

Emory University

Emory University is one of the leading institutions of higher education throughout the country with strong relationships with prominent public health organizations and agencies. Emory faculty and students have access to substantial library holdings, computing facilities, technical expertise, and research facilities. Emory is also a member of the Inter-University Consortium for Political and Social Research (ICPSR) at the University of Michigan and has full access to many services and resources available within ICPSR. Emory’s main campus covers more than 600 acres in Atlanta, Georgia.

Emory is the third-largest employer in the metro Atlanta area and the largest employer in DeKalb County. Emory University and Emory Healthcare employees over 28,000.

Emory University is comprised of the following schools: Emory College of Arts and Sciences; Goizueta Business School; Nell Hodgson Woodruff School of Nursing; Oxford College; James. T. Laney School of Graduate Studies; School of Law; School of Medicine; Nell Hodgson Woodruff School of Nursing; Rollins School of Public Health and the Candler School of Theology.

Student Enrollment for the University in fall 2016 was 14,913 (7,591 Undergraduate; 7,322 Graduate and Professional).

Emory College of Arts and Sciences

Emory College of Arts and Sciences was founded in 1836 in Oxford, Georgia, and is the oldest college of Emory University. In 1915, Emory University was established in Atlanta with Emory College of Arts and Sciences as its undergraduate school of arts and sciences. College classes continued to be held at Oxford until 1919 when the college relocated to the new campus in Atlanta.

Emory College of Arts and Sciences combines the personal engagement and excellent teaching of a traditional liberal arts college with the groundbreaking scholarship and resources of a major research university.

Our diverse, ethically engaged, and inquiry-driven community seeks to transform the world through leadership in research, teaching, and service. Our mission is supported by an internationally recognized faculty, dynamic staff, and superb facilities that adopt the latest innovations in technology and environmental sustainability.

Nearly 40% of College students have some international experience by graduation, placing Emory among the top U.S. research universities for study abroad. Emory College faculty have published more than 750 books and have been distinguished recipients of the Pulitzer Prize, the National Humanities Medal, and the National Book Award. Through participation in interdisciplinary research centers across campus, College faculty bridge traditional barriers between the disciplines and work together to advance the frontiers of knowledge.

Emory College of Arts and Sciences offers 86 majors, 63 minors, and 17 joint concentrations and 55 minors. Emory College has 550 faculty, 29 academic departments and 26 academic programs. The college faculty has published more than 750 books and has distinguished recipients of the Pulitzer Prize, the National Humanities Medal, and the National Book Award. Through participation in interdisciplinary research centers across campus, College faculty bridge traditional barriers between the disciplines and work together to advance the frontiers of knowledge.

Emory University School of Medicine

Emory University School of Medicine, a component of Emory Robert W. Woodruff Health Sciences Center, is ranked among the nation’s finest institutions for biomedical education. The School of
Medicine is located on the main Emory University campus in the Druid Hills section of Atlanta and in Emory-owned and affiliated medical facilities throughout metropolitan Atlanta.

The School of Medicine’s three-part mission encompasses teaching, scholarship, and service. Its wide-ranging educational and training programs include medical students, graduate students, residents, fellows, postdoctoral students, and students in the allied health professions. In 2010, the School received 43 applications for each first-year position. In addition to 455 medical students, the school trains more than a thousand residents and fellows in 74 accredited primary care and specialty medicine programs. It also includes 61 MD/PhD students, including some in a joint program with the Georgia Institute of Technology. The MD/PhD program is one of 34 selected for sponsorship by the National Institutes of Health. Students also may earn the MD/MPH degree or the Master of Science in Clinical Research degree through joint programs with the Rollins School of Public Health. Six allied health programs train 390 students. Allied health programs include a physician assistant program ranked third in the nation by US News & World Report and a physical therapy program ranked eighth. Nearly 7,000 physicians and other health care professionals come to Emory each year to participate in one of the nation’s largest and most successful continuing medical education programs.

