



Scientists discover clue to sex reversal

GENETICS

The mystery as to why some people who are genetically male are born with female reproductive organs or genitalia has been unravelled by scientists at Monash University and Prince Henry's Institute of Medical Research (PHIMR).

The findings could help identify these intersex people in utero, a diagnosis that could not only prepare expectant parents but also – because intersex people are often at high risk of gonadal cancer – could allow preventive health measures to be considered as early as possible.

In humans, male sex chromosomes are usually XY and females XX. A gene on the Y chromosome known as SRY determines sex and its presence means a person is male. But when an XY human has mutations in SRY, male-to-female sex reversal occurs, a condition called Swyer syndrome.

Professor David Jans, from Monash's Department of Biochemistry and Molecular Biology, and Associate Professor Vincent Harley, from the Human Molecular Genetics laboratory at PHIMR, have collaborated to show that in several intersex patients, SRY does not move into the nucleus. Their research has been published in the US journal *Proceedings of the National Academy of Sciences*.

"If SRY cannot move into the nucleus and perform its role in regulating the expression of the genes responsible for the formation of the testis, this can lead to an XY female," Professor Jans said. "Our research has focused on how proteins get into the nucleus, how that process is regulated and how that might result in disease."

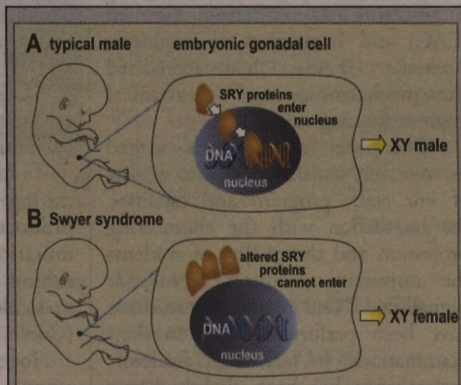
Dr Harley has been working on SRY protein for the past 11 years and collaborating with Professor Jans for about six years. The National Health and

Medical Research Council has funded the research.

"We have been particularly interested in altered SRY forms that seem to be normal in terms of DNA binding but still cause sex reversal," Professor Jans said. "By studying the DNA of sex-reversed people, we've shown that, in some cases at least, the sex reversal occurs through a transport problem – SRY can't get to where it needs to be in the cell, in the nucleus."

About one in 4000 Australians are sex-reversed – males or females born with reproductive organs or genitalia that do not match their sex chromosomes, said Dr Harley. Until now there has been no scientific explanation for the molecular basis of most intersex conditions.

"This research not only helps to better understand the molecular basis of sex determination but also explains the effects of the genetic mutations in intersex children," he said. "The research is also



A In seven-week-old typical male human embryos the testis can only be formed if SRY proteins enter the nucleus where they bind with DNA, turning on genes required to make a boy.

B In seven-week-old Swyer syndrome embryos, testes cannot form due to the inability of SRY proteins to enter the nucleus and bind to DNA – hence genes are not switched on.

significant because it is the first example of a human genetic variation arising from a gene change that restricts the movement of a protein, in this case SRY, into the nucleus of a cell."

– Penny Fannin

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Life in the robots' Garden of Eden: Associate Professor Andy Russell and Adam the robot.
See story on page 7.

Photo: Melissa IDI Clero

Premier's award for protein researcher

BIOCHEMISTRY

Research by a Monash University academic into a family of proteins called serpins and their role in controlling cell growth has earned him the 2003 Victorian Premier's Award for Medical Research.

Dr James Irving, a research fellow in the Department of Biochemistry and Molecular Biology, was presented with his award by Victorian Premier Mr Steve Bracks at a ceremony at Government House recently.

The annual award recognises outstanding work by young Victorian scientists and provides some practical help to encourage them to continue their careers.

Dr Irving has studied a protein called MENT that is capable of switching off large sections of DNA. The protein is part of the serpin family.

"In humans, serpin dysfunction contributes to diseases as diverse as emphysema, cirrhosis, breast cancer and thrombosis," Dr Irving said. "My research examined the way in which the serpin MENT causes the chromatin in cells to condense, thereby stopping cell growth and division."

One of the major challenges for today's scientists is understanding the factors that control cell growth. Dr Irving employed a variety of techniques from fields including biochemistry, structural biology and bioinformatics.

"The breadth of the expertise of my supervisors, Dr James Whisstock and Dr Rob Pike, and key facilities within the department – such as the Structural Biology



Outstanding young talent: Dr James Irving with the award presented to him by the Premier, Mr Steve Bracks.

Unit – played a critical role in the success of my project," he said.

Dr Irving received a trophy, a certificate and \$16,000 to help continue his work.

Mr Bracks also announced that the Jack and Robert Smorgon Families Foundation had entered into a partnership with the government to award a trophy and \$16,000 to the department or institute in which the winning research project was undertaken. Mr Jack Smorgon, chairman of the foundation, presented the inaugural award to Professor Christina Mitchell, head of the Department of Biochemistry and Molecular Biology.

The Premier also issued a commendation to Dr Jason Gill from Monash's Department of Pathology and Immunology for his research into the development of the human thymus, a crucial part of the immune system.

Dr Gill's studies led to the identification of stem cells that enable growth of a fully functioning thymus. The findings could lead to a novel therapeutic strategy aimed at restoring this organ in the aged, people undergoing chemotherapy and those with immune disease.

– Penny Fannin

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NEWS

Academics unite to fight identity fraud

Monash University's Professor Kim Langfield-Smith is part of an international team combating the growing problem of ID fraud.

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OPINION

A volatile Act

In Victoria, a new Act allows police to detain children suspected of chroming "for their own good" – even when they have committed no crime.

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ARTS

Rare Australian fiction on show

More than 100 works of Australian fiction from the Monash University Library Rare Books Collection are featured in a special exhibition.

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Accreditation for Monash Malaysia degrees

ENGINEERING

Monash University Malaysia (MUM) has become the first institution in Malaysia to achieve full professional accreditation in both Malaysia and Australia for two of its engineering degrees.

MUM pro vice-chancellor Professor Robert Bignall said the Malaysian Engineering Accreditation Council (EAC) and Institution of Engineers Australia (IEAust) had accredited the mechatronics and mechanical engineering degrees.

"The panel members who visited us were very satisfied with the quality of our staff, program and facilities, the interaction with the engineering profession and the quality of students the university produces," Professor Bignall said. "Our engineering students have been performing well in their examinations. In fact, their academic performance has been slightly better on average than their peers in Australia, who sit the same examinations."

The EAC and IEAust accreditations bring with them significant benefits for MUM's engineering graduates in terms of marketability and employment prospects.

Accreditation by IEAust ensures extensive international professional recognition of MUM's engineering programs, due to Australia's membership of the Washington Accord on Consistency in Engineering Education.

This means graduates of MUM's engineering programs will enjoy career advantages in accord signatory countries such as Australia, the UK, the US, Hong Kong, Canada and New Zealand.

US funding boost for blood disorders research

BIOSCIENCE

Monash University research that aims to improve treatments for major blood diseases has received more than \$A1.4 million from the National Institutes of Health (NIH) in the US.

