Promoting Research Excellence

Professor Margaret Sheil
CEO, Australian Research Council
Australian Research Council
Strategic Objectives

• To support excellence in research
• To build Australia’s research capacity
• To provide informed high quality policy advice to government
• To enhance research outcomes through effective evaluation
• To raise the profile of Australia’s research effort and be an effective advocate for its benefits
Government Investment in Research
2010-11

- Universities: 21%
- NHMRC et al: 12%
- CSIRO: 9%
- CRCs & Other Science: 9%
- Other R&D Agencies: 11%
- Industry Tax Concession: 18%
- Other business: 6%
- Energy and Environment: 6%
ARC Investment in Research (2010-11)

- National Competitive Grants Program
  - $708M
- Discovery & Fellowships
  - $423 M
- Linkage & Centres
  - $285 M
- Evaluation and Policy
- Excellence in Research for Australia

- Statutory Agency established 2001
- Mission: to deliver policy and programs that advance Australian research and innovation globally and benefit the community
- Fund direct costs to Universities and partners
- All disciplines except clinical medicine & dentistry
ARC Funding 2002 – 2010 and Application Numbers

$000
Applications

National Competitive Grants Program (NCGP)

• Highest-quality research
• New ideas, advancement of knowledge
• Facilities and equipment
• Internationally competitive researchers
• Building research capacity
• Industry links and internationalisation
NCGP Funding

- NCGP funding (2010-11) = $708,733 million
- $376 million – Major Grants supporting 1126 innovative projects
- $255.9 million – 13 new ARC Centres of Excellence
NCGP Programs & Schemes

**Discovery Program**
- Discovery Projects
- Discovery Indigenous Researcher Development
- Future Fellowships
- Australian Laureate Fellowships

**Linkage Program**
- Linkage Projects
- Linkage Infrastructure, Equipment and Facilities
- Linkage Learned Academies Special Projects
# NCGP Programs & Schemes (cont’d)

## Centres

- ARC Centres of Excellence
- ARC Special Research Centres
- Co-funded Centres of Excellence

## Special Research Initiatives

- Research in Bionic Vision Science and Technology
- Stem Cell Science
- Thinking Systems
- EMBL
- AAO Fellowships
Funding of the Chemical Sciences

Inorganic chemistry

- 2002: $4,000,000
- 2003: $4,500,000
- 2004: $4,000,000
- 2005: $6,000,000
- 2006: $6,000,000
- 2007: $5,000,000
- 2008: $3,000,000
- 2009: $8,000,000
- 2010: $5,000,000
- 2011: $4,000,000

Web: arc.gov.au  |  Email: info@arc.gov.au
The ARC aims to ..........

- Provide opportunities for researchers at every career stage
- Foster a range of different cohorts

- Researchers in industry
- Research-only
- Women
- Indigenous
- Teaching and research
The ARC does not ..........

• employ researchers directly
• aim to provide a complete externally funded career structure
• fund all the excellent research proposals it receives
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Funding & Investment

Flexibility

Linking & Developing

Information

Partnerships
Discovery Projects – Male & female applicants and corresponding success rates by career age

![Graph showing the proportion of male and female applicants and success rates by career age](image-url)
Flexibility

- Career interruptions
- Teaching transitions
- Options to convert
- Building Research Capacity (ECRs & women)
Australian Research Council – Promoting Excellence

Funding & Investment

Flexibility

Linking & Developing

Information

Partnerships
Linking/Developing

- An exemplary training environment (Laureates)
- Outcome-orientated, high-calibre (Linkage)
- High-quality & supportive (DECRA)
- Enabling Indigenous Australians (Discovery)
Building Research Capacity

**Australian Laureate Fellowships**
- 2x PhD
- 2x Post-Doc
- 17 5-year awards

**Discovery Early Career Research Awards (DECRA)**
- $125,000
- 200 p.a. 3-year awards

**Researchers in Industry Training Awards**
- $30,000
- 100 3-year awards (bi-annual)

**Future Fellowships**
- Up to $143,000
- 200 p.a. 4-year fellowships

Web: arc.gov.au  |  Email: info@arc.gov.au
Australian Research Council – Promoting Excellence

Funding & Investment

Flexibility

Linking & Developing

Information

Partnerships
ERA will inform

- Government
- Universities
- Research agencies
- Innovation system
- Business
- Postgraduate students
- International partners
Quality assessment exercises overseas

1986—The United Kingdom
1993—Hong Kong
1997—Germany
1998—Ireland
2002—The Netherlands
2003—New Zealand
2005—France
General ERA Principles

1. Unit of Evaluation is the four-digit ANZSRC Field of Research code (i.e., 157 possible Units of Evaluation); evaluation occurs at the two-digit level as well
2. Evaluation by Research Evaluation Committees in discipline clusters; eight clusters in total
3. There is a minimum level of output for a discipline to be considered ‘research active’ for evaluation in ERA
4. Evaluations informed by a ‘dashboard’ of discipline-specific indicators
5. Some peer review of outputs accessed through institutional repositories in some clusters
ERA Process Overview

<table>
<thead>
<tr>
<th>Volume &amp; Activity</th>
<th>Ranked Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citation Analysis</td>
<td>Esteem</td>
</tr>
<tr>
<td>Research Income</td>
<td>Applied Measures</td>
</tr>
</tbody>
</table>

Peer Review

International Benchmarks

Research Evaluation Committees
ERA

Background Statement

Volume and Activity
Ranked Outlets
Peer Review
Citation Analysis
Esteem Measures
Research Income
Applied Measures
The ERA Unit is **not** the department nor the individual researcher.
Why a matrix approach to indicators?

