

Moritz Schäfer

curriculum vitæ

Personal data

Date of birth 06th of January 1992
Place of birth Tübingen, Germany
Nationality german

Studies/Titles

Postdoctoral Studies

2022-02 to now at Medical University of Vienna
Advisor Christoph Bock
2022-01 to 2022-02 at CeMM Center for Molecular Medicine Vienna
Advisor Christoph Bock

Doctor of Sciences (Dr. sc. ETH Zürich)

2018-09 to 2021-11 Doctoral studies
University ETH Zurich
Department Biology
PhD program Systems Biology
Supervisor Prof. Dr. Constance Ciaudo
2021-11-05 PhD thesis defense
2022-04-13 PhD awarded
Title One layer at a time – disentangling canonical and noncanonical roles of the RNAi pathway in embryonic stem cells

Master of Science (M. Sc.)

2015-09 to 2018-05 at Technical University Berlin
Subject Computer Science
Grade 1.1
2018-05-10 Master's thesis
Title PAVOOC – An AI integrated web-app for CRISPR target recommendation
Grade 1.0
Supervisor Prof. Dr. Manfred Opper
Assistant Supervisor Dr. Andreas Steffen

Bachelor of Science (B. Sc.)

2012-09 to 2016-08 at Technical University Berlin
Subject Computer Science
Grade 1.9

1090 Vienna, Austria

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2013-09 to 2014-02 at University of La Laguna, Spain
 2015-09 to 2016-05 at Jiao Tong University Shanghai
 2016-05-17 Bachelor's thesis at Jiao Tong University
 Title *Intercultural comparison of emotion recognition with EEG - A first attempt*
 Grade 1.3
 Supervisor Prof. Dr. Bao Liang Lu (SJTU Shanghai)
 Prof. Dr. Benjamin Blankertz (TU Berlin)

Education

2008-09 to 2011-06 at Gewerbliche Schule Tübingen, Germany
 2011-06-07 German Abitur with honors
 Grade 1.2

Publications

- 2024 **Moritz Schaefer***, Stephan Reichl*, Rob ter Horst*, Adele M. Nicolas, Thomas Krausgruber, Francesco Piras, Peter Stepper, Christoph Bock, and Matthias Samwald. GPT-4 as a biomedical simulator. *Computers in Biology and Medicine*, volume 178, page 108796, 2024.
- 2024 **Moritz Schaefer***, Peter Peneder*, Daniel Malzl, Mihaela Peycheva, Jake Burton, Anna Hakobyan, Varun Sharma, Thomas Krausgruber, Jörg Menche, Eleni M Tomazou, and Christoph Bock. Multimodal learning of transcriptomes and text enables interactive single-cell RNA-seq data exploration with natural-language chats. *bioRxiv*, page 2024.10.15.618501, October 2024.
- 2024 **Moritz Schaefer***, Peter Peneder*, Daniel Malzl, Anna Hakobyan, Varun S. Sharma, Thomas Krausgruber, Jörg Menche, Eleni Tomazou, and Christoph Bock. Joint embedding of transcriptomes and text enables interactive single-cell RNA-seq data exploration via natural language. In *ICLR 2024 Workshop on Machine Learning for Genomics Explorations*, 2024.
- 2022 Madlen Müller*, **Moritz Schaefer***, Tara Fähr, Daniel Spies, Victoria Hermes, Richard Patryk Ngondo, Rodrigo Peña-Hernández, Raffaella Santoro, and Constance Ciaudo. Argonaute proteins regulate a specific network of genes through klf4 in mouse embryonic stem cells. *Stem Cell Reports*, volume 17, pages 1070–1080, 2022.
- 2022 Madlen Müller, Tara Fähr, **Moritz Schaefer**, Victoria Hermes, Janina Luitz, Patrick Stalder, Rajika Arora, Richard Patryk Ngondo, and Constance Ciaudo. Ago1 regulates pericentromeric regions in mouse embryonic stem cells. *Life Science Alliance*, volume 5, page e202101277, 2022.
- 2022 Marco Grodzki, Andrew P. Bluhm, **Moritz Schaefer**, Abderrahmane Tagmount, Max Russo, Amin Sobh, Roya Rafiee, Chris D. Vulpe, Stephanie M. Karst, and Michael H. Norris. Genome-scale CRISPR screens identify host factors that promote human coronavirus infection. *Genome Medicine*, volume 14, page 10, 2022.

