

SCHOOL OF CHEMISTRY & MOLECULAR BIOSCIENCES
OPERATIONAL PLAN 2009 – 2013
(Approved by School Executive Committee 31 October 2008)

Context

The School of Chemistry & Molecular Biosciences was formed from the disciplines of Chemistry, Biochemistry & Molecular Biology, Microbiology and Parasitology. The School teaches courses associated with undergraduate and postgraduate science, applied science and biotechnology degrees as well as professional degrees in the health, veterinary and engineering areas. The School has an extensive research portfolio supported by funds from research councils, industry and other sources and has a substantial research higher degree program. Members of its staff have won competitive awards for the quality of their teaching, teaching research and research performance. Engagement with employers, partners, prospective students and alumni is a hallmark of the School's history, and is currently being reinvigorated.

Mission

The School's mission is to:
enable our students and staff to fulfil their learning and discovery aspirations in the chemical and molecular life sciences by creating an environment that rewards excellence, openness and innovation and encourages School-wide engagement with stakeholders.

Direction

We will focus on encouraging more students to pursue studies and a career in Science, and on delivering them a meaningful and enriching learning experience, objectively measured. We will strengthen and diversify our research activity, including encouraging young researchers and enhancing our collaboration with external partners. We will build on our links with industry and alumni with a view to mutual benefit. We will further realise the advantages of an international outlook to all of our activities. We will manage limited resources in a responsible, yet productive, way and provide a supportive environment to our people.

Learning:

Profile

At the undergraduate, Honours and postgraduate coursework levels, the School aims to provide substantial learning opportunities in the discipline of Chemistry and core areas of the molecular biosciences: biochemistry, molecular and cellular biology, molecular genetics and genomics, bioinformatics, microbiology and parasitology. These are provided in the fields of study offered within the Bachelor of Science and in the very strong Master of Molecular Biology and Master of Biotechnology postgraduate degree programs. The School participates effectively in interdisciplinary programs and provides teaching in chemistry and core enabling molecular biosciences that underpins programs of study in biotechnology, biomedical sciences, materials science, environmental science, plant sciences, developmental biology, neuroscience and pharmacology. In addition, the School aims to provide high quality courses or contributions within its disciplinary areas to programs in Medicine, Dentistry, Veterinary Science, Chemical and Environmental Engineering, Agricultural and Food Science, Health and Rehabilitation Sciences, Human Movement Studies and Pharmacy.

Priorities

- Develop Majors within the BSc which incorporate the unique features of the 'UQ Advantage'
- Raise the profile, visibility and status of teaching and learning within the School
- Provide quality practical teaching that enhances the student learning experience
- Ensure that resources and staffing for service teaching are provided to meet developments on the St Lucia, Gatton and Ipswich campuses
- Improve the quality of feedback and assessment practice.

Discovery:

Profile

A common theme throughout all research in SCMB is addressing biological and chemical questions at a molecular level which provides an essential platform upon which larger scale problems in organismal biology and nanotechnology can be addressed. The combined expertise of SCMB researchers in the areas of molecular genetics, cell metabolism, infectious diseases (including pathogenicity and virology), structural and computational biology is a particular strength. We have the largest group of researchers engaged in biological inorganic chemistry (within the School's Centre for Metals in Biology) in Australia. SCMB has unique strengths in synthetic materials and bio-materials research that interface with the physical and biological sciences. Our biomolecular organic chemistry program comprises one of the largest groups of researchers within SCMB.

At the heart of experimental biomolecular science is structural biology and SCMB has been at the forefront in structural characterisation of molecular and macromolecular systems. Newly acquired X-ray crystallography, and cryo-electron microscopy facilities in addition to state of the art NMR and mass spectrometry equipment underpin all of our investigations in molecular science. Our cutting-edge proteomics facility enables high-throughput analyses of complex mixtures of proteins using a variety of separation and quantitative visualisation techniques. SCMB researchers have led the way in real time PCR analysis, which underpins many of our molecular genetics research programs. Our experimental studies in structural biology and protein chemistry are closely linked with complementary programs in computational biomolecular science.

Priorities

- Continue to promote research excellence at a national and international level
- Uphold key strategic areas of research excellence that build on collaborative relationships with groups outside UQ at the national and international level.
- Diversify SCMB research income to sustain high quality research and outcomes
- Sponsor programs for the career development of graduate students, postdoctoral and early career researchers.

Engagement:

Profile

The School promotes the disciplines within the School via its named-lectures and School prize evening. In May 2008, the School launched the *Future Scientists Program*, a joint initiative with Kelly Scientific, the world's largest scientific staffing firm. The School also has extensive links with companies including those formed at UQ (Vacquel, GeneDimmer, Nanomics Biosystems, Impedimed, QRx, Replikon) and companies formed outside the University environment (Mediherb, Ecobiotics, Inverness Medical Innovations, Alphapharm). School staff are active in the wider community through provision of expert commentary or advice when requested and through membership of national and international bodies and professional societies. The School participates strongly in University and Faculty-based outreach projects and at UQ Open Day. Several SCMB academic staff share joint appointments with the major research Institutes (IMB, QIMR, AIBN and QBI).

Priorities

- Improve interaction with alumni in the School's disciplines.
- Work with the Faculty and University to optimise outreach activities in the School's disciplines, by targeting (and ideally diversifying) marketing activities.
- Consolidate and build on links to chemical and biotechnology industry, with a view to mutual benefit and enhancement of the student experience.
- Continue the School's success in knowledge transfer and commercialisation, increasing the participation therein of research students and early-mid career research staff.
- Strengthen and diversify the School's international linkages, with emphases on drawing suitable overseas students and institutions to the School and offering local students an international experience.

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