# Postdoctoral research fellowships and PhD scholarships

Interdisciplinary Laboratory of Biological Systems Modeling at the Centre of New Technologies, University of Warsaw, Poland (http://jsulkowska.cent.uw.edu.pl/) led by assistant professor Joanna I. Sułkowska seeks to fill five junior research positions supported by the projects:

- **Classification and free energy landscape of entanglement proteins: knots, slipknots and lassos**, Idea Plus grant, Ministry of Science (MNiSW, Poland)
- **Influence of knotted structure on function of proteins and protein structure prediction,** Sonata BIS grant, National Science Centre (Poland)
- **Comprehensive analysis of knotted proteins,** EMBO Installation grant

These projects are devoted to a fascinating subject of entanglement in proteins. Within the last few years it has been realized that proteins may form non-trivial entangled structures, such as knots, slipknots or tadpoles, whose existence is obscured in a standard representation in terms primary, secondary and tertiary structures. While analysis of knotted proteins has already grown into an independent and rapidly developing field, in these projects we are going to go beyond its borders and include other tangled structures into analysis, such as proteins with lassos and links. The main goals of those projects are: 1) to understand energy landscape of such tangled structures based on mechanical manipulations (Sulkowska JI et al., PNAS 2010) also for knotted membrane proteins, 2) to understand their function (Sulkowska JI et al., Nature S&MB 2016) and to design selective inhibitors, 3) to predict entangled structures by means of theoretical models including co-evolution models (Sulkowska et al., PNAS 2012). All these tasks will be supported by experimental analysis.

The projects will be carried out in close collaboration with the groups of Prof. Sophie Jackson (Cambridge University), Prof. Martin Weigt (Laboratoire de Biologie Computationelle et Quantitative, Université Pierre et Marie Curie), and Prof. Ken Millett (University of California Santa Barbara, USA). Internships at partner institutions are planned for members of the group.

Available positions:

- **Three postdoctoral research fellowships, duration up to 3 years, monthly gross salary in the range 6,000 PLN – 10,000 PLN depending on candidate's qualifications.**
- **Two PhD scholarships, duration of 3 years, monthly stipend 4,000 PLN.**

Applicants are requested to e-mail their curricula vitae, research records, academic transcripts (in the case of PhD candidates), and two recommendation letters to jsulkowska@cent.uw.edu.pl before 1 December 2016. It is expected that the candidates will be notified by 5 December 2016 and those shortlisted will be interviewed (remotely or in person).

We seek motivated post-doctoral fellows with a PhD degree in physics, biochemistry, or mathematics, capacity for logical and critical thinking, and fluent in English. Knowledge of biophysics methods (molecular dynamics simulations, docking), bioinformatics (direct coupling analysis approach), genomics, evolutionary analysis and knot theory are highly advantageous. Additionally experience in membrane proteins modeling and QM techniques will be appreciated. Applicants are expected to demonstrate experience commensurate with their level of education in at least one of these areas.

UNIVERSYTET WARSZAWSKI
UNIVERSITY OF CAMBRIDGE
EMBO excellence in life sciences
UPMC SORBONNE UNIVERSITÉS