

Florida International University



Florida International University (FIU) is a multi-campus public research university offering a broad array of undergraduate, graduate, and professional programs. The university has two main campuses: the 344-acre Modesto A. Maidique campus in western Miami-Dade County and the 200-acre Biscayne Bay Campus in northeast Miami-Dade County. It offers 196 bachelor, master, and doctoral degree programs through 11 colleges and schools. The largest university in South Florida, FIU has over 54,000 students (Fall 2017 enrollment), more than 1,200 full-time instructional faculty, and nearly 12,000 degrees awarded annually. Approximately 61% of the student body is Hispanic, 15% is White Non-Hispanic, 13% Black Non-Hispanic, 4% Asian/Pacific Islander, and 7% other. In 2017, it was ranked first in the nation in awarding bachelor degrees to Hispanics (Top 100 Hispanic Degree Producers 2017, Diverse: Issues in Higher Education, 2017 diverseeducation.com). Hispanic students comprise 64 percent of FIU's undergraduate enrollment. The Carnegie Foundation for the Advancement of Teaching classifies FIU as an R1: Doctoral Universities – Highest Research Activity. Annual research expenditures exceed \$171 million. FIU's sponsored research funding (grants and contracts) from external sources totaled over \$127 million for the academic year 2016-2017.

Herbert Wertheim College of Medicine

Herbert Wertheim College of Medicine (HWCAM) is dedicated to preparing exceptional, socially accountable, community-based physicians capable of leading interdisciplinary teams of health care providers to meet the health care needs of South Florida. HWCAM's student body consists of 44% underrepresented in medicine (URiM), 20% self-identified disadvantaged, and 18% qualified for the AAMC Fee Assistance Program as indicated on the American Medical College Application Service (AMCAS) application.



HWCOC spans 5 buildings featuring research laboratories, medical library, lecture halls, High-fidelity clinical simulation labs, iLearn labs, 18 Clinical skill training labs for standardized patient simulation, multidisciplinary wet and dry labs for the students, anatomy labs and many other facilities. Wireless internet access is available throughout the FIU campus, including in the Medical Library, all classrooms, and all student study areas. In addition, HWCOC classrooms and study rooms are equipped with wired internet connection and students are provided with Ethernet cables as needed.

Office of Research and Economic Development

The **FIU Office of Research and Economic Development (ORED)** offers support to all researchers in developing and managing grants. The ORED minimizes impediments to research activity, promotes research conduct that meets the highest standards of ethical integrity, and ensures that research activity is compliant with all local, state, and federal regulations. The ORED offers training in grants management, assigns office and lab space for funded researchers and project directors, keeps researchers and project directors informed of regulatory changes required for funding agencies and provides various additional resources. ORED will provide support for post-award implementation, accounting, and reporting of grants.

Research Environment: Beginning in 2002, five buildings, Academic Health Centers Complexes (AHC) 1-5, encompassing over 600,000 sq. ft. of laboratory and classrooms space devoted to biomedical research and education have been added to the main campus of FIU. In May 2014 FIU established the Biomolecular Sciences Institute (BSI) officially as a multidisciplinary institute for promoting and facilitating collaborative research in biomolecular science. The BSI sponsors seminars by distinguished scientists, and workshops for faculty, students, and research staff. A seed funding program for collaborative sandbox teams has helped to facilitate new collaborative research projects.

Science Classroom Complex - AHC 4



This 130,000 square foot multi-use facility represents the state-of-the-art design for research labs, classroom spaces and offices. The innovative design optimized the efficient use of laboratory and research areas integrating flexibility of these spaces permitting groups to expand and contract as needed. This is implemented on the 3 research floors by having open labs which permit each researcher to customize the configuration of lab space to their area. Each floor has over 6000 square feet which include dedicated areas for tissue culture rooms, autoclave equipment and dark rooms. The open lab space format, discussion areas outside the labs, and joint lab meetings facilitate interactions among the students and postdocs. The PIs within the complex have a number of ongoing collaborations built from common interests and complementary expertise. These collaborations have resulted in joint publications and funding applications.

The complex houses over 135 separate offices for faculty, staff, and support personnel adjacent to the

research labs. In the interested of promoting collaboration the 3 research floors were designed with open seating areas as well as internal staircases to permit easy movement between floors.

