INTRODUCTION

CHAPTER 1

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Implementation of Backing Australia’s Ability
Highlights of the year

During the year, the ARC:

**Programs**

- invested over $363 million in excellent research and research training through the National Competitive Grants Program, a set of interrelated program elements that support excellent research for the benefit of Australia
- continued to implement program initiatives announced in *Backing Australia’s Ability* — for example, the recipients of 24 new Federation Fellowships in 2003 were announced on 20 March 2003
- supported more than 9,000 researchers in their research endeavours through new grants awarded in 2003, including over 570 recipients of research training awards
- announced the establishment of eight new ARC Centres of Excellence in the four priority areas of research nominated by the Government for the ARC in January 2002: nano-materials and bio-materials; genome/phenome research; complex/intelligent systems; and photon science and technology
- allocated over 33 per cent of funding under new grants in 2003 to projects in the four ARC priority areas of research
- launched a new Research Networks program that will provide support for building stronger interconnections between researchers across disciplinary, organisational, institutional and geographic boundaries
- finalised arrangements for the establishment of National ICT Australia and the National Stem Cell Centre, the Centres of Excellence in information and communications technology and biotechnology originally announced as part of *Backing Australia’s Ability*
- finalised arrangements for the establishment of the Australian Centre for Plant Functional Genomics, a joint initiative with the Grains Research and Development Corporation

**Policy**

- published the results of the *National Survey of Research Commercialisation — Year 2000* in September 2002 the first such survey undertaken in Australia
- submitted its implementation plan for national research priorities to the Minister for Science on 16 May 2003
Agency operations

- welcomed the appointment of Mr Tim Besley AC as the Chairman of the ARC Board
- welcomed new ex officio Board members - Dr Jeffrey Harmer and Professor John Shine AO
- welcomed the Government’s announcement of new appointments to the Board - Professor Peter Doherty AC, Mrs Janet Holmes à Court AO, Professor Wyatt (Rory) Hume and Dr Patricia Kailis AM OBE
- submitted the *ARC Strategic Action Plan 2003–05* to the Minister for Education, Science and Training — the plan was tabled in the Parliament in June 2003
- finalised negotiations for the *ARC Certified Agreement 2003*, the ARC’s first certified agreement
- commenced development and implementation of a new application and contract management system.
Introduction by the Chairman

It has been an honour to be Chairman of the Board of the Australian Research Council for the latter part of 2002–03, having commenced my term in December 2002. During this time, I have been impressed by the ARC as a small dynamic organisation which is the main source of competitively allocated funding for research in Australia and which provides thoughtful and considered views on research policy.

Research policy, along with science and innovation policy, has been an important theme during 2002–03. During this time, the Government introduced the National Research Priorities, concluded the Higher Education Review, Backing Australia's Future, and initiated a number of reviews and evaluations designed to underpin the development of future Government initiatives to support science, innovation and research. The ARC has been actively involved with and/or impacted by all of these developments. The ARC has also continued to implement the initiatives from Backing Australia's Ability, including Federation Fellowships and administering an increased research budget.

On 16 May 2003, the Board presented the ARC’s national research priorities implementation plan to the Minister for Science. We believe this plan provides an achievable and commendable approach to the implementation of the national research priorities, while progressing the ARC’s long-standing dedication to supporting research excellence.

An important achievement in 2002–03 was the implementation of the Minister for Education, Science and Training’s January 2002 direction that at least 33 per cent of new funds allocated in 2003 be directed to four ARC research priority areas. It was a matter of great pride to the Board that the ARC exceeded this target while ensuring that the primary goal of research excellence was not compromised in any way.

During 2002–03, the Board oversaw the development of two exciting new programs — the ARC Centres of Excellence and the ARC Research Networks. The ARC Centres of Excellence are eight outstanding Centres which increase Australia’s focus and depth of research in the ARC priority areas. These eight ARC Centres of Excellence will be complemented by a further nine ARC Centres from the same application round that the ARC supported in recognition of the extremely high quality of the applications received. The ARC Research Networks program will seek to enhance communication, coordination and sharing of key facilities within Australia’s diverse research community, with particular emphasis on the national research priorities.

