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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

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 organelles and subcellular structures. The microscope is equipped with wide-field imaging capabilities, as well as high-speed imaging 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 DG5020 pulsed diode laser. The microscope is also equipped with an Andor Mosaic/MicroPoint system for Optogenetics, Opto physiology, 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 mCherry. 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 Picoscan microinjectors, PowerShot G10 cameras, Adobe Photoshop software, and Nikon professional grade microscopes for transmitted light, fluorescence, and phase contrast imaging. It is used for calcium imaging and microinjection experiments.

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 resolution of 0.71 Å and an acceleration voltage of 100 kV. A 10M-pixel HAMAMATSU C4742-95 digital camera is integrated into the system for high-resolution image acquisition.

Nikon Eclipse E400 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.
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 instruments is $5/hr.

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 radioactive signals with high-resolution digital images using Typhoon autoradiography technology and direct imaging of chemiluminescence. The typhoon can also be used to analyze microarrays. The charge for this instrument is $5/scan.
Belfer GE FLA 7000 Typhoon

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 traditional methods of analyzing western blots, chemiluminescence, and fluorescence detection. It is equipped with two infrared channels at 700 nm and 800 nm, allowing for the simultaneous probing of 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 instrument is capable of performing kinetic and spectral scanning modes. Powerful Gen5 PC-based software is used for system control and data analysis.
The charge for this instrument is $3/scan.
### Laser Wavelength Specifications for Various Instruments

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<td>Synergy HTX</td>
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### Guidelines for Using the Facility

- **Rules of Operations**
  - Remote Instrumentation
    - Remote users can get remote access to advanced confocal microscopes for imaging purposes.
    - Utilize WebEx for remote desktop sharing.
    - Setup remote conferencing for real-time conferencing.

- **Remote Instrumentation**
  - A special rate policy applies: minimum charge is $5, and fractions of an hour count as whole hours.
  - Email Zhong Wang (zwang@genectr.hunter.cuny.edu) for applying this policy.

- **Equipment Charges**
  - Leica CM 3050S Cryostat: $5/hr, 15 minimum charge, and fractions of an hour count as whole hours.
  - Nikon Eclipse Ti Mosaic/MicroPoint System & FRAP: $15/hr, 5 minimum charge, and fractions of an hour count as whole hours.
  - Leica SP2 operational guide: $10/hr for use of an image.
  - PE Spinning-disk: $10/hr for use of an image.
  - Biotek PowerWave: $3/scan.

- **Contact Information**
  - For scheduling, contact Lloyd Williams (lloydw@genectr.hunter.cuny.edu) or Zhong Wang (zwang@genectr.hunter.cuny.edu).
  - For technical support, contact Zhong Wang (zwang@genectr.hunter.cuny.edu) or Lloyd Williams (lloydw@genectr.hunter.cuny.edu).
  - For instrument specifications, visit the Bio-Imaging Facility website or contact Zhong Wang (zwang@genectr.hunter.cuny.edu).

- **Sample Sizes**
  - The max specimen size is 55 X 70 mm, and samples can be cooled down to -50°C.

- **Safety Precautions**
  - Do not wear latex gloves in the facility.
  - Use proper PPE as per facility policy.
  - Sigma Aldrich Western Blot sample
  - ELISA Sample
  - Western blot sample
  - In-Gel Western Assay
  - Microwestern
  - In-cell Western Assay
  - On-cell Western Assay
  - Quantitative Western
  - RNA quantitation
  - Fluorography
  - Western blot sample
  - ELISAs and Immunoassays

- **Detection Modes**
  - Luminescence
  - Fluorescence
  - Phosphorimaging Chemiluminescence
  - Near-infrared detection

- **Sample Types**
  - 96 & 384-well plate
  - 200-999nm
  - 250-850nm
  - 457nm/488nm
  - 561nm

- **Image Bases**
  - Typhoon 9410 Imager
  - Biotek PowerWave
  - Leica CM 3050S Cryostat
  - Nikon A1R Resonant Confocal

- **Imaging Workstations**
  - Leica Confocal
  - Elements Analysis Workstation
  - Imaris Analysis Workstation
  - Synergy HTX