CARBON CLEAN-UP
It’s the economics that count

DOCTOR, DOCTOR
How a proposed medical school would address the shortage

ONLINE SHOPPING
Does it spell doom for traditional retailers?
Cite (sət) v. To put forward thought-provoking arguments; to offer insightful discussion and new perspectives on topics of social, political, economic or environmental relevance; to report on new thinking. Sight (sət) n. A feature or object in a particular place considered especially worth seeing. v. To frame or scrutinise community, research and business initiatives; to present points of view on current issues. Site (sət) n. The location of a building or an organisation, esp. as to its environment. v. To place or position in a physical and social context.

Citecontributors

Claire Bradshaw
Claire is a freelance writer, editor and scriptwriter with more than 20 years experience in the communications field. She completed her creative writing degree at Curtin.

Sue Emmett
Sue is a freelance writer and photo-journalist, with special interests in science, technology, Western Australian business, education and the marine environment.

Karen Green
Karen is a research and development writer, based in Curtin's Corporate Publications team.

Andrea Lewis
Andrea is a freelance writer and editor. She was formerly publications manager in Curtin's corporate communications area.

Isobelle McKay
Isobelle is a freelance journalist who writes broadly for newspapers and magazines. She is a Curtin alumna, with a degree in journalism and professional writing.

Kerry Hodson
Kerry is a freelance writer, journalist and publicist who has worked in print and online media, and in corporate relations. She is a Curtin alumna.

Cover
Matthew Cornthwaite – the face of future generations who are set to benefit from clean energy solutions that aim to reduce our carbon footprint.

Managing Editor
Margaret McNally

Editorial Team
Julia Nicol, Yvette Tulloch

Creative Direction
Sonia Rheinlander

Design
Manifesto Design

Contributing Writers
Claire Bradshaw, Sue Emmett, Karen Green, Kerry Hodson, Andrea Lewis, Isobelle McKay

Contributing Photographers
James Campbell, Adrian Lambert, James Rogers

Cover Photography
James Rogers

Print
Scott Print

Editorial Enquiries
Corporate Relations and Development
Curtin University
GPO Box U1987 Perth WA 6845
Tel: +61 8 9266 2200
Email: m.mcnally@curtin.edu.au

Cite is available online and in pdf at news.curtin.edu.au/publications and in alternative formats on request.

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Reinventing the doctor
A proposed medical school in Western Australia aims to transform the state’s strained healthcare system by training a new type of doctor – and more of them.
FROM natural disasters to economic turmoil, the events of 2011 are a salient reminder of the need for a vision to focus attention and prioritise activities. Universities also need vision; indeed, they are the foundation upon which visionary research and programs are developed to tackle specific issues when they occur, and to help communities affected by them.

In Australia, the incoming carbon tax has amplified the climate change issue and highlighted the need for clean energy technologies. Our stretched healthcare system is set to worsen, with a shortage of doctors to deliver appropriate health care. Also of concern is how to ensure the sustainable production and plentiful supply of quality food for the future.

These particular issues are being addressed at Curtin through targeted research, program development and collaboration with international partners – all of which foster the University’s vision: to be an international leader shaping the future through our graduates and research, and positioned among the top 20 universities in Asia by 2020.

I’m pleased to share details of these visionary research activities in this edition of Cite. ‘Staying Power’ (page 8) highlights the innovative technologies in development at Curtin to utilise Western Australia’s abundant biomass resources as an alternative energy source – and the equally important need to consider their economic viability.

The University is addressing the shortage of doctors in WA with a proposed medical school at the Bentley Campus, as ‘Reinventing the Doctor’ (page 16) outlines.

Read about the new Curtin institute that aims to address the looming food crisis from the perspective of agricultural productivity, changing climate conditions, economics and diet-related problems (page 6).

Leadership, research, international collaboration and graduates who have a global perspective are at the heart of Curtin’s vision. These attributes also serve a broader, collective vision – one that contributes to developing solutions to world problems, and sometimes even prevent them.

While we can expect 2012 will present challenges, we will be prepared to face them. As 2011 draws to a close, I hope you enjoy reading this issue of Cite, and I wish you and your family a peaceful and safe holiday season.