Medical education at all levels emphasizes problem solving within the context of excellent patient care, advanced biomedical research, preventive medicine, and ethical concerns. Graduates of Emory School of Medicine are trained to become leaders in medicine and science. Ongoing changes in the curriculum are designed to help students become active and independent learners and thinkers — skills they will need to deal effectively, efficiently, and humanely with the multiple challenges that will confront them as physicians in the 21st century. Atlanta’s large and diverse patient population, combined with Emory’s extensive research facilities, provide an excellent environment for a complete medical education. National public health organizations located nearby, such as the US Centers for Disease Control and Prevention, the American Cancer Society, and The Carter Center provide special educational opportunities. Distinguished faculty members who are dedicated to their clinical and research areas of expertise, yet committed to a close, interactive relationship with students, provide the foundation of the School of Medicine teaching programs. Faculty include 1,804 full-time members and 997 volunteer members.

Emory School of Medicine is renowned as a premier research institution. Among Emory’s extensive research facilities are the Woodruff Memorial Research Building, the Rollins Research Center, the Winship Cancer Institute, the Biomedical/Dental Building, the vaccine research center, and the Whitehead Memorial Research Building. Emory medicine is well known for its pioneering treatment and research in specialty areas, including cardiovascular diseases, cancer, renal diseases, ophthalmology, and geriatrics. As clinicians in Emory’s seven owned or affiliated teaching hospitals, faculty members are responsible for 2,975 hospital beds and more than 2.2 million patient encounters annually. Emory Healthcare is the clinical arm of the Emory University Woodruff Health Sciences Center. As the largest, most comprehensive health care system in Georgia, Emory Healthcare includes The Emory Clinic, Emory Children’s Center, Emory Medical Affiliates, Emory Specialty Associates, Dialysis Access Center of Atlanta, Emory Genetics Laboratory, Emory Medical Foundation, Emory Physical Therapy, Emory University Hospital, Emory Crawford Long Hospital, Wesley Woods Center, the jointly owned Emory-Adventist Hospital, and the jointly-owned Emory Johns Creek Hospital. Emory Healthcare has revenues in excess of $1.5 billion and approximately 10,000 employees.

Emory doctors also operate within Grady Health Systems, one of the Southeast’s largest & busiest Emergency Care facilities. Grady Memorial Hospital (pictured above) treats over 100,000 emergency cases per year and an average 300 per day.

Emory University School of Medicine is accredited by the Liaison Committee on Medical Education of the American Medical Association and the Association of American Medical Colleges. Emory University
Emory University School of Public Health

At the Rollins School of Public Health (RSPH), students learn to identify, analyze, and intervene in today's most pressing public health issues. The school's location in Atlanta, referred to as the "Public Health Capital of the World," also is home to the U.S. Centers for Disease Control and Prevention; CARE; the national home office of the American Cancer Society; The Carter Center; the Arthritis Foundation; and numerous state and regional health agencies. The School is also part of Emory University's Woodruff Health Sciences Center, providing access to the patient care, teaching, and health-related research programs of that organization. This setting is ideal for hands-on research, collaborations with the world's leading public health agencies, and interdisciplinary work with national and international organizations.

The program is community oriented, and many students bring actual problem-solving experience with them. Students join the RSPH community from all fifty states and from more than forty foreign countries to contribute to the school and apply knowledge to promote health and prevent disease in human populations.

The school comprises six academic departments: behavioral sciences and health education, biostatistics, environmental and occupational health, epidemiology, health policy and management, global health, and hosts over 20 interdisciplinary centers. More than 160 full-time, doctoral-level faculty members teach and conduct research in areas such as mathematical modeling of infectious disease transmission, exploring relationships between nutrition and chronic disease, and investigating cancer causation and control. Other research interests include identifying the social determinants of health-risk behaviors, AIDS, developing church-based health promotion programs to foster changes in nutrition and other health-related behaviors, detecting and preventing adverse outcomes in occupational settings, and evaluating the cost of health care and the allocation of health resources.

The RSPH offers dual-degree programs with Emory's business, medical, nursing, and law schools. In addition to these programs, the schools of public health and medicine collaborate on many levels. Research areas of mutual interest include nutrition, Alzheimer's disease, and the prevention and control of AIDS, cardiovascular disease, cancer, and adverse reproductive outcomes. In conjunction with The Emory Clinic, physicians of the environmental and occupational health department have created a diagnostic and evaluation facility for persons exposed to environmental health hazards and the school houses a residency program in occupational medicine.

