

# ATLANTA VA CORE EQUIPMENT INVENTORY

*(Updated February 2017)*

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## **Microscopy and Imaging**

### **1. Laser Capture Microscopy System**

Instrument name: Arcturus Laser Capture Microscopy System

Model: PixCell Ite (Model #LCM1614)

Manufacturer: Life Technologies ([www.lifetechnologies.com](http://www.lifetechnologies.com))

Date of purchase: unknown (manufactured June 2002)

Room number: 5A140

Individual who oversees the instrument: Hicham Drissi, Ph.D.

Description: The Applied Biosystems® PixCell Ite Laser Capture Microdissection is a microscope-based method of dissecting specific cells from tissue sections. Tissue sections are mounted onto slides & visualized under the microscope. Specially developed caps (pre-coated with a thermoplastic film) are placed on the tissue section of interest. The PixCell Ite LCM instrument is then used to direct a low-power infrared laser through the cap to melt the film onto the cells of interest. These cells adhere to the cap when it is lifted from the tissue section—thus, capturing them for further analysis. Once cells are “captured,” DNA, RNA, or (rarely) protein can be extracted for further experiments (qPCR, Western blotting, etc).

### **2. Olympus Flowview FV1000 confocal microscopy**

### **3. Histology Equipment:** paraffin embedding center (Shandon), microtome (Microm HM340E), tissue processor (Microm STP120), cryostat (Microm HM550), microscope (Nikon MICROPHOT-SA) and digital camera (Olympus DP-71), slide warmer, slide floating bath, hybridization oven.

Instrument Name: Paraffin Tissue Processing Center including:

- Paraffin tissue processor (model: Microm STP 120)
- Paraffin embedding center (model: Shandon #64000004)
- Microtome (model: Microm HM340E)

Manufacturer: Thermo Scientific/Shandon  
([www.thermoscientific.com](http://www.thermoscientific.com))

Date of purchase: unknown

Room number: 5A-142

Individual who oversees the instrument: Jennifer Kleinhenz,  
[jenkleinh@yahoo.com](mailto:jenkleinh@yahoo.com), x7399.

Description: Equipment to fix and embed animal tissues into paraffin blocks. Microtome and floatation water bath for sectioning and mounting tissue sections onto slides for microscopy.

#### **4. Cryostats**

Instrument name / model: Cryostat

Manufacturer: Leica

Approximate date of purchase: 2000

Room number: 4A-104

Individual who oversees the instrument: Machele Pardue  
(x7342) [mpardue@emory.edu](mailto:mpardue@emory.edu); [Machele.Pardue@va.gov](mailto:Machele.Pardue@va.gov)

Description: A basic cryostat with the ability to alter temperature. It uses steel blades or razor blades.

Instrument name: Thermo Scientific Cryostat

Model: HM 525

Manufacturer: Thermo Scientific/Shandon  
([www.thermoscientific.com](http://www.thermoscientific.com))

Date of purchase: unknown

Room number: 12C-177

Individual who oversees the instrument: Jennifer  
Kleinhenz, [jenkleinh@yahoo.com](mailto:jenkleinh@yahoo.com), X7399

Description: The HM525 Cryostat is used to section frozen tissues embedded in OCT for microscopy purposes.

#### **5. Olympus Spinning Disk Confocal Microscope**

Instrument name: Spinning Disk Confocal Microscope

Model: Olympus U-TB190 inverted microscope; Olympus IX-3 DSU

Manufacturer: Olympus

Year of purchase: 2014

Room number: 4A184

Individual who oversees the instrument: Dr. William Tyor, 404-321-6111 x7609, [wtyor@emory.edu](mailto:wtyor@emory.edu); or Dr. Vincent Ciavatta, 404-321-6111 x6583, [vciavat@emory.edu](mailto:vciavat@emory.edu)