I would like to take this opportunity to farewell those Board members whose terms concluded during 2002–03 and to thank them for their valuable participation in a busy year for the Board. I would particularly like to recognise the excellent contribution of Mr Peter Wills, the outgoing Chairman, together with those of Professor Brian Anderson, Mr John Grace, Ms Sue Middleton, Professor Nick Saunders, Dr Peter Shergold and the late Professor Richard Snape. I would also like to welcome the new Board members, Professor Peter Doherty, Dr Jeffrey Harmer, Mrs Janet Holmes à Court, Professor Wyatt (Rory) Hume, Dr Patricia Kailis and Professor John Shine. I am greatly looking forward to working with the new Board during 2003–04.

2003–04 will see the ARC continue to implement a number of the Government’s initiatives and provide input to the development of research policy, while directing research funds to excellent research for the benefit of Australia. Supporting research excellence will continue to be fundamentally important to the ARC. A key focus of the Board will be on ensuring that the advice provided to Government continues to be of the highest possible standard. It will be an exciting and challenging year for the ARC and the ARC Board, in which we will work hard to deliver the best outcomes for the research community and for Australia.

MA (Tim) Besley AC
Chairman
Australian Research Council
The Year in Review:
Statement by the Chief Executive Officer

The year 2002–03 was a period marked by both consolidation and change for the ARC. Consolidation has been the theme underlying ongoing refinements to management and administration of the National Competitive Grants Program (NCGP), the main structural elements of which were instituted in 2000 and 2001 in response to the Government’s December 1999 policy statement on research and research training, Knowledge and Innovation.

It was also a period during which the ARC consolidated its implementation of initiatives under Backing Australia’s Ability, the Government’s January 2001 statement on innovation. Backing Australia’s Ability provided an additional $736 million over five years to double the funding for national competitive research grants administered by the ARC.

Change has been the theme underlying the ARC’s response to the four national research priorities announced by the Government in December 2002, a major initiative to identify and address areas of strength, opportunity or need in which an increase in research effort — including collaboration, coordination or investment — can make a significant contribution to national wealth and well-being.

Perhaps most importantly, the ARC has continued to deliver national benefit from internationally competitive research through the NCGP. In 2002–03, the ARC has invested $363 million in over four thousand high-quality research projects across its two main funding programs, Discovery and Linkage. A key development during 2002–03 has been the ARC’s increased investment in the establishment of centres of research excellence as a mechanism for enhancing the quality, scale and focus of Australia’s research effort.

ARC leadership — farewells and welcomes

The inaugural Chairman of the ARC Board, Mr Peter Wills AC, resigned in 2002. Mr Wills took up his position following a period of significant structural change during which the ARC established a corporate style of governance including a new Board with representation from a broad cross-section of the national innovation system. Mr Wills led the Board through an important period in which the ARC consolidated its implementation of initiatives under Backing Australia’s Ability and established robust systems to enable it to monitor and report more effectively on its performance in implementing Government policy.

The appointment of Mr MA (Tim) Besley, AC, as Mr Wills’ successor as Chairman of the ARC Board was announced on 12 November 2002. Mr Besley has a distinguished career record in both the public and private sectors, having served as Chairman of the Commonwealth Bank of Australia and Leighton Holdings, and as Secretary of the Australian Department of Business and Consumer Affairs. Mr Besley served as Chancellor of Macquarie University from 1994 until 2001.

There have been a number of other changes to the membership of the Board during this period. The ARC was greatly saddened by the death of Professor Richard Snape on 4 October 2002, whose perspective and breadth of knowledge was a greatly valued contribution to the Board. As the incoming Secretary of the Department of Education, Science and Training, Dr Jeffrey Harmer replaced Dr Peter Shergold as an ex officio Board member. Likewise, as incoming Chair of the National Health and Medical Research Council (NHMRC), Professor John Shine replaced Professor Nick Saunders. In addition, the terms of Professor Brian Anderson and Mr John Grace came to an end on 30 June 2003, and Ms Sue Middleton resigned as a Board member in May 2003.
I greatly look forward to working with Board members newly appointed during 2002–03: Professor Peter Doherty AC, Mrs Janet Holmes à Court AO, Professor Wyatt (Rory) Hume, and Dr Patricia Kallis AM OBE whose terms commenced on 1 July 2003.

