

NRI-MCDB Microscopy Facility General Statement

The Neuroscience Research Institute (NRI) and the Department of Molecular, Cellular and Developmental Biology (MCDB) jointly operate a shared core microscopy facility. Dr. Benjamin Lopez, a highly accomplished researcher with extensive expertise in microscopy, serves as the full-time Director of the Facility. Our instrumentation includes four confocal instruments all with environmental chambers: (1) a Leica SP8 resonant scanning confocal with white light laser, fluorescence lifetime imaging, and integrated deconvolution processing, (2) an Abberior Instruments Facility Line STED super-resolution microscope capable of 30-50 nm resolution of live and fixed samples with 5 excitation laser line, 2 STED depletion lasers, a special MATRIX detector, and adaptive optics, (3) an Olympus Fluoview 1000 laser scanning confocal microscope with 6 laser lines and spectral detection, all three with a motorized stage, and (4) an Olympus DSU spinning disk confocal microscope with a Hamamatsu EMCCD camera. Additionally we have: a Zeiss Z.1 Lightsheet microscope with 6 laser lines and dual sCMOS camera system, a JEOL transmission electron microscope, and 5 research grade compound microscopes equipped with fluorescence, phase, DIC, darkfield, and bright field capabilities. All compound microscopes are equipped with state-of-the-art monochrome or color cameras. A novel new instrument, the Nanolive 3D Cell Explorer, offers label-free low photodamage imaging for long-term timelapse imaging. For data storage there is a 600 TB data server with 10Gbit connections to the campus network and for data analysis there are two high-end computer workstations for 3D image processing and analysis using IMARIS and other software applications.