Description: The spinning disk unit confocal microscope (DSU) is ideally suited for viewing live cell dynamics in 3D. The stage can hold 35 mm dishes and plate (e.g., 96-well or 6-well) formats, and the computer controlled, motorized objective turret controls objectives in x, y, and z directions. A Tokai Hit (model #WSKM) stage top incubator/controller/lense heater can maintain specimens under observation in a humidified, temperature- and CO<sub>2</sub>-controlled environment. There is also a Bioptics peristaltic pump to control infusion of test substances to specimens under observation. For image acquisition, there are two cameras. Images through the DSU are captured with a Hamamatsu EMCCD Image EMX2, model #C9100-23B. For higher resolution images not through DSU (e.g., fixed specimens) there is a Hamamatsu ORCA-Flash 4.0, model #C11440-22CU. A rapid wavelength switching option is available for intracellular calcium imaging.

Objectives: 20X, 40X (oil), 60X (oil), 60X (silicone oil), 100X (oil). Please note: For optimal live cell image resolution with these objectives, cells should be plated on #1.5 glass (see Matek dishes at [www.glass-bottom-dishes.com](http://www.glass-bottom-dishes.com)). Fluorescence filter sets are available for most commonly used fluorophores. Microscope and cameras are controlled by CelSens. Olympus MetaMorph software is available.

## **Rodent Physiology Tools**

### **6. DSI Rodent Cardiovascular Telemetry System**

Instrument Name: Implantable Telemetry

Model: PA-C10

Manufacturer: Data Sciences <http://www.datasci.com/products/implantable-telemetry>

Date of Purchase: 2004

Room Number: 4A-134

Individual who oversees the instrument: Roy Sutliff, PhD [rsutlif@emory.edu](mailto:rsutlif@emory.edu)  
404.321.6111 X17053

Description: DSI PhysioTel® Implantable Telemetry is designed for monitoring and collecting data from conscious, freely moving laboratory animals. These advanced implants are available in a variety of sizes to accommodate species and cage size requirements. The implantable transmitter senses, processes and transmits information via telemetry from within an animal of any size - mouse, small animal or large animal. The system available has 20 PA-C10 transmitters to monitor mouse blood pressure, 16 telemetry Platforms and a platinum version of the ART software which can collect from 16 telemetry devices simultaneously. Researchers and scientists can measure arterial pressure, venous pressure, left ventricular pressure, intra-ocular pressure, bladder pressure, kidney pressure, ECG, EMG, EEG, EOG, temperature, activity, as well as other parameters. The transmitter is only one component of the complete DSI System which includes software, acquisition hardware, calibration hardware, and validation assistance.

## **7. Visualsonics Rodent Ultrasound Imaging System**

Instrument Name: high-resolution micro-ultrasound imaging system

Model: Vevo 770

Manufacturer: Visualsonics [www.visualsonics.com](http://www.visualsonics.com)

Date of Purchase: 2006

Room Number: 4A-134

Individual who oversees the instrument: Roy Sutliff, PhD [rsutlif@emory.edu](mailto:rsutlif@emory.edu)  
404.321.6111 X17053

Description: The Vevo 770 can image various organs including the heart and larger vessels, tumors, etc. The system supports real-time B-mode imaging (30 frames per second) with spatial resolution down to 30  $\mu\text{m}$ . The Vevo 770 has bench top positioning system for 3D imaging and is equipped with an image-guided needle injection system. The system also has Doppler capabilities which include Pulsed Wave Doppler, Tissue Doppler and Power Doppler imaging modes. The software includes a cardiac evaluation package EKV (or ECG-based kilohertz visualization) which uses line-based reconstruction allowing frame rates of up to 1,000 frames per second. 2 different scanheads are available. 1) RMV707B: 30 MHz with 12.7 mm focal length providing an axial resolution of 55  $\mu\text{m}$  - used in cardiac imaging in adult mice 2) RMV704: 40 MHz with 6.0 mm focal length providing an axial resolution of 40  $\mu\text{m}$  - used in mouse vascular, abdominal, superficial embryonic imaging and small mouse cardiac imaging.

