# Dr. Marcel Brosch

**Neurotechnology R&D · Neural-Engineering Tool Developer · Data Science**

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## SUMMARY

Neuroscientist and tool developer with 10+ years building instruments that record the brain — wireless miniature microscopes, open-source neural devices, and the data and analysis software around them. Two first-author papers in a leading neural-engineering journal and a faculty prize for best doctoral thesis. Strong in Python, MATLAB, hardware prototyping, and leading interdisciplinary teams. Seeking R&D roles in neurotechnology and biotech where rigorous experimentation, prototyping, and data fluency drive real products.

## EXPERIENCE

### Postdoctoral Researcher

10/2022 – Present

**Aharoni Lab · UCLA · Los Angeles, USA**

- Co-developed **Miniscope Zero**, a fully wireless, single-cell-resolution miniature microscope; led the optics and wireless data link (2.6× the light collection of the UCLA Miniscope v4).
- Enabled multi-hour, tether-free calcium imaging during naturalistic and multi-animal social behaviors that were previously impossible.
- Led a cross-disciplinary team of ~10 (neuroscientists, electrical engineers, computer scientists); owned coordination and conflict management.
- Built the device's data-acquisition (mio) and analysis (CaTune) software; open-source, used across the Miniscope community.

### Doctoral Researcher

04/2016 – 05/2022

**Leibniz Institute for Neurobiology · Magdeburg, Germany**

- First-authored two papers in *J. Neural Engineering*: a 3D-printed optrode microdrive (TetrODrive, <$25) and an optically transparent µECoG array (6.5 µm, ~83% transparent to blue light).
- Identified dopaminergic units in the VTA that deviate from the classical reward-prediction-error model, via optogenetic tagging.
- Applied in vivo optogenetics, electrophysiology, and voltage/calcium imaging; analyzed large datasets in Python & MATLAB; mentored MSc and undergraduate students.

### Graduate Researcher

10/2013 – 03/2016

**Leibniz Institute for Neurobiology · Magdeburg, Germany**

- Revealed how auditory cortex and striatum interact during reversal learning, and characterized distinct behavioral strategies and their neural-network signatures.

## SELECTED PUBLICATIONS

- **Brosch M** et al. TetrODrive: an open-source microdrive. *J. Neural Eng*. 2021.
- **Brosch M** et al. Optically transparent multi-electrode array. *J. Neural Eng*. 2020.
- Aharoni D, **Brosch M**, Sasatani T. Wireless power transfer for neural recording devices. *Proc. SPIE* 2026.

Full list (9) at marcelbrosch.com

## CORE SKILLS

**PROGRAMMING**
Python, MATLAB, C/C++, SQL, Git

**DATA & ML**
scikit-learn, statistics, signal & image processing, data viz

**HARDWARE**
CAD & 3D printing, PCB, optics, embedded firmware, wireless power/data

**NEUROSCIENCE**
1-photon imaging, electrophysiology, optogenetics, surgery

**OTHER**
Team leadership, scientific writing, cross-disciplinary collaboration

## EDUCATION

**Ph.D. Neuroscience — *summa cum laude***
Leibniz Inst. / OvGU Magdeburg · 2022

**M.Sc. Integrative Neuroscience**
OvGU Magdeburg · 2016

**B.Sc. Biology**
FSU Jena · 2013

**Data Analytics Bootcamp**
Ironhack · 2022

## AWARDS

- ★ Faculty Prize — Best Doctoral Thesis (Promotionspreis)
- ★ Best Talk Award, Young Physiologists Symposium 2015
- ★ Peer reviewer, Nature Methods

## LINKS

- › marcelbrosch.com
- › linkedin.com/in/marcel-brosch
- › github.com/miniscope

## LANGUAGES

- German — native
- English — native