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Automation of Virtual Microscopy for Tissue Quality Control Purposes

T.J. Barr, H. Bao, W. Beyer, D.M. Billiter, S. Brewer, and S.J. Qualman

Center for Childhood Cancer, Center for Childhood Cancer Bioinformatics Group, Columbus Children's Research Institute, Columbus, Ohio

One objective of the Biopathology Center (BPC) is to implement an automated pathology review system for tissue quality control purposes. By utilizing Virtual Microscopy (VM), the technique of digitizing microscope slides, the BPC is able to provide expert review pathologists with digital images used for diagnostic quality assurance. Although this process has been automated from a pathologist's perspective the current system requires the BPC to perform multiple manual processes.

Utilizing various Linux-based technologies including Apache Tomcat, Hypertext Markup Language, JavaScript, JavaServer Pages, and MySQL, the Center for Childhood Cancer Bioinformatics Group (C3BIG) is in the pilot phase of Project VIPER (Virtual Imaging Pilot EndeavoR) which will further automate the pathology review process by allowing reviewers to identify clinically significant slides, complete cases, request accounts, and reset accounts automatically. VIPER has been designed to allow BPC operations staff to not only assign user accounts, passwords, cases, and slides but also to administer review protocols, per cooperative groups, and per institution.

Early feedback provided from both the BPC operations staff and reviewers has been very constructive and the pilot project is scheduled to be deployed to 10 reviewers in July 2006. VM and Project VIPER will facilitate biorepository management and translational research in both gynecological and pediatric cancers by providing an automated pathology review system for confirmation of eligibility criteria in a secure retrievable database. This system will also, in turn, assist in creating a digital archive of original pathology material.