

From the Editor

Women in Science: Is there equality of opportunity?

Half of our university graduates in science are women, yet, as the recently released report *Women in Science in Australia: Maximising Productivity, Diversity and Innovation*¹ by the Federation of Australian Science and Technology Societies clearly documented, there are few women found in the most senior research posts. The same is true for medicine where, again, more than half of graduates are now women. What is going on? Does this matter?

There are many reasons why it matters, and matters a lot!

Whatever the causes, motives and mechanisms, this is discrimination. All data suggest that women are at least as intelligent as men. When a competent and qualified group does not achieve its potential, it weakens all of society, because it undermines our concepts of fairness and equity. (Many years ago I was involved in the campaign against racism in the UK. The main lesson I learned from that fight is that the reason racism is bad is not because it harms black people, though it does, but because it harms the whole of society, white people every bit as much as black people.)

'Equality in the workforce would be good for us all. So let's make it happen.'

Rachel Ball, of the Human Rights Law Resource Centre

- As a society, we cannot afford, in terms of investment and education, to lose the services of many highly skilled people from the workforce. Depending on the discipline, as many as 50% of women stop working as trained scientists, doctors and engineers for years, and if they resume work they often do so at a level that undervalues their skills.
- Women often view problems in a different way from men, and many women work well in teams using a consensual approach to problem solving, while men often are more direct and confrontational. Psychologists argue that a combination of the two approaches is more likely to lead to success than either approach on its own. For this reason it is important that women are valued, senior members of research teams.
- It isn't fair! We live in a society which says it embraces equal opportunity. We think that families and children are good for individuals and for Australia. Then we penalise women because much of the work of having and raising children falls to them.

Most people would agree with the statements above, but there it ends! We need to

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Elizabeth Blackburn, from Tasmania, went to high school and university in Melbourne. She is now at the University of California, and won the 2009 Nobel Prize in Medicine. She has said, 'The career structure is very much a career structure that has worked for men' and that scientific institutions should take a more flexible approach that might allow more women to fill leadership positions. 'Quite rightly, women sometimes feel that if being a scientist means working 16-hour days, seven days a week, than that's not compatible with having a family. It's not stupid to say, 'Well, I don't want to do this.' But actually, I don't think it is necessary to do science that way. I learned that lesson when I was a young assistant professor at Berkeley. There was a postdoc in another lab; she was coming in at eight, going home at four. She had a young baby, and she was just super organised, incredibly productive... To me, it was like, 'Oh, there is another way to do science and be very successful.' It doesn't have to be this non-family-oriented model!'

The facts about women in senior posts:

In Australia, 52% of science students are women, as are 50% of PhD completions and 50% of junior university posts. Only about 12% of full professorial appointments in universities go to women, and the situation for senior staff in CSIRO is similar. There is also still a gender pay gap, though much less than was seen several years ago. (see *Women in Science in Australia*, report prepared for FASTS, October 2009, by Professor Sharon Bell)

The European Molecular Biology Organization recently found that over 50% of students of science in Europe are women, but women make up only 15% of full professors (ranging from 9% in Belgium to 21% in Finland). 'The success rate for women is lower than that of men at every step on the career ladder.'

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look into some of these issues more deeply, and then work out what we can do about it.

One approach has recently come from the Walter and Eliza Hall Institute of Medical research (WEHI), a large medical research institute with about 600 staff that is affiliated with the University of Melbourne. The new Director of WEHI, Professor Doug Hilton ^{FAA}, has just implemented a ten point practical plan to help women scientists remain competitive as they move up the career ladder.

¹Women in Science in Australia – FASTS Report Available

In October 2009 the Federation of Australian Scientific and Technological Societies (FASTS) launched its report *Women in Science in Australia: Maximising Productivity, Diversity and Innovation*. Much of the data included in Bob's editorial in this issue of *Early Days* is derived from the FASTS report. If you would like a copy, please email fiona.leves@science.org.au.

Although some of the initiatives are specifically aimed at women with young children, the program is designed to help all women (and indeed starts from the principle that what helps early career women scientists will also help men).

Some of the points cost a bit of money, and we all know that not every institute and university can afford (for instance) \$1.25 million for a Senior Fellowship. However, surely every department can make a commitment to avoid family-unfriendly meeting times, and most places can find a space for a family room! And mentoring is just as important around this issue as around finance or mis-conduct.

