## PHRI Analytical Imaging Facility
### Equipment and their Specifications

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Nikon A1Rsi

Microscope: Nikon Ti A1 confocal microscope with spectrum detection system; Inverted microscope with fully motorized, soon to have incubation and microinjection system for studies of BSL2 pathogens.

Objectives:
10XNA=0.45 Air
20XNA=0.75 Air
40XNA=1.30 Oil
63XNA=1.40 Oil

Filters All. Fully DIC. Spectrum detection system; unmixing resident scanner, Fast scanning.

Image detection NIS elements
Lasers 405, 480, 561, 638
X-Y stage motorized

Additional features Z-stacking, time lapse, multiple stage positions, anti-vibration table, and DIC with full range of objectives. Soon to include Incubations system with CO2 control, and Microinjection and micromanipulators (Eppendorf and Molecular Device systems, upon request).
Zeiss Axio Observer Z1

Microscope: Observer Z1 fully motorized, incubation and microinjection system

For studies of BSL2 pathogens and in the near future also for BSL3 pathogens

Objectives:
10XNA=0.3 Air
20XNA=0.5 Air
20XNA=0.75 Oil
40XNA=0.75 Air
40XNA=1.3 Air
63XNA=1.4 Oil

Filters DAPI, FITC, Cy3, Cy5 and Cy7

Image detection Zeiss Axiocam MRm Camera

Software Zen (Zeiss)

X-Y stage Motorized

Additional features DIC, Z-stacking, time lapse, multiple stage position, tiles software, autofocus, Incubation system: CO₂ / O₂ control, dual chamber for better temperature and humidity control; anti-vibration table, Tiles program, multiple sites of analysis, and microinjection capabilities (Eppendorf system)
Zeiss Axiovert 123M

Microscope: Observer semi motorized, Z planes motorized, and high resolution camera

Only for use in BSL2 spaces

Objectives:
10XNA=0.3 Air
20XNA=0.5 Air
40XNA=0.75 Air
40XNA=1.3 Air
63XNA=1.4 Oil
100XNA=1.4 Oil

Filters       DAPI, FITC, Cy3, Cy5 (upon request) and Cy7 (upon request)
Image detection Cooled Q-imaging Retiga SRV camera
Software      Volocity
X-Y stage      Manual

Additional features Z-stacking, and high resolution camera
Bio-Rad confocal microscope

Nikon iS confocal microscope
Inverted Microscope and Fluorescent Microscope:

Objectives:
4XNA= 0.3 air
10XNA=0.3 Air
20XNA=0.5 Air
40XNA=0.75 Air 40XNA=1.3 Air
63XNA=1.4 Oil
100XNA=1.5 Oil

Filters DAPI, FITC, Cy3, Cy5 (upon request) and Cy7 (upon request). Fully DIC.

Image detection Biorad/Zeiss software
Lasers Three lasers. Green, red and far red
X-Y stage motorized

Additional features Microinjection and micromanipulators (Eppendorf and Molecular Device systems, upon request). DIC full range of objectives. Color Cameras for Tissue Section imaging.
Nikon Diaphot

Microscope: Manual Nikon microscope for microinjection and single cell electroporation

Objectives:
- 10XNA=0.3 Air
- 20XNA=0.5 Air
- 40XNA=0.75 Air
- 40XNA=1.3 Air
- 63XNA=1.4 Oil

Filters
- DAPI, FITC, Cy3, Cy5 (upon request) and Cy7 (upon request)

Image detection
- Nikon DXM 1200

Software
- NIS Elements

X-Y stage
- Manual

Additional features
- Microinjection and micromanipulators
  (Eppendorf and Device systems)
Nikon Diaphot for BSL2 studies (In the HIV laboratory)

Microscope: Manual Nikon microscope for microinjection and single cell electroporation

Objectives:
10XNA=0.3 Air
20XNA=0.5 Air
40XNA=0.75 Air
40XNA=1.3 Air
63XNA=1.4 Oil

Filters
- DAPI, FITC, Cy3, Cy5 (upon request)
- Cy7 (upon request)

Image detection
- Nikon DXM 1200

Software
- NIS Elements

X-Y stage
- Manual

Additional features
- Microinjection and micromanipulators
  (Eppendorf and Molecular Device systems, upon request)
Electron microscopy (SEM and TEM)

in collaboration with Albert Einstein College of Medicine

Featuring:
- Operating voltage range from 0.02- 30kV.
- High brightness field-emission gun.
- Windows based Smart SEM control software.
- Everhart Thornley and in-lens secondary electron detectors.
- Backscatter and STEM detectors.
- ATLAS- large area mapping.
- Shuttle & Find for correlative fluorescence and SEM
- Gatan Alto 2500 cryotransfer system
- Oxford INCA energy dispersive x-ray microanalysis

Featuring:
100 kV transmission electron microscope
Side entry goniometer stage
High image contrast

Additional information obtained from the Albert Einstein College of Medicine
MALDI-MSI Imaging System

Imaging system: Fully automatic MALDI-MSI system to analyze distribution of lipids/protein/drugs in tissue sections and cell culture. This system allows analysis of BSL2 and BSL3 pathogens.

Equipment: Thermo Scientific MALDI LTQ Orbitrap and Sunchrom Suncollect-Automated matrix application device for MALDI imaging.

Services provided:

- Localization of molecules in tissue and cell cultures by Matrix-Assisted Laser Desorption
- Ionization Mass Spectrometry Imaging (MALDI-MSI)
- Quantitation of pharmaceutical compounds by HPLC
- Analysis of drug biodistribution and pharmacokinetics of drugs, peptides and small molecules
- Sample pre-processing (tissue sectioning, dessication, matrix application)
- Identification of molecules in biological tissues (tandem MS, high mass accuracy and resolution analysis)
- Software support and advanced data processing
Caliper IVIS Spectrum

Non invasive animal imager: Xenogen optical imaging technology to facilitate non-invasive longitudinal monitoring of disease progression, cell trafficking and gene expression patterns in living animals

Caliper IVIS® Spectrum

-Dyes Available upon Request
Imaging work stations for analysis

Work station for Image Analysis:

- 2 complete work stations
- Nikon software (NIS elements, basic and advance research)
- Zeiss software (Axiovision and ZEN)
- Perkin Elmer (Volocity and Volocity 3D)
- Image G (NIH free software)