Animal Care Facility AHC 4 5th Floor **Horatiu V. Vinerean, DVM, Director and Attending Veterinarian**

The fifth floor of the Science Classroom Complex houses the Animal Care Facility which has been certified by the Association for Assessment and Accreditation of Laboratory Animal Care International and is registered as a research facility with the United States Department of Agriculture in accordance with the Animal Welfare Act and Regulations.. An in-house attending veterinarian is responsible for a uniform comprehensive veterinary care program for all FIU facilities and oversight for the entire FIU biomedical research program.



The combined square footage of all the animal facilities is approximately 25,000 square feet within secure perimeters (three rodent facilities and two aquatic facilities <http://research.fiu.edu/proposal-preparation/templates/#facilities>)

Herbert Wertheim College of Medicine- Facilities

Tissue Culture Facility, AHC1 304A: Drs. Alexander and Irina Agoulnik, Directors



The tissue culture room is a 300 sq.ft. space with HEPA-filtered positive pressure. The major equipment located in the room includes: 3 ESCO biological safety cabinets (2x 4ft, 1x6ft), NAPCO Dry Heat CO2 incubators with decontamination, Invertoscope, Eppendorf 5810 table-top centrifuge, refrigerator, Invitrogen Countess Automated cell counter, Amaxa cell electroporator, and Roche DP RCTA Xcelligence machine with 3 platforms. These platforms allow for simultaneous use of E-plates for time-resolved measurements of proliferation and SIM-plates for measuring cell motility and invasion.

Microscopy Lab, AHC1 423 : Dr. Helen Tempest, Director



The facility include two epifluorescent microscopes (Olympus BX61) with CCD cameras and software for processing images captured with fluorescence (5 different single band pass, 1 dual pass filter)

HPLC-ICP-MS Core, AHC1 320B: Dr. Barry Rosen Director

A PerkinElmer ELAN DRC-e inductively coupled plasma-mass spectrometer (ICP-MS) coupled with a PerkinElmer Series 200 high-performance liquid chromatography (HPLC). The ICP-MS can be used for a wide range of multi-elemental analysis. When coupled with an HPLC, it is as an elemental detection system for speciation analysis.



Histopathology Core, AHC1 328: Dr. Irina Agoulnik, Director

Fully equipped for paraffin embedding and processing tissues. The major equipment in the Histopathology Core includes an Leica TP1020 Automatic tissue processor, Thermo Histocenter 3 embedding station, Leica RM2255 electronic microtome. The core has Zeiss Axio Imager M2 with a mechanical stage, 5 NeoFluor objectives at 5, 10, 20, 40 and 100X and an Apochromat 63X objective with DIC. It is outfitted with filters for measuring fluorescence: blue (DAPI), green (GFP, FITC), red (DsRed, TexasRed), far-red (Alexafluor 594, Plum). The scope is run by the AxioVision Special Edition x64 software. This software offers z-stacking, integrated deconvolution, and time lapse algorithms with 3-Dimensional rendering capabilities. In addition, the Histopathology Core has a Zeiss Axio Imager A2 for light microscopy and houses a two-laser, six-detector, analytical a BD Accuri C6 Flow Cytometer with CFlow Plus operating software.

Mouse Transgenic Support Core, AHC1 419B: Dr. Alexander Agoulnik, Director

The laboratory provides advice and support for transgenic experiments with laboratory mice. A set of well-characterized transgene vectors is available for targeting constructs design. Support is provided for traditional transgenic, conventional knock-out and knock-in experiments, as well as for the design of conditional cre/loxP, FTR/flp, shRNA and other vectors. A number of cre-transgenic strains are maintained in the animal facility.

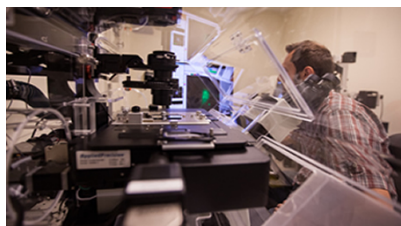
Nano-Device Laboratory, AHC1 306: Dr. Madhavan Nair Director

This facility is an integral part of the FIU Institute of Neuro-Immune Pharmacology (INIP), which is a multidisciplinary translational research and training center focusing on the human immune system, and high-tech procedures for targeted drug delivery for patients with central nervous system disorders, including brain cancer and Neuro-AIDS. INIP collaborates with the Nano-Device Laboratory in the development of state-of-the-art nanotechnology approaches. The laboratory has the capability to formulate nanosilicone particles and test their potential effects on immune response, test nanosubstrate as used to facilitate neuronal growth and bone regeneration, as well as create magnetic nanoparticles to deliver nano-medications via an external magnetic field.