- Not all indicators are suitable for all disciplines
- Pick and choose what is right for each discipline
- The indicator suite must ensure comparable quality across a range of indicator types
- Journal Rankings are not THE indicator
The ERA Clusters

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster 1</td>
<td>Physical, Chemical &amp; Earth Sciences</td>
</tr>
<tr>
<td>Cluster 2</td>
<td>Humanities and Creative Arts</td>
</tr>
<tr>
<td>Cluster 3</td>
<td>Engineering and Environmental Sciences</td>
</tr>
<tr>
<td>Cluster 4</td>
<td>Social, Behavioural and Economic Sciences</td>
</tr>
<tr>
<td>Cluster 5</td>
<td>Mathematics, Information and Communication Sciences</td>
</tr>
<tr>
<td>Cluster 6</td>
<td>Biological Sciences and Biotechnology</td>
</tr>
<tr>
<td>Cluster 7</td>
<td>Biomedical and Clinical Research</td>
</tr>
<tr>
<td>Cluster 8</td>
<td>Public and Allied Health, and Health Sciences</td>
</tr>
</tbody>
</table>
The ERA 2010 reference periods

- **Publications reference period**
  
  1 January 2003 – 31 December 2008

- **Non-publication reference period** (income, applied, esteem)
  
  1 January 2006 – 31 December 2008

- **Staff census date**
  
  31 March 2009

- **Citation reference period**
  
  1 January 2003 - 1 March 2010
ERA 2010 – the data....
The ERA 2010 Rating Scale

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
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<tbody>
<tr>
<td>5</td>
<td>The Unit of Evaluation profile is characterised by evidence of outstanding performance <strong>well above world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>4</td>
<td>The Unit of Evaluation profile is characterised by evidence of performance <strong>above world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>3</td>
<td>The Unit of Evaluation profile is characterised by evidence of average performance <strong>at world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>2</td>
<td>The Unit of Evaluation profile is characterised by evidence of performance <strong>below world standard</strong> presented by the suite of indicators used for evaluation.</td>
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<tr>
<td>1</td>
<td>The Unit of Evaluation profile is characterised by evidence of performance <strong>well below world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>NA</td>
<td>Not assessed due to low volume. The number of research outputs does not meet the volume threshold standard for evaluation in ERA.</td>
</tr>
</tbody>
</table>
National Strengths

- Astronomical and Space Sciences
- Optical Physics
- Quantum Physics
- Macromolecular & Materials Chemistry
- Physical & Structural Chemistry
- Geology
- Ecology
- Evolutionary Biology
- Plant Biology
- Zoology

- Electrical and Electronic Engineering
- Historical Studies
- Cardiovascular Medicine and Haematology
- Human Movement and Sports Science
- Immunology
- Oncology and Carcinogenesis
- Pharmacology and Pharmaceutical Sciences
- Medical Physiology
Gaps

- Agriculture, Land and Farm Management
- Automotive Engineering
- Maritime Engineering
- Engineering Design
- Complementary and Alternative Medicine

Pockets

- Classical Physics
- Aerospace Engineering
- Transportation and Freight
Research Excellence in Chemical Sciences
Research Excellence in Inorganic Chemistry

Inorganic Chemistry (0302)

Count of 1s  Count of 2s  Count of 3s  Count of 4s  Count of 5s
Australian Research Council – Promoting Excellence

- Funding & Investment
- Flexibility
- Linking & Developing
- Information
- Partnerships
Partnerships (International)

- Non-Australian PhD candidates
- Non-Australian Fellowships
- Overseas Partner Investigators
- DECRA encourages international post docs
International Strategy

To ensure Australia benefits from and makes a strong contribution to international research developments, partnerships, collaboration and policy.

- **Objective 1:** Build on existing ARC support for international research collaboration through the NCGP schemes

- **Objective 2:** Facilitate new opportunities for international research collaboration

- **Objective 3:** Maintain strong linkages with overseas research funding agencies on international research collaboration opportunities

- **Objective 4:** Allow for comparisons of Australia’s research nationally and internationally for all disciplines areas
Our focus on internationalisation

• Early-2008, the Minister announced that all fellowships will be open to international applicants to work in Australia

• *Discovery Projects*
  – new internationalisation objective
  – restrictions on the use of ARC funds for Partner Investigators living overseas have been lifted

• Significant changes to *Linkage Projects* Scheme
  – International organisations
  – *From 2009* citizenship/residency requirements for postgraduate students removed
Partnerships (Industry)

- Non-Australian APA(I)s
- Linkage
- Research in Industry Training Award
- Cooperative sharing - research facilities
### Examples of Partner Organisations

