INDIAN OCEAN TSUNAMI DISASTER

On 26 December 2004 an earthquake in the Indian Ocean triggered deadly tsunamis, killing over 230,000 people in several countries and leaving millions homeless. On behalf of the University, messages of support and sympathy for those affected by the disaster have been sent to all staff, students and alumni.

The loss of life and livelihood of those affected by the Tsunami was acknowledged at a Multifaith Memorial Service held at the Worship Centre on 18 January 2005. More than 130 staff, students and friends gathered to hear messages of prayer from the Hindu, Buddhist, Muslim and Christian faiths.

Lisa Jones, an international student from the United Kingdom doing her Masters in sustainable tourism, died following the collapse of her office located near the beach at the Golden Buddha Resort complex. She was conducting field work on a research project on sea turtles in the villages of Phra Thong. She was remembered as caring person with a strong sense of social justice and an enduring conservation ethic. Her research supervisors, Dr Jim Macbeth and Dr Carol Warren, were joined by fellow students and staff in the Division of Arts, the Research Office, the Teaching and Learning Centre and the Library in mourning her tragic loss.

A small coordinating group has been established, chaired by Professor Kat Longley, to review proposals put forward by staff for practical aid to Tsunami affected regions and coordinate any such assistance. Links have been established with Sri Lankan relief efforts through the Sri Lankan Parliamentary Friendship Group.

2005 RESEARCH FUNDING

Australian Research Council Grants
The Federal Government has announced $381 million in funding over five years for 1,387 new research projects administered by the Australian Research Council (ARC) commencing in 2005. Murdoch has again performed strongly with grants awarded across broad range of disciplines.

Discovery Projects
Nine Discovery Projects have been supported at Murdoch, with funding for 2005 of $704,044 and total funding for 2005-09 is $2,170,088. Detail of the successful applicants, including project title, staff and funding, is provided in the attached table.

Linkage Projects - Round 1
Murdoch was successful with five Linkage Projects. The value of 2005 funding is $193,914 with total funding for 2005-2007 of $625,433. Detail of the successful applicants, including project title, staff, industry partners and funds, is provided in the attached table.
Higher Education Innovation Programme
The Federal Government aims to support innovation in the higher education sector and improve the quality of the student learning experience through the Higher Education Innovation Programme (HEIP). Projects often involve collaboration between universities and other education partners. A total of $2.84 million funding was awarded to 24 projects in the current round of funding. Murdoch reinforced its reputation for innovation in education through direct and joint success in the recent round of HEIP grants.

Associate Professor Dave Macey received $31,000 to undertake a review of alternative entry systems into Australian universities. He will document existing admissions and enrolments systems for non-TER applicants into Australian universities with a view to sharing information and strategies which will lead to a fairer, more open and consistent access system for students entering higher education. The State Department of Education and Training and Curtin and Edith Cowan Universities will collaborate on this project.

The Innovative Research Universities Australia group was awarded $194,800 for the establishment of a student exchange program in Environmental Science and Environmental management across the group. This project was outlined in the November report to Council.

The Australian Universities Community Engagement Alliance, of which Murdoch is a member, has also been successful in obtaining funds for 2005 and 2006 to formalise and disseminate the Alliance.

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**COOPERATIVE RESEARCH CENTRES**

The Commonwealth Government has committed funding totalling $407 million to support 16 research consortia under the Cooperative Research Centres (CRC) Programme. Murdoch continues to build its national collaborative research profile through its membership of seven of the successful CRCs - two supplementary, two new, and three re-funded - that will receive a total of $130 million in funding.

The Government's current priorities mean that successful grants are focussed towards agricultural related research. The successful Centres, the key Murdoch staff associated with them and their industry partners are:

