Helena Coggan

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EDUCATION

University College London **Sep 2021 – Jan 2025**

PhD in computational biology, funded by the Engineering and Physical Sciences Research Council

- Project focused on modelling the role of cell plasticity in the development of early-stage lung cancer, in collaboration with the laboratories of Nicholas McGranahan and Charles Swanton, supervised by Prof J. Fisher
- Built highly-parallelised agent-based models of organoid growth and lung tumour evolution; used Bayesian and machine learning methods to make inferences from *in vitro* and tumour data from the TRACERx patient cohort
- Teaching experience: supervision of undergraduate projects, May-June 2022-24; tutorial lead for first- and second year mathematics courses, October 2021-Mar 2024; as postdoc, mentoring one master's student and one PhD-student intern

University of Cambridge **2017 – 2021**

BA & MSci in Natural Sciences (Physics)

- Achieved a high first (81.6%); classed eighth in a cohort of 107, and first in the General Paper (94.3%)
- Master's dissertation supervised by Prof. Pietro Liò, on white-box machine learning

EXPERIENCE

Computational Health Informatics Program (Cava Lab), Boston Children's Hospital **Jan 2025 – present**

Research Scientist

- Conducting epidemiological analyses of large-scale EHR databases to investigate the effect of demographic characteristics on clinician decision-making in the emergency department
- Developing real-time fairness monitoring algorithms for machine learning tools deployed in the clinic

Department of Applied Mathematics and Theoretical Physics, University of Cambridge **2020**

Summer Intern, Research

Goldman Sachs **2019**

Summer Intern, Engineering

Hodder and Stoughton **2014 – 2020**
Author

PUBLICATIONS

(*joint first authors)

- **H. Coggan** and K. M. Page. The role of evolutionary game theory in spatial and nonspatial models of the survival of cooperation in cancer: a review. *Journal of the Royal Society, Interface*, 19:20220346, 8 2022.
- **H. Coggan**, H. A. Terre, and P. Liò. A novel interpretable machine learning algorithm to identify optimal parameter space for cancer growth. *Frontiers in Big Data*, 5, 9 2022.
- **H. Coggan**, C. E. Weeden, P. Pearce, M. P. Dalwadi, A. Magness, C. Swanton, and K. M. Page. An agent-based modelling framework to study growth mechanisms in EGFR-L858R mutant cell alveolar type II cells. *Royal Society Open Science.* 2024 7;11.
- K. Grigoriadis*, P. Pawlik*, A. Bunkum, **H. Coggan**, … and N. McGranahan. Clone copy number diversity is linked to survival in lung cancer. *Nature,* 8 2025.
- **H. Coggan**, A. Bischops, … and William G. La Cava. Deciphering the influence of demographic factors on the treatment of pediatric patients in the emergency department. *Biocomputing 2026*. 2025 Dec;551–65.

PREPRINTS & MANUSCRIPTS IN PREPARATION

(*joint first authors)

- **H. Coggan***, J.R.M. Black*, T. Jones*, … J. Fisher and N. McGranahan. The clinical impact of phenotypic plasticity in non-small cell lung cancer. *In preparation.*
- **H. Coggan**, J.R.M. Black, C. Martinez-Ruiz, … J. Fisher and N. McGranahan. Agent-based simulations of lung tumour evolution suggest ongoing cell competition drives clonal expansion. *Accessible at: https://doi.org/10.1101/2025.11.04.686578*.
- **H. Coggan**, P. Chaudari, … and William G. La Cava. Demographic factors associated with triage acuity, admission and length of stay during adult emergency department visits. *Accessible at: https://arxiv.org/abs/2503.22781*

CONFERENCES AND WORKSHOPS

- Pacific Symposium on Biocomputing, Jan 2026 (contributed talk)
- Bioinference (conference), Warwick, UK, June 2024 (contributed talk)
- Society for Mathematical Biology Annual Meeting, July 2023 (invited talk)
- British Applied Mathematics Conference, Apr 2023 (contributed talk)
- The Francis Crick Institute PhD Student Symposium, July 2023 (best first-year speaker award)
- American Association for Cancer Research Annual Meeting, Apr 2023 (poster presentation)
- Integrated Mathematical Oncology Workshop, Oct 2022 (poster presentation)
- European Conference on Mathematical and Theoretical Biology, Sep 2022 (poster presentation)
- UK Graduate Modelling Camp, Jun 2022 (Best Student in Group Award)