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FEAST focus

BUILDING THE EUROPEAN-AUSTRALIAN RESEARCH COMMUNITY.
WWW.FEAST.ORG

Amidst the constant chorus of requests for more Australian funding (and better programmes) for international collaboration that we hear in the FEAST Secretariat is a second and only marginally quieter one, about the lack of attention paid to researchers in the rest of the industrialised world by Europe. There is a common perception among Australian researchers (and indeed those from other developed countries) that Europe needs to do a great deal more to send the correct signals to our research community if they really are serious about high quality international research.

European International Research Cooperation Policy: Is there one?

This perception is echoed within the European research community, and even more importantly, within the research policy bodies that advise the European Commission. The European Research Advisory Board (EURAB), for example, has now published two sets of recommendations that strongly support a new approach to addressing the major issues that the Australian research community has identified. Given that FEAST members are unlikely to see these, I have extracted some excerpts from the EURAB Working Group 9 (International Cooperation) Final report (EURAB 05.032), and the EURAB Activities Report 2005 (available at www.ec.europa.eu/research/eurab) for further illumination. It remains to be seen whether there will be a response from Brussels that will satisfy the Australian research community.

■ General principles of International research cooperation and its implementation

A main condition for international cooperation in the Framework Programme (FP) is to promote high-level research in Europe. In many respects results of international cooperation have been successful. Among others, intergovernmental organisations – such as CERN, ESA, and ESO - have produced useful contributions. However, in general, the results of international cooperation have been inadequate.

Therefore, a new approach is needed. In a word, the FP must become a strategic programme to serve both global and European needs to enhance each other. Its international aspect must cover the entire scope of the Programme. This stance has profound implications for the implementation of FP7.

In the EU jargon “third countries” are defined as “those outside the EU”, non-EU-countries,



and “the international cooperation partner country”, conversely leaves the industrialised countries out. This state of affairs reflects, of course, the strong polarisation of the world society, but it also poses significant problems of implementation; the EU must use multiple tools in its FPs.

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FEAST Conference 2006
Research without borders

28 - 29 November 2006
The Shine Dome
Canberra - Australia

SMARTER COMMUNITY: stepping stones to success



FEAST
is the only organization
having an official mandate
from the Australian gov-
ernment and the Euro-
pean Commission to foster
co-operation in Science
and Technology, including
Humanities and Social Sci-
ences
www.feast.org

European International Research Cooperation Policy: Is there one? (from page 1)

The international dimension of the FP should create win-win situations for all partners. The Union must attract the best researchers in the world and create innovative research environments and thus gain over the long term more from networking and “brain circulation”. To persuade third-country researchers to participate in the FP, its aims should be important even in global terms. Researchers from third countries often seem to consider the FP too Eurocentric.

At the moment, the thematic priorities are often seen as rather narrow and politically defined reflecting the internal needs of the EU. It appears the European added value should be seen more broadly – as part of the two-way street (win-win) in international scientific and technological cooperation.

To spread correct information on Framework Programmes and build capacity in the partner countries, the Commission should prepare non-EU partners. It has to be realised that they are usually not well aware of Community procedures. The Commission must ensure that the simplification process will be continued. There are, of course, other obstacles as well; among others, the fear of an excessive risk of failure of receiving Community funding, as well as administrative and financial restrictions in the EU countries.

It appears there is only limited coordination in the Commission among various international R&D programmes.

Third-country and even European participants tend to complain that the amounts of money they receive are often very small and in any case much smaller than those received by EU scholars. If this is the case, the reasons should always be transparent and justifiable. These and other hurdles have driven eminent scholars and industry representatives from active participation in the FP to other funding instruments. The European system of innovation is not well served if the best and most experienced researchers are not interested in funding opportunities provided by the EC.

To avoid unnecessary administrative complications and delays, the Commission and Member States should give all the necessary support to the European Network of Mobility Centres.

It is not unusual to hear criticism from third parties for a number of reasons. In sum, the EC is clearly facing the

challenge of greater policy coherence and administrative coordination. On balance, it has to be borne in mind that a considerable number of successful projects has been carried out with partners from third countries. Other positive examples of INCO cooperation include FEAST. This initiative has been followed by information events in partner countries and regions. It is a common impression that events in partner countries and regions have been successful; for instance, participation in the FP has grown in those countries where they have been actively promoted

■ Recommendations on cooperation with “third countries”

International cooperation is of mutual benefit for both the EU and its cooperating partners from third countries. It should be an integral part of FP7 and be viewed as a good investment. The activities planned with different countries and regions should, however, be differentiated according to their specificities, and depend on the comparative advantage or need.

- Participation should be eased and matching capacities built up wherever needed.
- Better coordination among member states national programmes is needed to achieve stronger synergies. The potentials of the EU (e.g. in setting standards, IPR, etc.) should be more efficiently utilized to optimize European added value. International cooperation must contribute to these goals, therefore in the FP third countries should be treated as equal partners.
- Mobility should be widely encouraged, seeking to make Europe an attractive destination for researchers from all over the world. It should be two way and without any restriction.
- The concentrated and efficient management of international cooperation in the EC is crucial for its efficiency.
- The budget for INCO in FP7 should be under a separate budget line, increased and allocated across the thematic areas. Budgetary allocations should not be made on a pro rate basis, since some thematic areas offer more options than others for meaningful international cooperation.

During the last two decades, a new competitive international system of science and technology has emerged. To promote its goals, the EC needs a new proactive international policy in

S&T. The EC has to develop large, visible projects that would attract attention especially in the emerging centres of economic power.

The EC should clearly spell out its priorities on and establish a long-term policy framework to promote international cooperation in S&T. High among these priorities is to make Europe attractive for the best researchers in the world and for investment in scientific infrastructures, including global large scale facilities.

The EC should differentiate clearly between target countries – e.g. advanced industrial countries, emerging economies and developing countries – to define its own interests and select the right kinds of instruments to promote international cooperation. The EC has to develop a proper mix of research and technology, business relations, and aid to properly address the interests of different partners. Moreover, the instruments of cooperation are quite different in areas that require large-scale scientific infrastructures compared, for instance, with fieldwork.