The RSPH also draws strength from several unique local resources. The U.S. Centers for Disease Control and Prevention, the federal agency dedicated to developing and applying disease prevention and control programs, provides more than one-half of the school's more than 200 adjunct faculty. The Carter Center is involved in international health intervention programs that provide student practicum opportunities. Our students learn from staff of the Task Force for Global Health, both in the classroom and as interns in the field. The school also shares research activities with the national headquarters of the American Cancer Society and international headquarters of CARE, both based in Atlanta.

Departmental Graduate Programs

Chemistry

Emory’s graduate program in chemistry consists of approximately 120 graduate students, and we admit approximately 25 students each fall semester. The current student body comes from 23 states representing all regions of the United States, as well as a dozen foreign countries. The graduate student body is evenly split by gender, and minority students comprise approximately 10% of our current students. Our program is large enough to have critical mass in most areas of chemistry, while
still intimate enough for most of the students to know each other. Emory’s chemistry department is excellent not only in the traditional disciplines of chemistry, but also in many interdisciplinary areas, including biomaterials, organometallic chemistry, medicinal and bioorganic chemistry, bioinorganic chemistry, and various collaborations of computational chemistry with each of these areas.

Emory Ph.D. chemists hold distinguished faculty positions at a variety of excellent colleges and universities throughout the United States and several foreign countries, and are also very well represented in the chemical industry. Our graduates are in high demand precisely because of the strength of our research and educational programs.

**Mathematics and Computer Science**

The Department of Mathematics and Computer Science began the doctoral program in the 1960’s. Since then well over 100 PhD's have been granted. Students have undertaken research in a broad range of mathematical areas, many publishing scholarly articles in advance of program completion. The graduate program in Computer Science was inaugurated in 1975. Beginning as a combined Computer Science/Mathematics masters degree, students now complete an M.S. in CS. A new doctoral program in Computer Science and Informatics began in fall 2007.

**Physics**

The Department of Physics specializes in several emerging cutting-edge research areas such as biophysics, nanoscience, soft matter physics, statistics of nonequilibrium and living systems, and network theory. The moderate size of our Department allows us to emphasize collegiality and a sense of community, as well as a comprehensive student experience including high teaching standards in a small-classroom environment, direct interaction with faculty/advisors, accessibility of research facilities, and diverse extracurricular activities. Graduate students can specialize in several research areas including biophysics, condensed matter physics and optics, soft matter and statistical and computational physics. About half of our graduating PhD students go to postdoctoral positions after they graduate, while others go into industrial or other permanent research and/or teaching positions.

**Psychology**

The Department of Psychology offers programs of study leading to the Doctor of Philosophy degree within our formal programs in Clinical Psychology, Cognition and Development, and Neuroscience and Animal Behavior. The emphasis of the department is a broad, interdisciplinary approach to understanding issues and problems in contemporary psychology, while at the same time offering specialization in a particular area.

Research projects and specific coursework are developed primarily within the student’s chosen program. However, all students receive a common grounding through courses in statistical methods, history of psychology, and fundamentals of teaching practice, and participate in department wide-colloquia, research seminars, and special workshops. Procedures, requirements, and training relevant to all students in the department are detailed in the Graduate Manual (updated yearly).

**Biostatistics and Bioinformatics**

The PhD program in biostatistics is designed for individuals with strong quantitative skills with background or interest in the biological, medical, or health sciences. To the extent possible, the curriculum of each student is tailored to his or her background and interests. Students can enter the PhD program with a bachelor's or a master's degree. The PhD program is offered through the Laney Graduate School.
The Training Program, Biostatistics in Genetics, Immunology and Neuroimaging (BGIN), is available for biostatistics PhD students to apply. It is funded by a grant from the National Institute of General Medicine Science. A concentration in bioinformatics is available for students in the PhD program (see link below).

**Epidemiology**

The Department of Epidemiology in the Rollins School of Public Health offers a program of study leading to the Doctor of Philosophy degree, granted through the Laney Graduate School. The emphasis of this program is on the development of analytic processes of epidemiology applied to a broad scope of conceptual issues and actual health problems in areas such as chronic diseases, infectious diseases, reproductive health and nutrition. Our PhD program offers unique opportunities for research and education within the Department of Epidemiology as well as through participation in any of our numerous affiliated health agencies. Our close collaboration with the Centers for Disease Control, located adjacent to our campus, the Carter Center of Emory University, the Georgia Division of Public Health, the Emory School of Medicine, and the American Cancer Society, among others, offer challenging research projects for our students as well as career opportunities.