The retirement of Ms Clare White, Executive Director of Policy and Planning Coordination Branch, was a great loss to the ARC and we will miss her good sense and depth of insight into research policy. Professor Bill Sawyer, Executive Director, Biological Sciences and Biotechnology also retired during 2002-03. I wish Clare and Bill much happiness in their retirements.

**Backing Australia’s Ability**

In 2002–03, the ARC consolidated its implementation of initiatives announced in *Backing Australia’s Ability*. Additional funding has allowed the ARC to increase its investment in Australian research excellence in order to strengthen our ability to generate ideas, accelerate the commercial application of those ideas, and develop and retain Australian skills.

A major initiative of *Backing Australia’s Ability* was the establishment of Federation Fellowships. These Fellowships are targeted at researchers who are recognised as being among the best in the world in their chosen fields. In 2003, 24 new Fellowships were awarded in such important and diverse areas as the study of extreme climate events (including bushfires), revolutionary clean energy alternatives, brain development and function, disease detection, new digital media, the detection of underground natural resources, the development of salt-tolerant cereal crops, and sustainable management of the Murray-Darling Basin. This initiative is attracting researchers of international standing and retaining some of our best and brightest to continue their groundbreaking work in Australia.

**Research priorities — securing competitive advantage for Australia**

*Backing Australia’s Ability* announced the Government’s intention to focus resources in areas in which Australia enjoys or wants to build competitive advantage. Australia has world-class capabilities in a number of fields of research but, on the international stage, it is a small to medium-sized player in terms of the resources it can deploy. Its future competitive standing will depend on the degree to which it can identify areas of strength and opportunity as foci for collaborative investment, while maintaining a broad foundation of research capability. Both are required if Australia is to not only continue to be adept at assimilating new knowledge and technologies developed elsewhere, but also become a leading source of these for the world in chosen areas.

A key to achieving this aspiration has been the identification of priorities for Australian research. In 2002–03, the Government established investment priorities for the ARC in four areas of emerging and enabling science and technology that represent strengths and opportunity for Australian research in which we can establish a world-leading position. These areas of research priority encompass complex and intelligent systems, genome-phenome research, nano- and bio materials and photon science and technology. The investment target identified by the Government for these priorities — at least 33 per cent of funds in the 2003 ARC new funding round — was exceeded, an excellent result.

A key element of the ARC’s strategy to implement these research priorities was the establishment of ARC Centres of Excellence. The quality of applications for the ARC Centres of Excellence was outstanding and eight extremely exciting Centres have been established. These Centres demonstrate the strength of Australian research in the priority areas, and will develop focus, research capability and critical mass. The strength of applications was so great that the ARC has worked with a number of other applicants to develop nine additional ARC Centres.
On 5 December 2002, the Prime Minister announced national priorities for research funded by the Commonwealth:

- An Environmentally Sustainable Australia
- Promoting and Maintaining Good Health
- Frontier Technologies for Building and Transforming Australian Industries
- Safeguarding Australia

These four areas provide a vision for research by focusing our research effort on key challenges for Australia today and into the future. They will serve as a guide for building on our strengths and seeking new opportunities in emerging areas. They will also serve as a focus for strengthening collaboration between research bodies and with industry, and building a critical mass of excellence in underpinning research areas.

The ARC submitted its implementation plan for national research priorities to the Minister for Science on 16 May 2003. The central elements of that plan are three inter-related objectives for research — to build scale and focus, encourage inter-disciplinary approaches, and facilitate collaboration — and a focus on frontier technologies and breakthrough science as areas in which investment by the ARC is likely to have greatest impact.

