Martina Oliver Huidobro, PhD

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Computational Biologist

 martinaoliver 🌐 Spanish, Argentinian 📍 London, UK

EDUCATION

PhD in Mathematical and Computational Biology
Imperial College, Centre for Integrative Systems and Bioinformatics

📅 Oct 2020 – April 2024   🏆 CDT Scholarship, PhD

Thesis: "Data-driven modelling of robust Turing patterns in synthetic biofilms 🔗 "

- Developed and validated models of gene expression using mathematical tools such as PDE numerical solvers and stability analysis.
- Used machine learning techniques: Bayesian inference and regression methods for parameter fitting; neural networks for image clustering; PCA and t-SNE for understanding the parameter space; and MCMC for system optimisation.
- Generated and analysed large biological datasets using High Performance Computing clusters and multi-threading, and built SQL databases to store and query results.
- Collaborated with experimental biologists to validate models and guide experimental design for the production of novel biomaterials.
- Speaker at 4 international conferences in mathematical biology and received 2 best poster awards (over 200 candidates).
- Published in 3 high-impact scientific journals: 🔗 [1] Cell Systems [2] Journal of microbial biotech. [3] PLOS Computational Biology (in review) [4] Spiral PhD Thesis and peer reviewed other publications.

MRes in Systems and Synthetic Biology
Imperial College London, CDT BioDesign Engineering

📅 Oct 2019 – Sept 2020   🏆 CDT Scholarship, Distinction 75%

Relevant courses: Maths, Informatics and Statistics for Computational Biology (SysMIC); Introduction to machine learning (Yandex School of Data Science); Differential equations (Boston University).

Thesis: "High throughput study and optimization of synthetic gene networks for pattern formation in tissue engineering."

BSc in Biochemistry and Bioinformatics
Imperial College London, Life Sciences Department

📅 Oct 2016 – July 2019   🏆 First Class 71%

Core modules: Bioinformatics, Integrative Systems Biology, Metabolic Network Engineering.

Thesis: "Molecular dynamics simulations of α-synuclein in Parkinson's disease." Predicted protein structure and dynamics using GROMACS software and pyMOL visualization.

Lit Review: "Multiscale modelling of Tumour-Immune interactions."

European Baccalaureate – High school degree
European School of Brussels I

📅 2008-2016   🏆 Highest grade of cohort 91.6%

Core modules: Advanced Mathematics, Physics, Biology, Chemistry.

ADDITIONAL COURSES

- **Genomic Data Science Specialization** - Johns Hopkins University
- **Advanced Learning algorithms** - Stanford University
- **Supervised machine learning** - Stanford University

WORK EXPERIENCE

Events Lead, Activator team
Nucleate

📅 March 2023 – February 2024   📍 London

- Organised events e.g. competition with UK university spinouts pitching for a £2M prize.

Teaching and project supervision
Imperial College London

📅 Oct 2020 – March 2024   📍 London

- Supervised 20 students carrying out their BSc and MSc research projects in mathematical and computational biology.
- Taught courses such as Programming for systems biology, Bioinformatics, Integrative systems biology, Maths.

Co-founder, start-up for early-stage Alzheimer's diagnostics
miCHIP

📅 Jan 2018–March 2019, April 2022   📍 London

- As an undergrad, secured £6k funding and lab space to develop proof of concept.
- Obtained proof of concept for an early-stage diagnostics method for Alzheimer's, gaining experimental and computational experience with RNA synthesis and RNA structure prediction.
- Finalists in start-up competitions: FONS-MAD, WE Innovate, SynBioUK Catalyse. News highlights: 🔗 [1] [2]

ADDITIONAL PROJECTS

- 2nd place at the EF Bio x AI Hackathon: developed multimodal data and machine learning approach for biodiversity mapping.
- SOTA Hackathon: Deep learning model to create novel carbon-capturing enzymes.
- Peer reviewed scientific documents for the Convention on Biological Diversity (CBD).

SKILLS

📄 Hard Skills

Differential equations | Machine learning | Python | TensorFlow | scikit-learn | Biopython | SQL | HPC | Bash | Git | GROMACS

📄 Languages

Spanish (Fluent) | English (Fluent) | French (Fluent) | Portuguese (Beginner)