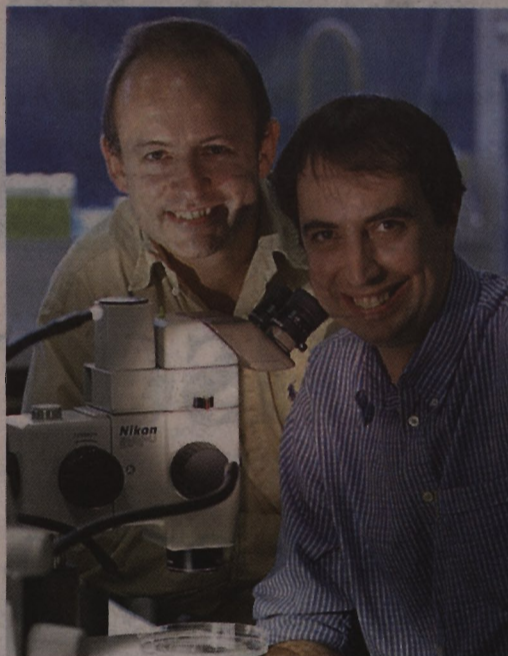
The research, on sickle cell anaemia and β -thalassaemia, is a collaboration between Dr Andrew Perkins from Monash's Department of Physiology and Associate Professor Merlin Crossley and Dr Joel Mackay from the School of Molecular and Microbial Biosciences at the University of Sydney. It has been funded for four years.

In humans, haemoglobin produced during fetal life differs from that produced after birth. People with mutations in the adult globin gene exhibit serious blood diseases such as sickle cell disease and thalassaemia (Cooley's anaemia).

Together, these two disorders are among the most common genetic diseases in the world. People with sickle cell disease have repeated sickle 'crises' that result from blood cells clogging up small blood vessels in all tissues of the body. This results in severe pain and progressive organ damage. Life expectancy is about 30 years in Western countries and about two years in developing countries.

People with β -thalassaemia major, the severe form of the disease, require monthly blood transfusions and often die prematurely due to complications of iron overload from the blood.

There is evidence that the symptoms of both diseases can be greatly reduced or even completely 'cured' by reactivating the fetal globin gene, Dr Perkins said.



Collaborating: Dr Andrew Perkins from Monash's Department of Physiology and Associate Professor Merlin Crossley from the University of Sydney.

Photo: Greg Ford

thalassaemia is also an important health issue in Australia.

Dr Perkins and Dr Crossley have been collaborating on haemoglobin research for about 10 years since they were postdoctoral research fellows together in Boston.

Dr Perkins said the NIH grant was a welcome

acknowledgement that Australian scientists produced quality research with implications for improving human health worldwide.

The research will also provide an opportunity to interact with already established clinical expertise at Monash University. Associate Professor Don Bowden, from the Department of Anatomy and Cell Biology, coordinates diagnostic and clinical services for globin gene disorders at Monash Medical Centre, a major tertiary referral centre in Australasia.

Due to the high frequency of the sickle cell mutation in Africans and African Americans, sickle cell disease costs the US government about \$10 billion each year in health care. In Asia, the Mediterranean and Africa, β -thalassaemia is a major health care burden. Melbourne's large Greek and Italian communities mean

– Penny Fannin

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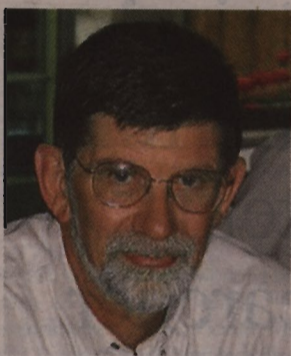
Medal for Monash pharmacologist

Professor Roger Summers, of Monash's Department of Pharmacology in the Faculty of Medicine, Nursing and Health Sciences, has been awarded the Michael Rand Medal.

The Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT) awards the medal biennially to a member whose research has had a national and international impact.

Professor Summers is internationally recognised for his work on adrenoceptors. By stimulating or blocking these natural targets for adrenalin in the body with drugs, it is possible to target a range of conditions, from hypertension to asthma. His current studies test the hypothesis that particular drugs can determine the signalling pathway utilised by a particular receptor and so establish the effect the drug has in the body.

Professor Summers will receive his award at ASCEPT's annual meeting in Sydney in December.



Cisco's hot deal for cool campus project

TECHNOLOGY

Internet networking company Cisco Systems has signed a deal to provide Monash University's Faculty of Information Technology with products and services to support its pervasive computing research project, Cool Campus.

Pervasive computing – where computing interacts with everyday life, from using palm pilots to smart cards and other devices – is one of the faculty's key research areas.

Cool Campus is investigating how new technology, systems and software may be used to better support Monash students and staff in their day-to-day activities.

Cisco will contribute software and hardware to assist with the demonstration of Cool Campus research prototypes.

"This is a generous contribution to a project that has huge potential for the faculty, the university and the community," said IT faculty dean Professor John Rosenberg.

University relations manager for Cisco Australia Mr Nigel Moreton said the company was very excited about working on the Monash project.

"It represents a real opportunity to be innovative and explore the possibilities available through internet protocol communications in the context of the university campus of the future," he said.

\$22 million for research teams

HEALTH

Two Monash University-led medical research teams have been awarded almost half of \$44 million allocated to Victoria by the National Health and Medical Research Council (NHMRC) Program Grants Scheme.

Professor Julian Rood, head of the Department of Microbiology at Monash, with researchers from the universities of Melbourne, Adelaide and Queensland, will use \$15.25 million to investigate bacterial infectious diseases over the next five years.

"These diseases account for more than 10 million deaths worldwide each year. They are a serious threat to human health," Professor Rood said. "This grant means the leading Australian

researchers in the field can work together, rather than in competition."

Dr James Whisstock, a research fellow in the Department of Biochemistry and Molecular Biology, leads the team that received \$6.5 million to investigate degenerative diseases.

"The funding will enable us to understand the biochemical basis of some of the most important diseases like osteoporosis, dementia and thrombosis that affect our ageing population," he said.

– Robyn Anns

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IN BRIEF

Monash people are honoured by nation

Monash University alumna and Qantas chair Ms Margaret Jackson and Monash University Council member Mr John Laurie have received the nation's highest award – Companion in the Order of Australia (AC) – in the 2003 Queen's Birthday Honours.

Ms Jackson received her award for service to business in diverse and leading Australian corporations and to the community in the area of support for medical research, the arts and education.

Mr Laurie was recognised for service to consulting engineering in Australia, to the export of engineering services overseas and to community support in education, health and major infrastructure development.

A Monash University Council member since 1999, Mr Laurie has had a distinguished career as a consulting engineer on major infrastructure projects.

Top prize for 'Kylie'

A virtual reality surgical simulator developed at Monash University has won a prestigious scientific award.

The simulator, known as 'The Virtual Kylie', took out the Conceptus prize for best new technology at the annual meeting of the Australian Gynaecological Endoscopy Society in Melbourne.

The award was accepted on behalf of the development team by laparoscopic surgeon Dr Jim Tsaltas from Monash Medical Centre, who gave a presentation to delegates on the simulator's capabilities.

'Kylie' allows surgeons to practise keyhole techniques in real time, using computer software that lets them 'feel' the weight and texture of the virtual organs and tissue they are operating on.

Ant research award

Monash University and Parks Australia have received a Banksia award for successfully delivering a program to manage Christmas Island's greatest environmental threat – invasion by the yellow crazy ant.

The Banksia awards are Australia's most prestigious environmental awards, recognising environmental excellence by individuals, community groups, businesses and government organisations.