A working division of labour and cooperation among the Commission services is crucial for the effective implementation of the EC’s international strategy on science and technology. The Commission should establish an efficient management structure to initiate and coordinate international actions across administrative boundaries. This would require the establishment of a strong focal point in DG Research to deal with partner countries and have the capacity to organise coordination with other EU agencies, Directorate Generals, and – where appropriate – with Europe’s intergovernmental research organisations.

DG Research as a whole and particularly the thematic areas should see to that international cooperation becomes an integral part of the Framework Programmes and that it receives adequate funding. In addition, each theme should have a single horizontal budget line for international cooperation to ensure participation of EU and non-EU research communities in research actions. This budget should be reallocated to the themes on the work programme level and adjusted in regular updates according to the needs and capacity to utilise resources.

*Dr. Neil Hamilton, FEAST
Executive Director*



UPDATE

FEAST Conference 2006 Research without borders



THE EUROPEAN RESEARCH COUNCIL'S FIRST IN AUSTRALIA

Prof. Norbert Kroo will deliver a keynote address at the FEAST conference. He is one of the 22 members of the Scientific Council of the European Research Council (ERC). This Council directs the ERC's scientific operations and ensure that its support is in accordance with the highest standards of research and scholarship. The ERC will be the first pan-European funding agency for frontier research. Prof. Ernst-Ludwig Winnacker will be the ERC Secretary General for the next and first 5 years of its operation.

Our European guest will elaborate the ERC views on International research policy in a session chaired by Mr Grahame Cook, Dep. Secretary of DEST.

Norbert Kroo is the Vice-President of the Hungarian Academy of Sciences since 2005. Beyond his position at the Scientific Council of the ERC, Prof. Kroo is a member of the Governing Council of ESF, the Council of Academia Europaea, and EURAB. He was the founding director of the Research Institute for Solid State Physics and Optics of the Hungarian Academy of Sciences. Biographies of all the speakers are on the website

CONFERENCE SPECIAL INTERESTS WORKSHOPS AND VISITS: VISIT OF THE ANSTO'S NEW OPAL REACTOR IN SYDNEY

In addition to the Agency's support of the FEAST conference, ANSTO will organise a visit of it's new and flagship research facility at Lucas Heights near Sydney for the delegates or speakers. OPAL stands for Open Pool Australian Light-water reactor. The OPAL reactor is a multipurpose facility for radioisotope production, irradiation services and neutron beam research. It's construction started in 2002 and should be fully operational by early 2007.

The FEAST Conference 2006 will be the highlight of a week rich in European-Australian events. Amongst them FEAST and its partners invite the delegates to participate in workshops and sites visits.

Due to limited availability, booking is essential when you register to the Conference at:

www.feast.org/conference2006/?registration



WELCOME COCKTAIL

The Innovative Research Universities Australia (IRUA) invites you to the welcome reception at the National Gallery of Australia. The evening includes a tour of the gallery up coming new exhibition "Egyptian Antiquities from the Louvre, Journey to the afterlife".

CONFERENCE DINNER

The official Dinner is hosted at Questacon, the National Science and Technology Centre.

RECEPTION

ABOUT THE CONFERENCE

"Researcher Without Borders" will gather around 250 delegates from Australia and Europe (including various countries and European institutions). The audience of the conference reflects the diversity of the community, including young researchers, research managers, senior academics, the research policy community and representatives from departments and state authorities.

Updates about the conference and the latest programme are available from the website

MILESTONE: commencing collaboration



Potočník and MEPs sung the praises of COST at the inauguration of the week-long COST 'A vision for European Science' exhibition at the European Parliament.

www.feast.org/?article&iD=171

Where to next for European stem cell research?

UK physicist Stephen Hawking, who has motor neuron disease, has described the recent decision on European Union (EU) funding for human embryonic stem (ES) cell research as a "fudge" in the Guardian newspaper.

Late July, European Ministers agreed the latest draft of Europe's 54.5 billion Euro 7th Framework Programme. Following attempts by a coalition (including Germany, Austria, Italy, Lithuania, Poland, Slovakia) to ban all EU funding of ES cell research, the agreement was reached after Ministers added the condition that no EU money would be given to projects that involve the destruction of human embryos. The amended budget proposal is now set to go back to the European Parliament for a second reading in November 2006. The current proposal dedicates 50 millions Euros for embryonic or adult stem cell research.

The agreement leaves the door open for projects involving existing ES, as no deadline for the creation of these cells was decided. This latest point is at

odd with some of the Member states. For example EU funded projects could be illegal in Germany while but still supported in other EU countries.

As illustrated by the UK's Royal Society position, the European research community is glad that Ministers had reached an agreement on the EU research budget, but is somehow disappointed by the decision to impose greater restrictions than currently exist for EU research funding on ES cell research. Nevertheless it remains to be seen what impact these limitations will have.

However, the co-ordinator of the EuroStemCell project, Professor Austin Smith, underlined, in an interview with Cordis News, that the ban of federal funding in the US does not make embryonic stem cell research illegal in the US and that the individual States,

such as California, have their own stem cell funding initiatives, and private companies are free to carry out their own research.

A ban on EU funding for embryonic stem cell research would have little impact on the overall research work in Europe, as stem-cell research in the EU is financed largely from national budgets in those countries that allow it. EuropaBio, the European Association for Bioindustries, takes this position as a positive signal for the sector.

Embryonic stem cell research around the world has suffered some political setbacks in recent weeks. First, Australian Prime Minister John Howard rejected the recommendations of the Lockhart Review that the current law should be amended to permit research into therapeutic cloning; a few weeks later, President Bush overruled the votes of the US Congress to veto a similar legislative proposal to allow federal funding for new embryonic stem cell research.

How is human embryonic stem cell research regulated in the 25 European member states?
www.eurostemcell.org/Outreach/outreach_legislation.htm

■ Renata Zanetti

Renata has recently completed her degree in international relations at the ANU. As part of her curriculum, she completed an internship through ANIP with FEAST. This involved writing an 8,000 word research report and completing a presentation on a selected topic, namely: *should research in communicable disease be collaborative?*

Renata learned a lot about the notion of collaboration and complex international health issues. *"It was a challenging experience in that I encountered overwhelming amounts of information regarding diseases such as HIV/AIDS, Tuberculosis and Malaria. Given the multitudes of actors and projects in the area of collaborative research and these diseases, it was also quite daunting."* says Renata.

