

Large Format Histology – Why Thinner is Better!

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The importance of large format histology as a method of assessing wide areas of tissue samples in cancer pathology is unparalleled. For a pathologist to be able to examine tumor extent, involvement of surgical resection margins and other prognostic parameters in a complete cross section of the tissue on a single slide is unrivaled in cancer diagnostics. However, there are several issues that need to be addressed before attempting to process large format, supra mega (SM) tissue samples in the laboratory. In order to achieve optimal high-quality tissue processing combined with a reduction in processing times, the ability to gross tissues consistently to 5mm thickness is crucial. However, due to the countless types and variable consistencies of tissues, this is not always possible in the grossing room. To overcome these challenges, it is often helpful to first gross the tissue into thicker slices before placing them into 100% reagent alcohol or ethanol for an hour in order to stabilize the tissue. This treatment not only firms the tissue to allow thinner slices to be taken but often reduces the need for reprocessing fatty or other problematic tissue. If tissues contain large amounts of fat, placing them into a fat solvent such as acetone is advantageous before attempting to gross the tissue into thinner 5mm slices. In addition, using isopropanol as the dehydrating agent during processing of fatty tissue is often recommended as it is a superior fat solvent compared to ethanol. However, if reagent alcohol is your preferred choice as a dehydrating agent, then extending processing times in that reagent would be required to ensure optimal processing. Since minimizing the thickness of slices is essential for quality processing of large tissue samples, commercial aids are available for the consistent grossing of tissue. Systems such as the ProCUT slicing devices (Milestone Medical) and the TruSlice specimen cut up systems (CellPath) are not only convenient to use but also allow reliable production of thin slices of fresh and fixed tissues in the grossing room (Figures 1 & 2).

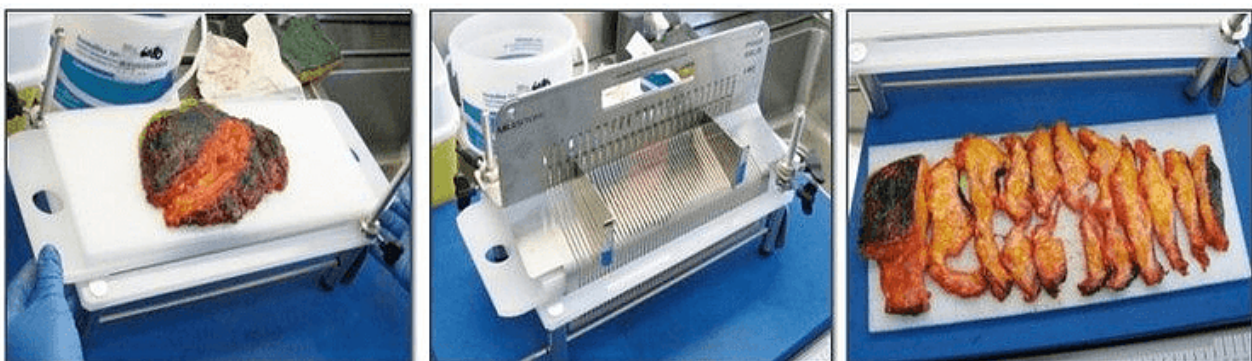


Figure 1. The ProCUT grossing system from Milestone Medical showing the tissue on the base prior to grossing (left), application of a dome large enough to accommodate the tissue (center) and the tissue following grossing (right).