THE UNIVERSITY OF
MELBOURNE

School of Mathematics and Statistics
Faculty of Science

Research Fellow in Multiscale Mathematical Modelling of Cell Biology

POSITION NO	0059007
CLASSIFICATION	Level A
SALARY	$77,171 - $104,717 (PhD entry level $97,558)
SUPERANNUATION	Employer contribution of 17%
WORKING HOURS	Full-time (1.0 FTE)
BASIS OF EMPLOYMENT	Fixed Term for 2 years with the possibility of extension
OTHER BENEFITS	https://about.unimelb.edu.au/careers/staff-benefits
HOW TO APPLY	Online applications are essential. Go to https://www.mathjobs.org/jobs, Login or Create a New Account, then find the position by title.
CONTACT FOR ENQUIRIES ONLY	Dr Stuart Johnston Email: stuart.johnston@unimelb.edu.au *Please do not send your application to this contact*

For information about working for the University of Melbourne, visit our website:
about.unimelb.edu.au/careers

Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of the unceded land on which we work, learn and live: the Wurundjeri Woi Wurrung and Bunurong peoples (Burnley, Fishermans Bend, Parkville, Southbank and Werribee campuses), the Yorta Yorta Nation (Dookie and Shepparton campuses), and the Dja Dja Wurrung people (Creswick campus).

The University also acknowledges and is grateful to the Traditional Owners, Elders and Knowledge Holders of all Indigenous nations and clans who have been instrumental in our reconciliation journey.

We recognise the unique place held by Aboriginal and Torres Strait Islander peoples as the original owners and custodians of the lands and waterways across the Australian continent, with histories of continuous connection dating back more than 60,000 years. We also acknowledge their enduring cultural practices of caring for Country.

We pay respect to Elders past, present and future, and acknowledge the importance of Indigenous knowledge in the Academy. As a community of researchers, teachers, professional staff and students we are privileged to work and learn every day with Indigenous colleagues and partners.

Position Summary

The Research Fellow in Multiscale Mathematical Modelling of Cell Biology is expected to develop a multiscale mathematical framework that allows for the connection between simple and complex biological experiments. This role will involve designing agent-based mathematical models in established software, deriving corresponding continuum mathematical models, and interfacing these mathematical models with experimental data.

This role is funded by the Australian Research Council's (ARC) Discovery Project of Dr Stuart Johnston, Dr Matthew Faria and Associate Professor James Osborne. The appointee will be a member of the School of Mathematics and Statistics, reporting to Dr Stuart Johnston.

The project, titled "Mathematical models to connect experiments across biological scales" (DP230100380) involves developing a mathematical modelling framework to connect simple and complex cell biology experiments via scaling techniques that connect agent-based and population-level mathematical models. The modelling framework will be used to understand the formation and structure of crypt organoids, which will involve interfacing the developed models with new experimental data. This is a research-only position but will also involve joint supervision of postgraduate students. Some teaching opportunities may also be available if the candidate is interested in developing their teaching skills, but the role is primarily focused on research.

1. Key Responsibilities

1.1 RESEARCH AND RESEARCH TRAINING

You are expected to significantly contribute towards the research effort of the team and to develop your research expertise with an increasing degree of autonomy.

▸ Under supervision, lead the development of mathematical models of cell behaviour, and calibration of models to experimental data, leading to peer-reviewed journal publications, revision-tracked software code and technical documents.

▸ Contribute to and publish academic papers and other scholarly outputs to a high academic standard in accordance with the research expectations of the University of Melbourne

▸ Assist and actively contribute, under the guidance of Senior Academics to the preparation of research proposal submissions to external funding bodies.

▸ Undertake administrative functions and obligations primarily connected with the area of research.

▸ Contribute to and assist in the co-supervision and training of postgraduate or research higher degree students.

▸ Give internal team presentations, external seminars and conference presentations as required.

▸ Work effectively with the project's experimental collaborators.

▸ Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise;

▸ Develop effective timelines and milestones based on goals of the research program.

1.2 TEACHING AND LEARNING

▸ Contribute to teaching, training, scientific mentoring and supervision of students.

▸ Contribute to the effective supervision of junior research staff in the appointee's area of expertise.

1.3 LEADERSHIP AND SERVICE

▸ Actively participate at School meetings and with guidance, contribute to planning activities or committee work to support capacity building in the School/discipline.

▸ Contribute to the research culture of the School of Mathematics and Statistics and of the research group by attendance and active participation in meetings and seminars associated with the research work of the project, as well as School meetings and seminars.

▸ Effective demonstration and promotion of University values including diversity and inclusion and high standards of ethics and integrity.

▸ Actively contribute to School activities such as Open day to promote student engagement.

1.4 OTHER DUTIES

▸ Perform other tasks as requested by the supervisor or the Head of School.

▸ Actively participate in the University Professional Development Framework.

▸ Ensure an up-to-date record of University compliance courses, such as, but not limited to, Appropriate Workplace Behaviour, PDF for Staff and Supervisors, OH &S training courses.

▸ Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 4.

2. Selection Criteria

2.1 ESSENTIAL

- Completion (or near completion) of a PhD in applied mathematics, or related discipline.

