

Polly-Anne Jeffrey

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CURRENT POSITION

Final year, EPSRC/AstraZeneca funded Smith Institute CASE PhD student.
Department of Applied Mathematics, University of Leeds, UK.

RESEARCH

The focus of my PhD project is to use mathematical modelling to learn about biological systems. In particular I work with models based around the interactions between cellular receptors and other small molecules. I am interested in both deterministic (ordinary differential equation) and stochastic (Markov process) mathematical modelling. I also use techniques from Bayesian statistics, such as parameter inference and model selection.

EDUCATION

University of Leeds Leeds, UK
PhD in Applied Mathematics October 2017 – Present

University of Leeds Leeds, UK
BSc Mathematics (Industrial) October 2013 – June 2017
1st Class Hons

King Edward VI high school Morpeth, UK
A-levels September 2011 – June 2013
Mathematics (A), Biology (A), Chemistry (A)

PUBLICATIONS

Competitive binding of STATs to receptor phospho-Tyr motifs accounts for altered cytokine responses in autoimmune disorders

Wilmes, S., **Jeffrey, P.A.**, Martinez-Fabregas, J., Hafer, M., Fyfe, P., Pohler, E., Gaggero, S., López-García, M., Lythe, G., Guerrier, T. and Launay, D.
bioRxiv, 2020. (submitted to *eLife*)

On Exact and Approximate Approaches for Stochastic Receptor-Ligand Competition Dynamics—An Ecological Perspective.

Jeffrey, P.A., López-García, M., Castro, M., Lythe, G. and Molina-París, C.
Mathematics, 2020.

Receptor tyrosine kinases regulate signal transduction through a liquid-liquid phase separated state.

Lin, C.C., Suen, K.M., **Jeffrey, P.A.**, Wieteska, L., Stainthorp, A., Seiler, C., Koss, H., Molina-París, C., Miska, E., Ahmed, Z. and Ladbury, J.E.
bioRxiv, 2019.

EMPLOYMENT	Covance Clinical Research	Leeds, UK
	<i>Student bio-statistician</i>	July 2015 – July 2016
	Responsibilities included, statistical programming and analysis, generating statistical documents and providing training to new starters.	
TEACHING	Tutor, Department of Mathematics	January 2019 - March 2020
	<i>Module: Probability and Statistics 1 and 2</i>	
	Responsibilities included running tutorial classes to groups of undergraduate students and coursework marking.	
CONFERENCES	Probability in the North East	January 2021
	Conference (Online), <i>Invited talk</i>	
	British Early Career Mathematicians' Colloquium	July 2020
	Conference (Online), <i>Contributed talk</i>	
	The mathematics of biology and medicine	September 2019
	Conference (University of Leeds), <i>Organiser</i>	
	Stochastic modelling in health and disease	September 2019
	Conference (University of Leeds), <i>Attendee</i>	
	Mathematical modelling in immunology	May 2019
OUTREACH	Conference (BSI, Cambridge), <i>Attendee</i>	
	Statistics and modelling in infectious disease	July 2018
	Workshop (University of Washington), <i>Attendee</i>	
	Cancer cell signalling	July 2018
	Conference (University of Leeds), <i>Invited talk</i>	
	In silico systems biology	June 2018
	Workshop (EMBL-EBI, Cambridge), <i>Poster</i>	
	College research projects	September 2019 – March 2020
	This outreach activity with a local Sixth Form College involved leading a small group of students to develop their research, writing, teamwork and presentation skills, through a multi-disciplinary project.	
OUTREACH	Medicine, not just about medics	December 2018/2019
	I delivered several interactive sessions, on the topic of mathematical biology, to classes of year 10 and 11 students who were on a day visit to Leeds University.	
	Leeds festival of science	March 2019
	I visited two local schools and delivered workshops to students ranging from year 7 to year 11, using computer software to make the sessions interactive for the students. The topic was the mathematics of cell division.	

RELEVANT EXPERIENCE

I am proficient in the use of Python and \LaTeX , and also have experience with the programming languages R, MatLab and SAS. I am competent in public engagement, through the running of outreach activities with school children. I have excellent teamwork and organisation skills which I have demonstrated through co-organising and running a multi-disciplinary conference, aimed at postgraduate students at Leeds University. I have experience tutoring undergraduate students and also supporting the research of newly recruited PhD students in the mathematical biology group.