

Peter Ashcroft

Curriculum Vitæ

Institute for Integrative Biology
ETH Zürich
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Personal details

Nationality British
Date of birth 13th October 1989

Research experience

Sept 2015 – **Postdoctoral researcher** ETH Zürich, Switzerland
Present Supervisor: Prof. Sebastian Bonhoeffer.
Group: Theoretical Biology, Institute for Integrative Biology.
Interests: Population dynamics, stochastic processes, mathematical modelling of cancer, evolutionary game theory, first-passage problems, quantitative biology, hematopoiesis, epidemiological modelling, mathematical immunology, multi-scale modelling.

Education

Sept 2012 – **PhD in Theoretical Physics** The University of Manchester, UK
Sept 2015 Supervisor: Dr. Tobias Galla.
Group: Complex Systems and Statistical Physics, School of Physics and Astronomy.
Thesis: *The statistical physics of fixation and equilibration in individual-based models*.
2008 – 2012 **Undergraduate degree: Maths and Physics** The University of Manchester, UK.
Degree: First Class M.Math and Phys (hons). Overall grade: 84%.

Awards

- Springer Thesis Award (2016).
- Humboldt Research Fellowship for Postdoctoral Researchers (2016) (Gratefully declined).
- Nuffield Foundation funding for summer research project (2011).

Publications

- *Clonal dominance and transplantation dynamics in hematopoietic stem cell compartments.* (Under revision)
[P. Ashcroft](#), M.G. Manz, and S. Bonhoeffer, arXiv preprint 1707.04194 (2017).
- *Effects of population growth on the success of invading mutants.*
[P. Ashcroft](#), C.E.R. Smith, M. Garrod, and T. Galla, J. Theor. Biol. **420**, 232 (2017).
- *The statistical physics of fixation and equilibration in individual-based models.*
[P. Ashcroft](#), Springer International Publishing, Switzerland (2016).
- *When the mean is not enough: Calculating fixation time distributions in birth-death processes.*
[P. Ashcroft](#), A. Traulsen, and T. Galla, Phys. Rev. E **92**, 042154 (2015).
- *Stochastic tunneling and metastable states during the somatic evolution of cancer.*
[P. Ashcroft](#), F. Michor, and T. Galla, Genetics **199**, 1213 (2015).

- *Fixation in finite populations evolving in fluctuating environments.*
P. Ashcroft, P.M. Altrock, and T. Galla, J. R. Soc. Interface **11**, 20140663 (2014).
- *Pattern formation in individual-based systems with time-varying parameters.*
P. Ashcroft and T. Galla, Phys. Rev. E **88**, 062104 (2013).

Talks

- Division of Theoretical Systems Biology (Höfer), Universität Heidelberg, July 2017.
- Society for Mathematical Biology Annual meeting, July 2017.
- Department Evolutionary Theory (Traulsen), MPI for Evolutionary Biology, April 2017.
- Hematology seminar series, UniversitätsSpital Zürich, June 2016.
- DPG Spring meeting, Universität Regensburg, March 2016.
- Modelling Biological Evolution 2015, University of Leicester, April 2015.
- Cancer Research UK Society Workshop (Outreach event), The University of Manchester, December 2014.
- Michor Laboratory group meeting, Dana-Farber Cancer Institute, Harvard School of Public Health, August 2014.
- W.E. Heraeus seminar: The versatile action of noise: applications from genetic to neural circuits, Jacobs University, Bremen, June 2014.
- DPG Spring meeting, TU Dresden, April 2014.
- Michor Laboratory group meeting, Dana-Farber Cancer Institute, Harvard School of Public Health, January 2014.

Teaching and supervision

- March 2016 – **MSc lab rotation supervision** ETH Zürich, Switzerland
- April 2016 I supervised an MSc student from the Computation Biology and Bioinformatics masters program for a 90-hour lab rotation. Together we investigated efficient simulation and analytical methods for calculating distributions of numbers of mutants generated in a branching process.
- Feb 2016 – **Lecturing and tutorials** ETH Zürich, Switzerland
- Present I gave lectures on the spread of epidemics on networks as part of the Infectious Disease Dynamics course. I also provided assistance during tutorials and oral examinations.
- Sept 2014 – **Undergraduate tutorials** The University of Manchester, UK
- May 2015 I tutored two groups of first year undergraduate physics students in Maths 1 & 2, Introduction to Astrophysics & Cosmology, and Properties of Matter.
- Sept 2013 – **M.Phys project supervision** The University of Manchester, UK
- May 2014 I joint-supervised groups of fourth year MPhys students in projects based on the emergence of cancer.

Administrative duties

- Regular reviewer for journals covering quantitative biology, including: Journal of Theoretical Biology, PLoS Biology, PLoS Computational Biology, and Scientific Reports.

Skills and interests

- Mathematical and graphing packages including Mathematica and Matlab.
- Linux OS, including scripting and high-throughput computing.
- Programming in C++.
- Statistical analysis in R.
- Scientific writing.
- Machine learning including regression, classification, and neural networks.
- L^AT_EX typesetting.
- Version control using Git.
- Beginner in German (A2).

References

Prof. Sebastian Bonhoeffer

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Dr. Tobias Galla

School of Physics and Astronomy, The University of Manchester, UK

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Prof. Arne Traulsen

Max-Planck-Institute for Evolutionary Biology, Germany

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