Dr Dennis O'Dowd and Dr Peter Green and their students from the Australian Centre for Biodiversity in Monash's School of Biological Sciences worked with Parks Australia to design, develop and deliver a program to research and control the yellow crazy ants.

The Monash/Parks Australia team was recognised for outstanding achievement and leadership in protecting Australia's flora, fauna and ecosystems and contributing to a sustainable future.

\$1 million in grants

New grants of more than \$1 million won by the BHP-Billiton-Monash Maintenance Technology Institute (MTI) from national competitive grant schemes over the past six months highlight its strong links to the mining, manufacturing and petroleum industries.

MTI director Mr John Rucinski said that since December 2002, the institute had received \$1.139 million in cash grants from the Australian Coal Association Research Program and the Australian Research Council Linkage – Infrastructure and Projects awards.

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Academics unite to fight ID fraud

ACCOUNTING

A team of researchers from universities in Australia and the US has won a half million-dollar research grant to investigate ways of fighting identity fraud, estimated to cost more than \$4 billion per year in Australia alone.

Professor Kim Langfield-Smith, from the Department of Accounting and Finance in Monash University's Faculty of Business and Economics, will help the team develop strategies so that Australian business and government can detect and prevent identity fraud more effectively.

The team – to be led by Associate Professor Rodger Jamieson of the University of New South Wales – will also include Associate Professor Peter Luckett from UNSW, Associate Professor Warwick Sarre of the University of South Australia, and

Dr Henry Pontell from the University of California, Irvine.

The research project, 'Investigating identity fraud control, management and policy: Australia in a global context', is funded by a \$508,000 Australian Research Council Linkage Grant.

It will be conducted in association with the Australian Transaction Reports and Analysis Centre (AUSTRAC) – a federal government authority that acts as Australia's anti-money-laundering regulator and specialist financial intelligence unit.

According to Professor Langfield-Smith, identity fraud involves either the theft of an existing person's identity or the creation of a fictitious identity and the subsequent use of that identity to engage in fraudulent transactions, including credit card fraud, accessing social security benefits and money laundering.



"The problem is widespread and difficult to control because it can be committed in diverse ways and in many areas such as the finance industry, global e-commerce, government revenues and benefit payments and immigration," she said. "Identity fraud creates high levels

of interdependencies between these areas, which means collaboration and joint solutions are a key to attacking the problem.

"This is the first time that the problem in Australia has been investigated in depth from both a conceptual and an applied viewpoint.

Battling a growing problem: Professor Kim Langfield-Smith says the Internet has played a major role in the spread of identity fraud.
Photo: Melissa Di Clero

"Through AUSTRAC, we will have access to major Australian stakeholders, such as peak government bodies and major banks, which will give us a unique opportunity to study the issues from the perspectives of a diverse range of organisations."

Professor Langfield-Smith said the increased use of the internet and the spread of electronic business have played a major role in the growth of identity fraud.

"The internet has dramatically altered the potential occurrence and impact of such crime. It has increased access to the global publication of identification details and creates a sense of anonymity for perpetrators."

– Robyn Anns

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War on terrorism has impact on Central Asia

ISLAM AND THE WEST

Relations between Islam and the West will come under scrutiny at an international conference to be co-hosted by Monash's Global Terrorism Research Unit in the School of Political and Social Inquiry and the University of Western Australia.

The conference, 'Islam and the West: the impact of September 11', will consider relations between the Muslim world and the United States, Muslim politics, the Muslim diaspora and responses to Islamic terrorism.

Minister for Foreign Affairs Mr Alexander Downer will open the conference, which will be held at the Ibis Hotel, Melbourne, on 15 and 16 August.

Professor Hassan Hanafi from Cairo University will present the keynote speech.

Other speakers will include Professor Osman Bakar from the Centre for Muslim-Christian Understanding at Georgetown University in the US, and Mr Hass Dellal from the Australian Multicultural Foundation.

For more information and to register, contact Ms Elena Mogilevski on +61 03 9905 5098, email elena.mogilevski@arts.monash.edu.au or go to www.arts.monash.edu.au/politics/conference/.

POLITICS

The US fight against terrorism could be fuelling political unrest among republics in Central Asia, according to Monash University senior lecturer Dr Shahram Akbarzadeh.

Dr Akbarzadeh, who is undertaking a study of the region with Professor Joseph Camilleri, from La Trobe University, said September 11 was a catalyst for US involvement in the region, and many states now wanted to be aligned with the powerful country.

Dr Akbarzadeh and Professor Camilleri received a \$180,000 ARC Discovery Grant for their three-year study, 'Central Asia between Islam and the great powers: the implications of September 11'.

The study will look at the impact of September 11 on internal and external relations in Central Asia. It will also consider the interaction between the domestic and foreign policies of the Central Asian republics and the evolving relationship between them and the US coalition, Russia and China.

"The study developed because we wanted to know if the convergence of interest between Central Asian states, Russia, China and the US against Islamic militants was changing the dynamics of regional politics in Central Asia," Dr Akbarzadeh said.

"Is this opening the way to some long-lasting cooperation between the different players? I suspect that it isn't – I suspect that each country has a distinct agenda when entering into alliances."

Dr Akbarzadeh said there were distinct differences between what was happening prior to September 11 and what was happening across Central Asia now. "Before, the US was advocating freedom of the press and information throughout Central Asia. However, US concerns are now focused on how regimes can best implement security measures and how they can advance the US war on terrorism."

The study will also look at how republics in Central Asia can use their newfound significance to the US and, to a lesser degree, China in negotiating foreign policy.

"Uzbekistan has always seen itself as a leading force in the region. The partnership between the US and Uzbekistan in the fight against terrorism has not only strengthened the regime internally but also given force to regional ambitions externally," Dr Akbarzadeh said.

"Uzbekistan sees itself as a US partner and its actions as being endorsed by the US. Other countries in Central Asia are concerned that Uzbekistan is causing problems. For instance, it has planted mines on its borders with Tajikistan, killing and maiming villagers, and conducted air raids against Islamic militants over Kyrgyz air space.

"So we can see the fight against terrorism is aggravating relations in the area."

– Diane Squires

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Warning on exercise bikes

HEALTH

Curious toddlers can find the whirring spokes of exercise bikes irresistible – but there can be a high price to pay.

Monash University research has found that home exercise bikes were to blame for the amputation or partial amputation of fingers and toes of 11 young children over a five-year period in Victoria.

The amputations were some of more than 140 exercise-bike-related injuries treated in emergency departments in Victorian hospitals between 1995 and 2000, revealed by the university's Victorian Injury Surveillance and Applied Research System.

Other injuries included fractures, sprains, and open and superficial wounds. Feet and toes were the most frequently injured body parts, followed by injuries to the hand and fingers – and even one to the teeth.

Research associate Ms Belinda Clark said children under four were the most vulnerable demographic group for exercise bike injuries, with most receiving open wounds or traumatic amputations.



Ms Belinda Clark

While the data did not reveal the exact circumstances of the injuries, she said, it was easy to imagine a curious toddler or pre-schooler coming to grief.

"The most common event seems to involve young children. They are often mesmerised by the sound and sight of spinning spokes and put a finger in while somebody else is riding the bike," she said.

Current safety standards were introduced in 1993 and are mandatory. They require securely fastened frames around all moving parts and well-constructed seats, supports, and handlebars.

