Offering the best of both internationally renowned institutions, we are united by our dedication to improving the health and well-being of all by fostering the next generation of leaders in biomedical engineering.
The Wallace H. Coulter Department of Biomedical Engineering is a single department that combines the world-class resources of the Georgia Tech College of Engineering and the Emory University School of Medicine.

Our faculty are committed to innovative graduate training that prepares a student for any career path. Students are fully supported by a range of funding sources, including pre-doctoral fellowships from the National Science Foundation and the National Institutes of Health, federal and private agencies, and federally funded training grant programs.

Our students are doing cutting-edge research in highly collaborative environments, which is a common element of our team-driven culture. Our research laboratories are dedicated to addressing unmet clinical challenges and have access to superior resources only found in world-class institutions.

Wallace H. Coulter Department of Biomedical Engineering

- No. 3 ranked biomedical engineering graduate program — U.S. News & World Report (2017)

We are an inclusive department that embraces diverse and talented individuals. Our College of Engineering is ranked:

- No. 1 in engineering doctoral degrees awarded to minority students — Diverse: Issues in Higher Education (2017)
Expansive Research Opportunities

Students have an abundance of opportunities to work in their desired fields:

- Neuroengineering
- Cancer Technologies
- Immunoengineering
- Cardiovascular Engineering
- Drug Delivery Cellular Delivery

- Biomedical Imaging
- Biomedical Informatics and Systems Modeling
- Biomedical Robotics
- Biomaterials
- Regenerative Technologies

Outstanding Medical Facilities and Resources

- Yerkes Vaccine Center
- Centers for Disease Control and Prevention
- Children’s Healthcare of Atlanta
- Grady Memorial Hospital
- Winship Cancer Institute

National Institutions Located Nearby:
Centers for Disease Control and Prevention (HQ), The American Cancer Society (HQ)

Research facilities: Yerkes Regional Primate Research Center, Wayne Rollins Research Center, Woodruff Memorial Research Building, Marcus Autism Center, Atlanta Clinical Research Network Sites, Whitehead Biomedical Memorial Building, Emory Pediatrics Building, Winship Cancer Institute

Teaching facilities: Grady Memorial Hospital, Emory University Hospital, Emory University Hospital Midtown, Egleston Children’s Hospital at Emory University, Atlanta Veterans Affairs Medical Center, Wesley Woods Geriatric Hospital
“The opportunities presented to me during my time in the BME program at Georgia Tech and Emory have been unique and vast. The quantity and breadth of faculty allowed me to find a project in which I was truly interested, and departmental involvement has given me valuable social, outreach, and professional development opportunities.”

– JULINE DEPPEN
BME PhD student
“The BME PhD program has a curriculum built to develop your technical and soft skills needed for a career in academia or industry.”

– ALINE NACHLAS (YONEZAWA)
BME PhD student
Looking for a Ph.D. Program? We offer many degree program options!

Biomedical Engineering Ph.D. Programs

Ph.D. in Biomedical Engineering
We are training the next generation of biomedical engineers to become independent, thought-provoking leaders. Graduates of this joint program leave armed with a strong foundation in engineering principles and bioscience knowledge.

M.D. / Ph.D. in Biomedical Engineering
The M.D. / Ph.D. is a dual degree program. Participants receive their Ph.D. in Biomedical Engineering from the Wallace H. Coulter Department of Biomedical Engineering, and their M.D. from Emory University. Application is through the Emory School of Medicine.

Interdisciplinary Ph.D. Programs

The Wallace H. Coulter Department of Biomedical Engineering participates in several interdisciplinary programs.

Bioengineering
The bioengineering program integrates engineering principles with life sciences to improve health, the environment, and engineering applications. Students work with participating program faculty members from the Colleges of Engineering, Computing, Sciences, and Architecture as well as the Emory University School of Medicine.

Bioinformatics
An interdisciplinary degree housed in the School of Biology. Bioinformatics is emerging as a strategic discipline at the frontier of biomedical research, where concepts from the natural sciences are merged with engineering and computer science techniques.

Computational Science
A joint program between the Colleges of Computing, Sciences and Engineering. Prepares students for positions in industry, government and academia that emphasize research and development in areas such as engineering software systems, web technologies, software for consumer product and drug design, software and systems for modeling and simulation, systems integration, data mining and visualization, high performance computing and computational modeling.

