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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, Optophysiology, 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, ...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 D生产总值 fluorescence microscope, Hamamatsu Orca flash charge-coupled device (CCD) camera, and MetaMorph 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 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.
The Nikon Color Imaging system consists of a Nikon Eclipse E400 upright microscope, and Nikon DXM 1200F high-resolution digital camera. The system also utilizes Nikon Imaging Software. The charge for this instrument is $5/hr.

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.

The NIS-Elements Imaging Station 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 this instrument 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:

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, dualexcitation, dual-emission, 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 multiple radioisotopic labels or chemiluminescent substrates and multiple wavelength fluorophors. It can be used with traditional 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 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 charge for this instrument is $5/scan.

Odyssey Infrared Imager

The Odyssey replaces the traditional methods of analyzing western blots, chemiluminescence, and fluorescence by allowing the simultaneous detection of up to five targets. 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 excels in 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.

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.

The charge for this instrument is $3/scan.

GloMax®-96 Microplate Luminometer

The GloMax®-96 Microplate Luminometer is a state-of-the-art Microplate Luminometer. It offers high sensitivity and broad flexibility for making: absorbance, fluorescence, luminescence, bioluminescent and chemiluminescent assays, eliminating the need to dilute samples or manage detector-driven gain changes.

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

Objectives of Microscopes in the Bio-imaging Facility

<table>
<thead>
<tr>
<th>Description</th>
<th>Lens/System</th>
<th>Wavelength</th>
<th>Excitation</th>
<th>Detection</th>
<th>Application</th>
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<tr>
<td>Microwestern</td>
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<td>532nm/633nm</td>
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<td>ELISA/FLISA</td>
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<td>On-cell Western Assay</td>
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<td>Protein Quantitation</td>
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<td>Colorimetric assays</td>
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<td>200-999nm</td>
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Remote Instrumentation

Elements Analysis Workstation:
- PowerWave HT Plate Reader
- Leica CM 3050S Cryostat
- Nikon SIM/TIRF
- Leica Sp2 Confocal
- Nikon Eclipse Ti Mosaic/MicroPoint System & FRAP Room 826 HN

Guide for the Nikon A1R Resonant Confocal (Room Belfer BB 453):
- 473 nm (Solid State Laser)
- 561 nm (SYAG laser)
- 640 nm (Solid State Laser)
- 650 nm (Solid State Laser)
- 635 nm (Solid State Laser)
- 561 nm (Melles Griot Solid State Laser)
- 405 nm (Solid State Laser)
- TIRF Module

Leica SP2 operational guide

− 4x/0.1
− 40x/0.6
− 100x/1.49/oil
− 60x/1.49/oil

Leica Upright
− 20x/0.45
− 40x/0.6

Biotek PowerWave
− Glomax 96
− Luminescence
− Endpoint/Kinetics
− 680nm/780nm

SpectraMax
− Chemiluminescence Bioluminescent assay
− Endpoint/Kinetics
− Fluorescence
− 635nm/640nm

LI-COR Odyssey
− Direct DNA quantitation
− 640nm/780nm
− Purity testing
− Endpoint/Kinetics
− Fluorescence
− 96 & 384-well plate

Gemini EM
− Quantitative Phosphorimaging
− ECL Plus Westerns
− Multifluorescence applications (such as 2-D DIGE and ECL Plex)
− 532nm/633nm

PCR Machine
− 1826 HN

FACS
− Basic MicroPoint System & FRAP Room 826 HN
− Western blot sample
− Chemiluminescence
− 640 nm

Equipment is available on a first come first serve basis. You can book 3 hours slots on the schedule.

The facility charges $20 per hour for use of the confocal. There is a $15 minimum charge, and fractions of an hour count as whole hours.

Please sign the log book. Email Lloyd Williams (williams@genectr.hunter.cuny.edu) in advance for applying this policy.

Guidelines for using the facility:

A. Your use of the facility will be recorded. For the optical microscopes and the Gel and Blot scanners, you must obtain a “Gene Center” computer account. This is required to book time on the machines.

B. Your use of the facility will be recorded. For the optical microscopes and the Gel and Blot scanners, you must obtain a “Gene Center” computer account. This is required to book time on the machines.

C. The facility is available for use 7 X 24. After normal working hours (9-5 Mon-Fri) lock the door when you leave, and access using a key obtained from the facility.

D. Training is required before using all machines. This can be done by individually with the facility manager, or by experienced users in the various CTBR laboratories. For the three confocals, and the Nikon SIM/TIRF you must be trained by the facility managers. Once you have completed the training course your account will be activated for the microscope.

E. Equipment is available on a first come first serve basis. You can book 3 hours slots on the schedule.

F. Remote instrumentation service

G. Do not wear latex gloves in the facility.

H. Users may have no more than 2 reservations made on a calendar at one time for any single machine.

I. Come 30 minutes late you will lose your reservation.

J. You can create an account to make a reservation.

K. Equipment is available on a first come first serve basis. You can book 3 hours slots on the schedule.

L. Users may have no more than 2 reservations made on a calendar at one time for any single machine.

M. Come 30 minutes late you will lose your reservation.

N. You can create an account to make a reservation.

O. Our service includes:

1. Remote instrumentation service
2. PVX video conferencing for real-time consultation during imaging experiment
3. PVX microscope system has fast scanning speed, ideal for cellular dynamic studies

P. You must log in to use the equipment using your Gene Center account.

Q. Outside parties with the prior arrangement of the staff of the Bio-Imaging facility may have access to the equipment using the Gene Center account.

R. Please follow the operational guidelines:

(i) Cell staining protocol: a simple cell staining protocol is posted here as an example.
(ii) PVX video conferencing for real-time consultation: during imaging experiment, PVX microscope system has fast scanning speed, ideal for cellular dynamic studies.

S. Equipment is available on a first come first serve basis. You can book 3 hours slots on the schedule.

T. The facility charges $20 per hour for use of the confocal. There is a $15 minimum charge, and fractions of an hour count as whole hours.

U. Please email Lloyd Williams (williams@genectr.hunter.cuny.edu) in advance for applying this policy.

V. Grant from the National Institute on Minority Health and Health Disparities (MD007599) of the National Institutes of Health.