

University of South Florida

The Department of Cell Biology,
Microbiology and Molecular Biology

Announces a seminar by

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Department of Physiology and Biophysics
Case Western Reserve University

**on April 21st, 2017
at 3:00 pm in CHE 103**

“GATING AND MODULATION OF PENTAMERIC LIGAND-GATED CHANNELS”

The pentameric ligand gated ion channels (pLGIC) belong to the cyst-loop super family and mediate fast chemical transmission in the central and peripheral nervous system. These channels are targeted by a large number of exogenous and endogenous modulators that include alcohols, anesthetics, neurosteroids, and membrane lipid constituents. Several high resolution structures of various members of the pLGIC family have been solved so far, but the structural basis for allosteric modulation remains elusive. Here, using a proton-gated pLGIC from *Gloeobacter violaceus* (GLIC), we characterize the effects of membrane lipid composition on channel function, structure, and dynamics. Using an integrated approach that involves EPR spectroscopy (CW and DEER methods), X-ray crystallography, and electrophysiological measurements, we provide high-resolution snapshots of the channel bound to these modulators and further describe the changes in channel dynamics that underlie the observed functional effects. Taken together, these findings provide novel insights into this critical yet poorly understood mechanism of lipid modulation in pLGIC.



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