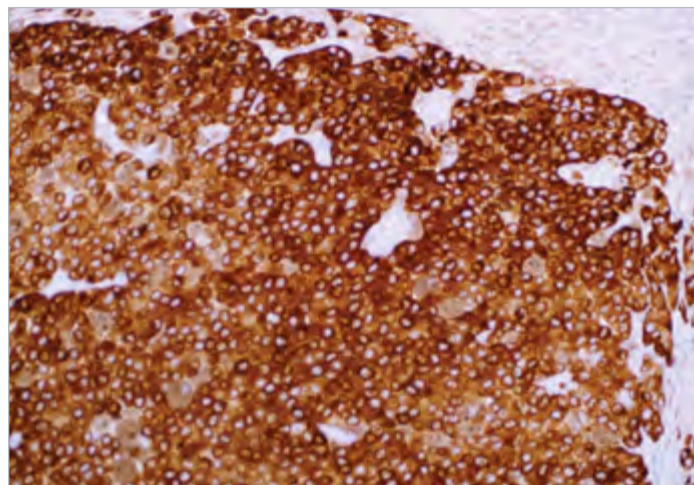
**RabMab**<sup>®</sup>  
Technology from Abcam



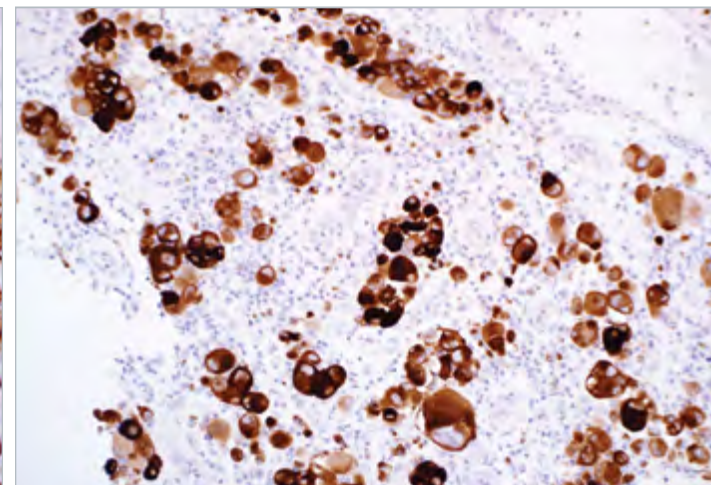
# Tyrosinase



Melanoma labeled by Tyrosinase (T311).



Tyrosinase (T311) on melanoma.



Tyrosinase (T311) on melanoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** melanoma, skin

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Dermatopathology

## Associated Panels

- Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor ..... 290
- Melanotic Lesions ..... 293

## Reference

1. Kaufmann O, et al. Mod Pathol. 1998; 11:740-6.
2. Busam KJ, et al. Am J Dermatopathol. 2000; 22:237-41.
3. Jungbluth AA, et al. Pathol Res Pract. 2000; 196:235-42.
4. Meije CB, et al. J Pathol 2000; 190:572-8.
5. Busam KJ, et al. Am J Dermatopathol. 2000; 22:237-41.
6. Hoang MP, et al. J Cutan Pathol. 2001; 28:400-6.
7. Kanitakis J, et al. Am J Dermatopathol. 2002; 24:498-501.
8. Eudy GE, et al. Hum Pathol. 2003; 34:797-802.
9. Jaanson N, et al. Melanoma Res. 2003; 13:473-82.

## Product Description

Tyrosinase is an enzyme, amongst a family of enzymes, which is involved in the biosynthesis of melanin. Anti-tyrosinase has been found to be quite specific for melanotic lesions such as malignant melanoma and melanotic neurofibroma. Essentially no carcinomas express this marker.

## Panel Quick View

Melanotic Lesions	Tyrosinase	CD63	Factor XIIIa	HMB-45	MART-1	MiTF	NGFR	S-100	SOX-10	WT1
Adrenal Cortical	-	-	-	-	+	-	-	+	-	-
Adult Melanocytes	+	+	-	-	+	+	-	+	+	-
Angiomyolipoma	+/-	+	-	+	+	+	-	+	+	-
Dermatofibroma	-	-	+	-	-	-	-	-	-	-
Interdermal Nevus	+	-	-	-	+	+	+	+	+	+/-
Intranodal Nevus Cells	+	-	-	-	+	+	-	+	+	-
Junctional Nevus	+	-	-	+	+	+	+	+	+	+/-
Metastatic Melanoma	+	+	-	+	+	+	-	+	+	+
Primary Melanoma	+	+	-	+	+	+	-	+	+	+
Spindle Cell Melanoma	+	+	-	+	+	+	+	+	+	+

## Ordering Information

### Clone: T311

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	344M-94
0.5 ml, concentrate.....	344M-95
1 ml, concentrate .....	344M-96
1 ml, predilute .....	344M-97
7 ml, predilute .....	344M-98

### Designations



IVD



IVD

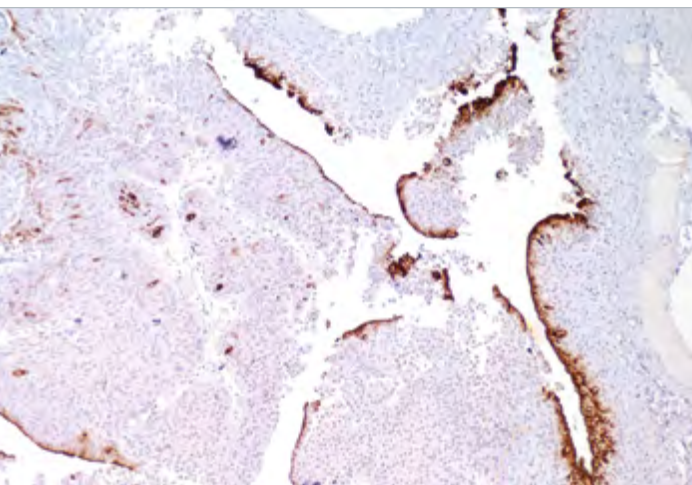


IVD

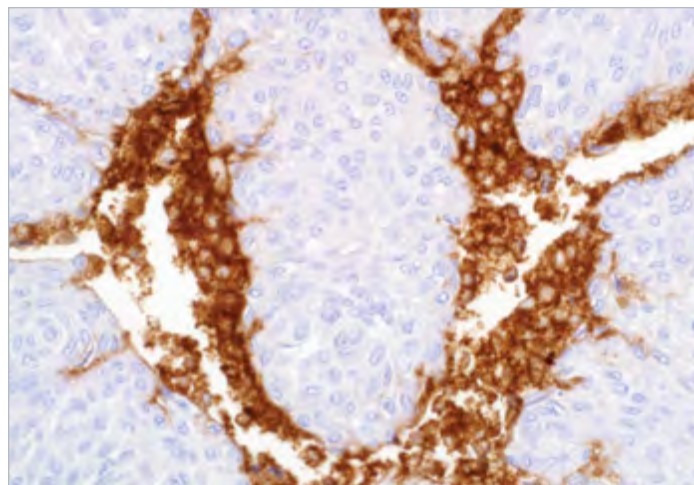


RUO

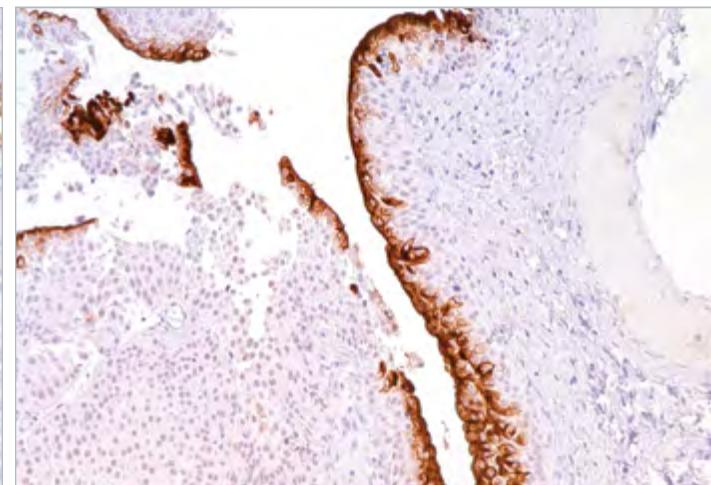
# Uroplakin III



Uroplakin III (SP73) labels the superficial layer of cells in transitional cell carcinoma of the bladder.



Uroplakin III (SP73) on transitional cell carcinoma.



Uroplakin III (SP73) on transitional cell carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** bladder

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG

## Synonyms and Abbreviations

URO III

UP III

## Associated Specialties

● Genitourinary (GU) Pathology

## Associated Panels

● Micropapillary Carcinomas... 289

● Prostate Lesions ..... 296

● Squamous Cell Carcinoma vs Urothelial Carcinoma ..... 296

## Reference

- Moll R, et al. Am J Pathol. 1995; 147:1383-1397.
- Olsburgh J, et al. J Pathol. 2003; 199:41-49.
- Ohtsuka Y, et al. BJU Int. 2006; 97:1322-63.

## Product Description

Uroplakins (UPs) are a family of transmembrane proteins (UPs Ia, Ib, II and III) that are specific differentiation products of urothelial cells. In non-neoplastic mammalian urothelium, UPs are expressed in the luminal surface plasmalemma of superficial (umbrella) cells, forming complexes of 16nm crystalline particles. Anti-UPIII was detectable immunohistochemically in 29 of 55 primary (53%) and 23 of 35 metastatic (66%) urothelial carcinomas, whereas many non-urothelial carcinomas were anti-UPIII negative.<sup>1</sup> The authors concluded that anti-UPIII should be a valuable marker, especially for the specific identification of urothelial carcinomas in patients with metastases of unknown primary site. Olsburgh et al. studied anti-UPIII gene expression in normal urothelium and bladder cancer specimens, and found that expression was absent after malignant transformation.<sup>2</sup> Thus, UP expression might reflect the malignant potential of urothelial cancer cells as well as being cytodifferential markers of urothelial cells. Ohtsuka et al. concluded in their studies that anti-UPIII expression was strongly associated with lower tumor grades, that lack of UPIII expression in urothelial tumors of the upper urinary tract was associated with much higher rates of metastases, and that 5-year specific survival was much worse for anti-UPIII negative tumors (54%) than for anti-UPIII positive tumors (100%).<sup>3</sup> Apparently, UPIII expression characteristics are a better indicator of the malignant potential of urothelial carcinomas than the grade of these tumors.

## Panel Quick View

Prostate Lesions								
	URO III	CK 34βE12	CK 7	PAX-2	p63	P504s	PSA/PSAP	TBM*
Prostate Carcinoma	-	-	-	-	-	+	+	-
Urothelial Carcinoma	+	+	+	-	+	-	-	+
Nephrogenic Adenoma	-	+/-	+	+	-	+	-	-

\*Thrombomodulin

## Squamous Cell Carcinoma vs Urothelial Carcinoma

	URO III	CK 34βE12	CK 5	CK 7	CK 20
Squamous Carcinoma	-	+	+	-	-
Urothelial Carcinoma	+	+	-/+	+	+

## Ordering Information

### Clone: SP73

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	345R-14
0.5 ml, concentrate.....	345R-15
1 ml, concentrate .....	345R-16
1 ml, predilute .....	345R-17
7 ml, predilute .....	345R-18

### Alternate Clones Available

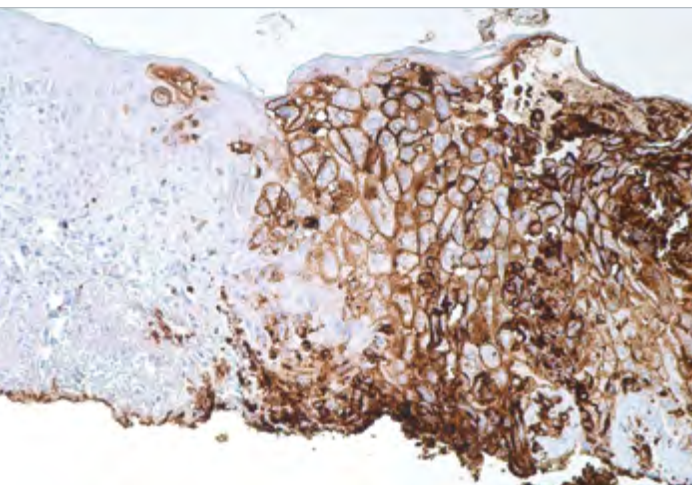
- Mouse Monoclonal, AU-1
- Contact us for more information.

### Designations

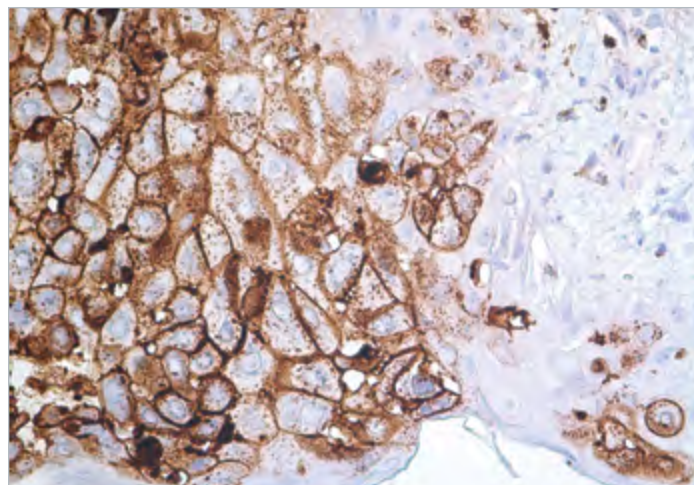




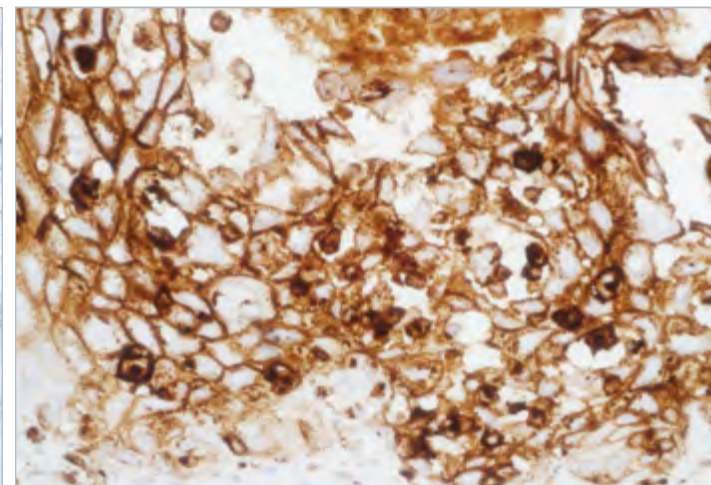
# Varicella Zoster Virus



Varicella Zoster Virus (SG1-1, SG1-SG4, NCP-1 & IE-62)



Varicella Zoster Virus (SG1-1, SG1-SG4, NCP-1 & IE-62)



Varicella Zoster Virus (SG1-1, SG1-SG4, NCP-1 & IE-62)

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic,  
membranous

**Control** varicella zoster virus infected  
tissue

**Stability** up to 36 mo. at 2-8°C

## Product Description

Analyte Specific Reagent: Analytical and performance characteristics are not determined.