## **8. Scisense Microcatheter System for Invasive Rodent Hemodynamics**

Instrument Name: Microcatheter system

Model: 4-channel

Manufacturer: Transonic

Scisense <http://www.transonic.com/products/research/product/rodent-pressure-catheters/>

Date of Purchase: 2008

Room Number: 4A-134

Individual who oversees the instrument: Roy Sutliff, PhD [rsutlif@emory.edu](mailto:rsutlif@emory.edu)  
404.321.6111 X17053

Description: High fidelity rodent Pressure Catheters are specifically designed for use with mice and rats. These Catheters have solid state sensors mounted at the tip that measure pressures with a high degree of precision. They are ideal for arterial, venous or cardiac pressures due to the solid state sensor's ability to accurately respond to minute and rapid changes in pressure. Catheter is 1.2 F.

## **9. Columbus Instruments Rodent Treadmill System**

Instrument name / model: Columbus Instruments Rodent Treadmill System

Manufacturer: Columbus Instruments

Approximate date of purchase: 2013

Room number: 4A-120

Individual who oversees the instrument (and their phone and email): Mabelle Pardue (x7342) [mpardue@emory.edu](mailto:mpardue@emory.edu); [Mabelle.Pardue@va.gov](mailto:Mabelle.Pardue@va.gov)

Description: This treadmill is designed to hold three rats or 6 mice at one time. The rodents are motivated to run by an electrified grid at the back of the lane. The treadmill speed can be altered. The angle of the treadmill can also be changed. <http://www.colinst.com/brief.php?id=66>

## **10. Columbus Instruments Rodent Calorimetry System**

Instrument name: Oxymax Comprehensive Lab Animal Monitoring System

Manufacturer: Columbus Instruments (<http://www.colinst.com/brief.php?id=61>)

Date of purchase: 2012

Room number: 4A-120

Individual who oversees the instrument: Simon Mwangi,  
Ph.D. [smwangi@emory.edu](mailto:smwangi@emory.edu) and Shanthi Srinivasan, MD, [ssrini2@emory.edu](mailto:ssrini2@emory.edu);  
404-321-6111 ext 7266

Description: The Oxymax Equal Flow System is an indirect open circuit calorimeter designed to simultaneously measure metabolic performance of multiple subjects that have similar ventilation needs. The system monitors oxygen and carbon dioxide concentrations by volume at the inlet and outlet ports of a chamber through which a known flow of air is being forcibly ventilated. The difference in gas concentrations along with flow information is employed to calculate oxygen consumption, carbon dioxide production, respiratory exchange ratio and heat. The system is configured for positive ventilation of multiple subjects. The total flow of a single source of air is accurately monitored before entering the equal flow distribution system. Within the equal flow distribution system is a manifold designed to distribute the incoming flow equally among all attached chambers. A second flow meter within the instrument provides a secondary method of assuring that the total flow is properly distributed. The addition of supplementary parameters, including activity and sleep analysis, measured concurrently with calorimetry, also maximizes animal use and reduces repeated testing.

## **11. Bruker Rodent Imaging System**

Instrument name: Bruker Xtreme Pre-clinical Multimodality In vivo Imaging System

Model: In-Vivo Xtreme 4MP

Manufacturer: Bruker (<https://www.bruker.com/products/preclinical-imaging/opticalx-ray-imaging/in-vivo-xtreme/overview.html>)

Date of purchase: 2014

Room number: Surgical suite 4<sup>th</sup> floor building A

Individual who oversees the instrument: George Beck Ph.D.  
([George.Beck@va.gov](mailto:George.Beck@va.gov); 404-321-6111, x5874 or [George.Beck@emory.edu](mailto:George.Beck@emory.edu); 404-

727-1340) or Linda C. Gilbert, Ph.D. (Linda.Gilbert3@va.gov; 404-321-6111, x5871)

