

2013 Summer Internship at Novartis Pharmaceuticals – Modeling and Simulations

Modeling and Simulation's Summer Internship Program is a dynamic ten to twelve week training program that provides:

- Challenging, innovative assignments to gain real-world experience in applying modeling and simulation techniques to problems in drug development
- A dedicated manager and mentor
- Ongoing training in the form of sessions with other members of the programming team
- Presentation of project results to our team within a seminar setting
- Exposure to the drug development process
- Professional and personal development activities
- Additional networking opportunities

Location: Novartis Pharmaceuticals, One Health Plaza, East Hanover, New Jersey, 07936.

Position #1: Hormonal systems modeling

Hormonal systems are important in drug development either as targets of therapy for diseases such as Cushing's disease and acromegaly, or as side effects such as hyperglycemia. The physiological literature is replete with complicated feedback control models for such hormonal systems. But most of those models require much more intensively sampled data for modeling fitting and validation that can be obtained from clinical trials.

The purpose of the internship will be to examine existing models for one or more of such systems of relevance to Novartis development projects and to find practical model reductions that might be useful for interpretation of clinical data and guidance into clinical decision making, especially as regards dose regimen selection.

Job Requirements:

- PhD candidate with training in modeling of biological systems, including stochastic approaches and statistical data analysis

To apply to this position you must send your CV and cover letter to: Jerry Nedelman at jerry.nedelman@novartis.com

Position #2: Cardiovascular systems modeling

Mechanistic models of physiological systems can help to integrate the large body of knowledge and data about physiology, disease, and the mechanism of action of drugs into a consistent mathematical framework. Such models are then useful for hypothesis testing, identifying gaps in our understanding, or communicating and explaining complex physiological mechanisms. We are looking for a summer intern to aid in further development and/or application of a large-scale mechanistic model of blood pressure regulation, kidney function, and heart failure. Depending on candidate's background and experience, tasks may include:

- 1) Compiling and synthesizing relevant clinical literature
- 2) Calibration/refinement of a specific component of the model
- 3) Application of the model to a specific drug-development question
- 4) Development of tools for automating modeling activities

Job Requirements:

PhD candidate in biomedical engineering, systems biology, or closely related field.

Some previous experience with modeling of biological systems is desired.

Cardiovascular background would be ideal but not necessary. Must be comfortable using Matlab.

To apply to this position you must send your CV and cover letter to: Melissa Hallow at melissa.hallow@novartis.com