## Ordering Information

**Clone: SG1-1, SG1-SG4,  
NCP-1 & IE-62**  
Mouse Cocktail

**Volume . . . . .Part No.**

0.1 ml, concentrate . . . 364M-14 (ASR)

0.5 ml, concentrate . . . 364M-15 (ASR)

1 ml, concentrate . . . . 364M-16 (ASR)

1 ml, predilute . . . . . 364M-17 (ASR)

7 ml, predilute . . . . . 364M-18 (ASR)

## Designations



ASR<sup>†</sup>



IVD



IVD

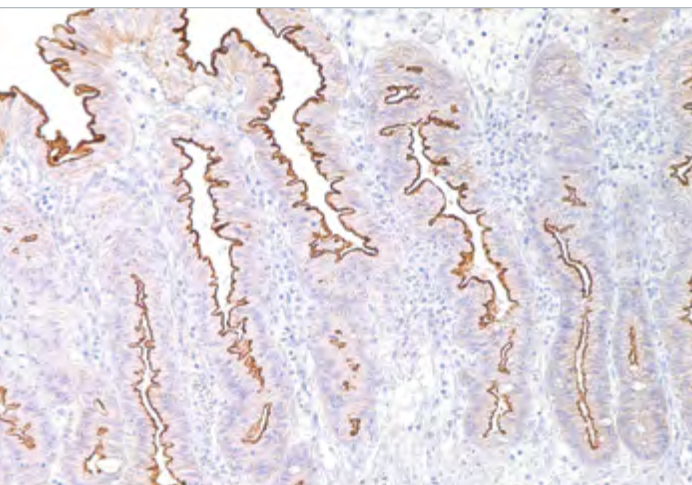


RUO

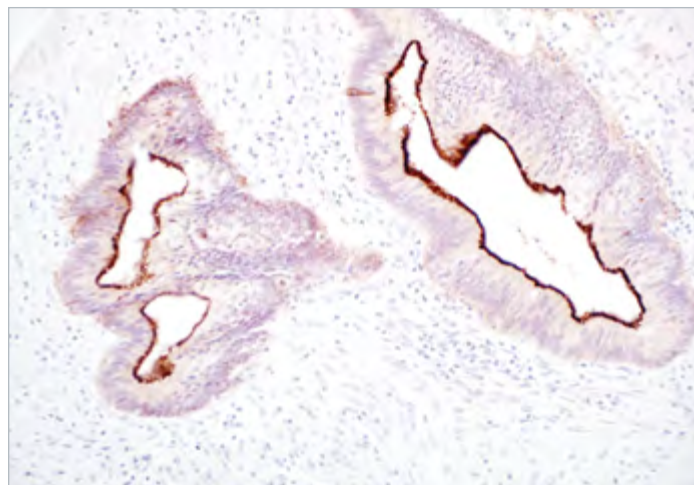
<sup>†</sup>Analyte Specific Reagent: Analytical and performance characteristics are not established.

For IVD product, please remove the "ASR" suffix from the end of the catalog number when ordering.

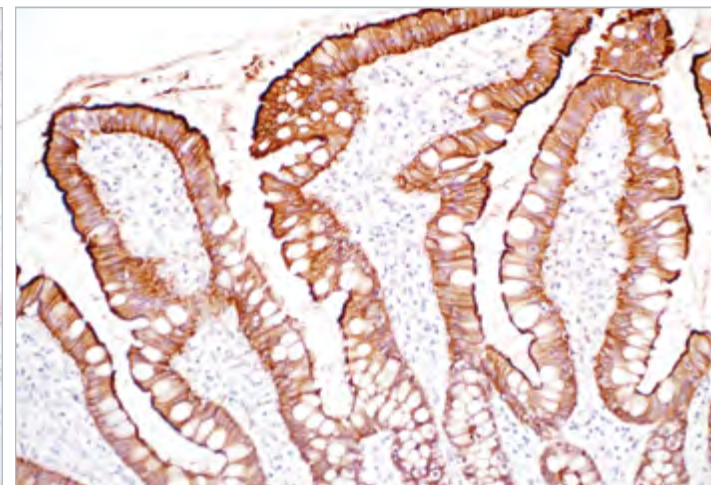
For RUO product, please replace the "ASR" suffix with an "RUO" suffix at the end of the catalog number when ordering.



Small bowel mucosa is labeled by Villin (CWWB1) in the spiral region.



Villin (EP163) on colon carcinoma.



Villin (EP163) on colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic, membranous

**Control** colon

**Stability** up to 36 mo. at 2-8°C

**Isotype**

- CWWB1: IgG<sub>1</sub>
- EP163: IgG<sub>1</sub>

## Associated Specialties

- Gastrointestinal (GI) Pathology

## Associated Panels

- Carcinomas. .... 286

## Reference

1. Leong AS-Y, et al. Manual of diagnostic antibodies for immunohistochemistry. London: Greenwich Medical Media Ltd. 1999. Print. p. 162-168.
2. Tan J, et al. Hum Pathol. 1998; 29:390-6.
3. Goldstein NS, et al. Am J Clin Pathol. 2001; 116:319-25.
4. Tamboli P, et al. Arch Pathol Lab Med. 2002; 126:1057-63.
5. Zhang PJ, et al. Arch Pathol Lab Med. 1999; 123:812-6.
6. Toyoshima K, et al. J Histochem Cytochem. 1998; 46:1329-34.

## Product Description

Villin is a 95 kD glycoprotein of microvilli associated with rootlet formation in gastrointestinal mucosal epithelium. Anti-villin labels the brush border area in the gastrointestinal mucosal epithelium.<sup>1</sup> This antibody has been useful in differentiating gastrointestinal adenocarcinoma, neuroendocrine carcinomas, and ovarian adenocarcinomas from adenocarcinomas of other organs.<sup>2-5</sup> This antibody also labels Merkel cells of the skin.<sup>6</sup>

## Panel Quick View

Carcinomas										
	Villin	CK 7	CK 20	CK Cocktail	CK, LMW	BRST-2	Hep-Par1	p63	RCC	TTF-1
Bladder Adenocarcinoma/ Carcinoma	+	+	+	+	+	-	-	-	-	-
Cervical Carcinoma	-	+	-	+		-	-	-	-	-
Colorectal Adenocarcinoma	+	-	+	+	+	-	-	-	-	-
Gastric Carcinoma	+	+	-	+		-	-	-	-	-
Hepatocellular Carcinoma	-	-	-	-	-	-	+	-	-	+ (cytoplasmic)
Lung Adenocarcinoma	-	+	-	+	+	-	-	-	-	+
Pancreatic Carcinoma	-	+	-	+	+	-	-	-	-	-
Prostate Adenocarcinoma/ Carcinoma	-	-	-		+	-	-		-	-
Salivary Gland Carcinoma	-	+	-	+	+	+	-	+	-	
Sweat Gland Carcinoma	-	+	-	+	+	-	-	+	-	
Transitional Cell Carcinoma	-	+	+	+	+	-	-	+	-	-

## Ordering Information

### Clone: CWWB1

Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	346M-14
0.5 ml, concentrate.....	346M-15
1 ml, concentrate .....	346M-16
1 ml, predilute .....	346M-17
7 ml, predilute .....	346M-18

### Clone: EP163

Rabbit Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	346R-14
0.5 ml, concentrate.....	346R-15
1 ml, concentrate .....	346R-16
1 ml, predilute .....	346R-17
7 ml, predilute .....	346R-18

## Designations



IVD



IVD



IVD



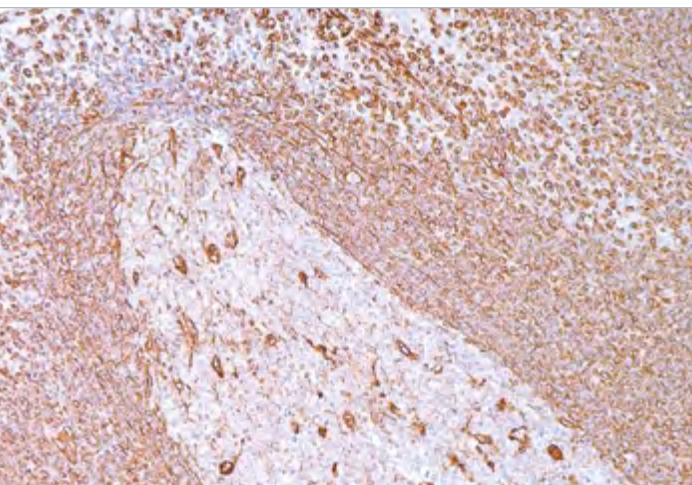
RUO

**CELL MARQUE**

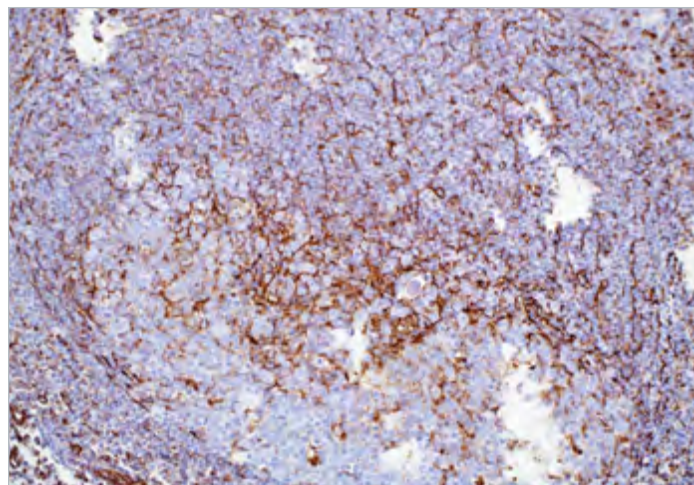
**RabMab®**  
Technology from Abcam



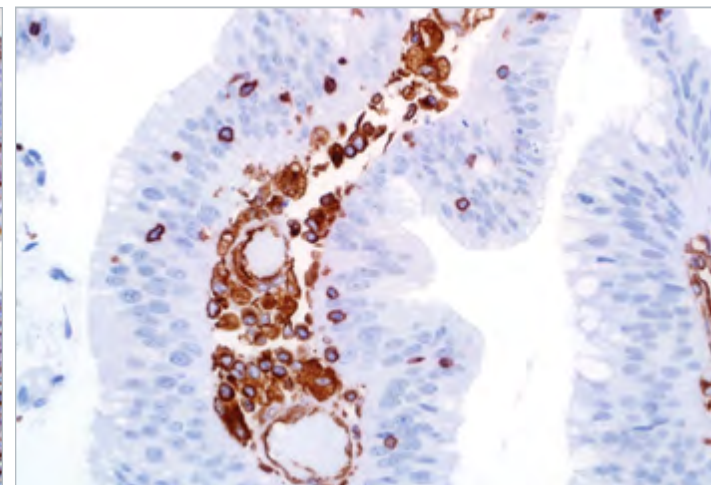
# Vimentin



Lymphocyte/germinal center cells are labeled by Vimentin (V9) in the tonsil.



Vimentin (V9) on tonsil.



Vimentin (SP20) on colon.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** tonsil, lymph node

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG/k

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Carcinomas. . . . . 286
- Placental Trophoblastic Proliferations . . . . . 292
- Uterus: Trophoblastic Proliferations . . . . . 292
- Sex Cord Stromal Tumors . . . . . 292
- Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors. . 293
- Skin: Pagetoid Tumors . . . . . 294
- Germ Cell Tumors. . . . . 295
- Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma. . . . 295
- Kidney: Renal Epithelial Tumors . . . . . 295
- Histiocytic Proliferation . . . . . 297
- Brain: CNS Tumors 1 . . . . . 300
- Brain: CNS Tumors 2 . . . . . 301
- Muscle Malignant Tumors. . . . . 302
- Small Blue Round Cell Tumors. 302

## Reference

- Ishii Y, et al. Clin Exp Immunol. 1984; 58:183-192.

For the complete list of references visit our educational website at [www.cellmarque.com](http://www.cellmarque.com)

## Product Description

Anti-vimentin is of limited value as a diagnostic tool; however, when used in combination with other antibodies (in panels) it is useful for the subclassification of a given tumor. Expression of vimentin, when used in conjunction with anti-keratin, is helpful when distinguishing melanomas from undifferentiated carcinomas and large cell lymphomas. All melanomas and Schwannomas react strongly with anti-vimentin. This antibody recognizes a 57 kD intermediate filament. It labels a variety of mesenchymal cells, including melanocytes, lymphocytes, endothelial cells, and fibroblasts. Non-reactivity of anti-vimentin is often considered more useful than its positive reactivity, since there are a few tumors that do not contain vimentin, e.g. hepatoma and seminoma. Anti-vimentin is also useful as a tissue process control reagent.

## Panel Quick View

Kidney: Renal Epithelial Tumors								
	Vimentin	CD10	CD117	Ep-CAM	Ksp-cadherin	Parvalbumin	PAX-2	RCC
Clear Cell RCC	+	+	-	-	-	-	+	+
Chromophobe RCC	-	-/+	+	+	+	+	+	-/+
Papillary RCC	+	+	+	-	-/+	-	-	+
Oncocytoma	-	+/-	+	-	+/-	+	+	-

Brain: CNS Tumors 2								
	Vimentin	CK Cocktail	EMA	GFAP	INI-1	NGFR	PR	S-100
Astrocytoma	+	-	-	+	+	+	-	+
Glioblastoma	+	-	-	+	+	-	-	+
Oligodendroglioma	+	-	-	-	+	-	-	+
Ependymoma	-/+	- (+ AE1 & AE3)	-	+	+	+	-	+
Meningioma	+	-	+	-	+	-	+	-
Schwannoma	+	-	-	+	+	+	-	+

Small Blue Round Cell Tumors										
	Vimentin	MS Actin	CD57	CD99	CK Cocktail	FLI-1	INI-1	Myogenin	PGP 9.5	WT1
Leiomyosarcoma	+	+	+/-	-	-/+	-	-	-	-	-
Rhabdomyosarcoma	+	+	-	-	-	-	+	+	+	-
Embryonal Carcinoma	-	-	+	-	+	-	+	-	+	-
PNET/ES	+	-	+	+	-/+	+	+	-	+	-
DSRCT	+	-	+/-	-	+	+	+	-	-	+

## Ordering Information

### Clone: V9

Mouse Monoclonal

Volume . . . . .	Part No.
0.1 ml, concentrate. . . . .	347M-14
0.5 ml, concentrate. . . . .	347M-15
1 ml, concentrate . . . . .	347M-16
1 ml, predilute . . . . .	347M-17
7 ml, predilute . . . . .	347M-18
25 ml, predilute . . . . .	347M-10

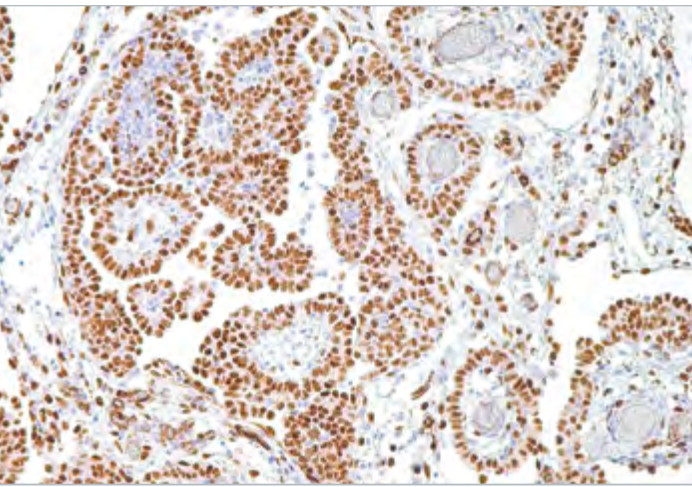
### Alternate Clones Available

- Rabbit Monoclonal, SP20
- Contact us for more information.

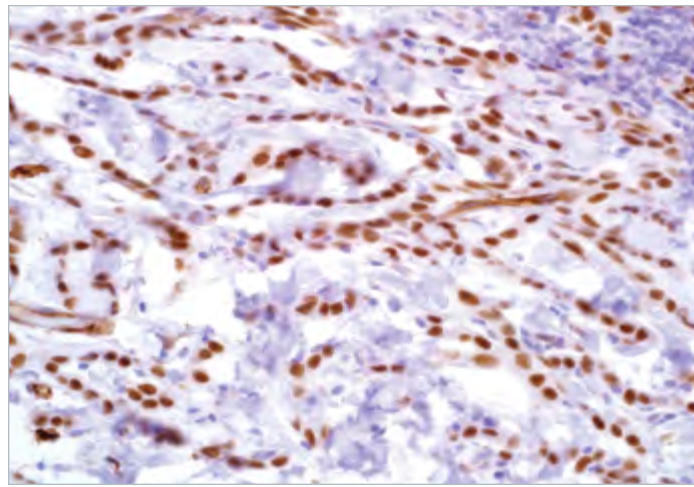
### Designations



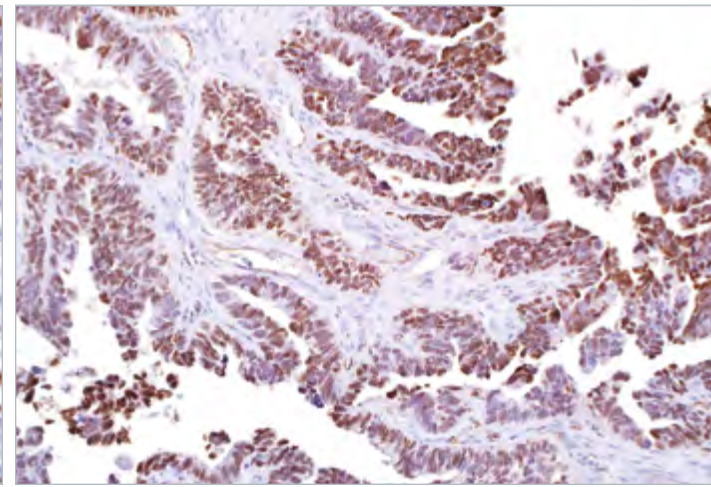




Nuclear labelling of cells of mesothelioma by WT1 (6F-H2).