Machine Learning
The machine learning program is a collaborative venture between the Colleges of Computing, Engineering, and Sciences. Students learn to integrate and apply principles from computing, statistics, optimization, engineering, mathematics, and science to innovate and create machine learning models and then apply them to answer real-world questions.

Robotics
Open to students enrolled in a participating home school in the College of Computing or the College of Engineering. Educates a new generation of robotics researchers who are prepared to be impactful contributors upon entering the high-tech workforce.

Enrolled students are full students at both Emory University and the Georgia Institute of Technology with all the benefits associated with them: parking permits, email addresses, e-journal subscriptions, student groups/clubs, classes to take, seminar series, and more!

Biomedical Engineering Ph.D. Program
To meet the needs of a rapidly changing society and global economy, three internationally renowned institutions, Peking University, Emory University and The Georgia Institute of Technology, have forged an unprecedented partnership in biomedical engineering.

This joint Ph.D. program offers a unique means for U.S. and Chinese students to learn and work in a global economy and in global health settings.

Students apply to the program through the school designated as the home campus, either the Department of Biomedical Engineering at PKU in Beijing or the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory in Atlanta.

Most of the classes and research will take place on the home campus. However, students will also spend at least one year taking classes and participating in research in the co-advisor’s lab on the secondary campus. A single dissertation will satisfy the thesis requirements of all three institutions. Students will be fully supported as long as they maintain satisfactory progress in the program.

Pictured: PKU students during a summer visit in the Bala Pai lab in the Whitaker Building.
Training grants enhance graduate research training by promoting fundamental, interdisciplinary and innovative research training essential for future biomedical researchers. Students appointed to a training grant are financially supported for a portion of their training. Below are the current training grants available to Biomedical Engineering Ph.D. students:

**NIH: Research Training Program in ImmunoEngineering**
The objective of this program is to train pre-doctoral biomedical engineering and bioengineering students in state-of-the-art immunology, with application of rigorous engineering principles, within a strong professional development environment, to equip them to be able to take on prominent positions in ImmunoEngineering academia and industry.

**NIH: Biotechnology Cellular and Tissue Engineering**
The objective of this biotechnology training program is to provide advanced and integrated training for predoctoral engineering students in cell and tissue engineering and to develop future leaders for the biotechnology industries.

**NIH: Computational Neuroscience**
The program aims to make a significant contribution to fulfilling the need for highly trained scientists capable of integrating experimental results using computational and theoretical approaches to understand the complexity of brain processes underlying neurological and psychiatric disorders.

**NIH: Computational Biology and Biomedical Genomics**
The goal of our program is to provide training for a broad-based set of students with expertise in computational biology and predictive health, which encompasses research from integrative genomics to medical informatics.

**NIH: Rationally Designed, Integrative Biomaterials**
The objective of the GTBioMAT program is to provide advanced and integrated training for pre-doctoral science and engineering students in the rational design, synthesis, and application of the next generation of integrative biomaterials.

**NIH: Research Training Program in ImmunoEngineering**
The objective of this program is to train pre-doctoral biomedical engineering and bioengineering students in state-of-the-art immunology, with application of rigorous engineering principles, within a strong professional development environment, to equip them to be able to take on prominent positions in ImmunoEngineering academia and industry.

**NSF: Stem Cell Biomanufacturing**
The NSF-funded Integrative Graduate Education and Research Traineeship (IGERT) program in Stem Cell Biomanufacturing was awarded to Georgia Tech in 2010 to educate and train the first generation of Ph.D. students in the translation and commercialization of stem cell technologies for diagnostic and therapeutic applications.

**NIH: Computational Biology and Biomedical Genomics**
The goal of our program is to provide training for a broad-based set of students with expertise in computational biology and predictive health, which encompasses research from integrative genomics to medical informatics.

**NIH: Rationally Designed, Integrative Biomaterials**
The objective of the GTBioMAT program is to provide advanced and integrated training for pre-doctoral science and engineering students in the rational design, synthesis, and application of the next generation of integrative biomaterials.

