Our group focuses on the field of visual neuroscience, we investigate how activity in specific areas of the brain (e.g. The Middle Temporal Area, MT in Figure) contributes to the perception of motion. We take advantage of the visual and auditory systems to study higher order function.

Historically, sensory systems have provided some of the most robust insights into brain function. Different parts of the brain represent information from the different senses (see Figure), but what happens when one of these areas is damaged? We now study how the activity of different parts of the brain changes after damage to another using V1 lesion as a model. Activity in area MT may be responsible for residual vision after damage to the most important visual area. We will extend this paradigm to study the neural basis of how training with simple perceptual tasks can improve visual function after V1 damage.

While we have a good idea on the function of visual and auditory areas, little is known about how these areas interact to give a unified percept, eg. to locate a moving car. We seek to find out how neurons allow us to do this, investigating the ways in which information that is initially represented in V1 and A1 are combined. Multisensory integration becomes particularly important to people with sensory deficits, such as those with Cochlear implants and hearing aids.

Research Projects

1. Neural plasticity underlying visual motion perception after damage to the primary visual cortex (V1)
2. Neural mechanisms underlying training-induced recovery from V1 damage
3. Neural mechanisms of audiovisual integration

Selected significant publications:


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