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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 delivering images with minimal photobleaching 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 scanning head. The system is 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%20Ultra%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, Cy5, and FITC channels. It is ideal 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](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](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 909 laser scanning unit, Carl Zeiss Axio Scope fluorescence microscope, and a Nikon Coolpix 990 camera. It also is equipped with a Narishige micromanipulator system and the Calcium & FRET imaging software.
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](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 magnification range of 20,000X to 1,000,000X. 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 DigiSight 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:

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 and emission wavelengths, variable optical bandpass, dual PMT, 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 signals from 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. 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. It is capable of 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.
The Digital Bio-Imaging Facility is supported by a Research Centers in Minority Websites:

- PVX video conferencing for real-time consultation: during imaging experiment, PVX video conferencing system is used for real-time conversations between microscope operator and remote observers.
- Perkin Elmer spinning disk microscope: besides the regular 2D & 3D fixed slide scanning, the facility also provides live scanning of 2D & 3D samples. Please check the following link for Leica SP2 system.

**Our service includes:**
- Video conferencing for remote communication purpose.
- PVX monitoring system to set up Internet video conferencing for remote control of the microscope for their experiment through a simple Internet connection.
- Remote instrumentation service using WebEx and PVX to facilitate remote experimentation.
- Utilize PVX monitoring system to setup Internet video conferencing for remote control of the microscope for their experiment through a simple Internet connection.
- A solution to overcome the high cost of advanced microscope systems is to share the microscope with other research labs. An approach for this remote instrumentation task is to combine the powers of WebEx and PVX.

**Fee Schedule**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 4 hours</td>
<td>$20/hour</td>
</tr>
<tr>
<td>4 - 10 hours</td>
<td>$10/hour</td>
</tr>
<tr>
<td>10+ hours</td>
<td>Special rate policy described as follows: in any 24 hour period, the facility charges $20 per hour for use of this microscope. There is a $20 minimum charge, and fractions of an hour count as whole hours.</td>
</tr>
</tbody>
</table>

**Special equipment and facilities:**

- Solid State Laser
- Amersham Biosciences Typhoon 9410 Room 826 HN
- Nikon Eclipse Ti Mosaic/MicroPoint System & FRAP Room 826 HN
- TIRF Module
- Nikon TIRF/SIM Room 826 HN

**Applications for various instruments:**

- ELISA/FLISA
- Reporter Gene Assays
- Transporter Assays Phosphatases/Kinases Microbial Growth
- RNA quantitation
- Western blot sample
- Immunohistochemistry
- Immunofluorescence
- Proliferation, and Cytotoxicity Enzyme Assays
- Glomax 96

**Equipment availability:**

- The facility charges $20 per hour for use of this microscope. There is a $20 minimum charge, and fractions of an hour count as whole hours. A solution to overcome the high cost of advanced microscope systems is to share the microscope with other research labs. An approach for this remote instrumentation task is to combine the powers of WebEx and PVX.

**Remote instrumentation service:**

- The facility charges $3 per scan. Use is monitored by the event log on the computer attached to the machines. For long time duration experiment, we have a special rate policy described as follows: in any 24 hour period, the facility charges $20 per hour for use of this microscope. There is a $20 minimum charge, and fractions of an hour count as whole hours. For long time duration experiment, we have a special rate policy described as follows: in any 24 hour period, the facility charges $20 per hour for use of this microscope. There is a $20 minimum charge, and fractions of an hour count as whole hours. For long time duration experiment, we have a special rate policy described as follows: in any 24 hour period, the facility charges $20 per hour for use of this microscope. There is a $20 minimum charge, and fractions of an hour count as whole hours. For long time duration experiment, we have a special rate policy described as follows: in any 24 hour period, the facility charges $20 per hour for use of this microscope. There is a $20 minimum charge, and fractions of an hour count as whole hours.