**Core Research Facilities**

**Animal Health Research Center**

The Animal Health Research Center (AHRC) is a state-of-the-art facility that enables scientists to study infectious microorganisms, parasites, and toxins in an environment that is safe for researchers, animals, and the public. One of the most technologically advanced biocontainment facilities in the United States, the AHRC is dedicated to studying a wide variety of infectious diseases affecting both animal and human health and offers training and consulting for study design, biosafety, and bioresources. Researchers can also use the facility independently once training is completed, documented, and approved. The AHRC, a 75,000 square-foot facility, is comprised of BSL-2 labs, ABSL-2 spaces, BSL-3 labs, ABSL-3/BSL-3Ag vivarium. Each lab is available for reservation by UGA and outside researchers.

**Bioexpression and Fermentation Facility**

The Bioexpression and Fermentation Facility (BFF) in the Department of Biochemistry and Molecular Biology provides wide-ranging expertise and capabilities in biotechnological applications such as animal cell culture, fermentation, high-containment services, molecular biology, monoclonal antibodies, gene synthesis, peptide synthesis, process development, endotoxin testing, and purification to UGA, other academic researchers, and industry. Established in 1967, the BFF speeds the pace of research, development, and manufacturing with an array of state-of-the-art equipment including: fermentation equipment from 750mL to 750L; downstream processing equipment including homogenization (12k psi), TFF (10 m2) & hollow fiber (up to 12 m2); preparative & analytical HPLC; low pressure chromatography (up to 3 L/min.); an array of chromatography equipment for projects (up to 25L packed column); and shelf lyophilizers (purified proteins only). Services are tailored to meet the needs of researchers.

**Bio-Imaging Research Center**

The Bio-Imaging Research Center (BIRC) is a multi-imaging research suite designed to provide a full range of biological tissue imaging technologies to multiple biomedical investigators, their students, and other researchers. The state-of-the-art facility serves as a resource across disciplines and fosters collaborative, extramurally funded research among human, animal, and cellular scientists at UGA and scientists in other federal, state, and private agencies or businesses. The facility houses a GE 32-channel fixed-site Discovery MR750 3.0 Tesla Magnetic Resonance Imaging (MRI) magnet, the anchor technology within the BIRC;a CTF Omega Whole-cortex magnetoencephalography system with 143-channel MEG and 64-channel EEG, all enclosed in a state-of-the-art magnetically shielded room; an EGI Geodesic System 200 Electroencephalography system with 256-channel head capabilities; a fully functional MRI simulator to acclimate research subjects; a 7T Varian Magnex 7 Tesla, 210 mm horizontal bore, MRI/MRS system for imaging mice and rats provides a non-invasive monitoring of both anatomical and metabolic changes; and a PIXImus Densitometer (GE Medical systems) for small animal imaging that allows measurement of bone density and of bone or soft tissue composition that uses dual energy x-ray absorptiometry (DEXA) and typically takes less than 10 minutes for image acquisition.

**Biomedical Microscopy Core**

The Biomedical Microscopy Core (BMC) provides access to confocal, deconvolution, light sheet, super resolution and other optical microscope systems that are useful for multi-color imaging of live and fixed cells and tissue samples, and high-content screening. This state-of-the-art microscopy facility serves UGA and external researchers by providing microscopy related expertise, training, and assistance for advancing their projects on various model organisms. Additionally, BMC offers software packages on high-end workstations for image processing and analysis. Among other equipment, users have access to a BD Pathway 435 Bioimager, DeltaVision I (pd125225), DeltaVision II (pd20621), DeltaVision II (pd20621), LaVision BioTec UltraMicroscope II, Zeiss LSM 710 Confocal Microscope, Zeiss LSM 880 Confocal Microscope, Zeiss Axio Examiner Microscope, Zeiss ELYRA S1 (SR-SIM) Super Resolution Microscope, and Zeiss Axio Scope A1.

