1 Advertisement

Post Title: Research Fellow in Systems Biology Cancer Research  
School/department: Brighton and Sussex Medical School  
Hours: full time considered up to a maximum of 1 FTE. Requests for flexible working options will be considered (subject to business need).  
Contract: fixed term for 2 years  
Reference: 4533  
Salary: starting at £33,797 to £40,322 per annum, pro rata  
Placed on: 16 September 2020  
Closing date: 16 October 2020. Applications must be received by midnight of the closing date.

• Tackle cancer with code and equations.  
• Build and analyse mathematical models with clinical impact.  
• Work towards the future of personalised medicine.  
• Benefit from strong experimental and clinical collaborations.

An exciting post-doctoral research opportunity is available at Brighton and Sussex Medical School; a joint venture between the University of Sussex and University of Brighton.

The project is sponsored by Leukaemia UK and is supervised by Dr Simon Mitchell, a systems biologist, and Prof Chris Pepper, a cancer cell biologist. Both Simon and Chris’ groups form part of the vibrant interdisciplinary Haematology Research Group, with expertise spanning computational biology, cell and structural biology, drug discovery and clinical oncology.

The project will use systems biology approaches to understand the clinical and molecular heterogeneity found in B-cell lymphomas. These are relatively common cancers, occurring when mutations cause a loss of regulation of molecular signalling pathways, which control cell survival, proliferation and differentiation. While lots is known about the mutational landscape of B-cell lymphomas, there is still a significant knowledge gap in our understanding of how mutation-driven dysregulation of molecular signalling pathways modifies cancerous cell fates. This project is designed to address this knowledge gap with the ultimate aim of identifying druggable molecular targets tailored for individual subsets of patients.

We recently published computational, systems biology, simulations of how cell fates are altered by changes in molecular signalling networks. These simulations revealed new molecular interactions, and targets to control B-cells, that were validated in the lab. These models consist of systems of differential equations, solved using computational algorithms, with populations of individual cells being simulated using highly parallel processing. These simulations have single cell resolution and can accurately predict B-cell differentiation.
Exciting recent data suggest if we recreate molecular misregulation, caused by mutations found in B-cell lymphomas, we can accurately simulate the disease. We now want to use and develop these models to improve treatments for B-cell lymphoma.

The successful candidate will:

- Combine the wealth of experimental and clinical data available for B-cell lymphoma to create accurate simulations of the disease.
- Simulate the diverse mutations found in patients
- Use simulations to perform virtual experiments.
- Computationally identify promising new targets for therapy.
- Computationally identify biomarkers that can be used to get the right therapy to the right patient.

The research will take place in a vibrant and collaborative research environment at BSMS and the successful applicant will benefit from opportunities for national and international collaboration and conference participation. In addition, a wealth of scientific and computing resources are available to support the work as well as the experience and expertise of the supervisory team.

The successfully candidate will work in the beautiful and diverse seaside city of Brighton and Hove, 1 hour from London by train, and some work may be performed remotely initially.

Please contact Dr Simon Mitchell, S.A.Mitchell@bsms.ac.uk for informal enquiries.

For full details and how to apply see our vacancies page
www.brighton.ac.uk/jobs  www.bsms.ac.uk

The University of Sussex values the diversity of its staff and students and we welcome applicants from all backgrounds.

2. The School / Division

Please find further information regarding the school/division at www.BSMS.ac.uk

3. Job Description

Job Description for the post of: Research Fellow in Systems Biology Cancer Research

Grade: Research Fellow I, Grade 7
School: Brighton and Sussex Medical School
Location: Medical Research Building (Falmer)
Responsible to: Principal Investigator through to Head of School
Direct reports: n/a
Key contacts: Members of research group, members of faculty within the School and University.
Dr Simon Mitchell
Research Fellow I is an early career-grade research position. Post-holders will be expected to contribute to the work of the research team, and also to develop their research skills with support from more experienced members of staff.

4. **Person Specification**

**PRINCIPAL ACCOUNTABILITIES**

1. To engage in individual and/or collaborative research activity resulting in high-quality publications; and to develop research funding and knowledge exchange income individually or in collaboration with others, as appropriate, depending on the size and scope of the bid.