The ARC has moved quickly to progress its plan for national research priorities, convening a forum on Research Futures on 25 June 2003. Involving eminent researchers from around Australia, the forum identified and described areas of research that represent the most promising foundations for building internationally competitive Innovation Platforms, ARC Centres of Excellence and ARC Research Networks in Australia. We also convened a forum in July 2003 for leading Commonwealth agencies responsible for funding and performing research to identify collaborative approaches to building Australia’s capabilities in frontier technologies.

As part of its implementation of the national research priorities, the ARC plans to establish a new ARC Research Networks program. This program will assist groups of researchers to coordinate and communicate their research activities across disciplinary, organisational, institutional and geographical boundaries. The program will encourage and fund open exchange of information and sharing of resources, development and implementation of coherent and integrated research plans among researchers working independently on topics of common interest, and efforts to nurture the careers of young investigators and research students by promoting a sense of community and strong, effective mentoring. The ARC has already called for applications for seed funding to assist groups to develop Research Network applications.

**Brokering investment partnerships**

Collaboration through investment partnerships is a key element of the commitment to investing in Australian research excellence that is embodied in the NCGP. In 2002–03, 933 partner organisations pledged over $158.2 million over five years to support 586 Linkage—Projects with $105.7 million in ARC funding over the same period. Partner organisations came from a wide range of sectors, including 15.6 per cent from the manufacturing sector, 15.3 per cent from administration and defence, and 12.4 per cent from the health and community service sector. International collaboration is also stronger than ever, with 1036 instances of international collaboration with 62 countries reported from 476 new Discovery—Projects. The highest incidence of collaboration was with the United States, where collaboration was indicated in 276 projects, followed by the United Kingdom with 146 projects.

The ARC has developed considerable experience in brokering investment partnerships. The establishment of the Australian Centre for Plant Functional Genomics as a collaborative venture between the ARC and the Grains Research and Development Corporation (GRDC) laid a firm foundation from which to implement the two world-class Centres of Excellence announced in Backing Australia’s Ability, National ICT Australia (NICTA) and the National Stem Cell Centre. In 2002–03, the ARC built on these collaborative initiatives...
by establishing new post-doctoral research fellowships in partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO). These fellowships will support outstanding young researchers to work in collaborative project teams between the CSIRO and Australia’s universities to encourage and develop strategic research alliances. They will provide opportunities for early career researchers currently working in UK, US and Canadian universities to return to Australia to take up jobs, as well as ensure that outstanding young researchers will continue working in Australia.

Another collaborative initiative that brings great opportunities for researchers is the Australia-Israel Fellowships initiative between the Australian Research Council and the Australia-Israel Scientific Exchange Foundation (AISEF) announced on 5 August 2003. The Fellowships will promote scientific exchange with Israel through reciprocal exchange at the postdoctoral, research or senior research fellow level. The fellowships will be funded jointly by the AISEF, using a donation from the Pratt Foundation, and the ARC under the ARC’s Linkage—International scheme, and will be administered through the scheme’s selection criteria and funding rules. This is the first collaborative venture between the ARC and a private philanthropic organisation.

Over recent years, the ARC and the Australia Council have forged a strong collaborative relationship, identifying areas in which partnerships between the creative arts and science can contribute strongly to Australian innovation. Through its New Media Arts program, Synapse, the Australia Council identified a number of projects which it supported as an industry partner under the ARC’s Linkage—Projects program. In 2003, two showcase projects — “Auto Nomad: A location-based handheld audio device for sound-art applications” and “Fish-Bird: Autonomous interaction in a contemporary arts setting” — were selected through national competition to receive investment support under Synapse and the ARC’s Linkage—Projects program. These projects showcase cross-government collaboration between the arts and science, and highlight the great potential for scientists and artists to enhance each others’ research.

The report of the National Survey of Research Commercialisation — Year 2000, commissioned by the ARC and undertaken in partnership with the NHMRC and CSIRO, was published in September 2002. For the first time in Australia, the report provides information about the commercial application of research that is occurring within our universities, medical research institutes and the CSIRO. As a baseline, this information will enable us to set ambitious but achievable targets for future performance and, through future surveys, to continue to monitor Australian performance against that of countries such as the US and Canada.