Description: The In-Vivo Xtreme is a state-of-the-art multimodal imaging system allowing bioluminescence, fluorescence, and radiographic (and potentially radioisotopic) imaging, all in one system. The system has an anesthesia system including vaporizer and a 5 mouse nose cone assembly allowing for imaging of multiple mice at once. Four modality imaging provides for flexible probe selection. Bioluminescent, fluorescent, and radioisotopic probes have unique properties of size and functionality that can differentially achieve specific experimental objectives. Bioluminescent imaging is a gold standard in detection of cells at low densities and low abundance expression. Fluorescent imaging is particularly well suited for probe development and preclinical screening. It is also a primary preclinical modality for detection of many biologically relevant enzymatic (e.g. proteases) detections. Radioisotopic imaging capability provides for imaging of the catalogue of current clinical nuclear imaging probes. Additionally, the Xtreme system provides a high throughput means of screening candidate nuclear probes. The In-Vivo Xtreme has the capability to image different reporter proteins ranging from typical GFP, YFP to far red proteins such as mCherry, mRaspberry and tdTomato to most commercial fluorophores including near-infrared fluorescent probes (Alexa680 and 750) as well different bioluminescent reporters including Renilla, Gaussia and firefly luciferases. Additionally, the system provides for multispectral imaging that allows for improving signal/noise quantification, subtraction of unwanted autofluorescence and imaging of multiple fluorescent reporters in a single sample. The high-resolution X-ray imaging feature of this system, which uses a true microfocus X-ray head with energy optimized for small animal imaging and five different aluminum filtration options, allows anatomical localization of the signal in the animal. The system is also equipped for geometric magnification, minimizing effective pixel size, thus maximizing X-ray resolution. X-ray energy calibration and a unique Bone Density Software (optional) provides for bone density ( $\text{CaPO}_4 \text{ g/cm}^3$ ) measurement in long bones. Finally, the Xtreme has the unique Multimodal Animal Rotation System (MARS) which allows fast imaging of a mouse at multiple angles in order to minimize the scattering effect of light by tissues (typical problem with optical imaging) thus leading to the greatest emission of light from the animal even in deep tissues. MARS imaging also provides for improved quantitative inter and intra animal comparisons because optimum imaging angle for analysis can be determined and analyzed. MARS imaging also provides for a unique appreciation of anatomical localization of functional signal. For example, combining ventral, dorsal, and lateral views the exact anatomical location of a reporter may be clearly determined.

## **12. Flexivent rodent pulmonary physiology system**

Instrument name: flexiVent



Model: FV-M1

Manufacturer: Scireq (bought by Emka Technologies)  
<http://www.scireq.com/flexivent>

Date of purchase: 2007

Room number: 12C-177

Individual who oversees the instrument: Cherry Wongtrakool MD,  
[Cherry.Wongtrakool@va.gov](mailto:Cherry.Wongtrakool@va.gov), X7388

Description: The *flexiVent* enables in vivo lung function measurements in anesthetized, tracheotomized mice. It goes beyond traditional resistance and compliance measurements, and captures crucial details about the mechanical properties of conducting airways, terminal airways and parenchyma. The *flexiVent* achieves the highest sensitivity and reproducibility by precisely controlling experimental conditions. The instrument is comprised of a computer-driven mouse ventilator that measures changes in airway resistance, lung compliance, and numerous parameters of lung function during a brief period of time in the anesthetized animal. The system employs the forced oscillation technique (FOT) to gain translational insights into the mechanical properties of the subject's respiratory system. It offers a wide selection of classical and refined outcomes for a comprehensive functional assessment, which can be performed in a controlled and automated manner for further standardization and enhanced result repeatability and reproducibility.

