DOCTOR OF PHILOSOPHY
WITH A MAJOR IN
BIOINFORMATICS

Participating Schools
• College of Computing
• School of Biology
• School of Biomedical Engineering
• School of Chemistry and Biochemistry
• School of Industrial and Systems Engineering
• School of Mathematics

Objective of the Program
The mission of the Georgia Tech Bioinformatics PhD Program is to educate and prepare graduate students to reach the forefront of leadership in the field of bioinformatics and computational biology; and to integrate research and education on the use of information technologies in biology and medicine. Thus, the program leading to a PhD in Bioinformatics is an interdisciplinary program spanning a variety of academic departments at Georgia Tech.

Bioinformatics is a multidisciplinary field in which physical sciences, life sciences, computer science, and engineering are merged to solve both fundamental and applied problems in biology and medicine. The outcomes of bioinformatics and computational biology particularly include

1. new and global perspectives into the organization and function of biological systems (fundamental biology);
2. new and novel targets for drug discovery and development; and
3. genetic/proteomic profiling for pharmaco-genomics or personalized medicine.

Thus, bioinformatics is emerging as a strategic discipline at the frontier between biology, biochemistry, biomedicine, bioengineering, computer science, and mathematics, impacting fundamental science, medicine, biotechnology, and society.

With its broad mission statement, this program at Georgia Tech has the following focus/strength areas:

1. Development of software tools, algorithms, and databases for gene identification, protein structural prediction, clustering analysis, and data mining.
3. Application of bioinformatics to fundamental biology and systems biology.

There is an increasing demand for scientists with advanced training in bioinformatics. Professionals in this area should have a thorough knowledge of molecular biology, mathematics, and statistics as well as computer science and engineering.

In 1997 the College of Sciences at Georgia Tech proposed and established a professional Master of Science in Bioinformatics degree program, the first of its kind in the United States. This interdisciplinary program consists of a unique combination of courses. Students are taught with equal strength in several scientific disciplines and are prepared for further successful work in industry or academia. At present there are more than forty students in the program, with twelve graduates already employed in academia and industry, particularly at SmithKlineGlaxo, Navartis, Johnson & Johnson, Informax, Los Alamos National Lab, Vanderbilt University, and the U.S. Centers for Disease Control and Prevention.

In 1993, the School of Biology at Georgia Tech implemented a PhD in Biology with a concentration in Bioinformatics. This option will stay in place for those students who would like to pursue a PhD in Biology.

The group of prospective applicants for the PhD program is expected to consist of students with an MS in Bioinformatics as well as holders of BS/BA and higher degrees in different disciplines. The applicants with life science degrees are usually looking for an interdisciplinary education with a focus on mathematics, physics, and computer science. This demand fits perfectly with what Georgia Tech can offer: high-quality education in mathematics, physics, and computing along with advanced courses in biology and biochemistry.

PhD Bioinformatics (http://bioinformatics.gatech.edu)