Managing Director
Dr. Lloyd Williams
Email: williams@genectr.hunter.cuny.edu
Office: 826B in the Hunter North Building
Phone: (212) 650 3872
Fax: (212) 650 3565
Scientific Director
Prof. Diana Bratu, Associate Professor
Email: bratu@genectr.hunter.cuny.edu
Office: 914D in the Hunter North Building
Phone: (212) 772 5235
Fax: (212) 772 5227

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

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.

To book time, use the SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/TIRF%20SIM%20Calendar/calendar.aspx

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 exceptional signal-to-noise ratios, high contrast, and enhanced sensitivity. The acquisition software is NIS-Elements. The system is located at Belfer Research Building.

The charge for this instrument is $20/hr.

To book time use the SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Nikon%20A1%20confocal%20microscope%20Belfer%20Building/calendar.aspx

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 laser system. The system is equipped with an Andor Mosaic/MicroPoint system for Optogenetics, Optophysiology, photobleaching/activation and uncaging applications.

The charge for this instrument is $15/hr.

To book time on this system use the Sharepoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Nikon%20Eclipse%20Ti%20With%20Ultima%20High%20Speed%20Wavelength/calendar.aspx
Perkin Elmer UltraView ERS
The UltraView is a spinning disk confocal microscope equipped with five laser lines, which allow visualization of GFP, RFP, YFP, CFP, and DsRed. It is used for high-speed, multiple-probe, time-lapse experiments; NIS-Elements software is used for image acquisition and analysis. The charge for this instrument is $20/hr.
To book time on this system use the SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Spinning%20Disk%20Calendar/calendar.aspx

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.
To book time on this system use the SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Leica%20Confocal%20Calendar/calendar.aspx

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 10-2 laser diode, a Hamamatsu ORCA-ER cooled digital camera, Cell*RTS software with Calcium & FRET plug-in. The system also is equipped with a Narishige micromanipulator. The charge for this instrument is $10/hr.
To book time on this system use the Calcium Imager SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Calcium%20Imager%20Calendar/calendar.aspx
Belfer Nikon Ti-S Fluorescence Microscope

The Nikon Ti-S microscope has a SOLA Light Engine solid state light source and a Nikon DigiSight 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. It has a powerful electron optical system with a maximum magnification of 800,000X. 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. To book time on this system use the Imaris SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Imaris%20Calendar/calendar.aspx

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. To book time on these systems use the Bioimaging SharePoint Calendar at: http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/NIS%20Elements%20Calendar/calendar.aspx

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: http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Drobo_PC%20NIS%20Elements%20Calendar/calendar.aspx
Belfer NIS-Elements Analysis with Deconvolution
This Imaging workstation has Nikon's NIS-Elements Imaging software installed. Additionally, it has Element’s deconvolution module installed. The charge for this instrument is $5/hr.

Gemini EM Microplate Spectrofluorometer
The Molecular Devices SpectraMax Gemini EM Microplate Spectrofluorometer features top and bottom reading optics, dual excitation 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 autoradiography technology and direct imaging of chemiluminescence. The typhoon can also be used to analyze microarrays. The charge for this instrument is $5/scan.
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 charge for this instrument is $5/scan.

Odyssey Infrared Imager

The Odyssey replaces tradition methods of analyzing western blots, chemiluminescence, and fluorescence detection, 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 software is user-friendly, providing both kinetic and spectral scanning mode. Powerful Gen5 PC-based software is used for system control and data analysis.

The charge for this instrument is $3/scan.
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Synchrotron Microscopy:

- The facility is open for use by members of the CTBR, other CUNY departments, and outside parties with the prior arrangement of the staff of the Bio-Imaging facility.

**Cryostat Systems:**

- Cryostat is available for use 7 X 24. After normal working hours (9-5 Mon-Fri) lock the computers that control the equipment. Your use of the machine will then be automatically recorded.

**Microscope Systems:**

- The facility operates as follows:
  - **Leica SP2 Confocal, Room 826 HN:**
    - **Description:**
      - A (50x/1.4) oil, **543 nm**
      - A (100x/1.4) oil, **633 nm**
    - **Application:**
      - Image
      - On-cell Western Assay
      - ELISA/FLISA
      - Nucleic Acid Quantitation
      - Reporter Gene Assays
      - RNA quantitation
      - Western blot sample

- **Leica CM 3050S Cryostat:**
  - Features motorized sectioning and programmable defrost cycles.
  - Cuts sections in the range 0.5 to 300 µm.
  - To book time on this system use the Cryostat SharePoint Calendar at http://biosharepoint.hunter.cuny.edu/Bio-Imaging/Lists/Leica%20CM3050S%20Cryostat/calendar.aspx

- **Nikon SIM/TIRF:**
  - Spinning disk

- **PerkinElmer Spinning Disk Microscope:**
  - Leica CM 3050S Cryostat:
    - **543 nm**
    - **633 nm**
  - Nikon SIM/TIRF:
    - **514 nm**
    - **640 nm**
  - Leica SP2 Confocal, Room 826 HN:
    - **457 nm**
    - **488 nm**

**Spectrometers:**

- **Fluorescence Spectrometer**
- **HT Plate Reader**
- **Luminometer**

**Wavelength Specifications:**

- **40x/1.0/oil**
- **10x/0.45**
- **640 nm**
- **561 nm**
- **100x/1.4/oil**
- **63x/1.4/oil**
- **20x/0.5**
- **200-999nm**
- **488 nm**
- **514 nm**
- **561 nm**
- **633 nm**

**Laser Specifications:**

- **457, 488 nm**
- **Amersham Biosciences Typhoon 9410 Room 826 HN**
- **Solid State Laser**
- **Leica SP2 operational guide**

**Image Analysis Workstations:**

- **Imaris Analysis Workstation**
- **Webex remote control guide**
- **PVX video conferencing operational guide**

**Chemical Applications:**

- **Absorbance**
- **Fluorescence**
- **Luminescence**
- **Percent transmittance**
- **Near-infrared detection 680-1000nm**
- **Near-infrared detection 850-1200nm**

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Contact us by email for scheduling a remote microscopic imaging experiment, including, a real-time conferencing: zwang@genectr.hunter.cuny.edu, Williams@genectr.hunter.cuny.edu, ams@genectr.hunter.cuny.edu, or his assistant Zhong Wang at zwang@genectr.hunter.cuny.edu.

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