

James Scott-Brown

Synthetic Biology Doctoral Training Centre,
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Date of Birth: October 19, 1991
Citizenship: British

DTC Homepage

I am currently a D.Phil student on the EPSRC/BBSRC Synthetic Biology Doctoral Training Centre, supervised by **Prof. Antonis Papachristodoulou** (Department of Engineering Science, University of Oxford).

I am investigating what can be achieved using communication between cells.

In my first year at the DTC I did two lab rotations:

- 'External Control of Gene Expression', supervised by **Prof. Mario di Bernardo** (Department of Engineering Mathematics, University of Bristol). This involved designing and simulating controllers that would be implemented in software and control living cells in a microfluidic device.
- 'Applications of cell-cell communication to Synthetic Biology', supervised by **Prof. Antonis Papachristodoulou** (Department of Engineering Science, University of Oxford). This involved modelling novel synthetic circuits that exploited quorum sensing systems.

RESEARCH INTERESTS

- Relationship between natural and engineered systems
- Information processing in living systems
- 'Design principles' of living systems
- Theoretical aspects of synthetic biology
- Fundamental constraints and performance limits

PUBLICATIONS

- James Scott-Brown, Harnessing the Cognitive Surplus, *The Science in Society Review (Cambridge edition)*, Issue 12, Lent 2011
- J A Scott-Brown et al, How hot can a fire piston get?, *Phys. Educ.* 45, 2010, p.32 doi:10.1088/0031-9120/45/4/F04

BACKGROUND

- BA and M.Eng (Cantab) 2014
- 2013-14: Part IIB of the Engineering Tripos (Merit). Completed project on Computational Auditory Scene Analysis, supervised by Dr. Rich Turner. Studied the modules: Robust and non-linear systems and control, Optimal and predictive control, Practical optimisation, Statistical Pattern Processing, Machine Learning, Computational neuroscience, Molecular modelling, Accounting and finance.
- 2012-12: Part IIA of the Engineering Tripos (Class I). Studied the modules: Signals and systems, Systems and Control, Computer and Network Systems, Software Engineering and Design, Medical Imaging and 3D Computer Graphics, Mathematical Physiology, Introduction to Neuroscience, Introduction to Molecular Bioengineering, Biomaterials, Operations Management for Engineers
- 2011-12: Part I of the Natural Sciences Tripos (Class II). Studied Biology of Cells, Physiology of Organisms, Chemistry, and Mathematics B at Part IA. Studied Biochemistry & Molecular Biology, Cell & Developmental Biology, and Mathematics at Part IB.
- A-levels in Physics, Chemistry, Biology, Mathematics and Further Mathematics.

SUMMER PLACEMENTS

- 2013: Software Developer Intern at **The MathWorks**. Prototyped a web GUI using JavaScript and the Dojo toolkit. Also implemented a new graph layout and improved GUI for a dependency graph viewer.

- 2012: Student placement with **Dr Madan Babu Mohan's** group at the MRC Laboratory of Molecular Biology. Constructed a website to visualise and compare networks of non-covalent interactions within proteins. I implemented the front-end in JavaScript with D3.js, and the backend in C++.
- 2011: Student placement with **Dr Bill Schafer's** group at the MRC Laboratory of Molecular Biology. Wrote a MATLAB program to play videos of experiments, and interact with metadata and annotations stored in both a MySQL database and binary files. I also had some exposure to *C. elegans* experimental methods, including behavioural assays and calcium imaging.
- 2010: Student placement with **Prof. Jeremy Frey's** group at the University of Southampton. This was mostly spent writing a Ruby on Rails web application to collect experimental data
- 2008: Student placement with **Prof. Jeremy Frey's** group. This included writing Perl scripts as part of a laboratory automation project

HOBBIES

- Sailing
- Reading
- Cooking
- Playing with computers (programming, system administration, etc.)