Mathias Mahn

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EDUCATION

PhD 11/03/2018   Department of Neurobiology, Weizmann Institute of Science, Israel
Thesis advisor: Ofer Yizhar
Thesis topic: Design and characterization of light-gated proteins for the
investigation of medial prefrontal cortex function

MSc 30/09/2011   LMU Munich, International Graduate School of Systemic Neuroscience, Germany
Thesis advisors: Shimon Marom (Technion) and Lars Kunz (LMU)
Thesis topic: Dynamical Modes in Coupled Large-Scale Networks

BSc 01/08/2009   Department of Biology, University of Constance, Germany

PROFESSIONAL EXPERIENCE

2023-   Project Lead - Ambizione Fellow, Department of Neurobiology, Friedrich Miescher Institute
for Biomedical Research, Basel, Switzerland.

2018-2022   Postdoctoral fellow with Andreas Lüthi, Department of Neurobiology, Friedrich Miescher
Institute for Biomedical Research, Basel, Switzerland.

TEACHING ACTIVITIES

2021   Instructor - Cajal Course: Optogenetics, chemogenetics and biosensors for cellular and
circuit neuroscience

2019   Instructor - Cajal Course: Biosensors and actuators for cellular and systems neuroscience

Speaker – Nencki Institute Open Lab – Ephys and Optogenetics Workshop

2014   Instructor, Methods in Neuroscience Lab course, module: Whole-cell patch-clamp recording
in primary neuronal cultures, Weizmann Institute of Science, Rehovot, Israel.

2010-2011   Tutor, Fundamentals in Neuroscience, LMU Munich, Germany

2007-2008   Tutor, Mathematics for biologists, University of Constance, Germany

INSTITUTIONAL RESPONSIBILITIES

2019-today Postdoc representative, FMI, Basel, Switzerland.

2017-2018   Organizing committee, students-invited lecture series in brain sciences, Weizmann Institute
of Science, Rehovot, Israel

PRIZES AND AWARDS

2018 Giora Yoel Yashinski Memorial Prize for outstanding PhD thesis, awarded by the Feinberg Graduate School, Weizmann Institute of Science

2017 Computational and Systems Neuroscience travel grant

2016 FENS Young Investigator Training Program

FENS and IBRO-PERC stipend for attending TENS

RECEIVED FUNDING

2023 SNSF Ambizione grant

2021 Marie Skłodowska-Curie Actions Individual Fellowship (MSCA-IF)

2019 European Molecular Biology Organization Long-Term Fellowship (EMBO-LTF)

2011 Technion Scholarship during Master Thesis Research

PROSA LMU Scholarship of the DAAD & State of Bavaria. Declined in favor of the Technion scholarship

ADVANCED COURSEWORK

2022 LTK Module 2 Animal Experiment Study Director

2021 EMBO Laboratory Leadership course

2016 FENS Young Investigator Training Program 2016 - research stay with Jakob B. Sørensen, Department of Neuroscience and Pharmacology, University of Copenhagen, Copenhagen, Denmark

2016 Transylvanian Experimental Neuroscience Summer School (TENSS), Cluj-Napoca, Romania

2013 ELSC International School: Intracellular In-vivo Recording, Eilat, Israel

2012 FENS-IBRO Winter School: Brain Dynamics and Dynamics of Brain Disease, Obergurgl, Austria

2011 Convergent Science Network of biomimetic and biohybrid systems School on Neurophysiology Techniques: Advanced Techniques for Neuronal Networks Investigation and Brain - Machine Interfacing, Padua, Italy

PATENTS

2021 Yizhar O, **Mahn M**. Bistable type II opsins and uses thereof. Patent number: US20210403518A1

SELECTED PUBLICATIONS

2022   d'Aquin S, Szonyi A, **Mahn M,** Krabbe S, Gründemann J, & Lüthi A.
Compartmentalized dendritic plasticity during associative learning
Science, 2022, 376, eabf7052. https://doi.org/10.1126/science.abf7052

2021   Hagihara KM*, Bukalo O*, Zeller M, Aksoy-Aksel A, Karalis N, Limoges A, Rigg T, Campbell
T, Mendez A, Weinholtz C, **Mahn M**, Zweifel LS, Palmiter RD, Ehrlich I, Lüthi A[#], & Holmes
A[#]. Intercalated amygdala clusters orchestrate a switch in fear state. Nature 594, 403–407 (2021).
https://doi.org/10.1038/s41586-021-03593-1. *equal contribution; [#]corresponding author.

2021   **Mahn M*,** Saraf-Sinik I*, Patil P*, Pulin M*, Bitton E, Karalis N, Bruentgens F, Palgi S, Gat A,
Dine J, Wietek J, Davidi I, Levy R, Litvin A, Zhou F, Sauter K, Soba P, Schmitz D, Lüthi A, Rost
BR, Wiegert JS, Yizhar O, Efficient optogenetic silencing of neurotransmitter release with a
mosquito rhodopsin. Neuron 109, 1621-1635 (2021), https://doi.org/10.1016/j.neuron.2021.03.013
*equal contribution

2018   **Mahn M*[#]**, Gibor L*, Patil P, Cohen-Kashi Malina K, Oring S, Printz Y, Levy R, Lampl I,
Yizhar O[#], High-efficiency optogenetic silencing with soma-targeted anion-conducting
Channelrhodopsins. Nat Commun. 2018 Oct 8;9(1):4125. https://doi.org/10.1038/s41467-018-
06511-8 *equal contribution; [#]corresponding author.

2016   **Mahn M**, Prigge M, Ron S, Levy R & Yizhar O, Biophysical constraints of optogenetic inhibition
at presynaptic terminals. Nat. Neurosci. 19, 554556 (2016). https://doi.org/10.1038/nn.4266

REVIEWS AND BOOK CHAPTERS

2022   Authors listed in alphabetical order: Emiliani V, Entcheva E, Hedrich R, Hegemann P, Konrad
KR, Lüscher C, **Mahn M**, Pan Z-H, Sims RR, Vierock J, & Yizhar O. Optogenetics for light
control of biological systems. Nat Rev Methods Primers 2, 55 (2022).
https://doi.org/10.1038/s43586-022-00136-4

2020   **Mahn M**, Klavir O & Yizhar O. Optogenetic modulation of neural circuits. Book Chapter In:
Handbook of Neurophotonics. CRC Press (2020), eBook ISBN: 9780429194702,
https://doi.org/10.1201/9780429194702

2017   Wiegert JS, **Mahn M**, Prigge M, Printz Y & Yizhar O. Silencing neurons: tools, applications and
experimental constraints. Neuron 95, 504-529 (2017),
https://doi.org/10.1016/j.neuron.2017.06.050

2014   **Mahn M**, Ron S & Yizhar O, Viral vector-based techniques for optogenetic modulation in vivo.
289-310 (2014). https://doi.org/10.1007/978-1-62703-610-8_15