Professor Jeanette Hacket
China expert forges foreign investment links

A leading academic in the area of foreign direct investment with China, Professor Fuming Jiang has been appointed Chair of International Management at Curtin University.

Jiang’s knowledge of Chinese foreign direct investment spans more than a decade and includes related research about direct investment into Australia. The head of Curtin’s School of Management, Professor Tony Travaglione, welcomed the appointment.

“Australia has very few, if any, experts in Chinese foreign direct investment, so while there is a lot of discussion and debate about this topic, there is also a good deal of confusion,” Travaglione says.

“These debates are absolutely critical, and to have an expert in understanding the significance of direct investment in Australia, and the advantages this brings to the country, is essential.”

Jiang says Curtin’s dynamic approach to learning and Western Australia’s booming economy provide him with an outstanding platform to make the link between academic research and practice.

“According to the Australian Bureau of Statistics, Australian companies achieved below the average performance in China in 2010, compared with all other nations, while New Zealand companies have outperformed most foreign companies in China,” he says.

“My aim is to contribute something to assist government and industry to work more successfully with China in the future.”

Breath of fresh air

Curtin has moved to prohibit smoking on University grounds, with all Curtin campuses in Western Australia becoming smoke-free from Sunday 1 January 2012.

From that date, Curtin’s by-laws will ensure that smoking anywhere on these campuses, and in student housing provided by the University, will be prohibited.

Curtin Senior Safety and Health Adviser Simon Mattiaccio says health is a priority area of research for the University, and with the overwhelming evidence that smoking, both active and passive, causes cancer and other diseases, Curtin’s decision to become smoke-free reflects the University’s commitment to put research into practice.

Professor Mike Daube, from the Public Health Advocacy Institute of Western Australia in Curtin’s Faculty of Health Sciences, says: “We know that only about four per cent of our staff and students are regular smokers, which is in line with research showing that people with higher levels of education smoke less.”

“Australian and international research has confirmed that passive smoking can be a serious health hazard, so it is important that we protect our staff and students from exposure to this known risk factor.”

The gift of giving

Curtin alumna Tanya Pinto is the latest recipient of the John Curtin Medal.

Pinto was awarded the medal for her work in providing care to impoverished children in India.

Through her charity, Baal Dan, which means ‘child donation’, Pinto helps more than 3000 children, providing food programs, support for education, medical aid and essential supplies.

In 2005, Pinto spent time volunteering at the Mother Teresa Orphanage in Calcutta. Moved by the poverty she saw – more than 40 per cent of India’s 18 million children are malnourished – she used her business experience as an advertising executive and created Baal Dan, with the aim of helping children “as directly and efficiently as possible”.

“Sometimes when we look at the horrible statistics, it immobilises us,” Pinto says. “But we can’t be scared off by statistics. If there’s something you want to do something about, do it.”

Pinto was presented with the medal at a special ceremony held at Curtin’s Bentley Campus in October.

The John Curtin Medal is named after the former prime minister of Australia from 1941 to 1945. It is awarded annually to a person or organisation who has made a significant contribution in their chosen field and exhibits the qualities embodied by John Curtin: vision, leadership and community service.
**US Ambassador visits Curtin**

United States Ambassador to Australia Jeffrey L. Bleich told guests at the John Curtin Prime Ministerial Library (JCPML) Anniversary Lecture on 8 August there was an urgent need to solve the ‘new’ challenges facing the world.

The annual lecture marked the 66th anniversary of Australia’s wartime prime minister John Curtin’s death on 5 July 1945.

Referring to the strong working relationship between Australia and America, Bleich – who previously served as special counsel to US President Barack Obama – said once again the two countries find themselves facing a crucial set of challenges, with new and different forms of threat emerging that were not nation-against-nation, but nature-against-nation and criminal-network-against-nation.

The new challenges include water, food shortages, terrorism and computer viruses.

"Just as in John Curtin’s time, what worked in the past will no longer achieve the desired results,” Bleich said.

“We must begin addressing these issues today, or we face a challenge to our long-term security, greater than any single nation poses.”