**NSF: Healthcare Roboticists**
The Georgia Institute of Technology and Emory University faculty members are uniting to train the next generation of engineering students in healthcare robotics technologies, so they can better understand the changing needs of patients and their caregivers and healthcare providers.
Pictured: Dillon Brown, a biomedical engineering graduate student, and Victoria Yang, research specialist in biomedical engineering. They are analyzing imaging data for corneal curvature and axial components to determine how the eye changes with the development of myopia or near-sightedness.
“The number of outreach opportunities and ways to be involved in the BME community are beyond what I expected to find as a graduate student. The department is very supportive of student leadership and involvement.”

— Simone Douglas
BME PhD student

Pictured: PhD students mentor high school students in the Project ENGAGES program. Olivia Burnsed, Biomedical Engineering Ph.D. student, is mentoring Niara Bolchwey and Clinton Smith.
Fellowships and Awards Opportunities

Fellowships are monetary awards, usually designated for graduate students. Many are nationally competitive. There are often specific requirements and expectations, with some fellowships being limited to particular fields of study. Students applying for fellowships should carefully read the requirements on the fellowship website before applying. Fellowship students are required to maintain full-time enrollment.

Access Resources from Two Institutions

Take advantage of extensive resources from both institutions that assist in all phases of fellowship awards, from submission to award management. Both campuses have offices which help with fellowship paperwork, grant proofreading, proposal and grantsmanship tips, and post-award accounting. In addition to the individual campus offices, our curriculum is designed to hone skills in grant writing and scientific reasoning, both critical skills for receiving fellowships.

The BME Department also has many internal fellowship opportunities drawn from both campuses. These include, but are not limited to:

- GT President's Fellowship
- Alfred P. Sloan Award
- Goizueta Fellowship
- Emory Jones Fellowship
- Research area specific awards

In the past five years, 174 individual graduate students were awarded one or more external fellowships and training grants.

The department has hosted 82 National Science Foundation Graduate Research Fellowship Program fellows.

Professional Development Resources That Expand Your Career Options

Our Ph.D. programs provide a wide range of scientific training and industry experience opportunities to graduate students. We prepare students for career success as pioneering future leaders in academics, business, industry, and government. Our goal is to develop students that have the skills needed to succeed both academically as well as professionally.

Our program provides important skills and options to help graduate students excel in the program:

**Coursework**
- Emory University Jones Program in Ethics
- Biomedical engineering seminar course
- Career services workshops

**Mentorship Training**
- Teacher training short course
- Teaching and Research Practicum
- Teaching Assistantship

**Certificate Programs**
- International Management for Graduate Students Certificate (Scheller College of Business)
- Management of Technology Graduate Certificate (Scheller College of Business)
- Tech to Teaching Certificate Program (Center for Teaching and Learning)
- Certificate Program in Translational Research (Laney Graduate School at Emory)
- Graduate Certificate in Engineering Entrepreneurship for Non-business Students (Scheller College of Business)
- Graduate Certificate in Science, Technology, and Society (Ivan Allen College of Liberal Arts)
- Graduate Communication Certificate Program (Center for Teaching and Learning with the Communication Center)
- Doctoral Certificate in Public Policy (Ivan Allen College of Liberal Arts)

**Dual Degree Programs**
- M.D. / Ph.D.
- Dual Degree MBA (Scheller College of Business)

**Internships**
- Part-time or full-time internship to gain experience in a career field

**Programs**
- Preparing Future Faculty – a joint initiative with the Coulter Department and the Center for Teaching and Learning
- Graduate Leadership Program (Scheller College of Business and the Coulter Department)
- BEST Program – Broadening Experiences in Scientific Training (Emory, Georgia Tech, and NIH supported)
- Office of Technology Transfer Internship (Emory University Office of Technology Transfer)
- The Technological Innovative: Generating Economic Results (TI:GER®) Program (Scheller College of Business)

**Additional Resources**
- Center for Career Discovery and Development at Georgia Tech
- Georgia Tech Professional Development Resources
- Bioengineering and Bioscience Unified Graduate Students (an interdisciplinary graduate student group)
- Emory Professional Development Resources
- Biotechnology Career Fair
- Career, Research, and Innovation Development Conference

In the past five years, 174 individual graduate students were awarded one or more external fellowships and training grants.

The department has hosted 82 National Science Foundation Graduate Research Fellowship Program fellows.
Learn, Live, and Work in Atlanta

Atlanta ranks No. 1 among major American cities in tree coverage percentage at 53.9 percent.