**CCRC Analytic Services**

Founded in 1985, the Complex Carbohydrate Research Center offers Analytical Services and training to universities, federal agencies, research institutes, and biotechnology and pharmaceutical companies interested in analysis, structural elucidation and validation of polysaccharides, glycoproteins, and glycolipids. The Analytical Service Team offers both routine services and in-depth full structural characterization of all types of glycoconjugates derived from plants, animals, or bacteria, or produced through cell culture. The AS team has the expertise and experience to tackle the most challenging projects in the analysis of glycoconjugates. They also develop and perform method validations and conduct research into new methods for glycoscience research.

**CCRC NMR Spectroscopy Facility**

Located at UGA’s Complex Carbohydrate Research Center, the Nuclear Magnetic Resonance (NMR) facility is used to determine molecular structures of carbohydrates and proteins and to investigate the structural and dynamical basis of protein-carbohydrate interactions. Researchers at the CCRC will consult in planning studies, preparing samples, and analyzing data and can help at all stages of bio-molecular NMR projects. The in-house expertise includes new NMR methods to analyze structures of large mammalian glycoproteins and carbohydrate binding proteins. The facility has standard laboratory facilities and supplies for sample preparation and a variety of automated sample handling capabilities and are equipped for remote access. It houses eight NMR spectrometers and a diverse collection of probes and hardware suitable for a wide range of biomolecular and chemical NMR. New hardware includes a 1.7 mm cryoprobe at 800MHz, a 5 mm TXO C13 and N15 optimized cryoprobe at 900MHz, a comprehensive multi-phase (CMP) HRMAS probe at 600 MHz, and an Oxford Hypersense dissolution DNP system.

**Cytometry Shared Resource Laboratory**

The Center for Tropical and Emerging Global Diseases’ (CTEGD) Flow Cytometry Facility provides UGA researchers and others across the scientific community with access to state-of-the-art flow cytometry analyzers, including a Luminex multiplexing instrument, an imaging flow cytometer, and flow cytometry cell sorters. The facility also provides expert advice and consultation for the design and analysis of flow experiments and educates researchers at all levels of expertise in the understanding of the concept and operation of flow cytometry equipment and the correct interpretation of flow data.

**Georgia Advanced Computing Resource Center**

The Georgia Advanced Computing Resource Center (GACRC) provides high-performance computing and networking infrastructure, as well as consulting and training services in support of world-class research computing and communications resources for UGA researchers. The GACRC has a fulltime staff of ten systems administrators and scientific computing consultants specializing in Linux/UNIX system administration, storage administration, scientific computing, virtualization, and database administration. The primary computational resource is a 26,000 compute-core Sapelo2 Cluster, spanning general-purpose compute nodes (128GB, 192GB and 256GB of RAM), high-memory nodes (512GB, 1TB and 2TB of RAM), CPU/GPU hybrid nodes (NVIDIA K40, P100 and A100 GPUs). Additionally, the cluster hosts an ever-growing number of researcher-owned compute nodes obtained through the GACRC Buy-In Program. High-performance storage for the Linux cluster is provided for users’ home directories and temporary scratch space. Slower storage resources are available for long-term archival needs. The GACRC provides better than 99.99% uptime to its users of computing and storage resources and serves over 280 principal investigators and over 1,200 total users.

**Georgia Electron Microscopy**

Established in 1969 through a Center of Excellence grant from the National Science Foundation, Georgia Electron Microcopy (GEM) offers expertise in the use and application of electron and optical microscopy methods within and outside the University System of Georgia to users with interests in biology, chemistry, biomedical sciences, nanotechnology, plant biology, geology, materials science, textiles, archaeology, food science, agriculture, and physics. A complete range of conventional preparative services are offered, allowing investigators to submit fresh or fixed tissues and receive representative study prints in digital format or from scanned negatives. Special services include Transmission Electron Microscopy (TEM), Negative Staining/Negative Contrast, and Scanning Electron Microscopy (SEM). GEM provides a unique medley of state-of-the-art equipment, a highly competent technical staff, and a broad STEM education mission. Instrumentation includes a STEM Hitachi SU9000EA, FE-SEM Thermo Fisher Teneo, TEM – JEOL JEM1011, Leica DVM6 high-resolution light microscope, Horiba XGT-5000 XRF, **Leica EM ACE600** coater, SPI coater, Tousimis critical point dryer, ultramicrotomes, light microscopes, and more. On-site instruction and training are available to most individuals who would like to utilize the facility for their own research and casework.

