

## Distinguished Lecture Series in Physiology

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## “Finding Friends: functional impact of protein-protein interactions in cardiac and neuronal ion channels”

Membrane proteins such as ion channels play crucial roles in human physiology and their dysfunction is associated with a variety of diseases, such as neurological and cardiac disorders. Despite recent advances in our understanding of their structure and function, many aspects of their biology remain elusive. In particular, the consequences of protein-protein interactions on their function are poorly understood. Here, I will present work in which we have investigated the regulation of ion channels by protein-protein interactions and their possible implications in neurodevelopmental and cardiac diseases, as well as the design of de novo protein binders. The first example will outline how we unravelled the molecular function, pharmacology and structure of the sodium leak channel complex. The second example will cover our efforts to employ protein semi-synthesis to investigate the effects of phosphorylation on the function and protein-protein interactions of the cardiac sodium channel Nav1.5 in live cells. Lastly, I will go over the de novo design of protein binders targeting different ion channels.

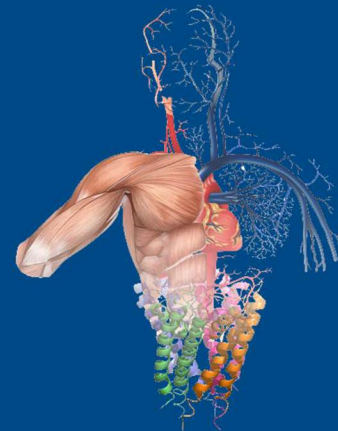
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November  
13



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