

## Seminar announcement

**Tuesday 14 March 2023**

**9.15 – 10.00**

**Venue:**

Room 1870-816 (faculty club)  
Dept. Molecular Biology and Genetics, Aarhus University



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### **Thermodynamic Modeling of Ion Transport**

Ion transport plays a vital role in the regulation of many cellular processes, especially those related to membranes. We developed a generalized thermodynamic description of the complex interplay of plasma membrane ion transporters, membrane potential and the consumption of energy for maintaining and restoring specific intracellular ion concentrations. Here, the fundamental principles of thermodynamics, including entropy production and energy conservation, are used to describe the dynamics of ions in the system. We show that well-parameterized models based on experimental data can serve predicting relevant phenomena and explain observations.

We discuss applications of the approach, namely to the cation homeostasis in yeast and to the regulation of ion fluxes between the red blood cell and the parasite *Plasmodium falciparum* during a malaria infection.

**Hosted by:** Prof. Poul Nissen,