Miniature 2-Photon Microscopy
Mini2P

PHENOSYS
Technology for Behaviour Analysis

SUMMARY

The Mini2P is a miniature two-photon microscope for fast, high-resolution, multi-plane calcium imaging in freely moving mice. Weighing under 3 g with a highly flexible connection cable, Mini2P enables stable imaging without hindering animal behaviour. Its optimized optical system allows simultaneous recordings of neuronal activity of more than thousand cells in different brain regions.

PhenoSys presents this innovative technology as a turnkey solution, including the miniature 2P microscope with its fiber optics, laser, detection unit and flexible DAQ hardware and software. Get your complete system and have it ready to run within hours.

The Mini2P is a development by Weijian Zong et al. (1) at Kavli Institute in Trondheim and is an open source initiative.

Mini2P microscope with excitation and emission optical fiber and cable harness

Mobile cart with 2-photon laser, detection unit and DAQ interface board and computer

- Head-staged miniature two-photon microscope for calcium imaging in freely moving animals, developed by Zong et al. (1).
- Total solution suite:
  - Ultra-light microscope body (2.4g) with MEMS scanner and µTlens.
  - <100 fs two photon laser (920nm) .
  - Light and flexible fiber optics and cable (2.2 m).
  - Detection unit with high-sensitive GaAsP-type PMTs.
  - DAQ-BNC interface board.
  - DAQ computer with Matlab-based software (ScanImage).
  - All integrated on a mobile trolley.
  - The package comes ready-to-use.
  - Full technical support
- Fast imaging (15 Hz for 256×256 pixels) in a large field of view 500×500 µm^2.
- Multilayer imaging into 240 µm depth.
- Maximum resolution of 1.3 µm x 1.3 µm x 15 µm.
- Set of interchangeable objectives to image e.g. visual cortex, medial entorhinal cortex or hippocampus.
- Simultaneous activity imaging of more than 1,000 neurons in one region or recoding of more than 10,000 cells in adjacent field-of-views.
- Stable high-quality imaging across a wide spectrum of mouse behaviours, including instances such as climbing and jumping.
- Open source based, raw data is fully accessible and the system is individually extendable.

(1) Zong W., Obenhaus HA., Skytoen ER., Eneqvist H., de Jung NL., Vale R., Jorge MR., Moser M., and Moser EI., 2022, Cell 185, 1240-1256

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