Postdoc and PhD Positions

Computational Structural Biology

Pasteur Institute, Paris

Applications are invited for Postdoctoral and PhD positions funded by the ERC project BayCellS, to work on the development of innovative molecular modeling concepts for cellular structural biology. The successful candidates will join the Structural Bioinformatics Unit in the Department of Structural Biology and Chemistry at the Pasteur Institute in Paris, France.

To characterize 3D structures of the large and often flexible macromolecular complexes that govern cellular processes, high resolution structure determination is the exception, and multiple sources of structural data at multiple resolutions are employed. Integrating these data into one consistent picture poses particular difficulties: data are much more sparse than in high resolution methods; data sets from heterogeneous sources are of highly different and unknown quality and may be mutually inconsistent; data are in general averaged over large ensembles and long measurement times. The project is to develop a consistent framework for this highly complex data integration problem, principally based on Bayesian probability theory. Appropriate models for the major data types used in hybrid approaches (electron microscopy, cross-linking/ mass spectrometry, various spectroscopy techniques, SAXS, ...) will be developed, as well as representations to include structural knowledge for individual components of the complexes. The new methods will be applied to a series of problems with increasing complexity. The ideal candidate has a strong background in mathematics/ statistics, theoretical biophysics or molecular modeling applied to macromolecular structure determination; experience in programming (Python, C); and an interest in Bayesian probability theory.

Contact: Michael Nilges, Department of Structural Biology and Chemistry, Structural Bioinformatis Unit; michael.nilges@pasteur.fr