

Postdoctoral/Senior Research Associate in Computer Modelling of Cellular Ionic Events
School of Mathematics & Statistics
Reference no. 641/0420F

ADVERTISEMENT BODY:

- **Opportunity to contribute to a key research programme creating computational models of ionic events in lymphatic cells and vessels**
- **Located at the CBD campus, Camperdown – join a community of world-class mathematical scientists!**
- **Full-time, 1 year fixed-term contract. Base salary: \$94k-\$126k p.a. (Level A,6-B,6) plus annual leave loading and a generous employer's contribution to superannuation.**

About the opportunity

The University of Sydney is welcoming applications for a **Postdoctoral/Senior Research Associate** in the Applied Mathematics group, to work with **Research Professor Chris Bertram** and colleagues on developing the next generation of numerical models of the electrochemical events in the muscle cells and endothelial cells of lymphatic vessels which control all aspects of lymphatic vessel contraction. The position is funded by a grant from the U.S. National Institutes of Health awarded to University of Missouri (UM) for biological experimental work with University of Sydney as the associated mathematical/numerical modeling hub. The laboratory at Missouri is world-famous in the lymphatic field, with landmark publications over the last 15 years or more. The group at Sydney has been involved in numerical modeling of lymphatics since 2010. The position is initially available for one year, but has excellent chances of renewal, potentially for up to three further years. There are prospects for funded travel to UM and to overseas conferences.

The lymphatic vascular system plays a vital role in returning interstitial fluid to the blood circulation, in the digestion of fats, and in the trafficking of immune cells between body tissues and lymph nodes, where the adaptive immune response to viruses, bacteria and foreign particles is centred. Unlike the blood circulation, where fluid is propelled by the heart, lymphatic vessels must generate their own means of fluid propulsion. Accordingly, lymphatic vessels are subdivided by frequent one-way valves, and segments between each pair of valves actively contract using a unique muscle type capable of mounting both long-lasting tone (like that in small blood vessels) and repetitive contractions (like heart muscle). The field has up to now been under-researched relative to the cardiovascular system, and the specifics of how the unique muscle isoform is controlled electrically are only now being discovered. While there are parallels to some of what is known about (e.g.) myocardial cells, almost all specifics remain to be pinned down at this point. Similarly, the detailed workings of the electrical and chemical coupling which allow bi-directional propagation of contraction waves along lymphatic vessels are yet to be understood.

This is an opportunity to conduct research in a collaborative research team. The role will require carrying out scientific research and preparing and presenting scientific results in papers and conferences, co-supervising undergraduate and graduate research students, assisting in the recruitment of research students and continuously working towards attracting new funding. Additionally, you will help to coordinate the research of other researchers.

Intending applicants are welcome to seek further information by emailing c.bertram@sydney.edu.au.

About you

The University values courage and creativity, openness and engagement, inclusion and diversity, and respect and integrity. As such, we see the importance of recruiting talent aligned to these values and are looking for a **Postdoctoral/Senior Research Associate** who possesses experience in the following areas:

- a PhD in an appropriate area such as (but not limited to) biomechanical engineering, biophysics, or another closely related scientific discipline.
- proven research ability, and evidence of self-motivation and research potential
- excellent interpersonal skills suited to working in a small but extremely enthusiastic research group

- proven commitment to producing high-quality work
- expertise in mathematical modelling in a biological area
- demonstrated excellence in research through published research in refereed journals
- excellence in written and verbal communication in scientific English

Desirable

- in-depth knowledge of the mathematics of ordinary and partial differential equation systems, electrical engineering concepts, fluid mechanics, mathematical software development, and cardiovascular physiology

About us

We're Australia's first university and have a global reputation for academic and research excellence. Across our campuses, we employ over 6000 academic and non-academic staff who support over 60,000 students. The School of Mathematics and Statistics is a leading centre for research and education in the mathematical sciences in Australia. We attract outstanding undergraduate students and have a large cohort of postgraduate research students. The postgraduate research student cohort and many overseas visitors benefit from, and help to sustain, a world-class research environment. The School attracts significant research funding in the form of Australian Research Council grants, fellowships, and other competitive external funding and is home to the University of Sydney Mathematical Research Institute which has attracted \$6.5M of philanthropic funding to date.

How to apply

For more information on the position and University, please view the position description available from the job's listing on the University of Sydney careers website.

All applications must be submitted via the University of Sydney careers website. Visit sydney.edu.au/recruitment and search by the reference number **641/0420F** to apply.

Routine pre-employment probity checks will be carried out for this position.

Closing date: 11:30pm, Sunday 24 May 2020

The University of Sydney is committed to diversity and social inclusion. Applications are encouraged from people of culturally and linguistically diverse backgrounds; equity target groups including women, people with disabilities, people who identify as LGBTIQ; and Aboriginal and Torres Strait Islander people.

The University reserves the right not to proceed with any appointment.