After the internship, Renata successfully applied to attend the Harvard Project for Asian and International Relations. *"Having enhanced my understanding of*

The other FEAST staff

In previous issues of FEAST focus we gave you an overview of the team that drives the FEAST secretariat. But the secretariat also enjoys the support of interns from the Australian National Internships Program (ANIP). Their collaboration enables us to focus on specific questions we all share..

international health issues, and the complexity of international collaboration, I also feel better placed to complete my role as an Australian Youth Ambassador for Development with UNESCO in Bangkok", says Renata.

■ Simon Wilson

Simon has just started working at FEAST, also through ANIP. Simon will soon complete a bachelor of arts/science degree from the ANU where he has focused studies on environmental science, sociology and political science.

His project with FEAST involves an analysis of ARC awards involving European collaborators. This analysis will be considered

in the context of current policy frameworks to eventually provide recommendations to facilitate future research collaborations. So far Simon is enjoying learning about the nature and complexities of international collaboration.

Upon graduation Simon intends to pursue further studies in environmental policy and management, while also taking up employment in the field. Simon is enjoying learning about the nature and complexities of international collaboration and expects his time at FEAST to have been particularly rewarding and useful in future endeavours.

Acknowledgement Renata and Simon

COST 299 *The COST action 299, otherwise known as FIDERS DEDicated to Society (FIDES) officially started in late 2005. For over 35 years COST has been an intergovernmental framework (among the 34 COST member countries) for European Co-operation in the field of Scientific and Technical Research, allowing the co-ordination and co-operation of nationally funded research on a European level. COST's strength is its built-in flexibility: countries participate on an "à la carte" principle and activities are launched on a "bottom-up" approach, complementing the Commission programmes. COST actions often lead to FP projects, and can be used as a testing and exploratory field for emerging topics.*

FIDES aims to provide a forum merging scattered knowledge in different research groups on novel applications of fibre optics. It combines the transdisciplinary expertise of key-players in the field to promote the invention of new optical fibre based information providing tools. Finally it aims to be the missing link between researchers and end-users required to coordinate research and needs. The research program is divided in four parts:

- Photonic Crystal Fibres: modelling, fabrication, characterization and devices.
- Rare Earth Doped Fibres: modelling, characterization, standardization and devices.
- Distributed measurement and nonlinear fibre optics: Raman, Brillouin and Kerr effects, linear and nonlinear distributed measurement techniques, supercontinuum generation and ultrashort pulse propagation in standard and photonic crystal fibres.
- New concepts in fibre sensors: new devices, new interrogation and multiplexing methods, applications and standardization of fibre sensors.

■ The project

Dr. Luc Thevenaz from the Ecole Polytechnique Fédérale de Lausanne (Switzerland), who currently chair the Action, lead the group of experts that decided to start a new COST Action reflecting the recent trends in optical fibre technology for the collection, the transmission and the processing of the information. The MOU that governs the action was signed for a duration of four years and with the participation of over 35 organi-

sations in 17 countries plus Australia.

The consortium is coordinated by the Management Committee composed of the national delegates under the lead of the Chair and Vice-Chair, and supported by the Secretariat and Grant Holder, as usually done in COST Actions.

A Working Group (WG) was created for each direction presented above. These WGs are divided into 2-3 Study Groups reflecting the diverse interests of the participants.

The support from COST covers some cost of the dissemination of the scientific results, Short-term scientific missions to other prestigious institutions to develop long-lasting collaboration with other laboratories. Special attention is paid to ensure that all active partners schedule such a scientific mission during the Action, to extend the scope of the research of a PhD student or to enable key personnel to bridge technology and know-how gap of collaborating labs during short stays. There is also a clear drive among interested participants to actively support the organisation of regular Workshops and a large Conference on a world-wide basis. The actions is also promoted during major sectorial conferences. The workshops have an important focus on training, and there is a strong will to include the findings/information for educational material that will be available through a FIDES web portal.

■ The partnership

Australia, as a non-COST

country, participates in 5 COST actions (plus two completed actions). The ARC Centre of Excellence for Ultrahigh-bandwidth Devices for Optical Systems (CUDOS) was the only non-COST organisation to participate at 299's first working group meeting organised in May 2006 in Belgium.

COST 299 and CUDOS collaboration is far from being a one off and Professor Ben Eggleton, CUDOS director, will also participate in the next meeting in France later this month. Action 299 is "highly synergistic with CUDOS activities particularly at the University of Sydney," says Ben. The partners of the European network and the Ben's group in Sydney share expertise and interest on three topics:

1. nonlinear propagation effects in novel fibres,
2. photonic crystal fibres and
3. optofluidic devices and the numerical modeling techniques that have been developed for these structures.

"I was invited to participate in COST through my network of collaborators in France. My group currently includes 3 postdocs from France (Lyon and Marseille) and I have existing collaborations with Besançon, links with Copenhagen and many more in the UK." says Ben.

In particular, the CUDOS contribution to this COST program will be in the investigation of novel nonlinear phenomena in highly nonlinear chalcogenide fibres. They will also collaborate on tapered photonic crystal fibres and optofluidics, which Prof Eggleton's group has pioneered

We are very keen on building links with European programs and have recently established formal links with a number of EU framework program (FP6) projects. They represent great opportunities to connect (and collaborate) with large scale international programs, to catch the wave... says Professor Ben Eggleton.

*Acknowledgement
Luc Thevenaz and Ben Eggleton*

MILESTONE:
build on
partnership



ERC Starting Independent Research Grants: first call should be published either at the end of 2006 or the beginning of 2007 and will have an indicative budget of roughly €300 million
www.feast.org/?article&iD=134

For detailed information about COST, please visit:
www.cost.esf.org

MILESTONE: global events



The British Council recently announced a first call for proposals under a new initiative aimed at supporting new links between early stage researchers in the UK and in other countries
www.feast.org/?article&ID=332

The UK Department of Trade & Industry (DTI) Global Watch Service provides support dedicated to helping UK businesses improve their competitiveness by identifying and accessing innovative technologies and practices from overseas. The service includes the UKWatch magazine, published jointly by science and technology groups of the UK Government and showcasing British innovation. Information is generally comprehensive and constantly updated. Australian innovative firms have recently been highlighted in the Globalwatch magazine.

