Robert J. Noble

robjohnnoble.github.io
scholar.google.com/citations?user=lDDprHkAAAAJ

Academic employment

July 2020- Department of Mathematics, **City, University of London**
Lecturer

May 2018- Department of Evolutionary Biology and Environmental Studies, **University of Zurich**
June 2020 Postdoctoral researcher (20% contract) advised by **Hanna Kokko**

Feb 2017- Department of Biosystems Science and Engineering, **ETH Zurich**
June 2020 Postdoctoral researcher (80% contract from May 2018) advised by **Niko Beerenwinkel**

Jan 2014- Institut des Sciences de l'Evolution de Montpellier (**ISEM**)
Jan 2017 Postdoctoral researcher advised by **Michael Hochberg**

Education

Oct 2009- Department of Zoology, **University of Oxford**
Jan 2014 DPhil: *Antigenic variation and its evolution in* P. falciparum *malaria*
Supervisors: **Sunetra Gupta** and **Mario Recker**

Oct 1999- University of York
Jul 2003 Master of Mathematics (First Class)

Publications as first or co-first author

2020	*When, why and how clonal diversity predicts future tumour growth* **Noble R***, Burley JT*, Le Sueur C, Hochberg ME (* equal contributions)	**Evol. Appl.** eva.13057
2017	*Spatial competition constrains resistance to targeted cancer therapy* Bacevic K*, **Noble R***, Soffar A, Ammar OW, Boszonyik B, Prieto S, Vincent C, Hochberg ME, Krasinska L, Fisher D (* equal contributions)	**Nature Commun.** 8, 1995
2017	*Antibiotic stress selects against cooperation in the pathogenic bacterium* Pseudomonas aeruginosa Vasse M*, **Noble R***, Akhmetzhanov AR, Torres-Barceló C, Gurney J, Simon Benateau, Gougat-Barbera C, Kaltz O, Hochberg ME (* equal contributions)	**PNAS** 114, 546-51
2016	*Overestimating the role of environment in cancers* **Noble R**, Kaltz O, Nunney L, Hochberg ME	**Cancer Prev. Res.** 9, 773-6
2015	*Peto's paradox and human cancers* **Noble R**, Kaltz O, Hochberg ME	**Phil. Trans. B** 370, 20150104
2013	*The antigenic switching network of* Plasmodium falciparum *and its implications for the immuno-epidemiology of malaria* **Noble R***, Christodoulou Z*, Pinches R, Kyes S, Recker M, Newbold CI (* equal contributions)	**eLife** 2013.2:e01074
2012	*A statistically rigorous method for determining antigenic switching networks* **Noble R**, Recker M	**PLoS ONE** 7, e39335

Other publications

2017	*A framework for how environment contributes to cancer risk* Hochberg ME, **Noble R**	**Ecology Letters** 20, 117-34

2012	*Erasing the Epigenetic Memory and Beginning to Switch—The Onset of Antigenic Switching of* var *Genes in* Plasmodium falciparum Fastman Y, **Noble R**, Recker M, Dzikowski R	**PLoS ONE** 7, e34168

Submitted for publication

In review	*The logic of containing tumors* Viossat Y, **Noble R**	**bioRxiv** 10.1101/ 2020.01.22.915355
In revision	*Spatial structure governs the mode of tumour evolution* **Noble R**, Burri D, Kather JN, Beerenwinkel N	**bioRxiv** 10.1101/ 586735

Software

2017	*ggmuller: Create Muller Plots of Evolutionary Dynamics* **Noble R**	**CRAN**
2019	*demon: Deme-based oncology model* **Noble R**	**GitHub**

Teaching

2017-2019 **Supervision (ETH Zurich)**
Second year MSc thesis, Alexander Stein (six months; ongoing): *Modelling solid tumour growth and evolution with diffusion approximations*
Second year MSc thesis, Jeanne Lemant (six months; ongoing): *Sample vs clone trees: A mathematical analysis of tumour phylogenies*
Second year MSc thesis, Dominik Burri (six months): *Study of clonal selection in healthy epidermal tissue*
Research internship Cécile Le Sueur (eight months) in computational modelling of tumour evolution
First year MSc lab rotation project, Dominik Burri: *The speed of propagation in a model of invasive cancer*

Lecturing and tutoring (ETH Zurich)
Evolutionary dynamics (MSc; three terms; group tutorials, setting and marking exercises, and a self-authored two-hour lecture)

2016 **Supervision (ISEM)**
First year MEME MSc project, John Burley: *Forecasting tumour growth*

2010-2013 **Supervision (University of Oxford)**
Second year BSc project, Charlotte Ward: *Calculating the* R_0 *of malaria*

Tutoring (University of Oxford)
Quantitative Methods (BSc; two terms)

Demonstrating (University of Oxford) Quantitative Methods (BSc; three terms); Epidemiology (BSc; two terms); Epidemiological Models (MSc; one term)

Funding

€140K personal funding for 2020-2023 from the NCI, via the Arizona Cancer Evolution Center

Co-awardee of Fondation Mathématique Jacques Hadamard grant *Optimization of a new type of cancer therapy* (€5K to support international collaboration in 2019-2020)

Biotechnology and Biological Sciences Research Council PhD fellowship 2009-2013

Travel grants: Lorentz Center 2017; Moffitt Cancer Center 2015; ECMTB 2011

Professional activities

Elected Advisory Committee member of the International Society for Evolution, Ecology and Cancer 2018-21

