Professor Margaret Sheil
CEO
Outline

• Role models and leadership
• Do we have a problem
• Recent initiatives by the ARC
• More to come
• Programs and advice
Professor Elizabeth Blackburn – the first Australian woman to win a Nobel Prize

- Professor Blackburn has spoken out against closing career avenues to women: culture needed to change so a woman who had a family would not feel damned as a serious scientist.

Research on telomeres - holding the promise of growing less frail with time or preventing the spread of cancer.
Professor Tanya Monro - ARC Federation Fellow

• Inaugural Chair of Photonics; Director of the Centre of Expertise in Photonics - University of Adelaide
• 1998: Bragg Gold Medal for the best physics PhD in Australia
• 2000: Royal Society University Research Fellowship, Optoelectronics Research Centre, University of Southampton
• 2006: Cosmos Magazine Bright Spark award for Australia's Top 10 Scientific Minds under 45
• 2008: Prime Minister's Science Prize for Physical Scientist of the Year
• 2009: Top Emerging Leader in Science, Weekend Australian Magazine's Next 100 Emerging Leaders series

Research by Professor Monro and her team is leading the world in the development of a new generation of optic fibres.
Dr Kira Westaway

• Jointly named 2009 UNSW Tall Poppy of the Year

• As part of a research team, she is currently investigating the ‘Hobbit’ site at Liang Bua cave, Indonesia.

• This research has greatly influenced our understanding of human evolution and what constitutes ‘being human’.

• The team have made fascinating discoveries about their diet, hunting patterns and predators.

“We know they hunted in groups and could pull down Komodo dragons,”
Unprecedented Leadership

CSIRO
Chief Executive

Chief Scientist

President
Academy of Science

ARC
Chief Executive
The ARC

- Statutory Agency established 2001
- Fund direct costs to Universities and partners
- Projects, fellows and infrastructure (\(<5\) M)
- All disciplines except clinical medicine and dentistry (with the exception of the new *Future Fellowships*)

<table>
<thead>
<tr>
<th>National Competitive Grants Program</th>
<th>Approx $700M in 09–10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery</td>
<td>$379.1 M</td>
</tr>
<tr>
<td>Linkage</td>
<td>$290.8 M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluation and Policy</th>
<th>Excellence in Research for Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$9.6M</td>
</tr>
</tbody>
</table>
Do we have a problem?
## Success Rates

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Female</th>
<th></th>
<th></th>
<th>Male</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unfunded (no.)</td>
<td>Funded (no.)</td>
<td>Funded (%)</td>
<td>Unfunded (no.)</td>
<td>Funded (no.)</td>
<td>Funded (%)</td>
</tr>
<tr>
<td>Discovery</td>
<td>8096</td>
<td>2292</td>
<td>22</td>
<td>22864</td>
<td>8061</td>
<td>26</td>
</tr>
<tr>
<td>Federation Fellows</td>
<td>65</td>
<td>8</td>
<td>11</td>
<td>489</td>
<td>75</td>
<td>13</td>
</tr>
<tr>
<td>LIEF</td>
<td>668</td>
<td>735</td>
<td>52</td>
<td>3132</td>
<td>3674</td>
<td>54</td>
</tr>
<tr>
<td>Linkage</td>
<td>2577</td>
<td>2073</td>
<td>45</td>
<td>6193</td>
<td>5275</td>
<td>46</td>
</tr>
</tbody>
</table>
Gender

Proportion of female researchers in selected ARC schemes

D-P = Discovery Projects
L-P = Linkage Projects
L-E = Linkage Infrastructure, Equipment and Facilities
F-F = Federation Fellowships (2001 to 2007)
F-L = Australian Laureate Fellowships (2008)
Success rates for females and males in Discovery Projects and Linkage Projects

D-P Overall Success Rates
- Male: 26.3%
- Female: 22.5%
- Difference: 3.8

L-P overall Success Rates
- Male: 47.6%
- Female: 47.0%
- Difference: 0.6
Proportion of females and males in ARC Future Fellowships for submit year 2008

- **Level 1 Salary** = $95,000
- **Level 2 Salary** = $115,000
- **Level 3 Salary** = $135,000
Success rates for females and males in Future Fellowships for submit year 2008

- Level 1 Salary = $95,000
- Level 2 Salary = $115,000
- Level 3 Salary = $135,000

Success rates:

- Level 1: Female 27.5%, Male 27.2% (131:261)
- Level 2: Female 15.9%, Male 17.9% (107:268)
- Level 3: Female 13.3%, Male 13.5% (45:163)
- Overall: Female 20.8%, Male 20.4% (283:692)
Proportion of total female and male applicants by career age and corresponding success rate for Discovery Projects for submit years 2004 to 2009 combined.
## Number and proportion of female and male applicants in Discovery Projects by discipline for submit years 2001 to 2009 combined