ATLANTA: A Thriving Metropolis

Atlanta is an integral and exciting aspect of the Georgia Tech and Emory educational experience. Atlanta is one of the Southeast's most vibrant, progressive, and dynamic cities. When students are not studying, they explore Atlanta's rich and diverse culture through museums, music venues, professional sports teams, shopping districts, and the best cuisine in the south. Atlanta's warm climate allows for year-round outdoor activities. Mountains, lakes, campsites, and hiking trails are all within an hour's drive — and access to Hartsfield-Jackson Atlanta International Airport makes the whole world just a flight away.
The Bioengineering and Bioscience Unified Graduate Students (BUGS) group serves as the core student group for the bioengineering and bioscience community.

The Graduate Student Advisory Board (GSAB) is an organization within the BME department that serves a critical role in providing student input to the graduate program as well as a way for students to engage in the BME community.

Inscripto Emory SciComm: Popular science website that hosts content created, written, and produced by Emory graduate students.

Petit Undergraduate Research Scholars Program: Graduate students serve as mentors.

Black Graduate Student Association: Dedicated to the enhancement of the graduate experience for African-American students and students of African descent at Emory University.

The Graduate Sustainability Group (GSG) is the first graduate-level association with a specific focus on sustainability at Emory.

oSTEM: Out in Science, Technology, Engineering, and Math is a national professional development organization aimed at supporting the LGBTQIA community at Georgia Tech.

Project ENGAGES: A high school science education program developed at Georgia Tech in partnership with Coretta Scott King, B.E.S.T. Academy, and KIPP Atlanta Collegiate.

wBME brings together female graduate students and post-doc researchers across the BME department to develop a community of successful women.

Alliance for Diversity in Science and Engineering (ADSE@GT): An organization that aims to promote and support underrepresented groups in STEM graduate programs.

Join a Vibrant and Diverse BME Community Supported by Great Student Organizations!

Above: The Chattahoochee River National Recreation Area is located within Metro Atlanta. The Georgia Aquarium in Atlanta is the world’s largest indoor aquarium.

Opposite Page: The 211-acre Piedmont Park is open year-round to athletes, nature lovers and anyone who enjoys a stroll through beautiful green space in midtown Atlanta.

ATLANTA’S COST OF LIVING IS LOWER THAN THE NATIONAL AVERAGE

<table>
<thead>
<tr>
<th>City</th>
<th>Cost of Living Index (100 = average)</th>
</tr>
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<tbody>
<tr>
<td>Durham, NC</td>
<td>88.3</td>
</tr>
<tr>
<td>St. Louis, MO</td>
<td>90.0</td>
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<tr>
<td>Atlanta, GA</td>
<td>97.7</td>
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<tr>
<td>Baltimore, MD</td>
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<tr>
<td>Philadelphia, PA</td>
<td>116.2</td>
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<tr>
<td>Boston, MA</td>
<td>148.6</td>
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<tr>
<td>San Francisco, CA</td>
<td>188.5</td>
</tr>
<tr>
<td>New York, NY</td>
<td>230.8 *</td>
</tr>
<tr>
<td>Palo Alto, CA</td>
<td>409.0 **</td>
</tr>
</tbody>
</table>

Source: Council for Community and Economic Research (C2ER) Cost of Living Index, 1st Qtr. May, 2017, Vol. 50 No. 1
* Index represents Manhattan, NYC
** The Palo Alto, CA cost of living data is derived from the C2ER for the 4th Qtr. of 2016

Pictured: Six BME graduate students and one faculty advisor are honored at the annual BME Graduate Awards event.
Preventing Graduates for a Range of Career Paths

Coulter Department Ph.D. students have pursued a variety of careers in many areas.