WT1 (6F-H2) on mesothelioma.



WT1 (6F-H2) on serous ovarian carcinoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** nuclear

**Control** ovarian serous carcinoma, mesothelioma, kidney, testis

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>1</sub>/k

## Associated Specialties

- Anatomic/Surgical Pathology

## Associated Panels

- Colon vs. Ovarian Carcinoma... 287
- Micropapillary Carcinomas... 289
- Ovarian Carcinomas... 292
- Melanotic Lesions... 293
- Pleura: Adenocarcinoma vs. Mesothelioma... 302
- Small Blue Round Cell Tumors... 302

## Reference

- Tsuta K, et al. Appl Immunohistochem Mol Morphol. 2009; 17:126-130.
- Marchevsky AM. Arch Pathol Lab Med. 2008; 132:397-401.
- Ordonez NG. Am J Surg Pathol. 1998; 22:1203-1214.
- Ordonez NG. Arch Pathol Lab Med. 2005; 129:1407-1414.
- Yaziji H, et al. Mod Pathol. 2006; 19:514-523.
- Goldstein NS, et al. Am J Clin Pathol. 2002; 117:541-545.
- Barnoud R, et al. Am J Surg Pathol. 2000; 24:830-836.

## Product Description

Anti-WT1 is useful in the differential diagnosis of pulmonary malignancies in that up to 93% of malignant mesotheliomas (nuclei) are labeled with this antibody. In contrast, the nuclei of lung adenocarcinomas are not labeled with this product (0 of 50 in a recent study).<sup>1-5</sup> However, cytoplasmic labeling of lung adenocarcinomas may be observed. The differential diagnosis of abdominal papillary carcinomas can be problematic. Anti-WT1 labels 93% of serous ovarian carcinomas and 0% (nuclei) of mucinous carcinomas of the ovary and pancreato-biliary carcinomas.<sup>6</sup> Anti-WT1 can also be utilized in the differential diagnosis of small round cell tumors as 100% of desmoplastic small round cell tumors and 70% of neuroblastomas (Wilm's tumor) are positive (nuclei) for this marker. Tumors such as Ewings sarcoma/PNET, neuroblastomas, rhabdomyosarcomas, and rhabdoid tumors are negative. Occasionally cytoplasmic labeling may be seen in these tumors, however.<sup>7</sup>

## Panel Quick View

Colon vs. Ovarian Carcinoma						
	WT1	CA-125	CDX-2	CEA	CK 7	CK 20
Ovarian Carcinoma, Serous	+	+	-	+	+	-
Ovarian Carcinoma, Mucinous	-	-	+	-	+	-
Ovarian Carcinoma, Endometrioid	+	+	-	-	+	-
Colorectal Carcinoma / Colon Carcinoma	-	-	+	+	-	+

Pleura: Adenocarcinoma vs. Mesothelioma										
	WT1	Caldesmon	Calretinin	CK 5	Ep-CAM	E-cadherin	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	-	-	-	-	+	+	-	-	+	+
Mesothelioma	+	+	+	+	-	-	+	+	-	-

Small Blue Round Cell Tumors											
	WT1	MS Actin	SM Actin	CD57	CD99	CK Cocktail	FLI-1	Myogenin	PGP 9.5	Vimentin	
Lymphoblastic Lymphoma	-	-	-	-	+	-	+	-	-	+	
Leiomyosarcoma	-	+	+	+/-	-	-/+	-	-	-	+	
Rhabdomyosarcoma	-	+	-	-	-	-	-	+	+	+	
Neuroblastoma	-	-	-	+	-	-	-	-	+	+	
Embryonal Carcinoma	-	-	-	+	-	+	-	-	+	-	
PNET/ES	-	-	-	+	+	-/+	+	-	+	+	
DSRCT	+	-	-	+/-	-	+	+	-	-	+	

## Ordering Information

### Clone: 6F-H2

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate .....	348M-94
0.5 ml, concentrate .....	348M-95
1 ml, concentrate .....	348M-96
1 ml, predilute .....	348M-97
7 ml, predilute .....	348M-98
25 ml, predilute .....	348M-90

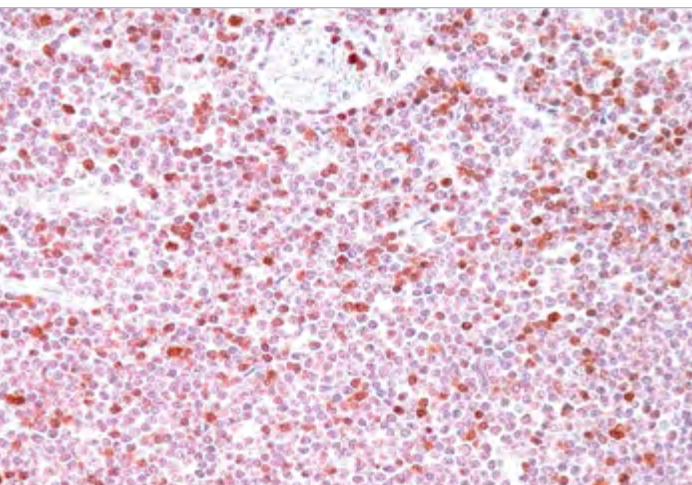
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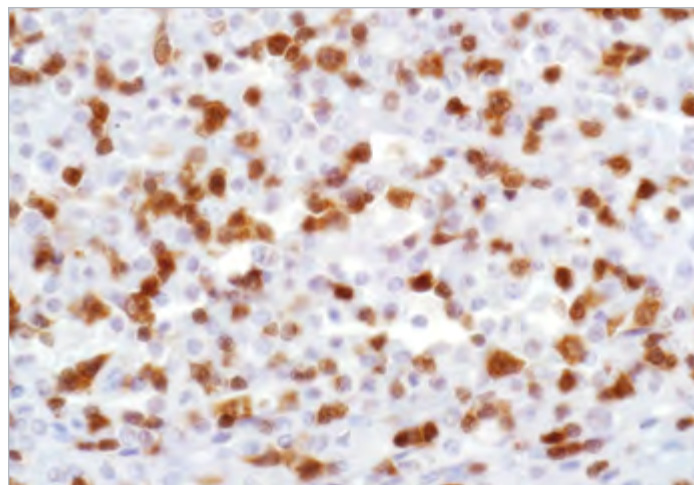
IVD IVD IVD RUO



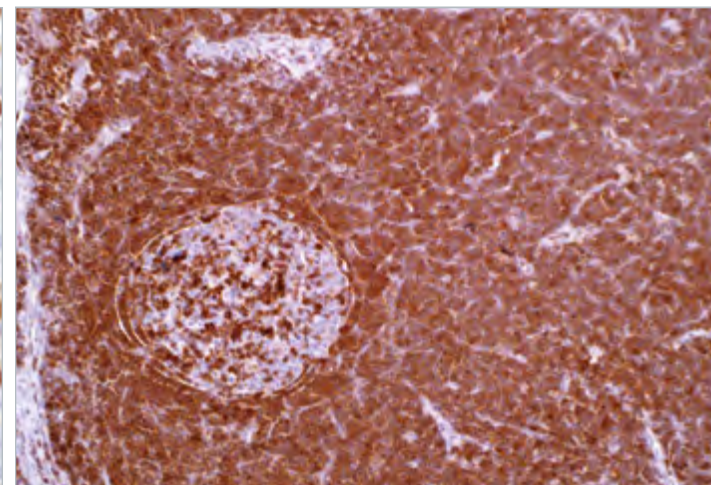
# ZAP-70



Nuclear and cytoplasmic labelling of chronic lymphocytic leukemia cells by ZAP-70 (2F3.2).



ZAP-70 (2F3.2) on low-grade lymphoma.



ZAP-70 (2F3.2) on small lymphocytic lymphoma.

## Product Specifications

**Reactivity** paraffin

**Visualization** cytoplasmic

**Control** CLL/SLL, tonsil

**Stability** up to 36 mo. at 2-8°C

**Isotype** IgG<sub>2a</sub>

## Associated Specialties

● Hematopathology

## Associated Panels

● B-cell Lymphomas ..... 296

## Reference

1. Wiestner A et al. Blood 15 June 2003. Vol. 101, No. 12, p. 4944-4951.
2. Crespo M. et al. N Engl J Med 348;18 May 1, 2003, p.1764-1775
3. Chen L et al. Blood. 2002 Dec 15;100(13):4609-14

## Product Description

Zeta-associated protein-70 (ZAP-70), a member of the Syk family of tyrosine kinases, has an important role in T-cell receptor signaling, natural killer cell activation, and early B-cell development.<sup>1</sup> ZAP-70 protein is not expressed in most normal mature B-cells, but is expressed in various B- and T-cell lymphomas.<sup>1</sup> Attempts to implement ZAP-70 analysis in clinical flow cytometry laboratories have been fraught with difficulty; this approach is technically challenging and results often have been unreliable. Detection of ZAP-70 protein by immunohistochemistry using tissue sections of chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL) is an easy and inexpensive technique.<sup>1</sup> The clinical course of CLL/SLL is extremely variable: in some patients it is aggressive and requires chemotherapy within a relatively short time of diagnosis; in others it is indolent and asymptomatic and may not require treatment for many years.<sup>2</sup> It has recently been demonstrated that the mutational status of the immunoglobulin heavy-chain variable-region (IgVH) genes identifies 2 distinct groups of CLL/SLL: the patients with unmutated IgVH have an unfavorable clinical course, whereas those with mutated IgVH experience a favorable course. The reasons for the differences in the clinical course of CLL patients with mutated and unmutated IgVH genes are not clear. ZAP-70 expression is the best discriminator of mutated and unmutated IgVH genes<sup>3</sup>, ZAP-70 positive (>20% tumor cells) being Ig-unmutated and ZAP-70 negative being Ig-mutated. Wiestner et al.<sup>3</sup> demonstrated that ZAP-70 expression levels assessed by means of Western blotting, real-time RT-PCR and immunohistochemistry are closely correlated with IgVH mutational status.

## Panel Quick View

B-cell Lymphomas										
	ZAP-70	ANXA1	BCL2	BCL6	CD5	CD10	CD23	CD79a	Cyclin D1	MUM1
Burkitt Lymphoma	-	-	-	+	-	+	-	+	-	-
CLL/SLL	+/-	-	+	-	+	-	+	+	-	+
Diffuse Large Cell Lymphoma	-	-	+	+/-	-/+	-/+	-	+	-	+/-
Follicular	-	-	+	+	-	+	-	+	-	-
Hairy Cell Leukemia	-	+	+	-	-	-	-	+	+ (weak) /-	
Lymphoplasmacytic	-	-	+	-	-	-	-	+	-	+
Malt Lymphoma			+	-/+		-	-	+	-	-
Mantle Cell	-	-	+	-	+	-	-	+	+	-
Marginal Zone	-	-	+	-	-	-	-	+	-	+
Marginal Zone BCL	-	-	+	-	-	-	-	+	-	+
Splenic Marginal Zone		-	+	-	-	-	-	+	-	+/-

*This product is for in vitro diagnostic use only. It is not to be used for any other commercial purpose. Use of this product to produce products for sale or for research, therapeutic or drug discovery purposes is prohibited. In order to obtain a license to use this product for any purpose other than in vitro diagnostic use, contact Cell Marque™.*

## Ordering Information

### Clone: 2F3.2

### Mouse Monoclonal

Volume .....	Part No.
0.1 ml, concentrate.....	349M-94
0.5 ml, concentrate.....	349M-95
1 ml, concentrate .....	349M-96
1 ml, predilute .....	349M-97
7 ml, predilute .....	349M-98

### Designations



IVD



IVD



IVD



NA

# Positive Control Slides

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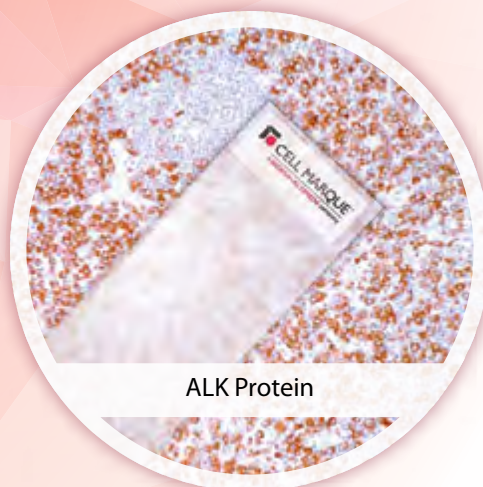
# Positive Control Slides

## Take Control of Your IHC Staining

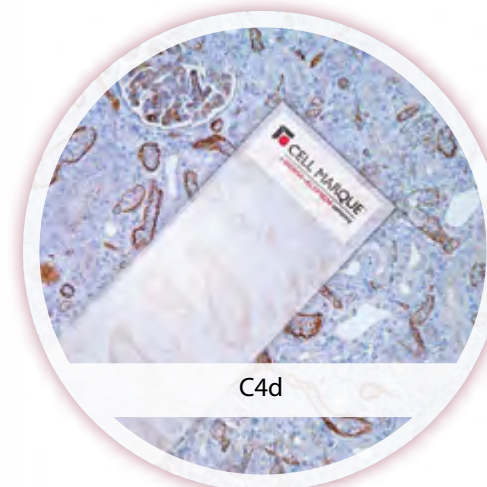
Cell Marque™ offers an extensive array of positive control slides that correspond with the majority of our antibody portfolio. Each tissue block is selected and reviewed by a certified pathologist in order to provide our customers with quality assurance and the best overall experience when testing and validating their antibodies.

### The Cell Marque™ control slide portfolio offers:

- FFPE human tissues
- Positively charged slides
- Tissue cut optimally at 4µ
- Guaranteed antigenicity
- 36 month shelf life
- 5 unstained slides per pack
- Availability of rare and viral infected tissues
- Increased confidence in antibody performance
- Assistance with validation of new antibodies
- Improved quality control of internal tissue



ALK Protein



C4d

### Positive Control Slide List

A-1-Antichymotrypsin	222S
A-1-Antitrypsin	223S
ACTH	206S
Actin, Muscle Specific	201S
Actin, Smooth Muscle	202S
Adenovirus	212S
Adipophilin	393S
ALDH1A1	400S
ALK Protein	204S
Alpha-Fetoprotein	203S
Androgen Receptor	200S
Annexin A1	221S
Arginase-1	380S
BCA-225	225S
BCL2	226S
BCL6	227S
Beta-Catenin	224S
BG8, Lewis <sup>x</sup>	228S
BOB.1	294S
c-Myc	395S
C3d	403S
C4d	404S
CA-125	325S
CA 19-9	399S
Cadherin-17	378S
Calcitonin	229S
Caldesmon	230S
Calponin	231S
Calretinin	232S
Carbonic Anhydrase IX (CA IX)	379S
Cathepsin K	402S

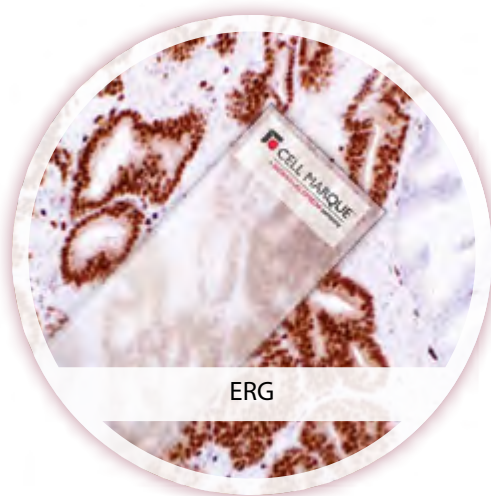
Caveolin-1	412S
CD1a	101S
CD2	102S
CD3	103S
CD4	104S
CD5	205S
CD7	107S
CD8	108S
CD10	110S
CD13	113S
CD14	114S
CD15	115S
CD16	116S
CD19	119S
CD20	120S
CD21	121S
CD23	123S
CD25	125S
CD30	130S
CD31	131S
CD34	134S
CD35	135S
CD38	118S
CD43	143S
CD44	144S
CD45 (LCA)	145S
CD45R	146S
CD45RO	147S
CD56	156S
CD57	157S
CD61	161S
CD63	263S
CD68	168S



