Method of Formalin Fixed Paraffin Embedded Cell Block Preparation of Cytology Specimens

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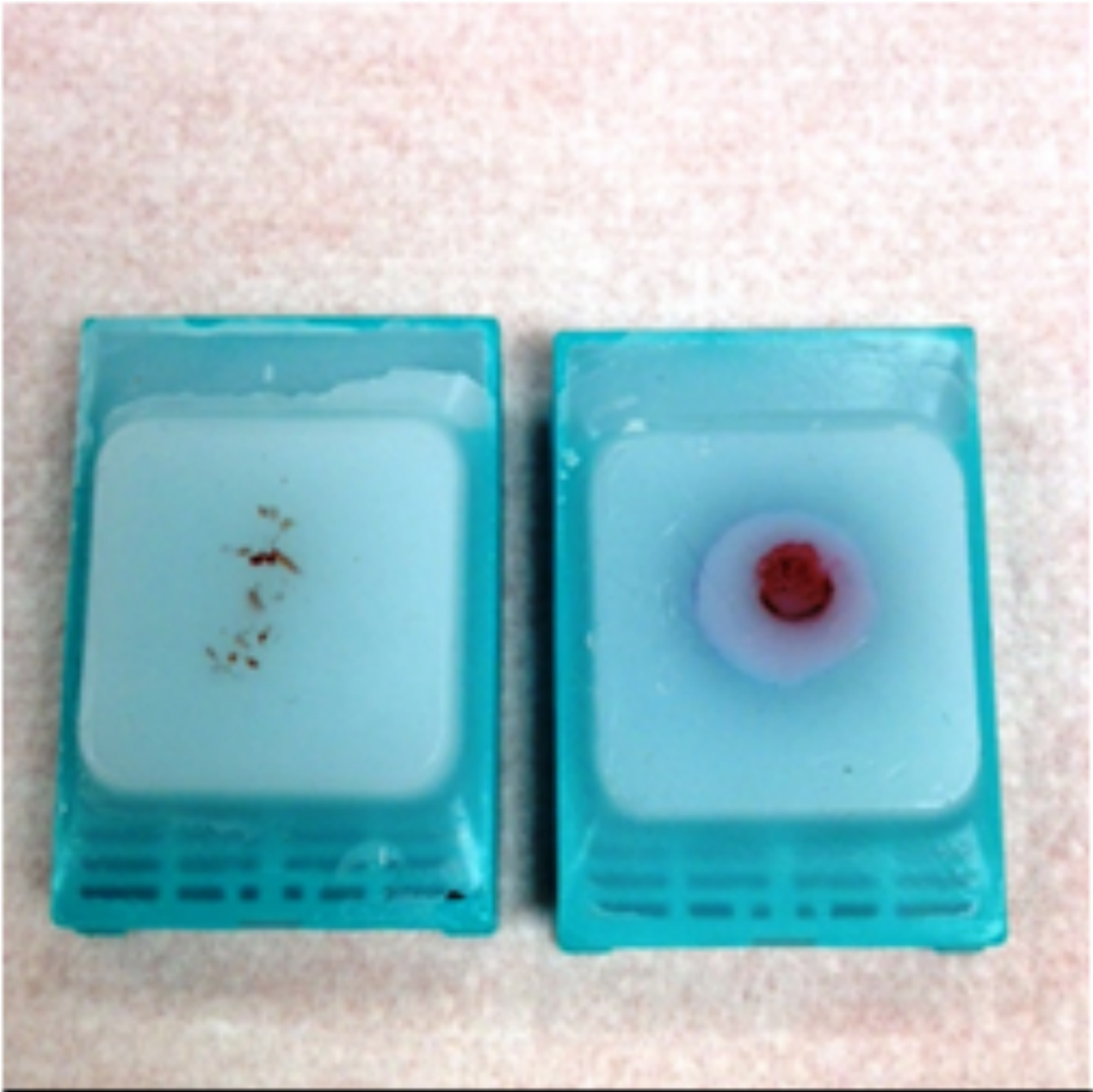
Technology description

Inventors at MUSC have created a straightforward method and apparatus to prepare histologic sections from cytologic specimens (cell block). Cell blocks (CB) are a useful adjunct to other cytopreparatory methods, and when successful, yield multiple histologic sections for subsequent special and immunohistochemical (IHC) staining to classify tumors. In addition, CBs provide lesional cells for molecular diagnostics to determine treatment regimens. The apparatus produces CBs quickly, easily, and inexpensively. The specimen processing is uncomplicated and can be readily implemented into any laboratory setting. One advantage of the apparatus is that CBs can be generated using formalin as the fixative which does not impede or alter immunohistochemical stains. Cytogenetic tests have also been successful with this method. The process, which is CLIA certified, has been used at MUSC since July, 2014. The process was first validated with quality control comparative studies, and cell block yield is currently being optimized. 41 residual cytologic specimens were used to prepare cell blocks using this method. 40 of 41 (98%) cases yielded a cellular sample. The method produced cellular samples regardless of formalin or alcohol fixation.



Side by side comparison of a split sample with the sample on the left prepared via the traditional method, and the sample on the right prepared via Cyto-centrifugation with Infinicel®

Overview

Traditional CB methods are expensive, labor intensive, and often yield less than adequate numbers of lesional cells for diagnosis or ancillary testing. Some techniques use fixatives other than formalin which can interfere with IHC. Automated methods are expensive, time consuming, and use alcohol as the fixative. Many laboratories use expired blood products to coagulate the specimen which may influence the outcome. Others use an agarose gel method to agglutinate cells through histologic processing. The agarose gel and thrombin methods often render the specimen invisible in the CB, and the lesional cells can be completely cut away at the time of sectioning. Visible markers can be used but are cumbersome to add and may interfere with IHC.

Publication: Lindsey, Kathryn G., et al. " Young investigator challenge: A novel, simple method for cell block preparation, implementation, and use over 2 years. " Cancer Cytopathology (2016).

Application area

Diagnostic and molecular testing for targeted therapies in cytopathology laboratories. Clinical research and basic science research for aspirate or fluid specimens.

Advantages

Allows for production of CBs quickly, easily, and inexpensively. Easy to implement into any laboratory setting. Can create CBs using formalin as fixative.

Institution

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