

Automation of slide coverslipping for large tissue sections

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Coverslipping is the process of placing a cover glass or coverslip over a glass slide mounted with a stained tissue specimen without forming air bubbles, which can negatively impact the microscopic examination. While manual coverslipping is still widely used, automated systems have made the process easier and more consistent. Commercially available automated cover-slippers are limited to handling only slides that are 1" x 3", suitable for processing smaller tissue specimens. However, for larger tissue specimens sectioned from organs like the brain, liver, etc., slides can reach sizes up to 6" x 8", exceeding the capabilities of these systems. We present SLIDE PROTEKT, a fully automated large format coverslipping system designed to efficiently coverslip large format slides. This system has multiple zones for slide and coverslip transportation, dispensing of mounting medium, and precise placement of the coverslip without air bubbles. The ability of the system to output quality coverslipped slides was validated by processing 50 large-format brain tissue slides. The results were found to be comparable to manual coverslipping. The system achieved a coverslip placement accuracy of 80% with a mean positional offset that was within a tolerance of plus or minus 3 millimeters. Additionally, 75% of the slides had no air bubbles, while the remaining slides had air bubbles that were less than 120 micrometers in size. These results demonstrate the potential impact of SLIDE PROTEKT in the field of histology.