1. Australian CRC for Interaction Design, Information and Communication Technology Sector (Supplementary) - Professor Duane Varan, $1.65 million in funding.
2. CRC for an Internationally Competitive Pork Industry, Agriculture and Rural Based Manufacturing Sector (New) - Professor Dave Hampson and Dr John Pluske, $25.75 million.
3. CRC for Beef Genetic Technologies, Agriculture and Rural Based Manufacturing Sector (Developing from an existing CRC) - Associate Professor Dave Pethick, $30 million.
4. CRC for Molecular Plant Breeding, Agriculture and Rural Based Manufacturing Sector (Supplementary) - Professors Rudi Appels and Matt Bellgard, $4.93 million.
5. CRC for National Plant Biosecurity, Agriculture and Rural Based Manufacturing Sector (New) - Professors Mike Jones, Rudi Appels and Matt Bellgard, $20.5 million.
6. CRC for Sustainable Forest Landscapes, Agriculture and Rural Based Manufacturing Sector (Developing from an existing CRC) - Associate Professor Giles Hardy and Dr Treena Burgess, $26.6 million.
7. Parker CRC for Integrated Hydrometallurgy Solutions, Mining and Energy Sector (Developing from an existing CRC) - Professor Mike Nicol, and Associate Professors Glenn Heffer and Peter May, $20 million.

Vice Chancellor & Report to Senate
MINISTERIAL VISIT

Dr Dennis Jensen, Federal Member for Tangney, hosted an Education Roundtable at Murdoch University on 4th February 2005. The Hon Dr Brendan Nelson MP, Minister For Education, Science and Training, was the key speaker and participated in an open Question and Answer Forum. Representatives from each of the four public Universities and Central, Challenger and Swan TAFE attendees.

Dr Jensen highlighted the positive relationship he has with Murdoch and that the University was the biggest employer in his electorate. He was keen to form close links with the University and facilitate closer links between the university and the secondary schools in Tangney.

Dr Nelson spoke about further reform within the higher education sector, with issues broached including standardised testing, funding levels and indexation, and the review of State and Commonwealth responsibility for universities. He also made several specific comments about Murdoch's reputation as an outstanding teaching and research institution.

GOVERNANCE PROTOCOLS

Murdoch has received advice from the Department of Education, Science and Training (DEST) that the Minister has exercised his discretionary power to approve the 2.5% Commonwealth Grant Scheme (CGS) funding increase for Murdoch University in 2005. In making his decision, the Minister acknowledged that Murdoch has complied with nine of the Protocols and has taken reasonable steps towards complying with the others, all of which rely on legislative amendments currently being drafted by the WA Government.

The Minister has no power to exercise discretion for 2006 funding and it is therefore important to ensure that legislative change is enacted by the next date of assessment, 31 August 2005, to avoid being considered non-compliant and thus ineligible for the CGS funding increase.

MURDOCH UNIVERSITY PRESENCE AT PEEL

The Commonwealth Government has allocated a further $2.0 million to Murdoch towards the development of our Peel Campus. This supports CDP allocations of $2.5 million and $2.0 million received in 2002 and 2003 respectively.

The Capital Development Pool (CDP) is a discretionary fund set aside by DEST for special capital projects to assist institutions undertaking electronic delivery infrastructure projects and/or new campus developments in suburban growth corridors and regional centres. A total of $43 million is available for allocation from CDP in 2007 and DEST received 64 submissions seeking a total of $230 million of funding. While no institution got more than $2 million, 15 got this level, including the consortium of WA Universities involved in the Geraldton University Centre. In this context, Murdoch's allocation represents important recognition of the significance of our presence in Peel.

The centrepiece of our facility at Peel will be a University Learning Centre that provides a flexible learning space that can be used for face-to-face instruction in variable group sizes, supplemented and supported by information technology infrastructure. Space for academic staff, academic support services and administrative staff is also incorporated help build a vibrant campus life and develop relationships that are an important component of students' learning.
Continuing support from the Commonwealth Government and the local community will ensure that Murdoch remains on a growth path and will be the main Higher Education provider in the South West corridor. Through key initiatives such as the expansion of our Peel campus we can help improve educational outcomes in the wider Peel region and move forward with confidence.

MWEP Peel Regional Office
The Murdoch Westscheme Enterprise Partnership (MWEP) has successfully aligned itself with Murdoch's push to establish a strong industry-focused innovation and entrepreneurship presence in the Peel region. The Partnership was awarded a grant of $27,500 by the Peel Development Commission for the development of the MWEP Peel Regional Office sited at the Murdoch Campus. A Research Analyst, Ms Adina Firescu, is earmarked to take up the position of Peel Investment Analyst early this year.

INTEGRATED AGRICULTURAL RESEARCH INSTITUTE

In the lead up to the State Election to be held on 26th February 2005, the major parties have released their agriculture related policies. Detail of their position in relation to the Agriculture Institute is provided below.