Our academic program is oriented toward producing graduates who are well grounded in methodology and who, as they pursue careers as researchers and teachers, will expand the scientific knowledge of the nature of disease in human populations by developing new theories, and testing the "truth" of these theories through epidemiologic studies. Epidemiology is a wonderful career for analytically inclined individuals who also desire to contribute to the betterment of mankind. It is a profession for those who find research, problem solving, and collaborating with other scientists exciting.

**Environmental Health Sciences**

Emory University is pleased to offer the Ph.D. degree in Environmental Health Sciences. The goal of the program is to provide students with interdisciplinary training to better understand the impact of the environment on human health and disease. Students have a wide range of unique opportunities for research and education through the participating departments across campus and the numerous health agencies affiliated with the program. Furthermore, the program aims to produce a unique cadre of future leaders in the field of environmental health sciences who have expertise in both laboratory- and population-based research. Our graduates will be competitive for positions in academia, government and private industry.

The faculty members of the Environmental Health Sciences Program utilize a wide range of tools to address problems central to the field, including exposure assessment, toxicology, disease ecology, and environmental epidemiology. Faculty research interests include infectious diseases, cardiovascular diseases, cancer, development, neurological disorders, and the impact of climate change on human health and disease. Several departments in multiple schools participate in the program making this a truly University-wide enterprise. Departments from the Rollins School of Public Health include Environmental Health, Epidemiology, Global Health, and Biostatistics and Bioinformatics; from the College of Arts and Sciences: Environmental Studies; and from the School of Medicine: Pharmacology, Biochemistry, Medicine, and Pediatrics. Faculty members within the Environmental Health Sciences Programs are leaders in the field and hold prestigious Center and Training Grants from the National Institute of Environmental Health Sciences and the Environmental Protection Agency. The wide range of faculty expertise provides a wealth of research experiences for incoming students.

Our program is designed around three major areas of Environmental Health Sciences research: exposure science, biological mechanisms of susceptibility and disease, and environmental determinants of population health. Students will receive training in each of these areas so that they can identify and solve interdisciplinary research problems. It is likely that the topic of dissertation research
will span one or more of these areas, but it is possible that a student’s research will focus on a particular topic within one of the three major areas.

**Nutrition and Health Sciences** (previously a GDBBS program is now under the School of Public Health)

Emory’s strongly interdisciplinary doctoral program in Nutrition and Health Sciences (NHS) provides the expertise and skills necessary for original research into the relationship between nutrition and human health. Nutrition is the quintessential translational science in which discovery, development, and delivery intersect. Advances in the understanding of biochemical processes change the management of clinical disease and public health programs; clinical observations drive future research into the mechanisms of pathophysiology and disease progression; and the need for effective public health programs leads to research on behavior modification and the social processes that influence dietary habits. Our students obtain the skills necessary to investigate relationships between human nutrition and health and contribute to improving nutrition worldwide. The NHS faculty were recently ranked 4th in the US in terms of research productivity. Core strengths in metabolomics and predictive medicine, clinical nutrition, population-based intervention trials and epidemiology, and public nutrition programs ensure quality training in whatever aspect of human nutrition inspires you.

**Interdepartmental Graduate Programs**

**Graduate Division of Biological and Biomedical Sciences**

The GDBBS is composed of eight interdisciplinary and interdepartmental doctoral programs: Biochemistry, Cell and Developmental Biology (BCDB), Cancer Biology (CB), Genetics and Molecular Biology (GMB), Immunology and Molecular Pathogenesis (IMP), Microbiology and Molecular Genetics (MMG), Molecular and Systems Pharmacology (MSP), Neuroscience (NS) and Population Biology, Ecology and Evolution (PBEE). Each program has a faculty member who serves as Director, responsible for all aspects of the individual program, and another acting as the Director of Graduate Studies, overseeing the academic performance and counseling of the students within the program. While recruitment and admissions are coordinated centrally in the office of the Director of the GDBBS, students are recruited by and admitted into individual programs. Currently the eight programs have 327 faculty members. In fiscal year 2016 these faculty received over $150 million in research funding awards. The faculty are drawn from 18 departments and centers in Emory College and Emory School of Medicine as well as from the joint department of Biomedical Engineering (Emory University/Georgia Institute of Technology), and the Centers for Disease Control and Prevention located immediately adjacent to the Emory Campus. In addition, many faculty are associated with Georgia’s only National Cancer Institute (NCI)-designated cancer center, the Winship Cancer Institute. Programs and course of study are described at the GDBBS website (http://biomed.emory.edu/programs/)

