Physiological and pathophysiological roles of Calcium Signals

- Ca^{2+} signals mediate a vast range of both short-term (contraction, secretion) and long-term (mitogenesis, differentiation and survival) cellular events.
- Store-operated Ca^{2+} entry is mediated by members of the Stromal-Interacting Molecule (STIM) and Orai families.
- My lab has longstanding interests in how this process occurs, the identification of alternative roles for these proteins and defining their physiological and pathophysiological functions in specific cell types.
- Major techniques used include fluorescence microscopy, molecular and cellular biology, biochemistry and unbiased approaches.

T cell activation

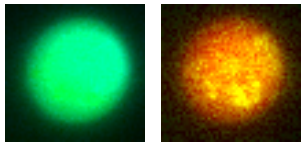
Ca^{2+} signals are required for T cell activation; we are interested in both how these responses occur and in defining their impact.

Melanoma metastasis

We have observed evidence of suppression of Ca^{2+} signals in metastatic melanoma cells. Our lab is investigating its pathophysiological impact.

Calcium response in a T cell

Resting Activated



Bone maintenance

We have shown that Orai1 is required for the differentiation of osteoblasts and osteoclasts. We are assessing the use of a patented Orai1 inhibitor for protection against bone erosion.

Jonathan Soboloff, Professor,
Fels Cancer Institute for
Personalized Medicine

Recent publications:

Mol Cell Biol 2015; FASEBJ 2016; Sci Signal 2019; EMBOR 2020

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