Government Policy
The Hon. Kim Chance MLC, Minister for Agriculture, Forestry and Fisheries; the Midwest, Wheatbelt and Great Southern, announced the Government's Agriculture and Food Development Policy at a press conference held at the Veterinary School farm on 10th February 2005. The Minister announced that the establishment of the Western Australian Agricultural Research and Teaching Institute will be progressed, with $27 million being allocated to the project. The Department of Agriculture will be retained and renamed the Department of Agriculture and Food with new headquarters at Murdoch. He said that co-locating the Department of Agriculture at Murdoch would promote the efficient use of resources, ensure integration of research and agricultural policy and regulation, and provide a one-stop shop for industry.

I took the opportunity to show the Minister potential sites for the Department of Agriculture headquarters and to illustrate how the siting of the building would facilitate links with research and administrative groups.

Coalition Policy
The Coalition announced that it would support the proposed new Integrated Agricultural Research Institute at Murdoch. The Institute will incorporate the work currently being undertaken at UWA, Murdoch and Curtin universities and the Department of Agriculture. The Coalition have indicated that the Department of Agriculture needs a metropolitan based administrative and research centre that is readily accessible to agricultural producers. Co-location with the new Integrated Agricultural Research Institute at Murdoch University is one of two options canvassed.

AWARDS AND ACHIEVEMENTS

- The Nurses Board of Western Australia has confirmed full Accreditation of the Bachelor of Nursing until December 2006. The School of Nursing is the first School to achieve this, given the Nurses Board of Western Australia's new and expanded criteria for assessing courses introduced in mid 2004. On behalf of the University I offered my congratulations to Rhonda Marriott and her staff on attaining this goal.
• Murdoch University has recently been awarded status as an Elite Athlete Friendly University (EAFU) by the Australian Institute of Sport in recognition of our commitment to flexible learning and delivery. The Australian Institute of Sport, in conjunction with the Western Australian Institute of Sport (WAIS) and partner professional sporting associates such as the AFL Players' Association and Australian Cricketers' Association, establish this initiative to both recognise and assist those universities supporting elite athletes to achieve academic excellence.

• Professor Richard Hobbs has been appointed a member of the ARC College of Experts. On behalf of the University, I have sent congratulations to Professor Hobbs on this well deserved recognition. In selecting members for its Expert Advisory Committees the ARC considers:
  • Excellence in research as well as a sound understanding of the utility of research
  • Broad disciplinary expertise
  • Professional and academic standing
  • Organisational skills
  • Relevant experience in industry or public sector organisation
  • Experience in coordination of research activity

• Professor Michael Durey has been elected as a Fellow of the Australian Academy of the Humanities. He was one of only 18 outstanding scholars elected Fellows at the Annual General Meeting of the Academy. Professor Durey was recognised as a scholar of international repute whose thirty-year career has been devoted to investigating the history of radical political thought in Britain, Ireland, and the United States.

• Professor Andris Stelbovics, Pro Vice Chancellor Research Murdoch University, has recently been elected Fellow of the prestigious American Physical Society (APS). The election recognises his seminal contributions to electron-atom collision theory, including co-development of the convergent-close-coupling method. The APS Fellowship Program was created to recognize members who may have made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology. No more than one-half of one percent of the current membership of the Society are recognized by their peers for election to the status of Fellow.

• Two students from the After School and Vacation program run by Jennifer Searcy excelled in the 2004 National Qualifying Examinations for the Rio Tinto Physics Olympiad. Benjamin Golightly was selected for the January Chemistry School in Canberra to compete for a place in the Australian team going overseas to contest the International Olympiad and Hiro Ashihara gained a distinction in Chemistry and was awarded a silver medal for coming second in the State for Physics. This is an outstanding achievement in only the first time students have entered for the NQE.