**Other**

**Center for Ethics**

Scientific and medical researchers face a host of ethical challenges in pursuing their research and career goals. Since 1992, the Center for Ethics has assisted Emory’s research community in meeting the National Institute for Health’s (NIH) requirements for ethics training by offering a short course on the responsible conduct of scientific research. Entitled *Values in Science* (VIS), the course addresses a range of issues, such as data management and fraud, research with human and animal subjects, conflicts of interest, and authorship attributions. Taught by active researchers in the biological and biomedical sciences, philosophers, and Center ethicists, VIS uses current case studies faced by researchers. Each semester the course offers enrollment for approximately fifty doctoral and post-
doctoral students in the biological and bio-medical sciences and is also open to university researchers and interested graduate and professional students. The one-credit-hour course, IBS/CHEM 606, is offered through the Graduate Division of Biological and Biomedical Sciences.

**Emory University’s Libraries**

The University Libraries provide collections and services in support of campus instructional and research programs.

The nine Emory Libraries are: *Woodruff Health Sciences Library*, *Goizueta Business Library*, *James S. Guy Chemistry Library*, *Math & Science Reading Room*, *The Marian K. Heilbrun Music & Media Library*, *Health Sciences Center Library*, *Hugh F. MacMillan Law Library*, *Oxford College Library* and *Pitts Theology Library*.

The nine Emory Libraries house more than 3.1 million volumes, at least 55,000 of which are electronic. From the Manuscript, Archives, and Rare Book Library -- which holds special collections strong in modern literature, African American history and culture and the history of Georgia and the South -- to the Woodruff Health Sciences Library, whose librarians are called upon by medical students and hospital professional alike -- each library make the system as a whole the intellectual commons of the campus.

**Core Facilities**

A number of shared Core Facilities have been developed, which are available to all University researchers. The following are some examples:

**Emory College of Arts & Sciences Core Facilities**

- **The Cherry L. Emerson Center for Scientific Computation**, directed by Jamal Musaev was established in 1991. The objective of the Center is manifold, including:
  - To provide high-end computational facilities and expertise to the computationally oriented scientific research at Emory, and to propel Emory into the forefront of research in computational sciences;
  - To help provide state-of-the-art education on computational sciences at Emory, and to help bring computational education in Emory to the highest possible national and international levels;
  - To encourage collaborations in computational sciences with other national and international institutions, as well as on Emory campus.

- **The FERN (Facility for Education and Research in Neuroscience)**, directed by Gregory Bern features:
  - (a) MRI simulator ("mock scanner"), to acclimate participants to the imaging environment and train them to remain still (critically important for pediatric and special populations; no simulator facilities are available on the Emory campus);
  - (b) high density EEG/ERP system;
  - (c) full psychophysiology recording suite (Biopac: heart rate, startle, skin conductance);
  - (d) Tobii eye tracker;
  - (e) acoustically shielded chamber;
  - (f) behavioral testing space;
  - (g) computer room, for data processing and analysis. FERN also features a waiting area and bathroom and locker facilities. Long term, we also plan to apply for a magneto-encephalography (MEG) system. If that is successful, the MEG will be housed in the same suite. Thus, the scanner will be situated in an environment that is optimized for research on cognitive and affective neuroscience, using a variety of complementary, state-of-the-art techniques for peering into the brain.