"But difficulties arise with regulating the use of older-style exercise bikes and the purchase of second-hand exercise bikes for personal use," Ms Clark said.

"Consumers need to be cautious when buying second-hand exercise bikes through the private market. It is important to check that the bike conforms to the mandatory safety standards and that none of the protective guards have been removed."

– Allison Harding

WEBLINK
www.general.monash.edu.au/muarc/visar/ShrtRps.htm#exercise_bikes

EXERCISE BIKE INJURIES

BODY REGION	FREQUENCY	PERCENTAGE
Head, face, neck	13	9.3
Thorax, pelvis	4	2.8
Arm	6	4.3
Hand, fingers	40	28.6
Thigh, leg	19	13.6
Foot, toes	43	30.7
Unspecified	3	2.1
Missing, code not required	12	8.6
Total	140	100



Law students with Dr Bronwyn Naylor (third from left) outside Port Phillip Prison in Melbourne.

Inmates get 'court ready' with students' help

LAW

A Monash University law lecturer and a group of her students have established a prison outreach program that helps remand prisoners prepare for their courtroom appearance.

Dr Bronwyn Naylor and the undergraduates devised the Court Readiness program, with the help of Monash senior lecturers Mr Ross Hyams and Mr Jonathan Clough, to address the difficulties prisoners face in readying themselves for court appearances.

"If you are on bail you can get answers to questions by visiting your lawyer. If you are on remand, you might have questions and problems,

but you have to wait for a visit or phone call to get answers. This situation can make preparation for a court appearance quite difficult," Dr Naylor said.

"It is recognised that inmates show increasing levels of anxiety as their trial date approaches – and that's understandable. When you are in jail, you are 'processed' through the system, from arrest to remand to court and, possibly, to sentencing. Our program gives people in jail the feeling they have some input into the process."

The Monash Court Readiness program at Port Phillip Prison assists the remand prisoners, who make up about 75 per cent of that prison's population.

In two pilot programs in February and May this year, a group of six final-year Monash law students conducted education sessions for prisoners awaiting trial. The work formed part of the professional practice unit of their degree.

Dr Naylor said the program was a good example of outreach work, with aspects of community contribution that also gave students face-to-face experience.

– Robyn Anns

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Student wins Taiwan government scholarship



Scholarship winner: Mr Justin Kennedy will conduct fieldwork for his PhD.

Photo: Greg Ford

ENVIRONMENT

Monash University postgraduate student Mr Justin Kennedy has been awarded a scholarship by the Taiwan government to study Mandarin and conduct research on the environmental policies of Taiwan.

The Mandarin Chinese Training Scholarships issued by Taiwan's Ministry of Education aim to promote cultural and educational exchanges with Australia. Only nine such scholarships were awarded to Australian students this year.

Mr Kennedy is currently completing his masters thesis at Monash Asia Institute (MAI), investigating urban environmental policies in the city of Chengdu, capital of the Sichuan province in southwest China. He will leave for Taiwan later this year after a tutoring stint at Monash's Economics department and working as a research assistant at MAI.

The 12-month scholarship will enable Mr Kennedy to study Mandarin at Feng Chia University in Taichung and conduct fieldwork for a PhD that will centre on a comparative study between Taiwan and China in the field of environmental development.

MAI director Professor Marika Vicziany said the scholarship confirmed that the work undertaken by MAI postgraduates was being recognised internationally.

"We are delighted with Justin's success. His plan to work on environmental degradation in Taiwan is clearly a topic of great significance," she said.

"Taiwan has been one of the most rapidly industrialising parts of Asia. The history of environmental degradation there, and government, corporate and citizens' responses to it, could reveal crucial lessons for other parts of Asia that are catching up with Taiwan."

Mr Kennedy believes there is considerable scope for Australian companies to do business in the region, particularly China.

"Australian companies have tremendous opportunities to sell their expertise in water treatment, land use, air pollution abatement and urban planning," said Mr Kennedy.

"The fact that AusTrade already has an office in Chengdu is testimony to this."

In the long term, Mr Kennedy hopes to pursue an academic career or work for an organisation such as AusAid promoting environmental protection in China.

— Karen Stichtenoth

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Monash strikes oil

EXPLORATION

A revolutionary \$1 million project to help improve the success rates of deepwater oil and gas exploration around the world will see Monash playing a key role.

The university is collaborating with energy and petrochemical giant Exxon Mobil and the University of Sydney to develop a 'virtual atlas' that will be able to model and illustrate changes that occur over time in gas and oil-rich sediment.

The three-year Australian Research Council linkage project aims to develop the 'thermo-mechanical interactive atlas of basin evolution'. The atlas will allow geoscientists to visualise all parts of a basin as one system, replacing existing models.

The atlas will combine computer models with geological data from exploration companies, so geoscientists will be able to 'click' on areas of potential interest to produce relevant data and animated computer models.

The Monash researcher on the project, Associate Professor Louis Moresi, from the School of Mathematical Sciences and School of Geosciences, said the atlas had the potential to increase the chances of exploration success in areas where little or no drilling had taken place.

"The models will pay particular attention to the temperature and pressure in each spot, as oil and gas are produced out of the organic materials at very specific levels," he said.

"The models also help predict if oil and gas are likely to be trapped in particular types of rock structures.

"Although only in its early stages, the project is very exciting as it means geoscientists will be able to analyse how a basin evolved through time, predict where oil and gas may have formed and where they may now be trapped in the geological strata."

— Allison Harding

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In the swim: Forty children, aged between five and 14, took advantage of the Victorian Government's Vicswim program at the Doug Ellis Aquatic Centre at Monash University's Clayton campus during the recent school holidays. Honing their swimming skills for the summer are Taylor, Samir, Hayden, Michael and Yasmin.

Photo: Melissa Di Clero

IT course targets next generation game designers

Monash's IT faculty is targeting the computer game designers of the future with a new course for 2004.

The Bachelor of Multimedia Systems (Games Development), to be taught at the university's Berwick campus, will have a strong industry focus and will provide students with advanced multimedia design and animation skills.

Mr Lindsay Smith, deputy head of the School of Multimedia Systems, said the three-year course would offer a core set of units that deal with graphical and new media software and approaches.

"At each year level, students will work in small teams to develop a multimedia product, beginning with web-based products and advancing to CD-ROM and DVD-based production

and, finally, to designing 3D animation."

In their final year, students will be placed for 12 hours each week with a commercial games development company. The School of Multimedia Systems is an associate corporate member of the Games Developers Association of Australia.

Further details can be obtained from www.multimedia.monash.edu.au/courses/bms.html.



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SCHOOLS

Monash Open Day

Don't forget to visit Monash University's campuses between 10 am and 4 pm over the 2003 Open Day weekend. Sit in an open drama rehearsal, play robot soccer, see a sleep laboratory in action, visit the painting studio and exhibition and much more.

Saturday 2 August
Gippsland, Parkville, Peninsula

Sunday 3 August
Berwick, Caulfield and Clayton

Monash in Adelaide and Canberra

A Monash University representative will be available at the Ridley Convention and Exhibition Centre in Wayville, Adelaide, on 24 July and at the Canberra Careers Market, to be held at the Australian Institute of Sport on 6 and 7 August.

Year 10 and beyond

The Monash University brochure *Year 10 and Beyond - Tertiary Entry in 2006* is now available. Copies have been sent to school career coordinators along with an order form for further copies. If you have not received your brochures or would like to receive additional copies, email the Prospective Students Office at ps@adm.monash.edu.au.

