ECE Speaker Series

Department of Electrical and Computer Engineering

Richard Levenson

Professor and Vice Chair for Strategic Technologies
Department of Pathology and Laboratory Medicine
University of California at Davis

Microscopic evaluation of tissue remains the definitive diagnostic procedure in the evaluation of most solid tumors, as well as of many other disease processes. Conventional brightfield or fluorescence microscopy works best with thin, stained specimens mounted on glass slides, but to prepare these requires hours of processing and the help of highly skilled technical personnel. We describe a new, inexpensive form of light microscopy, based on UV surface excitation (MUSE), that can generate high-quality histology and histopathology images directly from cut surfaces of fresh (or fixed) tissue samples of any thickness, within about two minutes. Unlike standard diagnostic processes, it is non-destructive, preserving the specimen for downstream molecular analyses. Through its use of novel contrast mechanisms and the capability to highlight surface topography, MUSE can present revealing new views of familiar specimens.

April 10, 2017 at 10:00am in Egr Bldg 2, Rm W122

Richard Levenson, MD, FCAP, is Professor and Vice Chair for Strategic Technologies in the Department of Pathology and Laboratory Medicine, UC Davis. After studying History and Literature at Harvard College, he obtained his training in medicine at University of Michigan and pathology at Washington University, and is Board-certified in Anatomic Pathology. A faculty position at Duke was followed by an appointment at Carnegie Mellon University where he helped develop multispectral imaging approaches for pathology and biology. In 1999, he joined Cambridge Research and Instrumentation (Cri, now part of PerkinElmer) to become VP of Research. His research has included multispectral microscopy systems and machine-learning software for molecular pathology and diagnostics, three-dimensional small-animal imaging, optical dynamic contrast techniques, birefringence microscopy, multiplexed ion beam imaging, and pigeons as diagnostic aid(e)s.

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