

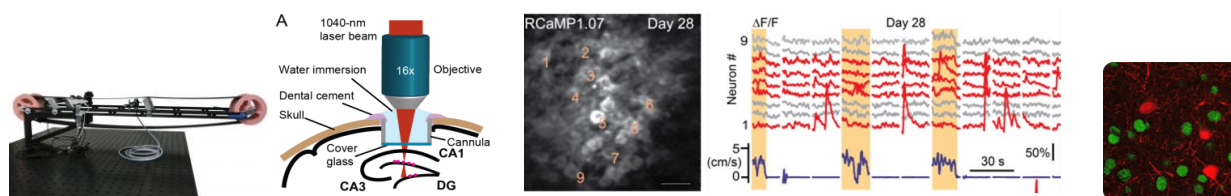
Open position for Master's student project
Helmchen Lab, Brain Research Institute, University of Zürich

All-optical interrogation of Hippocampal circuits in Virtual Reality

We are looking for Master's student candidates to carry out a project to investigate sensory integration and short-term memory processing in mammalian hippocampus using virtual reality set-up and high-resolution imaging. Candidates with Engineering background with strong interest in Neuroscience are encouraged to apply.

Description:

Perceptual decisions often require an individual to process incoming sensory information and retain it in short-term memory before choosing an appropriate action. Several brain regions are implicated in memory-guided decisions, including the hippocampus, however, it is not understood which specific circuits are recruited or how distinct components interact to retain and relay information relevant to behavior during this process. Recent developments in experimental tools allow us to image neuronal activity at the level of specific cell populations deeper in the brain in awake and behaving mice.



The Master's student project will focus on using transgenic mice with genetically-defined cell populations combined with two-photon calcium imaging, opto- and pharmacogenetic circuit manipulations and virtual reality-based approaches to study functional dynamics and plastic changes in mouse dentate gyrus (DG) and CA1. We aim to find activity patterns in hippocampal DG and/or CA1 cellular populations that show learning-mediated changes and construct a cellular and circuit basis for contextual memory engrams. The project is innovative and the applicant should be comfortable with analysis and preparing scripts independently. Experience with MATLAB is required.

The project will be supervised by Dr. Abhishek Banerjee together with Prof. Fritjof Helmchen at the Brain Research Institute, University of Zurich. Both supervisors have excellent reputation in mentoring young students and researchers.

Keywords:

Two-photon imaging, Pharmacogenetics, Sensory processing, Virtual reality, Hippocampus

Contact Details:

Please send applications to **Dr. Abhishek Banerjee** at banerjee@hifo.uzh.ch, with a brief **statement** and **CV** (including contact information of two academic referees).

More info can be found here:
neuronic.mit.edu

<http://www.hifo.uzh.ch/en/research/helmchen/interest.html>