

Department Profile

School of Biomedical Sciences, Faculty of Science, University of Queensland, Australia

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The School of Biomedical Sciences (SBMS)¹ at The University of Queensland (UQ) is an acknowledged leader in biomedical sciences in Australia. UQ is typically ranked around 30 globally in the top 100 for Life Sciences according to *The Times Higher Education World University Rankings*². SBMS is creating world-class biomedical scientists through excellence in research and teaching. This is achieved by attracting and nurturing the best students, the finest educators, dedicated support staff, and internationally-competitive researchers.

Annually, SBMS academics deliver teaching to thousands of undergraduate and higher degree students enrolled in 13 programs across three UQ Faculties. This comprises over 200 Honours and other postgraduate students, and more than 10,000 students across 14 degree programs. The teaching and learning academic team of 40 includes 7 Professors, 7 Associate Professors, 9 Senior Lecturers, 10 Lecturers and 7 Associate Lecturers. There are also 10 Research Only (RO) staff members within the School.

The School is home to a number of prestigious Research Fellows funded by UQ, and externally by the NHMRC, the ARC, and various other bodies. Excellent performances in research and teaching by academic staff members are reflected in the continuous growth in external competitive research funding and awards for teaching excellence.

SBMS is a distinguished centre for research in anatomy, cell biology, developmental biology, neuroscience, pharmacology, and physiology. Numerous teaching-focused projects that are aimed at producing positive outcomes on student learning and skills are also an important facet of the research output for the School.

More specifically, examples of this diversity in scientific research and the laboratories involved include:

- key roles of proteins in normal and cancer cells (Figure 1)
- molecular endocrinology involving brain, bone, reproduction and growth
- kidney development and disease



Figure 1: Postdoctoral researchers Dr Neelima Sidharthan and Dr Gysell Mortimer operating a liquid chromatography mass spectrometer in the cancer research laboratory headed by Professor Rodney Minchin.

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Figure 2: PhD student Liam Coulthard, from Professor Stephen Taylor's laboratory, preparing microinjector samples during research into the development of drugs for treatment of pain and inflammation.

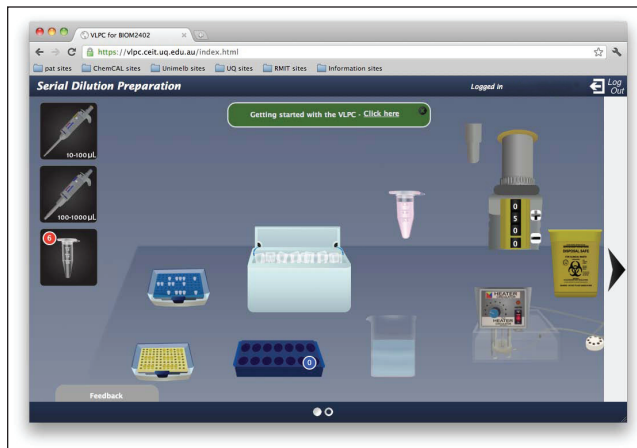


Figure 4: An example of a computer-based virtual laboratory studied as part of a teaching-focused research project supervised by Dr Matthew Cheesman.

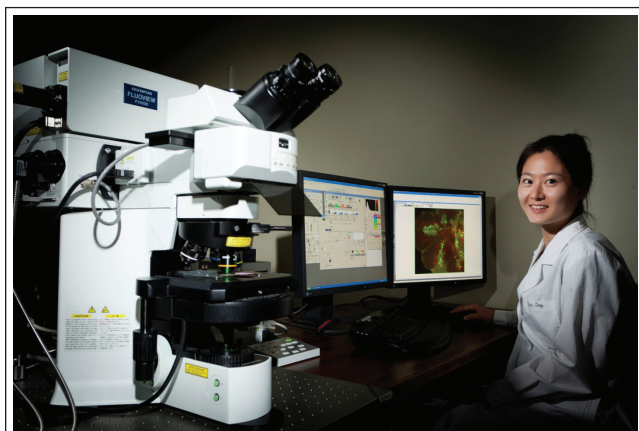


Figure 3: Yujin Jang, a final-year PhD student with Associate Professor Peter Thorn, using confocal microscopy to understand the role of actin dynamics during secretion in pancreatic cells.



Figure 5: One of the SBMS undergraduate teaching laboratories where students develop practical skills and learn key principles involved in conducting scientific research.

- calcium signaling and regulation in muscle cells
- CNS neuronal transmission and pathways, and development of synapses
- molecular basis of behavioural and visual neurobiology in marine species
- mechanisms of neuronal cell death, toxicity and ion channel modulation
- roles of inflammation in neurodegenerative diseases (Figure 2)
- immunopharmacology and drug development involving inflammation, epilepsy and asthma
- vertebrate biomechanics and anatomy of larynx and skin biology
- musculoskeletal function, injury and rehabilitation
- ion-channel signaling and receptor coupling in muscle contraction, hormone release or exocytosis (Figure 3)
- nervous and placental system development and function
- molecular and genetic basis of heart development, and organogenesis

- discipline-specific approaches to teaching and learning in physiology, medical and clinical-based coursework
- use of virtual and other modern computer-based methodologies in student learning, performances and assessment (Figure 4)
- investigation of undergraduate research experiences on cognitive development (Figure 5)

The breadth of this research provides a strong foundation for multi-disciplinary research and, as a result, staff members collaborate with many research institutes locally, nationally and internationally. SBMS also has a long history of stakeholder engagement which includes student outreach programs, professional development courses for health and allied health professionals, and a public lecture series.

In recent years the School has strengthened its research base with professorial appointments in a diversity of fields

including biophysics, cell physiology, comparative physiology, developmental biology, endocrinology, and pharmacology. Through the efforts of the outstanding academic and professional staff, the School is continually identifying ways to strengthen its resources, explore niche areas, and focus on research training. Curiosity, creativity, commitment, and collegiality are highly valued.

The collective vision of SBMS is to attract the best and brightest academics in biomedical sciences to UQ and educate the next generation of science leaders in Australia.

1. <http://www.uq.edu.au/sbms/index.html>
2. <http://www.timeshighereducation.co.uk/world-university-rankings/2011-2012/life-sciences.html>