# Positive Control Slides



CMV



ERG



Herpes Simplex Virus I & II

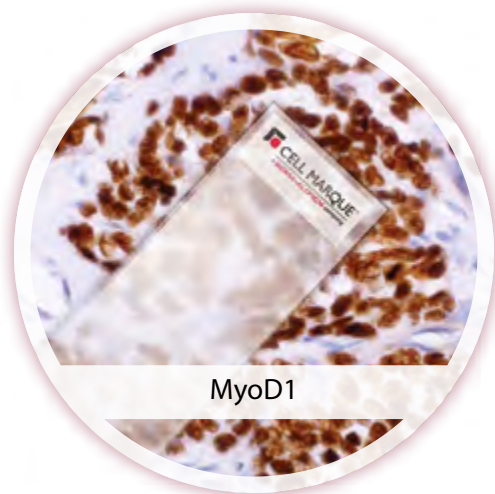
CD71 .....	171S
CD74 .....	174S
CD79a .....	179S
CD99 .....	199S
CD103 .....	437S
CD117, c-kit .....	117S
CD123 .....	198S
CD138/syndecan-1 .....	138S
CD163 .....	163S
CDX-2 .....	235S
CEA .....	236S
Chromogranin A .....	238S
CITED1 .....	424S
Claudin 1 .....	359S
Claudin 7 .....	418S
CMV .....	213S
Collagen Type IV .....	239S
COX-2 .....	240S
Cyclin D1 .....	241S
Cytokeratin (34betaE12) .....	334S
Cytokeratin (35betaH11) .....	335S
Cytokeratin (CAM 5.2) .....	452S
Cytokeratin (OSCAR) .....	300S
Cytokeratin 5 .....	305S
Cytokeratin 5 & 6 .....	356S
Cytokeratin 7 .....	307S
Cytokeratin 8 & 18 .....	818S
Cytokeratin 10 .....	410S
Cytokeratin 14 .....	314S
Cytokeratin 17 .....	317S
Cytokeratin 19 .....	319S
Cytokeratin 20 .....	320S
Cytokeratin Cocktail .....	313S

Cytokeratin, HMW .....	303S
Cytokeratin, LMW .....	301S
Desmin .....	243S
DOG1 .....	244S
E-cadherin .....	246S
EGFR .....	414S
EMA .....	247S
Ep-CAM/Epithelial Specific Antigen .....	248S
Epstein-Barr Virus .....	245S
ERG .....	434S
Estrogen Receptor .....	249S
EZH2 .....	415S
Factor VIII-R Ag. ....	250S
Factor XIIIa .....	251S
Fascin .....	252S
FLI-1 .....	254S
FOXA1 .....	405S
FoxP1 .....	350S
FSH .....	207S
Galectin-3 .....	255S
Gastrin .....	256S
GATA1 .....	417S
GATA3 .....	390S
GCDFP-15 .....	257S
GH .....	208S
Glial Fibrillary Acidic Protein (GFAP) .....	258S
Glucagon .....	259S
GLUT1 .....	355S
GLUT3 .....	413S
Glutamine Synthetase .....	389S
Glycophorin A .....	260S
Glypican-3 .....	261S
Granzyme B .....	262S

HBME-1 .....	283S
hCG .....	234S
Heat Shock Protein 27 .....	398S
Helicobacter pylori .....	215S
Hemoglobin A .....	360S
Hepatitis B Virus Core Antigen .....	216S
Hepatitis B Virus Surface Antigen .....	217S
Hepatocyte Specific Antigen (Hep Par-1) .....	264S
Her2/Neu (c-erbB-2) .....	237S
Herpes Simplex Virus I & II .....	214S
HGAL .....	375S
HHV-8 .....	265S
HMB-45 .....	282S
Human Placental Lactogen (hPL) .....	266S
IgA .....	267S
IgD .....	268S
IgG .....	269S
IgG4 .....	367S
IgM .....	270S
IMP3 .....	433S
Inhibin, alpha .....	271S
INI-1 .....	272S
Insulin .....	273S
Islet-1 .....	431S
Kappa .....	274S
KBA.62 .....	366S
Ki-67 .....	275S
Ksp-cadherin .....	276S
Lambda .....	277S
Langerin .....	392S
LH .....	209S
LMO2 .....	370S
Lysozyme .....	278S



# Positive Control Slides



MyoD1



Pneumocystis jiroveci (carinii)



Treponema pallidum

Macrophage .....	279S
Mammaglobin .....	280S
MART-1 (Melan A) .....	281S
MCM3 .....	435S
Mesothelin .....	439S
Microphthalmia Transcription Factor (MITF) .....	284S
MLH1 .....	285S
MSH2 .....	286S
MSH6 .....	287S
MUC1 .....	290S
MUC2 .....	291S
MUC4 .....	406S
MUC5AC .....	292S
MUC6 .....	293S
MUM1 .....	358S
Myelin Basic Protein .....	295S
Myeloperoxidase .....	289S
MyoD1 .....	386S
Myogenin .....	296S
Myoglobin .....	297S
Myosin, Smooth Muscle .....	298S
Napsin A .....	352S
Nerve Growth Factor Receptor (NGFR) .....	304S
Nestin .....	388S
Neurofilament .....	302S
NKX3.1 .....	441S
NSE .....	306S
Oct-2 .....	308S
Oct-4 .....	309S
Olig2 .....	387S
p21 <sup>WAF1</sup> .....	421S
p27 <sup>Kip1</sup> .....	427S
p53 .....	453S

p57 <sup>Kip2</sup> .....	457S
p120 Catenin .....	420S
P504s .....	504S
Parathyroid Hormone (PTH) .....	310S
Parvalbumin .....	396S
Parvovirus B19 .....	218S
PAX-2 .....	311S
PAX-5 .....	312S
PAX-8 .....	363S
PD-1 .....	315S
Perforin .....	316S
PGP 9.5 .....	318S
Phosphohistone H3 (PHH3) .....	369S
PLAP .....	321S
PMS2 .....	288S
Pneumocystis jiroveci (carinii) .....	219S
PNL2 .....	365S
Podoplanin .....	322S
Progesterone Receptor .....	323S
Prolactin .....	210S
PSA .....	324S
PSAP .....	326S
PU.1 .....	328S
Renal Cell Carcinoma .....	329S
S-100 .....	330S
S100A1 .....	408S
S100P .....	376S
SALL4 .....	385S
SATB2 .....	384S
Smoothelin .....	377S
Somatostatin .....	332S
SOX-2 .....	371S
SOX-10 .....	383S

SOX-11 .....	382S
Spectrin .....	333S
Stathmin .....	394S
SV40 .....	351S
Synaptophysin .....	336S
T-bet .....	368S
TAG-72 .....	337S
TCL1 .....	357S
TdT .....	338S
TFE3 .....	354S
Thrombomodulin .....	339S
Thyroglobulin .....	340S
Thyroid Peroxidase .....	409S
TLE1 .....	401S
Toxoplasma gondii .....	220S
TRAcP .....	341S
Transgelin .....	423S
Treponema pallidum .....	397S
Tryptase .....	342S
TSH .....	211S
TTF-1 .....	343S
Tyrosinase .....	344S
Uroplakin III .....	345S
Varicella Zoster Virus .....	364S
Villin .....	346S
Vimentin .....	347S
WT1 .....	348S
ZAP-70 .....	349S

# Companion Products

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# Pre-staining



## Trilogy™ Pretreatment Solution

Trilogy™, a Cell Marque™ patented pretreatment formula, is the ultimate solution for your lab. Unlike other EDTA solutions, Trilogy™ is a near neutral pH solution, making it less harmful on tissue, while still exhibiting the strong unmasking abilities of a conventional EDTA solution. This revolutionary formula combines deparaffinization, rehydration, and unmasking, all in one simple step! Trilogy™ allows for standardization of the pretreatment procedure, which in turn leads to more consistent and reliable results.

50 ml, 20x .....	920P-04
200 ml, 20x .....	920P-06
1 liter, ready-to-use .....	920P-09
1 gallon, ready-to-use .....	920P-10

## Declere™ Pretreatment Solution

Declere™ may be used whenever immunohistochemistry staining is performed on formalin-fixed, paraffin-embedded tissue sections. Using this product encourages standardization of the pretreatment procedure, thereby producing more consistent, more reliable results.

50 ml, 20x .....	921P-04
200 ml, 20x .....	921P-06
1 liter, 20x .....	921P-09

## Electric Pressure Cooker

Heat induced epitope retrieval (HIER) techniques using Trilogy™ in conjunction with a pressure cooker allows for simultaneous deparaffinization, rehydration, and epitope retrieval.

Electric Pressure Cooker 100V, 60 Hz.....	976L
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## Staining Dish and Slide Racks

Designed for histological or cytological staining. Each rack vertically holds up to 24 slides. This kit includes two staining dishes and two slide racks.

Staining Dish and Slide Racks.....	975L
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## Diamond: Antibody Diluent

Diamond: Antibody Diluent is an appropriately Tris buffered solution (TBS) for the dilution of both polyclonal and monoclonal antibodies as well as for the preparation of negative control reagents in IHC. It is designed to minimize the non-specific reaction that may be caused by the antibody and encourage specific antigen-antibody binding.

50 ml, ready-to-use .....	938B-03
250 ml, ready-to-use .....	938B-06
1 liter, ready-to-use .....	938B-09

## Emerald: Antibody Diluent

Emerald: Antibody Diluent is an appropriately phosphate buffered solution (PBS) for the dilution of both polyclonal and monoclonal antibodies as well as for the preparation of negative control reagents in IHC. It is designed to minimize the non-specific reaction that may be caused by the antibody and encourage specific antigen-antibody binding. Emerald: Antibody Diluent can also be used to stabilize diluted antibodies when stored at 2-8°C.

50 ml, ready-to-use .....	936B-03
250 ml, ready-to-use .....	936B-06
1 liter, ready-to-use .....	936B-09



## Overview Guidelines: *Pretreatment*



### Deparaffinization & Rehydration

#### Time:

1. Deparaffinization: up to 45 minutes; protocols vary
2. Rehydration: up to 20 minutes; protocols vary

Insufficient deparaffinization can result in:

1. Weak or no staining → inadequate paraffin removal. If paraffin is not removed, epitopes will not be fully exposed leaving them unrecognizable by the primary antibody.
2. Background staining → paraffin traps excess chromogen. Paraffin that is not removed will also be evident under the microscope and can be distracting to pathologists.

#### Type:

1. Deparaffinization: Xylene or substitute
2. Rehydration: Graded alcohol (100%, 95%, 50%)

#### Troubleshooting:

Weak or no staining → inappropriate or ineffective reagent(s) are used; target epitopes are not retrieved and primary antibody cannot bind.

Weak or no staining → reagents become saturated; reagents like xylene and alcohol need to be changed based on usage. If not changed regularly, potency will be lost and deparaffinization/rehydration can become ineffective; paraffin is not removed and the target epitope is still blocked.

### Epitope Retrieval

Time: 10–60 minutes; protocols vary

1. HIER (heat induced epitope retrieval) → 30–60 minutes
2. EIER (enzyme induced epitope retrieval) → 10–20 minutes

Insufficient epitope unmasking can result in:

Weak or no staining → epitopes are not fully exposed leaving them unrecognizable by the primary antibody; epitope-antibody binding will not occur.

Excessive epitope unmasking can result in:

Background staining → tissue will become “over-exposed” with primary antibody and chromogen binding nonspecifically to various cellular elements within the over-exposed tissue.

#### Type:

1. HIER (heat induced epitope retrieval)
2. EIER (enzyme induced epitope retrieval)

Use of an incompatible epitope unmasking method can result in:

Weak or no staining → some epitopes are better unmasked with either EIER or HIER. If the preferred method is not followed, inadequate epitope retrieval can occur resulting in the primary antibody being unable to bind.

#### Reagents/Equipment:

1. HIER: Citrate buffer, pH 5–6 and EDTA buffer, pH 8–9
2. EIER (Protease): Proteinase K, Pronase, Pepsin, Trypsin
3. Equipment: pressure cooker, steamer, waterbath, microwave

Use of an incompatible epitope retrieval reagent can result in:

Weak or no staining → inadequate epitope retrieval will occur resulting in the antibody being unable to bind to its target.

For more pretreatment tips visit our educational website at [www.cellmarque.com/troubleshooting](http://www.cellmarque.com/troubleshooting)





# Staining



## Peroxide Block

Peroxide Block is used to block the endogenous peroxide enzymes that naturally occur in tissue sections.

Blocking of endogenous peroxidase is a necessary step when performing immunohistochemistry and utilizing a horseradish peroxidase enzyme (HRP) label. If this step is eliminated from the protocol, endogenous peroxide enzymes may cause the chromogen to precipitate, thereby causing background staining to occur.

15 ml, ready-to-use .....	925B-02
50 ml, ready-to-use .....	925B-03
100 ml, ready-to-use .....	925B-04
200 ml, ready-to-use .....	925B-05
1 liter, ready-to-use .....	925B-09

## PBS IHC Wash Buffer + Tween® 20

PBS IHC Wash Buffer + Tween® 20 is a 20X concentrated solution that is employed to rinse reagents off slides and to provide a medium for short-term storage of immunohistochemistry specimens between application of reagents. When diluted, the ready-to-use solution is a 0.01 M phosphate buffered saline solution with a pH of 7.4 ±0.1.

200 ml, 20x .....	934B-06
1 liter, 20x .....	934B-09

## TBS IHC Wash Buffer + Tween® 20

TBS IHC Wash Buffer + Tween® 20 is a 20X concentrated solution that is employed to rinse reagents off slides and to provide a medium for short-term storage of immunohistochemistry specimens in between application of reagents. When diluted, the ready-to-use solution is a 50mM Tris buffered solution with a pH range of 7.6 ±0.1.

200 ml, 20x .....	935B-06
1 liter, 20x .....	935B-09

## Mouse Negative Control Serum

Mouse Negative Control Serum is applied in place of a mouse anti-human primary antibody onto tissue that has been designated as the corresponding negative control. The section under test and the corresponding negative control should be serial sections off the same paraffin-embedded block. Note: Both the tissue under test and the negative control tissue must be unmasked using the same unmasking reagent and protocol.

15 ml, ready-to-use .....	932B-02
200 ml, ready-to-use .....	932B-05

## Rabbit Negative Control Serum

Rabbit Negative Control Serum reagent is used in IHC assays where rabbit primary antibodies produce antigen specific recognition and binding. These reagents aid in the identification of cells, tissues or tissue components which may nonspecifically bind antibodies and thereby facilitate interpretation.

15 ml, ready-to-use .....	933B-02
200 ml, ready-to-use .....	933B-05

## Universal Negative Control Serum

Universal Negative Control Serum reagent is used in IHC assays where both mouse and rabbit primary antibodies produce antigen specific recognition and binding. These reagents aid in the identification of cells, tissues or tissue components which may nonspecifically bind antibodies and thereby facilitate interpretation.

7 ml, ready-to-use .....	932B-01
25 ml, ready-to-use .....	932B-02
100 ml, ready-to-use .....	932B-03
1 liter, ready-to-use .....	932B-09



## Overview Guidelines: *Staining*



### Blocking

**Time:** 5–15 minutes

Insufficient blocking can result in:

Background staining → unblocked endogenous tissue elements interact nonspecifically with primary antibody, detection, and/or chromogen.

Applying a blocking agent at the wrong time can result in:

No staining → blocking agent damages targeted epitope leaving the epitope unrecognizable by the primary antibody; epitope-antibody binding will not occur.

**Type:**

**1. Endogenous elements:**

Avidin-Biotin block → biotin

Peroxide block → peroxidase

Alkaline Phosphatase block (Levamisole) → phosphatase

**2. Background/Protein block**

No blocking or use of an incorrect blocking agent can result in:

Background staining → unblocked endogenous tissue elements interact nonspecifically with primary antibody, detection, and/or chromogen.

### Primary Antibody

**Time:** 10–60 minutes

**Concentration:** Variable

If the primary antibody is too diluted or the incubation time is too short, the following may occur:

Weak staining → minimal epitope-antibody binding; there is not enough antibody in the solution or the primary antibodies do not have enough time to locate and bind to their targets.

If the primary antibody is too concentrated or the incubation time is too long, the following may occur:

Background staining → excess antibody in the solution can bind nonspecifically to various sites within the tissue specimen.

