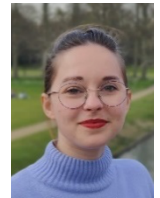


# Mélanie GOULEY

melanie.gouley@bsse.ethz.ch | +33 6 48 77 08 69 | melaniegouley.com | LinkedIn



## PhD Candidate in genetic engineering

### Education

---

2019 - 2022

Strasbourg,  
France

**Trinational Biotechnology Engineering School (ESBS)** - equivalent to M.Sc. in Engineering  
EUCOR Universities of Strasbourg, Freiburg I. Br. and Basel (France, Germany, Switzerland)

Enzymology, Thermodynamics, **Structural biology**, Chemistry, Plant Physiology, Neurobiology, **Genetic engineering**, **Immunology**, **Bioethics**, Finances, Quality, **Statistics**, Molecular modelling, Process engineering, Plant bio-engineering, **Programming**.

2016 - 2019

Caen, France

**Bachelor's degree in Life Sciences, speciality in physiology of organisms**

**Genetics**, Biochemistry, Cellular biology, **Immunology** (in plants and animals), Microbiology, **Cellular signalisation**, Biostatistics, Populations et ecosystems.

### Work experiences

---

02.2023 -

present

Basel,  
Switzerland

**ETH Zurich – PhD Candidate**

**“Precision gene editing and multi-omics profiling of patient-specific variants in human-derived stem cells and neurons”**

Supervised by Prof. Dr. Randall Platt and Prof. Dr. Barbara Treutlein

02-07.2022

Cambridge,  
UK

**Wellcome Trust Sanger Institute – Master's thesis**

**Randomizing gene regulatory regions with prime editing**

Identified interesting enhancer regions by analysing genome-wide **chromatin data sets** and combining the findings with a literature search.

Used **CRISPR prime editing** to insert multiple **recombinase recognition sequences** into enhancer clusters of these genes.

Created cell lines with stable prime editor expression that achieve **> 80% insertion efficiencies** for a loxP site (these lines are now widely used by other people in the lab).

Established **targeted Oxford nanopore sequencing with Cas9 enrichment** in the lab. Collaborated with a team at Imperial college to learn the method.

Presented my work at 2022 International Mammalian Synthetic Biology Conference as a poster.

11-12.2021

Strasbourg,  
France

**Institute of Plants Molecular Biology CNRS – Master's project**

**Insertion of CRISPR/Cas9 prime editing complex into *A. thaliana* targeting AtmtPNPase gene**

**Validated an experimental process** for the insertion of the prime editing complex into plants.

Used Golden Gate and Gateway **cloning methods** for the generation of a binary vector and analysis of Sanger sequencing results.

Performed **bacterial transformations** in *E.coli* and *A. tumefaciens* strains and **plant transformation**.

07-08.2021

Strasbourg,  
France

**TWISTAROMA & PCBIS – Intern in analytic chemistry**

**Analysis of secondary metabolic compounds in serum and in beer by GC-MS and LC-MS**

Led a **project in collaboration** between the TWISTAROMA start-up and the PCBIS academic platform.

Generated a protocol for the **derivation of non-volatile compounds by silylation** (TMS) for GC-MS analysis.

Automated GC-MS samples preparation and analysis with **Gerstel MPS Autosampler**.

**Created a library** recording non-volatile compounds detected in GC-MS after silylation.

Compared compounds detection between **GC-MS and LC-MS**.

06.2021  
Strasbourg,  
France

### EASE - Industrial bioproduction – *Master's project*

#### Optimization of nanobodies production in *Pichia pastoris* (yeast)

Production and **optimization in baffled flasks.**

Production in **3L bioreactor** in a clean room (**GMP Class C**).

Filtration using a **cross-flow filtration** (TFF).

2018 - 2019  
Caen, France

### University of Caen Normandy – *Teaching and Mentoring*

Mentoring 1st year biology's students in different lectures. Weekly supervisions in groups of 4 to 5 students.

Discussing and maintain a regular monitoring, preparing mock-exams.

## Poster presentation

---

M. Gouley, J. Koeppl, L. Parts (2022). "**Randomizing gene regulatory regions using CRISPR/Cas9 Prime editing and the Cre Lox system**". *Poster Session*. Edinburgh, UK – 2022 International Mammalian Synthetic Biology Conference.

## Skills

---

Experimental	<b>Genetic engineering:</b> CRISPR/Cas9 Prime editing, Creation of stable cell line, Recombinases, Golden Gate cloning, Gateway cloning, Long-read sequencing. <b>Molecular biology:</b> PCR, Agarose Gel, Western Blot, DNA extraction, High Sensitivity DNA kit. <b>Cell culture:</b> K562, HAP1, HeLa, iPSCs, Neural differentiation, Transfections, Infection, Electroporation, Immunostaining, FACS, Biosafety Level 2. <b>Chromatography:</b> GC-MS, LC-MS, Ion exchanger (AKTA), Gel filtration.
Softwares	Benchling, ImageJ, FlowJo, IGV, Microsoft Projects, Familiarity with R.
Languages	French (Native), English (Fluent), German (Basic).
References	References available on request.