Post-Doctoral Research Assistant in Structural Bioinformatics

"Design of new protein structures"

Applications are invited for a 2-year full-time post-doctoral position in the Centre of New Technologies, University of Warsaw, Poland.

Project description

The aim of the project is to set up a bioinformatics pipeline for designing new protein structures with the use of parameterization, a procedure that allows representing protein backbones with mathematical equations. The best-known protein structure class that has been fully parameterized is α-helical coiled coils, encompassing very regular structures in which canonical α helices are wound around each other to form bundles. There are a vast number of studies in which parameterization has been used to support analysis of the sequence-structure-function relationship in α-helical coiled-coil domains of various proteins. We propose that other protein structures could be also parameterized, and thus manipulated and studied in a similar fashion to α-helical coiled coils. To investigate this hypothesis, we will study β-helices, widespread regular structural motifs that occur in many functionally unrelated proteins. The key aspect of the project will be experimental validation (crystallography/NMR) of novel structures designed with the aid of the parametric models. The successful candidate will work on development of parametric models, *in silico* design simulations, and deciphering structure-sequence relationships.

Assessment

The successful applicant must have a PhD in a subject of relevance to the position (biology, bioinformatics, chemistry, physics, mathematics). Applications from candidates who plan to defend the thesis before the planned start date will be also accepted.

Expected qualifications and skills:

- Experience related to some of the following: computational protein modeling and design, Rosetta package, molecular dynamics (preferably Amber); protein sequence analysis, comparative genomics, or machine learning techniques.

- Extensive experience in any of established scripting language (e.g. Python, R, MATLAB).

- Good writing and oral communication skills in English, and competence in scientific writing.

- Strong publication record in peer-reviewed journals.

The main emphasis will be placed on personal suitability and on good communication and interpersonal skills as well as on the ability to work independently and as part of a team.

Applicants should send a curriculum vitae, including a list of publications, a cover letter, and contact details of 2 references to Dr. Stanisław Dunin-Horkawicz (s.dunin-horkawicz@cent.uw.edu.pl). Informal enquiries are welcome. The closing date for the receipt of applications is **1 July 2017**. The planned start date: **1 August 2017 or as soon as possible afterwards.**

The University of Warsaw is committed to equality and diversity, and encourages applications from all sections of the community.