J. Quincy Brown, PhD, Tulane University, USA

Bio:

J. Quincy Brown is the Paul H. and Donna D. Flower Assistant Professor of Biomedical Engineering at Tulane University. He received the Ph.D. in Biomedical Engineering from Louisiana Tech University in 2005 for his work on implantable "smart tattoo" optical glucose sensors under the direction of Michael J. McShane. He then pursued postdoctoral study in tissue optical spectroscopy and imaging for breast cancer applications at Duke University under the direction of Nimmi Ramanujam. He joined Tulane University in 2012, where he is the director of the Translational Biophotonics Laboratory, with a mission to improve cancer patient outcomes via the development and translation of practical biophotonics technologies. He has been active in the field of optical tumor margin assessment for over a decade, and has worked most extensively in the areas of breast cancer and prostate cancer.

Presentation Title:

Mind the Gaps: An Argument for more Comprehensive Surface Sampling of Tumor Resection Margins Using Advanced Microscopy

Abstract:

Surgical tumor removal is the frontline curative strategy for non-metastatic disease in most organs, yet good patient outcomes depend on the successful removal of the entire tumor. However, incomplete tumor removal continues to be a nuisance in clinical practice for many organs including the prostate, breast, soft tissue sarcoma, kidney, and others. The current clinical standard for determination of clean tumor margins is histopathology, which entails examination of sparsely sampled, micron-thin cross-sections of the removed tissue. This procedure is too slow and cumbersome to be of much use intra-operatively for large resection specimens, and suffers from extremely limited sampling of the tumor surface area (less than 0.1%) even in post-operative examination. Thus, the intervening gaps of the tumor resection surface, comprising the remaining 99.9%, go unexamined by pathologists, and the extent to which unobserved cancer involvement at the surface contributes to worse patient outcomes is unknown. Our group has been working to solve this problem by developing fast optical sectioning microscopy instruments and chemical strategies for pseudo-histology to enable whole-resection-surface microscopy. Such a strategy could be employed intra-operatively to identify and correct incomplete tumor resections, and could be employed post-operatively to obtain a more accurate assessment of residual tumor burden than standard histology sectioning can provide. In this talk I will discuss our results from over 60 patients for both kidney and prostate cancer removal surgeries, and will discuss the challenges and opportunities for translation of optical tumor margin assessment technologies.