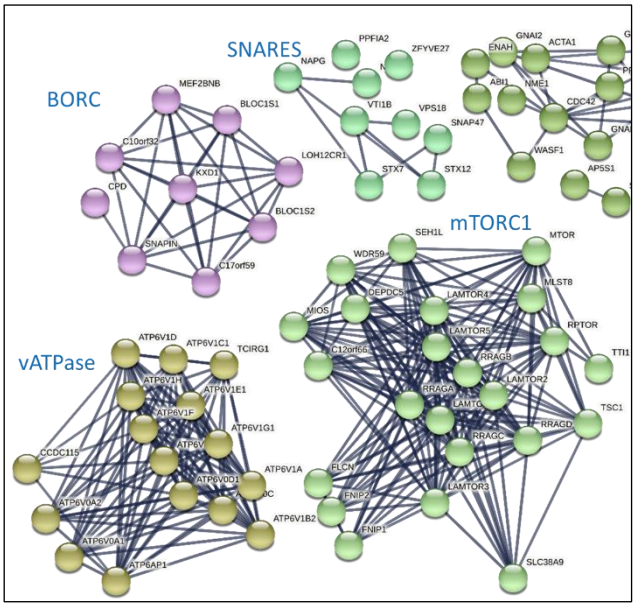
Open PhD positions at the Institute of Cell Biology, Medical University of Innsbruck, Austria

We are offering two PhD positions with immediate effect at the Institute of Cell Biology, Biocenter, Medical University of Innsbruck and supervised by Dr. Taras Stasyk. The projects are embedded within the PhD program Molecular and Cellular Basis of Diseases (MCBD) at the Medical University of Innsbruck, Austria.

Project: Molecular architecture of native LAMTOR and BORC assemblies

Lysosomes are intracellular hubs for anabolic and catabolic signaling that control cell growth, division and differentiation. Despite significant advancements in our understanding of the molecular mechanisms of sensing such critical nutrients as amino acids, cholesterol and glucose, key questions on how components of sensing and signaling machineries work together still need to be answered. The LAMTOR/Ragulator complex is a key regulator of lysosomal mTORC1, MAPK and AMPK signaling. LAMTOR also coordinates lysosome biogenesis via the BORC complex. Molecular mechanisms of how LAMTOR relates to different sensing and signaling protein machines, including BORC in particular, and how these interactions coordinate lysosomal biogenesis and function, to maintain cellular homeostasis, are largely unknown and are thus the focus of our interest.



Within these PhD projects, we aim to identify all LAMTOR and BORC associated protein assemblies on intact lysosomes under different growth factors and nutrition conditions and obtain evidence for direct and endogenous protein-protein interactions. We are applying cross-linking mass spectrometry (XL-MS) in combination with advanced subcellular fractionation to understand the molecular architectures of the different LAMTOR and BORC assemblies (super-complexes) at endogenous levels and under different physiological conditions. A unique advantage of this approach is that native endogenous protein interactions are captured using a chemical cross-linker reactive towards specific amino acid side-chains that are in close spatial proximity. In a parallel approach, enriched lysosomes are first cross-linked followed by affinity purification of protein complexes to reveal signaling-dependent rearrangements.

Your profile: a master's degree in biology or chemistry, as well as a strong interest in cellular signaling, proteomics and mass spectrometry

Contact: taras.stasyk@i-med.ac.at

Job Category: PhD