### **13. Device for nebulizing substances into the rodent lung**

Instrument name: inExpose

Model:

Manufacturer: Scireq (bought by Emka Technologies)  
<http://www.scireq.com/inexpose>

Date of purchase: 2013

Room number: 12C-185

Individual who oversees the instrument: Cherry Wongtrakool,  
MD; [cwongtr@emory.edu](mailto:cwongtr@emory.edu); (404)321-6111x7388

Description: The *inExpose* system is a tabletop device that nebulizes toxicants or therapeutics in small volumes that are inhaled by awake mice. This system

distinguishes itself by its compact size and high level of integration. The small form factor reduces direct and indirect costs, and low internal volumes also minimize unintended dilution of precious compounds. The *inExpose* has modularity and integration permits both nose-only and/or whole-body exposure of rodents, as well as automated generation of aerosols. The *inExpose* system in 12C-185 is set up for nose-only exposure and 12 mice can be exposed simultaneously. The *inExpose* system is capable of aerosolizing a number of different substances including allergens, reagents, medications, miRNA, and particulate matter between 2-6  $\mu\text{m}$  in size. Substances must be constituted in non-organic solvents. Aerogen nebulizers are used to generate the aerosols using a vibrating metal mesh technology. *inExpose* is most useful when the inhalation route is desired for exposure or therapeutic delivery. The *inExpose* system can potentially be configured for tobacco smoke exposure and whole body exposure, but the current system in 12C-185 does not have the required modules for these configurations.

#### **14. Scanco Micro-CT for Rodent Bone Densitometry**

Instrument name / model: Scanco uCT40

Manufacturer: Scanco Medical AG (<http://www.scanco.ch/>)

Approximate date of purchase: 2007, upgraded in 2015

Room number: 5A129

Individual who oversees the instrument: Susanne Roser-Page, x6142 or 404-727-2598, [susanneroser@yahoo.com](mailto:susanneroser@yahoo.com)

Description: Micro Computerized Tomography analysis of rodent bones, mainly mouse/rat tibias, mouse /rat femurs, mouse /rat spine or any other rodent bone. Calcified rodent tissues may also be analyzed.

#### **15. Myographs**

Instrument Name: Myograph

Model: Custom

Manufacturer: Custom

Date of Purchase: 2002

Room Number: 12C-107

Individual who oversees the instrument: Roy Sutliff, PhD [rsutlif@emory.edu](mailto:rsutlif@emory.edu)  
404.321.6111 X17053

Description: This custom myograph allows the examination of contractile or relaxation properties of isolated tissues (primarily vascular tissues but it could be adapted to other muscle tissues). The tissue is isometrically mounted in a 50 ml water jacketed organ baths and compounds can be added to see how the tissue contracts or relaxes in response to the agent. Harvard force transducers are available for 0.5 to 50 g of force. Tissue will be responsive in the bath for up to 10 hours. The contractile apparatus is connected to a Powerlab system for continual monitoring of muscle tone. Multiple dissecting microscopes are available for sample preparation.

Instrument Name: Small Vessel Myograph

Model: 4-channel

Manufacturer: Danish Myotechnologies (DMT)  
Adinstruments <http://www.adinstruments.com/products/dmt-myograph-systems>

Date of Purchase: 2011

Room Number: 12C-107

Individual who oversees the instrument: Roy Sutliff, PhD [rsutlif@emory.edu](mailto:rsutlif@emory.edu)  
404.321.6111 X17053

Description: This four chamber wire myograph research system is for *in vitro* monitoring of smooth muscle function of up to four separate tissue segments of small arteries, veins and other tubular tissues, such as bronchi and ureter (tissue diameter > 60  $\mu$ m to 10 mm). The myograph features built-in temperature control; ports for gas supply; ports for filling and injection of drugs; and ports for rapid draining (a vacuum pump is required for drainage and is not supplied with the systems). The system is connected to a Powerlab system and a computer

running Labchart Pro. . Multiple dissecting microscopes are available for sample preparation.

## **16. Rodent Smoking machine**

Instrument name: Teague Enterprises Rodent Smoking machine

Model: TE-10

Manufacturer: Teague Enterprises

<http://www.teague-ent.com/equipment/smoking-machines>

Date of purchase: 2010?