Australian expertise aids artificial intelligence advance

Most computers contain programmed rules offering users help in making decisions, and a few now learn to make some of their own. But this is just the beginning. In the future, artificial intelligence could transform current technologies just as microchips and microprocessors have in the last 20 years. Dr Tim Stucke, Chief Technical Officer at Aeye, is determined to fast-track this future. *'If you allow software to learn and get closer to what humans can do it is easier to interact with, delegate to, use efficiently and benefit from – this is what we are interested in achieving,'* he says.

Aeye currently applies its technologies to the banking industry, providing financial data business intelligence – a natural first step given that numeric data can be relatively easily processed in ever more intelligent ways. With the decision to add to its abilities by processing visual data came a plan to work with Vividas, based in Victoria, which provides cutting-edge motion and interactive media via video and streaming technologies. *'We wanted to bridge the gap between our R&D and potential commercial targets for our research engine and apply our general theory to a number of industries,'* says Tim Stucke, who shared a 12-month DTI Global Watch Secondment with his colleague Dr Mariann Matay.

The secondees learned about Vividas's media platform and media generation tools, and gained expertise in state-of-the-art object tracking, encoding and compressing interactive audiovisual information. They focused on developing a high-risk 3D solution underpinned by a new codec. *'A codec encodes*

Innovation with Europe: watch UK

large volumes of data, enabling movies to be put onto a DVD or streamed, and then decodes them to be viewed and interacted with,' says Tim Stucke. *'To do this, the software must make many complex decisions and compromises. We are improving 3D object understanding and introducing interactivity. This will make it possible for users to adjust their viewpoint in a movie or to go through a door, for example, or find out more about an object.'*

Technology already exists for turning 2D images into 3D, but it is a time-consuming process. Aeye's development has the potential to convert 2D film into 3D, providing 3D televisions and computers with much-needed media. And following successful R&D tests of the technology, Aeye has also received interest from those involved in town planning, surveillance tracking and healthcare applications.

Australia advances UK skin treatment

A former Sheffield University spin-out has accelerated development of a novel treatment for the skin disease psoriasis by transferring Australian know-how in a specialist technique enabling early proof of concept. York Pharma plc is now progressing its clinical trial plans. *'For the past 30 years, mild to moderate psoriasis has been treated with vitamin D therapies, which have a propensity to cause skin irritation and lose efficacy with continuous use,'* says Dr Simon Ward, Chief Scientific Officer of York Pharma, who undertook a nine-month DTI Global Watch Secondment in Australia. *'Our understanding of skin diseases has allowed us to patent-protect an entirely new approach to manipulating a biological sys-*

tem that is being developed as a target for intervention in psoriasis.' This approach involves vitamin A metabolic pathway (VAMP) inhibitors, whose effect in hyperproliferation diseases such as psoriasis is to encourage susceptible cell types to switch from proliferation to differentiation, returning them to a 'non-disease' state.

Having identified a lead compound, Vampex™, York Pharma decided that securing critical information on its efficacy before committing to the expense of full clinical trials was vital. CMAX, a division of the Institute of Drug Technology in Adelaide, was found to have just the clinical research skills and facilities needed. *'We learnt lessons in the design, implementation and analysis of a well controlled, small-scale study in humans using microplaque assay processes, highly specialist techniques specifically tailored to dermatology,'* says Dr Ward. *'This enabled us to test various forms of treatment on individual psoriatic 'plaques', evaluating safety, tolerability and clinical activity.'* The results confirmed the company's confidence in its compound, demonstrating that the treatment was well tolerated and reduced the chance of irritation often seen with comparative treatments. Since the secondment, York Pharma has worked on optimising its formulation in anticipation of submitting a clinical development plan to the Medical and Healthcare products Regulatory Agency (MHRA) for approval. *'We want to launch in Europe, the US and Japan, and by 2009 we should be entering our final clinical trials,'* says Dr Ward. *'The techniques, know-how and networks we gained in Australia have played an important role in reducing our costs and minimising our risks.'*

DTI Global Watch Service:
www.globalwatchservice.com

Australia-UK teams join to fight

The University of Bath, CSIRO and WEHI have combined their expertise to develop new drugs to better safeguard against flu viruses developing resistance.

In a joint application to the British Medical Research Council (MRC), Dr Andrew Watts of the University of Bath, Dr Jennifer McKimm-Breschkin of CSIRO Molecular and Health Technologies will share a £408,000 (AU\$ 1M) grant over three years to tackle pandemic flu. The Australian team was not only the unique international applicant awarded funds in this round of MRC grants but also the first international partner since the Research Council has changed its granting system toward full economic cost (FEC) earlier this year.

The MRC will fund up to £10m over the next two years for research proposals that tackle the potentially pandemic influenza. Among the ten different funded projects during this call, other groups are looking at issues such as how flu viruses infect different hosts or trying to better understand the human immune response to flu. The Australian-UK team is the only one looking at developing new drugs to fight the disease. These collaborations gave the UK scientist direct access to world-class facilities and expertise of these two groups at the forefront of international research in influenza pandemic.

■ The project

The recent emergence of the highly pathogenic H5N1 strain of avian influenza now circulating in Asia, Europe and Africa has increased concerns that a new, and devastating, influenza pandemic may be imminent. Antiviral drugs represent the first line of defence for pandemic outbreaks, and governments are currently stockpiling the influenza neuraminidase inhibitors Relenza™ (Zanamivir) and Tamiflu™ (Oseltamivir) in preparedness. These inhibitors prevent the release of newly formed virions by blocking the action of the neuraminidase (sialidase) enzyme, which normally removes sialic acid from receptors on the surface of infect-

ed cells to allow virus release. These neuraminidase inhibitors are highly efficient against all known influenza A and B strains, including the avian H5N1 virus. There are, however, several problems associated with them. Unfortunately, as Relenza is only delivered to the respiratory tract, its usefulness is limited if the pandemic influenza strain spreads to other organs, and, more alarmingly, drug-induced resistance to Tamiflu has already been observed in clinical isolates from H5N1 infected patients. As such, there is an urgent need to develop new and

The Challenge

Influenza is a major cause of human illness and death and is responsible for considerable economic loss. Ongoing mutation of the virus and the time required to produce vaccines make it difficult to provide annual protection against epidemic influenza, whilst the ability of influenza viruses to cross species, particularly birds, means there is an ever present threat of a new pandemic, such as occurred in 1918, 1957 and 1968. The recent emergence of highly pathogenic avian H5N1 viruses circulating in Asia and now the EU and Africa has increased concerns for adaptation of this strain to humans and poses the next pandemic threat.

improved classes of anti-virals for the treatment of influenza.