**Georgia Genomics & Bioinformatics Core**

The Georgia Genomics and Bioinformatics Core (GGBC) is UGA’s core laboratory for nucleic acid sequencing and bioinformatics. GGBC’s mission includes research support, education, and training. GGBC provide genomics and bioinformatics consultation to UGA researchers on experimental design, selection of the appropriate sequencing platforms, and bioinformatics analyses. GGBC operates multiple platforms for short-, long-, and single-molecule sequencing reads, as well as optical genome mapping (i.e., Illumina MiSeq and NextSeq, PacBio Sequel, Oxford NanoporeMinIon).

**Integrated Bioscience and Nanotechnology Cleanroom**

The Integrated Bioscience and Nanotechnology Cleanroom includes a 2,200-square-foot (Phase I) Class 100/1,000 multidisciplinary, nanotechnology-focused fabrication, characterization, and manipulation facility and a 1,000-square-foot (Phase II) Class 10,000 bio-cleanroom part. This campus-wide shared facility can also be accessed by users outside UGA.

**Proteomic and Mass Spectrometry Facility**

The Proteomics and Mass Spectrometry Facility is equipped with an ThermoScientific Orbitrap Elite mass spectrometer for high resolution and high mass accuracy analysis. It is coupled with a nano HPLC, increasing its capacity to analyze more complex protein mixtures. The facility also has a Bruker Autoflex MALDI for quick analysis of tryptic digests of pure proteins. The facility offers UGA researchers in-gel digestion and subsequence analysis for protein identification. The facility also has an in-house version of Mascot that provides customers with the option of loading a database to search for protein identification.

**Statistical Consulting Center**

The Statistical Consulting Service (SCC) provides collaborative research assistance to faculty, research staff, and students in all departments of the University of Georgia. Housed in the Department of Statistics since 1990, the SCC offers consultation on experimental and/or survey design, general procedures for analyzing data, and interpretation of output from statistical software packages. Graduate students receive training in both theory and applications.

**Survey Research Center**

The SPIA Survey Research Center (SRC) is a nationally recognized polling operation with a primary focus on the state of Georgia, providing timely data about public perceptions of policy priorities and political attitudes of Georgia citizens. the SRC serves as a model for the University’s experiential learning initiative. Graduate students are hired to serve as lab managers, overseeing onsite operations of the SRC. The center also serves as a teaching tool for undergraduates in the Applied Politics Program—an interdisciplinary program focusing on practical politics and public affairs communications. The SRC conducts both live-interviewer surveys, as well as online polls. In addition to conducting its own statewide polls relating to Georgia politics and policy, the SRC also performs contract work for academic researchers, corporations, and non-profits.

**Veterinary Diagnostic Laboratories**

The College of Veterinary Medicine AAVLD-accredited diagnostic labs (VDLs) are committed to providing quality, efficient, and affordable service to veterinarians, the livestock industry, and researchers throughout Georgia and the world. Both the Athens and Tifton Diagnostic Laboratories are fully accredited by the American Association of Veterinary Laboratory Diagnosticians. Board-certified pathologists, highly trained laboratory professionals, and infectious disease experts are available for consultation both before and after sample submission. The test catalog includes bacteriology and mycology, clinical pathology and cytology, molecular diagnostics, necropsy, parasitology, pathology and histopathology, virology and serology and clinical flow cytometry. The VDLs provide comprehensive diagnostic services to laboratory veterinarians and researchers in order to further One Health efforts. The Athens Diagnostic Laboratory (ADL) provides custom health monitoring and clinical diagnostic services for conventional and unconventional laboratory species, as well as for agricultural animals. In addition, the ADL can conduct various studies to phenotype genetically modified rodents and fish.