Computational Biology Internship - Virtual Patient Engine (VPE) Team - Standardization of Systems Biology Models of Disease for Benchmarking and Training of Foundation Biology Models

About BioMed X

BioMed X is an independent research institute with sites in Heidelberg, Germany, New Haven, Connecticut, XSeed Labs in Ridgefield, Connecticut, and a world-wide network of partner locations. We operate at the interface between academia and industry, performing biomedical research and drug discovery & development in the fields of oncology, immunology, neuroscience, platform technologies, and artificial intelligence. All our research projects are sponsored by leading pharmaceutical companies and conducted by early-career scientists recruited from the best schools around the world. The combination of global crowdsourcing with local incubation of the best research talents and ideas allows us to solve the biggest challenges in biomedical research. We stand for free, creative, and curiosity-driven research combined with a solid validation of results, timelines, and deliverables. We serve a large purpose in advancing translational biomedicine by leveraging synergies and fostering cross-pollination across disciplines.

About Team VPE

The goal of team VPE, led by Dr. Douglas McCloskey, is to develop a versatile computational platform that can predict the efficacy of first- or best-in-class drug candidates in virtual patient populations at unprecedented accuracy, thereby addressing one of the most critical bottlenecks of the pharmaceutical industry today: a 90% failure rate of new drug candidates during clinical development. In partnership with Sanofi, the VPE team will develop innovative artificial intelligence methods to build the virtual patient platform. As a proof-of-concept, the initial platform will focus on chronic immune-mediated diseases such as atopic dermatitis (AD) and inflammatory bowel disease (IBD), where new medication that can address patient heterogeneity is needed.

The Position

The candidate will work closely with Team VPE at BioMed X, our partners at Sanofi, and our collaborators at BioModels to standardize and annotate a compendium of systems biology models of disease for benchmarking and training foundation models of biology to compute clinical efficacy. The position will provide candidates with hands-on experience curating mathematical modeling of disease following the best practices established by BioModels, and developing and generating synthetic data sets for training foundation models of biology that will be developed by team VPE. The ideal candidate would have a bachelor's degree or equivalent in systems biology, computational biology, or bioinformatics and a strong interest in machine learning and disease biology.

Required Skills
- Intermediate knowledge and experience working with ordinary differential equations (ODEs)
- At least Intermediate programming knowledge in Python and Matlab
- Basic knowledge and experience modeling biological systems
- Basic knowledge of cell and molecular biology
- Independent thinking, problem-solving skills, and attention to detail
- Experienced to work in interdisciplinary teams
- Excellent communication skills in English

Additional Preferred Skills (that will also be taught during the course of the project)
- Modeling and simulation of disease biology
- Version control using GitHub
- Tools and techniques in bioinformatics to build data pipelines
- Tools and techniques in machine learning for building foundation models in biology
- Experience developing in the cloud

Our Offer
- Flexible working hours and hybrid working location. The average weekly work hours would not exceed 20 during the project.
- Extensive training and collaboration with BioModels (www.ebi.ac.uk/biomodels/), the world-leading repository of mathematical models of biological/biomedical processes.
- Opportunities to publish in top academic journals and present at top academic and industry conferences.
- Access to a vast network in science and industry.
- A competitive salary
- Job ticket, complimentary fresh fruit, soft drinks, and chocolate team recognition events, etc.
- The post is offered for a limited term of 6 to 12 months with an option to extend it at the end of the term.

The position is sponsored by Sanofi.

What Candidates are Requested to Submit
- 1-page cover letter explaining the reasons of interest to join our team
- Curriculum Vitae outlining scientific interests, research achievements, a record of publications, future personal goals, and extra-scientific passions
- 2 references will be asked for after submission as a part of the interview process.

The position is available immediately. Please mail your application to **Dr. Lilija Wehling (wehling@bio.mx**) before **Thursday, 18 July, 2024**. Applicants will be evaluated on a first-come-first-served basis.

At BioMed X, we embrace diversity as we consider it the source of innovation. We are committed to equal opportunity in the terms and conditions of employment for all employees and job applicants without regard to race, color, religion, ideology, sex, sexual orientation, age, gender identity or gender expression, national origin, or disability.

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