**URL:** <http://www.utoledo.edu/med/research/icf/facilities.html>

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**Description**

*Square Footage*: 3,000

*Facility Location*: Health Science Campus, Block Health Science Building, Room 057

The University of Toledo Advanced Microscopy & Imaging Center on the Health Science Campus is a 3,000 square foot facility designed to bring together advanced light and fluorescence microscopy systems and “state of the art” image analysis software to perform biomedical research.  Current projects in this center include work in Cancer, Genetics, Neurobiology, Vascular Biology, Pathology, Pulmonology, and Arthritis research.  The Center consists of a 1,000 square foot General Microscopy Laboratory with 12 separate “work stations” housing individual, computer-based microscopy systems.  The center also includes an 800 square foot, Tissue-culture Microscopy Laboratory with 6 separate “work stations” for microscopy systems dedicated to the study of living cells, along with complete culture facilities and a cryogenic storage system.

**Major Equipment**

* **Leica TCS SP5 multiphoton laser scanning confocal microscope** outfitted with both conventional and high speed scanners, allowing for excitations lines from 458, 488, 514, 561, 633, and 710-990nm (from the tunable Ti-Sapphire MP laser). This system is capable of collecting up to 5 colors simultaneously for quantitative confocal image analysis, 3D reconstruction, FRAP and FRET, animation, stereo imaging, single layer projection, time lapse collection, and co-localization analysis.
* **Olympus Total Internal Reflection Fluorescence (TIRF) Microscope** coupled to multiple laser lines (488, 546, 633nm) and equipped with a live-cell imaging incubator for time-lapse imaging.  Experiments requiring whole animal fluorescence/bioluminescence imaging are performed on the **IVIS Spectrum** (Molecular Devices), a multimodal bioluminescent/fluorescent imaging system designed for noninvasive imaging of cells and tissues in small animals.  This instrument facilitates the study of biological processes via fluorescence, including tumor growth, cancer metastasis, bacterial infections, immune responses and inflammation, and regulation of tissue-specific gene expression.
* **ACUSON Sequoia C512 ultrasound imaging system**, manufactured by Siemens Medical Solutions USA, Inc. is also available.  This echocardiography system is

widely accepted as a valuable research tool for studying a broad range of cardiovascular disease processes in small animals, including ischemic heart disease, heart failure, cardiac hypertrophy and remodeling, hypertension and diabetic cardiomyopathy.  The Sequoia system provides a full range of echocardiographic capabilities including high-resolution imaging, tissue harmonic imaging, differential echo amplification, spectral Doppler (Pulsed and Continuous Wave), color Doppler (for measurements of velocity energy and tissue Doppler imaging), and M-mode and color-Doppler M-mode imaging.

* **Full service Histology Core** that provides researchers with a range of specimen work-up and preparation selection.  This includes both paraffin and frozen sections and is inclusive of processing, embedding, sectioning, staining (H&E or special stains) and coverslipping.  A number of special stains are routinely performed including H&E, trichrome, PAS, Oil Red O, etc. as well as immunohistochemistry (IHC) and immunofluorescence (IF).  Special procedures for IHC and IF are discussed on an individual basis to incorporate antigen retrieval methods and antibody selection.  A state-of-the-art Electron Microscopy (EM) Laboratory is also part of the AMIC. The EM facility specializes in ultrastructural diagnosis of human disease and also provides research support to The University of Toledo and is equipped with two transmission electron microscopes.