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Description of the Facility

Background Overview
The BioImaging Facility at Hunter College is centered in a multi-room facility of 1024 sq. ft. located in the Biological Sciences Department on the 8th Floor of Hunter North building. A satellite facility also includes a number of instruments on the 4th Floor of the Belfer Research building (at 69th Street and York Ave). Faculty and students have access to a broad spectrum of instruments, ranging from simple white light wide-field microscopes to fluorescent multidimensional super-resolution and confocal imaging systems. The Faculty supervisor and Scientific Director is Dr. Diana P. Bratu. Dr. Lloyd Williams is the Managing Director of the facility. The facility staff has expertise in many areas of microscopy including the laser scanning confocal microscopy, super-resolution microscopy, two-photon microscopy. They are also familiar with many image analysis software packages, including, Imaris, Volocity, Autoquant, MetaMorph, and NIS-Elements. Detailed descriptions of the equipment in the facility is given below. All equipment is located at Rm 826 HN or at the 4th floor of the Belfer Research Building where designated.
To book time on any of the instruments go to  http://bookit.hunter.cuny.edu

Instruments

**Nikon Eclipse Ti, TIRF/SIM**
The Nikon TIRF SIM microscope allows the users to do both Total Internal Reflection Microscopy and SIM super-resolution microscopy. The acquisition software is Nikon NIS-Elements.
The charge for this instrument is $20/hr.

**Belfer Nikon A1 Confocal Microscope**
The Nikon A1 Confocal microscope is Nikon's powerful fully-automated confocal imaging system, capable of capturing high-resolution images with enhanced sensitivity. The acquisition software is NIS-Elements. The system is located at Belfer Research Building.
The charge for this instrument is $20/hr.
Nikon Eclipse Ti Mosaic System for FRAP
The Nikon Eclipse Ti scope is a wide-field fluorescent microscope. It is equipped with Andor iXon EMCCD camera and a DG5... an Andor Mosaic/MicroPoint system for Optogenetics, Opto physiology, photobleaching/activation and uncaging applications.
The charge for this instrument is $15/hr.

Perkin Elmer UltraView ERS
The UltraView is a spinning disk confocal microscope equipped with five laser lines, which allow visualization of GFP, YFP, and other fluorophores. The UltraView is used for high-speed, multiple-probe, time-lapse experiments; NIS-Elements software is used for image acquisition and analysis.

Leica Confocal TCS SP8 DLS
The Leica TCS SP8 DLS is a dual function fluorescence microscope that can be used as a conventional laser scanning confocal microscope (LSCM) or as a lightsheet fluorescence microscope (LSFM).
The charge for this instrument is $20/hr.

Leica Confocal Microscope TCS SP2
The TCS SP2 Laser Scanning Spectral Confocal Microscope can do measurements of transmitted light, fluorescence, and laser scanning fluorescence imaging.
The charge for this instrument is $20/hr.

**Nikon Eclipse TE 200 Calcium Ratio & Micro Injection**

The calcium ratio imaging system consists of: a Nikon Eclipse TE 200 inverted epifluorescence microscope, Sutter Lambda Fluorescence microspectrofluorometer, Sutter Lambda 1000 Raman microscope, Calcium & FRET imaging software with Calcium & FRET plug-in. The system also is equipped with a Narishige micromanipulator system.

The charge for this instrument is $10/hr.

**Belfer Nikon Ti-S Fluorescence Microscope**

The Nikon Ti-S microscope has a SOLA Light Engine solid state light source and a Nikon DigiSight digital camera. It has filter sets for DAPI FITC and RFP. The charge for this instrument is $5/hr.

**JEOL JEM-100C/CX Transmission Electron Microscope**

JEOL JEM-100CX II transmission electron microscope is an advanced high-performance electron microscope that provides high-resolution images. A 10M-pixel HAMAMATSU C4742-95 digital camera is integrated into the system for high-resolution image acquisition.
Nikon Eclipse E 400 Color Image Analysis System

The Nikon Color Imaging system consists of a Nikon Eclipse E400 upright microscope, and Nikon DXM 1200F high-resolution digital camera. The system utilizes Nikon Imaging Software. The system also has Adobe Photoshop installed for image acquisition and manipulation. The charge for this instrument is $5/hr.

Imaris Imaging Station

The Imaris Imaging station is a high-power workstation with Bitplane's Imaris Imaging software installed. Imaris provides functionality for the visualization, segmentation, and interpretation of 3D and 4D microscopy datasets. The charge for this instrument is $10/hr.

NIS-Elements Imaging Station

This Imaging workstation is a high-power workstation with Nikon's NIS-Elements Imaging software installed. NIS-Elements provides cutting-edge tools for image manipulation and data management. The charge for these instruments is $5/hr.
Autoquant and NIS-Elements Imaging Analysis Station

This Imaging workstation has both AutoQuant and Nikon’s NIS-Elements Imaging software installed. AutoQuant is used to deconvolve images acquired in the facility. The charge for this instrument is $10/hr.

To book time on these systems use the Bioimaging SharePoint Calendar at:

Gemini EM Microplate Spectrofluorometer

The Molecular Devices SpectraMax Gemini EM Microplate Spectrofluorometer features top and bottom reading optics, dual wavelength scanning, well scanning, auto PMT gain and is driven by Softmax Pro software on a Windows-based controller. The charge for this instrument is $5/scan.
Amersham Biosciences Typhoon 9410

Typhoon is a highly sensitive variable-mode gel imager. The Typhoon 9410 unites the ability to detect an extensive range of chemiluminescent and fluorescent substrates with the high-speed photography of a digital camera. The Typhoon 9410 is particularly suited for the imaging of gels and blots, and can also be employed for the direct imaging of chemiluminescence. The Typhoon 9410 can also be used to analyze microarrays.

