UNIVERSITY of WASHINGTON
PSYCHIATRY & BEHAVIORAL SCIENCES
School of Medicine

Larry S. Zweifel, PhD

Lab Website

Faculty Profile

Summary of Research Program:

The main focus of my research efforts are to define how specific genes influence neuronal connectivity and function within neural circuits that regulate innate and motivated behaviors with a special emphasis on genes linked to psychiatric disorders such as schizophrenia and depression. My laboratory utilizes conventional mouse genetics approaches coupled to viral-based strategies for projection specific gene manipulation, optogenetic and pharmacogentic approaches, in vivo single unit electrophysiology recordings, whole-cell patch clamp, in vivo fiber-optic imaging, and behavior. We have recently demonstrated that a disease-related mutation in the human KCNN3 gene that encodes the calcium activated potassium channel SK3 significantly alters activity pattern regulation of midbrain dopamine neurons resulting in disruption of specific behavioral domains relevant to schizophrenia. We have also shown that phasic activation of dopamine neurons potently influences fear processing by the amygdala and is critical for the prevention of generalized fear and anxiety. Other recent developments in the lab include the identification of CRF neurons in the central amygdala as key regulators of cued fear memory acquisition and the identification of a novel dopaminergic pathway within the hypothalamus that regulates social behavior.