- Demonstrated capacity to engage in outstanding research consistent with the strengths and strategic directions of the ARC Discovery Project, with a strong publication track record of original research publications in peer reviewed international journals, relative to time since PhD completion.

- Experience in at least one of the following topics: mathematical biology, continuum mathematical modelling, agent-based modelling.

- Demonstrated capacity to work constructively and collaboratively with colleagues in furthering the aims of the School, and an ability to work in multidisciplinary research or teaching teams.

- Demonstrated oral and written communication skills, and an ability to represent the School and the discipline with internal or external groups.

- Demonstrated ability in scientific programming or software development.

2.2 DESIRABLE

- A PhD or equivalent in data-driven mathematical biology.

- Experience in calibrating mathematical models to experimental data.

- Experience in the development and computational implementation of agent-based models of biological processes.

- Experience in discrete-to-continuum scaling techniques and/or coarse graining approaches.

- Track record of peer-reviewed publications in the area of data-driven mathematical biology.

- Experience in either working in an experimental laboratory environment, or working closely with experimental collaborators.

- The ability to attract external funding through grant applications and/or support in funded joint projects with others internal or external to the university.

- Experience in assisting with supervision of students undertaking undergraduate or higher degree research projects.

3. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion, and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the Advancing Melbourne strategy that addresses diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Advancing Melbourne.

4. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

https://safety.unimelb.edu.au/people/community/responsibilities-of-personnel

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. Other Information

5.1 SCHOOL OF MATHEMATICS AND STATISTICS

http://www.ms.unimelb.edu.au

The University of Melbourne's School of Mathematics and Statistics is one of Australia's leading mathematics and statistics schools. It has achieved this status through the high quality of its research and teaching programs. The School offers a wide range of subjects to undergraduate and postgraduate students and is involved in aspects of community life that impact on the interests of the School and the discipline.

The School of Mathematics and Statistics has a total of 70 continuing teaching and/or research staff; 34 research only staff and consultants; 16 academic specialists and 16 support staff. The School has over 240 casual and honorary staff. In 2020, there were 90 Research Higher Degree and 278 Coursework Master of Science students. Five members of the School staff and one Emeritus Professor are members of the Academy of Science.

Infrastructure support for research and basic information technology facilities are provided to all members of the department. Special facilities such as high-end workstations and salaries for research fellows are supported through individual competitive external research grants. Members of the School have had considerable success at attracting support from the Australian Research Council. The school currently hosts two ARC Centres of Excellence, and has hosted four ARC Laureate Fellows, ten ARC Future Fellows and fourteen DECRA Fellows.

It is one of the objectives of the University to develop and maintain a strong international profile. In this context, members of the School have strong collaborative links with colleagues in the United States of States of America, most countries in Europe and the Asia-Pacific region.

5.2 FACULTY OF SCIENCE

https://science.unimelb.edu.au

Science at Melbourne is a global leader across fundamental and impactful scientific research and education. Science begins with curiosity, and we are dedicated to understanding the universe from the level of sub-atomic particles to the solar system. We aim to be leaders who positively impact the community locally and globally, addressing major societal issues from climate change to disease. Our discoveries help build an understanding of the world around us.

Our strength is our breadth of expertise. We are the second largest faculty in the University comprising seven schools: Agriculture, Food, Forest & Ecosystems Sciences, BioSciences, Chemistry, Geography, Earth & Atmospheric Sciences, Mathematics & Statistics, Physics and Veterinary Science.

This depth of knowledge positions the faculty to better understand, explore and impact our world and humanity, within a truly comprehensive Faculty of Science.

We have more than 150 years of experience in pioneering scientific thinking and analysis, leading to outstanding teaching and learning and offer a curriculum based on highly relevant research. We aim to train students with the knowledge and intellectual flexibility to drive the industries of tomorrow and lead across all levels of society.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling more than 11,500 undergraduate and 3,750 graduate students.

We are dedicated to delivering leading transformative educational outcomes, underpinned by research, and an inclusive and inspiring student experience.

Excellence comes in many forms and diversity of thought, perspective and disciplines is essential to deliver globally leading science. At the core of our success is our focus on an inclusive environment for all in our community. Our Faculty's focus on equity, inclusion and belonging is grounded in our endeavour to ensure we are best placed to advance research, teaching and serve diverse national and global communities.

As a Science community we sit across six of the University's seven campuses – Parkville, Dookie, Burnley, Creswick, Shepparton and Werribee. This reach provides us with a unique perspective that is beneficial to our teaching and research. It also means we can offer our students a greater variety of learning experiences and internships to engage with industry partners to solve real-world issues.

We are highly research focused, performing strongly in the ARC competitive grants schemes, often out-performing the national average. The Faculty of Science is also currently growing its competitiveness and standing in the NHMRC space.

The Faculty is custodian of the Bio21 Molecular Science and Biotechnology Institute, Office for Environmental Programs, Australian Mathematical Sciences Institute (AMSI), the Indigenous Knowledge Institute and home to numerous Centres.

5.3 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia's premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at http://about.unimelb.edu.au/careers

5.4   ADVANCING MELBOURNE

The University's strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University's commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

- We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.

- We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.

- We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.

- We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne's academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

5.5   GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at https://about.unimelb.edu.au/strategy/governance