SUBJECT STAT 1: Development of a model validation pipeline

Background:
A model validation is the process of determining the degree to which a model or simulations accurately represent the real world (i.e. data collected from experimental observations realized in a defined environment) from the perspective of the intended application of the model or simulations under similar conditions\(^1\). A validation is necessary as the model, the virtual population and the simulation protocol are specifically developed to answer a set of predefined questions, and if a model is not validated on real-life data, its credibility is considered as poor and its predictions would only hold little value.

The suggested internship would be embedded into an ongoing project conducted at Novadiscovery (to be defined based on the internship starting date). This internship aims at improving the already existing validation protocol, in order to more precisely assess a model’s credibility when its predictions are compared to data collected in vitro or in vivo.

Objective:
- Development of a precise and reusable computational model validation pipeline
- Benchmarking of the pipeline on multiple models and validation datasets

Work Process:
- Quick literature review concerning FDA and EMA guidelines on pharmaceutical model validation and familiarize with the current validation protocol
- Scoping the objectives the validation should address (with the Novadiscovery biostatisticians)
- Develop a robust validation pipeline

Deliverables:

- Validation pipeline and corresponding R scripts
- Validated Computational Model

You are

- A team player, a good listener, and an effective communicator: Join a growing multidisciplinary team of enthusiastic innovators
- Curious and proactive with a solid grounding in biology: Particularly in cell biology, molecular biology, and omics, to address real-life clinical issues.
- Autonomous and self-motivated with strong analytical and problem-solving skills: Find innovative solutions to science and engineering problems
- Eager to learn and use mathematical methods for the modeling of biological systems: Simulate virtual diseases and treatments with ODE, PDE, Monte-Carlo Simulations
- Willing to explore and exploit large datasets and virtual populations: Apply machine learning, statistical analysis, and outliers detection
- Responsive and capable of facing time-sensitive challenges: Project management with client-facing opportunities are awaiting you

You will

- Contribute actively to the creation of in silico pathophysiological models
- Impact the development of the company’s simulation platform
- Analyze and exploit large simulation results
- Participate in weekly and monthly project meetings and reporting

Details

- Apply directly on our careers page
- Contact: recruitment@novadiscovery.com
- Type: Internship
- Salary: Competitive
- Start date: Flexible

Technologies & languages:

Internal Tools (Jinko), R

Duration: 6 months

Keywords: Systems Biology, Biostatistics, Model Validation