Room number: 4A-117

Individual who oversees the instrument: Mike Hart, MD, [Michael.hart3@va.gov](mailto:Michael.hart3@va.gov); X7278

Description: The TE-10 is a microprocessor-controlled cigarette smoking machine that produces either side-stream or mainstream smoke (or a combination of the two) from filtered research cigarettes (non-filtered or standard size cigarettes smoking machines can be manufactured by special order), 1-10 cigarettes can be smoked at a time. Cigarettes are loaded into a magazine where they are automatically pushed into a wheel and lighted. The cigarettes are puffed according to FTC method and automatically ejected after a certain number of puffs. Expended butts are extinguished in water. Smoke is captured in a chimney and transported to a collecting and mixing chamber for use in rodent exposure studies.

Videos: <http://www.teague-ent.com/videos>

## **Basic and Cell Biological Tools**

### **17. Seahorse Bioanalyzer**

Instrument name: Seahorse Bioanalyzer

Model: XF<sup>e</sup>96

Manufacturer: Seahorse Biosciences

(<http://www.seahorsebio.com/products/instruments/analyzers.php>)

Date of purchase: 2014

Room number: 12C-181

Individual who oversees the instrument: Mike Hart, MD, [Michael.hart3@va.gov](mailto:Michael.hart3@va.gov); 404-321-6111 ext 7278

Description: The XFe96 Extracellular Flux Analyzer simultaneously interrogates the two major energy producing pathways of the cell – mitochondrial respiration and glycolysis - in a 96-well microplate, in real-time. The XFe96 determines *in vitro* oxygen consumption rate (OCR), and extracellular acidification rate (ECAR), in order to assess cellular functions such as oxidative phosphorylation, glycolysis, and fatty acid oxidation. The measurement of cellular bioenergetics on live cells enables time-resolved analysis and testing of multiple conditions per assay well. XF assays provide increased throughput and use less sample compared to conventional respirometry techniques. By incorporating automated compound addition and solid-state fluorescence sensors in a microplate format, XF technology provides the tools to: 1) rapidly detect cellular responses to substrates, inhibitors, and other perturbants. 2) test more conditions with the same amount of sample, maximizing the value of each experiment. The XFe Extracellular Flux Analyzer, XF stress test kits, reagents, consumables, and software tools work together to simplify the measurement of cellular metabolism.

## 18. Flow cytometry systems

Instrument name: BD FACSAria II

Manufacturer: BD Bioscience

Date of purchase:

Room number: 5A-134

Individual who oversees the instrument: Jan Mead, PhD; [jmead@emory.edu](mailto:jmead@emory.edu); 404-321-6111 EXT 2545

Description: The BD FACSAria II is a 7 color 9-parameter high-speed digital bench-top cell sorter capable of acquiring rates of up to 70,000 events per second. The instrument is a standard system equipped with an octagon containing six PMTs that detect light from the 488-nm (blue) laser, and a trigon containing two PMTs that detect light from the 633-nm (red) laser. The sorter can be configured with 405-nm (violet) or 375-nm (Near UV) lasers for detecting up to 13 colors. The instrument is able to perform aseptic sorting for a variety of tube sizes as well as sorting into a variety of multi-well plates. A variety of cell sizes can be sorted with four different nozzle sizes (70, 90, 100 and 130 microns). The instrument is also equipped with an aerosol management option (AMO) to control the risk of biohazard exposure ([bdbioscience.com](http://bdbioscience.com)).

Instrument name: BD FACSCaliber

Manufacturer: BD Bioscience, bdbioscience.com

Date of purchase:

Room number: 5A-134

Individual who oversees the instrument: Jan Mead, PhD; jmead@emory.edu; 404-321-6111 EXT 2545

Description: The BD FACSCalibur flow cytometer is ideal for benchtop flow acquisition (up to 10,000/sec). It has two lasers (488nm and 635nm), 4 photomultipliers (PMTs) with bandpass filters: 530 nm (FITC), 585 nm (PE/PI), 661 nm (APC), and >650 nm (PerCP), >670 nm (APC) (bdbioscience.com).

## **19. Luminex**

Instrument name: Luminex 100

Manufacturer: Luminex, luminex.com.