■ The partnership

Dr McKimm-Breschkin is an expert in testing inhibitors of flu and evaluating drug resistance. Dr Watts brings his medicinal chemistry expertise to the collaboration and works on the design, synthesis and the study of enzymes of biological and medical importance, in particular for HIV integrase and Influenza Neuraminidases. Dr McKimm-Breschkin says "This is an exciting collaboration because the Australian and British research teams both have so much to bring to this project and our skills are perfectly complementary".

Andrew Watts in Bath has

recently patented the use of fluorinated sialic acid analogues as 'mechanism-based' neuraminidase inhibitors for the treatment of influenza. These compounds are known to covalently inhibit influenza neuraminidases by specifically targeting amino acid residues essential for catalytic activity and, as such, drug-induced resistance is less likely to evolve in response to these compounds. The Bath's team proposes to synthesise a series of modified fluoro-sialic acids as 'mechanism-based' inhibitors of influenza neuraminidases, incorporating structural features designed to improve the pharmacokinetic properties and inhibitory activities of the original inhibitors. Andrew will perform

detailed kinetic analyses of their inhibitory activity against purified influenza neuraminidases - provided by the team in Melbourne (also with Peter Colman of WEHI) - and potent inhibitors will then be tested for efficacy towards a panel of wild-type influenza viruses and viruses with known neuraminidase mutations that confer drug resistance to Relenza or Tamiflu. Finally, they will attempt to generate resistance to selected mechanism-based inhibitors by in vitro passaging of influenza viruses in cell cultures. This will help the teams to evaluate the susceptibility of this class of inhibitor to drug-induced resistance, and should provide a greater understanding of the mechanisms associated with drug resistance in influenza.

Dr McKimm-Breschkin is optimistic about the new project. "We are aiming to produce a likely drug candidate within the three year period. However, given the long period of time it takes to properly trial and evaluate a new anti-viral drug, it could be up to fifteen years before we see the resulting treatment on the shelves." CSIRO was instrumental in developing the world's first anti-flu drug effective against all strains of flu. Dr McKimm-Breschkin was a part of the team that developed Relenza™.

Source CSIRO, MRC and Jennifer McKimm-Breschkin

MILESTONE: bookmarks



2005 International Patent applications
USA 33.6%
Japan 18.8%
Germany 11.8%
followed by France and the UK
Australia is 13th with a rate of growth of 10.1%!

Source: World Intellectual Property Organization, 03/02/2006

ACoRN-NEWCOM Joint Agreement

In May 2005, the Australian ACoRN (ARC Communications Research network) and the European NEWCOM (Network of Excellence in Wireless Communications) signed a joint agreement. The intention of the agreement was to establish close collaboration between ACoRN and NEWCOM through the existing programs of activity in the two networks.

The joint ACoRN-NEWCOM collaboration agreement is a major achievement for ACoRN and will be a priority for establishing a strong Australian involvement in Europe in this sector. The declared strategic objective of NEWCOM is the development of mobile and wireless systems beyond 3G. Through ACoRN, Australia is now in a position to take part in these European activities, providing an exciting path forward for Australian telecommunications research. Prior to this partnership, the NEWCOM Director, Prof. Sergio Benedetto, was a member of the ACoRN Advisory Board and during the first meeting of the Board, Lars Rasmussen suggested establishing a close link between the two networks, and subsequently the agreement was put in place.

A standing committee of four people - two from ACoRN (A/Prof. Jamie Evans, Uni. Melbourne and Prof. Lars Rasmussen, UniSA) and two from NEWCOM (Prof. Sergio Benedetto, Politecnico di Torino and Prof. Roberto Verdone, Uni. Bologna) - coordinates the joint activities.

■ The partnership

Joint activities currently being pursued include:

■ Activities Open for ACoRN and NEWCOM Members

The agreement enables a set of activities open to both networks like Summer schools, and workshops.

Unfortunately, the dates of the first two events in 2005 clashed. Once the coordinating committee was in place, such clashes were avoided. The intention is that all ACoRN and NEWCOM events will be

open to both network members.

■ Annual Joint Workshop

The main event for promoting and establishing collaboration is a joint annual workshop, alternately hosted by Australia and Europe. The intention is for the workshop to be a two-day event held in connection with a larger, general conference event. The inaugural workshop takes place in September 2006, where more than 150 researchers from the two networks meet in Vienna, Austria for a 3 day joint event (see Diary p. 12).

This event is expected to be a forum for establishing collaborative research, opening up for Australian involvement in the NEWCOM work towards future standards for mobile wireless communications.

ACoRN

The ARC Communications Research Network (ACoRN) aims to stimulate creativity, innovation and breakthrough science, leading to technological advancement in telecommunications. ACoRN was awarded \$AU1.5M over five years by the ARC under the ARC Research Networks Program, and together with pledged funding from ACoRN member organisations, the annual budgets are now in excess of \$AU500K.

ACoRN brings together a network of more than 120 researchers in the field of information and communication, especially for emerging wired and wireless communications. ACoRN does not directly fund research projects, but instead supports nation-wide collaborative research through four programs of activities: the Researcher Mobility Program, The National and International Workshops and Conferences Program, the Postgraduate Education Program, and the Knowledge Management Program.

