

# Jessie Renton

Department of Mathematics | University College London  
Gower Street | London WC1E 6BT

☎ +44 (0)7894531935 | ✉ jsr.renton@gmail.com | 🏠 jessiesrr.github.io

## Research Interests

---

I am broadly interested modelling biological and social processes, using analytical and computational methods such as agent-based modelling, stochastic processes and dynamical systems. My PhD research has focused on invasion dynamics of mutant cells in epithelia, considering how the structure and dynamics of the tissue affect evolutionary outcomes. This is relevant to oncogenesis as pre-cancerous cells must obtain a number of mutations in order to become malignant. For my masters I undertook a project on the social evolution of language, looking at effects of population structure and how it can lead to the formation of dialects.

## Education

---

### University College London

London, UK

PHD MATHEMATICS

Sep. 2016 - PRESENT

- Thesis: “Evolutionary dynamics in epithelia,” supervised by Prof. Karen Page.

### University of Washington

Seattle, USA

JUNIOR HONOURS YEAR OF MPhys MATHEMATICAL PHYSICS

Sep. 2013 - May 2014

- Study abroad programme

### University of Edinburgh

Edinburgh, UK

MPhys MATHEMATICAL PHYSICS: 1ST CLASS

Sep. 2011 - May 2016

- MPhys project: “The effect of population structure on spontaneous dialect formation,” supervised by Prof. Richard Blythe.
- Modules include advanced statistical physics, biological physics, modelling and visualisation in physics and dynamical systems
- Awarded pre-honours certificate of merit

## Awards & Funding

---

2019	<b>Sir George Jessel Studentship:</b> £1800 prize awarded by UCL during PhD.
2017	<b>LMS travel award:</b> support for attending MMEE conference.
2016-20	<b>EPSRC PhD Studentship:</b> full PhD funding for four years covering fees, stipend & travel.
2013	<b>Certificate of merit:</b> awarded by the University of Edinburgh during MPhys.

## Publications

---

1. Jessie Renton and Karen M. Page. The effect of contact inhibition on the evolution of co-operation in epithelia. *In progress*.
2. Jessie Renton and Karen M. Page. Evolution of cooperation in an epithelium. *Journal of the Royal Society Interface*, 16:20180918, 2019.

# Teaching

---

## University College London

POSTGRADUATE TEACHING ASSISTANT

2016-2020

- **First-year tutorials.** *Sep. 2017- May 2018.*  
Taught small group tutorials covering material from first-year modules: applied maths, mathematical methods and Newtonian mechanics.
- **Python labs.** *Jan. 2017 - May 2019.*  
Running computer lab sessions for an introductory Python module and marking final projects.
- **Marking.** *Jan. 2017- Jan. 2020.*  
Various marking duties including courses on mathematical methods, biomathematics and python.

# Conferences & talks

---

- Jul. 2019 **Society of mathematical biology**, poster, *University of Montreal.*  
Apr. 2019 **Evolution evolving.** *University of Cambridge.*  
Mar. 2019 **Institute for the Physics of Living Systems meet-up**, seminar talk, *UCL.*  
Jul. 2018 **European conference on theoretical and mathematical biology.** *University of Lisbon.*  
May 2018 **Physical biology circle meeting**, *Francis Crick Institute.*  
Jul. 2017 **Mathematical models in ecology and evolution**, poster, funded by the London Mathematical Society, *City, University of London.*  
Apr. 2017 **British applied mathematics colloquium**, *University of Surrey.*  
Mar. 2017 **Physical biology circle meeting**, *EMBL Heidelberg.*

# Activities & work experience

---

- 2018-19 **Postgraduate seminar series:** organised the UCL Mathematics postgraduate seminars.  
2015-16 **Freelance science writing:** wrote articles for the science dissemination magazine 'International Innovation' on a variety of topics in physics, mathematics, engineering and computer science. Communicated complex ideas to an intended audience of scientists who are non-specialists in the field.  
2015-16 **Mentoring:** took part in a mentoring scheme for first and second year physics students while in my masters year at the University of Edinburgh.  
2010-11 & 2015 **Administration:** worked in the Psychology office at the University of East London and later in the Physics office at the University of Edinburgh.

# Other skills

---

- Computer skills:** Proficiency in MS Office, Apple products and LaTeX. Coding in Python and Java. Experience with cluster computing e.g. using Slurm job scheduling.  
**Languages:** Intermediate Spanish.