Curriculum Vitæ

Postdoctoral researcher in theoretical biology, applying ideas from statistical physics to model, simulate, and analyse population dynamics, differentiation, and disease.

Peter Ashcroft

Institute for Integrative Biology
ETH Zürich
Universitätstr. 16, Zürich, 8092
☎ +41 (0)44 633 60 34
✉ peter.ashcroft@env.ethz.ch
ashcroftp.github.io

Personal information

Date of birth	13th October 1989
Nationality	British
PhD since	14th September 2015
Bibliometrics	Google Scholar, OrcID

Research experience

Sept 2015 – Present
Postdoctoral researcher ETH Zürich, Switzerland
Advisor: Prof. Dr. Sebastian Bonhoeffer, Institute for Integrative Biology
Funding: SystemsX.ch (MRD project 2014/266 StemSysMed)

Sept 2012 – Sept 2015
PhD student The University of Manchester, UK
Advisor: Dr. Tobias Galla, School of Physics and Astronomy
Funding: Engineering and Physical Sciences Research Council UK (EPSRC)

Education

Sept 2012 – Sept 2015
PhD in Theoretical Physics The University of Manchester, UK
Advisor: 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
PhD defence: 8th September 2015

Sept 2008 – June 2012
Undergraduate degree: Maths and Physics The University of Manchester, UK
Degree: First Class M.Math and Phys (hons). Overall grade: 84%

Prizes, awards, fellowships

Sept 2019	ETH Career Seed Grant (30,000 CHF).
July 2018	Travel award from systemsX.ch to attend a workshop at ICMS, Edinburgh, UK.
Oct 2017	Travel award to attend a workshop at the Moffitt Cancer Centre, FL, USA.
Feb 2016	Springer Thesis Award.
Nov 2015	Humboldt Research Fellowship for Postdoctoral Researchers (Gratefully declined).
June 2011	Nuffield Foundation funding for a summer research project.

Skills and interests

- Mathematical and graphing packages including Mathematica and Matlab
- Linux OS, including scripting and high-throughput computing
- Programming in C++
- LaTeX typesetting
- Statistical analysis in R
- Version control using Git
- Scientific writing
- Beginner in German (A2/B1)

Publications and preprints

9. *Stochastic gene expression influences the selection of antibiotic resistance.*
L. Sun*, P. Ashcroft*, M. Ackermann, and S. Bonhoeffer, Mol. Biol. Evol. msz199 (2019).
doi:10.1093/molbev/msz199 PDF
8. *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).
doi:10.1101/454447 PDF
7. *Clonal dominance and transplantation dynamics in hematopoietic stem cell compartments.*
P. Ashcroft, M.G. Manz, and S. Bonhoeffer, PLoS Comput. Biol. **13**, e1005803 (2017).
doi:10.1371/journal.pcbi.1005803 PDF
6. *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).
doi:10.1016/j.jtbi.2017.03.014 PDF
5. *The statistical physics of fixation and equilibration in individual-based models.*
P. Ashcroft, Springer Theses: Recognizing Outstanding Ph.D. Research, Springer International Publishing, Switzerland (2016).
doi:10.1007/978-3-319-41213-9 PDF
4. *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).
doi:10.1103/PhysRevE.92.042154 PDF
3. *Stochastic tunneling and metastable states during the somatic evolution of cancer.*
P. Ashcroft, F. Michor, and T. Galla, Genetics **199**, 1213 (2015).
doi:10.1534/genetics.114.171553 PDF
2. *Fixation in finite populations evolving in fluctuating environments.*
P. Ashcroft, P.M. Altrock, and T. Galla, J. R. Soc. Interface **11**, 20140663 (2014).
doi:10.1098/rsif.2014.0663 PDF
1. *Pattern formation in individual-based systems with time-varying parameters.*
P. Ashcroft and T. Galla, Phys. Rev. E **88**, 062104 (2013).
doi:10.1103/PhysRevE.88.062104 PDF

Invited talks

- Stem Cell Modelling Day, Roskilde University (2019).
- Society of Mathematical Biology Minisymposium, University of Montreal (2019).
- 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, January 2014 & August 2014

Teaching activities

Feb 2016 – June 2018 **Lecturing and tutorials** ETH Zürich, Switzerland
Course: Infectious Disease Dynamics.
Level: Masters. Activity: Lectures, tutorials, and oral exams.

Sept 2014 – May 2015 **Undergraduate tutorials** The University of Manchester, UK
Courses: Maths 1&2, Introduction to Astrophysics & Cosmology, and Properties of Matter.
Level: First year undergraduate. Activity: Tutorials.

Supervision activities

Sept 2019 – Dec 2019 **Research assistant** ETH Zürich, Switzerland
Assistant: Valentin Jacot-Descombes

Oct 2018 – May 2019 **Masters thesis supervision** ETH Zürich, Switzerland
Student: Juan Gabriel Kostelec. [Thesis: *Optimising drug dosing to control an infection.*]

March 2017 – Sept 2018 **PhD project supervision** ETH Zürich, Switzerland
Student: Lei Sun

Oct 2017 – May 2018 **MSc term paper supervision** ETH Zürich, Switzerland
Student: Deborah Zani

March 2016 – April 2016 **MSc lab rotation supervision** ETH Zürich, Switzerland
Student: Inna Grijnevitch

Sept 2014 – May 2015 **M.Phys project co-supervision** The University of Manchester, UK
Students: Matthew Garrod and Casandra Smith

Sept 2013 – May 2014 **M.Phys project co-supervision** The University of Manchester, UK
Students: Michael Dowhyj and Ammamraj Sohi

Further contributions

March 2015 – Present Reviewer for journals covering quantitative biology, including: Journal of Theoretical Biology, PLoS Biology, PLoS Computational Biology, Mathematical Biosciences, Chaos, and Scientific Reports. Publons

Feb 2017 – Present Member of the European Society of Mathematical and Theoretical Biology (ESMTB) and the Society of Mathematical Biology (SMB).