■ Researchers and Students Exchanges

An important part of the collaboration is a joint exchange of researchers and students. The first ACoRN-NEWCOM exchanges took place in 2005 with three NEWCOM members visiting ACoRN institutions and three ACoRN members visiting NEWCOM institutions. So far in 2006, 3 NEWCOM members and 6 ACoRN members have been exchanged, resulting in ongoing collaboration.

NEWCOM

NEWCOM aims at creating a European network that links in a cooperative way a large number of leading research groups addressing the strategic objective "Mobile and wireless systems beyond 3G". This objective is a strategic research priority within the EU.

NEWCOM includes participants from almost all countries of the European Union (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Italy, the Netherlands, Spain, Poland, Portugal, Sweden, and United Kingdom). Additional four countries associated with the FP6 (Israel, Norway, Switzerland and Turkey) also participate with NEWCOM. At the Italian Istituto Superiore Mario Boella Professor Sergio Benedetto is the Coordinator of the network.

In terms of members, NEWCOM is significantly larger than ACoRN, including 61 academic and industry partner organisations, totalling hundreds of researchers and students.

Research & development expenditure by business sector in 2002-2003 (as % of total R&D expenditure)

Japan:	73.9
Sweden:	71.9
USA:	67.3
EU (25):	55.4
Australia:	48.8
UK:	46.7

Source: Eurostat and ABS

For more information about ACoRN please visit the ARC network's website: www.acorn.net.au and more information about NEWCOM is available from: <http://newcom.ismb.it>

Intelligent robotics

Michael Breakspear from the Black Dog Institute in Sydney has taken the lead of a new project supported by the special research initiative jointly organised by the ARC and NHMRC, in Thinking Systems. With partners in the USA, UK France and Switzerland, the team will unite two broad research streams - neuroscience and robotics - with the aim of endowing autonomous systems with specific biological advantages. Traditional exchanges between these domains have often progressed little beyond a vague sharing of conceptual terms, so they will investigate the hierarchical nature of real neuronal systems & use these data to underpin the next generation of robotic control systems. The immediate outcome will be novel control systems that use brain-like sensorimotor architectures. This work will have wide application in robotic control systems & will significantly advance our understanding of the human brain.

The ARC and the NHMRC collaborated in a new funding initiative, the Thinking Systems initiative, to address the Australian Research Priority goals of Breakthrough Science and Frontier Technologies under the National Research Priority Frontier Technologies for Building and Transforming Australian Industries. The aim of this funding initiative was to support novel, innovative and cross-disciplinary research at some or all of the intersections of neuroscience, genetics, proteomics, cognitive science, artificial intelligence, computer science and information technology which could lead to the development of intelligent machines, robots and information systems. Outcomes from this schemes were announced in July 2006.

■ The project

The ability of humans to manipulate objects with their hands permits a sophisticated and active interaction with the physical environment. This confers a marked survival advantage and, in order to optimise hand movement control, may have contributed to the rapid evolutionary expansion of human cortex. The importance of control of the hand is also attested by the fact that the hand's representation occupies approximately one quarter of the somatosensory and primary motor regions of the cortex.

The sensory and motor regions of the human brain display a highly specific hierarchical structure which derives from their anatomical and pharmacological organization. This hierarchy underlies much of what is particularly adaptive about human hand coordination such as learning and context-specific perception. The distributed network architecture of sensorimotor cortex may also underlie the resilience of the

brain to a variety of tissue insults that is not present in robotic systems. Likewise, this hierarchy is expressed in the wide spectrum of possible behaviours, ranging from simple and automatic reflexes through purposeful but stereotyped behaviours, to highly individualized and context-specific performance. The hand's sensorimotor regions operate under varying degrees of conscious control which manifest at the highest levels of the hierarchy as "touch" and "volition". Such cognitive phenomena - which are arguably crucial to the highest forms of hand control - are only accessible empirically in experiments involving human subjects.

Autonomous systems - robots which require only minimal supervision - represent an exciting means of optimising the potential of robotic devices. However, as recently published, "*robots that develop their mental skills autonomously represent a fundamental change from the traditional paradigm for constructing intelligent machines*". Motivating the design of such machines with observations of real nervous system structure and function represents an intuitive means of addressing this challenge. Likewise, implementing basic principles of neural functioning in robotic systems represents an exciting means of testing the robustness and logic of those principles.

Such a project requires the construction of computational algorithms that incorporate specific anatomical and physiological details. This is clearly best achieved through a direct collaboration between neuroscientists, physicists, engineers and computer scientists collaborating. Michael's team therefore proposes a set of inter-related experiments of the hand geared toward

endowing the control of a robotic hand with specific biological advantages.

■ The partnership

A substantial component of the project receives support towards collaborative visits from scientists in the UK, France, Switzerland and the USA. Such visits will aim to enhance local expertise in the signal analysis of hierarchical systems, computational models based upon Bayesian principles, electrophysiology and neuroimaging experiments.

The primary objective of this international team is to develop a novel autonomous robotic hand control system using a unique combination of insights from computational neuroscience and the neurobiology of mammalian sensorimotor systems. Specifically, they propose a series of physiological and neuroimaging experiments involving humans, supplemented by electrophysiological experiments of the cat sensorimotor system, to elucidate the nature and logic of the hierarchical somatosensory and motor systems. These experiments will test a set of core neurobiological hypotheses concerning the functioning of human neural systems. They will use these hypotheses to inform computational modelling of sensorimotor neural systems. These models will inform the design of algorithms directly implemented into a laboratory-based robotic hand. A further aim is to use the functional effectiveness of these algorithms to test and improve the core neurobiological hypotheses, improve our understanding of the basic neuroscience of human hand movement, which has many potential benefits in clinical neurology.

Source Michael Breakspear

MILESTONE:
build on
partnership



Breathtaking animations from the The European Homepage For The NASA/ESA Hubble Space Telescope are available at:
www.spacetelescope.org/videos/archive/topic/astro/7

More information about selected Thinking Systems Projects, on the ARC's website:
http://www.arc.gov.au/funded_grants/TS_sumapps_06.htm

When is a Postdoc not a Postdoc? Trying on new genes in Switzerland

Kirsten Puls holds a PhD in molecular immunology from the Immunology Division at the Walter & Eliza Hall Institute (Wehi). Her work has shown, in particular, the regulatory role for CD37 in T cell proliferation: CD37 is a leukocyte-specific protein belonging to the tetraspanin superfamily. Previously thought to be predominantly a B cell molecule, CD37 was shown to regulate T cell proliferation. Kirsten worked at the The Biozentrum of the University of Basel. She is now a project coordinator for the Novartis Pharma AG in Basel.

