

Robert Ross

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Born: May 10, 1987

Nationality: British

Current position

Postdoctoral fellow in the Department of Systems Biology at Harvard Medical School (2017 -), supervised by Professor Walter Fontana.

I currently work on modeling dynamical systems on growing networks. In particular, I am studying the scenario in which the network growth is coupled to the behavior of the dynamical system situated on the network.

Education

B. Sc. in Physiology (2006 - 2010), University of Edinburgh (First class honours)

M. Sc. in Systems Biology (2011 - 2012), University of Warwick (1 year BBSRC Studentship to complete M. Sc.)

D. Phil. in Systems Biology (2012 - 2016), Mathematical Institute, University of Oxford (4 year EPSRC Studentship to complete D. Phil.)

Thesis title: *Modelling cell migration, proliferation and interactions on growing domains*

Supervised by Professor Ruth Baker and Dr Christian Yates

Publications & talks

GOOGLE SCHOLAR PAGE: [Robert JH Ross](#)

JOURNAL ARTICLES

Ross, R. J. H. and Yates, C. A. and Baker, R. E. (2015), [Inference of cell–cell interactions from population density characteristics and cell trajectories on static and growing domains](#), *Mathematical Biosciences* 264: 108–118.

Mort*, R. L. and **Ross***, **R. J. H.** and Hainey, K. J. and Harrison, O. and Keighren, M. A. and Landini, G. and Baker, R. E. and Painter, K. J. and Jackson, I. J. and Yates, C. A. (2016), [Reconciling diverse mammalian pigmentation patterns with a fundamental mathematical model](#), *Nature Communications* 7: 10288 (*indicates joint first authorship).

Ross, R. J. H. and Baker, R. E. and Yates, C.A. (2016), [How domain growth is implemented determines the long term behaviour of a cell population through its effect on spatial correlations](#), *Physical Review E* 94:012408.

Ross, R. J. H. and Yates, C. A. and Baker, R. E. (2016), [The effect of domain growth on spatial correlations](#). *Physica A* 466:334–345.

Ross, R. J. H. and Yates, C. A. and Baker, R. E. (2016), [Variable species densities are induced by volume exclusion interactions upon domain growth](#), *Physical Review E* 95 (3), 032416.

Ross, R. J. H. and Baker, R. E. and Parker, A. and Ford, M. J. and Mort, R. L. and Yates, C.A. (2016), [Using approximate Bayesian computation to quantify cell-cell adhesion parameters in a cell migratory process](#),

npj Systems Biology and Applications 3 (9).

REVIEWING DUTIES

Bulletin of Mathematical Biology • Royal Society Open Science

TALKS

University of Bath (2015) ~ Reconciling diverse mammalian pigmentation patterns with a fundamental mathematical model.

University of Oxford, Department of Physiology and Genetics (2016) ~ Pattern formation and variable species densities are induced by domain growth.

PRESS COVERAGE OF RECONCILING DIVERSE MAMMALIAN PIGMENTATION PATTERNS WITH A FUNDAMENTAL MATHEMATICAL MODEL, *NATURE COMMUNICATIONS* 7: 10288

[Piebald mystery solved: scientists discover how animals develop patches](#)

[Black and white cats 'owe distinctive colouring to faulty genes'](#)

AREAS OF SPECIALIZATION

Moment-closure techniques • growing domains • individual-based modelling • many-body processes • developmental neuroscience • neural plasticity • molecular biology

SKILLS

Computational: competent in MATLAB, C/C++, LaTeX, Linux

Experimental: I have completed three 12-week projects in biological research laboratories so I am comfortable with a range of molecular biology experimental techniques

Teaching & leading group meetings

TEACHING ASSISTANT (HONOURS LEVEL)

Techniques of applied mathematics • Applied partial differential equations • Mathematical ecology and biology

GROUP MEETINGS

In my final year of my D. Phil. I helped organise the interdepartmental developmental biology club, a cross-disciplinary meeting where mathematicians, computer scientists, and experimental biologists present their research.