

Elisa Billard

Master Student in Life Science Engineering at EPFL - [Linkedin](#)

PROFILE

I am a master student in Life Science Engineering at EPFL, specialised in Biological Data Science. I aim to integrate my knowledge in oncology or neuroscience with my programming skills to enhance biomedical research.



CURRENT ACTIVITY

Research Student in Pietro Lio's Computer Lab, Cambridge University

CAMBRIDGE, UK — October 2025 - March 2026

Master thesis on deep learning for cancer diagnosis using spectral pathology (IR & Raman), developing CycleGAN-based virtual staining models and classification pipelines for tumor vs. normal discrimination from hyperspectral data. Co-supervised by Prof. Charlotte Bunne at EPFL.

PAST EXPERIENCES

Computational Biology Intern, Orakl Oncology

PARIS, FR — February 2025 - July 2025

Analyzed 150+ patient-derived organoids and improved biomarker identification pipeline (driver mutations, transcriptomic signatures) using WES and RNA-seq data.

Research Student in the Bitbol Lab, EPFL

LAUSANNE, CH — September 2024 - January 2025

Fine tuning the protein language model ProtMamba to predict the functionality of a new protein.

Research Student in the Schwarz Lab, Institut for Computational Cancer Biology

COLOGNE, DE — March 2023 - July 2023

Computational research in cancer evolution and tumor heterogeneity surrounding the automated detection of closely related clones in phylogenetic trees of cancer evolution.

Intern at AstraZeneca Site Management and Monitoring Oncology

HAMBURG, DE — Sept 2022 - Jan 2023

Analysis of AstraZeneca's work with hospitals and clinics to conduct clinical trials in Oncology, with the goal of identifying the challenges faced by Doctors and Study Nurses.

Intern in the van der Goot Lab of Cell and Membrane Biology at EPFL

LAUSANNE — Feb 2022

Bachelor's project in the van der Goot laboratory, researching about 2 proteins, TMED2 and TMED10, and their role in the Endoplasmic Reticulum - Golgi communication. Wet lab experiments performed.

Student Assistant for the course Applied Data Analysis, EPFL — 2024 - 2025

English and Math teacher for students in apprentice at GPA — 2022 - 2023

Active Member of Polyquity promoting equality on campus — 2021 - 2022

EDUCATION

Master in Life Science Engineering at the Ecole Polytechnique Fédérale de Lausanne (EPFL) — 2023 - 2025

Specialisation in Biological Data Science: Machine Learning (grade 5/6), Applied Data Analysis (grade 5.75/6), Digital Epidemiology, Genomics and bioinformatics, Bioimage informatics, Biostatistics

Biology courses: Stem cells, Infection biology, Neurodegenerative diseases, Endocrinology

Bachelor (Grade: 5,1/6) in Life Science Engineering at the Ecole Polytechnique Fédérale de Lausanne (EPFL) — 2019 - 2022

Life sciences: biochemistry, organic chemistry, synthetic biology, immuno-engineering, neuroscience, oncology, physiology, genetics & genomics. Engineering and programming: oriented object programming, various languages, machine learning, physics, algebra, statistics & probability

Lycée Français de Zürich (LFZ) — 2016 - 2019

French scientific baccalaureate, grade: 20/20

PAPERS AND GRANTS

- Ganesan, K., **Billard, E.**, Kaufmann, T. L., Strange, C. B., Cwikla, M. C., Altenhoff, A., Dessimoz, C., & Schwarz, R. F. (2025). *PhytClust: efficient and optimal node clustering in phylogenetic trees*. (Soon preprint), a threshold-free algorithm that partitions taxa in phylogenetic trees into monophyletic clusters.
- Karl Zeno Schindler Foundation Research Grant (2025): funded project (12 000 CHF) on deep learning approaches for spectroscopy image analysis under supervision of Prof. Pietro Liò - Cambridge University and Prof. Charlotte Bunne - EPFL.

PROJECTS

- Design of Binder Proteins Targeting PDGFR β With RFdiffusion, ProteinMPNN, and AlphaFold
- Image-based Cell Cycle Phase Classification using Deep Learning in Python (Convolutional Neural Network, Data augmentation, Transfert Learning)
- Digital Epidemiology Website for the surveillance of pollen allergies (Streamlit, Google API)
- Movie data analysis to unravel gender stereotypes in Python (Clustering, Natural Language Processing, Sentiment Analysis, Statistical Analysis) available online: <https://elisabillard.github.io/>
- Google Hackathon in Paris using Gemini for hospital patient record uniformization

PROGRAMMING TOOLS & SKILLS

Python (PyTorch, Scikit-learn), C++, Julia, R, Java, Git, Google Colab, Docker

LANGUAGES

French (native), German (C1), English (C1), Spanish (B1)

HOBBIES

Listening to podcasts, traveling by train