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Chief Executive Officer

Agriculture and the ARC

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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*)





Australian Government
Australian Research Council



Minister for Innovation, Industry,
Science & Research

Department
of Innovation,
Industry,
Science and
Research

Australian
Research
Council
Act 2001

CSIRO
AIMS
ANSTO
AAO
Chief Scientist





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





An Environmentally Sustainable Australia

- National Research Priority
- Significant land degradation issues, such as salinity, need to be arrested to underpin our agricultural production systems;
- Our agricultural and mining industries are being transformed through the adoption of new technologies, and the development of new types of foods.
- Priority goals for research fall in the seven areas of:
 - water utilisation
 - transforming resource-based industries
 - overcoming land degradation
 - developing cleaner, more efficient fuels and energy sources
 - managing biodiversity
 - deep earth resources, and
 - responding to climate change and variability



ARC funding



Australian Government

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National Competitive Grants Program (NCGP)

- Comprises two main elements
 - Discovery and Linkage



- Recommendations are made to the Minister by the CEO following independent and extensive competitive peer review by Australian and international experts
- Biological Sciences and Biotechnology, which includes agriculture disciplines, is one of the inter-disciplinary groupings in which the NCGP is based



Agriculture Projects funded under the NCGP



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Description	2002	2003	2004	2005	2006	2007	2008
Defence	2	13	8	10	17	7	7
Plant production and plant primary products	55	67	47	38	42	48	26
Animal production and animal primary products	27	29	25	20	12	21	17
Mineral resources (excl. energy)	21	36	25	30	19	18	21
Energy resources	13	15	11	30	16	19	13
Energy supply	38	65	51	44	40	44	59
Manufacturing	179	229	231	195	180	183	161
Construction	45	38	55	60	45	33	47
Transport	18	13	15	10	12	11	9
Information and communication services	103	142	128	120	99	88	82
Commercial services and tourism	14	27	34	40	30	28	25
Economic framework	54	88	72	69	71	50	46
Health	84	131	122	188	142	165	172
Education and training	58	75	48	54	58	42	56
Social development and community services	210	278	279	298	248	246	231
Environmental policy frameworks and other aspects	14	21	11	11	14	14	22
Environmental management	125	140	127	141	120	117	105
Non-oriented research	372	475	359	387	359	287	353
Total	1432	1882	1648	1745	1524	1421	1452



Discovery Projects

- Provides funding for research projects that can be undertaken by individual researchers or research teams
- *Australian Postdoctoral Fellowships*
- *Australian Research Fellowships and Queen Elizabeth II Fellowships*
- *Australian Professorial Fellowships*





Discovery Projects 2009

Discipline	Proposals received	Proposals approved	Success rate	Requested funds over project life (all proposals) \$ million	Indicative funds over project life (approved) \$ million
BSB	784	144	18.4	448.06	56.87
EE	493	101	20.5	275.70	41.50
HCA	717	140	19.5	289.09	40.95
MIC	547	127	23.2	276.57	39.99
PCG	788	154	19.5	488.10	62.25
SBE	823	179	21.7	328.80	46.87
<i>All</i>	<i>4152</i>	<i>845</i>	<i>20.4</i>	<i>2,106.32</i>	<i>288.43</i>





Discovery Projects 2008

Discipline	Proposals received	Proposals approved	Success rate	Requested funds over project life (all proposals) \$ million	Indicative funds over project life (approved) \$ million
BSB	748	160	21.4	103.7	60.2
EE	479	94	19.6	72.8	43.8
HCA	715	150	21.0	68.2	42.3
MIC	637	135	21.2	85.9	43.1
PCG	696	157	22.6	119.1	62.7
SBE	837	182	21.7	82.3	48.8
<i>All</i>	<i>4112</i>	<i>878</i>	<i>21.4</i>	<i>532</i>	<i>300.8</i>



Linkage Projects



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- Supports collaborative research and development projects between higher education organisations and other organisations
- Collaborating organisation must make a significant financial contribution to the project



- *Australian Postgraduate Awards*
- *Australian Postdoctoral Fellowships*
- *Linkage Industry Fellowships*
- AIATSIS now eligible for funding
- Applications are processed twice a year





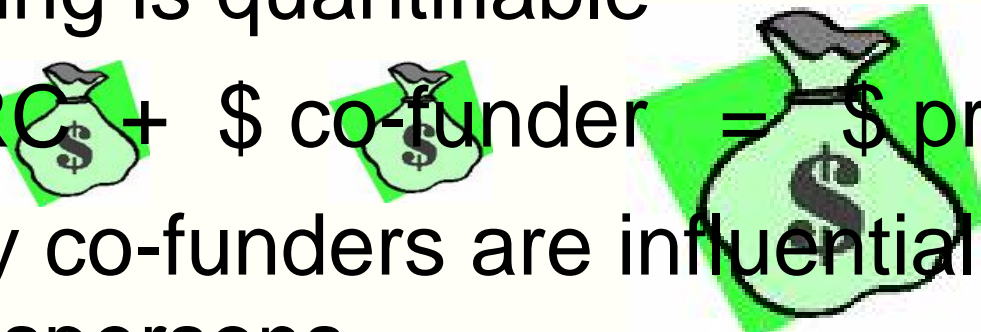
Linkage Projects partners

- Private sector
- Private non-profit organisations
- Government organisations with funds not committed to internal research or any other purpose of research, evaluation and/or consultancy
- The Agricultural Produce Commission is a recent linkage partner on three projects





