

Biomedical Research Highlights and Opportunities in Australia and New Zealand



Brad Marsh



Cynthia Jensen

Despite the geographical isolation of Australia and New Zealand, the discipline of cell biology was firmly seeded in these countries as early as the 1970s. Discussions among leading cell biologists in the region that actively grew over the course of several conferences led to the establishment of the Australian and New Zealand Society for Cell Biology in 1981, with “the aim of advancing research and education in cell biology.” The society’s first annual meeting was held in Canberra the following year, in association with the Seventh Australian Conference on Electron Microscopy. The list of invited speakers and attendees at this first conference included Shinya Inoue, Lew Tilney, E.H. Mercer, Andrew Somlyo, and Sue Wick. Shortly after its formation, the society affiliated with the International Federation for Cell Biology, the Asia-Pacific Organization for Cell Biology, and the European Developmental Biology Organization. In 1996, it was agreed to establish a more formal relationship with developmental biologists; the society then renamed itself as the Australia and New Zealand Society for Cell and Developmental Biology (ANZSCDB).

In recent times, the society’s annual meeting has been held under the auspices of ComBio, the major Australian biology conference that is held in conjunction with the Australian Society for Biochemistry and Molecular Biology and a variety of other organizations each year. Although the meetings have occurred

predominantly in Australia, they have been held twice in New Zealand—in Auckland in 1987 (in conjunction with the New Zealand Society for Electron Microscopy), and in Christchurch in 2009. Two of the society’s annual meetings have been held in association with international congresses. The Second Congress of the Asia-Pacific Organization for Cell Biology was held in Sydney’s Darling Harbour in 1994. Eminent invited cell biologists attended and spoke at that conference, including John Heuser, Ira Mellman, Richard Scheller, Nobutaka Hirokawa, Peter Dempsey, and Wanjin Hong. The 19th conference of the ANZSCDB was held on Queensland’s Gold Coast in association with the Seventh International Congress for Cell Biology, as well as the International Society of Differentiation and the Asia Pacific International Molecular Biology Network. Major features of these two international meetings were workshops on cell biology education... distinguished invited speakers included Mary Lee Ledbetter, Mina Bissell, Janet Oliver, and Denys Wheatley. In addition to these larger conferences, the Hunter Meeting (originally the “Hunter Cellular Biology Meeting”) has provided an informal yet internationally renowned forum since 2001 that has brought Australian and New Zealand cell and developmental biologists together with leading international

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speakers. The conference takes place annually in the idyllic setting of the Hunter Valley (one of Australia's premier wine-growing regions) to discuss "cell biology among the vines." The attendance of eminent cell biologists from overseas at cell biology conferences such as these over the years has helped to promote an air of excitement and fostered a sense of community that has established cell biology as a major research discipline in Australia and New Zealand.

Research Funding

Currently, the majority of funding for biomedical research within Australia is obtained through highly competitive, peer-reviewed grant schemes managed by the two main federal government science funding agencies, namely the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC). As a general rule of thumb, both agencies expect that successful grant recipients will remain based in Australia for the duration of the award. Additionally, while there is a general requirement for lead investigators applying for NHMRC grant funding to be Australian citizens or permanent residents when they apply, the NHMRC may waive these requirements provided the applicant(s) clearly demonstrate that the research is based in Australia and justify how it will benefit Australian health and medical research (note that any lead investigator who is a New Zealand citizen does not require a waiver if he/she will be based in Australia for the duration of the grant). Although researchers who are not Australian citizens or permanent residents of Australia are typically not eligible to submit grant applications as the primary investigator, they may be included as a co-investigator. However, co-investigators from overseas who will stay based in Australia during the grant may be eligible to submit an independent request for salary funding by applying for a Personnel Support Package at the level that most closely matches the role/responsibilities of the position on the research project (not the investigator's expertise/past experience).

Generally, most of the award mechanisms brokered by these two federal agencies accept new grant applications only once per year; unfortunately, grant submission dates tend to cluster together early in the year (February–March) for both agencies (www.nhmrc.gov.

au/grants/calendar/index.htm). As of last year, each agency requires all grant applications to be completed and submitted online via their respective Web-based systems. New grant applications to the NHMRC must be submitted via the Research Grants Management System; new grant applications to the ARC must be submitted via the Research Management System.

External Funding Partnerships

Over recent years—as the Australian federal government's primary biomedical funding body—the NHMRC has formally partnered with a variety of external funding agencies both to leverage funding across agencies and allow foreign/private funding bodies to capitalize on the NHMRC's significant infrastructure/expertise in grant review and administration within Australia. Examples include the establishment of formal linkages with the Juvenile Diabetes Research Foundation International and managing the NHMRC–European Union Collaborative Research Grants scheme that enables Australian researchers to participate in international projects funded under the Seventh Framework Programme of the European community for research and technology development. Access to the Human Frontier Science Program (HFSP), which supports international/interdisciplinary collaborations in basic research focused on complex mechanisms of living organisms, is afforded via Australia's membership in the program through the NHMRC.

