

## PhD student position

### Mechanisms of cargo recognition by kinesin molecular motors

**Project:** The project is aimed at structure-function studies of anterograde transport mediated by conventional kinesins and their interactions with cargo molecules. We will use a bottom-up approach to analyze a kinesin/cargo transport system at the molecular level. To this end, we will express and purify individual protein components to reconstitute kinesin/cargo complexes and analyze their structural and functional properties. We will apply mutagenesis, biophysical approaches (microscale thermophoresis, analytical ultracentrifugation, SPR, FRET) and structural biology techniques (hydrogen/deuterium exchange, X-ray crystallography, SAXS, cryoEM) to pinpoint motifs mediating cargo/kinesin interactions and delineate the interaction interface(s). The total internal reflection microscopy will be used to visualize the complexes and elucidate their functional properties up to the single molecule level *in vitro*. Finally, neuronal cell-based assays will be exploited to translate and validate *in vitro* data in a physiologically relevant environment of the axonal transport. Overall, we expect our data to contribute to our understanding of general molecular mechanisms governing kinesin activation and principles of a protein transport in (neuronal) cells.

**Qualifications:** Applicants should have a solid background in molecular biology, biochemistry, or cell biology. We expect good communication skills, analytical thinking, and the ability for teamwork. The successful candidate will participate in a PhD program at the Charles University, Prague. The starting date is summer/fall 2022.

**How to Apply:** For more information, please contact Cyril Bařinka ([cyril.barinka@ibt.cas.cz](mailto:cyril.barinka@ibt.cas.cz)) directly.

Cyril Barinka, PhD  
Laboratory of Structural Biology  
Institute of Biotechnology of the Czech Academy of Sciences  
BIOCEV, Centre of Excellence  
25242 Vestec  
Czech Republic  
<http://lsb.avcr.cz/>