In addition, in recognition of the importance of fostering the commercial uptake of Australian research, the ARC has developed a database of ARC-funded research to communicate information about Australia’s research capability to potential technology investors. A ‘first-generation’ searchable database was made available on the ARC’s website in early 2003–04.

### Corporate Overview

From July 2001 the ARC has been a statutory agency under the Public Service Act 1999 and a prescribed agency under the Financial Management and Accountability Act 1997, as well as having a statutory set of responsibilities under the Australian Research Council Act 2001.

During 2002–03 the ARC continued to develop and implement administrative processes and guidelines necessary for its role as an independent statutory authority. This has resulted in a number of services, previously provided under a memorandum of understanding with the Department of Education, Science and Training, now being provided in-house or by external providers. From 1 July 2002 the ARC moved to its own financial system which has been extremely successful. This system is used for the ARC’s budgeting, financial management, financial transaction processing and financial reporting.

During 2003 the ARC also moved its payroll services from the Department of Education, Science and Training (DEST) to an external provider, the National Library of Australia.
The ARC’s first Certified Agreement (CA) was negotiated during 2002–03 and certified on 16 June 2003. The CA covers the terms and conditions of employment of ARC staff who are not covered by Australian Workplace Agreements (AWAs). The ARC offers AWAs to all of its employees as its preferred method of employment and, at 30 June 2003, 45 per cent of staff had chosen to be employed on that basis.

A key activity within the ARC has been development of an enhanced application and contract management system. The ARC receives several thousand applications annually, assessed through an extensive competitive peer-reviewed process. The ARC also manages four to five thousand active projects at any time, which have significant progress and final reporting requirements. An extensive review of the ARC’s contract management systems has been undertaken, a design specification developed, and a tender opened for the development of a new ARC application and contract management system (nominally known as the Application and Grants Management System). At this stage, it is anticipated that the phased implementation of a new application and contracts management system will occur during 2004.

The year ahead

The year ahead promises consolidation and change that will be of fundamental importance to the ongoing health and vitality of Australian research.

The ARC, along with other Government agencies responsible for funding or performing research, will implement its plans for national research priorities. Through this process, we can expect to see established a range of collaborative initiatives that will deliver improvements to Australia’s international research competitiveness and lasting benefits to the community.

Towards the end of 2002–03, the ARC turned its attention to a series of reviews and evaluations announced by the Government in order to lay the foundations for future policy for science and innovation beyond the time horizon of Backing Australia’s Ability. Responding to these reviews is a high priority for the ARC over the first half of 2003–04. The results from them, and the decisions taken by the Government in their wake, will be a major determinant of the international standing of Australia’s research system over the decade to come.

In addition to being actively involved in these reviews and evaluations, the ARC has commissioned a review of its implementation of relevant initiatives under Backing Australia’s Ability and Knowledge and Innovation.

Early in 2003–04, the ARC finalised two commissioned projects — a study on the return on investment from ARC-funded research, and a bibliometric analysis of the impact of ARC-funded research. These studies are expected to greatly enhance our understanding of the value of outcomes flowing from investment in research that is of the highest international standing, and will be a valuable contribution to the development of future science and innovation policy.

In 2003–04, the ARC will begin to address a long-standing anomaly by which important elements of the costs of ARC-supported research have been borne by universities using funds sourced from operating grants. As an initiative flowing from the Government’s May 2003 statement on higher education, Our Universities: Backing Australia’s Future, the ARC will, fund some of the costs of chief investigators’ salaries in some research grants. This is an important step towards greater transparency and clearer lines of accountability for publicly funded research. Over the second half of 2003, the ARC will develop its approach to implementing this initiative.

