Research Intro

Our laboratory uses an integrative approach to study the relationship between the brain and the mind. The relationship between the brain and the mind, the body-mind problem, has fascinated scientists, philosophers, and artists for centuries. Thoughts, feelings, impressions, actions, sounds, and images, all correspond to patterns of electrical impulses in the brain. Even though the brain and the mind have been studied for centuries already, we still don’t understand how, exactly, the mind and the brain relate to each other.

To elucidate the relationship between the brain and the mind, we study the neural basis of visual perception. Studying visual perception provides a platform to approach the body-mind problem with the rigor of science. Methods for studying visual perception have matured over centuries and enable quantitative measurements of perception in simplified environments. To reveal relationships between perception and the brain, we record the electrical activity of populations of neurons in animals that perform perceptual tasks. To connect perception and the activity of neural populations to anatomical brain circuits, we genetically engineer brain circuits to control their activity with light.