

# THOMAS RAWSON

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## EDUCATION

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- University of Oxford** *October 2016 - April 2021*  
DPhil Systems Biology - Zoology  
*'Mathematical modelling approaches to understanding the spread of Campylobacter in broiler flocks.'*  
Supervisors: Michael B Bonsall & Marian Stamp Dawkins
- University of Reading** *October 2012 - July 2016*  
MMath Mathematics *First Class*

## RESEARCH EXPERIENCE

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- Real time modelling of COVID-19** *April 2019 - Present*  
I am currently working within the Imperial College London real time modelling group to provide ongoing projections of the spread of COVID-19 in the UK, to help inform government policy. Independent of this I am researching spatial trends of COVID-19 incidence across the UK.
- Mathematical Modelling of *Campylobacter*** *October 2017 - December 2021*  
My DPhil project focused on utilising mathematical tools to better understand and tackle the public health burden of food poisoning. Through a mixture of theoretical modelling and data-driven network analysis, new opportunities for disease prevention were uncovered.
- Optimal lifting of COVID-19 lockdown measures** *February 2020 - April 2020*  
I instigated a project and managed a team of researchers in assessing the viability of multiple lockdown release strategies.
- Optimal Control of Prevention Methods in Tackling Dengue** *July 2017 - October 2017*  
Using a mathematical model of dengue infection dynamics, I built an optimal control algorithm to assess the most advantageous treatment methods for a variety of outbreak scenarios.

## TECHNICAL STRENGTHS

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<b>Programming</b>	R, Matlab, Git, Python, JAGS, STAN, JavaScript
<b>Software</b>	LaTeX, Jupyter, Adobe Creative Suite, MS Office

## EMPLOYMENT

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- Jameel Institute - Postdoctoral Research Associate** *May 2021 - Present*  
I am currently employed as a postdoc at the Imperial College Jameel Institute, a group focused on combatting disease threats worldwide.
- Open COVID-19 Data Working Group - Research Assistant** *March 2020 - September 2020*  
Employed as a research assistant on the Oxford Martin School's COVID-19 data response team. The role encompasses database management, statistical analysis of confirmed case data, and transmission modelling.

## FURTHER EXPERIENCE

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## Microbial Risk Assessment Internship

September 2019 - December 2019

I undertook a three-month internship at the Food Standards Agency, joining the microbial risk assessment team to aid in developing mathematical models to assess the risk of an ongoing novel Salmonella outbreak. The role required working as part of a multi-disciplined team with large quantities of public health data. I constructed a hierarchical Bayesian model assessing the ‘farm-to-fork’ risk in the food chain. This was informed by large datasets supplied by Public Health England.

## Associate Editor - *Frontiers in Public Health*

July 2020 - Present

I am currently working as an associate editor for *Frontiers in Public Health*’s ‘Coronavirus Disease (COVID-19): Pathophysiology, Epidemiology, Clinical Management and Public Health Response, Volume II’. This role requires assessing the merits of dozens of new COVID-19 manuscript submissions each month.

## Introduction to Mathematics Course - Lecturer

October 2018 - November 2018

Delivered a series of lectures as part of the Oxford Doctoral Training Program’s (DTP) introductory courses for new DPhil students. The objective was to equip a group of approximately eighty students of varied mathematical backgrounds with the necessary mathematical skills to understand and engage with modelling methods in their respective fields. Lectures were followed by problem classes, which I supervised, to enable students to apply and challenge their understanding with one-to-one support.

## Equality and Diversity Committee

September 2015 - September 2016

Served as a student representative on the University’s Equality and Diversity Committee. As well as serving a pastoral role, the committee ensured the University’s resources were appropriately inclusive.

## Teaching Qualification

Completed DLT (Developing Learning and Teaching) training, Oxford’s primary early-career teaching qualification. SEDA (Staff and Educational Development Association) accreditation mapped at UKPSF Descriptor 1 for Teaching and Supporting Learning in Higher Education.

## Selected Conference Presentations

UFAW International Animal Welfare Science Symposium, Bruges, Belgium, 3rd - 4th July 2019 - ‘*Mathematical Modeling of Campylobacter in a broiler flock.*’

Models in Population Dynamics, Ecology, and Evolution, University of Leicester, 9-13 April 2018 - ‘*Optimal control approaches for combining medicines and mosquito control in tackling dengue.*’

Tomorrow’s Mathematicians Today, University of York, February 21st 2015 - ‘*Optimising Green Space.*’

## SELECTED PUBLICATIONS

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**Rawson, T.**, Brewer, T., Huntingford, C. & Bonsall, M.B. How and when to end the COVID-19 lockdown: an optimisation approach *Front. Public Health* DOI: 10.3389/fpubh.2020.00262 (2020)

**Rawson, T.**, Paton, R., Colles, F.M., Maiden, M.C.J., Dawkins, M.S. & Bonsall, M.B. A mathematical modelling approach to uncover factors influencing the spread of *Campylobacter* in a flock of chickens. *Front. Microbiol.*, (accepted) pre-print DOI: 10.1101/2020.06.03.132191

**Rawson, T.**, Dawkins, M.S. & Bonsall, M.B. A mathematical model of *Campylobacter* dynamics within a broiler flock. *Front. Microbiol.*, **10** 1940, DOI: 10.3389/fmicb.2019.01940 (2019)

**Rawson, T.**, Wilkins, K. E., & Bonsall, M. B. Optimal control approaches for combining medicines and mosquito control in tackling dengue. *Royal Society Open Science*, **7**(4), 181843. (2018)

## ACADEMIC ACHIEVEMENTS

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*Richard Rado Prize* - Undergraduate award for highest scoring exam results.

*Fourth Year Project Prize* - Award for highest scoring master's dissertation.

*UROP Project Prize* - My project 'Optimising Green Space' was awarded as the best of the year's approximately sixty other projects. As a result I represented the University at that year's 'Posters In Parliament' event, and the British Conference of Undergraduate Research.