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SEMINAR SERIES 2025

19 August, 4:00 PM AEST

SPECIAL SEMINAR - 19 August, 4:00 PM AEST

Prof. Dimitrios Fotiadis

Institute of Biochemistry and Molecular Medicine (IBMM), Medical Faculty, University of Bern, Switzerland

Dimitrios Fotiadis is full professor, managing director of the Institute of Biochemistry and Molecular Medicine (IBMM) and Vice Dean for Research at the Medical Faculty of the University of Bern, Switzerland. His research focuses on the structural and functional characterization of soluble and, in particular, membrane proteins, including transporters, G protein-coupled receptors, light-driven ion pumps and viral protein complexes. Throughout his scientific career, he has developed extensive expertise in high-resolution techniques such as electron microscopy, atomic force microscopy and X-ray crystallography, with the goal of elucidating protein structures, supramolecular assemblies and their underlying functional mechanisms. In recent years, his laboratory has concentrated on cryo-electron microscopy (cryo-EM) to resolve 3D structures of biologically and medically relevant membrane proteins and soluble complexes.

Structural and mechanistic insights into transmembrane glucose transport and light-driven proton pumping

This seminar presents recent structural and mechanistic insights into two distinct classes of membrane proteins: bacterial transporters and light-driven proton pumps, investigated using cryo-EM.

The first part of the talk focuses on the glucose-specific transporter from Escherichia coli, a key component of the bacterial phosphotransferase system responsible for efficient glucose uptake. Cryo-EM structures of this transporter provided insights into how glucose is recognized and translocated across the membrane, offering a comprehensive view of the transport cycle.

The second part explores the structural basis of light-driven proton pumping by a bacterial rhodopsin, an important model system in photobiology and synthetic biology. Cryo-EM structures of the green-light absorbing proteorhodopsin revealed its oligomeric states and clarified the structural arrangement underlying proton translocation.

Together, these findings advance our understanding of transmembrane solute transport and light-driven proton pumping.