About Georgia Tech, Emory, and Atlanta

The Georgia Institute of Technology is one of the nation’s top research universities, distinguished by its commitment to improving the human condition through advanced science and technology. Georgia Tech’s campus occupies 400 acres in the heart of the city of Atlanta, where more than 16,000 undergraduate and graduate students receive a focused, technology-based education.

Emory University is home to nine major academic divisions, numerous centers for advanced study, and a host of prestigious affiliated institutions. Located just 15 minutes from downtown Atlanta in the tree-lined suburban neighborhood of Druid Hills, Emory University is positioned along the Clifton Corridor, which also includes the U.S. Centers for Disease Control and Prevention and the American Cancer Society.

Atlanta, Georgia is the home of over seven institutions of higher learning including Georgia Tech, Emory, Georgia State, Spelman College, Morehouse College, Agnes Scott College, Morehouse School of Medicine, and others. The Atlanta metropolitan area has a population of over 4 million people.

Hybrid Neural Microsystems IGERT
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The NSF IGERT Program

The Integrative Graduate Education and Research Traineeship (IGERT) program, initiated in 1997, now comprises approximately 125 award sites. The IGERT program has been developed to meet the challenges of educating American Ph.D. scientists, engineers, and educators with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become in their careers the leaders and creative agents for change. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and institutions, by establishing innovative new models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. It is also intended to facilitate greater diversity in student participation and preparation, and to contribute to the development of a diverse, globally-engaged science and engineering workforce.

What are Hybrid Neural Microsystems?
Hybrid Neural Microsystems (HNM) integrate living neural tissue with engineered components by combining microelectronics/computing technology and microelectromechanical systems (MEMS) with the study of cellular and systems neuroscience. The combination of these two previously disparate disciplines has great potential for applications ranging from the treatment of disease to the implementation of artificial systems inspired by biology.

Training Overview for the HNM IGERT Program
The Hybrid Neural Microsystems IGERT is an innovative graduate program that bridges neuroscience and engineering. The training that the HNM IGERT fellows will receive will be interdisciplinary and consists of a three phase process. Year one, the preparation phase, consists of an integrated seminar series, interdisciplinary research rotations, and coursework in neuroscience and engineering. During year two, the integration phase, fellows will participate in the cornerstone of their graduate training, the Hybrid Neural Microsystems laboratory course, that will use a problem-based learning approach, hands on laboratory experiences, and peer instruction that crosses disciplines. The final phase, the articulation phase, is when HNM fellows will articulate the training that they have received the previous two years and serve as mentors to second year HNM fellows in the HNM IGERT program and lab course, mentor undergraduate students, and participate in research opportunities in industry and/or international research laboratories if they choose.

Hybrid Neural Microsystems Core Research Areas
- MEMS Technology for interfacing to neural tissues
- Interfacing to Real Time Models
- Hybrid Neuromechanical Interfacing
- Neural Injury and Repair
- Hybrid Computational Systems
- Neural Prosthetics

Hybrid Neural Microsystems Program Highlights
- Opportunities to participate in research in both neuroscience and engineering at Georgia Tech and/or Emory University
- Ability to do research rotations to determine your "scientific fit" with a research mentor
- Optional industrial internships with partner companies
- Ability to participate in collaborative projects with 6 labs in Asia and Europe
- HNM IGERT fellows receive tuition and stipend support at NSF stipend levels (Currently $30,000/year) for two years

Who should apply?
Students with degrees in the biological and biomedical sciences (especially neuroscience), computer science, engineering, and physics.

How do I apply?
The application to the IGERT program consists of two essential steps: (1) apply to one (or more) of the four associated graduate programs, and (2) complete the supplemental IGERT application. The graduate programs associated with this project are:
- Joint Biomedical Engineering Program (Georgia Tech/Emory)
- Interdepartmental Bioengineering Program (Georgia Tech)
- Electrical and Computer Engineering Program (Georgia Tech)
- Neuroscience Program (Emory)

You can find the program web sites from the HNM IGERT homepage. After applying to one or more programs, fill out the supplemental application on our web site http://www.neuro.gatech.edu/igert/

If there are any questions regarding the application process or any general questions about this IGERT program, please send e-mail to igert_info@neuro.gatech.edu