Leif G Sieben

Seeweg 12, CH-6404 Greppen I +41 79 893 28 64
leif.sieben@outlook.com I linkedin.com/in/leif7/ I Swiss, German

Education

Master Thesis, Broad Institute/ Massachusetts Institute of Technology I Oct 2024 – Jun 2025
Active Machine Learning for the Discovery of Broad Spectrum Antibiotics

- Planned, developed, and trained a machine learning model that led to the discovery of a new antibiotic successful in preclinical mouse models.
- Using large data sets to make decisions in the drug discovery process and lead the antibiotics develpoment project.

Master of Science, Interdisciplinary Sciences, ETH Zurich I Sep 2023 – Oct 2025
Major in Chemistry and Computer Science I GPA expected Q4 2025

- Courses in chemistry, big data, machine learning, drug discovery, computational biology. Interdisciplinary research work next to studies.

Bachelor of Science, Interdisciplinary Sciences, ETH Zurich I Sep 2020 – Sep 2023
Major in Chemistry and Biology I *247/180 ECTS* I *GPA = 5.23/6*

- Course work covering biology, chemistry, and physics.
- Actively involved in research since second semester including wet lab & computational work.

Federal Matura, Kantonsschule Alpenquai, Lucerne I Jun 2014 – May 2020
Bilingual Matura German/English I *GPA = 5.89/6*

Work Experience

Student Researcher, Broad Institute / MIT I Oct 2024 – Jun 2025
Working on deep learning models and high throughput screening methods to discover novel antibiotics.

Teaching Assistant, Department of Chemistry, ETH Zurich I Feb 2022 – Jun 2024
Preparing and teaching a weekly exercise class for 20 to 40 students.

Student Partner, Giant Ventures, remote I Dec 2024 – Dec 2025
Doing background research, market analysis, scouting talent and discussing investment thesis.

Internship, Roche, Penzberg, Germany I Aug 2018 – Sep 2018
Internship with multiple teams in the Research and Development department

Skills

Languages: German (native), English (C2), French (C1).

Programming: python, lightning, torch, pandas, raytune, optuna, SQL, Jsoniq, C++, MATLAB, R.

Awards and Fellowships

Harvard Biotech Club Bioventure Life Sciences course taught by leading VC professionals in the Boston area. Taught by the Harvard Biotech Club and the Harvard Griffin GSAS Business Club.

Y Combinator Startup School Invited participant at the YC AI Startup School.

Excellence Fellowship from the Werner Siemens foundation awarded to exceptional students with interdisciplinary mind and strong sense of responsibility.

First Place ETH hackathon to find off-label treatments for a 5-year-old patient using real-world genomics data.

Fellow of the Swiss Study Foundation.

Speaker at TEDx Youth Basel.

First Place, National Swiss Science Competition.

Extracurriculars

- **Organizer** of a two-day seminar about alchemy for the Swiss study foundation.
- **Contributing Writer** at the ETH student newspaper with a regular column on the philosophy of science.
- **Research Fellow** at the student-led geopolitics and security think tank EPIS working on biosecurity & climate risks.
- **International Chemistry Olympiad**, volunteer and guide for of international teams of students 18–20 years old.
- **Other hobbies**: Piano, sailing, swimming, reading, writing.

Publications

1. Aarti Krishnan, Melis N. Anahtar, Jacqueline A. Valeri, Wengong Jin, Nina M. Donghia, Leif Sieben, Andreas Luttens, Yu Zhang, Majed Modaresi, ..., Connor Coley, Felix Wong, and James J. Collins A generative deep learning approach to de novo antibiotic design. ***Cell***, 2025, in press.

2. Yoel Zimmermann, Leif Sieben, Henrik Seng, Philipp Pestlin, Franz Görlich.
A Chemical Language Model for Molecular Taste Prediction. ***npj Science of Food***, 2025.

3. Fan Li, Leif Sieben, Johannes Büchler, Pascal Poc, Matej Vizovišek, Michael G. Christiansen, Simone Schuerle. A fluidic device for continuous on-line inductive sensing of proteolytic cleavages. ***Lab on a Chip***, 2024.

4. Lionel Wettstein, Julia Specht, Vera Kesselring, Leif Sieben, Yanlin Pan, Daniel Käch, Dominika Baster, Frank Krumeich, Mario El Kazzi, Máté J. Bezdek. A Dye-Sensitized Sensor for Oxygen Detection under Visible Light. ***Advanced Science***, 2024.

5. Lea Marti, Ioannis Gr. Pagonakis, Leif Sieben, Marthe Millen, Jérémy Genoud, JeanPhilippe Hogge, Alexander B. Barnes. Electron Optics Simulation in the Overall Gyrotron Geometry. ***Physics of Plasmas***, 2024.

6. Leif Sieben, Ioannis Gr. Pagonakis, Jérémy Genoud, Jean-Philippe Hogge, Alexander B. Barnes. A model of electron beam neutralization for gyrotron simulations. **Physics of Plasmas**, 2024.