• Matthew Inie, a gifted 10-year-old student, was awarded the Murdoch University Vice Chancellor's Award for Academic Excellence, which is made to a primary school student who has demonstrated outstanding academic potential and has also been recommended for special notice by the Academic Board of Murdoch College. The scholarship provides his full tuition fees during his 5 year stay at Murdoch College for his secondary education. He will enter the Gifted and Talented Program at Murdoch College. Matthew was presented with his scholarship by Pro Vice Chancellor (Strategy), Professor Gary Martin, at a ceremony held on 20th December 2005.
NOTABLE EVENTS

- I received a letter of thanks from the Governor of Hyogo Prefecture in relation to their visit to Murdoch University as part of the Hyogo Joint Summer Session at Sea 2004. Four Murdoch students joined the program for the Bali to Fremantle leg of the voyage.

- An official function was held 3rd November to launch Murdoch University’s participation in the Australian Digital Theses Program. This is a joint initiative between Murdoch University Library and the Division of Research and Development and an important contribution to the promotion of our excellent research to the international community.

- In a ceremony held at the Rockingham Campus on 24th November 2004, the Hon Kim Beazley, Member for Brand, awarded six students with funds from the Mick Young Scholarship Trust (MYST). The Trust was set up in memory of the late Mick Young, a former Member of Parliament and Federal Minister, who sought to enhance educational opportunities for disadvantaged people. Primarily aimed at students in the VET sector, Murdoch is one of only two universities nationally to be invited to participate in the Scholarship scheme. This recognises that Murdoch, with over 500 students with special needs, has one of the best equity records in Australia.

- The Minister for Planning and Infrastructure, Alannah MacTiernan MLA, launched a suite of courses focused on local governance education to be offered by Murdoch from 2005 at a function on 7th December 2004. The courses will be offered through the Institute for Sustainability and Technology Policy (ISTP) and include a Bachelor of Arts, Master of Arts, Postgraduate Diploma in Policy Studies and a Postgraduate Certificate in Policy Studies all with specialisation in Local Governance. They aim to provide training for citizens or policymakers who are involved in developing partnerships between government, businesses and the community. The courses have been established in consultation with local and State government authorities and regional development organisations. They are an Australian first and provide an initial step in an area of emerging expertise at the University.

- Murdoch hosted the Cultural Studies Association of Australia (CSAA) National Conference, *Everyday Transformations: The Twenty-First Century Quotidian*, from 9th to 11th December 2004. This was one of the biggest cultural studies conference ever held in Australia. 'Everyday life' is emerging as an increasingly important theme in the field. This conference will investigate connections between ordinary practical interests (the water crisis in Australian cities, talkback radio, food, modified car cultures, makeovers) with big questions about who we are in the twenty-first century and about where we are going. During the conference, a pre-museum exhibition, *Half-Lives: Experiencing the Atomic Age*, was held in Club Murdoch. The exhibition showcased objects from daily life in the nuclear era and was co-curated by Dr Mick Broderick.

- The Peel Health Campus Professor of Nursing was launched at a function held on 8th December 2004. The ceremony provided an opportunity to thank Peel Health Campus for their contribution and to recognise those staff involved in developing the proposal and negotiating and finalising the agreement. Importantly, the relationship between the partners and its value to the community was acknowledged.

- It was particularly valuable for Murdoch and our Peel Health Campus partners to have the Minister for Health, Jim McGinty, there to recognise their investment in the Peel region.

- Daniel Marsden, the Chief Executive Officer of Australian University Sport, and Peter Schofield, AUS General Manager - Operations, visited Murdoch on 10th November 2004. They toured the University’s sporting facilities with staff from the Office of Commercial Services, the Guild Sports Officer and the Manager of Murdoch University Sports. Daniel was impressed with the facilities and plans for sport on campus.

Vice Chancellor's Report to Senate
• The Official Welcome for the National Association of Graduate Careers Services Conference was held in the Moot Court in the new Law Building on 29th November 2004. The theme of the Conference was Being Heard; Hearing the Message; Moving Forward and it attracted over 100 delegates from across Australia and internationally. I had the opportunity to formally welcome and meet with delegates on the opening day of the Conference.

• Professor Steve Halls, Director of Murdoch Environment, gave a public lecture titled “Waste, Water and Food - Is there a Sustainable Future?” on 2nd December 2004. The event was attended by over 100 people, including Murdoch staff and students, Senate members and representatives from industry and the environmental sector.

