

Edwina YEO

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RESEARCH INTERESTS

I am an applied mathematician interested in the intersection of continuum mechanics and mathematical biology. I specialise in the development of mathematical models for biological and biomedical fluid mechanics processes. I have developed mathematical models for biological systems in collaboration with researchers in the field of regenerative medicine and nanotechnology. Through formal model reduction on the mechanistic models I develop, I am also able to effectively parameterise these using experimental data. These models can then accurately predict the dynamics of complex biological systems.

EDUCATION AND RESEARCH

<i>Current</i> OCT 2022-APRIL 2023	EPSRC Doctoral Prize Fellowship <i>University of Oxford</i> In collaboration with Prof J Chapman I am currently developing mean-field models for systems of interacting magnetic nanoparticles and validating this approach against numerical simulations of large numbers of nanoparticles.
OCT 2018-OCT 2022	DPhil in Mathematics <i>University of Oxford</i> Funded by an EPSRC Scholarship Supervisors: Prof J Oliver & Prof S Waters Thesis title: Transport and deposition problems in blood flow I developed mathematical models to study the fluid mechanics of magnetic stem cell delivery and arterial blood clot formation. I used asymptotic and numerical techniques to examine the outputs of the models in comparison to experimental data.
OCT 2017-SEPT 2018	MSc in Mathematical Modelling and Scientific Computing <i>University of Oxford</i> Distinction Thesis title: Mathematical Modelling of Magnetically Targeted Stem Cell Delivery Supervisors: Prof J Oliver & Prof S Waters
OCT 2014-JUNE 2017	Bsc Mathematics <i>University College London</i> First Class Honours, Final year average 85%

PUBLICATIONS

FEB 2021	Experimental and mathematical modelling of magnetically labelled mesenchymal stromal cell delivery <i>Royal Society Interface</i> E. F. Yeo , H. Markides , A. T. Schade , A. J. Studd , J. M. Oliver , S. L. Waters A. J. El Haj
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AWARDS AND ACHIEVEMENTS

2017	Ellen Watson Memorial Scholarship <i>University of Oxford</i> Awarded to the Best Student in Applied Mathematics (Final Year)
2017	Bursary for MSc in Mathematical Modelling and Scientific Computing <i>University of Oxford</i> Awarded on the merit of application and interview

TEACHING AND PROFESSIONAL EXPERIENCE

- 2022-2023 Graduate Teaching Assistant *Jesus College, University of Oxford*
- 2020-2022 Research Group Coordinator *University of Oxford* Sarah Waters research group.
- 2019-2022 Class Tutor *University of Oxford*
For Mathematics 2nd year undergraduates in Jesus College & Masters level students.
- 2018-2022 Teaching Assistant *University of Oxford*
For Mathematics 3rd year undergraduate course: Numerical Solutions of Differential Equations 1,
4th year undergraduate courses: Applied Complex Variables, Nonlinear Systems
- 2019 Article Reviewer *Journal of Fluid Mechanics*
- 2018-2019 Academic and Personal Mentor *University of Oxford*
Mentoring for an individual mathematics undergraduate student with learning difficulties.

CONFERENCE ATTENDANCE AND RESEARCH PRESENTATIONS

- 2022 14th European Fluid Mechanics Conference, Oral presentation
British Applied Maths Colloquium, Oral presentation
- 2021 American Physical Society, Division of Fluid Dynamics Meeting, Oral presentation
CurvoBio Workshop, Virtual presentation
Junior Applied Maths Seminar, *University of Oxford*, Oral Presentation
- 2020 American Physical Society, Division of Fluid Dynamics Meeting, Virtual presentation
Oxford Industrial and Applied Mathematics Seminar, Oral presentation
12th European Conference on Mathematical and Theoretical Biology, Virtual presentation
- 2019 European Mechanics Society Colloquium: Fluid and solid mechanics for tissue engineering, Oral Presentation
Tissue Engineering and Regenerative Medicine International Society Meeting, Poster presentation
Junior Applied Maths Seminar, *University of Oxford* Oral Presentation
Women in Mathematics Symposium *ETH Zurich*, Poster presentation
- 2018 Tissue and Cell Engineering Society Conference, Poster presentation

OUTREACH & PUBLIC ENGAGEMENT

- 2022 Maths Ambassador Oxford, which includes participation in open days and facilitating workshops for school students.
- 2021 SIAM three minute thesis competition, aimed at summarising your research in three minutes to a non specialist audience.
- 2020 Smith Institute Competition, aimed at communicating mathematical research to the general public
- 2019 'I'm a Scientist' initiative with Hertford & Wadham College Oxford paired with secondary schools aiming at demystifying research and science as a career.
- 2018 Mathematics Aspiration Day at Wadham College Oxford. Held taster lesson on mathematical biology to school pupils. Aiming to show the potential of studying mathematics at higher level.

PROGRAMMING LANGUAGES

Python and Matlab

REFERENCES

Prof. Sarah Waters, DPhil Supervisor
Mathematical Institute, University of Oxford
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Prof. James Oliver, DPhil Supervisor
Mathematical Institute, University of Oxford
oliver@maths.ox.ac.uk