



William J. Tyler, Ph.D.
 Assistant Professor
 School of Life Sciences
wtyler@asu.edu



We study fundamental properties of synaptic transmission, how these properties are modified by environmental experience, and how to control neuronal activity in order to make the nervous system more efficient. Two main thrusts motivate our investigations.

First, we aim to better understand the manner by which natural activity patterns (environmental experience) change the efficacy of synaptic transmission thereby governing behavior. Here, we focus on primary sensory circuits by examining the regulation of sensory input gains and modification of behavioral output.

In a second series of investigations, we are developing novel methods for the control of neuronal activity in intact brain circuits. To this end, we are employing the use light-gated ion channels and transporters in genetically-modified sensory circuits in mice (image below). Finally, for the human therapeutic potential of numerous neurological and psychiatric diseases/disorders, we are developing techniques for the noninvasive remote control of neuronal activity in intact brain circuits using pulsed ultrasound (see *Ultrasonic Neuromodulation Lab* link above).



We employ a variety of optical, molecular genetic, electrophysiological, and behavioral approaches in our studies.

The core of our investigations, is to determine how naturally occurring, or

<http://www.public.asu.edu/~wtyler/lab/Home.html>

Go

AUG JUN SEP

◀ 13 ▶

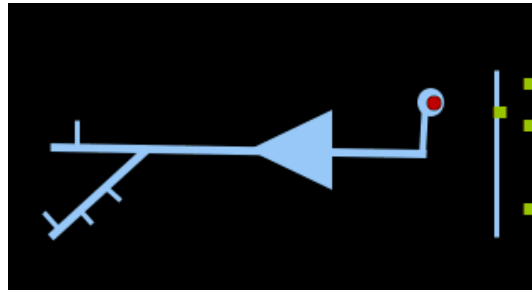
2008 2010 2011



▼ About this capture

[13 captures](#)

2 Sep 2006 - 13 Jun 2016



Web Design, Images, and
Graphics
by W.J. Tyler