A volatile Act



Photo: Newspix

Two 14-year-old boys are wandering around the Bourke Street Mall in Melbourne's city centre. A police officer approaches them and says: "I'm not placing either of you under arrest for any alleged offence, but I'm going to detain you for an indefinite time until I can find a suitable person to pick you up."

Couldn't happen in Victoria? Under the Drugs, Poisons and Controlled Substances (Volatile Substances) Act 2003 (Vic), police officers now have the power to detain people under the age of 18 for an indefinite time if they believe, 'on reasonable grounds', that the child has recently inhaled a 'volatile substance'. Such detention can occur irrespective of whether a volatile substance has actually been seized or produced.

The 2003 Act inserts new provisions into the Drugs, Poisons and Controlled Substances Act 1981 (Vic) – provisions that are aimed at the detention of 'chromers' to protect them from the serious harm that can result from this practice.

In September 2002, the Drugs and Crime Prevention Committee of the Parliament of Victoria released a 687-page report summarising its findings after a lengthy inquiry into the inhalation of volatile substances. The committee found that chroming is an extremely complex problem and that those who engage in the practice often do so in response to a sense of hopelessness and marginalisation. The committee made numerous recommendations in relation to supply reduction, community responses, education, information and training, as well as possible legal responses.

One legal recommendation was that there should be a civil apprehension scheme that enabled police to take a child suspected of chroming into custody until he or she could be released to a family member or agency.

The trouble with the government's response is that police detention, search and seizure powers are now placed in a statute that criminalises drug possession, use and trafficking. Chroming and glue sniffing are not crimes. The detention of children under drugs legislation is very

Police now have powers to use reasonable force to search a child who is carrying a bottle that may contain a 'volatile substance'. If suspected of chroming, the child can be detained indefinitely, but according to **Associate Professor Bernadette McSherry** from Monash's Faculty of Law, this state of affairs should give people grave cause for concern.



different to the civil detention power of police to apprehend those who appear to be mentally ill and likely to cause serious bodily harm to themselves under section 10 of the Mental Health Act 1986 (Vic).

For a start, the powers given to police are excessively broad. The new provisions make it clear that inhaling a volatile substance is not a crime, nor is the possession of such a substance. Yet police officers now have the power to detain children indefinitely despite no crime having been committed. There is no maximum period of time set for detention. The police must release the child into the care of a 'suitable person' as soon as practicable, but there is provision for continued detention if this is unable to take place.

It is clear that police must not detain children in a jail or police cell or lock-up. But the provisions do not say where they are to be kept. Does this mean they can be kept in a police car for an indefinite time? There is also no mention of transporting them to a place of safety.

The new provisions grant broad powers to the police to search children without a warrant. The definition of a 'volatile substance' includes a cleaning agent or even nail polish remover. This means that technically the police could use reasonable force to search a child returning from shopping at the local supermarket if he or she was carrying a bottle of bleach. Even worse, there is a power to search a child for the purpose of seizing an item used to inhale volatile substances. That could mean searching a child if he or she was carrying a plastic bag.

If a child commits criminal damage or assault or is offensive in their behaviour while

consuming volatile substances, then there are avenues of criminal redress already available and provisions in place concerning the arrest and detention of children suspected of committing crimes. These new provisions, however, seem to be aimed at simply getting children who chrome off the street.

Article 37(b) of the Convention on the Rights of the Child states that no child shall be deprived

"Are we now prepared to detain children who have committed no crime 'for their own good'?"

of his or her liberty unlawfully or arbitrarily. Detaining children who have committed no crime for an indefinite period of time until they can be handed over to a 'suitable person' would seem to be a clear breach of this article.

Chroming is a terrible social problem, but surely at-risk children should be protected through our health and education services rather than through the arbitrary use of criminal detention powers.

There are already mechanisms in place under the Children's and Young Persons Act 1989 (Vic) to initiate the intervention of

the protective services of the Department of Human Services for young people thought to be at risk of volatile substance abuse. The police have argued that these processes are ineffective and cumbersome. However, it makes more sense to concentrate on simplifying and streamlining these processes rather than using police detention powers to keep such children off the streets and out of sight.

Police officers are authority figures, and giving them the power to detain children where no crime has been committed may only serve to increase at-risk children's feelings of marginalisation. Children of asylum seekers are already being held in detention camps. Are we now prepared to detain children who have committed no crime 'for their own good'?

Associate Professor Bernadette McSherry teaches and researches in the area of criminal law, criminology, mental health law and international criminal law. She is also a member of the Mental Health Review Board of Victoria.

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Monash News welcomes contributions for this column from Monash University academics. Contact the Media Communications unit on +61 3 9905 9314.

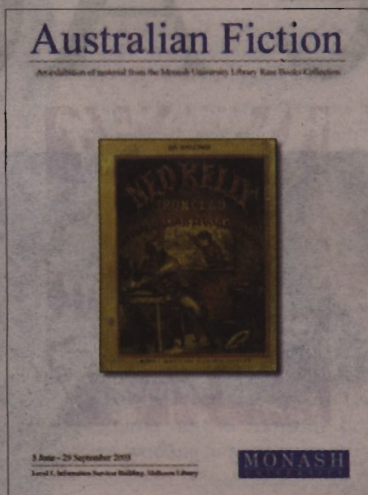
Rare Australian fiction on show

More than 100 works of Australian fiction from the Monash University Library Rare Books Collection are currently featured in a special exhibition at the Matheson Library on the university's Clayton campus.

One noteworthy inclusion is *Ned Kelly: The Ironclad Australian Bushranger* by Melbourne solicitor James 'Skip' Borlase, published in 38 weekly instalments around 1881.

The collection also features Henry Lawson's first book, *Short Stories in Prose and Verse*, published by his mother in 1894, and Barbara Baynton's first publication, *The Chosen Vessel* (c 1896). All three works are extremely rare.

According to Monash Rare Books librarian Mr Richard Overell, the exhibition offers an excellent reflection of the range and depth of the holdings at Monash. "There



are some obvious names in the collection, as well as some of the more unusual writers in Australian history," Mr Overell said.

Other publications featured include a first edition of Miles Franklin's *My Brilliant Career* (1901), an early edition of Fergus Hume's classic *The Mystery of a Hansom Cab* (1886), and the English (1939) and American (1940) editions of Patrick White's first novel, *Happy Valley*. The book was never reprinted as the author became dissatisfied with the novel.

A typescript of an unpublished work, 'The Mangle: A Novel', produced by Norman Lindsay's son Philip in 1927, is another interesting work, as is the 1988 US edition of Peter Carey's *Oscar and Lucinda*, which includes a chapter not intended for publication. The novel, without the additional chapter, was awarded the 1988 Booker prize.

A virtual tour of the *Australian Rare Fiction* exhibition can be viewed at www.lib.monash.edu.au/exhibitions/.

The Monash University Library Rare Books Collection consists of more than 100,000 items. The earliest work is a 1476 commentary on the Bible. The collection has significant holdings from the period 1660 to 1800. It is also strong in Australiana, art, and 19th and 20th-century literature.

— Karen Stichtenoth

SHOW NOTES

What: *Australian Rare Fiction*

When: Until 29 September

Where: Matheson Library, Monash University, Clayton campus.

