

Helena Coggan

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EDUCATION

University College London

Sep 2021 – Mar 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, supervised by Prof J. Fisher in collaboration with the laboratories of Nicholas McGranahan and Charles Swanton
- 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 two PhD-student interns

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 (Jan-May 2025), then Postdoctoral Research Fellow (May 2025-present)

- 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

PUBLICATIONS

(*joint first authors)

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- **H. Coggan***, B. Romero-Milà*, ... and William G. La Cava. The benefit of the doubt phenomenon in emergency triage assignment disparities. *Accepted at Nature Communications*.
 - **H. Coggan**, J. R. M. Black, C. Martínez-Ruiz, K. Grigoriadis, J. Fisher, and N. McGranahan. Agent-based simulations of lung tumor evolution suggest that ongoing cell competition drives realistic clonal expansions. *Advanced Science* (2026): e76764.
 - **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.
 - 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**, 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.
 - **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** 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.

PREPRINTS & MANUSCRIPTS IN PREPARATION

(*joint first authors)

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- **H Coggan**, ... and William G. La Cava. A real-time machine-learning clinical decision support tool to address disparities in emergency department admissions. *In preparation*.
 - **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**, 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

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- Association for Health and Learning Inference Summer Camp 2026 (contributed talk)
 - 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)