Open PhD position on computational design of polyhedral protein assemblies

The group of **Protein Design and Self-Assembly** at the Department of Chemistry, Ludwig Maximilian University (LMU) of Munich is offering a PhD position to expand the current repertoire of self-assembling protein systems.

The project

Polyhedral protein assemblies, aka protein nanoparticles, are modular biomaterials that have three distinct genetically defined surfaces available for functionalization: (i) interiors, to compartmentalize molecules; (ii) exteriors, to interact with their surroundings; and (iii) inter-subunit surfaces, to determine the assembly. While recent development of computational methods for designing novel protein assemblies with atomic-level accuracy greatly expanded our engineering capabilities well beyond the natural realm, their application is still limited by their intrinsic properties. The goal of the Khmelinskaia lab is to expand the available repertoire of protein assemblies, in terms of architectural, dynamic and functional properties, to achieve application-dependent "off-the-shelf" programmability. We take a hybrid approach combining *de novo* computational protein design and *in vitro* biophysical characterization to capture the behavior of naturally occurring systems and further map out the possible assembly space. The PhD student will use the latest protein structural prediction and design neural networks, as well as Rosetta-based approaches software suite to create protein scaffolds with precise properties and characterize their assembly pathways *in vitro* using structural biophysical methods and microscopy techniques.

Your profile

- Enthusiasm for research in a collaborative environment
- Strong interest in solving fundamental biological problems
- Experience in computational biology, physics, biophysics, molecular biology and/or protein biochemistry (Master's degree or equivalent)
- Excellent degrees and track record
- Very good communication skills (English)

We offer

- Challenging projects at the interface of biophysics, molecular biology and computational biology
- A stimulating, multidisciplinary and international research environment
- Supportive mentoring
- Salary in accordance to the German salary scale TV-L EG 13
- A "semester"/"jobticket" (subsidized public transport) is available
- Supplementary benefits in the public sector (pension plan according to VBL)
- Numerous offers of university sports

Contact information

We welcome people from all backgrounds to join our lab! To apply, please send your CV, short motivation letter and contact information of 2 scientific referees to Alena Khmelinskaia via e-mail (akhmelin@cup.lmu.de).