



## **Postdoc, Translational Disease Modeling/Digital & Data Sciences**

### Job Description:

The Translational Disease Modeling (TDM) Department is seeking to hire a highly motivated Postdoctoral Fellow to develop and apply quantitative systems pharmacology (QSP) models for the in silico evaluation of emerging novel targets in Immunology & Inflammation (I&I). The TDM group is part of the newly formed Digital & Data Sciences organization within R&D scientific operations platform. Sanofi provides a great multi-disciplinary environment to work and interact with extraordinarily talented and diverse group of people – all driven by innovative thinking and creativity. To this end, the Postdoctoral Fellow will be working on a highly stimulating and collaborative environment with biologists, clinicians, precision immunology scientists, pharmacometricians and in-house QSP as well as nonclinical modelers. This position is an exciting opportunity to impact critical decision making in drug R&D by coupling mechanism-based models of disease biology with drug pharmacology. The position will be based in Bridgewater, NJ.

### Position Objectives:

- Develop and apply QSP models to impact the progression of multi-target drug R&D in I&I.
- Leverage relevant data (literature, in house) for model development, calibration and validation.
- Contribute to translational (modeling & simulation) plans and assessments.
- Promote QSP modeling both internally (within R&D) and externally (QSP scientific community).

### Key Responsibilities:

- Function as part of a team to design and develop multiscale computational models of disease pathophysiology and drug(s) mechanism of action.
- Conduct extensive literature review to identify suitable mechanistic elements, interactions, rate constants and sub-modules for incorporation into models.
- Develop and rigorously assess the functionality, feasibility, efficiency and validity of new models.
- Analyze model predictions and identify suitable strategies to resolve issues (whenever occur) pertaining to model performance and inaccuracy.
- Leverage algorithms for parameter optimization and parameter sensitivity analysis.
- Communicate technical material to internal and external audiences.
- Maintain quantitative systems pharmacology expertise through comprehensive education including attendance and participation in conferences, scientific workshops etc.

#### Basic Qualifications:

- Recent PhD (0-3years) in biomedical/biochemical engineering, biophysics, applied mathematics, pharmacology or related field with a proven track record of productivity as demonstrated by publications and conference presentations.
- Creative and innovative scientist who is passionate about developing a deep understanding of disease and disease mechanisms.
- Solid understanding of theory, principles and statistical aspects of mathematical modeling and simulation, including numerical methods, parameter estimation/optimization, ordinary differential equations (ODEs), and how these can be applied in the development of complex models of biological pathways and systems.
- Excellent oral and written communication skills and the ability to interact effectively with scientists in other disciplines with a positive, collegial and collaborative attitude.
- Computational fluency and hands-on experience with one or more modeling and simulation packages or programming languages (MATLAB, R).
- Strong commitment to on-the-job-training.

#### Preferred Qualifications:

- Experience in building, validating and using QSP models or ODE-based models of biological pathways/systems.
- Self-directed, independent, and highly-motivated researcher who excels in a collaborative, multi-disciplinary environment.
- Primary authorship in peer-review scientific journals.
- Familiarity with the challenges and general application of mathematical models in pharmaceutical R&D.