

# FUNCTION AND REGULATION OF ION CHANNELS IN PHYSIOLOGY AND DISEASES

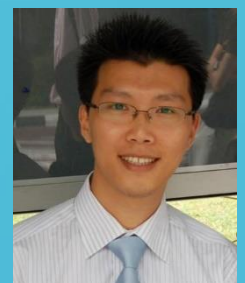
Ion channels form aqueous conduits for ions across biological membrane which is hydrophobic in nature. Over 300 different types of ion channels have been identified and they are closely involved in various biological processes ranging from cell excitability, neuronal signalling to cellular volume regulation and etc. At the RNA level, the pre-mRNA of ion channel genes are subjected to extensive regulation by RNA modification and splicing, potentially creating channels isoforms with altered functional properties that could be tailored for different biological contexts. In this regard, genome editing tools such as CRISPR/Cas9 system provide unprecedented opportunity to unveil the physiological consequences of such regulation. In this talk, I will highlight and discuss three on-going projects in the lab: (1) Fine tuning of CaV1.3 channels by alternative splicing and neuronal selective A-to-I RNA editing. (2) Functional disruption of hTRPA1 via alternative splicing in the C-terminal coiled-coiled domain. (3) Identification of volume and pH sensitive potassium channel KCNK5 as a novel target in Ph+ CML.

## ABOUT THE SPEAKER

Dr Huang Hua obtained his PhD in neuroscience from National University of Singapore in 2012. He is currently working as senior research fellow at the Department of Physiology, NUS. His areas of expertise include molecular biology and ion channel physiology. His PhD thesis reported the first functional A-to-I editing in mammalian voltage gated calcium channel CaV1.3. He has sought to understand the tissue specific regulatory mechanism of A-to-I RNA editing and recently he embarked on projects to investigate the regulation of other channel targets such as TRPA1 channels and potassium channels in other diseases such as pain and cancer.

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Monday  
29 January 2018  
2.30 pm to 3.30 pm  
Seminar Room, MD10  
Level 2, Anatomy Museum