Biozentrum Lectures

Insights into the structure and dynamics of membrane transport proteins

Poul Nissen
Professor at Aarhus University and Director of DANDRITE, the Danish node of the Nordic-EMBL Partnership for Molecular Medicine, Aarhus, Denmark

Tuesday, June 5, 2018
5:15 pm
Poul Nissen: Insights into the structure and dynamics of membrane transport proteins

The membrane of a cell is a natural barrier to the environment and at the same time, the door to the world. In the human, there are up to 10'000 membrane proteins, which are responsible for signal transduction and the transport of molecules.

A large and diverse family of membrane transporters are the so-called P-type ATPases. These transport proteins use the energy molecule ATP to pump specific ions across the cell membrane. In the brain, the Na⁺, K⁺ and Ca²⁺ ATPases play a vital role in ion homeostasis. The activities of P-type ATPases are fundamental to life, and their malfunction is linked to a range of disorders including neurological and cardiovascular diseases.

The combination of a variety of techniques such as membrane protein crystallography, molecular dynamics simulations and modelling has provided greater insights into the mechanistic concepts and function of the mammalian Na⁺, K⁺ and Ca²⁺ ATPase ion pumps. Recently, the group of Poul Nissen has initiated cryoEM studies supported by a large Danish cryoEM network, and embarked on defining new rationales for X-ray and neutron scattering studies made possible due to the emerging facilities at the MAX IV synchrotron and European Spallation Source in Lund and the European XFEL and Petra3 X-ray sources in Hamburg.

In the upcoming Biozentrum Lecture, Poul Nissen will talk about his latest research findings and the progress made on the elucidation of the structure and dynamics of P-type ATPases.

June 5, 2018, 5:15 pm
Hörsaal 1, Pharmazentrum
Klingelbergstrasse 50/70, Basel
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