- 2021 **Moritz Schaefer***, Amena Nabih*, Daniel Spies, Maxime Bodak, Harry Wischniewski, Patrick Stalder, Richard Patryk Ngondo, Luz Angelica Liechti, Tatjana Sajic, Ruedi Aebersold, David Gatfield, and Constance Ciaudo. Integrative Analysis Allows a Global and Precise Identification of Functional miRNA Target Genes in mESCs. *bioRxiv (in revision)*, 2021.
- 2020 **Moritz Schaefer** and Constance Ciaudo. Prediction of the miRNA Interactome - Established Methods and Upcoming Perspectives. *Computational and Structural Biotechnology Journal*, volume 18, pages 548–557, 2020.
- 2018 **Moritz Schaefer**, Djork-Arne Clevert, Bertram Weiss, and Andreas Steffen. PAVOOC: Designing CRISPR sgRNAs using 3D Protein Structures and Functional Domain Annotations. *Bioinformatics*, 2018.
- 2017 Si-Yuan Wu, **Moritz Schaefer**, Wei-Long Zheng, Bao-Liang Lu, and Hiroshi Yokoi. Neural patterns between Chinese and Germans for EEG-based emotion recognition. *8th International IEEE/EMBS Conference on Neural Engineering (NER)*, 2017.

Talks Conference contributions

- 2024-12-29 Talk @ 38C3 Chaos Communication Congress
- 2024-11-15 Talk @ CSHL Biological Data Science Meeting
- 2024-10-15 Invited Talk @ Max Delbrück Center Berlin (Data Science AI Lecture Series)
- 2024-08-30 Invited Talk @ AstraZeneca Applied Data Science Seminar
- 2024-07-08 Invited Talk @ Virtual workshop on Cell Perturbation Modeling
- 2024-05-11 Poster "You can talk to cells now" (spotlight) @ ICLR 2024 MLGenX workshop
- 2024-04-26 Invited Talk @ EU-LIFE Utopia Conference
- 2024-04-16 Talk @ Postdoc Networking day Vienna
- 2023-02-27 Invited Talk "Diffusion Models for Targeted Antibody Design" @ C'est la Wien PhD workshop
- 2023-01-26 "Applying Diffusion Models to Protein Design" @ 47th Deep Learning Vienna meetup
- 2022-03 to today MedUni AI Institute seminar chair
- 2022-09-09 CeMM research institute seminar chair
- 2022-04-26 "Design of arbitrary binding domains for versatile chimeric antigen receptors" Talk @ Postdoc Networking day Vienna
- 2020-11-24 "Scientists and Society - let's talk!" Panel discussion moderation at OILS Zurich
- 2019-01-25 "Uncovering the roles of RNA interference proteins in mouse embryonic stem cells" Poster at Swiss RNA workshop in Bern

Research projects (undergrad)

- 2016-10 to 2017-02 Generation of arbitrary-sized fragments for *ab initio* protein structure prediction in Rosetta
- 2014-10 to 2015-05 Development of a reliable multi-channel RSS measurement tool for Wireless Sensor Networks
- 2010-09 to 2011-04 GPGPU-accelerated ray tracing with OpenCL at "Jugend forscht"

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2009-09 to 2010-04 Development of an ultrasonic range analyzer for 3D localization at "Jugend forscht"

Scholarships

2016-10 to 2018-06 Deutschlandstipendium supported by General Electrics Germany

2015-10 to 2016-10 Deutschlandstipendium supported by Carmeq GmbH

Supervision & Teaching

2023-12 to now PhD student supervision "AI-driven enhancer design"

2023-12-03 Guest lecture at TU Vienna "Generative AI as a driver for biotechnology"

2022-06 to 2023-01 Master thesis "Deep Learning-driven antibody design"

2022-04 to 2024-12 "Machine Learning" lecture and seminars in MSc. program "Molecular Precision Medicine" at MedUni Vienna

Social & representative commitment

2024 MedUni Vienna PhD application screening

2022-10 to 2024-12 ELLIS PhD application screening

2024-01 to 2025-02 EU-LIFE Postdoc Working Group

2023-03 to 2025-01 Postdoc representative (CeMM)

2022-03 to today MedUni AI Institute seminar coordinator

2022 & 2024 Long Night of Research Vienna - CeMM representation

2019-02 to 2021-05 Academic staff representation at ETH Zurich (Treasurer, event manager, representative at ETH Biology Departments Conference)

2020-10 to 2021-03 OILS (Open Innovation in Life Sciences) - Organization of panel discussions

- Scientists and Society - let's talk! - A panel discussion about science communication
- Open up for Open Science - A panel discussion about the state of Open Science in Zürich

Others

2019-10 to 2021-10 Organization of Systems Biology PhD program retreat

2014 to today Contribution to various open source software projects

2011-08 to 2012-09 Volunteering at school/nursery in Bolivia