Summer Student Opportunities at GlaxoSmithKline

The Scientific Computing and Mathematical Modeling group at GlaxoSmithKline seeks talented advanced undergraduate and graduate students in applied mathematics, mathematical biology, computational systems biology, and computer science for summer 2005.

The Scientific Computing and Mathematical Modeling (SCMM) group applies mathematical and computational techniques to a variety of challenging problems in pharmaceutical research. Our group works on mathematical models related to the biology of disease states and drug interventions, the chemistry and physics of drug formulations and delivery devices, and the structure and network characteristics of large biochemical pathways in cells.

In addition, we develop sophisticated computational tools that are used to build and calibrate mathematical models. This involves model formulation, efficient numerical solutions, processing large quantities of experimental data, and visualizing the results of model-generated computational experiments.

Possible projects in computer science include implementing optimization algorithms, developing tools for parallel computations, and developing graphical representations of pathways and pathway properties. Projects for students with an applied mathematics background include development of network analysis tools, analysis of metabolic pathway simulation algorithms, development of optimization algorithms, and stability analysis of dynamical systems. Other projects involving mathematical modeling and computational biology may involve bone remodeling, blood coagulation and receptor mediated signal transduction processes involved in cancer and inflammation.

We seek mature, motivated self-starters who can successfully integrate sophisticated mathematics and computer software with real-world biological problems. All students are expected to have graduate-level expertise in the area directly related to their summer project. This typically requires advanced training and experience in at least one of the following areas:

- mathematical biology
- scientific computing
- mathematical modeling
- numerical analysis and optimization
- differential equations
- computational systems biology

All students must be proficient in at least one programming language, preferably Matlab. Students with a computer science background are expected to be familiar with parallel programming techniques. Students with an applied mathematics background are expected to have graduate-level expertise in areas such as optimization and numerical analysis, graph theory, and stability analysis. Students interested in computational biology projects are expected to have prior experience in developing mathematical models of biological processes. While the ability to work autonomously is desired, the student will have the opportunity to interact with a larger team composed of other computational scientists and R&D researchers under the guidance of an SCMM mentor. The internship positions may be located at our facilities in the Philadelphia area, Research Triangle Park, NC, or near London in the UK.

Applicants can apply through our website: [http://www.gsk.com/careers/university_us.htm](http://www.gsk.com/careers/university_us.htm), Job Code Requisition Number: 16032. Developing talent through equality of opportunity, M/F/D/V.