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Females</th>
<th></th>
<th>Males</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Proportion</td>
<td>Number</td>
<td>Proportion</td>
</tr>
<tr>
<td>Biosciences</td>
<td>2731</td>
<td>25.5%</td>
<td>7990</td>
<td>74.5%</td>
</tr>
<tr>
<td>Engineering</td>
<td>1022</td>
<td>13.2%</td>
<td>6712</td>
<td>86.8%</td>
</tr>
<tr>
<td>Humanities</td>
<td>3679</td>
<td>43.0%</td>
<td>4881</td>
<td>57.0%</td>
</tr>
<tr>
<td>Maths ICT</td>
<td>1187</td>
<td>14.5%</td>
<td>6994</td>
<td>85.5%</td>
</tr>
<tr>
<td>Physical</td>
<td>1363</td>
<td>14.3%</td>
<td>8180</td>
<td>85.7%</td>
</tr>
<tr>
<td>Social</td>
<td>5396</td>
<td>39.7%</td>
<td>8186</td>
<td>60.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15378</strong></td>
<td><strong>26.40%</strong></td>
<td><strong>42943</strong></td>
<td><strong>73.60%</strong></td>
</tr>
</tbody>
</table>
### Success rates for mixed gender proposals by the gender of the lead investigator and by discipline for submit years 2001 to 2009

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Gender of team leader</th>
<th>Proposals considered</th>
<th>Proposals funded</th>
<th>Success rate</th>
<th>Difference in success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>Female led team</td>
<td>632</td>
<td>130</td>
<td>20.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>725</td>
<td>180</td>
<td>24.8%</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>Female led team</td>
<td>271</td>
<td>62</td>
<td>22.9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>324</td>
<td>80</td>
<td>24.7%</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>Female led team</td>
<td>422</td>
<td>128</td>
<td>30.3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>499</td>
<td>149</td>
<td>29.9%</td>
<td></td>
</tr>
<tr>
<td>Maths &amp; IT</td>
<td>Female led team</td>
<td>302</td>
<td>73</td>
<td>24.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>386</td>
<td>93</td>
<td>24.1%</td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>Female led team</td>
<td>269</td>
<td>65</td>
<td>24.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>407</td>
<td>111</td>
<td>27.3%</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Female led team</td>
<td>930</td>
<td>215</td>
<td>23.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>1069</td>
<td>298</td>
<td>27.9%</td>
<td></td>
</tr>
<tr>
<td>All Disciplines</td>
<td>Female led team</td>
<td>2826</td>
<td>673</td>
<td>23.8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male led team</td>
<td>3410</td>
<td>911</td>
<td>26.7%</td>
<td></td>
</tr>
</tbody>
</table>

Web: arc.gov.au    | Email: info@arc.gov.au
Mixed teams of senior researchers and ECRs: Success rates for ECRs based on seniority of lead investigator in DP from 2001 to 2009

<table>
<thead>
<tr>
<th>Career Age of Lead Researcher</th>
<th>Gender of ECR/s</th>
<th>Considered</th>
<th>Funded</th>
<th>Success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Researcher (15+ yrs since PhD)</td>
<td>Female ECR/s</td>
<td>612</td>
<td>161</td>
<td>26.3%</td>
</tr>
<tr>
<td></td>
<td>Male ECR/s</td>
<td>1156</td>
<td>363</td>
<td>31.4%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1768</strong></td>
<td><strong>524</strong></td>
<td><strong>29.6%</strong></td>
</tr>
<tr>
<td>Mid-Career Researcher (5-15 yrs since PhD)</td>
<td>Female ECR/s</td>
<td>628</td>
<td>142</td>
<td>22.6%</td>
</tr>
<tr>
<td></td>
<td>Male ECR/s</td>
<td>1098</td>
<td>288</td>
<td>26.2%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1726</strong></td>
<td><strong>430</strong></td>
<td><strong>24.9%</strong></td>
</tr>
<tr>
<td>Early-Career Researcher (0-5 yrs since PhD)</td>
<td>Female ECR</td>
<td>513</td>
<td>106</td>
<td>20.7%</td>
</tr>
<tr>
<td></td>
<td>Male ECR</td>
<td>898</td>
<td>203</td>
<td>22.6%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1411</strong></td>
<td><strong>309</strong></td>
<td><strong>21.9%</strong></td>
</tr>
</tbody>
</table>

**ECR only proposals:** Success rates for ECRs in DP from 2001 to 2009

<table>
<thead>
<tr>
<th>Career Age of Lead Researcher</th>
<th>Gender of ECR</th>
<th>Considered</th>
<th>Funded</th>
<th>Success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early-Career Researcher (0-5 yrs since PhD)</td>
<td>Female ECR</td>
<td>2505</td>
<td>405</td>
<td>16.2%</td>
</tr>
<tr>
<td></td>
<td>Male ECR</td>
<td>4301</td>
<td>856</td>
<td>19.9%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>6806</strong></td>
<td><strong>1261</strong></td>
<td><strong>18.5%</strong></td>
</tr>
</tbody>
</table>
Evaluation of Fellowship Applications: Gender

“...the success rate of female scientists applying for postdoctoral fellowships at the [Swedish Medical Research Council] during the 1990s has been less than half that of male applicants.”

Women applying for a post-doctoral fellowship had to be 2.5 times more productive to receive the same reviewer rating as the average male applicant.