Outstanding research is ever more reliant on multidisciplinary, international collaborations based on advanced information and communications technology (ICT). The ARC Strategic Action Plan 2003–05 commits to ensuring that Australia is a participant in the next generation of international e-Research developments, such as grid computing. As a step towards this goal, the ARC and the UK eScience Program convened an “N+M” meeting in Sydney on March 10–11 2003 to identify eResearch/Grid research development and deployment activities that could be carried out jointly by researchers from Australia and the United Kingdom.
Towards the end of 2003, the ARC will finalise its Humanities and Creative Arts Stocktake, the first of a series of discipline cluster reviews foreshadowed in the ARC Strategic Action Plan. These reviews will examine research performance at the national level and benchmark it against international best practice. The Humanities and Creative Arts Stocktake will identify strengths and opportunities for research in Australia, develop appropriate performance indicators and benchmarks for that research, and assess the strength of international linkages.

In conclusion, 2002–03 has been a year of great achievement for the ARC, with the implementation of a number of Government initiatives, and the consolidation of the ARC as an independent agency. 2003–04 appears set to be an extremely exciting period for the development of future science, innovation and research policy. I am greatly looking forward to the ARC’s involvement in the Government’s determination of its future directions, while ensuring that the ARC continues to deliver excellence in research for the benefit of Australia.

Professor Vicki Sara  
CEO  
Australian Research Council
ARC implementation of Backing Australia’s Ability

Background

On 29 January 2001 the Government announced its innovation action plan, Backing Australia’s Ability. Since then, this major policy statement has underpinned all programs in research, development and innovation.

The Backing Australia’s Ability strategy focuses on the Government’s commitment to three key elements in the innovation process:

- strengthening our ability to generate ideas and undertake research
- accelerating the commercial application of those ideas
- developing and retaining Australian skills.

Backing Australia’s Ability provided $2.9 billion of additional funding over five years, with $159 million in the first year growing to $947 million in 2005–06.

Initiatives

Backing Australia’s Ability demonstrated the Government’s major commitment to supporting innovation and research in Australia. A key element was the doubling of funding for national competitive research grants, by the provision of an additional $736 million over five years to the ARC. The funding was provided for initiatives to:

- establish Federation Fellowships from 2002, paying internationally competitive salaries to attract and retain leading researchers in Australia
- double the number of ARC-funded postdoctoral positions — through Australian Postdoctoral Fellowships — from 2002, from 55 to 110
- improve the competitiveness of researchers’ salaries to establish better parity between the salaries payable to research-only and research-and-teaching academics
- increase funding available for specific research projects in both basic and applied or collaborative research, to improve substantially grant application success rates and average grant sizes
- contribute to the establishment of two world-class centres of research excellence, in information and communications technology (ICT) and biotechnology.

The Backing Australia’s Ability statement notes that emphasis is to be placed on areas in which Australia enjoys, or wants to build, a competitive advantage.

Progress in implementing Backing Australia’s Ability initiatives

Establish Federation Fellowships

Twenty-four Federation Fellowships were awarded for commencement in 2003. These included six awarded to Australians who will return from overseas to take up their appointments, and two to foreign nationals who will relocate to Australia to continue their research. A list of Federation Fellows awarded in 2003 is provided in the Discovery section, Table 3.1.4.

Over the two years since the program commenced, 49 Federation Fellowships have been awarded. This includes 14 (29 per cent) awarded to returning Australians and three (6 per cent) awarded to foreign nationals.
Double the number of Australian Postdoctoral Fellowships (APDs)

In the 2001 application round (for fellowships commencing in 2002), 110 new APDs were awarded, twice the number awarded in 2001. This doubling of APDs resulted in a success rate of 19.6 per cent for fellowship applications, up from 14.3 per cent in the previous year. In the 2002 application round, for fellowships commencing in 2003, a further 110 new APDs were awarded, with a success rate of 19 per cent.

Improve the competitiveness of researchers’ salaries

The increase to researchers’ salaries through Backing Australia’s Ability was to be implemented over two years, commencing in 2002. In 2002, the salaries of new and existing fellowship recipients increased by between 15 and 43 per cent. In 2003 the salaries of new and continuing fellowships recipients further increased by between 4 and 9 per cent.

Increase funding available for specific research projects in both basic and applied or collaborative research

Prior to the introduction of Backing Australia’s Ability funding, the average allocation for grants commencing in 2001 (for Large Research Grants and Fellowships combined) was $178,581, with a success rate of 21.1 per cent.