Date of purchase:

Room number: 5A-134

Individual who oversees the instrument: Jan Mead, PhD; jmead@emory.edu; 404-321-6111 EXT 2545

Description: The Luminex® 100/200™ System is a flexible analyzer based on the principles of flow cytometry. The system enables you to multiplex (simultaneously measure) up to 100 analytes in a single microplate well, using very small samples. The system delivers fast and cost-effective bioassay results on many assay formats including nucleic acid assays, receptor-ligand assays, immunoassays, and enzymatic assays. The Luminex 100/200<sup>1</sup> System is the combination of three core xMAP® Technologies. The first is xMAP microspheres, a family of fluorescently dyed micron-sized polystyrene microspheres that act as both the identifier and the solid surface to build the assay. The second is a flow cytometry-based instrument, the Luminex 100/200 analyzer, which integrates key xMAP detection components, such as lasers, optics, fluidics, and high-speed digital signal processors. The third component is the xPONENT® software, which is designed for protocol-based data acquisition with robust data regression analysis (Luminex.com).

## **20. Biotek Multidetector Plate Reader**

Instrument name / model: Synergy HT multi-mode microplate reader

Manufacturer: BioTek

Approximate date of purchase (year) ~2010??

Room number: 5A 146

Individual who oversees the instrument (and their phone and email):

Russ Price 404-727-3934 or Bin Zheng 404-727-3424

The Synergy HT Multi-detection reader is a microplate reader that can measure absorbance, fluorescence, and luminescence. Its compact design and robot-friendly plate carrier make it an ideal platform for HTS and drug discovery environments. The Synergy HT utilizes a unique dual-optics design. It has both a monochromator/xenon flash system with a silicone diode detector for absorbance, and a tungsten halogen lamp with blocking interference filters and a PMT detector for fluorescence.

## **21. Gel Logic Gel Documentation System**

Instrument name: Gel Logic 212 PRO (EE 71966)

Model: GL212 PRO

Manufacturer: Carestream (<https://www.carestream.com/moleuclar-imaging-products.html>)

Date of purchase: 2010

Room number: 4A-160

Individual who oversees the instrument: Simon Mwangi, Ph.D, [smwangi@emory.edu](mailto:smwangi@emory.edu) and Shanthy Srinivasan, MD, [ssrini2@emory.edu](mailto:ssrini2@emory.edu); 404-321-6111 ext 7266

Description:

The Carestream Gel Logic 212 PRO Imaging System (GL212 PRO), in combination with Carestream Molecular Imaging Software (Carestream MI), is specially designed for gel documentation and analysis. It comes with an IEEE 1394 (FireWire) 1.4 mega pixel CCD camera with an automated lens that provides real time imaging for increased throughput. The scientific grade CCD provides a 12-bit data file which can be accumulated up to 14-bit image files for improved sensitivity and data accuracy. The GL212 PRO fully automated cabinet integrates both transillumination and epi-illumination for both UV and white light excitation allowing imaging of a wide variety

of fluorescent and colorimetric samples. The broadband UV excitation (peak at 306 nm) provides for the detection of a broad range of fluorescent dyes including ethidium bromide, SYBR Green and SYBR Red. The white light illumination is ideal for illumination of protein gels, blots and plates.

The Software module, running within Carestream MI allows you to:

- Image electrophoresis gels, microtiter plates, and colony and plaque assays.
- Analyze your image for molecular weight, mass, optical density, and intensity measurements.
- Annotate and prepare your images for publication.
- Generate hard copy prints at a fraction of the cost of instant photography.
- Easily share or transmit image files

## **22. LiCOR Image Documentation System**

Instrument name: Odyssey

Model: Odyssey Classic (#9120)

Manufacturer: Li-Cor Biosciences ([www.Licor.com](http://www.Licor.com))

Date of purchase: 2011

Room number: 12C-185

Oversees the instrument: Tamara Murphy, [tmurphy@emory.edu](mailto:tmurphy@emory.edu), X7163