**Source:**

**1. Polyclonal vs. Monoclonal**

**2. Ascites vs. Supernatant**

Polyclonal and ascites derived primary antibodies can be prone to:

Background staining → contain additional immunoglobulins that can nonspecifically bind to various elements within a tissue specimen.

Monoclonal and supernatant derived primary antibodies can be prone to:

Weak or no staining → target a single epitope; destruction of that epitope during the retrieval or blocking process can minimize binding potential.

For more staining tips visit our educational website at [www.cellmarque.com/troubleshooting](http://www.cellmarque.com/troubleshooting)





# Staining



**C**ell Marque™ HiDef Detection™ Polymer Systems are high-sensitivity visualization systems that are ready-to-use in immunohistochemical protocols. This two-step system uses an indirect method resulting in an antibody-enzyme complex that universally detects primary mouse and rabbit antibodies. The resulting chromogenic reaction can be visualized by either HRP or Alk Phos compatible chromogens using light microscopy. They are biotin-free and eliminate non-specific staining that could result

from any endogenous biotin. These visualization systems consist of two detection reagents for amplifying the detection of low expressing antigens within a shorter turnaround time. These systems are compatible with both manual and automated staining platforms (subject to available software-selectable options in the latter instances).

## HiDef Detection™ HRP Polymer System

7 ml each, predilute amplifier and polymer detector ..... 962D-10  
50 ml each, predilute amplifier and polymer detector ..... 962D-20  
100 ml each, predilute amplifier and polymer detector ..... 962D-30

## HiDef Detection™ Alk Phos Polymer System

7 ml each, predilute amplifier and polymer detector ..... 954D-10  
15 ml each, predilute amplifier and polymer detector ..... 954D-50  
50 ml each, predilute amplifier and polymer detector ..... 954D-20  
100 ml each, predilute amplifier and polymer detector ..... 954D-30  
1 liter each, predilute amplifier and polymer detector ..... 954D-40

## DAB Substrate Kit

Cell Marque™ chromogen, DAB Substrate, while compatible with other detection systems, has been specially formulated for optimal signal with HiDef Detection™ HRP Polymer Systems.

12ml DAB/ 200ml Buffer (2,000 tests)\* ..... 957D-30

## Permanent Red Chromogen Kit

Cell Marque™ chromogen, Permanent Red, while compatible with other detection systems, has been specially formulated for optimal signal with HiDef Detection™ Alk Phos Polymer Systems.

3 reagents at 2.25 ml ea. /100 ml buffer (1,000 tests)\* ..... 960D-20



## Overview Guidelines: *Staining*



### Detection

**Time:** 15–45 minutes

**Concentration:** Variable

If the detection system is too dilute or the incubation time too short, the following may occur:

Weak staining → minimal detection component binding; overall weak signal.

If the detection system is too concentrated or the incubation time too long, the following may occur:

Background staining → excess detection components bind nonspecifically to various sites within the tissue specimen.

**Handling and Storage:** refrigerated at 2–8°C

If the detection system is not stored according to manufacturer's recommendation, the following may occur:

Weak or no staining → contamination, degradation of detection components. If the integrity of the detection components is compromised, proper binding can be negatively impacted and overall staining diminished.

**Type and Compatibility:** LSAB (Link-Label) vs. 1-step polymer vs. 2-step polymer

Weak staining → low detection sensitivity; LSAB (Link-Label) detection systems have fewer color inducing enzymes compared to the much larger polymer systems. Since there is limited opportunity for chromogen-enzyme interaction, the overall signal (staining intensity) is reduced.

Background staining → high detection sensitivity; 2-step polymers utilize an additional linking or secondary antibody step. Use of secondary and tertiary antibodies increases the opportunity for non-specific binding to occur.

### Chromogen

**Time:** 1–10 minutes

**Concentration:** Variable

If the chromogen is too diluted or the incubation time too short, the following may occur:

Weak staining → minimal enzyme-chromogen color-producing reaction.

If the chromogen is too concentrated or the incubation time too long, the following may occur:

Background staining → chromogen will bind nonspecifically. Chromogen is also easily trapped in folds/artifacts created during tissue processing.

**Type and Compatibility:**

Horseshadish Peroxidase (HRP)	Alkaline Phosphatase (AP)
DAB	Permanent Red

If an enzyme is used with an incompatible chromogen (AP with DAB for example), the following may occur:

No staining → color changing chemical reaction will not occur.

**Handling and Storage:** refrigerated at 2–8°C

If the chromogen is not stored according to the manufacturer's recommendations, the following may occur:

Weak or no staining → contamination or oxidation can compromise the integrity of the chromogen.

For more staining tips visit our educational website at [www.cellmarque.com/troubleshooting](http://www.cellmarque.com/troubleshooting)





# Counterstain & Cover Slip



## Overview Guidelines: *Counterstain & Coverslip*



### Hematoxylin

Hematoxylin is a nuclear stain that is used as a differential stain for immunohistochemical procedures. Hematoxylin gives a contrasting color from that of the chromogen in the immunohistochemical stain. Hematoxylin also enables for more distinct viewing of the morphological characteristics of the section.

15 ml, ready-to-use ..... 936B-02  
200 ml, ready-to-use ..... 936B-05

### Permanent Aqueous Mounting Medium

Permanent Aqueous Mounting Medium is an aqueous-based mounting medium that can permanently mount the aqueous based chromogens. It is designed to act as a barrier between the chromogen stains and the organic solvent-based permanent mounting media. This solution hardens and polymerizes to protect the aqueous-based chromogens from dissolving when they are permanently mounted.

15 ml, ready-to-use ..... 931B-02  
50 ml, ready-to-use ..... 931B-03

**Hematoxylin: 30 seconds–10 minutes; depends on concentration and pathologist preference**

If the hematoxylin incubation time is too long or too short, then the following may occur:

Dissatisfied pathologist → difficulty distinguishing cellular morphology.

If the hematoxylin is exposed to light, then the following may occur:

Dissatisfied pathologist → oxidation creating crystalline precipitates that are observed under the microscope; these crystalline structures can be distracting and, in some instances, make accurate diagnosis difficult.

#### Dehydration and Mounting:

1. **Dehydration: graded alcohol (3–10 minutes) and xylene or xylene substitute (5–15 minutes)**
2. **Mounting Media: non-aqueous (permanent chromogens) vs. aqueous (non-permanent chromogens)**

No or inadequate dehydration can result in:

Cloudy appearance → water is not fully removed creating a hazy appearance to the tissue; cellular morphology can also be affected.

Use of the wrong dehydration method or inappropriate mounting media can result in:

Weak staining → non-permanent chromogens can fade if used with alcohols or with non-aqueous mounting mediums.

For more counterstaining tips visit our educational website at [www.cellmarque.com/troubleshooting](http://www.cellmarque.com/troubleshooting)

# References

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# Antibody Panels



## Anatomic/Surgical Pathology

### Adrenal Tumors

	Cal-retinin	CD56	Chromogranin A	Inhibin, alpha	MART-1	Synaptophysin
Pheochromocytoma	-	+	+	-	-	+
Adrenocortical Carcinoma	+	+	-	+	+	-/+
Adrenocortical Adenoma	+	+	-	+	+	-/+

### Breast vs. Lung vs. Prostate Carcinoma

	AR	ER	BRST-2	Mammaglobin	Napsin A	NKX3.1	PR	PSA	PSAP	TTF-1
Breast Carcinoma	-	+	+	+	-	-	+	-	-	-
Lung Carcinoma	-	-	-	-	+	-	-	-	-	+
Prostate Carcinoma	+	-	-	-	-	+	-	+	+	-

### Carcinoma: Differential Diagnosis

	AR	BCA-225	TTF-1	ER/PR	BRST-2	Mammaglobin	PSA	PSAP	NKX3.1
Salivary Duct Carcinoma	+	+	-	-	+	-	-	-	-
Breast Carcinoma (apocrine)	+	+	-	+/+	+	+	-	-	-
Prostate Carcinoma	+	-	-	-	-	-	+	+	+
Lung Carcinoma	-	+/-	+	+/-	-	-	-	-	-

### Carcinomas

	β-Catenin	CD10	CDX-2	CEA	pCEA	CK 34βE12	CK OSCAR	CAM 5.2	CK 5	CK 5&6	CK 7	CK 19	CK 20	CK Cocktail	CK, HMW	CK, LMW
Basal Cell Carcinoma						+		+/-				-		+		
Bladder Adenocarcinoma/ Carcinoma	-	+	+	+	+		+		-		+		+	+	+	+
Breast Carcinoma			-	-	-		+		-		+		-	+	+	+
Cervical Carcinoma	-		-	+	+		+		-		+		-	+		
Cholangio Carcinoma						+		+				+		+		
Colorectal Adenocarcinoma	+	+	+	+	+		+		-		-		+	+	-	+
Endometrial Adenocarcinoma			-	-	-		+		-		+		-	+		
Gastric Carcinoma	-	-	+	+	+		+		-		+		-	+		
Hepatocellular Carcinoma	-	+	-		+	-	-	+	-		-	-	-	-	-	-
Lung Adenocarcinoma	-	-/+	-	+	+		+		-		+		-	+	+	+
Lung SQ Carcinoma															+	
Merkel Cell Carcinoma						-/+		+				-		+		
Ovarian Carcinoma		-	-	-	-		+		+	+	+		-	+	+	+
Ovarian Carcinoma, Non Mucinous					-				+		+		-		+	+
Pancreatic Carcinoma	-	+/-	-	+	+		+		-		+		-	+	+/-	+
Prostate Adenocarcinoma/ Carcinoma	-	+			-		+		-		-		-		-	+
Renal Cell Carcinoma		+			-		+		-		-		-		-	+
Salivary Gland Carcinoma	-	-/+	-	+	+		+		+	+	+		-	+	+	+
Sarcomatoid Carcinoma						+		+/-				-		+		
Skin Squamous Carcinoma						+		-				-		+		
Spindle Cell Carcinoma					-		+		-		-		-		+	
Squamous Cell Carcinoma	-	-	-	-	-		+		+	+	-		-	+	+	+
Sweat Gland Carcinoma	-	-	-	+	+		+		+	+	+		-	+	+	+
Thyroid Carcinoma					-		+		-		+		-		+	+
Transitional Cell Carcinoma	-	+	-	-	-		+		+	+	+		+	+	+	+
Urothelial Carcinoma															+	

# Antibody Panels

Carcinomas (continued)											
	Ber-EP4	MOC-31	ER/PR	BRST-2	Hep-Par1	p63	RCC	S100P	TTF-1	Villin	Vimentin
Basal Cell Carcinoma	+	+/-			-						
Bladder Adenocarcinoma/ Carcinoma			-	-	-	-	-		-	+	
Breast Carcinoma			+	+	-	-	-	-	-		-
Cervical Carcinoma			-	-	-	-	-		-	-	
Cholangio Carcinoma	+	+			-						
Colorectal Adenocarcinoma				-	-	-	-		-	+	+
Endometrial Adenocarcinoma				-	-				-		
Gastric Carcinoma			-	-	-	-	-			+	
Hepatocellular Carcinoma	-	-		-	+	-	-		+ (cytoplasmic)	-	
Lung Adenocarcinoma			-	-	-	-	-	+	+	-	-
Lung SQ Carcinoma						+		-			
Merkel Cell Carcinoma	+	+			-						
Ovarian Carcinoma			-	-	-	-	-	-	-		
Ovarian Carcinoma, Non Mucinous				-	-		-		-		
Pancreatic Carcinoma			-	-	-	-	-		-	-	
Prostate Adenocarcinoma/ Carcinoma				-	-		-	-	-	-	
Renal Cell Carcinoma				-	-	-	+	-	-		
Salivary Gland Carcinoma			-	+	-	+	-			-	+
Sarcomatoid Carcinoma	+	-			-						
Skin Squamous Carcinoma	-	-/+			-						
Spindle Cell Carcinoma				-	-	-	-				
Squamous Cell Carcinoma			organ specific	-	-	+	-		-		-
Sweat Gland Carcinoma			-/+	-	-	+	-			-	-
Thyroid Carcinoma				-	-	-	-		+		
Transitional Cell Carcinoma			-	-	-	+	-		-	-	-
Urothelial Carcinoma						+		+			

Carcinomas										
	Arginase-1	CA IX	Cadherin-17	CDX-2	GATA3	HBME-1	Napsin A	PAX-8	S100P	TTF-1
Breast Carcinoma	-	+	-	-	+	-	-	-	-	-
Lung Adenocarcinoma	-	-	-	-	-	-	+	-	-	+
Thyroid Carcinoma	-	-	-	-	-	+	-	+	-	+
Gastric Adenocarcinoma	-	+/-	-/+	+	-	-	-	-	-	-
Colon Adenocarcinoma	-	+/-	+	+	-	-	-	-	-	-
Pancreatic Ductal Carcinoma	-	+/-	-/+	+	-	-	-	-	+	-
Hepatocellular Carcinoma	+	-	-	-	-	-	-	-	-	-
Urothelial Carcinoma	-	-	-	-	+	-	-	-	+	-
Renal Cell Carcinoma	-	+	-	-	-	-	-/+	+	-	-

Colon vs. Ovarian Carcinoma								
	CA-125	Cadherin-17	CDX-2	CEA	CK 7	CK 20	SATB2	WT1
Ovarian Carcinoma, Serous	+	-	-	+	+	-	-	+
Ovarian Carcinoma, Mucinous	-	-	+	-	+	-	-	-
Ovarian Carcinoma, Endometrioid	+	-	-	-	+	-	-	+
Colorectal Carcinoma / Colon Carcinoma	-	+	+	+	-	+	+	-

Colon vs. Prostate Adenocarcinoma								
	AR	CA 19-9	CDX-2	CEA	CK 20	NKX3.1	P504s	PSA
Colon Adenocarcinoma	-	+	+	+	+	-	+	-
Prostate Adenocarcinoma	+	-	-	-	-	+	+	+



# Antibody Panels

## Comparison of immunoreactivity of PHH3 and Ki-67 in cell cycle

Cell Cycle	PHH3	Ki-67
G0 phase	-	-
Interphase		
G1 phase	-	+
S phase	-	+
G2 phase	-	+
Mitosis phase		
Prophase	+	+
Metaphase	+	+
Anaphase	+	+
Telophase	+	+

## Differential Diagnosis of Parathyroid Tumors

	Calcitonin	Chromogranin A	Galectin-3	PTH	PAX-8	S-100	Synaptophysin	TTF-1
Parathyroid Tumors	-	+	-	+	+	-	+	-
Follicular Cell Tumors	-	-	+	-	+	+/-	-	+
Medullary Thyroid Carcinoma	+	+	-	-	+	-	+	+

## Epithelioid Cell Neoplasms

	CD34	CK 35βH11	Desmin	DOG1	EMA	FLI-1	HMB-45	INI-1	S-100	TFE3
Epithelioid Sarcoma	+	-	+	-	+	-	-	+	-	-
Epithelioid Angiosarcoma	+	+	-	-	-	+	-	+	-	-
MPNST	-/+	+	+	-	-	-	-	+/-	+	-
Leiomyosarcoma	-/+	+	+	-	-	-	-	-	-	-
GIST	+	-	-	+	-	-	-	-	-	-
Endothelial Tumors	+	-	-	-	-	+	-	+	-	-
PEComa	-	-	-	-	-	-	+	-	+	-
Clear Cell Sarcoma	-	+	-	-	-	-	-	-	+	-
Alveolar Soft Part Sarcoma	-	-	-	-	-	-	-	-	-	+
Melanoma	-	-	-	-	-	-	+	-	+	-
Plasmacytoma	-	-	-	-	+	-	-	-	-	-

## Epithelioid Cell Neoplasms

	MS Actin	SM Actin	CD34	CD56	Claudin 1	Desmin	EMA	FLI-1	GLUT1	INI-1
Epithelioid Sarcoma	+	-	+	-	+	+	+	-	+	+
Epithelioid Angiosarcoma			+			-	-	+		+
GIST	-	-	+	-		-	-	-	-	-

## Liver Neoplasms

	Arginase-1	CD10	pCEA	GPC-3	Hep-Par1
Hepatic Adenoma	+	+	+	-	+
Hepatocellular Carcinoma	+	+	+	+	+
Metastatic Adenocarcinoma	-	-/+	-/+	-	-