The introduction of Backing Australia’s Ability corresponded with the ARC’s becoming an independent organisation with a new grants program structure. The former Large Research Grants and Fellowships were replaced by Discovery—Projects and the Strategic Partnerships with Industry—Research and Training scheme was replaced by Linkage—Projects. As the Backing Australia’s Ability funding has become available, the average grant size over the life of the project for Discovery—Projects has increased, reaching $247,013 in 2002 and $251,007 in 2003. The success rate of applications has also increased, to 25.4 per cent in 2002 and to 25.8 per cent in 2003.

Similarly, while the average allocation for collaborative research projects in 2001 was $130,879, under the Linkage—Projects program this increased to $163,145 in 2002 and reached $178,762 in 2003. Success rates rose from 44.6 per cent in 2001 to 51.8 per cent in 2002. The success rate for applications for funding under Linkage—Projects in 2003 was 49.7 per cent, slightly down from the 2002 rate but strong in the face of a 30 per cent increase in application numbers.

Establishment of world-class Centres of Excellence

The biotechnology and ICT world-class Centres of Excellence established under Backing Australia’s Ability are aimed at generating a critical mass for research in these areas to maintain a competitive edge for Australia.

The Government will provide $43.55 million to the National Stem Cell Centre over the next four years, jointly from the ARC and the Department of Industry, Tourism and Resources. In addition, $129.5 million has been committed, jointly by the ARC and the Department of Communications, Information Technology and the Arts, to National ICT Australia. Further details about these two world-class Centres of Excellence can be found in the Priorities section of Chapter 3.

Priorities

In announcing the additional funding for the ARC in Backing Australia’s Ability, the Government stated its intention that ‘Emphasis will be on areas in which Australia enjoys, or wants to build, a competitive advantage.’

In January 2002, the Minister for Education, Science and Training, Dr Brendan Nelson MP directed the ARC to allocate at least 33 per cent of funding in its 2003 new funding round to four priority areas: nano-materials and bio-materials; genome/phenome research; complex/intelligent systems; and photon science and technology. In his media release of 29 January 2002 announcing this direction, the Minister noted that funding for these areas would be provided through:
• the Discovery and Linkage elements of the National Competitive Grants Program
• the establishment of new ARC Centres of Excellence that would be based upon research excellence, human capacity building, international and national linkages, and national benefit.

This direction was implemented during 2002–03, with the target of 33 per cent exceeded.

Following the introduction of ARC priorities, the Government extended its approach to targeting research into areas of competitive advantage for Australia. In December 2002 the Minister directed that the ARC take account of four national research priorities — environmental sustainability, good health, frontier technologies and safeguarding Australia — in performing its functions under the Australian Research Council Act 2001, including with respect to making recommendations to the Minister for funding proposals under the National Competitive Grants Program, commencing with the 2004 funding round.

Further detail about the ARC’s implementation of priorities can be found in the Priorities section of Chapter 3.
The Information and Communications Technology (ICT) Centre of Excellence, National ICT Australia (NICTA), is the ICT cornerstone of the Commonwealth Government’s $3 billion Innovation Action Plan *Backing Australia’s Ability*.

Launched in February 2003, NICTA, Australia’s foremost ICT research institute, is set to take the Australian ICT industry to new heights. NICTA will build an environment in which ICT innovation and excellence thrive and attract world-class researchers, including many of Australia’s best and brightest researchers currently working overseas.

The Commonwealth Department of Communications, Information Technology and the Arts (DCITA) and the ARC will jointly contribute $129.5 million over the next five years to NICTA.

NICTA founding members are The Australian National University, The University of New South Wales, and the ACT and NSW Governments.

NICTA will conduct world-class ICT research, enhance the research training of R&D professionals, and build linkages with Australian and international public and private research organisations, major corporations, small and medium enterprises, and the public higher education and training sector related to the ICT industry.

