



Three Postdoctoral positions in structural bioinformatics

The Brussels Universities (**Université Libre de Bruxelles (ULB)** and **Vrije Universiteit Brussel (VUB)**), are seeking candidates for **three postdoctoral positions in structural bioinformatics**. The successful candidates will participate in the (IB)² Interuniversity Institute of Bioinformatics in Brussels (<http://ibsquare.be>), an institute that brings together the science, engineering and medical faculties of VUB and ULB in a collaborative and open atmosphere. The focus of the (IB)² is on interdisciplinary research, with expertise in machine learning, big data, rare diseases, oligenic disorders, network analysis, genome analysis, metagenomics and structural bioinformatics.

Postdoctoral positions P1 and P2:

Research context: Next generation sequencing produces massive amounts of genome data, which allows among others the mapping of the gene sequence variability among humans. Most observed gene variants have no or little effect on the protein that they encode and on their host organism, with only a few causing disease or facilitating its progression. Identifying which mutation(s) are associated with a particular disease phenotype is a goal of utmost importance in personalized medicine. To date, software tools predict with reasonable accuracy if a variant is deleterious but do not explain why. Such insight is essential for a biological researcher or medical practitioner to understand the molecular causes for a disease and to be able to treat it.

Objective: Develop a software framework that connects and improves state-of-the-art bioinformatics tools from the VUB and ULB to identify possible molecular causes of diseases and communicate this information to researchers and medical practitioners. Exploitation of this framework in Brussels and beyond will also be strongly pursued within this project.

Offer: Two full time postdoctoral positions for 2 years, extendable to 3 years, one computer science (P1) starting as soon as possible and one bioinformatics oriented (P2) starting in October. These positions are fully (IB)² based, will involve a review after the first 6 months, and are financed by the FEDER European Fund (promoters: Wim Vranken (VUB) and Marianne Rومان (ULB)).

Postdoctoral position P3:

Research context: The control of the physicochemical and biological properties of proteins is a major biotechnological challenge. Proteins are increasingly used as catalysts for their high specificity and performance in the development of environment-friendly bioprocesses. Moreover, therapeutic proteins, monoclonal antibodies and protein vaccines are key targets in the biomedical and biopharmaceutical sectors. It has now become possible to develop bioinformatics tools for rationally designing optimized proteins with a good level of accuracy, with the notable advantage compared to purely experimental approaches that the number of experiments for validating candidate mutants is drastically reduced. Such prediction tools can also be applied to get insight into the molecular effects of human variants, in the context of the abovementioned project.

Objective: Design, develop and apply dedicated software for predicting protein stability, solubility and affinity changes upon mutations in the context of rational protein design.

Offer: One full time postdoctoral positions for 2 years, starting on October 1, 2016, financed by the FNRS Fund for Scientific Research (promotor: Marianne Rومان, ULB). This position will be mostly based at the 3BIO group at the ULB.

Required:

- PhD degree in Sciences.
- Excellent programming and computer science skills, preferably in C or Python.
- Excellent communication skills in English: within the context of this project you will be interfacing with



scientists of different backgrounds.

- Publication in peer-reviewed international scientific journals.
- Open to collaborative work between the research groups.

Desirable:

- Experience in the area of structural bioinformatics, with focus on the prediction and simulation of conformation, stability and dynamics of proteins.
- Experience in the development of dedicated software frameworks and visualization tools in the context of personalized medicine.

Contact: Please submit a 1) cover letter detailing your background and interest in the positions, and specifying your preference – if any - for one of the three positions, 2) a full C.V. and 3) at least two references (with name, email, address, phone number) via email to Wim Vranken (wvranken@vub.ac.be) and Marianne Rooman (mrooman@ulb.ac.be).

Application deadline: Please submit your application on March 31, 2016 the latest.