



Room 103C: Monday, February 12

11:30 AM – 1:00 PM

Nanon Technologies

High Fidelity Electrophysiology: From Single Channels to High Throughput and Transporters In-Between

Speaker: *Tim Strassmaier, Director of Scientific Operations, Nanion Technologies Inc*

For over 20 years, Nanion Technologies has been providing diverse solutions for electrophysiologists worldwide. We aim to successfully implement innovative technologies in the fields of ion channel automated patch clamp (APC) electrophysiology, monitoring of cell viability and contraction, as well as electrogenic transporters, with various throughput capabilities. This year, our symposium will start with an introduction by Dr. Tim Strassmaier (Director of Scientific Operations, Nanion Technologies Inc.) who will guide you through the overall capabilities of Nanion's portfolio. Following this, we will welcome our speakers, whose work focuses on ion channel and transporter physiology and pathophysiology.

Structural Investigation of Ryanodine Receptor - Small Molecule Interactions

Speaker: *Filip Van Petegem, Professor Biochemistry and Molecular Biology, The University of British Columbia*

Dr. Filip Van Petegem will present cryo-electron microscopy and planar lipid bilayer electrophysiology on Ryanodine Receptors (RyRs), large calcium release channels located in the membranes of the ER and SR. These channels are targets for tens of proteins and small molecules that can alter their gating, and are involved in a wide range of channelopathies including malignant hyperthermia, CPVT, and central core disease. An overview will be presented on the various molecules for which structural information is now available. This includes calcins, small peptides produced by scorpions. These can cross the plasma membrane, produce subconductance states and create asymmetry in the RyRs.

Ion Channel Targeted Small Molecule and Antibody Therapeutic Programs

Speaker: *Franck Potet, Director, Electrophysiology, OmniAb Inc*

Ion channels are important therapeutic targets for many disease states and high throughput automated patch clamp is a useful tool to record ion channel activity in cell lines, stem cells and primary cells. The ability to investigate the effects of small molecules and large antibody compounds at high throughput is crucial for efficient drug discovery. At Icagen, the SyncroPatch 384 is used in multiple programs for drug discovery, some of which will be described in this talk.

Functional Characterization of Human GAT1 Through Solid Supported Membrane-Based Electrophysiology

Speaker: *Rocco Zerlotti, Application Scientist, Nanion Technologies GmbH*

Dysregulation in GABA transport has been linked to many neurological disorders, hence hGAT1 is an important target for their medical treatment. It is important to have tools to measure the GABA transporter, which can be achieved using solid supported membrane (SSM) electrophysiology. At the synapse, GAT1 exploits the Na⁺ gradient to energize the uphill re-uptake of GABA from the synaptic cleft into the presynaptic neuron. Samples prepared from CHO cells stably expressing GAT1 were used the SURFE²R N1, and GABA-induced currents were elicited using the substrate-containing activating buffer. Three different electrogenic events were detected, two faster components and a slower component corresponding to the transport event. The SURFE²R technology is a useful tool to study GAT1 as well as other transporters, membrane pumps and leak channels.