Similar findings:
- USA/GAO report on Peer Review in Federal Agency Grant Selection (1994)
- European Molecular Biology Organization Reports (2001)

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I have frequently been questioned, especially by women, of how I could reconcile family life with a scientific career.

Well, it has not been easy.

*Marie Curie*
What are we doing?

- “Track record” has been replaced with “Research Opportunity & Performance Evidence”
- Eased restriction on some fellowships (PT etc)
Research Opportunity and Performance Evidence

- the number of years it has been since you graduated with your highest educational qualification;
- the research opportunities that you have had in the context of your employment situation, the research component of your employment conditions, and any unemployment or part-time employment you may have had;
- whether you are a research-only, teaching and research, teaching-only, teaching and administration, research and administration, or administration-only academic, giving any additional information (e.g. part-time status) needed to understand your situation. Give an indication of what percentage of time you have spent over the last five years in those roles.
Continued ........

• any career interruptions you have had for childbirth, carer’s responsibility, misadventure, or debilitating illness;

• the research mentoring and research facilities available to you; and

• any other aspects of your career or opportunities for research that are relevant to assessment and that have not been detailed elsewhere in this Proposal (e.g. any circumstances that may have slowed down your research and publications) or affected the time you have had to conduct and publish from research.
We are considering ........

- Extending no of years publications can be reported by year per child (WEHII)
- Ways to encourage more female applicants to elite schemes
- Trying to understand differences in success rates early in careers
- Greater representation on committees
- Better training of committees and reviewers
Leadership Development for Women

Send stronger messages to potential applicants to stimulate more applications
Workshop on Faculty Recruitment for Diversity and Excellence

ADVANCE Program at the University of Michigan Strategies and Tactics for Recruiting to Improve Diversity and Excellence

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<table>
<thead>
<tr>
<th>Students</th>
<th>Faculty</th>
<th>Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julia Cross</td>
<td>Werner Goldsmith</td>
<td>Oren Jacob</td>
</tr>
<tr>
<td>Studies the martial art Wu Shu</td>
<td>Wrote the book on Impact</td>
<td>Pixar wizard</td>
</tr>
<tr>
<td>Kibibi Moseley</td>
<td>Ali Niknejad</td>
<td>Julia Gee</td>
</tr>
<tr>
<td>Table tennis champion</td>
<td>Circuit Maven</td>
<td>Volunteer-aholic</td>
</tr>
<tr>
<td>Anthony Levan-dowski</td>
<td>Accomplished viola player</td>
<td>Chip guru</td>
</tr>
<tr>
<td>Lego robot creator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is the effect on applicants -- aspiring students and potential faculty? How is it that people committed to diversity made such a web page? It was clearly not done intentionally, meaning that there was an unconscious element.
Schemas: Non-conscious Hypotheses

- Schemas (expectations or stereotypes) influence our judgments of others (regardless of our own group).
- All schemas influence group members’ expectations about how they will be judged.
Blind Auditions: Gender

Records from major US symphony orchestras from 1970-1996:

• Audition data from 14,000 individuals show the use of a screen increases the probability that a woman will advance from preliminary rounds by 50%.

• Roster data from 11 major orchestras show the switch to blind auditions accounts for 30% of the increase in the proportion of women among new hires.

Evaluation of Identical Resumes: Race

• Applicants with African American-sounding names had to send 15 resumes to get a callback, compared to 10 needed by applicants with white-sounding names.

• White names yielded as many more callbacks as an additional eight years of experience.

Evaluation of Identical CVs: Gender

- When evaluating identical application packages, male and female University psychology professors preferred 2:1 to hire “Brian” over “Karen” as an assistant professor.
- When evaluating a more experienced record (at the point of promotion to tenure), reservations were expressed four times more often when the name was female.

Evaluation of Identical Resumes: Gender and Sexual Orientation

- Nearly identical resumes of law students applying to internships in Canadian law firms.
- Gay-labelled male applicants received 62% as many offers as other male applicants.
- Gay-labelled female applicants received half as many offers as other female applicants.

Similar and expanded findings: Weichselbaumer (2003)
Why do race cues produce different evaluations? Ambiguity in Job Credentials: Race

- Identical resumes, but ambiguous fit of credentials to job (rather than ambiguous credentials)
  - A sample of white evaluators recommended
    - Black candidate 45% of the time
    - White candidate 76% of the time
- Whites get “benefit of the doubt” in ambiguous situations—bias leading to advantage in this case.

Critical Mass Affects the Use of Schemas

• When there are many individuals, we differentiate among them and cannot rely on group-based schemas.

• In both experimental and field settings, increasing the female share of those being rated increased ratings of female applicants and employees.

Heilman (1980) Organizational Behavior and Human Performance, 26:
Evaluation of Candidates: Promote Awareness of Evaluation Bias

• Awareness of evaluation bias is a critical first step. Remember the lessons of:
  – Blind Auditions
  – CVs and Resumes
  – Letters of Recommendation

• Spread awareness to the others on the search committee.

• Evaluation bias can be counteracted.