

Miniscope Methodology Workshop Munich, May 22-23 2017.

Miniscope is – a short name for a miniature wide-field 1-photon fluorescent microscope that can be head-mounted on a small freely-moving animals (mice, rats, gerbils) and used for imaging activity of large number (hundreds) of neurons in deep regions of the brain via a miniature lens. Miniscope is based on a design pioneered by Mark Schnitzer's Lab at Stanford (Ghosh et al, Nat. Methods 2011). Schnitzer and colleagues commercialized their design via the company Inscopix, but most labs cannot afford the excessive cost of this technology. Recently a similar miniature microscope (Miniscope) was designed by the group of Peyman Golshani and Alcino Silva (UCLA) and successfully used in their labs (see Kai et al, Nature 2016), as well as many other labs around the world. The design of hardware and software is en par with commercial counterpart, but is made open-source to the research community via the website miniscope.org. Thanks to this, Miniscope community is growing every month.

How to get started with Miniscope? Miniscope has a mass of 3 grams and uses a single, flexible coaxial cable to carry power, control signals, and imaging data to custom open source Data Acquisition (DAQ) hardware and software. Miniscope is relatively easy to build and parts are commercially available. An approximate cost of parts needed to build a single device and DAQ is ~1000\$. All information on parts, assembly and usage is provided on the miniscope.org. To lower the entry threshold Golshani and Silva labs are providing training workshops to researchers from all over the world that serve to provide to participants theoretical and hands-on skills needed to build devices in their own labs, perform surgeries, recordings and analyze the data. But, UCLA is far away from Munich, which motivated us to organize

Miniscope Methodology Workshop in Munich, that will be given by Miniscope developers group from UCLA (Peyman Golshani, Daniel Aharoni, Tristan Shuman and Denise Cai) and will allow a large number (up to 30 people) of students and postdocs of Munich, and potentially beyond, to get comprehensive training on the methodology as well as to form a network for future collaborative usage and further development of Miniscope methodology. In addition, we optionally plan to order all necessary parts that would allow trainees to build their own miniscope during the course and take it to their lab to start using right away.

Where? The workshop will take place on May 22-23 (full days) at the Biocentrum, Martinsried Campus LMU.

How to participate? Email to miniscope2017@bio.lmu.de, indicate the institution and lab you are affiliated with, your supervisor's name, shortly mention the planned usage of miniscope, whether you and your lab will be interested in building your own miniscope during the workshop. We urge you to apply as soon as possible to help better plan and fund the event, given that number of available places is limited.

Tentative Program of the Workshop

May 22, Monday. 9AM-6PM

Coffee & pastries/Registration

Welcome (Peyman Golshani and Anton Sirota)

Overview & Introductions (Denise Cai)

Imaging principles and miniscope design (Daniel Aharoni)

5-min presentation by participants (with lunch / coffee breaks)

Hands-on training on Soldering and Assembly of miniscopes (Daniel Aharoni, Tristan Shuman, Denise Cai, Nikolas Karalis, Elena Itzkovich)

Group dinner

May 23, Tuesday. 9AM-6PM

Coffee and pastries

Lens implant and baseplate surgeries (Tristan Shuman)

Hands-on stations :

Image acquisition & lens testing (Daniel Aharoni , Tristan Shuman)

In vivo imaging & behavior (Denise Cai, Elena Itzkovich, Nikolas Karalis) with coffee/lunch break

Lunch break

Image processing and analysis (Daniel Aharoni)

Future directions/ Q&A (happy hour, Denise Cai)

Group dinner

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More/Update information: <http://cogneuro.bio.lmu.de/events/miniscope-workshop/index.html>