

# CHRISTOPHER K. WEINGARTEN

Researcher Biotechnology

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## SUMMARY

Recently completed my master's thesis on the design of photocatalytic proteins in the group of Prof. Sven Panke at the Biosystems Science and Engineering (D-BSSE) department at ETH in Basel. I would like to continue working in protein sciences and computational biology, preferably in biocatalysis or material development. With a strong background in biology plus computational methods in applied biosciences, I believe I could quickly contribute to a research team working in structural biology or protein engineering, for example.


## SKILLS


**Laboratory Experience** Protein Expression & Purification, Cloning, DNA & RNA Sequencing, Activity & Binding Assays, Bacterial & Mammalian cell culture, Flow Cytometry, Light & Fluorescence Microscopy, Spectroscopy (NIR, IR, UV/VIS, CD), ITC, cryo-EM, XRPD

**Languages** Python, Matlab, R, Julia, SQL, Unix

**Software** Rosetta, AlphaFold2, ProteinMPNN, AmberMD, GROMACS, SimBiology, PyTorch

## EDUCATION

09/2021-04/2024 **Masters in Biotechnology — Swiss Federal Institute of Technology, Basel**  **GPA: 5.6/6.0**  
Specialized Master's program in biotechnology and synthetic biology. *Relevant Courses:*  
• Master Thesis: 6.0/6.0 • Scientific Computing: 5.75/6.0  
• Machine Learning: 5.0/6.0 • Microbial Biotechnology: 5.5/6.0

09/2018-09/2021 **Bachelors in Biology — Swiss Federal Institute of Technology, Zurich**  **GPA: 5.4/6.0**  
Studies in biology with a focus in biological chemistry. *Relevant Courses:*  
• Macromolecular Structure Determination: 6.0/6.0 • Intro to Bioinformatics: 5.5/6.0  
• Applied Machine Learning: 6.0/6.0 • Proteins and Lipids: 5.25/6.0

## EXPERIENCE


11/2022-05/2023 **Intern Pharmaceutical Development — Novartis AG**  
• Extensive stability testing on oral drug products in development.  
• Development of a method for early risk assessment of salt disproportionation in oral drug products.


09/2022-11/2022 **Histology Technician Assistant — University Hospital Basel**  
• Preparation, staining, and analysis of tissue samples in the histopathology department.  
• Organization of histological samples in the university hospital archive.


06/2021-08/2021 **Research Assistant — Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)**  
• Characterization of insect samples for overall insect biomass estimation.  
• Assisting in field projects for insect sample collection.

07/2018-09/2018 **Research Assistant — University Hospital Zurich**  
• Study of the absorption spectra of bilirubin in swine bile samples for correction in NIR-based medical measurement devices.

## PROJECTS

Master Thesis **Computational Design of Functional 2D and 3D Assemblies for Photovoltaic Enzymes**   
• Computational design of 2D protein arrays for protein-based solar cells in Rosetta and *in-silico* screening with molecular dynamics simulations in AmberMD.  
• Computational design of protein scaffolds using AlphaFold2 and ProteinMPNN for structural determination of small proteins using cryo-EM.  
• Expression and biophysical characterization of designed variants for small molecule binding as well as nanostructure assembly.

Course Work **Mammalian Gene Circuits**   
• Implementation of a positive feedback-loop sensor gene circuit in a HEK293 cell line with fluorescent readout.  
• Fluorescent analysis of the positive feedback-loop through flow cytometry and comparison to an open-loop system and simulation data.

Course Work **Structural Analysis of  $\beta$ -Galactosidase with Single Particle Cryo-EM**   
• Single-particle cryo-EM sample preparation and data processing in RELION of  $\beta$ -Galactosidase.  
• Model building in COOT and PHENIX and structural analysis of the produced model.

## COMMUNITY INVOLVEMENT

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04/2022-10/2023 **Board Member for Events — *Biotechnology Student Association at ETH (BSA)***

- Organization and hosting of events in the department, including a bi-weekly after-work pint.
- Management of student organization's inventory and event budget.

09/2019-09/2021 **Spokesperson & Board Member for Student Affairs — *Biology Student Association at ETH (VeBiS)***

- Maintaining communication between students and professors by organizing feedback and representing student interests in department-wide meetings.
- Organization of exam preparation courses for students.

## REFERENCES

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**Dr. Adrian Bunzel:** [adrian.bunzel@bsse.ethz.ch](mailto:adrian.bunzel@bsse.ethz.ch) 

**Aliénor Hagenmuller:** [alienor.hagenmuller@novartis.com](mailto:alienor.hagenmuller@novartis.com) 

## ADDITIONAL

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**Languages:** English (native), German (native), French (B1)

**Citizenship:** USA, Switzerland