Who: For information, contact Mr Richard Overell on +61 3 9905 2689.

For inquiries or viewing hours, contact +61 3 9905 5054 or visit www.lib.monash.edu.au/hours.

Sex, lies and commedia dell'arte

A comedy of mistaken identity and love gone wrong will be presented by the Bell Shakespeare Company at Monash University this month.

John Bell's acclaimed company will present Carlo Goldoni's rumbustious 18th-century classic, *The Servant of Two Masters*, at the Alexander Theatre on the university's Clayton campus on 15 and 16 July.

Goldoni despised the clichéd convention of the day – comic drama presented as *commedia dell'arte*, or comedy of masks. Influenced by Molière, the master of the French comic stage, he wanted to replace the convention of using masks to portray comedy by making his plays a truthful representation of daily life and manners.

The play's main protagonist, Truffaldino is an unemployed servant



Comedy unmasked: The cast of *The Servant of Two Masters* in full flight.

Photo: Heidrun Lohr

who is offered two jobs on the same day. Unknown to him, his two masters are long-lost lovers anxious to find each other – not an easy task when one is a woman disguised as a man.

The play demonstrates the longevity of Carlo Goldoni's dramatic

compositions and his capacity to capture the comic force and ironies implicit in everyday situations.

Directed by John Bell, the cast features some of Australia's finest, including Darren Gilshenan, Blazey Best and Paula Arundell.

— Nicola Vance

SHOW NOTES

What: *The Servant of Two Masters*

When: 15 and 16 July

Where: Alexander Theatre, Monash University, Clayton campus

Who: For bookings call the Monash Box Office on +61 3 9905 1111.



Damiano Bertoli's 'The Diamond Age'.

Coming out of the shadows

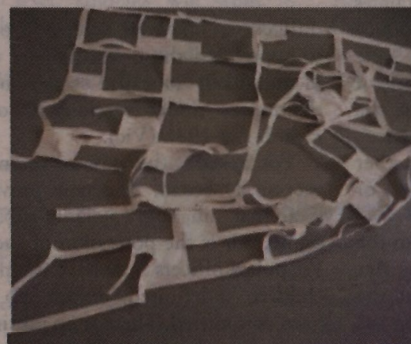
An exhibition drawing on the material properties of paper to explore ideas about the body, culture, landscape and process is on show at the Faculty Gallery at Monash University's Caulfield campus until August.

The *Papercuts* exhibition, curated by Ms Natasha Bullock and Ms Katarina Paseta, presents a range of cut paper works by contemporary artists who explore the textures, surfaces and structure of paper.

Ms Paseta, who is also collection manager at the Monash University Museum of Art, said there had been a growing resurgence of artists' interest in media such as tissue, cardboard, graph and tracing paper.

"In this exhibition, paper comes out of the shadows to assume a dominant role as a vehicle in the creation of contemporary artworks including sculpture and installation," she said.

A range of scale, approach and process is evident in all of the works by 11 predominantly emerging



Sandra Selig's 'Quilt'.

artists from Melbourne, Hobart and Brisbane.

Mathematical precision resonates from Damiano Bertoli's prismatic, cardboard chandelier suspended three metres from the ceiling, while Sandra Selig investigates the possibilities of negative space with her cascading, chessboard cut-out quilt strewn on the floor.

— Nicola Vance

SHOW NOTES

What: *Papercuts*

When: 10 July – 7 August

Where: Faculty Gallery, Faculty of Art & Design, Caulfield campus

Who: For more information, contact the gallery on +61 3 9903 2707 or Ms Katarina Paseta on +61 3 9905 4355.

IN BRIEF

Lecturer invited to symposium in China

Dr Dan Wollmering, senior lecturer in sculpture at the Faculty of Art and Design, is one of 12 sculptors, and the only Australian artist, invited to participate in the Ninth Guilin Yuzi Paradise International Sculpture symposium in southern China this month.

The symposium, which runs until 31 July, will be held just outside Guilin, a Chinese tourist destination. It aims to engage with and encourage dialogue between sculptors from around the world. It also provides a unique opportunity for artists to create new work that focuses on environmental, cultural and land projects.

Dr Wollmering's stone, metal and bronze work, titled 'Suge', measures 3 x 5 x 1.5 metres and will be created *in situ* by the artist with a team of symposium assistants.

For more information, contact the Faculty of Art and Design on +61 3 9903 1910.

From laminex to glomesh

An exhibition of works by Melbourne contemporary artist Constanze Zikos from the 1990s until today opens at the Monash University Museum of Art on the university's Clayton campus on 30 July.

The artist draws from a myriad of influences including pop art, fashion, minimalism, geometric abstraction and street culture and incorporates an eclectic fusion of elements into his work: Grecian iconography, décor and faux and popularised surfaces such as laminex and glomesh.

A free artist floortalk will be held at 1 pm on Wednesday 30 July at the museum, building 55, Clayton campus. For more information, contact +61 3 9905 1644.

The family in Venice

What do cloned twin boys, a trans-species mother suckling her young, motorcycle helmets and prosthetic devices have in common? They have all been created by Melbourne multimedia artist Patricia Piccinini, Australia's representative at the 50th Venice Biennale – considered the most prestigious and influential contemporary art event in the world.

The exhibition, *We Are Family*, on show at the Australian Pavilion in Venice until 2 November, has won international media attention. Curated by Monash University Museum of Art senior curator Linda Michael, the exhibition was commissioned by the chair of the Visual Arts/Crafts Board at the Australia Council for the Arts, Ms Victoria Lynn.

For more information, see www.ozco.gov.au/venice or www.patriciapiccinini.net.

Collection in bloom

An exhibition at the State Library of Victoria brings together works by leading Australian contemporary artists represented in the Monash University Collection who have been inspired by the rich symbolism of the flower.

Hothouse: The Flower in Contemporary Art is on show until 24 August at the Keith Murdoch Gallery at the State Library. It includes works by artists including Lauren Berkowitz, Christopher Langton, Tim Maguire, Rosslyn Piggott and Azine Wallace.

The exhibition was curated by Ms Katarina Paseta and Ms Karen Hall, the collection management team at the Monash University Museum of Art.

Entry is free. For information, contact +61 3 9654 7000.

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Mastering life in the 'Garden of Eden'

ROBOTICS

Once upon a time at Monash's Intelligent Robotics Research Centre there was a little robot called Adam who learned to live happily in his very own Garden of Eden under the watchful eye of his 'father', Associate Professor Andy Russell.

In this real life fairy-tale, being played out inside the Department of Electrical and Computer Systems Engineering, ADAM (ADaptive Mobile Robot) is learning to travel around EDEN (EDucational ENvironment) in the most energy-efficient way.

EDEN is a wooden enclosure measuring 1.5 square metres, a bit like a baby's playpen but with a floor and low walls to contain the 24-cm diameter robot, which moves about on small wheels. Different areas of the enclosure are painted black, white, red or green, and the robot has sensors to detect these colours.

Three flowers made of aluminium plates with green borders are laid out on the white floor for the robot to feed from via an antenna-like proboscis and gain the energy he needs to roam around the enclosure. One flower has no border and is 'invisible' to him.

There is also an illuminated basking area, separated from the flowers by two black lines, where he can sun himself and reduce his energy requirements. But if he bumps into the red-bordered walls on his travels, he loses energy at a rapid rate.

