

CONFOCAL MICROSCOPY CORE FACILITY

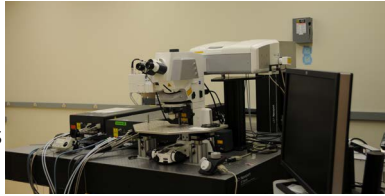
DEPARTMENT OF PHYSIOLOGY

CIBR: Center for Innovative Biomedical Resources

CORE INSTRUMENTATION

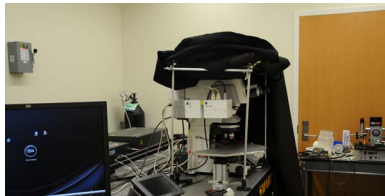
Zeiss 710 NLO & Zeiss 7MP

- Upright confocal microscope with single photon and multiphoton excitation capabilities for imaging live cells, slices and whole animals
- Excitation wavelengths 730 to 1300 nm; 2 PMT and 2 sensitive GaAsP detectors
- Provide ability to combine with other measurements (electrophysiology, etc.)



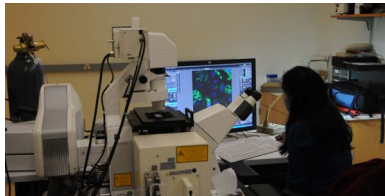
Zeiss 5Live & Zeiss 510

- Point-scanning and slit-scanning confocal microscope
- Fast acquisition frame rates for studying dynamic cellular processes at physiological temperatures
- Dual scan heads (5Live) allow simultaneous imaging and optical manipulation
- Excitation (488, 543, 560, 633, Ti:Sapphire laser)



Olympus LCV Incubated Microscope

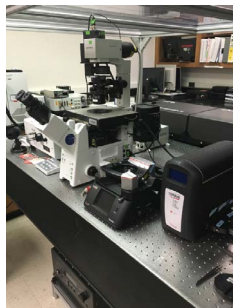
- Widefield inverted microscope allowing continuous imaging of cells for hours or days
- Fluorescence and DIC imaging on multiple positions
- Cell migration, cell division, wounding and repair processes, phagocytosis



Olympus FV300/Atomic Force Microscope

- Inverted confocal microscope capable of multicolored imaging
- Equipped with an Atomic Force Microscope accessory (AFM, Bruker)

The new microscope combines the capabilities of confocal imaging with atomic force microscopy for your experiments.



MISSION

The Confocal Core's mission is to provide researchers with a wide array of state-of-the-art confocal imaging equipment to enable acquisition of high resolution images (both *in vivo* and *in vitro*). The Confocal Core offers training and assistance in the use of multiple confocal microscopes housed in our facility. Optimization of data acquisition and image processing are both part of the training, thus enabling researchers to efficiently design studies, acquire image data and extract relevant data features. The confocal facility is available to all UMB researchers and extramural users on a fee-for-service basis.

CORE SERVICES

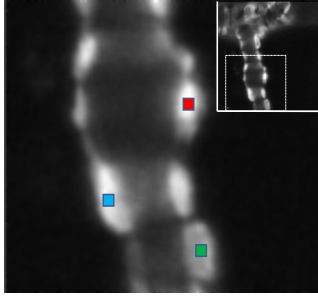
The facility provides individual instruction on an array of confocal microscopes. The needs of the researcher are considered in choosing which microscope will best suit the experimental design. In general, imaging of fixed samples, cultured cells, organ slices and small animals can be accommodated. Imaging techniques including FRET, FRAP, photoactivation and uncaging are readily implemented. The microscopes have excitation sources that cover most fluorophores with excitation ranging from 355-633 nm. Multiphoton excitation of fluorophores is also available on select instruments. An image analysis workstation equipped with software packages is available to users.

The Core also has a culture room with an incubator, culture hood and a widefield fluorescence microscope for use in preparation of cultured and live samples. Preparation of live animals for imaging experiments can also be done in this newly renovated space.

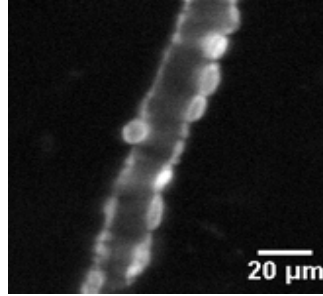
CONFOCAL MICROSCOPY CORE FACILITY

DEPARTMENT OF PHYSIOLOGY

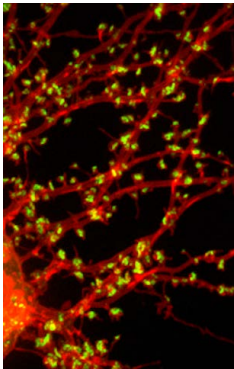
CIBR: Center for Innovative Biomedical Resources



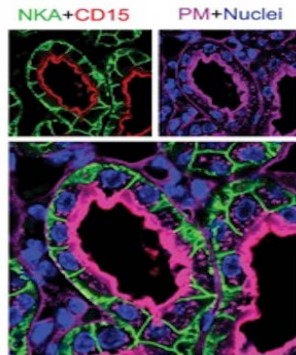
10 μ m



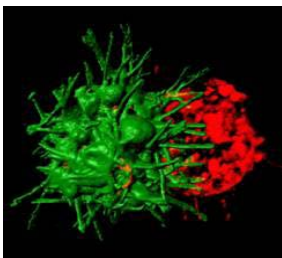
Imaging of vascular tone and Ca²⁺ signaling in murine cremaster muscle arterioles *in vivo*
Mauban *et al.* (2013) Microcirculation



Cultured neuron expressing tdTomato (red) and the synaptic marker PSD-95-GFP (green)
courtesy of Blanpied Lab



Fixed Kidney Sections
courtesy of Dr. A. Villar



Microtentacles on a live, free-floating breast tumor cell labeled with membrane-localized GFP (green) encircle a neighboring tumor cell (red)
courtesy of Martin Lab

CONTACT



Thomas Blanpied, PhD, Director
Department of Physiology
Room 505, Howard Hall
tBlanpied@som.umaryland.edu
410-706-4769



Joseph Ryan H. Mauban, PhD
Confocal Core Manager
Department of Physiology
Room 523, Howard Hall
jmauban@umaryland.edu
410-706-6170

LOCATION

Room 610, Health Sciences Facility I
685 West Baltimore Street
Baltimore, MD 21201
410-706-3925

Web Address

<http://medschool.umaryland.edu/CIBR/confocal>