- **The Mass Spectrometry Center**, directed by Fred Strobel provides state of the art mass spectrometry for the Emory University Community. Including, using separation techniques as a method to introduce the sample to the mass spectrometer. Some of the Services: Accurate mass measurements, which provide elemental analysis for compounds. Self-service Matrix Assisted Laser Desorption, which allow the measurements of large molecules by researchers themselves. LC-MS, which allows for the analysis of complex mixtures
• The NMR Research Facility, directed by Shaoxiong Wu houses five high resolution NMR spectrometers: Two INOVA 600, one INOVA 400, one VNMRs400 and one Mercury 300, as well as two solid state NMR spectrometers: Bruker three channels AVANCE 600 WB solid state NMR and Bruker Avancell 300 WB solid state NMR. These instruments are able to perform most high end experiments such as 1H, 13C, 31P, 19F, 2H, 51V, COSY, NOESY, TOCSY, HMQC HMBC, CPMAS, REDOR etc. Sample temperature from -100C to 150C. The center provides NMR data service, user training and collaboration. All authorized NMR users can use online schedule to reserve the instrument time. NMR center has data server that allows researchers to transfer the NMR data to their own laboratory computers. Users can process their data on their computer by using MNOVA off-line processing software.

• The X-ray Crystallography Center, directed by John Bacsa is for the investigation of inorganic, organometallic, organic or macromolecular materials with state of the art X-ray diffractometry. The primary function is the complete determination of the three-dimensional arrangement of atoms and molecules in inorganic, organometallic, organic and biological compounds. Chemists and biologists use this structural information to validate and improve their inorganic and organic syntheses and to understand the biological activity of compounds. Many research groups at Emory and elsewhere rely on our service for the unambiguous structural characterization of their products, not only to establish relative and absolute stereochemistry, but also to confirm the regioselectivity and outcomes of reactions. The X-ray lab has two single crystal Bruker APEX II CCD diffractometers and one D8 Discover Powder diffractometer. Both single crystal diffractometers are sealed tube instruments with Oxford Cryostream low temperature systems and are controlled by PC’s running the Bruker APEX-II suite of programs. One instrument has a Mo tube while the other is a Cu X-ray system. Both instruments have Monocap X-ray beam intensifiers.

School of Medicine Core Facilities
• The Transgenic Mouse Facility, directed by Dr. Ifor Williams, occupies 520 sq. ft. in the Winship Cancer Center. This facility contains state-of-the-art equipment for the generation of transgenic animals and the production of animals containing targeted gene disruption and replacements in their genomes.

• The Microchemical Facility, directed by Dr. Jan Pohl, is designed to provide Emory scientists with access to modern molecular biological techniques and materials requiring instruments too costly for individual laboratories to purchase and operate. It contains seven major instrument systems including a DNA synthesizer, peptide synthesizer, protein sequencer with on-line PTH analyzer, amino acid analyzer, HF peptide cleavage apparatus and semi-preparative and microbore HPLC. The facility is capable of high sensitivity (femtomole level) protein and peptide mapping, including microbore and/or capillary liquid chromatography units, capillary electrophoresis, (Edman-type) protein microsequencing, and triple quadrupole mass spectrometry.

• The Winship Cancer Center’s Flow Cytometry Facility, directed by Dr. Edmund Waller, provides cell sorting and analysis for faculty and trainees. Flow cytometry equipment is also located in the laboratory of Dr. John Altman in the Rollins Research Center as an extension of this facility. The FACS Caliber is equipped with argon-ion and diode lasers, with detectors for two scatter parameters and four fluorescent channels; it is also equipped with an autoloader for ease of processing large numbers of samples. Sorting will be provided on a FACS Star that has been upgraded for acquisition of three fluorescence parameters, and will be equipped with containment facilities, appropriate for sorting of infectious materials. Both instruments will be controlled by CeliQuest software (Becton Dickinson), running on Macintosh Power PC computers.

• The Confocal Microscopy Facility, also located in the Rollins Research Center under the direction of Dr. Amy Sears, provides high resolution, digital confocal images of cells. Examples of applications include localization and co-localization of neural proteins, identification of subcellular compartments, assays of localization of cellular proteins after different stimuli (e.g., capping of cell surface proteins when cells are activated).

• The DNA Sequencing Facility is supported and subsidized by the Emory School of Medicine and is equipped with three Applied Biosystems model 377 automated DNA sequencing machines. This facility provides services to more than 350 investigators representing more than 125 individual labs at Emory,
and is also equipped with two high quality PE Applied Biosystems PCR machines including one 3600 and the latest 3700 models. The facility also has a SUN workstation that provides linkage analysis and DNA assembly in a rapid fashion, as well as an Inherit sequencing analysis system that can be used for robotic, genetic, and linkage analysis.