

Curriculum Vitæ

Peter Ashcroft

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Personal details

Nationality British
Date of birth 13th October 1989
PhD since 8th September 2015

Research experience

Sept 2015 – Present **Postdoctoral researcher** ETH Zürich, Switzerland
Supervisor: Prof. Sebastian Bonhoeffer
Group: Theoretical Biology, Institute for Integrative Biology
Interests: Evolutionary dynamics, cancer initiation & progression, hematopoiesis, population structure, quantitative biology, stochastic processes, multi-scale modelling, data analysis

Education

Sept 2012 – Sept 2015 **PhD in Theoretical Physics** The University of Manchester, UK
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

- Travel award from systemsX.ch to attend workshop at ICMS, Edinburgh, UK (2018)
- Travel award to attend workshop at the Moffitt Cancer Centre, FL, USA (2017)
- Springer Thesis Award (2016)
- Humboldt Research Fellowship for Postdoctoral Researchers (2016) (Gratefully declined)
- Nuffield Foundation funding for summer research project (2011)

Publications

- *Evolutionary exploitation of PD-L1 expression in hormone receptor positive breast cancer.* J. West, D. Park, C. Harmon, D. Williamson, P. Ashcroft, D. Maestrini, A. Ardaseva, R. Bravo, P. Sahoo, H. Khong, K. Luddy, M. Robertson-Tessi, bioRxiv 10.1101/454447 (2018)
- *Clonal dominance and transplantation dynamics in hematopoietic stem cell compartments.* P. Ashcroft, M.G. Manz, and S. Bonhoeffer, PLoS Comput. Biol. **13**, e1005803 (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)

Invited talks

- Division of Theoretical Systems Biology (Höfer), Universität Heidelberg, July 2017
- Department for Evolutionary Theory (Traulsen), MPI for Evolutionary Biology, April 2017
- Hematology seminar series, University Hospital Zürich, June 2016
- Cancer Research UK Society Workshop (Outreach event), The University of Manchester, December 2014
- Dana-Farber Cancer Institute (Michor), Harvard School of Public Health, August 2014
- Dana-Farber Cancer Institute (Michor), Harvard School of Public Health, January 2014

Teaching and supervision

Oct 2017 – **MSc term paper supervision** ETH Zürich, Switzerland

May 2018 I supervised an MSc student from the Ecology and Evolution masters program. We wrote a review about the role that climate change will have on plant community composition in an alpine ecosystem, and constructed a game-theoretic framework to investigate this further.

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 multi-type 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

- 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)