Compared with the NHMRC, ARC funding covers a much wider spectrum of research topics under its National Competitive Grants Program. However, through the ARC's commitment to foster the development of Australia's most talented researchers and support "discovery" research leading to new ideas and/or the advancement of knowledge, over the past few years the ARC has seen a substantial increase in the number of biomedically focused research grant applications encompassing more technologically innovative and ambitious science through its Discovery Projects scheme. In parallel, the ARC's Linkage scheme centers on building Australia's research capability by expanding and enhancing research networks and collaborations, establishing national centers of research excellence, and enabling international research collaborations. Notably, in addition to providing a number of senior research

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fellowships under the banner of its Discovery schemes, the ARC also either supports or formally partners with a variety of external entities through its Special Research Initiatives scheme, such as the European Molecular Biology Laboratory, to facilitate increased collaboration and scientific linkages between Australian and European scientists.

In addition to the NHMRC and the ARC, the Australian Academy of Science (AAS) offers a number of awards, such as Travelling Fellowships to allow Australian scientists to visit/study overseas, and funding to host research conferences that encourage stronger international linkages in rapidly evolving research areas. In particular, the AAS has a strong history of working hard to promote increased international activities through interactions with a variety of prestigious scientific organizations in overseas countries.

Opportunities for Scientific Exchange

Numerous opportunities for bilateral international scientific exchange other than those already outlined are available via targeted international programs as well as private foundations and governmental organizations. One of the most well-known programs is that of the Fulbright Scholarships offered through the Australian-American Fulbright Commission. Likewise, a number of strategic programs have now been established specifically to enable increased scientific exchange and collaboration between Australia and other countries, for example India, China, and France.

The prospects for scientific study, exchange, training and/or postdoctoral research within Australia are generally quite strong, offer a wide range of exciting opportunities, and vary only marginally among different states around the country. While numerous research centers, institutes, and universities offer unique opportunities for biomedical research and training in Australia, the so-called Group of Eight (Go8) universities afford a high level of quality for prospective students and postdoctoral scientists from overseas. The Go8 universities represent an alliance among Australia's leading "sandstone" institutions, which are genuinely committed to ensuring a world-class research environment and internationally competitive research outcomes. Go8 members include the University of Adelaide, Australian National University, University of Melbourne, Monash

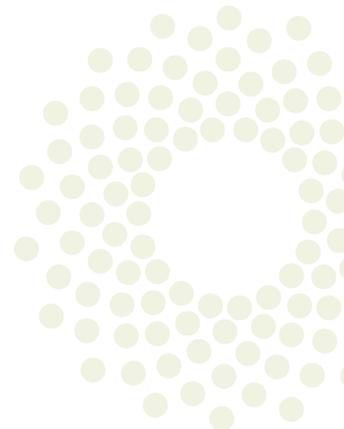
University, University of New South Wales, University of Queensland, University of Sydney, and University of Western Australia. In addition, Australia now plays host to a handful of premier research institutes that have earned themselves strong international reputations for research excellence in cell biology. Such sites include the Institute for Molecular Bioscience and Diamantina Institute in Queensland, the Walter and Eliza Hall Institute of Medical Research and Bio21 Institute in Victoria, the Garvan Institute of Medical Research and Children's Medical Research Institute in New South Wales, and the Western Australian Institute for Medical Research in Western Australia.

Research in New Zealand

Support for biomedical research in New Zealand is obtained mainly through competitive peer-reviewed schemes administered by the Health Research Council (HRC) of New Zealand, which also only accepts grant submissions once per year. The HRC is the major government-funded agency responsible for coordinating health research and the career development of health research professionals in New Zealand. The Marsden Fund, administered by the Royal Society of New Zealand, provides a substantial number of grants each year awarded for research excellence, including biomedical sciences and cellular/molecular/physiological biology. In addition, New Zealand also belongs to the HFSP.

Specific New Zealand universities have links internationally (for example, the University of Auckland is a member of the 13-country Universitas21 and of the Association of Pacific Rim Universities). These links encourage international cell biology collaborations. Increasingly more cell and molecular research is being carried out within the Crown Research Institutes, such as the National Institute of Water and Atmospheric Research, Landcare Research, AgResearch, Institute of Environmental Science and Research (ESR), and Industrial Research Ltd. ESR, for example, recently won a significant international grant from the U.S. Department of Health and Human Services for the Influenza Division of the National Center for Immunization and Respiratory Diseases to look at how the influenza virus and other respiratory pathogens spread through populations. ■

—Brad J. Marsh, *Division of Molecular Cell Biology, Institute for Molecular Bioscience, The University of Queensland, Australia; and Cynthia G. Jensen, Department of Anatomy with Radiology, University of Auckland, New Zealand*



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