I came to Basel in Switzerland to do a postdoc in the European summer of 2001. I was to work on *Drosophila* genetics at the Biozentrum in the University of Basel. I would investigate fly morphogenesis, specifically, the transcriptional repression of brinker expression during *Drosophila* development by the Schnurri gene. This was despite the fact that during my undergrad at Melbourne Uni I swore never to work with flies again, after a difficult session with a dissecting microscope and some blowfly larvae. (The Prof said they were beautiful. Poor bloke must've had some form of dyslexia where you use the word "beautiful" in place of the word "nauseating"). But still, it was a job in the middle of Europe after all!

The whole job-finding process was very simple. I had just one interview with the Professor.

"Well, let us know tomorrow if you want the job," he said. (What, no giving a talk? Don't you want to hear about my CD collection? As you see, I was an immunologist with a questionable sense of humour).

"Oh yes, and it's a seven year contract". (Seven - oh my God! I was planning to go home again after two!).

"And by the way, we are all going in the annual "Rhyschwimm" (swim in the Rhine) tomorrow - do you want to join [us]?" This was all going a bit fast, and - dare I say it - it was even a bit too laid back for an Aussie!

"Well" I thought, "nothing of the Swiss over-cautiousness here! To think I was afraid of that!" So I decided to take the plunge - both of them - and turned up the next day to swim. Thus my first meeting with my new colleagues was conducted being

next to naked. It already felt surreal enough being so far from home!

I settled into the lab life quickly enough - it was quite like labs at home, really. The lab I had come from in Melbourne was multicultural anyway. There were a few extra oddities though, like the opportunity to learn languages on the job! I wanted to learn German as quickly as possible. I was getting very tired of feeling like a prat in front of shopkeepers. But

Science, at least, is a pretty universal language. All the seminars were in English.

the boss wanted me to speak English so that the others could improve theirs. I certainly hope their English got better. I know mine got worse! I began to speak what I think of as being international English, littered with German or French constructions or words that sound like they should translate into the similar sounding word in English but don't.

Science, at least, is a pretty universal language. All the seminars were in English. I felt quite in awe of the others for being able to give a confident seminar in another language when I couldn't even order a beer.

There was just one *Drosophila* in the ointment: The Uni would not sanction my employment as a postdoc. My PhD thesis was still in review (although I had done the defence). Could quite possibly be for years, as far as I knew. The admin thought that was simply absurd. They eyed me with suspicion as though I was somehow trying to fake my credentials. They employed me as a PhD student and paid me a student salary, about half of what I would ordinarily have received. My boss was astonished. Couldn't I get my Uni to move its butt a tad? No, I could not.

"You see, here the thesis review is two weeks", he explained,

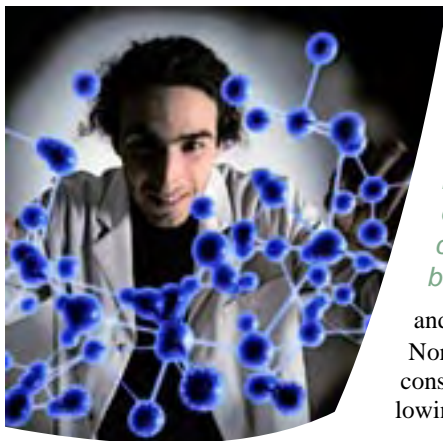
"what's wrong with your University?" I beg your pardon? Two weeks?! It was then I realised I had done my PhD in the wrong country. People in Switzerland were handing in theses the size of a leaflet, and could be passed in 2 weeks. It was too late to do anything but take myself off to the cold room and whimper quietly.

Irish pubs are a novelty all over the world it seems. International as pizza. It was inside the Basel clone that I met a Frenchman. This was significant, not only because I married him and started producing froglets, but because he knew the European ropes. He heard the sad story of my endless PhD, said "Well, what the hell are you doing? You can't stay there!" and whisked me out of the Uni, after 6 months of pseudo-postdoc and plonked me into "industry". Industry was used to international mismatches, it seemed, and allowed me to embark on a "real" postdoc in proteomics straight away. I never thought I would work in industry (or marry a Frenchman). To be honest, it didn't really matter - I had got a taste for experiencing new things, and I loved just being swept along with what was becoming a very unpredictable current. I also wanted to see applied research. How does a successful experiment turn into a drug?

I worked on identifying proteins up or down regulated in response to drug treatments, followed by data-mining to correlate changes with (and identify new markers for) pharmacological efficacy or pathological effects. I could even stumble across the odd new indication or so. I have to say I fell on my feet because I loved it, and all the new ideas floating around (biomarkers, personalized medicine, systems biology) fascinated me. So here I am in Basel still, although it's not quite 7 years yet!

Kirsten Louise Puls

The Bill and Melinda Gates Foundation has announced a USD287 million (€227.6 million) donation to fund research into HIV vaccine development. A total of 16 grants will support large-scale collaborative projects involving more than 165 researchers in 19 countries worldwide, including researchers coming from nine European countries.



What is? ARC Linkage International

The ARC provides funding under Linkage International for travel between Australian research organisations and centres overseas, and to foster collaboration and networking between Australia-based and overseas researchers.

The Linkage International awards fund:

- reciprocal visits by Chief Investigators (CI) and Overseas Investigators (OI);
- reciprocal exchanges for post-graduate and/or postdoctoral researchers working in the CI's and OI's research teams: visits by early career researchers should be for substantial uninterrupted periods, typically three months or more;
- funding for innovative modes of international research collaboration, for example through e-research networking;
- participation in international activities, such as meetings

and workshops.

Normally, the ARC will consider providing the following support:

- for researchers travelling from Australia, international return economy class airfare(s) and, in some cases, a contribution to living expenses; or
- for researchers coming to Australia, a contribution to living expenses (up to \$700 per week), and domestic travel.