<table>
<thead>
<tr>
<th>Organizations</th>
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</thead>
<tbody>
<tr>
<td>Alcoa</td>
</tr>
<tr>
<td>BAE Systems Australia</td>
</tr>
<tr>
<td>BHP Billiton Ltd</td>
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<tr>
<td>BlueScope Steel Ltd</td>
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<tr>
<td>Brisbane City Council</td>
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<tr>
<td>CSL Limited</td>
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<tr>
<td>GlaxoSmithKline Aust Pty Ltd</td>
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<tr>
<td>Hydro Tasmania</td>
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<tr>
<td>Rio Tinto Ltd</td>
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<tr>
<td>Telstra Corp Ltd</td>
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<tr>
<td>Bartlett Grain Pty Ltd</td>
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<tr>
<td>Gold Coast City Council</td>
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<tr>
<td>Lastek Pty Ltd</td>
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<tr>
<td>Leica Geosystems</td>
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<tr>
<td>Micronisers Pty Ltd</td>
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<tr>
<td>National Australia Bank Ltd</td>
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<tr>
<td>Native Seeds Pty Ltd</td>
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<tr>
<td>Orica Australia Pty Ltd</td>
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<tr>
<td>Ridley Aqua-Feeds Ltd</td>
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<tr>
<td>Ronin Films</td>
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<tr>
<td>Saltgrow Pty Ltd</td>
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<tr>
<td>Santos Ltd</td>
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<tr>
<td>Sialon Ceramics Pty Ltd</td>
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<tr>
<td>Suncorp General Insurance</td>
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<tr>
<td>Tissue Therapies Ltd</td>
</tr>
<tr>
<td>Ulan Coal Mines Ltd</td>
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<tr>
<td>Williams Boag Architects</td>
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<tr>
<td>Wind Prospect Pty Ltd</td>
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<tr>
<td>Dupont-Pioneer</td>
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<tr>
<td>Kaltim Prima Coal</td>
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<tr>
<td>Microsoft Pty Ltd</td>
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<tr>
<td>Optus Networks Pty Ltd</td>
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<tr>
<td>Sprint Advanced Technology Labs</td>
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<tr>
<td>Yokogawa Electric Corp</td>
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<tr>
<td>Aged Care Queensland Inc</td>
</tr>
<tr>
<td>Agricultural Producers Commission</td>
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<tr>
<td>AIDS Council of NSW</td>
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<tr>
<td>Australian Football League</td>
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<tr>
<td>Australian Macadamia Society</td>
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<tr>
<td>Australian Institute of Sport</td>
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<tr>
<td>Brotherhood of St. Laurence</td>
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<tr>
<td>Delfin Lend Lease</td>
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<tr>
<td>Diabetes Australia</td>
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<tr>
<td>Electoral Council of Australia</td>
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<tr>
<td>Flora Hill Secondary College</td>
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<tr>
<td>Forestry TAS</td>
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<tr>
<td>Greening Australia Ltd</td>
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<tr>
<td>Illawarra Retirement Trust</td>
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<tr>
<td>Lifeline Australia Inc</td>
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<tr>
<td>Linux Australia Inc</td>
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<tr>
<td>Macquarie Library Pty Ltd</td>
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<tr>
<td>McDonalds Australia Ltd</td>
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<tr>
<td>National Heart Foundation</td>
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<tr>
<td>Neporendi Aboriginal Forum Inc</td>
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<tr>
<td>Oxfam Australia</td>
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<tr>
<td>Australian Museum</td>
</tr>
<tr>
<td>Barwon Health</td>
</tr>
<tr>
<td>Bawaninga Aboriginal Corp</td>
</tr>
<tr>
<td>Boulia State School</td>
</tr>
<tr>
<td>Bureau of Sugar Experiment Stations Ltd</td>
</tr>
<tr>
<td>Central Darling Shire Council</td>
</tr>
<tr>
<td>City of Greater Geelong</td>
</tr>
<tr>
<td>City of Rockingham</td>
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<tr>
<td>WA Dept of Environment</td>
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<tr>
<td>Geological Survey of VIC</td>
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<tr>
<td>Gippsland Coastal Board</td>
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<tr>
<td>Goulburn Murray Water</td>
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<td>Healthy Waterways</td>
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<td>Hunter Water Corp</td>
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<tr>
<td>Legal Aid QLD</td>
</tr>
<tr>
<td>Maribyrnong City Council</td>
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<tr>
<td>Midland Redevelopment Auth</td>
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<tr>
<td>Museum VIC</td>
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<tr>
<td>NSW Fisheries</td>
</tr>
<tr>
<td>NSW Police</td>
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<tr>
<td>Perth Zoo</td>
</tr>
<tr>
<td>Powerhouse Museum</td>
</tr>
<tr>
<td>Royal Flying Doctor Service</td>
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<tr>
<td>St Vincent de Paul Society</td>
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<tr>
<td>SA Museum</td>
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<tr>
<td>Timbercorp Ltd</td>
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<tr>
<td>Unions WA</td>
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<tr>
<td>VIC Dept of Education</td>
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<tr>
<td>Westmead Hospital</td>
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