



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY
Division of Life Science

Seminar Notice

“Structure and mechanism of TMEM16A Calcium-activated Chloride Channel”

by

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Abstract

Calcium-activated chloride channels (CaCCs) encoded by TMEM16A control neuronal signalling, smooth muscle contraction, airway and exocrine gland secretion, and rhythmic movements of the gastrointestinal system. To understand how CaCCs mediate and control anion permeation to fulfil these physiological functions, knowledge of the mammalian TMEM16A structure and identification of its pore-lining residues are essential. Here we present *de novo* atomic structures of the transmembrane domains of mouse TMEM16A in nanodiscs and in lauryl maltose neopentyl glycol as determined by single-particle electron cryo-microscopy. These structures reveal the ion permeation pore and represent different functional states. Our mutagenesis and electrophysiological studies, prompted by analyses of the structures, identified ten residues distributed along the pore that interact with permeant anions and affect anion selectivity, as well as seven pore-lining residues that cluster near pore constrictions and regulate channel gating. Together, these results clarify the basis of CaCC anion conduction.

Date : 23 February 2018 (Friday)

Time : 4 p.m.

**Venue : Lecture Theatre C
The Hong Kong University of Science & Technology
Clear Water Bay, Kowloon**

(Host faculty: Prof. Mingjie Zhang)

ALL ARE WELCOME!!