## Liver: Malignant vs. Benign

	A1ACT	A1AT	AFP	Arginase-1	CD34	mCEA	pCEA	GPC-3	Hep-Par1	p53	TTF-1
Hepatocellular Carcinoma	-/+	-/+	-/+	+	+	-	+	+	+	+	+ (cytoplasmic)
Hepatoblastoma	+	+	+		-	-	+	+	+	+	-
Benign Liver Nodules	+/-	+/-	-	+	-	-	-	-	+	-	+ (cytoplasmic)

# Antibody Panels

## Lung Small Cell Carcinoma vs. Merkel Cell Carcinoma

	CD117	CEA	Chromogranin A	CK 20	E-cadherin	Neurofilament	Synaptophysin	TTF-1
Merkel Cell Carcinoma	+	-	+	+	+ (nuclear)	+	+	-
Lung Small Cell Carcinoma	+/-	-	-	-	-	-	+	+

## Lymph Node

	CD1a	CD14	CD21	CD35	CD68	CD163	Lysozyme	PD-1	S-100
Reactive Histiocytosis	-	+	-	-	+	-	+	-	-
Langerhans Cell Histiocytosis	+	+	-	-	+	+	+	-	+
Sinus Histiocytosis with Massive Lymphadenopathy	-	+	-	-	+	+	+	-	+
Follicular Dendritic Cell Sarcoma	+/-	-	+	+	-	-	-	-	-
Dermatopathic Lymphadenitis	+	-	-	-	-	+	+	-	+

## Lymph Node

	CK Cocktail	HMB-45	MART-1	S-100	SOX-10
Metastatic Melanoma	-	+	+	+	+
Nevus Cell	-	+	+	+	+
Interdigitating Dendritic Cells	-	-	-	+	-

## Meningiomas from Histologic Mimics

	ALD-H1A1	CD34	Claudin 1	E-cadherin	EMA	GFAP	S-100	STAT6
Meningothelial Meningioma	-	-	+	+	+	-	-	-
Atypical Meningioma	-	+	+	+	+	-	-	-
Fibrous Meningioma	-	-	-	+	+	-	+	-
Solitary Fibrous Tumor	+	+	-	-	-	-	-	+
Meningeal Hemangiopericytoma	+	+	-	-	-	-	-	-/+
Schwannoma	-	-	+/-	+	-	+	+	-

## Micropapillary Carcinomas

	CK 7	CK 20	CK, HMW	EMA	ER	Mammaglobin	PAX-8	TTF-1	URO III	WT1
Bladder	+	+/-	+	-	-	-	-	-	+	-
Breast	+	-	-	+	+	+/-	-	-	-	-
Lung	+	-	-	+	-	-	-	+	-	-
Ovary	+	-	+	-	+	-	+	-	-	+

## Mucin Expression in Neoplasms

	MUC1	MUC2	MUCSAC	MUC6
Pancreatic Adenocarcinoma	+	-	+	-
Cervical Adenocarcinoma	+	-	+	-
Paget Extramammary	+	-	+	-
Cholangiocarcinoma	+	-	+/-	-
Salivary Duct ACA	-	+	-	+
Colon Carcinoma, Signet Ring	-	+	-	-
Prostate Carcinoma	-	+/-	-	-
Pan Intraductal Pap Ca	-	+	+	+
Adrenocortical Carcinoma	-	-	-	-
Breast Carcinoma	+	-	-	-
Endometrial Carcinoma	+	-	-	-
Appendiceal Adenocarcinoma	-	+	+	-
Barrett Esophagus	+	+	+	-
Panc. Mucinous Cystic	-	-	+	-
Breast Colloid Carcinoma	+	+	-	+



# Antibody Panels

## Mucins Expression in Organs

	MUC1	MUC2	MUC4	MUC5AC	MUC6
Stomach	+	-	+	+	+
Small Intestine	-	+	-	-	+
Colon	-	+	-	-	-
Pancreas	+	-	-	-	+

## PEComa

	SM Actin	Caldesmon	Calponin	CD63	CD68	Desmin	HMB-45	MART-1	S-100
Angiomyolipoma	+	+	+	+	+	-	+	+	-
Lymphangiomyomatosis	+	+	+	+	-	-	+	+	-
Extrapulmonary Clear Cell Tumor	+	-	-	+	-	-	+	+	+
Primary Cutaneous PEComa	-/+	-	-	+	+/-	-	+	+	-
Pulmonary Clear Cell Sugar Tumor	-	-	-	+	+/-	-	+	+	+/-

## Retroperitoneal Lesions

	Chromogranin A	CD99	GFAP	Neurofilament	NSE	PGP 9.5	S-100	Synaptophysin
Neuroblastoma	+	-	-/+	+	+	+	-	+
Ganglioneuroblastoma	+	-	+	+	+	+	+	+
Ganglioneuroma	+	-	+	+	+	+	+	+
Leiomyosarcoma	-	-	-	-	-/+	-/+	-	-
Rhabdomyosarcoma	-	-	-	-	-	+	-	-
Synovial Sarcoma	-	+/-	-	-	-	-	-/+	-

## Spindle Cell Lesions

	SM Actin	CD34	CD99	Claudin 1	Desmin	EMA	GLUT1	S-100
Perineurioma	+/-	+	+	+	-	+	+	-
Neurofibroma	-	-	-	+	-	-/+	-	+
Schwannoma	-	-	-	-	-	-	-	+

## Spindle Cell Melanoma vs. Epithelioid Peripheral Nerve Sheath Tumor

	Collagen IV	HMB-45	NGFR	PNL2	S-100	SOX-10	CD63	Tyrosinase
Spindle Cell Melanoma	-	+	+	+	+	+	+	+
PNST (Peripheral Nerve Sheath Tumor)	+	+	+	-	+	+	+	+
Adrenal Adenoma	+	+	-/+	-	+	-	-	+

## Spindle Cell Tumors

	MS Actin	SM Actin	ALK	β-Catenin	BCL2	Caldesmon	Calponin	CD34	CD56	CD117	CK Cocktail	Desmin	DOG1	EMA	Myogenin	SM Myosin	PGP 9.5	S-100
Myofibroblastic Tumor	+	+	+	-	-	+	+	-	+	-	-	+	-	-	-	-	-	-
Spindle Cell Carcinoma	-	-	-	+/-	-	-	-	-	-	-	+	-	-	+/-	-	-	+	-
Neurofibroma	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+	+
Rhabdomyosarcoma	+	-	-	-	+	-	-	-	-	+	-	+	-	+/-	+	-	-	-
Endometrial Stromal Tumor	+	+	-	+/-	-	-	+	-	-	-	-	-	-	-	-	-	+	-
Smooth Muscle	+	+	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-
Fibromatosis	-	+	-	+	-	-/+	-	-	-	-	-	-	-	-	-	-	+	-
GIST	-	-	-	-	+	+	-	+	-	+	-	-	+	-	-	-	-	-
Schwannoma	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	+
Leiomyosarcoma	+	+	-	-	-	+	+	-	+	-	-/+	+	-	+/-	-	+	-	-
MPNST	-	-	-	-	+	-/+	-	-/+	-	-	-	-	-	-	-	-	+	+/-

## Thymus

	BG8	CD1a	CD5	CK 14	CK 5&6	CD57	CD117	CEA	MOC-31	GLUT1	MUC1
Thymic Carcinoma	+	-	+	+	+	-	+	+	-/+	+	+
Thymoma	-	+	-	-	-/+	+	-	-	+	-/+	-/+

# Antibody Panels

## Thyroid: Malignant vs. Benign

	Calcitonin	CK 19	Galec-tin-3	HBME-1	p27	Thyro-globulin	TTF-1
Papillary Carcinoma	-	+	+	+	-/+	+	+
Follicular Carcinoma	-	-	+	+/-	-	+	+
Medullary Carcinoma	+	+	-	+	+/-	-	+
Benign Thyroid	-	-	-	-	+	+	+



## Breast/Gynecological Pathology

### Breast Carcinoma

	CA15-3	CA 19-9	CK 5	CK 7	CK 20	ER/PR	p63	CD117
Infiltrating Ductal Carcinoma	+	-	-	+	-	+	-	-
Adenoid Cystic Carcinoma	+	+	+	+	-	-	+	+

### Breast Lesion

	CK 34βE12	E-cad-herin	BRST-2	Mamma-globin	p120
Lobular	+	-	+	+	+ (cyto-plasmic)
Ductal	-	+	+	+	+ (mem-branous)

### Cervix

	BCL2	CK17	Ki-67	MCM3
Cervical Intraepithelial Neoplasia	-	-	+	+
Tubo-Endometrial Metaplasia	+	+	-	-
Microglandular Hyperplasia	-	-	-	-

### Cervix Neoplasia

	CK 8	CK 17	p16
CIN I	-/+	-/+	+
CIN II	-/+	+	+
CIN III	+	+	+

### Lesions

	Ki-67	p16	p27	Stath-min
CIN I	+	+	-	-
CIN II	+	+	+	+/- (45%)
CIN III	+	+	+	+
Invasive Squamous Carcinoma	+	+	+	+
Endocervical Adenocarcinoma in situ	+/-	+	+	+
Endocervical Carcinoma	+	+	+	+
Benign Ectocervical Mucosa	-/+	Few +	-/+	- (Basal layer +)
Benign Endocervical Tissue	-	-	-	-

### Non-invasive Breast Lesions vs. Invasive Ductal Carcinoma

	Cal-ponin	SM Myosin	CK 5&6	p63
Sclerosing adenosis	+	+	+	+
Breast Carcinoma <i>in-situ</i> (Myoepithelial Cells)	+	+	+	+
Infiltrating Breast Carcinoma	-	-	-	-



# Antibody Panels

## Ovarian Carcinomas

	CA-125	CEA	PAX-8	WT1
Ovarian CA, Serous	+	+	+	+
Ovarian CA, Mucinous	-	-	-	-
Ovarian CA, Endometrioid	+	-	+	-
Ovarian CA, Clear Cell	+	-	+	-

## Placental Trophoblastic Cells

	1st Trimester		2nd Trimester		3rd Trimester	
	hCG	hPL	hCG	hPL	hCG	hPL
Cytotrophoblast	-	-	-	-	-	-
Intermediate Trophoblast	1-24%	25-49%	-/+	50-74%	1-24%	1-49%
Syncytiotrophoblast	>75%	1-24%	25-49%	50-74%	1-24%	>75%

## Placental Trophoblastic Proliferations

	CK OSCAR	hCG	hPL	p57	PLAP	Vimentin
Partial Mole	+	-/+	-/+	+	+	-
Complete Mole	+	+	-/+	-	-/+	-
Choriocarcinoma	+	+	-/+	-	-/+	-/+
Placental Site Tumor	+	+/-	+	+	+	+

## Sex Cord Stromal Tumors

	Cal-retinin	CD99	CK 7	EMA	Inhibin	MART-1	Vimentin
Granulosa Cell Tumors	+	+	-	-	+	+	+
Sertoli-Leydig Cell Tumors	+	+	+	-	+	+	+
Gynandroblastoma	+	-/+	-	-	+	-	+
Gonadoblastomas	+	+	-	-	+	-	+

## Uterus: Trophoblastic Proliferations

	CK Cocktail	hCG	hPL	p57	PLAP	Vimentin
Partial Mole	Strong, diffuse	Weak, diffuse	Weak, diffuse	+	+	-
Complete Mole	Strong, diffuse	Strong, diffuse	Weak, focal	-	Weak, focal	-
Choriocarcinoma	Strong, diffuse	Strong, diffuse	Weak, focal	-	Weak, focal	-/+
Placental Site Tumor	Strong, diffuse	Strong, focal	Strong, diffuse	-	Strong, diffuse	Strong, diffuse



## Dermatopathology

### Cutaneous Lesion

	SOX-10	CK Cocktail	HMB-45	S-100	MART-1
Conventional Melanoma	+	-/+	+	+	+
Desmoplastic Melanoma	+	-	-	+/-	-
Squamous Cell Carcinoma	-	+	-	-/+	-
Basal Cell Carcinoma	-	+	-	-	-
Merkel Cell Carcinoma	-	+	-	-/+	-

### Cutaneous Neoplasm

	AR	BCL2	CD10	CD34	CK 15	CK 19	CK 20	Ber-EP4
Basal Cell Carcinoma	+	+	+	-	-	+	-	+
Trichoepithelioma	-	+	-	+	+	+	+	+
Merkel Cell Carcinoma	-	+	-	-	-	+	+	+
Microcystic Adnexal Carcinoma	-	+	+/-	-	+	+	-	-/+
Sebaceous Carcinoma	+	+/-	+/-	-	-	-	-	+
Sebaceous Adenoma	+	+	-	-	-	-	-	+

# Antibody Panels

## Lesions

	Adipo-philin	CK 5+14	CK Cocktail	EMA	Ber-EP4
Sebaceous Adenoma	+	+	+	+	+
Sebaceous Carcinoma	+	+	+	+	+
Basal Cell Carcinoma	-	-	+	-	+
Squamous Cell Carcinoma	-	+	+	+	-

## Melanomas

	Nestin	SOX-10	HMB-45	S-100
Desmoplastic Melanoma	+	+	-	+
Conventional Melanoma	+	+	+	+

## Melanotic Lesions

	CD63	Factor XIIIa	HMB-45	KBA.62	MART-1	MiTF	NGFR	PNL2	S-100	SOX-10	Tyrosinase	WT1
Adrenal Cortical	-	-	-	-	+	-	-	-	+	-	-	-
Adult Melanocytes	+	-	-	+	+	+	-	+	+	+	+	-
Angiomyolipoma	+	-	+	-	+	+	-	+	+	-	-	-
Dermatofibroma	-	+	-	-	-	-	-	-	-	-	-	-
Interdermal Nevus	-	-	-	+	+	+	+	+	+	-	+	+/-
Intranodal Nevus Cells	-	-	-	+	+	+	-	+	+	-	+	-
Junctional Nevus	-	-	+	+	+	+	+	+	+	-	+	+/-
Metastatic Melanoma	+	-	+	+	+	+	-	+	+	+	+	+
Primary Melanoma	+	-	+	+	+	+	-	+	+	+	+	+
Spindle Cell Melanoma	+	-	+	+	+	+	+	+	+	+	+	+

## Merkel Cell Carcinoma vs. Cutaneous Small Cell Tumors

	CD117	CK, pan	CK 5&6	CK 20	Vimentin	Chromogranin A	HMB-45	Neurofilament	Synaptophysin	TTF-1	CD45	S100
Merkel Cell Carcinoma	+	+	-	+	-	+	-	+	+	-	-	-
Small Cell Carcinoma	+/-	+	-	-	-	+	-	-	+	+	-	-
Lymphoma	-	-	-	-	+/-	-	-	-	-	-	+	-
Small Cell Melanoma	+	-	-	-	+	-	+	-	-	-	-	+
Squamous Cell Carcinoma	-	+	+	-	-	-	-	-	-	-	-	-

## Neuroid Skin Lesions

	CD57	GFAP	MBP	S-100
Neuroma	+	-	+	+
Neurotised Nevi	-	-	-	+
Neurofibroma	+	-	+	+

## Skin Adnexal Tumors

	CD15	CK 7	CK 20	EMA	BRST-2	S-100
Merkel Cell Carcinoma	-	-	+	+	-	-
Sebaceous Tumor	+	+	-	-	-	-
Apocrine Tumor	+/-	+	-	+/-	+	-
Eccrine Tumor	-	+	-	+	-	+

## Skin: Basal vs. Squamous Cell Carcinoma

	BCL2	CK 8&18	CK Cocktail	EMA	Ep-CAM	MOC-31	UEA-1
Basal Cell Carcinoma	+	-/+	+	-	+	+	-
Squamous Cell Carcinoma	-	-	+	+	-	-	+

## Skin: Dermatofibrosarcoma Protuberans (DF-SP) vs. Dermatofibroma Fibrous Histiocytoma (DF-FH)

	CD10	CD34	CD163	CK Cocktail	Desmin	Factor XIIIa	NGFR	p63	S-100
DF-SP	+/-	+	-	-	-	-	+	-	-
DF-FH	+	-	-	-	-	+	-	-	-



# Antibody Panels

## Skin: Pagetoid Tumors

	CEA	CK, HMW	CK, LMW	S-100	Vimentin
Melanoma	-	-	-	+	+
Paget's Disease	+	-	+	-/+	-
Bowen's Disease	-	+	+	-	-

