

Dr. Tobias Marc Leva

POSTDOCTORAL RESEARCHER

Contact

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Education

Humboldt University, Berlin
May 2017 – Feb. 2024
Dr. rer. nat. Neuroscience
Magna Cum laude

neue fische Gmbh
Sep. 2023 – Jan. 2024
Data Scientist

Goethe University, Frankfurt
Oct. 2009 – March 2015
Diploma Biochemistry
Grade: 1.1

Hard Skills

Python
Time series analysis
Statistics
Data visualization
Machine learning
Neural networks
Code optimization
Version Control

Database systems
Image processing

Hardware/software -
interfacing
CAD
3D printing
Laser-cutting

Soft Skills

Analytical thinking
Problem-solving
Excellent communication
German, English
Project management
Team player
Teaching, Mentoring

Profile

I am a neuroscientist with a strong background in programming, data analysis, and biophysical chemistry. I am deeply fascinated by cutting-edge technology and state-of-the-art analytical methods. I am particularly drawn to projects that explore complex relationships and uncover new insights, aiming to continually expand the frontiers of what is possible. My academic journey and professional experiences have cultivated strong project management, problem-solving, and analytical skills, along with excellent verbal and written communication abilities. I am committed to collaborative teamwork and thrive in dynamic, innovative environments where I am eager to apply my expertise.

Current Position

Postdoctoral Researcher Neural Circuits and Behavior, MDC Berlin

Neuroscience Research Follow-up on the PhD project to investigate the existence and function of potentially two thalamocortical processing streams for temperature information via pathway-specific neural inactivation during a thermal perception task.

Data Analysis and Code Accessibility Quantitative analysis of behavior using custom Python code, along with the development of code libraries for easy access and use by lab members and the broader scientific community.

Professional Experience

May 2017 - February 2024

Doctoral Student, Neural Circuits and Behavior, MDC Berlin

Neuroscience Research I uncovered a multi-faceted thalamic temperature representation with location-specific differences in encoding motifs and anatomical connectivity with temperature-sensitive cortical regions. This work demonstrated the thalamus's crucial role in thermal perception.

Hardware Development I engineered hardware devices from scratch, including an advanced electrophysiological recording rig for high-density extracellular probes (Neuropixel, IMEC). This setup enabled me to record the activity of approximately 15,000 neurons from precisely defined thalamic positions.

Software and Data Analysis I analyzed the recorded neural activity profiles using a custom Python-based preprocessing analysis pipeline, leveraging all major libraries for time series and statistical analysis, as well as 2D/3D data visualization.

Publications Synthesized and published scientific findings in multiple neuroscience journals.

Fellowship Acquisition Secured independent funding for three years.

Extracurricular Activities Taught 'Data Analysis in Python' as part of a Medical Neuroscience master's curriculum, mentored over 30 master's students across two terms. Supervised PhD and bachelor students on several month-long projects. Organized and initiated a lecture series on systems neuroscience and networking events.

Teaching

Einstein Center for
Neuroscience, Berlin

2020 - 2022

'Data analysis in Python'

Goethe University, Frankfurt
2013

Institute for Biochemistry
'Principles of metabolism'

2012

Institute for Biophysical
Chemistry
'Kinetics and electrostatics'

Fellowship

2016

'NeuroCure' PhD Fellowship

Publications

2024

The spatial representation of
temperature in the thalamus.
bioRxiv

The spatial investigation of
temperature across the thalamus.
PhD Thesis

2023

Thermosensory thalamus:
parallel processing across
model organisms. Frontiers in
Neuroscience

2022

Brain-wide connectivity map
of mouse thermosensory
cortices. Cerebral cortex

Invited Talks

2022

Gordons Research Confer-
ence, Lucca
'Thalamocortical Interactions'

2022

35th Annual Barrels Meeting
La Jolla

May 2016 - October 2016

Research Assistant, Sensory Systems & Behaviour, CRG Barcelona

Neuroscience Research I conducted experiments investigating the causal relationship between artificial neural activation (Optogenetics) and locomotion patterns in various Drosophila larvae strains expressing ChR2 in distinct sensory neurons. My work included routine lab tasks such as micro-dissections of larvae brains, followed by confocal and two-photon microscopy of histologically stained tissue.

Hardware and Software Locomotion was recorded in real-time using high-speed video recordings, tracking was performed using custom mat-lab software.

August 2015 - February 2016

Management 'Badias' Restaurant, Schirn Kunsthalle, Frankfurt

Project Management As one of the initiators of 'Badias' restaurant in Frankfurt, I was responsible for team coordination, time management, budgeting, and developing business goals. I implemented efficient workflows that contributed to a successful opening and continue to support the restaurant's ongoing success.

July 2014 - March 2015

Diploma Student, Max- Planck Institute for Biophysics, Frankfurt

Biophysical Research I designed and performed experiments to functionally incorporate a carotenoids into transmembrane proteins (rhodopsin) in transfected human cell cultures, with the aim of creating a functional antenna complex. These structures have the potential to serve as genetically encoded membrane voltage sensors with extremely fast kinetics. My work included routine biophysical, genetic, microbiological, and biochemical lab tasks.

Hardware Development To demonstrate the existence and functionality of the antenna complex, I constructed a setup for in-vitro patch-clamp recordings. I conducted intracellular electrophysiology and action-spectra recordings of the transfected human cell cultures.

July 2013 - November 2013

Research Assistant, MPI Human Cognitive Brain Sciences, Leipzig

Cognitive neuroscience research Worked as a part of a team for a large-scale study on the effects of mental training (mindfulness and loving-kindness meditation) on higher brain functions.

Human Testing Performed behavioral experiments with humans investigating cognitive functions like self-awareness, compassion emotional control, stress resilience. Organized and managed weekly testing and training sessions of experimental groups (+40 people) over several months.