• On 9th December 2004, University staff and their families celebrated the year’s end with a Christmas Chemistry Magic Show presented by the Mudrock Academy of Magic - Professor Dumbledore (Doug Clarke), Gandalf (Andrew Foreman) and Merlin (Emeritus Professor Ian Ritchie). Nearly 300 adults and children were treated to astounding with real life magic, after which both children and adults walked away with prizes and the Christmas fairy shared lolly bags with all the children. The event wound up with a free ‘Sorcerer’ sausage sizzle in Bush Court.

• Challenger TAFE and Murdoch University announced new articulation agreements at a ceremony hosted by the Minister for Education and Training, the Hon Alan Carpenter MLA, on 14th December 2004. The event was attended by the Managing Director of Challenger TAFE, Malcolm Goff, Pro Vice Chancellor (Regional Development), Professor Kateryna Longley, Murdoch and TAFT staff, and business and industry representatives. The agreements in Business and Information Technology grant entry to Murdoch to graduating Challenger TAFE students. The Peel Careers Combo was also launched. This is an initiative between Challenger TAFE, Murdoch University and Mandurah Senior College, which gives high school students (as well as mature age applicants) alternative pathways into Nursing, Science or Business by combining vocational training with more conventional education programs.

• On 17th December 2004 I hosted a Christmas function for Heads of Schools. This provided an opportunity for me to thank them for their efforts on behalf of their staff during 2004.

• I met with Christine Ewan, a consultant working for DEST, to discuss the Review of Responsibility for Higher Education currently being undertaken by the Department. Her component of the project is to canvass the views of Vice Chancellors on the possible transfer of responsibility for universities from State and Territory Governments to the Commonwealth.

• The Postgraduate Diploma in Advanced Mental Health Nursing and the MBA in Health Services Management were launched by the Executive Dean of Health Sciences Professor Jim Reynolds on 24th January 2005. The Diploma programs provide opportunities for Registered Nurses to further their education in high demand specialty areas. The MBA course is tailored to provide specific postgraduate education in the specialist field of health services management and nursing leadership. Murdoch staff and Senators attended the launch, together with representatives from State and Commonwealth Health Departments, Hospitals and mental health and aged care services.

• Murdoch University hosted the 14th Annual Teaching Learning Forum on 3rd and 4th February 2005. Titled The Reflective Practitioner, the Forum draws together academic staff from the five Western Australian Universities who are interested in pedagogical issues and members of the university community who are keen to explore ways to improve the quality of the university experience for students. The Forum was well attended, with national and international registrants adding alternative perspectives to discussions.
A Senate member has requested that the following questions on notice be put.

- How many full-fee paying students, sorted by school, are enrolled so far in 2005, and were enrolled in 2004?

- When we take account of administration and other incidental costs, how much additional funding has Murdoch received from full-fee paying students (with incidental calculations included) in 2004 and (predicted) 2005?

A report detailing this information is attached for noting.
Australian Research Council Grants

Discovery Projects

Devising sophisticated computational comparative genomic analysis strategies for animal and plant genomes
Prof M Bellgard; A/Prof JK Kulski; Prof R Appels; Dr RH Taplin; A/Prof RR Barrero
2005 : $50,000
2006 : $50,000
2007 : $50,000
Summary: Given the significance of comparative genomic analysis, this research proposal brings together Australian scientists with a track record in comparative genomic analysis, bioinformatics, molecular biology and statistics to work on consolidating a computational framework for comparative genomic analysis and investigating transcriptome data by capitalising on international collaborations and involvement. The outcomes of this research will be of benefit to the national community through technology transfer (such as the identification of novel and functional genomic non-coding sequences), training (in bioinformatics related activities) and national coordination (of bioinformatics activities).

The Democratisation of Documentary Cinema in China
Dr Y Chu
2005 : $40,044
2006 : $35,044
Summary: The Democratisation of Documentary Cinema in China has cultural, political, economic, and research benefits for Australia. Culturally, the Project provides an analysis of the ways China views itself and the world. Politically, the Project enriches Australia's understanding of how media control in China has been transformed from 1949 to the age of globalisation. Economically, the Project enhances Australia's chances of finding a niche in the world's largest documentary film market. As a contribution to research, the Project will produce the first in-depth study of Chinese documentary film, its industry and politics and so offers Australia a new perspective on how political change is reflected in one of China's leading media productions.