Major pieces of equipment available include focused Magneto-optical Kerr Effect (f-MOKE) Magnetometer capable of real-time monitoring of nano-carriers (for targeted drug delivery and therapeutic applications), UV and Visible Light Spectrophotometer, a modular magnetometry system for multi-physics studies of nanoscale devices under various electro-magnetic resonance environments (ferromagnetic resonance, magnetic resonance imaging (MRI), and others), Spinstand for extremely-high precision studies of hybrid nanosystems including electromagnetic and molecular components, versatile scanning probe microscopy systems (atomic force microscopy (AFM), magnetic force microscopy (MFM), scanning tunneling microscopy (STM), and others) capable of Angstrom-precision surface texture and field measurements under a broad range of electric and magnetic fields in a wide range of temperature, under ambient, liquid and gaseous environments.

College of Arts, Sciences, and Education Facilities

Microscopy and Digital Imaging Lab AHC1 405 Dr. M. Alejandro Barbieri, Director



The Microscopy and Digital Imaging Lab is equipped with several optical microscopes and digital image capture technology specifically fitted for algal and bacteriological studies. This includes a Zeiss AxioScope II compound light microscope (with Nomarski / DIC optics and high resolution Plan-Apo 10-100X objectives) equipped with a Sony DKC 500 1.2 mp color digital camera, a Zeiss compound epifluorescent microscope (with Plan-Neofluoar 10-100X objectives) equipped with a Hamamatsu color chilled 3CCD 2mp digital camera, two microcomputers with Image Pro® and other analytical software, and a Sony UP-D5500 digital color printer to produce publication-quality plates. A Coulter Multisizer II, equipped with Coulter AccuComp Color Software, is available for particle/cell counting. A recent addition is a highly sensitive flow cytometer with high-speed cell sorting capabilities and a phosphor imager equipped for fluorescence, chemiluminescence and radioisotopic detection

<http://research.fiu.edu/facilities/imaging/>

DNA Core Facility AHC1 332 Dr. Timothy Collins, Director



This 1000 sq. ft. facility is fully equipped for DNA sequencing, fragment analysis, and data analysis. DNA sequencing and Fragment Analysis are carried out on three Applied Biosystems 3100 Genetic Analyzers with Sequencing Analysis and GeneScan software. A next generation high throughput sequencer, Ion Torrent Personal Genome Machine, has recently been installed along with a Digital Developer from Protein Simple <http://dnacore.fiu.edu/>

Tissue Culture Core Lab AHC1 232 Dr. Erasmo Perera, Director

The Tissue Culture Core Facility of the Department of Biology is committed to delivering training and services in animal tissue culture and histology to the research community of FIU. The Facility also assist the Department of Biology in the preparation of upper-level laboratory courses such as Cell Biology laboratories. Among the services provided by the Facility are: training and advising in mammalian cell culture and histology, preparation of frozen and fresh tissue sections, lentivirus vector production, transduction and transfection of animal cells, detection of mycoplasma contamination in cell cultures and cryopreservation of cell lines. The Facility is equipped with a Leica CM 3050S cryostat, a Leica VT 1000S vibratome, a Leica RM 2165 microtome, a Reichert-Jung 2030 microtome and microscopes

Advanced Mass Spectrometry Facility AHC4 Dr. Francisco Fernandez-Lima Director

The AMSF occupies 2500 square foot facility contains a powerful collection of chromatographic and mass spectrometric instrumentation that is accessible for both internal and external users. The state-of-the-art instruments, supplied by Bruker Daltonics Research, include Solarix 7T MALDI/ESI-Q-FT-ICR-MS, MAXIS ESI-Q-TOF, AUTOFLEX MADI-TOF/TOF, GC-MS, LC-MS Ion Trap, and an ION TOF 5. These devices allow investigators to incorporate proteomics, metabolomics, trace analyses, and MS-based imaging into their proposed studies.