"Within EDEN, the overall motivation for ADAM is to gather energy and minimise his energy use," Dr Russell said. "The flowers manufacture and accumulate energy, which the robot harvests during feeding, when his metal proboscis makes electrical contact.

"A supervisory computer keeps track of the energy available in each flower and transfers energy to the robot when feeding occurs.

"ADAM is equipped with sensors for colour, light, collision and sound, along with a micro-controller system, which allow him to move about

Robot paradise: Associate Professor Andy Russell helps Adam the robot live and learn in his very own Garden of Eden. **Photos:** Melissa Di Clero



and monitor his environment, via connection to an external PC that runs the learning system."

To kick-start the learning procedure, the robot was also given some innate behaviours for negotiating his enclosure. These included the ability to back off and turn after a collision, feed when both of his colour sensors saw green, stop and bask when light sensors detected high illumination and move forward in steps of three centimetres in the absence of other sensory information.

"The objective of this project was to see how the performance of the robot could be improved by implementing a learning algorithm," Dr Russell said. "ADAM records everything he senses and every action he takes. As well as this, he knows that he is controlled by a set of simple rules but does not know what the rules are."

This deliberately minimalist set of information was all that ADAM had available to help him learn, Dr Russell said. "When the learning strategy was put in place, ADAM was able to learn to associate the colour red with an imminent collision, backing off and turning before hitting a wall.

"Learning to avoid colliding with the wall was expected, but the big

surprise was that ADAM also learned to improve his feeding technique."

Responding to regularities in the recorded data increased the robot's ability to gain and retain energy.

Dr Russell also helped ADAM learn to feed from the invisible flower, by developing an association between a loud noise and the feeding action.

In this experiment, every time the robot approached a flower, Dr Russell made a loud noise by hitting two pieces of wood together. After some time, the robot learned to use the noise cue to feed from the invisible flower too.

"The ability to learn and adapt to new surroundings is a valuable asset for animals, improving their chances of survival – these abilities are also valuable for robotic systems," Dr Russell said. "A learning robot could be used in different situations without the necessity for reprogramming. It would also be able to adapt its operation to changes that occurred in its environment."

Dr Russell said that while ADAM's learning scheme was very basic, it presented many possibilities for future additions and extensions, with the potential for application to robots for home use.

"In the future, it's possible you would be able to buy a home-help robot, unpack the carton in your living room, press the robot's on-button, and without you having to consult an instruction manual, the robot would 'map out' the room and start vacuuming in a logical fashion.

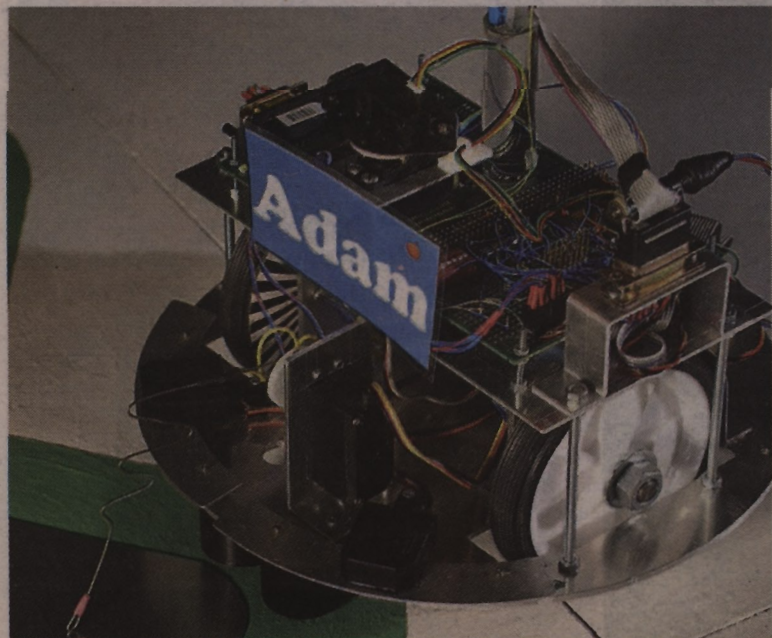
"While there are currently some robot vacuum cleaners on the market, they're not particularly intelligent and just wander around at random without carrying out a mapping exercise.

"But with the sort of learning ability being developed with ADAM, the next stage could be a vacuuming robot with the ability to clean every corner of the room as well as the best cleaning person."

– Michele Martin

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www.ecse.monash.edu.au/staff/rar/



Still learning: Adam records everything he senses and every action he takes.

INPRINT



Venice, Fragile City 1797-1997

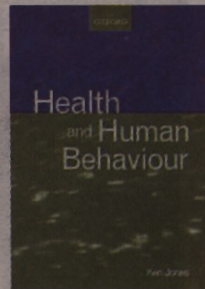
By Margaret Plant
Published by Yale University Press
RRP: \$110

This strikingly illustrated book charts the architectural and urban changes that have taken place in Venice over the past 200 years and the conservation efforts to protect the city and lagoon from the sea.

It also examines the social restructuring of the city, from the conquest by Napoleon through two world wars to the current battles not only against rising sea levels, but also against depopulation, industrial pollution and mass tourism.

The author also explores the myths surrounding Venice created by writers, artists, architects, musicians and film-makers, as well as those created by the Venetians themselves. She contrasts the myths with the realities of living and working in a fragile city.

Margaret Plant is professor emerita of history of art at Monash University.



Health and Human Behaviour

By Ken Jones
Published by Oxford University Press
RRP: \$49.95

Health and Human Behaviour serves as an introduction to the psychology of both health and illness. Written specifically for first and second-year students of medicine, nursing, physiotherapy and other allied health disciplines, the book examines how our

environment, behaviour, beliefs and emotions affect our health and, conversely, how our health affects the environment and our behaviour.

Case studies and 'self tests' in every chapter reinforce key topic areas, while discussion questions prompt readers to explore the major themes more deeply.

Ken Jones is an associate professor in the Department of Psychological Medicine at Monash University.



Islam and Political Legitimacy

Edited by Shahram Akbarzadeh and Abdullah Saeed
Published by RoutledgeCurzon
RRP: \$140

One of the most challenging issues facing the Muslim world – the Islamisation of political power – is explored in *Islam and Political Legitimacy*.

Contributors examine the evolving relationship between Islam and political power in Muslim societies in West, South, Central and South East Asia.

The book contends that the growing reliance on Islam for justifying power across the Muslim world has contributed to its evolution from a social and cultural factor to an entrenched political force.

Shahram Akbarzadeh is a senior lecturer in global politics at the School of Political and Social Inquiry at Monash University. Abdullah Saeed is head of the Islamic Studies program at Melbourne University.

POSTSCRIPT

In his latest book, *One World*, Peter Singer, formerly of Monash's Centre for Human Bioethics, discusses the ethical issues surrounding globalisation.

The key debates, he argues, cut across national boundaries. How can we resolve questions about the environment and climate change without international cooperation? What do we make of the refusal by the US and Australia to ratify the Kyoto protocol? Why do people protest so violently against the World Trade Organisation? In posing these questions, Peter Singer asks readers to consider what a global ethic could mean.

Peter Singer is Ira W. DeCamp professor of bioethics at Princeton University in the US. He will be among the speakers at the official launch of the Monash Institute for the Study of Global Movements on 24 July.

If you are a member of the Monash community and have a forthcoming book, contact monashnews@adm.monash.edu.au.

