CEITEC

Central European Institute of Technology
BRNO | CZECH REPUBLIC

PhD positions in Computational Biophysics
(Brno, Czech Republic)

Starting: Optional - after July 2017
Duration: 4 years
Expires: Applications are considered until the position is filled
Supervisor: Robert Vacha (robert.vacha@mail.muni.cz), http://vacha.ceitec.cz
Employer: CEITEC Masaryk University, Czech Rep.

Project: The aim of this project is to unravel the relationship between membrane-associated proteins and their preferred membranes. Despite a continuous exchange of material, organelles maintain a precise composition and morphology of membrane lipids, which is crucial for their function, the recruitment of specific peripheral proteins, and overall organization in space and time, without which serious diseases occur. Moreover, membrane curvature and lipid content can be specific to cancer cells, bacteria, and enveloped virus coatings, which could be utilized for selective targeting. The research will be strongly coupled to collaborations with excellent experimental teams and more closely discussed during the interview. The results will lay the foundations for the design of new protein motifs sensitive to membranes with a specific curvature and composition on enveloped viruses, organelles and cells. The student will master the tools of computer simulations and their analysis. Moreover, he/she will learn the advantages and disadvantages of various parameterizations.

Eligibility: Outstanding candidates with experience in computer simulations and with an MSc degree in biophysics, soft matter physics, physical chemistry, computational chemistry, stat. mechanics, or related fields. Experience with molecular dynamics (GROMACS, CHARMM, NAMD, AMBER, LAMMPS, etc.) or other simulation techniques (Monte Carlo, DPD, etc.) at the atomistic or coarse-grained level is an advantage.

Computing Resources: Successful candidates will have access to local computing clusters with 1500 cores. Access to Metacentrum NGI – National Grid Infrastructure for computing (with ~10,000 cores) will be also available. Additional resources include the possibility of applying for IT4Inovations, where the group is active.

Competitive salary supported by grant projects, well above Czech average.

Application Procedure: Applications must include a CV, list of publications, personal statement (description of research interests, past, and plans), and the names of 2 people willing to provide a letter of recommendation. Applications with all of the material (preferably in a single pdf) should be sent to Robert Vacha (robert.vacha@mail.muni.cz).