2. To contribute to School teaching activities.

**KEY RESPONSIBILITIES**

1. **Research, Scholarship & Enterprise**

   1.1 Develop research objectives and proposals for own or joint research, at acceptable levels, with assistance if required.

   1.2 Conduct research projects individually and in collaboration with others.

   1.3 Analyse and interpret research findings and draw conclusions on the outcomes.

   1.4 Produce high-quality research outputs for publication in monographs or recognised high-quality journals as appropriate, and contribute to the School’s REF submission at acceptable levels of volume and academic excellence.

   1.5 Contribute to the preparation of proposals and applications to external bodies, for example for funding purposes.

   1.6 Individually or with colleagues, explore opportunities for enterprise activity, knowledge exchange income and/or consultancy, where permissible.

   1.7 Build internal contacts and participate in internal networks and relevant external networks in order to form relationships and collaborations.

   1.8 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2. **Teaching & Student Support**

   2.1 Undertake teaching duties, if required.
2.2 Assist in the assessment of student knowledge and supervision of student projects if required.

2.3 Assist in the development of student research skills, for example as part of a postgraduate supervision team.

3. **Contribution to School & University**

3.1 Attend and contribute to relevant School and project meetings.

3.2 Undertake additional duties, as required by the Principal Investigator and/or Head of School.

4. **Role-specific duties**

4.1 Construct, validate and utilise computational models to produce clinically impactful results.

4.2 Publish research results in internationally recognised journals.

4.3 Maintain high standards of research integrity and reproducibility at all times.

4.4 Assist in knowledge exchange with other members of the group, including providing guidance to PhD students.

4.5 Present research findings at national and international conferences. Attend, present and participate in school, departmental and university-wide research events.

4.6 Collaborate, where appropriate, on related haemato-oncology research projects within the University and externally.

4.7 Participate in research outreach, where appropriate, to maximise the impact and benefit to patients, of the project.

This Job Description sets out current duties of the post that may vary from time to time without changing the general character of the post or level of responsibility entailed.
INDICATIVE PERFORMANCE CRITERIA

- A PhD or equivalent scholarly or relevant professional activity
- Pursuing a line of independent research within a research group.
- Publishing research (either from a recently completed PhD or new original research).
- Other forms of externally recognised professional practice or creative output of a standing equivalent to regular publication of original research.
- Initiating, developing or participating in links between the University and external bodies such as business and industry, the professions, community organisations and policy-makers.
- Evidence of successful engagement in teaching or supervision.

PERSON SPECIFICATION

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline (see role-specific criteria below).

2. Evidence of engagement in high-quality research activity.

3. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.

4. Ability to work individually on own initiative and without close supervision, and as part of a team.

5. Ability to exercise a degree of innovation and creative problem-solving.

6. Excellent organisational and administrative skills.

7. Ability to prioritise and meet deadlines.

8. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. Ability to communicate insight from analytical techniques to interdisciplinary audiences (mathematicians, cell biologists and clinicians)

2. Knowledge of, or ability to rapidly learn, the genetic, molecular and cellular details of B-cell signalling and Diffuse Large B-Cell Lymphoma.

3. Experience of modelling/simulating a dynamic system to generate actionable insight.

4. Ability to write clear, efficient and maintainable computer code, which can be made publicly available to reproduce research results.
5. Familiarity with dynamical systems and ordinary differential equations.

**DESIRABLE CRITERIA**

1. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.

2. Experience of generating research or knowledge exchange income.

3. Experience simulating biological systems or cellular signalling networks.

4. Knowledge of B-cell biology, lymphoma, haematology, immunology, cell signalling or related areas; and the ability to independently gain knowledge of these areas where not already present.

5. Experience in writing and reading code in one or more of: MATLAB, Julia, Python etc.

6. Experience of interpreting and utilising experimental data in dynamical systems modelling construction, validation or interpretation.

7. Experience in communicating effectively with experimental bio-scientists to interpret experimental data, explain modelling results, and collaborate effectively.

8. Familiarity with the formats and notation associated with systems biology (SBML, SBGN etc.).

9. Experience with multi-scale or agent-based modelling.

10. Experience of coding and solving optimisation problems.

11. Be driven by improving outcomes for patients through systems biology.

12. Experience with high performance computing, distributed and parallel processing, or cloud computing; along with the ability to run computing tasks on remote hardware.