"Correlative Optical, X-Ray and Electron Microscopy in study of Disease Pathogenesis"

Correlative Microscopy is a recent concept in cellular imaging to extract spatial information across multiple length scales by using different, yet complementary imaging modalities. In its simplest form, Correlated Light and Electron Microscopy (CLEM) couples the multiplexed detection ability of fluorescence microscopy with the nanoscale ultrastructural resolution of electron microscopy. Recent efforts in the group have focused on the development of a targeted CLEM approach to study the pathogenesis of urinary tract infection, in particular focusing on the identification and structural characterization of intracellular bacterial communities (IBC). In contrast, our recent development of Correlated X-Ray and Focused Ion Beam Nanotomography allows the spatial targeting, in three-dimensions, of tissue specific structures in a whole organism for 3D ultrastructural imaging using Focused Ion Beam - Scanning Electron Microscopy (FIB-SEM). We have applied this novel approach to characterize defects in the elastic connective tissue of the heart muscle in a zebrafish model of dilated cardiomyopathy.

James A.J. Fitzpatrick, Ph.D.
Director, Center for Cellular Imaging
Associate Professor, Cell Biology & Physiology, Neuroscience and Biomedical Engineering
Washington University in St. Louis

James Fitzpatrick, Ph.D., joined the School of Medicine on June 1st 2015 as the inaugural Scientific Director of the Washington University Center for Cellular Imaging (WUCCI) and as an Associate Professor of Anatomy & Neurobiology and Cell Biology & Physiology. Prior to his appointment, he was Senior Director of Biophotonics and Strategic Technology Initiatives at the Salk Institute for Biological Studies in La Jolla, CA.