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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 super-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. 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 Dampened Gating Switching power supply. The scope is fitted 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, mCherry, and mTomato. It is capable of performing 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, Dantec dye laser, and Bio Imaging Analyst for image analysis. The system also is equipped with a Narishige micromanipulator system.

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 with a stable and accurate illumination system. 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. This system utilizes Nikon Imaging Software and 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, time resolution, 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 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.
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. The instrument also supports 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.
The Digital Bio-Imaging Facility is supported by a Research Centers in Minority Institutions (RCMI) program. The facility is open for use by members of the CTBR, other CUNY departments, and other researchers. The facility charges $3 per scan. Use is monitored by the event log on the computer attached to the machines.

There is a $5 minimum charge, and fractions of an hour count as whole hours. For example, Monday 12-4pm, Tues 9-1pm. After Monday's session, the user may schedule their next session. Remote users can get the WebEx-based remote control operational guide.

Remote Instrumentation: Remote users can connect to the facility's computers that control the equipment. Your use of the machine will then be automatically monitored by the event log of the machine. A $5 per hour minimum charge applies for use of the cryostat. The facility charges $5 per hour for use of the Cryostat. There is a $5 per hour minimum charge for use of the cryostat.

A. The facility is open for use by members of the CTBR, other CUNY departments, and other researchers.
B. Equipment is available on a first come first serve basis. You can book 4 hours slots on the calendar.aspx.
C. Report mercury lamps in service for more than 300 hours.
D. Turn off all microscope lamps after use. It is particularly important to turn off the mercury lamps and cool them for 15 minutes.
E. If you encounter problems with the facility, e-mail the facility director, Lloyd Williams at Williams@genectr.hunter.cuny.edu.
F. Publications using data taken in this facility must acknowledge the RCMI program and the National Institutes of Health.

Guidelines for using the facility:

(i) Leica SP2 confocal microscope: It is ideal for regular 2D & 3D scanning for fixed slide samples. Please check the following link for the Leica SP2 system:

(ii) Perkin Elmer spinning disk microscope: Besides the regular 2D & 3D fixed slide scanning, spinning disk systems can be used for real-time conferencing: PVX video conferencing operational guide.

Cell staining protocol: A simple cell staining protocol is posted here as an example:

Remote connection: A PVX video conferencing system is used for real-time conversations between microscope operators, which requires an approved application summary for different readers in bio-imaging facility.

Objectives of microscopes in the bio-imaging facility:

1. Leica SP2 confocal microscope: It is ideal for regular 2D & 3D scanning for fixed slide samples. Please check the following link for the Leica SP2 system.
2. Perkin Elmer spinning disk microscope: Besides the regular 2D & 3D fixed slide scanning, spinning disk systems can be used for real-time conferencing: PVX video conferencing operational guide.

Purpose

Remote Instrumentation

0 - 4 hours $20/hour
4 - 8 hours $25/hour
8 - 12 hours $30/hour
12 - 16 hours $35/hour
16 - 20 hours $40/hour
20 - 24 hours $45/hour

Remote Instrumentation

Remote connection:

A PVX video conferencing system is used for real-time conversations between microscope operators, which requires an approved application summary for different readers in bio-imaging facility.

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<td>State-of-the-art Microplate Luminometer</td>
<td>Absorbance, fluorescence, luminescence and bioluminescent assays, eliminating the need to dilute samples or manage detector-driven gain changes.</td>
</tr>
<tr>
<td>Syngene GS Multimode Reader</td>
<td>Multi-Mode Reader</td>
<td>Absorbance, fluorescence, luminescence and bioluminescent assays, eliminating the need to dilute samples or manage detector-driven gain changes.</td>
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For more information, please visit the facility's website.