

Distinguished Lecture Series in Physiology



Physiology and Membrane Biology

University of California, Davis

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"Mechanisms and functions of store-operated calcium channels"

Store-operated calcium channels (SOCs) are a major pathway for calcium signaling in all animal cells and serve a wide variety of functions ranging from gene expression, motility and secretion to tissue and organ development and the immune response. SOCs are activated by the depletion of Ca^{2+} from the endoplasmic reticulum (ER), triggered physiologically through stimulation of a diverse set of metabotropic surface receptors. The identification of the STIM proteins as ER Ca^{2+} sensors and the Orai proteins as store-operated channels 10 years ago has enabled rapid progress in understanding the unique and unusual mechanism of SOCE. Depletion of Ca^{2+} from the ER causes STIM to accumulate at ER-plasma membrane junctions where it traps and activates Orai channels diffusing in the closely apposed plasma membrane. In this talk, I will discuss our recent work on the activation mechanisms of SOCs, focusing on how the Orai channel pore opens in response to STIM binding, and some ongoing work on understanding their physiological roles in the brain.

Genome Auditorium
Thursday, May 19, 2016
10:00 a.m.