In both cases, a limited contribution to consumables directly related to the collaborative work may be paid, up to a maximum of \$A5,000 a year.

Applications may seek funding for reciprocal visits by leading researchers and exchanges for postgraduate and/or postdoctoral researchers working in their research teams. Usually, the ARC will fund international travel costs for Australian-based

researchers and subsistence in Australia for visiting researchers from overseas. The ARC expects the overseas partners to match the direct costs of their participation. In cases where the matching funding for the overseas collaborator(s) provides international travel and subsistence for them, the ARC will consider supporting Australian researchers on the same basis. Last deadline for 2006 is 13 October.

The Linkage international also includes International Fellowships (ARCIFs) covering salaries for young and senior researchers in Australian or in partner countries and for up to 12 months. Finally the Internationally Coordinated Initiatives (ICI's) are funded under joint initiatives with overseas funding agencies (i.e. UK's Economic and Social Research Council).

For more details about the Scheme the guidelines are available at:
www.arc.gov.au/pdf/LX07_FundingRules.pdf

Glossary

■ ANSTO

Australian Nuclear Science and Technology Organisation (AU)
www.ansto.gov.au

■ ANU

Australian National University
www.anu.edu.au

■ ARC

Australian Research Council
www.arc.gov.au

■ CNRS

French National Research Centre (EU)
www.cnr.fr

■ Consortium

A group of participants in the same FP project (EU)

■ Cordis

COmmunity Research & Development Information Service (EU)
www.cordis.europa.eu

■ COST

European Co-operation in the

field of Scientific and Technical Research (EU)

www.cost.esf.org

■ CRC

Cooperative Research Centre (AU)
www.crca.asn.au

■ CSIRO

Commonwealth Scientific and Industrial Research Organisation (AU)

www.csiro.au

■ EC

European Commission
www.ec.europa.eu

■ DEST

Australian Department of Education Science and Training (AU)
www.dest.gov.au

■ EMBL

European Molecular Biology Laboratory (EU)
www.embl.org

■ ENEA

Italian National Agency for New Technologies, Energy and

the Environment

www.enea.it

■ ERA

European Research Area (EU)

■ FP6/7

6th/7th Framework Programme for Research and Technological Development (EU)

europa.eu.int/comm/research/fp6

■ GRDC

Grains Research and Development Corporation (AU)
www.grdc.com.au

■ MOU

memorandum of understanding

■ STREP

Integrated Projects in FP6 (EU)

■ IATICE

Italian-Australian Technological Innovations Conference & Exhibition (AU)

The FP6 Glossary can be found at:
fp6.cordis.lu/fp6/glossary.cfm

Diary

To add your event to this snapshot of Australia and Europe activity, please notify us at info@feast.org

SEPTEMBER

■ TNT2006

The "Trends in Nanotechnology" 2006 conference will be held at MINATEC.

04-08 September - Grenoble, France

www.tnt2006.org

■ EuroStemCell Conference

Advances in Stem Cell Research organised by the European consortium 8-10 September - Lausanne, Switzerland

www.eurostemcell.org/News/Lausanne_2006.htm

■ ENGAGE Indonesia 2006

1st ENGAGE European Union-Southeast Asia ICT Business Event.

14 September - Jakarta, Indonesia

www.jakarta2006.engage-ist.org

■ NEWCOM-ACoRN

The two Communications Networks organise a joint Workshop.

20 - 22 September - Vienna, Austria

www.newcom-acorn.org

■ ECCS '06

European Conference on Complex Systems 2006

25-29 September - Oxford, UK

<http://complexsystems.lri.fr/>

■ European Healthcare Futures Conference

The Choice Group (UK) targets to bring together key players in European healthcare.

29 - 30 September - Brussels, Belgium

www.euhealthcarefutures.org

OCTOBER

■ ITS World Congress

13th world congress & exhibition on Intelligent Transport Systems and Services.

8-12 October - London, UK

www.itsworldcongress.com

■ ITER Forum Workshop

Towards an Australian involvement in ITER.

12-13 November - Sydney, NSW

www.ainse.edu.au/fusion/workshop.html

■ FAST 2007

The call-for-proposals of the 4th round of the French Australian

scheme.

4 September - 13 October

www.ambafrance-au.org/article1851.html

■ ICT outlook forum

A showcase of the best in Australian ICT research and development.

18 October 2006 - Melbourne, VIC

www.ictoutlookforum.com.au

■ From Finisterrae to Terra Australis and Back

International Conference on Cultural and Historical Relations between Australia and Galicia.

18-21 October - A Coruña, Spain

www.udc.es/congresos/traducion/australia/

■ European Nanosciences

The European Forum on Nanosciences organised by COST.

19-20 October - Brussels, Belgium

www.cost.esf.org



July

2007

■ CARV2007

IMS Windsor and IWB Muenchen invite you to the 2nd International Conference on Changeable, Agile, Reconfigurable and Virtual Production

23-24 July 2007 - Toronto Canada

www.carv-production.com

ARIA

■ November, Canberra

Workshop on Earth Observation for adaptive management of inland and coastal waters

■ Bollettino della Comunita' scientifica in Australasia

The last issue of Scientific Bulletin - August 2006 - is now available

www.scientificambitalia.org

FEAST-France

■ FEAST-France Newsletter

#13 - August 06 - has been published

www.ambafrance-au.org/article1007.html



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SIXTH FRAMEWORK PROGRAMME

This project is proudly supported by the International Science Linkages established under the Australian Government's innovation statement, Backing Australia's Ability and by the European Community's Sixth Framework Programme

The FEAST secretariat is hosted by the Australian National University on behalf of Australia's research Community

FEAST
Conference 2006
Research without borders
28-29 November - Canberra
www.feast.org/conference2006

■ Coral

Reef Ecosystems Biodiversity Forum

Co-organised by the IRD and the SPC.

30 October - 4 November - Noumea - New Caledonia

www.ird.nc/biodec

NOVEMBER

■ IST 2006

The European Commission's annual IST conference.

22-24 November - Helsinki, Finland

www.europa.eu/information_society

MARCH 2007

■ Today is the Future

Launch of the 7th Framework programme

7 March - Brussels, Belgium

ec.europa.eu/research/fp7/events