Strong in-house programs and projects developed in collaboration with ICT research and commercial organisations will make NICTA a catalyst in improving Australian ICT research education. By building Australia’s ICT research capability, NICTA will transform the Australian ICT sector and strengthen the competitiveness of the financial services, primary industries, resources, education, entertainment and health sectors. NICTA currently has major research and training nodes in Sydney and Canberra.
World-renowned climate change scientist Professor Amanda Lynch will return to Australia to take up an ARC Federation Fellowship to undertake research at Monash University’s School of Geography and Environmental Science. Her research project will investigate the impact of climatic extremes on a community.

Professor Lynch’s project aims to develop a new model and data-based method to characterise extremes that are not predicted by normal climate models, focusing on bushfires in northern Australia and coastal flooding in Alaska. Bushfires and coastal flooding, in the context of regional climate variation, will act as test cases for the method. The project will lead to increased knowledge of climate variability and its impact on community infrastructure, making planning and preparation for extreme events much more effective.

Professor Lynch’s research expertise is in atmospheric modelling development and use, particularly regional and global climate modelling and numerical weather prediction models. She developed the Arctic Regional Climate System Model (ARCSyM) and, with a graduate student, the Antarctic Regional Climate System Model (AntARCSyM) — the first regional climate system models developed for any region of the Earth. Since 1998, Professor Lynch has led several research expeditions funded by the National Science Foundation (NSF) to study the conditions in Alaska’s North Slope. She has previously held posts in leading atmospheric centres including as Visiting Scientist at the National Center for Atmospheric Research and as Consultant at the Los Alamos National Laboratory in the U.S.

Professor Lynch is currently a Fellow of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado at Boulder. She has chaired the NSF Office of Polar Programs Advisory Committee and is a member of the U.S. National Academy of Sciences Polar Research Board.

Photograph: Professor Lynch at Barrow public meeting, from left: Mike Aamodt (North Slope Borough Assemblyman), Professor Lynch, Jim Maslanik (project scientist) and Ron Brunner (project scientist) (Courtesy of Professor Lynch).
Salt-tolerant CEREALS

Leading plant scientist Dr Mark Tester from the University of Cambridge will lead a project on salinity tolerance and long-distance transport in cereals at the Australian Centre for Plant Functional Genomics.

An ARC Federation Fellow, Dr Mark Tester will bring back to Australia expertise and knowledge from his successful research work on salinity tolerance at the University of Cambridge where he is head of the Stress Physiology Laboratory, Department of Plant Sciences.

Dr Tester’s project on salinity tolerance will investigate the effects of random gene activation in specific cell types in cereal crops. It will be complemented by a range of projects and will build on current work at Cambridge on the mechanism and control of sodium transport at the cellular level. His work will advance our understanding of long-distance communication mechanisms regulating nutrient processes in plants.

Salinity is one of the major land degradation problems in Australia. Dr Tester’s project aims to develop cereal crops which have increased tolerance of saline soils and to generate plants with altered concentrations of a range of nutrients in both leaves and grain. The development of salt-tolerant cereal crops will benefit Australia’s agricultural industry through the application to important crop plants, wheat and barley.

Dr Tester brings with him extensive links to sophisticated and advanced plant nutrient genomics projects. He was awarded a Research Development Fellowship by the UK’s Biotechnology and Biological Sciences Research Council (BBSRC) in 2001 to study the changes in patterns of plant gene expression using genomic-scale techniques. He serves on the BBSRC Plant and Microbial Sciences Committee. Dr Tester is an Associate Editor of the journal *Plant, Cell & Environment.*

Photograph: Dr Tester with Arabidopsis (Courtesy of Dr Tester)

Chief Investigator:
Dr Mark Tester, The University of Adelaide

International Collaboration:
Major collaborations include US (Purdue University); UK (University of Cambridge and University of Oxford), France (CIRAD – La Recherche Agronomique au Service des Pays du Sud; Institut National de la Recherche Agronomique), Germany (University of Potsdam; University of Hohenheim); Switzerland (University of Neuchâtel); and Italy (Italian National Research Council (CNR), Turin)

Australian Collaboration:
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