CCC method: new applications to electron scattering from atoms and molecules
Dr D Fursa; Prof AT Stelbovics
2005 : $120,000
2006 : $120,000
2007 : $120,000
Summary: Achievement of the stated aims will be of enormous benefit to industry and laboratory research because at the present time no reliably accurate models exist for the range of the required scattering parameters. The modelling work will result in development of new software packages for supercomputers and will provide training for research associates, PhD and Honours students in an area where Australian theorists are preeminent.

The roles of invasive ants in urban ecosystem dynamics and restoration
Prof RJ Hobbs; Ms L Lach; Prof JD Majer
2005 : $105,000
2006 : $90,000
2007 : $90,000
Summary: The potential impacts of invasive ants are recognised worldwide, and we know that invasive ant species are already present in heavily disturbed areas in southern Australia, particularly in urban settlements. However, as yet, we have very little information on the actual and potential impacts of invasive ants on ecosystem processes. Urban bushland is seen as an
important conservation and amenity resource, and there are increasing efforts to manage and restore these areas. This project aims to elucidate the likely impact of invasive ants on the maintenance and restoration of urban bushland, and hence provide guidance as to whether management and restoration needs to include invasive ant control.

Expression profiling of giant cells induced in host plant roots by root-knot nematodes
Prof MG Jones; A/Prof D Bird; Dr VA Vanstone
2005 : $75,000
2006 : $70,000
2007 : $70,000

Summary: Root-knot nematodes cause crop losses of over $400 million per annum in Australia. Control by toxic chemical nematicides is expensive and can pollute groundwater. Benefits from this research for the Australian community are: (i) it will ensure that Australian researchers stay at the forefront of research in plant nematology, (ii) it provides significant local and international linkages that will stimulate research outputs, and (iii) new knowledge will be generated on how plants respond to attack by nematodes - this will generate new intellectual property, leading to better control methods and reduced costs that will support rural communities, and reduce environmental pollution.

Prof Dr WR Loader
Attitudes towards Sexuality in Judaism and Christianity in the Hellenistic Greco-Roman Era: The First Comprehensive Analysis, in two volumes.
2005 : $142,000
2006 : $142,000
2007 : $142,000
2008 : $142,000
2009 : $142,000

Summary: This study investigates how attitudes towards sexuality in early Judaism and Christianity developed and were shaped in interaction with Hellenistic culture which largely dominated their world. It thus provides information about a formative period which continues to influence attitudes towards sexuality in many communities today and will provide them with a useful resource in the form of a two volume work and an abridged account for exploring where such attitudes came from and how they developed.

Cellular control mechanisms of matrix mineralization in the teeth of marine molluscs
A/Prof DJ Macey; A/Prof JM Webb; Dr AP Lee; Dr I Brooker
2005 : $60,000
2006 : $78,000
2007 : $80,000

Summary: These studies are significant as a foundation for the country’s current focus on advanced materials and nanotechnology. The production of new materials is critically dependant upon understanding the crystallochemical control organisms, such as chitons and limpets, have over the precipitation of simple compounds, such as the calcium and iron oxides, phosphates and silica, often formed as nanoscale deposits. This study constitutes a systematic in situ exploration of the biomineralization processes that form these composite microstructures and as such will provide a new source of inspiration to the production of new biomaterials.

The Life and Writings of Sir Charles Brooke, second Rajah of Sarawak (1829-1917)
A/Prof RH Reece
2005 : $32,000
2006 : $20,000

Summary: The benefit of the project is an understanding of the processes and mentality which underlaid what was perhaps history’s most successful experiment in enlightened European rule
over Asian peoples during the Imperial era. There are lessons here for Australians’ relations with their Southeast Asian neighbours, notably Malaysia and Indonesia. In the British context, it will document and evaluate for the first time the achievement of one of the great figures of the Imperial era. Within Malaysia (and notably Sarawak) it will provide a major contribution towards an understanding of the ‘White Rajah’ era and its legacy of economic autonomy and political and cultural pluralism.

Contestation or Regulation - New Politics in Southeast Asia
Prof G Rodan; Dr K Jayasuriya; Dr VR Hadiz; Prof KJ Hewison; Dr BH Chua
2005 : $50,000
2006 : $25,000
Summary: By providing a greater understanding of the region’s politics and societies the study can enhance all forms of Australian engagement with Southeast Asia. It offers insights into differential intra-regional capacities and orientations of political systems to absorb diverse social forces into the political process. This knowledge provides a basis for strategies to promote effective governance reform and other Australian aid programs. It will also assist policymakers seeking to influence the management of, or resolution to, conflicts threatening stability in the region.