Importance of Co-Funding

- Co-funding is a 'revealed preference'
 - confirmation of research need
 - pre-selection process
- Co-funding is quantifiable
 - $\$ \text{ARC} + \$ \text{co-funder} = \$ \text{project}$

 - Happy co-funders are influential spokespersons
 - to whom others really listen

Assessment Process(es)



Specialty Readers

- match with sub-discipline or field
- read a small number per round

General Readers

- strong experience of discipline or field
- read between 10 and 20 per round

College of Experts

- leaders of discipline or field; expert researchers
- read many proposals per round





ACPF
G



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Australian Centre for Plant Functional Genomics

- Hosted by the University of Adelaide.
- Established in December 2002
- Jointly funded by the ARC and the Grains Research and Development Corporation (GRDC).
- ARC and GRDC initially provided \$10 m over 5 years
- An additional \$21 million over 5 years from 2008 is being provided by the ARC and GRDC
- The Centre addresses community concerns about the genetic modification of plants, by contributing to the public debate through an active community outreach program.





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Excellence in Research for Australia (ERA)



*Defining our
strengths,

identifying
opportunities...*

RESEARCH in the national interest - enabling the future





ERA

- Announced on 26 February 2008
- Will assess research quality within Australia's higher education institutions using a combination of indicators and expert review by committees comprising experienced, internationally-recognised experts
- Aims to:
 - Have the confidence of the research community
 - Identify excellence across all areas of research
 - Minimise the burden on those making submissions and those doing the evaluations





International research excellence exercises

United Kingdom (UK)

- Research Assessment Exercise (RAE)
- Research Excellence Framework (REF)

New Zealand

- Performance-Based Research Fund (PBRF)



Consultation and interest



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National

103 submissions to the Consultation Paper (36 from HEPs)

- Australian Institute of Agricultural Science and Technology submission

114 submissions to the journal rankings

ERA helpdesk has fielded over 330 queries



International

- Consulted with UK, The Netherlands, US and NZ
- international experts on committees and groups, and in workshops

Media

- > 70 media clips since March 08
- Received international media coverage - with PBRF and RAE/REF



Discipline clusters



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1. Physical, Chemical and Earth Sciences (PCE)
2. Humanities and Creative Arts (HCA)
3. Engineering and Environmental Sciences (EE)
4. Social, Behavioural and Economic Sciences (SBE)
5. Mathematical, Information and Computing Sciences (MIC)
6. Biological and Biotechnological Sciences (BB)
7. Biomedical and Clinical Health Sciences (BCH)
8. Public and Allied Health Sciences (PAH)



ANZSRC



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DIVISION 01 MATHEMATICAL SCIENCES

This division covers mathematics, statistics, and mathematical aspects of the physical sciences.

This division contains six groups:

- 0101 Pure Mathematics
- 0102 Applied Mathematics
- 0103 Numerical and Computational Mathematics
- 0104 Statistics
- 0105 Mathematical Physics
- 0199 Other Mathematical Sciences

$$\int_{-\infty}^{\infty} e^{i\pi x^2} dx = \sqrt{\pi}$$
$$\lim_{x \rightarrow 1^-} \sum_{n=1}^{\infty} a_n x^n = \sum_{n=1}^{\infty} a_n$$
$$\partial_t u + u \partial_x u + \partial_x^3 u = 0$$
$$\varphi(s+t) = \frac{\varphi(s)\sqrt{1-\varphi(t)^4} + \varphi(t)\sqrt{1-\varphi(s)^4}}{1 + \varphi(s)^2\varphi(t)^2}$$
$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s}$$
$$u_t - u_{xxt} + 3uu_x - 2u_x u_{xx} - uu_{xxx} = 0$$



Cluster 6 (BB)



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07 Agricultural and Veterinary Sciences

0701 Agriculture, Land and Farm Management

0702 Animal Production

0703 Crop and Pasture Production

0704 Fisheries Sciences

0705 Forestry Sciences

0706 Horticultural Production

0707 Veterinary Sciences

0799 Other Agricultural and Veterinary Sciences

10 Technology

1001 Agricultural Biotechnology



Indicators



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ERA will use discipline-specific indicators to evaluate research where appropriate

The development of indicators was assisted by expert advice provided by the Indicators Development Group and sub-groups, and consultation with the research and higher education sector.

Indicator methodologies have been developed in accordance with international best practice.

In December 2008, the Minister and I released two key indicator documents: the *ERA Indicator Principles* and *ERA Indicator Descriptors*.





Interdisciplinary research

ERA is a discipline-based exercise, but seeks to recognise this research

Institutions can identify research by institutional unit and/or research theme so they can compile interdisciplinary profiles

Full ERA evaluations in 2010 will help

There are still issues of how we aggregate this information

Applied research

Will be included in ERA

Has the meaning used in the ANZSRC

Is considered on the basis of research commercialisation income and other applied measures.



What next



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ERA trial

- Will evaluate the PCE and HCA clusters
 - Submission Guidelines and Technical Specifications released last week
- Minister announced timeframe on 23 February
 - PCE submissions to commence in June
 - HCA submissions to commence in August
- Outcomes will inform the full ERA process
- Esteem indicators will not be included

Full ERA in 2010





ERA: Lessons learned

Time needed to adjust thinking to the new approach

All spent a long time preparing for the RQF

RQF taught us some things

Senior administrators and research offices understand the new approach, researchers are taking some time to get up to speed

Workshops held with researchers have shown that once they understand, there is strong level of support for the approach

Competing agendas between researchers, research disciplines and university administrators

Esteem indicators are a good example of the tensions the ARC has to deal with