The charge for this instrument is $5/scan.

Belfer GE FLA 7000 Typhoon FLA

Typhoon FLA 7000 is a fast laser scanner for biomolecular imaging applications including sensitive and quantitative measurements of radioisotopic labels, chemifluorescent Western blots, and single fluorescence. The Typhoon FLA 7000 is equipped with a 256x256 pixel detector and a high-speed laser for fast scanning.

The charge for this instrument is $5/scan.

Odyssey Infrared Imager

The Odyssey replaces traditional methods of analyzing western blots, chemiluminescence, and fluorescent applications. It is equipped with two infrared channels 700 nm and 800 nm, and can thus probe two different targets in the same experiment.

The charge for this instrument is $5/scan.
PowerWave HT Microplate Spectrophotometer

PowerWave HT is a multi-channel reader for maximum speed in both 96- and 384-well plate formats. The PowerWave HT supports all kinetics, spectral scanning, and fluorimetric modes. Powerful Gen5 PC-based software is used for system control and data analysis.

Charge for this instrument is $3/scan.

Belfer Bio Tek Synergy HTX Microplate Reader

Synergy HTX is a Multi-Mode Microplate Reader for making: absorbance, fluorescence, luminescence, and AlphaScreen/AlphaLISA measurements on 6- to 384-well microplates.

Charge for this instrument is $3/scan.

GloMax®-96 Microplate Luminometer

GloMax®-96 Microplate Luminometer is a state-of-the-art Microplate Luminometer that supports a wide range of assays, including bioluminescent and chemiluminescent assays. It eliminates the need to dilute samples or manage detector-driven gain changes.

Charge for this instrument is $5/scan.
The Bio-Imaging Facility - Biology

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The Max specimen size is 55 X 70 mm and can cool samples down to -50°C. The facility charges $10 per hour for use of this image analyser.

The following guidelines apply:

1. Turn off all microscope lamps after use. It is particularly important to turn off the mercury lamps as they will heat up the facility and potentially damage other equipment.
2. If you encounter problems with the facility, email the facility director Lloyd Williams at williams@genectr.hunter.cuny.edu.
3. Your use of the facility will be recorded. For the optical microscopes and the Gel and Blot analysis package, there is a $10 minimum charge, and fractions of an hour count as whole hours. Please sign the log book.
4. Photographing or video recording the facility is strictly prohibited.

For scheduling remote microscopic imaging experiments, please check the following link for PVX real-time conferencing: PVX video conferencing operational guide.

For PVX video conferencing for real-time consultation: during imaging experiments, please check the following link for Perkin Elmer spinning disk microscope system:

Perkin Elmer spinning disk microscope:

- Besides the regular 2D & 3D fixed slide scanning, samples can be cooled down for 15 minutes.
- Leica SP2 system is available for Perkin Elmer spinning disk microscope.
- There is a $5 minimum charge, and fractions of an hour count as whole hours.

Guidelines for using the facility:

- You must log in to use the equipment using your University ID.
- You must have completed the training course before your account will be activated.
- If you encounter problems with the facility, email the facility director Lloyd Williams at williams@genectr.hunter.cuny.edu.
- Email Lloyd Williams in advance for applying this policy.
- The facility charges $10 per scan. Use the following guide for various instruments:
  - ELISA/FLISA
  - On-cell Western Assay
  - In-cell Western Assay
  - In-Gel Western Assay
  - Protein Quantitation
  - Cell Viability, Nucleic Acid Quantitation
  - Proliferation, and Cytotoxicity Enzyme Assays
  - Transporter Assays
  - Phosphatases/Kinases
  - Microbial Growth
  - RNA quantitation
  - Chemiluminescence
  - Bioluminescent assay
  - Western blot sample

Objectives of Microscopes in the Bio-imaging Facility:

- Nikon Eclipse Ti Mosaic/MicroPoint System & FRAP Room 826 HN
- Leica CM 3050S Cryostat
- Biotek PowerWave
- Glomax 96
- Glomax Microplate
- Gemini EM
- Microplate

Description of excitation and emission wavelengths:

- **Solid State Laser** 532 nm
- **Solid State Laser** 561 nm
- **405 nm** SYAG laser
- **457, 488 nm** Argon Ion Laser
- **Nikon Eclipse Ti Mosaic/MicroPoint System & FRAP Room 826 HN**
  - 640 nm
  - 440 nm
  - **561 nm**
  - **561 nm** SIM module
- **Leica Sp8 Confocal**
  - 640 nm
  - 561 nm
- **458, 476, 488, 514 nm** Argon Ion Laser
- **561 nm**
- **405 nm**
- **561 nm**
- **561 nm**
- **561 nm** SIM module
- **Nikon Upright & Inverted Microscopes**
  - 640 nm
  - 440 nm
- **561 nm**
- **561 nm**
- **561 nm**
- **458, 476, 488, 514 nm** Argon Ion Laser
- **PowerWave HT Plate Reader**
- **All Other Nikon Upright & Inverted Microscopes**: 640 nm
- **Leica Sp8 Confocal**
  - 640 nm
  - 561 nm
  - **561 nm** SIM module
- **Leica CM 3050S Cryostat**
  - 640 nm

Sign the log book.