

Helmholtz – CSC – Fellowships 2010

- Helmholtz Centre:** Research Centre Jülich – (www.fz-juelich.de/portal/home)
- Research Field:** Health
- Research Project:** Structural studies on the rhodopsin arrestin complex
- Position:** PhD Student or Sandwich PhD Student Postdoc
- Department/Supervising scientist:** Institute of Structural Biology and Biophysics
Structural Biology, ISB-3, Priv.-Doz. Dr. Bernd W. Koenig

Research Area:

Atomically resolved structures of G protein-coupled receptors (GPCR) in complex with their cognate G protein or with regulatory proteins are of fundamental importance for understanding biological signal transduction. Our lab studies the interaction of the GPCR rhodopsin with the G protein transducin and with visual arrestin. Using high resolution liquid state nuclear magnetic resonance spectroscopy (NMR) we determined the structure of rhodopsin-bound transducin and arrestin peptides reflecting the interface of the complex. The first x-ray crystal structure of bovine arrestin was solved in our sister institute ISB-2. The aim of the planned project is identification and characterization of additional interaction sites in the functional rhodopsin arrestin complex using NMR, x-ray crystallography and molecular modeling/docking approaches.

ISB-3 has a well equipped wet lab for cloning and protein production as well as instrumentation for biochemical and biophysical interaction analysis. State-of-the-art ultra high field NMR spectrometers (800 and 900 MHz) will be used in Jülich. A robotic system is available for crystallization screens at ISB-2. Diffraction quality of crystals can be tested in-house. X-ray data will be collected at the European Electron Synchrotron Radiation Facility in Grenoble. Molecular modeling and docking studies of the rhodopsin arrestin complex will be done in collaboration with the supercomputing centre (JSC) in Jülich. Total stay for a Postdoc: 24 months, total stay for a PhD: 36 months

Specific Requirements:

Masters degree or PhD in Biochemistry, Biology, or Biophysics; Experience in recombinant protein production and purification; Sound background in biophysics and biochemistry; Computer skills, experience with NMR, x-ray crystallography or molecular modeling would be an advantage but is not mandatory; Fluency in English or German

- Work Place:** Research Centre Jülich, Germany (near Cologne)
- Earliest Start** (between September 2010 and February 2011): 01.09.2010
- Language Course:** A German language course will be offered parallel to the project
- Further Information:** b.koenig@fz-juelich.de
http://www.fz-juelich.de/isb/isb-2_3/

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