Reviewer: Cancer Research, Evolutionary Applications, F1000Research, Journal of Theoretical Biology, Nature Communications, Nature Ecology & Evolution, npj Genomic Medicine, PLoS Computational Biology, PNAS, Proceedings of the Royal Society B, Royal Society Open Science, Scientific Reports

Symposia: Co-organizer of "How does spatial structure affect tumour evolution?" (MBE conference 2017); co-organizer of "Aging & cancer through the lens of evolution" (ESEB conference 2019)

Other employment

Dec 2008- Sep 2009 **International HIV/AIDS Alliance, Preece House, Hove, BN3 1RE**
Communications

Aug 2004- Dec 2008 **AVERT, 4 Brighton Road, Horsham, West Sussex, RH13 5BA**
Science/heath communication and web development

Invited departmental seminars

Jun 2020 *Characterizing and forecasting tumour evolution*
Virtual Seminar on Modeling Biocomplexity (hosted by Andreas Deutsch)

May 2020 *Characterizing and forecasting tumour evolution*
Moffitt Cancer Center (hosted by David Basanta)

Jan 2020 *Cancer: evolution, ecology and bad luck*
University of Bath (hosted by Ben Ashby)

Dec 2020 *The logic of containing tumours*
University of Oxford (hosted by Eamonn Gaffney)

Sep 2019 *Cancer: evolution, ecology and bad luck*
University of Southampton (hosted by Lindy Holden-Dye)

Feb 2019 *Characterising the evolutionary modes of cancer and normal tissue*
TU Dresden (hosted by Andreas Deutsch)

Mar 2018 *Characterising the evolutionary modes of cancer and normal tissue*
University of Basel (hosted by Richard Neher)

Feb 2018 *The mode and predictability of intra-tumour evolution*
Wellcome Sanger Institute (hosted by Iñigo Martincorena)

Dec 2017 *The mode and predictability of intra-tumour evolution*
Boston University (hosted by Kirill Korolev)

Nov 2017 *Spatial constraints on intratumour evolution*
Harvard University (hosted by Martin Novak)

May 2017 *Models for understanding tumour evolution and improving cancer therapy*
University of Edinburgh (hosted by Bartlomiej Waclaw)

Mar 2017 *Evolution, ecology, and cancer risk: from naked mole rats to modern humans*
Chalmers University (hosted by Philip Gerlee)

Sep 2016 *Cancer: evolution, ecology and bad luck*
Harvard University (hosted by Martin Novak)

Feb 2015 *Data-based modelling of tumour evolution*
Moffitt Cancer Center (hosted by Robert Gatenby)

Conference talks

Aug 2020 *The logic of containing tumours*
Society for Mathematical Biology, virtual conference

Aug 2019 *Spatial competition constrains resistance to targeted cancer therapy*
International Society for Evolution, Medicine & Public Health conference, Zurich

Jul 2019 *Spatial structure governs the mode of tumour evolution*
Intelligent Systems for Molecular Biology / European Conference on Comp. Biology, Basel

Jun 2019 *Spatial structure governs the mode of tumour evolution*
Modelling Ecology & Evolution Zurich seminar, Zurich

Sep 2018 *Characterising the evolutionary modes of cancer and normal tissue*
Evolutionary Models of Structured Populations workshop, Plön

Dec 2017 *Spatial competition constrains resistance to targeted cancer therapy*
International Society for Evolution, Ecology and Cancer Conference, Tempe

Oct 2017 *Impact of tissue architecture on the nature and predictability of tumour evolution*
Satellite Symposium to the Louis-Jeantet Symposium, Geneva

Sep 2017 *Impact of tissue architecture on the nature and predictability of tumour evolution*
Basel Computational Biology Conference, Basel

Jul 2017 *Impact of tissue architecture on the nature and predictability of tumour evolution*
Intelligent Systems for Molecular Biology / European Conference on Comp. Biology, Prague

Apr 2017 *Evolutionary ecology of senescence and cancer risk: from naked mole rats to modern humans*
Modelling Biological Evolution conference, Leicester

Nov 2016 *Controlling drug resistance with adaptive therapy*
Invited talk at the second Modeling Tumour Evolution conference, Bielefeld

Sep 2016 *Cancer: evolution, ecology and bad luck*
Invited talk at the first Modelling Tumour Evolution conference, Bielefeld

Jul 2016 *Cancer risk: evolution, ecology and bad luck*
Joint Meeting of European Society for Mathematical and Theoretical Biology & Society for Mathematical Biology, Nottingham

Dec 2015 *Peto's paradox and human cancers*
Third International Biannual Evolution and Cancer Conference, San Francisco

Sep 2015 *Modelling ecological interactions of cancer clones*
Cancer Evolution Through Space and Time workshop, Plön

Jun 2015 *Peto's paradox and human cancers*
Invited talk at the Institute of Cancer Research, London

Apr 2015 *Eco-evolutionary models of tumour heterogeneity*
Invited talk at the Modelling Biological Evolution conference, Leicester

Mar 2015 *Modelling the evolution of tumour heterogeneity*
Invited talk at the Evolution and Cancer Conference, Montpellier

Nov 2014 *Data-based modelling of tumour evolution*.
Joint Meeting: Institute of Cancer Research & French Consortium on Cancer Evolution, London

June 2011 *Using iterative methods to determine an antigenic switching network in* Plasmodium falciparum
European Conference on Mathematical and Theoretical Biology, Krakow

May 2011 *Determining the switch pathway of the* var *gene repertoire of* Plasmodium falciparum
Biology and Pathology of the Malaria Parasite, Heidelberg