

GAANN Fellowship Program in Multiscale Biomedical Engineering at Cornell University

The Department of Biomedical Engineering (BME) has been awarded a Graduate Assistance in Areas of National Need (GAANN) grant by the US Department of Education to fund three fellowships per year in Multiscale Biomedical Engineering in the areas of Biomaterials, Nanobiotechnology, Cardiovascular research, Bio-orthopedics, Cell and Tissue Engineering, and Imaging. The fellowships will cover full tuition and provide a stipend of \$30,000 (depending on financial need). To be considered, candidates must be US citizens or permanent residents, demonstrate financial need, plan to pursue a Ph.D degree in Biomedical Engineering with research interest in the stated areas, and have an interest in teaching. Most graduate students can demonstrate financial need easily as they are old enough to be independent from their parent's resources.

Fellowship Details

The focus of this GAANN program is to train US students to conduct research and teaching in biomedical engineering that will satisfy the increased demand for biomedical engineers who can make explicit and quantitative connections between phenomenon occurring at different scales and use that information to improve human health. The program is designed such that GAANN fellows after a graduate training period of 4-5 years will be equipped to become leading researchers and educators in biomedical engineering. The GAANN program transcends traditional departmental boundaries and encourages interdisciplinary and multiscale approaches.

The unique educational and training objectives of the Graduate Assistantships in the Areas of National Need (GAANN) Fellowship program are to:

- Enable Fellows to participate in multidisciplinary research and establish leadership roles in areas of Biomaterials, Nanobiotechnology, Cardiovascular research, Bio-orthopedics, Cell and Tissue Engineering, and Imaging
- Provide supervised teaching experiences as well as instruction on effective teaching techniques
- Enable greater numbers of women and minority students to pursue interdisciplinary doctoral study in Biomedical Engineering
- Prepare fellows to pursue careers in academia and become industry leaders

Minimum Requirements

- U.S Citizen or Permanent Resident of the U.S
- Admission to the PhD program in Biomedical Engineering
- Excellent Academic Record (as evidenced by Transcript and GRE)
- Must demonstrate financial need by completing the FAFSA application

GAANN Program Overview

GAANN Fellows are expected to complete the core class requirements for the BME department and take part in a summer clinical immersion term at Weill Cornell Medical School. In addition, they are required to participate in outreach programs, take a seminar course each year where they present their research, and take part in two teaching assistantships over the course of their graduate career. All BME students must do at least one teaching assistantship. GAANN fellows will also receive specialized instruction on teaching techniques and research methodologies.

Research Opportunities

GAANN Fellows will have the opportunity to participate in cutting edge multiscale, multidisciplinary research in the following areas (1) Biomaterials; (2) Nanobiotechnology; (3) Cardiovascular Research; (4) Bio-orthopedics (5) Cell and Tissue Engineering and (6) Imaging. They will work with [distinguished faculty](#) in these areas.

Our focus areas represent critical emerging research areas in human health. For example, cardiovascular disease is one of the major disease killers in the US. Through our multiscale research and teaching opportunities in cardiovascular disease, GAANN fellows will be able to apply knowledge learned through course work and research to make multiscale connections (between heart cells and heart function) and through this develop their own research and teaching programs to solve current cardiovascular health issues. In addition, the rehabilitation and bio-orthopedic engineering specialties are growing quickly, increasing the need for biomedical engineers. GAANN fellows will use engineering and cellular principles combined with biomaterial design and structural analysis to answer basic and clinical research questions about the musculoskeletal and bone-implant systems. There is also a demand for more sophisticated medical equipment and procedures that are developing from exciting new research areas such as nanobiotechnology and cellular imaging. Through Cornell's Nanobiotechnology Center and the DRBIO Center (Developmental Resource for Biophysical Imaging and Opto- Electronics), GAANN fellows will have research experiences in a number of areas, spanning optical and electrical engineering, as well as studies in cancer biology and nanotechnology. Our expertise in cellular and tissue engineering research will allow our fellows to develop research programs that can meet the needs for substitute organs and tissue.

Teaching Requirements

Each fellow will be provided with supervised training in instruction and effective teaching techniques. They will be teaching assistants twice over the course of their graduate career and will participate in the Teaching Assistant Development Program (TAD) run by the College of Engineering Learning Initiative (CELI). The CELI staff will work closely with the GAANN fellows to develop a tailored program for each fellow. Fellows will be required to enroll in ENGRG 678 Teaching Seminar, participate in an extensive 2 day workshop on effective teaching at the beginning of the semester, participate in microteaching sessions, and participate in the Cornell's Center for Learning Initiative Graduate Teaching Development Workshops.

Outreach Opportunities

GAANN fellows will participate in one of the many College of Engineering Diversity Outreach Program outreach programs such as the CATALYST (under-represented minority high school outreach) and CURIE (female high school outreach) Programs:

<http://www.engineering.cornell.edu/diversity/office-diversity-programs/summer-programs/highschool-programs/catalyst/index.cfm>

-and -

<http://www.engineering.cornell.edu/diversity/office-diversity-programs/summer-programs/highschool-programs/curie-academy/index.cfm>

In addition, through the REU (Research Experience for Undergraduates) program, GAANN Fellows will be paired with REU students to give the Fellow opportunities for guiding the research efforts of the students.

Application Process

- Apply to [Graduate Admissions](#) indicating interest in the BME GAANN fellowship by January 15th
- Apply for FAFSA-Free Application for Federal Student Aid (www.fafsa.edu.gov)
- Essay on why you should be considered for the GAANN program

Women and underrepresented minority candidates are encouraged to apply. Cornell University is an affirmative action/equal opportunity employer.

For more information please contact:

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