Bob Williamson
Secretary for Science Policy
Australian Academy of Science

Is it enough to be well intentioned? These three examples show how hard it is to get away from stereotyped attitudes. They are *not* a joke.

The New York Academy of Science is hosting a Girls Night Out series featuring talks by women scientists on topics 'close to women (and the people who love them)', such as 'Lust, Romance and Attachment' and 'Survival of the Prettiest'. (*Science*, 18 December 2009, p1597: www.nyas.org/Events/SCevents.aspx)

The President of the Girls' School Association (representing 'leading private girls' schools in England) says, 'Teenage girls

need to be taught a heavy dose of realism – it may not be possible to be a perfect mother and a career woman.'

A recent study shows that in homes where two scientists are partners, the woman does twice as much housework (cooking, cleaning and laundry) as the man. This is true even when they are of the same seniority. The authors of the report 'propose that employers provide [financial] benefits to support housework.' (*Academe*, American Association of University Professors, 20 January 2010, www.aaup.org/AAUP/pubsres/academe/)

Research Workforce Strategy Roundtable: A chance for early- and mid-career researchers to be heard by government

On 21 January 18 early- to mid-career researchers (E-MCRs), many nominated by the Australian Academy of Science, attended a Research Workforce Strategy roundtable held by the Australian Government Department of Innovation, Industry, Science and Research (DIISR) in Melbourne. They provided this report on their perception of the day.

The key objective of the roundtable was to obtain input on the current hurdles and challenges faced by E-MCRs in their career training, transitions, progression and mobility. Though the definition of E-MCRs is not clear-cut, discussions included PhD training through to attaining independent research positions. The overall aim of the roundtable was to use this knowledge to develop a strong and productive research workforce to underpin the Australian Government's reform agendas for innovation and higher education in Australia. Attendees were active researchers in different fields and disciplines and from both industry and academia

It was a great day with E-MCR representatives from Australian National University, Baker IDI Heart and Diabetes Institute, Bio21

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The WEHI Ten Point Program

'Towards gender equity at senior levels at WEHI'



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Institute, CSIRO, Deakin University, Florey Neuroscience Institutes, Invasive Animal Cooperative Research Centre, Melbourne University, Monash University, Murdoch Children's Research Institute, Royal Women's Hospital, Swinburne University of Technology, Tasmanian Aquaculture and Fisheries Institute, University of Canberra and Victoria University in attendance. Everyone left the roundtable feeling heard and hopeful that positive change could come from the discussions that occurred, particularly related to influencing science policy and guidelines for major funding bodies.

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- The Suzanne Cory Fellowship, a \$1.25 million five year Fellowship for new women lab heads.
- Childcare support, providing a limited number of support packages of up to \$15,000 per annum to help outstanding female postdoctoral fellows with child care expenses.
- Family rooms, to provide a family centre in which to breast-feed infants and to be used by parents caring for young children.
- Meeting and travel support, for female postdocs and lab heads with preschool age children, to help them accept invitations to speak at conferences and participate in academic activities.
- Technical support while on maternity leave, so productivity continues during that critical period of months with a new baby.
- Additional time for contract renewal, for women who are lab heads and have a child during their initial appointment.
- Women in science lectures and mentoring.
- Leadership and skills training, for all postdocs and junior lab heads, with a focus on leadership skills and mentoring.
- Family-friendly meeting times, with no early morning or late afternoon institute meetings to allow parents to honour personal commitments.
- Flexible working hours where possible for all staff.

WEHI is to be congratulated, but they are not alone. The European Molecular Biology Organisation

(EMBO) has launched The Way Forward: Women in Science, an exciting program designed to offer mentoring, as has the UK Department of Health.

The Australian Academy of Science is the peak body that brings together the top scientists in Australia; we have considered ways in which we can try to improve gender equity in our organisation. For a number of historical reasons most Fellows are men, but we also found that some excellent women scientists have been reluctant to agree to being put forward for election.

Diversification Search Committees have been set up to assist the discipline-based Sectional Committees that prepare nominations for consideration by the Fellowship to identify candidates in a range of under-represented areas. A key part of their role will be to encourage more women to allow their names to go forward.

We will also ensure that gender balance is considered in appointments to the Sectional Committees and the 22 national committees for science. The latter committees are concerned with the development of their discipline areas and represent 'training grounds' where leaders of the future can learn about the national and international dimensions of science. And when a meeting is sponsored by the Academy, we will aim to achieve gender balance among the speakers and chairs.

