



Biomedical Informatics Special Seminar



***Rajarsi Gupta, MD, PhD; Instructor of Clinical Pathology,
Department of Pathology & Department of Biomedical
Informatics, Stony Brook University***

Utilizing Novel Data to Gain Insight into Human Disease and Develop Real-Time Clinical Applications

Tuesday, April 30th, 2019 2 pm—3 pm

HSC L3 Classroom 152

Abstract

Digitized whole slide images (WSIs) contain vast amounts of information that can provide additional insight into many types of cancer. I will introduce pioneering research in the rapidly emerging field of digital pathology that is focused on creating quantitative image analysis methods that can enhance traditional histopathologic evaluation of malignant tissues. Ongoing work in our lab is focused on extracting features like shape, color, and texture of malignant nuclei and characterizing lymphoplasmacytic infiltrates in WSIs of diagnostic tissue samples of cancer. I will highlight our current work in automated tumor detection that is being used in combination with our previously published lymphocyte detection method. The results appear quite promising and have the potential to be developed into a clinical application to screen breast cancer patients who can benefit from emerging immunotherapeutic treatment options. This combined tumor-immune detection method is also being developed for applications in pancreatic and prostate cancer. Future work will further explore the added benefit of combining other extracted features from WSIs with the tumor detection and lymphocyte detection methods. The goals of this research are to implement image analysis tools in the workflow of surgical pathologists by providing image-based data that can augment the diagnostic evaluation of tissue samples from patients and improve our ability to predict clinical outcomes and treatment response in many different types of cancer. Long-term goals of this research are to perform multidisciplinary correlative studies to develop clinically useful tools that integrate quantitative analyses of WSIs with clinical, radiologic, molecular testing, pharmacologic, and survival data in order to further our collective understanding of cancer biology and improve patient management.

Bio

Dr. Gupta is currently completing the second year of a Pathology Informatics fellowship in the Department of Biomedical Informatics and he is also actively engaged in ongoing research in the Shroyer/Escobar-Hoyos laboratory in the Department of Pathology. Dr. Gupta obtained a BA in Molecular Biophysics from the University of Pennsylvania and a MD/PhD combined degree from the Medical Scholars Program at the University of Illinois at Urbana-Champaign. After completing his postgraduate training, Dr. Gupta completed a 4 year Anatomic and Clinical Pathology (AP/CP) residency and a one year fellowship in Hematopathology at Stony Brook University Hospital. Dr. Gupta's research is focused on developing real-time deep learning-based image analysis tools to extract additional information from digital whole-slide images of tissue samples from patients to enhance traditional histopathologic evaluation performed by pathologists.

Questions? Please call the Biomedical Informatics Department at 631-638-2590.