## Skin: Spindle Cell Tumors

	MS Actin	SM Actin	ALD-H1A1	BG8	CD10	CD31	CD34	CD99	Collagen IV	CK 8&18	CK Cocktail	Factor VIII	Factor XIIIa	FLI-1	HHV-8	NGFR	D2-40	S-100	STAT6
Angiosarcoma	-	-	-	-	-	+	+	-	+/-	-	-	+	+	+	-	-	+/-	-	-
Atypical Fibroxanthomas	+	+	+	-	+	-	-	+	-	-	-	-	+/-	-	-	-	-	-	+
Dermatofibroma Fibrous Histiocytoma	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Dermatofibrosarcoma Protuberans	-	-	-	-	+/-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
DF-FH	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-
DF-SP	-	-	-	-	+/-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
Glomus Tumor	+	+	-	-	-	-	+/-	-	+	-	-	-	-	-	-	-	-	-	-
Hemangioma	-	+	-	+	-	+	+	-	+	-	-	+	-	+	-	-	-	-	-
Hemangiopericytoma	-	-	+	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	+
Kaposi's Sarcoma	-	+	-	-	-	+	+	-	+/-	-	-	+	+/-	+	+	-	+	-	-
Kaposiform Hemangioendothelioma	-	-	-	-	-	+	+	-	-	+	-	-	-	+	-	-	-	-	-
Peripheral Nerve Sheath	+	-	+	-	-	-	-	+	+	-	-	-	-	-	-	+	+	+/-	-
Smooth Muscle	+	+	+	-	-	-	-	-/+	-	-	-	-	-	-	-	-	-	-	-
Solitary Fibrous Tumor	-	-	+	-	-	-	+	+/-	-	-	-	-	-	-/+	-	-	-	-	+
Spindle Cell Melanoma	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+	-
Spindle Squamous Cell Carcinoma	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	-	-
Squamous Cell Carcinoma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-



## Gastrointestinal (GI) Pathology

### Ampullary Cancer

	CDX-2	MUC2	CK 17	MUC1
Intestinal Subtype	+	+	-	-
Ductal	-	-	+	+

### GIST Mutation vs. Wild Type

	CD34	CD117	DOG1
GIST, Kit Mutation	+	+	+
GIST, PDGFRA Mutation	-	-	+
GIST, Wild Type	+/-	+	+

### Pancreas / Pancreatic Tumors

	β-Catenin	CA 19-9	CD10	CD56	CDX-2	Synaptophysin	CK 7	CK 19	E-cadherin	Maspin	MUC4	PGP 9.5	pVHL	S100P	SMAD4	Synaptophysin
Ductal Adenocarcinoma / Ductal Carcinoma	+/-	+	+/-	-	-	-	+	-	+/-	+	+	-	-	+	-	-
Pancreatic Adenocarcinoma	-	+	+/-	-	-	-	-	+	-	-	+	-	-	-	-	-
Pancreatic Endocrine Tumor	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+
Acinar Cell Carcinoma	+	-/+	+/-	-	-	-	-	+	+	-	-	-	-	-	-	-
Pancreatoblastoma	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
Neuroendocrine Tumor	+	+/-	-	+	-	+	-	+/-	-	-	-	+	-	-	-	+
Solid Pseudopapillary Tumor	+	-	+	+	-	-	-	-	+	-	-	-	-	-	-	+
Islet Cells	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	+
Pancreatic Ducts	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-

# Antibody Panels



## Genitourinary (GU) Pathology

### Bladder Tissue

	SM Actin	MS Actin	Calponin	Smoothelin
Muscularis Mucosae	+	+	+	-
Muscularis Propria	+	+	+	+

### Bladder: Dysplasia vs. Reactive

	CD44	CK 20	CK 5&6	Ki-67	MCM3	p53
Carcinoma- <i>in-situ</i>	-	+	-	+	+	+
Reactive Atypia	+	-	+	+	+	-
Normal Urothelium	+	+	-/+	-/+	-/+	-

### Carcinomas

	CD10	CD117	CK 7	CK, HMW	Ksp-cad-herin	RCC	S100P	TFE3
Xp11 Tr RCC	+		-/+		+	+	-	+
Clear Cell RCC	+	-	-/+	-	-/+	+	-	-
Papillary RCC	+	-	+	+/-	-/+	+	-	-
Chromophobe RCC	+/-	+	+	-	+	+	-	-
Oncocytoma	+	+	-/+	-/+	+	-	-	-
Urothelial Carcinoma	+	+/-	+	+/-	-	-	+	-

### Germ Cell Tumors

	AFP	CD30	CD117	CK Cocktail	EMA	GPC-3	hCG	hPL	Inhibin	Oct-4	PLAP	D2-40	SALL4	SOX-2	Synap-tophysin	Vimen-tin
Seminoma (Seminoma/ Dysgerminoma)	-	-	+	-	-	-	-	-	-	+	+	+	+	-	-	+
Embryonal Carcinoma	-	+	-	+	-	-	-	-	-	+	+	-	+	+	-	-
Choriocarcinoma	-	-	-	+	+	+	+	+	-	-	+	-	-	-	-	-/+
Yolk Sac Tumor	+	-	-/+	+	-	+	-	-	-	-	-/+	-	+	-	-	-
Granulosa Cell Tumor	-	-	-	-	-	-	-	-	+	-	-	+/-	-	-	-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	+	+	-	-	-	-	-	-	+			-	-
Mature Teratoma	+/-	-	-	+	+	-	-	-/+		-	+/-	-	-	+/-	-	+
Immature Teratoma	-	-	+/-	+	+	-	+/-	-/+		-	-	-	+/-	+	-	+
Carcinoid	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+

### Gonads: Germ Cell Tumors vs. Somatic Adenocarcinoma

	AFP	CD30	CD117	CK Cocktail	EMA	GPC-3	hCG	hPL	Inhibin	Oct-4	PLAP	D2-40	Vimen-tin
Seminoma	-	-	+	-	-	-	-	-	-	+	+	+	+
Embryonal Carcinoma	-	+	-	+	-	-	-	-	-	+	+	-	-
Choriocarcinoma	-	-	-	+	+	+	+	+	-	-	+	-	-/+
Yolk Sac Tumor	+	-	-	+	-	+	-	-	-	-	+	-	-
Somatic Carcinoma	-	-	-	+	+	-	-	-	-	-	-	-/+	-
Granulosa Cell Tumor	-	-	-	-	-	-	-	-	+	-	-	+/-	+
Hypercalcaemic Small Cell Carcinoma	-	-	-	+	+	-	-	-	-	-	-	+	-

### Kidney: Renal Epithelial Tumors

	CD10	CD117	Ep-CAM	Ksp-cad-herin	Parvalbumin	PAX-2	RCC	S100A1	Vimen-tin
Clear Cell RCC	+	-	-	-	-	+	+	+	+
Chromophobe RCC	-/+	+	+	+	+	+	-/+	-	-
Papillary RCC	+	+		-/+	-		+	+	+
Oncocytoma	+/-	+	-	+/-	+	+	-	+	-



# Antibody Panels

## Prostate Lesions

	CK 34βE12	CK 7	GATA3	PAX-2	p63	P504s	PSA	PSAP	TBM*	URO III
Prostate Carcinoma	-	-	-	-	-	+	+	+	-	-
Urothelial Carcinoma	+	+	+	-	+	-	-	-	+	+
Nephrogenic Adenoma	+/-	+	+	+	-	+	-	-	-	-

\*Thrombomodulin

## Prostate: Malignant vs. Benign

	AR	CK 34βE12	CK 5&6	CK 14	p63	P504s	PSA	PSAP
Prostate Carcinoma	+	-	-	-	-	+	+	+
Benign Prostate	+	+	+	+	+	-/+	+	+

## Renal Cell Carcinoma vs. Hemangioblastoma

	CD10	Cal-retinin	CK Cocktail	Inhibin	D2-40	PAX-2
Metastatic RCC	+	-	+	-	-	+
Hemangioblastoma	-	+	-	+	+	-

## Squamous Cell Carcinoma vs Urothelial Carcinoma

	COX-2	CK 34βE12	CK 5	CK 14	CK 7	CK 20	Desmo-glein 3	GATA3	URO III
Squamous Carcinoma	-	+	+	+	-	-	+	-	-
Urothelial Carcinoma	+	+	-/+	-	+	+	-	+	+



## Head and Neck Pathology

### Differential Diagnosis of Parathyroid vs. Thyroid Tumors

	Calcitonin	PAX-8	Chromogranin A	PTH	S-100	Galec-tin-3	Synap-tophysin	TTF-1
Parathyroid Tumors	-	+	+	+	-	-	+	-
Follicular Thyroid Tumors	-	+	-	-	+/-	+	-	+
Medullary Thyroid Cacinoma	+	+	+	-	-	-	+	+



## Hematopathology

### B-cell Lymphomas

	Annex-in A1	BCL2	BCL6	BOB.1	CD5	CD10	CD11c	CD20	CD23	CD25	CD43	CD45	CD79a	Cyclin D1	FoxP1	IgD
Burkitt Lymphoma	-	-	+	+	-	+	-	+	-			+	+	-	+	-
CLL/SLL	-	+	-	-/+	+	-	-/+	+	+		+	+	+	-	-	+
Diffuse Large Cell Lymphoma	-	+	+/-	+	-/+	-/+		+	-		-	+	+	-	+	-
Follicular	-	+	+	+	-	+		+	-	-		+	+	-	-	+
Hairy Cell Leukemia	+	+	-		-	-	+	+	-	+	-	+	+	+(weak)/-		-
Lymphoplasmacytic	-	+	-	+	-	-	-	+	-	-		+	+	-	-	-
Malt Lymphoma		+	-/+			-		+	-				+	-	+	
Mantle Cell	-	+	-	-/+	+	-	-	+	-	+	+	+	+	+	-	+
Marginal Zone	-	+	-		-	-	+	+	-	-	+	+	+	-		+
Marginal Zone BCL	-	+	-	-/+	-	-		+	-				+	-		-/+
Splenic Marginal Zone	-	+	-		-	-			-				+	-	-	

# Antibody Panels

## B-cell Lymphomas (continued)

	Kappa	Lambda	MUM1	Oct-2	p27	PAX-5	PD-1	PU.1	T-bet	TCL1	TRAcP	ZAP-70
Burkitt Lymphoma	+/-	-/+	-	-	-	+	-	-	-	+	-	-
CLL/SLL	+/-	-/+	+	+	+	+	-	+	+/-	+	-	+/-
Diffuse Large Cell Lymphoma	+/-	-/+	+/-	+	-	+	-	+	-	+	-	-
Follicular	+/-	-/+	-	+	+	+	+	+	-	+	-	-
Hairy Cell Leukemia	+/-	-/+		+(weak)/-	-	+	-		+	+	+	-
Lymphoplasmacytic	+/-	-/+	+	-	+		-		+	+	-	-
Malt Lymphoma			-							+		
Mantle Cell	+/-	-/+	-	+	+	+	-	+	-	+	-	-
Marginal Zone	+/-	-/+	+	+		+	-	+		-	+/-	-
Marginal Zone BCL			+	+	+	+		+	+	-	+/-	
Splenic Marginal Zone			+/-	+		-				-		

## c-Myc in DLBCL

	BCL2	CD10	CD38	CD44	TCL1
Large B-cell Lymphoma with c-Myc Rearrangement	-/+	+	+	-	+
Large B-cell Lymphoma with no c-Myc Rearrangement	+	+/-	-	+	-/+

## Erythroid

	CD71	Glyco-phorin A	Hemo-globin A	Spec-trin
Erythroid Hyperplasia	+	+	+	+
Erythroid Hypoplasia	+	+	+	+
Acute Erythroid Leukemia	+	+	+	+
Extramedullary Hematopoiesis	+	+	+	+
Mature Erythrocytes	-	+	+	+

## Histiocytic Neoplasms / Histiocytic Lesions

	CD3	CD4	CD20	CD45	CD68	CD163	Factor XIIIa	Lyso-zyme	MPO
Histiocytic Neoplasms	-	+	-	+	+	+	+	+	-

## Histiocytic Proliferation

	CD1a	CD68	CD163	Factor XIIIa	HAM-56	Lyso-zyme	S-100	Vimen-tin
Juvenile Xanthogranuloma	-	+	+	+	+	+	-	+
Langerhans Cell Histiocytosis	+	+	+	-	+	+	+	+
Dermatofibroma	-	+	-	+	-	-	-	+

## Histiocytic/Dendritic Cell Lesions

	CD1a	CD21	CD23	CD35	CD68	CD163	Lan-gerin	Lyso-zyme	S-100
Langerhans Cell Histiocytosis	+	-	-	-	+	+	+	+/-	+
Rosai-Dorfman Disease	-	-	-	-	+	+	-	+	+
Follicular Dendritic Cell Sarcoma	-	+	+	+	+/-	+/-	-	-	-
Interdigitating Dendritic Cell Sarcoma	-	-	-	-	+/-	+	-	+	+
Histiocytic Sarcoma	-	-	-	-	+	+	-	+	+/-
Juvenile Disseminated Xanthogranuloma	-	-	-	-	+	+	-	+	+/-

## Hodgkin vs. Non-Hodgkin Lymphomas

	ALK	BCL6	BOB.1	CD15	CD30	CD45	CD79a	EMA	Fascin	Gran-zyme B	MUM1	Oct-2	PU.1
Anaplastic Large Cell Lymphoma	+	+/-		-	+	+	-	+	-	+	-	-	-
Angioimmunoblastic T-cell Lymphoma	-	+		-	-	+	-	-	-	-	-	-	-
Hodgkin Lymphoma, Classic	-	-	-	+	+	-	-	-	+	-	+	-	-
Hodgkin Lymphoma, Nodular Lymphocyte Predominant	-	+	+	-	-	+	+	+	-	-	+/-	+	+
T-cell Rich B-cell Lymphoma	-	+	+	-	-	+	+/-	+/-	-	-	+	+	-
T-cell Rich LBCL	-	+	+	-	-	+	+	-	-	-	+	+	-



# Antibody Panels

## Immunoglobulin, Heavy and Light Chain

	IgA	IgD	IgG	IgM	Kappa	Lambda
Cutaneous Lymphoma	-	-	-	-	+/-	-/+
Myeloma	+	-/+	+	-/+	+/-	-/+
Diffuse LBCL	-	-	+	+	+/-	-/+
Marginal Zone Lymphoma	-	-/+	-	+	+/-	-/+
SLL/CLL	-	+	-	+	+/-	-/+

## Leukemia

	CD13	CD14	CD16	CD33	CD34	CD38	CD71	CD117	CD163	MPO
Acute Myeloid Leukemia with Minimal Differentiation	+	+	-	+	+	+	-	+	-	-
Acute Myeloid Leukemia without Maturation	+	-	-	+	+	-	-	+	-	+
Acute Myeloid Leukemia with Maturation	+	-	-	+	+	-	-	+	-	+
Acute Myelomonocytic Leukemia	+	+	+	+	+/-	-	-	+	+	+
Acute Monoblastic and Monocytic Leukemia	+	+	+	+	-/+	-	-	+/-	+	+
Acute Erythroid Leukemia	-	-	-	-	-/+	-	+	+/-	-	-
Acute Megakryoblastic Leukemia	+/-	-	-	+/-	-	-	-	-	-	-
Acute Basophilic Leukemia	+	-	-	+	+/-	-	-	-	-	-
Acute Panmyelosis with Myelofibrosis	+	-	-	+	+	-	-	+	-	-

## Lymph Node

	CD1a	CD14	CD21	CD35	CD68	CD163	Lysozyme	PD-1	S-100
Reactive Histiocytosis	-	+	-	-	+	-	+	-	-
Langerhans Cell Histiocytosis	+	+	-	-	+	+	+	-	+
Sinus Histiocytosis with Massive Lymphadenopathy	-	+	-	-	+	+	+	-	+
Follicular Dendritic Cell Sarcoma	+/-	-	+	+	-	-	-	-	-
Dermatopathic Lymphadenitis	+	-	-	-	-	+	+	-	+

## Lymph Node

	CD1a	CD14	CD68	CD169
Sinusoidal Histiocytes	-	+	-	-
Tingible Body Macrophages	-	-	+	-
Plasmacytoid Monocytes	-	-	-	-
Langerhans Cell Histiocytosis	+	+	+	+/-
Interdigitating DC	+	+/-	-	-

## Lymphoblastic Lymphomas, BCL vs. TCL

	CD1a	CD3	CD5	CD7	CD10	CD19	CD20	CD74	CD117	PAX-5	TdT
Lymphoblastic BCL	-	-	-	-	+/-	+	+/-	+	-	+	+
Lymphoblastic TCL	+/-	+	+/-	+	+	-	-	-	-	-	+