Some common challenges faced by E-MCRs (continued from page 3)

Absence of job security:

- particularly influenced by funding

Inadequate funding for:

- research in general (small pool of available grants)
- PhD scholarships
- overseas training and postdoctoral fellowships
- career transition – particularly with regard to grants
- underlying support funding so that job security is increased
- infrastructure and support

Transition phases – PhD to postdoc, postdoc to next position

- these are particularly difficult transitions to make and require more support (both financial and psychosocial)
- moving beyond the postdoctoral phase to attracting funds and obtaining independence is highly competitive
- transition to a teaching position (eg lecturer) initially slows research productivity, but has down-stream benefits in exposure to and selection of students

Work/life balance

- this is challenging for both women and men
- family commitments – there are few good models available for how to do both successfully and there are negative role modelling (eg the workaholic) that impact decision-making

- most E-MCR's doubted that career interruptions are taken into account in grant application assessment.

Closing statement

The general sentiment of the day was that many E-MCRs face a very challenging road, without always being trained to meet those challenges. Although increased general funding levels, or directing more funds to E-MCRs would certainly help, we also conceded this was an unlikely outcome. Therefore, preparing researchers to face funding shortfalls in a highly competitive environment was addressed and two major themes developed:

1. Extending or augmenting the PhD training period to include vocational research skills.
 - a. Many felt that the PhD program equips researchers with skills specific to their field of research and thesis writing, but did little to train people to become independent research leaders. This could be addressed by including financial and people management skills, CV and job interview training, grant and manuscript writing coursework in the degree, as well as supporting more overseas travel for conference presentations which could provide excellent collaborative and networking opportunities.
 - b. A working model is the Balanced Scientist program developed by the Invasive Animals CRC. PhD students

undertake the equivalent of a Diploma in Research Management, which includes industry placements, courses in intellectual property and budget management, commercialisation, paper- and grant-writing.

- c. Ways to involve the commercial sector in training and mentoring researchers were also considered.
2. Supporting E-MCRs during their transition to independence:
 - a. Increased funding support for CJ Martin-style fellowships and E-MCRs in general
 - b. Introducing other support schemes such as mentoring, training and importantly, the founding of a national postdoctoral organisation for researchers in all scientific fields.

A unifying element amongst all who attended was their strong passion, interest and commitment to research.

It was great to have such an open conversation with Dr Alison Mannion and her team from DIISR. A summary report will be prepared, based on this and two similar roundtables in Sydney and Brisbane, covering the areas of discussion and conclusions reached. These reports will inform the development of the final Research Workforce Strategy. Further information about the strategy will be posted on:

www.innovation.gov.au/Section/Research/Pages/ResearchWorkforceIssues.aspx

Other themes arising from these discussions:

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The importance of mentoring

- both external and internal mentors, formal and informal
- having a range of mentors to fulfil different mentoring roles is important
- finding mentors from different fields is vital
- the role of a mentor is fundamentally different from a supervisor or manager – a mentor is important given the different motivations and dynamics of these relationships
- not everyone is 'trained' in how to be a good mentor
- peer mentoring is also valuable

Career structure

- not well-defined
- there may be a need to redefine the

postdoctoral 'training' phase versus the 'permanent postdoctoral role'

- increase number of secure senior research scientist positions (ie 'permanent postdocs')

Specialised skills and training

- leadership skills
- budget management
- curriculum vitae development
- interviewing skills
- management skills
- networking skills
- life skills (eg work/life balance)

PhD and postdoc – how to improve and enhance each stage

- targeted, specialised training
- increase time of PhD to four years

with increased exposure to different types of careers

- have an 'opt-out' period where students could graduate with a Diploma or MSc

Non-research based support

- have infrastructure in place
- support personnel (eg people to assist with administrative responsibilities)

'National Postdoctoral Association, Australia'

- a central one-stop shop of information and support for postdocs from all fields, including international fellows (eg National Postdoctoral Association, USA www.nationalpostdoc.org)

And so much more (this list barely scratches the surface).

