

UW-Chemistry

DATE: THURSDAY, DEC. 8

TIME: 3:30 PM, SEMINAR HALL

Dr. Evan Miller

UC-San Diego

*“Chemical Tools to
Illuminate the Brain”*

The human brain comprises 2% of our total body mass, but accounts for 20% of the body's oxygen intake. Voracious oxygen consumption in the brain primes this organ for oxidative stress and damage, and new tools are needed to track the dynamics of reactive oxygen species (ROS) in real time. The vast, interconnected networks of neurons fueled by this energy consumption depend upon both chemical and electrical signals for communication; however, chemical tools for direct voltage measurements have lagged behind methods for monitoring chemical messengers such as Ca^{2+} . Fluorescence imaging is a powerful technique for monitoring biological events in real time, but requires suitable chemical tools to realize its full potential. The first half of this talk will focus on the design, synthesis, and application of reaction-based fluorescent probes for H_2O_2 ; the latter portion of the seminar will address new methods for directly measuring voltage in neurons with high spatial and temporal resolution using photo-induced electron transfer (PeT) across molecular wires.

Special Seminar

