



PhD Program between Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

**Open PhD Position at Freie Universität Berlin,
offered only to Chinese CSC scholarship candidates 2026**

Department/Institute: [Biology/Chemistry/Pharmacy]

Subject area: [Protein Biochemistry/Structural Biology]

Name of Supervisor: [Prof. Dr. Christian Freund]

Number of open PhD positions: [1]

Type of the PhD Study: [Full-time]

Project title: [Intrinsically disordered proteins in control of the actin
cytoskeleton]

Intrinsically disordered proteins (IDPs) play a vital role in biological processes that rely on transient molecular compartmentation. In T cells, the dynamic switching between migration and adhesion mandates a high degree of plasticity in the interplay of adhesion and signaling molecules with the actin cytoskeleton. For the scaffolding protein ADAP we have found that positively charged motifs spread across an intrinsically disordered region (IDR) of the protein interact with both longitudinal sides of G-actin in a promiscuous manner. Furthermore, actin bundling is induced by this protein by engaging in several weak interactions. We have referred to this type of multivalent interactions in the context of the self-polymerizing actin molecule as actin sponge. This phenomenon is different from phase separation, but maybe linked by protein-protein interactions with phase-separating actin regulatory proteins.

In this PhD project the intrinsically disordered regions of several actin regulatory proteins will be investigated by cryo-EM, NMR spectroscopy, cross-linking mass spectrometry and by biochemical and functional assays. In collaborative work the regulatory properties of the protein will be investigated in the context of the larger protein complexes that act in concert at the immunological synapse when a T cell encounters an antigen and requires to invoke downstream signaling processes.

PhD Project description:

Language requirements:

- IELTS: 6,5 oder TOEFL: 95 ibt

Academic requirements:

Applications of highly motivated candidates with a master degree in the areas of structural, molecular or biochemistry are welcome. Experience in the areas of protein biochemistry or cellular immunology is desirable and qualifications and references should be excellent.

Information of the professor or research group leader (website, awards etc.):

Our group is interested in the understanding and manipulation of molecular interactions that govern the assembly of protein complexes. The focus is on proteins important for immune cell function, such as MHC class II molecule, integrin regulating scaffolds or alternatively spliced proteins. By using molecular and structural biology techniques we want to decipher regulatory pathways that can subsequently be manipulated by protein engineering approaches. Small molecule and biologics are utilized as tools for understanding and interfering with the molecular switches that govern the behavior of immune cells. Further information is available at: <https://www.bcp.fu-berlin.de/en/chemie/biochemie/research-groups/freund-group/index.html>

Please note:

In a first step, the complete application should be uploaded to the online portal (<https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbd5/eng>) for evaluation by December 15th, 2025.
