FRITH (MOLLY) EDBROOKE, MSc

RESEARCH EXPERIENCE

January-July 2024 – M2 internship, Collège de France, François Blanquart

- Modelling antibiotic resistance of *Escherichia coli* across France:
  - I am developing an epidemiological model explaining the stable coexistence of resistant and sensitive strains through geographically heterogeneous antibiotic use-rates.
  - I am fitting the model to data on *E. coli* resistance in isolates from the Ile-de France region, a finer scale of spatial population structuring than has been previously attempted.

January-July 2023 – Ecology and Evolution of Health, Collège de France, Samuel Alizon

- Genomic study of within-host HPV evolution, as part of the PAPCLEAR study:
  - I developed a pipeline to filter, and map reads to genomes detected computationally and experimentally. I called variants, building consensus sequences and comparing within longitudinal sample groups. I then analysed minority variants.
  - I am in the process of writing up my work with a view to publishing.

January-July 2022 – M1 internship, Stroma and Immunity, Institut Curie, Hélène Salmon

- Investigating the role of stromal cells in the microenvironment of non-small cell lung carcinoma:
  - I established and cultured cell lines from patient samples, investigating the effects of substrate stiffness on fibroblastic phenotype and creating spheroids

March-September 2021 – Bachelor's internship, Imperial College London and Natural History Museum London, Alfried Vogler

- Bioinformatic analysis and *de novo* assembly of mitochondrial DNA from bulk, pooled samples of neotropical Coleoptera DNA in the SITE100 project:
  - I carried out meta-assembly of mitochondrial genomes using Geneious and Metassembler. During this analysis, I also used Fastqc, Blast searches and filtering, SPAdes, Ray and IDBA.

June-August 2018 – Imperial College London, Hsi-Cheng Ho & Samraat Pawar

- I devised R code to sort, analyse and display data from various food-webs as part of a project to test theoretical models of the effects of individual foraging strategy on food-web structure and dynamics.
- I conducted a literature search to find new community datasets. Each community comprised information on nodes and the links between them.

EDUCATION

2023-2024 – M2 Interdisciplinary Masters in Life Sciences, École Normale Supérieure – Qlife Fellowship

- Courses: Functional genomic analysis: transcriptomics (19.5) & epigenomics (17); environmental genomics for microbial ecology (16); quantitative viral dynamics (13); frontiers in microbial systems (18); theoretical systems biology (17); cellular ecosystems; advanced data analysis; QLife Winter School, quantitative seascape ecology of marine plankton
- Further developed literature-based research, written and oral communication skills while deepening my understanding of bioinformatics and quantitative biology

2021-2022 – M1 Interdisciplinary Masters in Life Sciences, École Normale Supérieure – Qlife Fellowship

- Courses: computational biology (16); data analysis (16); molecular cancer biology; cell biology: traffic, motility, and biophysics; biology of ecological systems; microbial populations

- Internship, 6 months (15.5)

2016-2021 – BSc Biological Sciences with German for Science (1st class hons. 270 ECTS), Imperial College London

- Elective modules: systems neuroscience; stem cells, regeneration, and ageing; vertebrate form and evolution; developmental biology; immunology; and behavioural ecology
- Additional study of German modules shows excellent organisation and time-management

Awards

2020/21 – Sir Arthur Acland Prize for Excellence in Languages

2016-2019 – Dean's List years 1 and 2 (top 10% of cohort)

2019-2020 – ERASMUS, Ruprecht-Karls-Universität Heidelberg

- 'Infectious Diseases' master course and classes on programming for bioinformatics; ecotoxicology; plant geography; astronomy for non-physicists; German art and literature in war and theatre
- 10000-word essay on feminism and sexism in Germany today, developing written communication skills in German and learning about sociological research
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OTHER PROFESSIONAL EXPERIENCE

November-February 2022/23 – Online tutoring in GCSE maths and science for disadvantaged students

July-August 2020 – Heidelberg Schule für Kunst, 69221 Heidelberg

December-January 2018/19 – Sales assistant, John Lewis & Partners, SW1W 8EL

- Delivered and maintained excellent customer service and communication in a fast paced and high-pressure environment

2017-2019 – Private tutor in maths and biology

July 2016-December 2018 – Sales assistant, waiting and bar work

SKILLS

- **Languages**: English native; French B2; German C1 (CEFR level) and scientific translation to English
- **Coding** in R, Bash, Python, Julia and LaTeX. Using Snakemake and Conda for reproducible pipelines.
- Wet **lab skills** in cell culture, microscopy, molecular biology, genetics, immunology, and dissection
- Clean UK **driving licence**

In my spare time, I enjoy singing in a choir, climbing and I am teaching myself the guitar!