## Lymphoma

	CD3	CD20	CD43	CD45R	CD45RO
Mature B-cell	-	+	-	+	-
Mature T-cell	+	-	+	-	+

## Lymphoma

	CD20	CD30	CD38	CD45	CD79a	CD138	EMA	HHV-8	MUM1	PAX-5
Plasmablastic Lymphoma	-	+	+	-	+	+	+	-	+	-
Primary Effusion Lymphoma	-	+/-	+/-	+	-	+	+/-	+	+	-
Large B-cell Lymphoma arising in HHV8-associated Multicentric Castleman Disease	-/+		-/+	+	-	-		+		
Extranodal Marginal Zone Lymphoma with Plasmacytoid Differentiation	-		+	+	+	+			+	-

# Antibody Panels

## Lymphomas

	Gran-zyme B	Perforin	TIA-1
NK/T Cell Lymphoma	+	+	+
Hepatosplenic T-cell Lymphoma	-	-	+
Cutaneous T-cell Lymphoma	+	+	+
EBV+ Systemic T-lymphoproliferative Disorders	+	+	+
T-cell Large Granular Lymphocytic Leukemia	+	+	+
Adult T-cell Leukemia/Lymphoma	-	-	-
Angioimmunoblastic Lymphoma	-	-	-
Anaplastic Large Cell Lymphoma	+	+	+

## Lymphomas

	BCL2	BCL6	CD15	CD30	Cyclin D1	Gran-zyme B	IMP3	MUM1	PAX-5	SOX-11
Classical Hodgkin's Lymphoma	+	-	+	+	-	-	+	+	+	-
Lymphocyte Predominant Hodgkin Lymphoma	+	+	-	-	-	-	+	-/+	+	-

## Mastocytosis

	CD2	CD25	CD117	CD163	Tryptase
Mastocytosis / Systemic Mastocytosis	+	+	+	-	+
Mast Cell Leukemia	+	+	+	-	+
Reactive Mast Cells	-	-	+	+	+

## Mature B-cell Lymphomas

	Annex-in A1	BCL2	CD5	CD10	CD20	CD23	HGAL	LMO2	Cyclin D1
Follicular Lymphoma	-	+/-	-	+/-	+	-	+	+	-
Diffuse Large B-cell Lymphoma	-	+	-/+	+/-	+	-	+	+	-
Small Lymphocytic Lymphoma	-	+	+	-	+	+	-	-	-
Mantle Cell Lymphoma	-	+	+	-	+	-	-	-	+
Marginal Zone Lymphoma	-	+	-	-	+	-	-	-	-
Hairy Cell Leukemia	+	+	-	-	+	-	-	-	-

## Mature B-cell Neoplasms

	Annex-in A1	CD10	CD11c	CD25	CD103	CD123	Cyclin D1	DBA44	T-bet	TRAcP
Hairy Cell Leukemia	+	+20%	+	+	+	+	+(weak)/-	+/-	+	+/-
Hairy Cell Leukemia Variant	-	-	+	-	+/-	-	-	+/-	-	+/-
Splenic Marginal Zone Lymphoma	-	-	-/+	-	-	-	-	+/-	-	+/-

## NK Cell Leukemia/Lymphoma

	CD2	CD3	CD16	CD56	CD57	Gran-zyme B	Perforin	TIA-1
Aggressive NK-Cell Leukemia	+	+	+	+	-	+	+	+
T-Cell Large Granular Lymphocytic Leukemia	+	+	+	-	+	+	+	+
Extranodal NK/T-Cell Lymphoma, Nasal Type	+	+	-	+	-	+	+	+

## Non-Hodgkin Lymphomas

	CD5	CD10	CD20	CD23	Cyclin D1	SOX-11
MCL	+	-	+	-	+	+
FL	-	+	+	-	-	-
SLL/CLL	+	-	+	+	-	-
MZL	-	-	+	-	-	-
LBL	-	+/-	+	-	-	+
BL	-	-	+	-	-	-/+
CD5+ DLBCL	+	+	+	-	-	-
Blastoid Variant MCL	+	-	+	-	+	+



# Antibody Panels

## Plasma Cell Neoplasm and Lymphoproliferative Neoplasms

	CD19	CD20	CD43	CD56	CD79a	CD138	Cyclin D1	EMA	MUM1
Plasma Cell Neoplasm	-	-/+	-	+	+	+	-/+	+	+
ALK + LBCL	-	-	-/+	-	-	+	-	+	+
Plasmablastic Lymphoma	-	-	-	-	+	+	-	+	+
HHV Associated LBCL	+/-	+/-	-	-	-	-	-	-	-
Primary Effusion Lymphoma	-	-	-	-	-	+	-	+	+
Lymphoblastic Lymphoma	+	+	-	-	+	+	-	-	+/-
Splenic Marginal Zone Lymphoma	+	+	-	-	+	-/+	-	-	+/-

## Splenic Hematopoietic Proliferations in Neoplastic and Benign Disorders

	CD34	CD68	CD117	Hemo-globin A	MPO
Chronic Myelogenous Leukemia	-/+	+	+/-	-	+
Chronic Idiopathic Myelofibrosis	+/-		-/+	-	+
Myelodysplastic Syndrome	+		-/+	-	
Myelodysplastic/Myeloproliferative Disorders	-	+	-	-	+
Mastocytosis	-		+	-	+
Erythroid Disorders	-	-/+	-	+	+/-
Splenic Lymphoma	-		-	-	-/+
Acute Myeloid Leukemia	+	+	+	-	+
Polycythemia Vera	+		+	+	

## T-cell Lymphomas

	CD2	CD3	CD4	CD5	CD7	CD8	CD25	CD45	CD45RO	CD56	CD57	Gran-zyme B	PD-1	Perforin	TCL1
Angioimmunoblastic	+	+	+	+	+	-	+	+	+			-	+		
Lymphoblastic	+/-	+	+/-	+	+	+/-	+	+	+			+/-	-		
Subcutaneous Panniculitis-Like	+	+	-	+	+	+/-	-	+	+	-		+	-	+	
NK/T-cell Lymphoma	+	+	-	-	-/+	-	-	+	-/+	+	+/-	+	-	+	+
Cutaneous	+	+	+	-	+	-	-	+	-			+	-/+	+	
Peripheral, NOS	+	+	+/-	+/-	+/-	-/+	+	+	+	-	-		-		
Mycosis Fungoides	+	+	+	+	-	-	+	+	+	-		+/-	-	-	



## Neuropathology

### Brain: CNS Tumors 1

	EMA	CK, pan	GFAP	Vimentin	Olig2	S-100
Astrocytoma	-	-	+	+	+/-	+
Oligodendrocytoma	-	-	-	+	+	-
Glioblastoma	-	+	+/-	+	+	+
Ependymoma	-	+	+/-	-	-	+
Meningioma	+	-	+/-	+	+/-	-/+

# Antibody Panels

## Brain: CNS Tumors 2

	CK Cocktail	EMA	GFAP	INI-1	NGFR	Neuro-filament	PR	S-100	Synap-tophysin	Vimen-tin
Astrocytoma	-	-	+	+	+	-	-	+	-	+
Glioblastoma	-	-	+	+	-	-	-	+	-	+
Oligodendrogloma	-	-	-	+	-	-	-	+	-	+
Ependymoma	-(+ AE1 & AE3)	-	+	+	+	-	-	+	-	-/+
Choroid Plexus Carcinoma	+	-	-/+	+	-	-	-	+	+	+/-
Central Neurocytoma	-	-	-	+	+	-	-	-	+	-
Neuroblastoma	-	-	+/-	+	+	+	-	+/-	+	+
Pineocytoma	-	-	-	+	-	-	-	-	+	-
Meningioma	-	+	-	+	-	-	+	-	-	+
Schwannoma	-	-	+	+	+	-	-	+	-	+
Rhabdoid Tumors	+	+	-	-	-	+/-	-	+/-	+/-	+
Metastatic Carcinoma	+	+	-	+	-	-	-/+	-	-	-/+

## Meningiomas from Histologic Mimics

	ALD-H1A1	CD34	Claudin 1	EMA	E-cad-herin	GFAP	S-100	STAT6
Meningothelial Meningioma	-	-	+	+	+	-	-	-
Atypical Meningioma	-	+	+	+	+	-	-	-
Fibrous Meningioma	-	-	-	+	+	-	+	-
Solitary Fibrous Tumor	+	+	-	-	-	-	-	+
Meningeal Hemangiopericytoma	+	+	-	-	-	-	-	-/+
Schwannoma	-	-	+/-	-	+	+	+	-

## Retroperitoneal Neoplasms

	CD99	Chromogranin A	GFAP	MBP	Neuro-filament	NSE	PGP 9.5	S-100	Synap-tophysin
Neuroblastoma	-	+	+/-	-	+	+	+	-	+
Ganglioneuroblastoma	-	+	+	-/+	+	+	+	+	+
Ganglioneuroma	-	+	+	+	+	+	+	+	+



## Pediatric Pathology

### Histiocytic Proliferation

	CD1a	CD68	CD163	Factor XIIIa	HAM-56	Lyso-zyme	S-100	Vimen-tin
Juvenile Xanthogranuloma	-	+	+	+	+	+	-	+
Langerhans Cell Histiocytosis	+	+	+	-	+	+	+	+
Dermatofibroma	-	+	-	+	-	-	-	+

### Retroperitoneal Lesions

	Chromogranin A	CD99	GFAP	Neuro-filament	NSE	PGP 9.5	S-100	Synap-tophysin
Neuroblastoma	+	-	-/+	+	+	+	-	+
Ganglioneuroblastoma	+	-	+	+	+	+	+	+
Ganglioneuroma	+	-	+	+	+	+	+	+
Leiomyosarcoma	-	-	-	-	-/+	-/+	-	-
Rhabdomyosarcoma	-	-	-	-	-	+	-	-
Synovial Sarcoma	-	+/-	-	-	-	-	-/+	-



# Antibody Panels



## Pulmonary Pathology

### Lung Adenocarcinoma vs. Mesothelioma

	BG8	Caldesmon	Cal-retinin	CEA	CK 5&6	Ber-EP4	E-cadherin	HBME-1	D2-40	TAG-72	TTF-1
Adenocarcinoma	+	-	-	+	-	+	+	-	-	+	+
Mesothelioma	-	+	+	-	+	-	-	+	+	-	-

### Lung Squamous Cell Carcinoma vs. Adenocarcinoma

	CK 5&6	Desmocollin3	Napsin A	p63	SOX-2	TTF-1
Lung Adenocarcinoma	-	-	+	-/+	-/+	+
Lung Squamous Cell Carcinoma	+	+	-	+	+	-

### Pleura: Adenocarcinoma vs. Mesothelioma

	Caldesmon	Cal-retinin	CEA	CK 5	CK 5&6	Ep-CAM	E-cadherin	HBME-1	Napsin A	D2-40	TAG-72	TTF-1	TBM*	WT1
Adenocarcinoma	-	-	+	-	-	+	+	-	+	-	+	+	-	-
Mesothelioma	+	+	-	+	+	-	-	+	-	+	-	-	+	+

\*Thrombomodulin



## Soft Tissue Pathology

### Histiocytic/Dendritic Cell Lesions

	CD1a	CD21	CD23	CD35	CD68	CD163	Langerin	Lysozyme	S-100
Langerhans Cell Histiocytosis	+	-	-	-	+	+	+	+/-	+
Rosai-Dorfman Disease	-	-	-	-	+	+	-	+	+
Follicular Dendritic Cell Sarcoma	-	+	+	+	+/-	+/-	-	-	-
Interdigitating Dendritic Cell Sarcoma	-	-	-	-	+/-	+	-	+	+
Histiocytic Sarcoma	-	-	-	-	+	+	-	+	+/-
Juvenile Disseminated Xanthogranuloma	-	-	-	-	+	+	-	+	+/-

### Muscle Malignant Tumors

	SM Actin	MS Actin	Myogenin	PGP 9.5	Caldesmon	Myoglobin	Calponin	Vimentin	INI-1
Leiomyosarcoma	+	+	-	-	+	-	+	+	
Rhabdomyosarcoma	-/+	-/+	+	+	-	+	-	+	+

### Small Blue Round Cell Tumors

	MS Actin	SM Actin	Caldesmon	Calponin	CD45	CD57	CD99	CK Cocktail	FLI-1	INI-1	Myogenin	Myoglobin	PGP 9.5	Vimentin	WT1
Lymphoblastic Lymphoma	-	-	-		+	-	+	-	+	+	-	-		+	-
Leiomyosarcoma	+	+	+	+	-	+/-	-	-/+	-		-	-	-	+	-
Rhabdomyosarcoma	+	-	-	-	-	-	-	-	-	+	+	+	+	+	-
Neuroblastoma	-	-	-		-	+	-	-	-	+	-	-	+	+	-
Embryonal Carcinoma	-	-			-	+	-	+	-	+	-	-	+	-	-
PNET/ES	-	-		+	-	+	+	-/+	+	+	-	-	+	+	-
DSRCT	-	-			-	+/-	-	+	+	+	-	-	-	+	+
Medulloblastoma	-	-			-	+	-	-	-	+	-	-		-	

### Soft Tissue Neoplasms

	MS Actin	SM Actin	Cal-retinin	CD34	CD56	CK Cocktail	Desmin	HMB-45	S-100	TFE3
Alveolar Soft Part Sarcoma	+	+	-	-	-	-	-	-	-	+
Clear Cell Sarcoma	-	-	-	-	-	-	-	+	+	-
Leiomyosarcoma	+	+	-	-/+	+	-/+	+	-	-	-
PEComa	-	+	+	-	+	-	-	+	+	-

# Antibody Panels

Soft Tissue Sarcoma														
	MS Actin	SM Actin	Cal-ponin	Cal-retinin	CD34	CD56	CD99	CK Cocktail	Desmin	EMA	Myo-genin	S-100	TFE3	TLE1
Alveolar Soft Part Sarcoma	+	+	-	-	-	-	-	-	-	-	-	-	+	-
Clear Cell Sarcoma	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Desmoplastic Small Round Cell	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Epithelioid Sarcoma	-/+	-	-	-	+	-	-	+	-	+	-	-	-	-
Leiomyosarcoma	+	+	-	-	-/+	+	-	-/+	+	-/+	-	-	-	-
Mesenchymal Chondrosarcoma	-	-	-	+	-/+	-	+	-	-	-	-	+/-	-	-
Myxoid Chondrosarcoma	-	-	+/-	+	-/+	-	-	-	-	-	-	-	-	-
PEComa	-	+	-	+	-	-	-	-	-	-	-	-	-	-
PNET/ES	-	-	-	-	-	-	+	-/+	-	-	-	+	-	-
Rhabdomyosarcoma	-/+	-/+	-	-	-	+	-	-	+	-	+	-	-	-
Synovial Sarcoma	-	-	-	+/-	-	+	+	+	-	+	-	-/+	-	+

Soft Tissue Tumor																
	MS Actin	SM Actin	ALK	Cal-ponin	CD34	CD99	CK Cocktail	Desmin	EMA	FLI-1	INI-1	Myo-genin	PGP 9.5	S-100	TFE3	TLE1
Alveolar Soft Part Sarcoma	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Clear Cell Sarcoma	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Desmoplastic Small Round Cell	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
Epithelioid Sarcoma	-/+	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-
Fibrous Histiocytoma	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inflammatory Myofibroblastic Tumor	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Leiomyosarcoma	+	+	-	+	-	-	-/+	-	-	-	-	-	-	-	-	-
Myxoid Chondrosarcoma	-	-	-	-	-/+	-	-	-	-	-	-	-	-	+/-	-	-
PEComa	-	+	-	-	-	-	-	+/-	-	-	-	-	-	-	-	-
PNET/ES	-	-	-	-	-	+	-/+	-	-	+	+	-	+	+	-	-
Rhabdomyosarcoma	-/+	-/+	-	-	-	-	-	-	-	-	+	+	+	+	-	-
Synovial Sarcoma	-	-	-	-	-	+	+	-	+	-	-	+	+	-	-	+

Vascular Tumors						
	CD34	ERG	Factor VIII	FLI-1	HHV-8	D2-40
Hemangioma	+	+	+	+	-	-
Kaposi's Sarcoma	+	+	+	+	+	+
Hemangioendothelioma	+	+	-	+	-	-
Angiosarcoma	+	+	+	+	-	+/-
Colorectal Adenocarcinoma	-	-	-	-/+	-	-
Invasive Ductal Carcinoma	-	-	-	-/+	-	-



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