ACADEMIC INSTITUTIONS*

*Tenure Track

Arizona State University
Auburn University
Baylor College of Medicine
Boston University
Duke University
East Carolina University
Emory School of Medicine
Emory University
Engineering College of Aarhus
Franciscan University of Steubenville
Geisinger Health System
Georgia Tech
Karolinska Institutet
Khalifa University
Kyungwon University (Korea)
Mississippi State
National University of Singapore
North Carolina State University
Ohio State University
Oregan State University
Rensselaer Polytechnic Institute
Rutgers University
ShanghaiTech
Stony Brook University
SUNY Upstate Medical University
Texas Tech
UC Davis
UC Davis School of Veterinary Medicine
University of Louisville
University in Israel
University of Alabama at Birmingham
University of Arkansas
University of Calgary
University of Chicago
University of Florida
University of Illinois
University of Kentucky
University of Miami
University of Michigan
University of North Carolina
University of Pennsylvania
University of Pittsburgh
Vanderbilt University
Virginia Commonwealth University
Worcester Polytechnic Institute

GOVERNMENT

CDC
CIA
FDA
NASA Johnson Space Center
National Institutes of Health
NIH
US Army Corps of Engineers
US Army Intelligence
US Environmental Protection Agency
USPTO

INDUSTRY

3M
Access Biomedical Solutions
Acelity
Allen Institute for Brain Science
Amgen
Amniox Medical
Apple Inc
Axion Biosystems
AxoGen, Inc
Bain & Company
Bard Peripheral Vascular
Bayer
BD Medical
Beckman Coulter
Becton Dickinson Medical
Biogen
Boston Scientific
Celtaxsys
Center for Rehab Medicine, Emory University
Children's Health Care of Atlanta
Clarion Healthcare
Complete Genomics Inc
Connexios
Cook Biotech
Coyne Scientific
Davol Inc
Edwards Lifesciences
Epic
Exponent
Fish & Richardson-IP law firm
Gaumard Scientific
Genentech
Google
Halyard Health
Integra Lifesciences
Intel
Intuitive Surgical
Kimberly Clark
Kinetic Concepts, Inc.
Kite Pharma
Leica Microsystems
LymphTech
McKinsey & Company
McMaster-Carr
McNeil Consumer Health
MedShape Inc
MedTech Media
Medtronic
Merck
Merial
Microsoft
MiMedx
NeuroPace
New Health Sciences, Inc.
Northrop Grumman
Novetta
Omniguide
Organogenesis
PerkinElmer
Plexon Inc.
PLOS ONE
Procter & Gamble
Regenerative Matrix
Saint Joseph's Translational Research Institute
SanBio Inc
Siemens Medical Solutions
Simatrace Modeling Technologies
SiO2 Medical Products
Synthetic Genomics
Takeda Pharmaceuticals
Teledyne Scientific & Imaging
Terbium Labs
Thoratec
Toyota, Partner Robot group
Vertera
ViewRay
Viral Images
Vutara
W.L. Gore Medical Products
Xenco Medical
**DID YOU KNOW?**

- There are more than 2,000 bioscience companies and 30,000 bioscience jobs in Georgia (TEConomy/BIO, 2014)
- No. 1 Metro Area for Openings for STEM Graduates per Capita (WalletHub, January 2017)
- No. 2 Next Big Tech Hubs that Are (Still) Affordable (Realtor.com, April 2017)
- No. 3 City for Minority Entrepreneurs (Expert Market, May 2017)
- No. 3 City Poised to Become Tomorrow’s Tech Meccas (Forbes, March 2017)
- Metro Atlanta is the nation’s Health Information Technology (HIT) capital with more than 225 companies, employing more than 30,000 people
- Atlanta is one of America’s ten best healthcare cities (iVantage Health Analytics, 2015)
- Atlanta’s airport serves 150 U.S. destinations and more than 75 international destinations in 50 countries, and is within a two-hour flight of 80 percent of the United States population.

**The National Science Foundation (NSF)** has awarded nearly $20 million to a consortium of universities, led by Georgia Tech, to support a new engineering research center (ERC) that will work closely with industry and clinical partners to develop transformative tools and technologies for the consistent, scalable and low-cost production of high-quality living therapeutic cells. The NSF Engineering Research Center for Cell Manufacturing Technologies (CMaT) could help revolutionize the treatment of cancer, heart disease, autoimmune diseases and other disorders by enabling broad use of potentially curative therapies that utilize living cells.

*Pictured: Research scientist Sommer Durham and research technician Naima Djeddar set up and initiate process steps for automated cell culture on the AMBR 15 micro-bioreactor in the Roger A. and Helen B. Krone Engineered Biosystems Building at Georgia Tech. Their work supports the NSF Engineering Research Center for Cell Manufacturing Technologies (CMaT).*