Institute of Molecular and Cell Biology
A*STAR

SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by A/Prof. Frederic Bard:

Date: 12 July 2018, Thursday

Time: 11:00AM – 12:00PM

Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Speaker: Prof. Vivek Malhotra, ICREA Research Professor and Chair, Centre for Genomic Regulation, Barcelona, Spain

Title: Mechanism of mucosal homeostasis in the colon

Agonist-dependent (stimulated), and -independent (baseline) mucin secretion are distinct modes of regulated secretion and their dysregulation in mucin-secreting goblet cells leads to airway and colonic pathologies. Over extended periods, baseline release of mucin can exceed quantities released by stimulated secretion, yet its regulation remains poorly characterized. We have discovered that ryanodine receptor-dependent intracellular Ca^{2+} oscillations in goblet cells, effect the dissociation of a small molecular weight Ca^{2+}-binding protein, that we have called PIMS2, from mature mucin-filled secretory granules, allowing for their release. Increased Ca^{2+} oscillations, or depleting PIMS2 lead to mucin hypersecretion, an effect reproduced in the colon of PIMS2$^{-/-}$ mice. Conversely, overexpressing PIMS2 or abrogating its Ca^{2+}-sensing ability, increases PIMS2 association with granules, thus inhibiting baseline secretion. PIMS2 therefore emerges as the long-sought after, high-affinity Ca^{2+} sensor for baseline secretion. We propose that PIMS2 presents a mark of maturity to primed mucin granules, acting as a Ca^{2+} oscillation-dependent, tonic brake on baseline secretion.

Biography:

Vivek Malhotra received B.Sc. in Biochemistry from Stirling University and D.Phil. in biochemistry from Oxford University. He was a postdoc in the laboratory of James Rothman at Stanford University and then as an assistant, associate and full professor at UCSD from 1990-2008. In 2008 he moved to chair the Department of Cell and Developmental Biology at CRG in Barcelona, Spain. He is interested in the mechanism of protein secretion and the biogenesis of the Golgi apparatus.