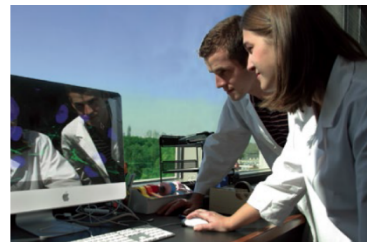


The physical layout of the first floor laboratory is designed to accommodate the mass spectrometry and imaging instrumentation used by the FIU research group (e.g., low vibration levels, low magnetic field, low noise and interference, etc.). The second floor room (992 sq. ft.) is equipped with a 155 sq. ft. cell culture room, a 199 sq. ft. clean room, and two chemical hoods. <http://ms.fiu.edu/>

Robert Stempel College of Public Health & Social Work Facilities

Integrated Biostatistics & Data Management Center Dr. Boubakari Ibrahimou Deputy Director

The mission of the IBDMC is to enhance FIU's research endeavors by providing infrastructure support relevant to biostatistics, data management and data quality enhancement. It supports investigators and graduate students for proposal preparation, study design, data collection, data management, statistical analyses, study operations, report and manuscript preparation and data archival, going beyond the typical CTSA sponsored Biostatistics Cores at other universities.

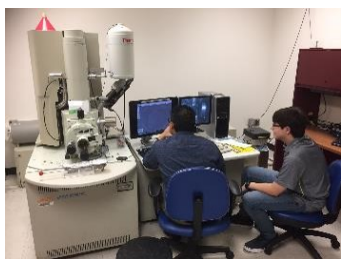


Metabolism and Toxicology Instrumentation/Assays Core, AHC4 241: Dr. Jeremy Chambers, Director

This laboratory specializes in mechanisms of mitochondrial dysfunction and cell death, utilizing a Seahorse XF-96 Extracellular Flux Analyzer that non-invasively monitors cellular metabolism in real-time and in high-throughput (96 samples per run). Further, the laboratory has a variety of assays (fluorescent, luminescent, and colorimetric) to monitor cellular viability, apoptosis, oxidative stress, mitochondrial physiology, and other cellular processes. These assays are performed on a BioTek multiparameter plate reader and a LiCor Biosciences Odyssey CLx near infrared scanner. The latter device can also be used for quantitative western blot analysis as well.

College of Engineering and Computing Facilities

Advanced Materials Engineering Research Institute- Engineering Center Dr. Arvind Agarwal, Director



The AMERI is an open access user facility that provides equipment infrastructure to support materials and electronic device research and engineering over a broad range of technology and applications. The Institute provides analytical instrumentation, materials characterization, and micro/nanofabrication process development laboratories to support university faculty, industry, and government labs in the development and characterization of new materials over the continuum from the nanoscale to bulk materials, as well as the development of sensor, actuator, and communication micro devices.

The AMERI Analytical Instrumentation Laboratory contains a field emission scanning electron microscopes (FESEM), a micro milling focused ion beam (FIB), a 200 keV Transmission Electron Microscope (TEM), Atomic Force Microscope (AFM), X-ray diffractometers, thermal analysis (DSC, TGA, DMA, dilatometer flush diffusion, and mechanical testing (uniaxial/biaxial Instron, micro indentation, scratch, creep, etc.).



The AMERI sensor and micro device development cleanroom is an ISO5/7 cleanroom providing Micro Electro Mechanical Systems (MEMS) and Nanolithography (20nm lines) processes, Deep Reactive Ion Etching (DRIE), thin film deposition of metals, ceramics, and polymers, (e-beam, sputtering, filament evaporation, cvd, imprint, focused ion beam, and others), Photolithography and

mask making (1 μ m lines), as well as wet and dry chemical etching processes and metrology. Device development is done on the 4 inch wafer platform by batch or die processing.

Additional equipment and processes within the AMERI include a complete Microelectronics Packaging Laboratory. Equipment and processes support the development of sensor device electronics integration, biomedical device implant packaging, and packaging materials (ceramics and metals) systems development, as well as 3D printing device and materials development.

<http://ameri.fiu.edu/>

