PhD Computational Biophysics, CNRS, Paris, FR

PhD Computational Biophysics: Design and application of coarse-grained force fields to study bioenergetic membrane processes in mitochondria.

A joint PhD position is available in the groups of Dr. Sterpone Fabio and Dr. Baaden Marc starting from September 2016. The team is located in the Institut de Biologie et Physico Chimique (CNRS), Paris, France.

The research has both applicative and methodological focuses. The biological application concerns the study of mitochondrial membrane processes involving the protein mitofusins, e.g. Fzo1, their conformational dynamics and assembly. Method development will focus on combining an explicit membrane model with in-house state-of-art coarse-grained model for proteins. The goal of the project is to understand through atomistic and coarse-grained simulations how Fzo1 membrane proteins contribute to mitochondrial membrane fusion as supposed by common belief. Assessing the microscopic picture of mitochondrial protein assemblies may have tremendous impact on industrial and medical applications.

The PhD candidate will be trained to perform and analyze atomistic and coarse-grained molecular dynamics simulations, in particular learning how to exploit multi-scale approaches for representing complex biological models. Original coarse-grained models for membrane proteins will be used and further developped.

We are seeking a creative and a highly motivated student. The successful candidate must have a solid background in physics/chemistry or biology; computational skills are required.

The position will be funded for three years by the Laboratory of Excellence Dynamo (http://www.labexdynamo.ibpc.fr/en/).

The candidate will work in the groups of Dr. Fabio Sterpone and Dr. Marc Baaden in Paris, in the Laboratoire de Biochimie Thorique at the Institut de Biologie Physico-Chimique (http://www-lbt.ibpc.fr/). The Laboratoire de Biochimie Thorique is an internationally recognized laboratory with the mission of developing and applying computational methodologies to solve biological relevant problems. The members are active in the fields of docking, atomistic and coarse-grained simulations tackling problems as protein/protein and protein/DNA interactions, dynamics and function of membrane proteins, protein folding and aggregation. For more info on F. Sterpone and M. Baaden activities:
https://sites.google.com/site/sterponefabio/ and http://www.baaden.ibpc.fr.

Interested applicants should send a detailed CV and have three reference letters sent to:

Dr. Sterpone Fabio
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