Books featured in 'Inprint' are available or can be ordered at Monash's four on-campus bookshops.

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Monash scientists to study Narran Lakes wetlands

ECOLOGY

Narran Lakes and the surrounding land on the Queensland-New South Wales border are the subject of a new \$1.6 million study involving Monash University and the University of Canberra and organised by the Cooperative Research Centre for Freshwater Ecology.

The four-year study, funded by the Murray-Darling Basin Commission, is examining the importance of water flow to the lakes and their value as a habitat for birds, plants and animals.

Co-leader of the project Associate Professor Gerry Quinn, from Monash's School of Biological Sciences in the Faculty of Science, said the collaboration would be an important element in the project's success.

"The team has expertise in freshwater biology, river flows and the physical structure of freshwater lakes and streams," he said.

Listed as a Ramsar Wetland of International Importance in 1999, the Narran Lakes Nature Reserve accommodates water birds from all over the world, as well as several species noted as 'protected' in bilateral

agreements with the governments of Japan and China, including terns, sandpipers and ducks.

Upstream of the Narran River and the Narran Lakes, water is extracted, mainly to supply irrigated crops. The extraction is vital to the local economy but leaves

less water for the lakes. The study team wants to determine what happens to the lakes' ecosystem and the life that depends on it when the river inflow varies or where there are land use changes.

"An important goal is to combine the knowledge of local people with the

A valuable habitat: The Narran Lakes research site on the Queensland-NSW border is the focus of a four-year study.

research results to improve the overall outcome of the project," Dr Quinn said. "We want the community to be part of the study, and we hope they will be proud to be associated with the results."

The project will have a website with a 'living page', to which interested residents can contribute their knowledge and opinions.

Four committees have been established to facilitate the study and contribute to quality control. They include a community reference group made up of local community members from Queensland and northern NSW and an international scientific panel of eminent ecologists from Australia and overseas.

— Richard Ewart

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Futuristic furniture

Monash industrial design student Mr Rob Tang has won first prize with his innovative furniture piece, 'Cuppa', at the recent *Flat Pack With A Twist* exhibition hosted by the Faculty of Art and Design.

The brief was to design a piece of furniture incorporating a curve that could be packed flat in the style of IKEA, the exhibition's sponsor.

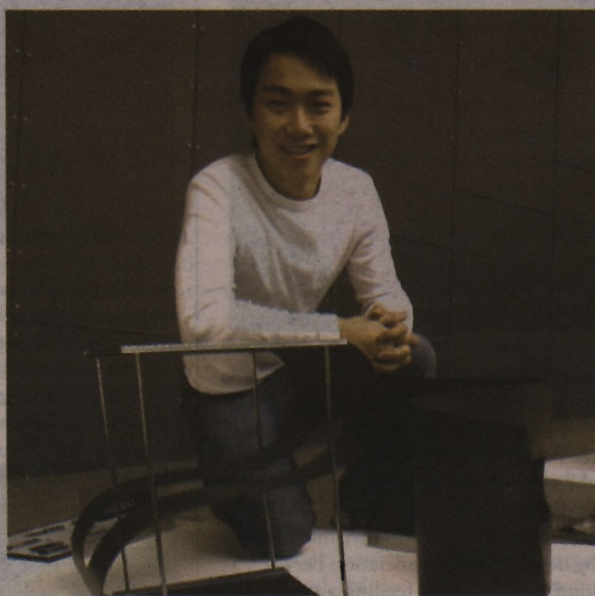
Ms Catherine Beaumont, marketing manager for IKEA's Richmond store, said Mr Tang's piece was chosen as the winning entry because it was the most "IKEA-ish".

"I'll certainly look into passing it on to our design team in Sweden to see what they think of it," she said.

Course coordinator Mr Selby Coxon said the results on display were a credit to the students.

"IKEA is a design icon, and if they associate the quality of our undergraduates' work with something of the design image they project around the world, that's fantastic for our profile."

Photo: Melissa Di Clero



Link found between birth weight and kidney health

MEDICINE

A Monash University study has found that the number of nephrons in a person's kidney is related to their birth weight – a finding that could explain why some groups in the community are at greater risk of kidney disease and high blood pressure.

Nephrons are a vital component of kidneys. They filter the blood, allowing water, some salts, glucose and amino acids to be reabsorbed into the blood capillaries while removing waste products. Human and animal studies have shown that having few nephrons creates a risk of developing hypertension and kidney disease.

For the study, Professor John Bertram and Mrs Rebecca Douglas-Denton, from Monash's Department of Anatomy and Cell Biology, collaborated with researchers from the Northern Territory's Menzies School of Health Research and the University of Mississippi Medical Center in the US.

The researchers examined the autopsy kidneys of black and white Australians and North Americans for the size and number of nephrons. They also looked for any gender differences or correlations with age or birth weight.

Australian Aborigines, Native Americans and African Americans have much higher rates of kidney and heart disease than the general population in the same geographic

areas. These groups also have higher rates of low-weight infant births.

The study, supported by Janssen-Cilag Australia and the National Health and Medical Research Council, was published in the May issue of *Kidney International*.

"When people are born, they have all the nephrons they are going to get and will lose them as they age," Professor Bertram said. "For many years, it has been assumed that people have about one million nephrons at birth."

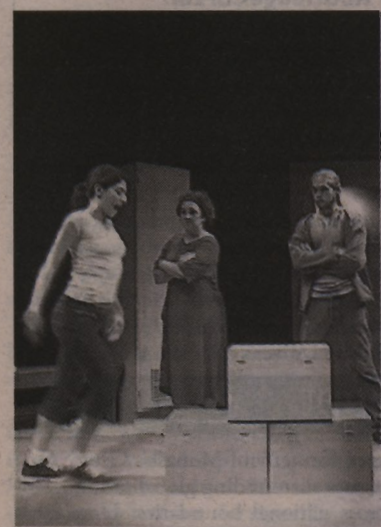
"This autopsy study has shown that there is a huge range in the number of nephrons people might have at birth – from 200,000 up to 1.8 million. More importantly, it has shown that the number of nephrons a person has increases with their birth weight."

When there are few nephrons, certain parts of the kidney become susceptible to scarring, which puts people with fewer nephrons at greater risk of kidney disease.

"If low nephron number is a risk factor for high blood pressure, and therefore heart and chronic kidney disease, then interventions that emphasise prenatal care and reducing the prevalence of low birth weight deliveries should hopefully reduce this risk."

— Penny Fannin

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Indigenous circus workshop

The National Institute of Circus Arts Workshop and well-known actor Aaron Pederson will feature in an Indigenous Performing Arts Expo for Indigenous students at Monash University this month. The one-day expo, 'Blackfellas Actin' Up Again', provides high school students with an insight into working on the big stage and behind the scenes.

The students, from around Victoria, will take part in a series of workshops, including a Victorian College of the Arts audition workshop, a National Institute of Circus Arts workshop and a behind-the-scenes lighting, sound and camera workshop.

They will also watch a performance by the Ilbjerri Aboriginal and Torres

Strait Islander Theatre Co-operative. The group, formed in 1990 by local artists and community members, develops performances in collaboration with local communities on issues of interest to, and from the perspective of, Indigenous people.

The expo will be held at the Centre for Drama and Theatre Studies at Monash's Clayton campus from 10.30 am to 3.30 pm on 17 July.

— Diane Squires

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