Description: The Odyssey imager accurately and reproducibly quantifies western blot images using IR Dye-conjugated secondary antibodies in lieu of HRP-conjugated antibodies and chemiluminescent detection. Multiplex detection is possible due to two antigens bound by secondary antibodies detected in independent fluorescence channels (700 and 800nm), allowing for dual detection on a single membrane. Detection with the Odyssey imager is quantitative across the entire range tested (65-fold) compared to 8-fold for chemiluminescence. The Odyssey is also capable of detecting fluorescent EMSA or DNA probes, as well as detecting IR-dye conjugated in-cell westerns (96 well plates). We also have the capability of detecting IR-Dye conjugated substances injected into rodents using the Li-Cor MousePod attachment on the Odyssey.



### **23. Chemi-Doc Gel Documentation System**

Instrument name: Chemi-Doc Gel Documentation System

Model: XRS

Manufacturer: Bio-Rad  
([www.bio-rad.com](http://www.bio-rad.com))

Date of purchase: unknown

Room number: 12C-185

Individual who oversees the instrument: Tamara Murphy, [tmurphy@emory.edu](mailto:tmurphy@emory.edu), X7163

Description: ChemiDoc XRS gel documentation system is based on CCD high-resolution, high-sensitivity detection technology and modular options to accommodate a wide range of samples and support multiple detection methods including fluorescence, densitometry, chemiluminescence, and chemifluorescence. The ChemiDoc XRS system is used to scan ethidium bromide stained gels or western blots developed with chemiluminescence. The system is controlled by Quantity One software to optimize imager performance for fast, integrated, and automated image capture and analysis of various samples. The ChemiDoc XRS system eliminates the need to use costly and unreliable X-ray film technologies while providing quantitative and reproducible data in seconds. The system features a signal accumulation mode (SAM), which guides a user through determining optimum exposure time and capturing a desired image of a chemiluminescent sample.

### **24. In Vitro and In Vivo Ino Channel Monitoring**

MultiChannel System MEA2100 and accessories.

Approx date of purchase (year): 2017

Room number : 4A169, Atlanta VA Medical Center

Individual who oversees the instrument (and their phone and email): Dr. Shan Ping Yu; 404-712-867; [spyu@emory.edu](mailto:spyu@emory.edu)

Description: The MEA system can detect activation of ion channels in excitable cells via a mechanism resembling extracellular recording. Different from conventional recording techniques that are limited in their detection of only a few cells in a single location, the MEA system can simultaneously record the activity of tens and hundreds of cells in up to over a hundred locations in a spatial specific and coordinated manner. The system also allows selective stimulation of specific cells and recording evoked responses

simultaneously in many cells connected in the neuronal circuitry. An MEA system can be used to perform electrophysiological experiments on tissue slices, dissociated cell cultures, and awake animals. Through the inclusion of specific optical, fluorescence, and laser techniques, optogenetic (ie., precision excitation or inhibition of light sensitive channels expressing in specific cells) experiments can also be performed. With acute tissue slices, the connections between the cells and neuronal pathways can be specifically evaluated under normal and pathological conditions. In cultured cells, cellular and sub-cellular activities (ion channel and receptors) under specific conditions and during cell proliferation/differentiation can be examined, allowing the investigation of cell-cell interaction and neural development such as neuronal differentiation and synaptic plasticity. The MEA system also has the capability of in vivo recording of field potential for brain regional activation and connections. This in vivo monitoring has traditionally been extremely difficult for conventional electrophysiology but became feasible using the in vivo wireless probes of the MEA system. It is a great advantage for the study of cellular/molecular mechanism of behavioral/functional changes in animal models of stroke, vision deficits, and degenerative diseases that are the main focus in our VA supported projects. We are particularly excited about developing the ability to use optogenetic stimulation during recordings. This specific feature of the MEA system will allow us to combine the innovative techniques of genetic transfection of light sensitive proteins with in vitro, ex vivo and in vivo recordings in a spatial and cell type specific manner.