DIISR also provided links to the following reports:

1. House of Representatives Standing Committee on Industry, Science and Innovation: *Building Australia's Research Capacity*

www.aph.gov.au/House/committee/isi/research/report.htm

2. Australian Government response to *Building Australia's Research Capacity*

www.innovation.gov.au/ScienceAndResearch/Documents/Building%20Australia's%20Research%20Capacity%20Response.pdf

3. *Supply, demand and characteristics of the higher degree by research population in Australia* (Australian Council for Educational Research, 2009)

www.innovation.gov.au/Section/Research/Documents/SupplyDemandandCharacteristicsoftheHDRPopulationinAustralia.pdf

Government and Research

The Australian Academy of Science has made a submission to the Standing Committee on Industry, Science and Innovation *Inquiry into Australia's International Research Collaborations*. The Inquiry's Terms of Reference are available at www.aph.gov.au/house/committee/isi/intresearch/tor.htm and the Academy's submission is available at www.aph.gov.au/house/committee/isi/intresearch/subs/sub57.pdf.

Any comments on the Academy's submission or the inquiry can be forwarded to fiona.leves@science.org.au.

Bulletin board

PRIME MINISTER'S PRIZES

The Prime Minister's Prizes for Science are now open for nominations. The Australian Government awards five prizes annually for outstanding scientific achievements and excellence in science teaching. The prizes are: The \$300,000 Prime Minister's Prize for Science, the \$50,000 Malcolm McIntosh Prize for Physical Scientist of the Year, the \$50,000 Science Minister's Prize for Life Scientist of the Year and two science teaching prizes.

Nominations close Friday 21 May. For more information, go to grants.innovation.gov.au/SciencePrize/Pages/Home.aspx and for expressions of interest contact pmprize@innovation.gov.au

THE AUSTRALIAN MUSEUM EUREKA PRIZES

The Eureka Prizes reward excellence in the fields of research and innovation, science leadership, school science and science journalism and communication.

Nominations close Friday 7 May. For more information, go to www.eureka.australianmuseum.net.au/

L'ORÉAL AUSTRALIA FOR WOMEN IN SCIENCE FELLOWSHIPS

Each year three \$20,000 L'Oréal Australia For Women in Science Fellowships are awarded for scientific excellence in early-career researchers. The Fellowships are open to female scientists no more than five years past their PhD, excluding periods of maternity leave. These are one of the few fellowships which allow part of the funding to be spent on child care.

In 2009 the recipients were exploring our roots in Africa, looking for dark energy, and revealing what really controls our genes.

Nominations will open in April.

For more information go to www.scienceinpublic.com/loreal/applications

DANIEL JOUVANCE MARINE BIOLOGY LABORATORIES AWARD

Each year the cosmetics company Daniel Jouvance Marine Biology Laboratories award a prize of €4000 to a young scientist working in fundamental or applied aspects of marine biology, marine chemistry, marine biotechnology or oceanography. Applications from Australian researchers under 30 years of age are welcome.

In 2008, the award winner was (then) PhD student Edd Stockdale of the University of Western Australia. That year the topic was *Biominalisation* in marine systems.

The topic for the 2010 prize is *Environmental management and economic use of excessive algal biomass*.

Closing date for applications is 30 April. Applications should include a CV (2 pages maximum), an abstract of the scientific work (4 pages maximum), and a copy of the title page of published papers and thesis.

Send applications to y.legal2@orange.fr or to:

Daniel Jouvance Scientific Committee
c/o Professor Y. LE GAL
Station de Biologie Marine
du Muséum National Histoire Naturelle
CONCARNEAU France

Science at the Shine Dome – Competition

Each year the Australian Academy of Science hosts its annual event, *Science at the Shine Dome*, which includes an early-career researcher (ECR) program. ECRs attend the Admission of New Fellows ceremony, New Fellows seminar, the Academy honorific awards presentations, the annual dinner and the one-day symposium, which in 2010 is *Genomics and Mathematics*. To support networking and skills development, ECRs also participate in an informal dinner and career development workshops. In 2010 three career workshops will be offered: *Science communication and the media*, *Commercialising scientific research* and *Skills for successful grant writing*. In recent weeks institutions will have been invited to sponsor ECRs to attend *Science at the Shine Dome*.

In this issue of *Early Days* (No 3, March 2010) we are running a competition with the prize of sponsorship for one ECR to attend the 2010 *Science at the Shine Dome*. To enter, outline a new topic idea for the 2011 ECR workshops. Please provide a workshop title and no more than 50 words describing your vision of the workshop's content to fiona.leves@science.org.au by 9am on 12 April. The topic ideas will be judged by a panel within the Academy and the panel's decision is final. The successful ECR will be notified directly. Good luck and we hope to receive many exciting workshop suggestions!



Australian Academy of Science