Linkage Projects - Round 1
Computational methods in atomic collision theory
Prof I Bray; Dr D Fursa; Prof AT Stelbovics; Dr R Gomperts
2005 : $40,000
2006 : $40,000
2007 : $40,000
Partner Organisation(s): SGI
Summary: We will develop computational methods for solving interactions between particles on the atomic scale. Computational problems, of particular interest to the industry partner, are the treatment of large-scale ill-conditioned linear systems, and the extension of the Gaussian molecular structure package to collision physics. We have been world-leaders in the field of atomic collision theory for almost a decade, and now, utilising the latest software and hardware, will have the capacity to extend the numerical techniques to a vast range of collision systems of interest to science and industry, where visualisation and sheer computer power will play a major role in both code development and production runs.

Field based molecular diagnostics for identification of plant parasitic nematodes
Prof MG Jones; Dr VA Vansone
2005 : $60,000
2006 : $80,000
2007 : $80,000
Partner Organisation(s): Dept of Agriculture WA
Summary: Nematodes are economically important pests of many agricultural and commercially grown plants. We have shown “proof-of-Concept” that plant parasitic nematodes can be identified by protein profiling using MALDI-TOF mass spectroscopy. In this project advanced techniques of proteomics and associated bioinformatics will be used to identify, isolate and characterise proteins that are specific to economically important nematode species and races, and to identify diagnostic proteins or epitopes. The diagnostic proteins will be used to generate specific monoclonal antibodies that will be incorporated into immunochromal “Lateral Flow” devices. These will provide on-site tests to identify nematodes for growers and quarantine services.
Modelling Bayer Plant Liquors for Industrial Process Simulations
Dr E Koenigsberger; A/Prof PM; A/Prof GT Hefter; Dr M Filella
2005: $45,618
2006: $46,850
2007: $48,077
**Partner Organisation(s):** Worsley Alumina Pty Ltd; Alcoa World Alumina Australia; Alcan Engineering Pty Ltd; Comalco Limited
**Summary:** Alumina refining is one of Australia’s most important industries but it exists within an increasingly competitive global market. More meaningful computer simulations of the Bayer process, covering conditions far beyond current plant operating ranges, are seen by Australian producers as an important way to increase future productivity, minimise energy consumption and cut greenhouse emissions. To achieve these aims, we must develop hitherto unavailable modelling capabilities for predicting the behaviour of Bayer plant liquors. The more robust thermodynamic models developed in this project will enable more realistic simulations, which are a prerequisite for innovative process design and optimisation.

Monitoring and Predicting Frost Events in the Agricultural Area of WA
Prof Dr TJ Lyons; Dr IJ Foster
2005: $24,148
2006: $24,148
2007: $24,148
**APA(II) Award(s):** 1
**Partner Organisation(s):** Department of Agriculture Western Australia
**Summary:** Frost is commonly ranked by farmers as the second most important climate risk after rainfall variability. Thus reliable nocturnal temperature forecasts are of paramount importance in understanding the potential for frost formation and enabling its timely prediction and detection. Such forecasts would allow appropriate active or passive management responses. Utilising the existing meteorological network of the Department of Agriculture, this project aims to develop an integrated frost prediction system that will provide timely estimates of both the spatial and temporal extent of frost events for farmers and agribusiness.

Enhanced metal recovery from a modified Caron leach of mixed nickel-cobalt intermediate concentrate
Dr NJ Welham; Dr PA Anderson
2005: $24,148
2006: $24,148
2007: $24,148
**APA(II) Award(s):** 1
**Partner Organisation(s):** Queensland Nickel Industries Pty
**Summary:** Nickel metal production from lateritic deposits involves dissolution in acid followed by purification and selective alkaline precipitation of the nickel and cobalt as hydroxide phase. Hydroxides from several plants are transported to a central refinery where the hydroxide is redissolved in ammoniacal solutions and nickel and cobalt are separated and reduced to metal. This project will examine the effect of preparation conditions and aging of the hydroxide precipitate on the refining process.