Former Australian prime minister Paul Keating, patron of the JCPML, attended the lecture, along with Curtin Vice-Chancellor Professor Jeanette Hacket, members of the Curtin community and invited guests.

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**Author scoops awards**

Celebrated author and Curtin academic Associate Professor Kim Scott has won five major Australian and international literary awards for his latest book, *That Deadman Dance*.

The awards include the prestigious Miles Franklin Literary Award, the Australian Literature Society Gold Medal, the Victorian Prize for Literature (including the Vance Palmer Prize for Fiction), the Kate Challis RAKA Award (Australian Centre Literary Awards 2011), and the 2011 Commonwealth Writers’ Prize for South-East Asia and the Pacific.

It is the second time that Scott has been honoured with the $50,000 Miles Franklin prize for one of his novels. He is also the first Indigenous Australian to win the Commonwealth Writers’ Prize.

*That Deadman Dance* examines the relationships between British colonists, American whalers and the local Nyungar population as they all met on the ‘frontier’ of Western Australia’s south-west in the early 19th century.

Scott says the novel, completed in 2009, took him three years to write. It resulted from his PhD, obtained from Curtin, based on history, linguistics and literary research.

He works with students at the Curtin Health Innovation Research Institute.

It is the fourth time a Curtin graduate has received the Miles Franklin Literary Award.

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**Three decades on radio**

Curtin FM 100.1 volunteer presenter Alan Mannings recently celebrated 30 years on radio.

Mannings, who started at Curtin’s community radio station on 3 July 1981, hosts the Sunday morning program *From the Vault*.

The power of community radio has always fascinated Mannings, and being able to share his passion for music with listeners has been a bonus.

*From the Vault* gives new life to rare releases from the 1950s, ’60s and ’70s, many of them from Mannings’s own collection.

He says his first real opportunity for radio work came when he took a tape deck along to a Roxy Music media conference, when the UK rock band visited Perth. He was able to get an exclusive 20-minute interview with guitarist Phil Manzanera, which he then offered to Curtin FM to air.

The segment ended up as a one-hour special, and Mannings never looked back.

The 61-year-old presenter says music and radio have led him into a fabulous lifestyle, including his on-air marriage during his show in January 2006.
The installation of drinking water fountains around the Bentley Campus is part of Curtin’s ongoing commitment to reducing its environmental footprint. The fountains supply filtered water from dispensers that are designed to refill water bottles. They are just one of Curtin’s green campus initiatives, and stem from research that shows the most effective strategy for improving the environment is to avoid wastage by re-using products, with recycling a secondary priority. With more than 400 million plastic water bottles manufactured each year in Australia, and the majority of them going to landfill, the fountains are a small step in the right direction. Three filtered water fountains have been installed so far, with more planned for 2012. To read more about Curtin’s green campus initiatives, visit greencampus.curtin.edu.au
A newly established food institute will address how our looming food crisis is more than just a question of having enough; it is about ensuring that food is nutritious and produced sustainably so that diet-related problems are given as much importance as food security.

Depending on who you talk to, the world’s impending ‘food crisis’ can be seen from many angles. Farmers will talk about decreased productivity, climate change scientists about the increased negative impact of severe weather events, economists about economic consequences, and health experts about the rising incidence of diet-related diseases. Different emphases, but together all are vital for ensuring an interconnected chain of food production that can sustain us.

Recognising this, Curtin has put great effort behind its new International Institute of Agri-Food Security (IIAFS), which incorporates multidisciplinary research teams from across Curtin’s five teaching areas – Curtin Business School, Health Sciences, Humanities, Science and Engineering and the Centre for Aboriginal Studies. The Department of Agriculture and Food WA and key industry partners are also on board.

The highly integrated approach shows just how important it is to grapple with the food security issue in a concerted manner. The institute’s agenda is broad, but targeted aspects of food production will be looked at: using Indigenous and heritage crops, known for their robustness in the face of climate change as well as their health-promoting ingredients; implementing post-harvest practices that boost food quality; and involving and promoting local supply chains to support socio-economic development, especially in rural and remote areas. The institute will draw inspiration from the slow food movement and biodiversity practices. Health promotion and lifestyle choices will also play vital roles.

Professor Janet Bornman, the 2011 recipient of Curtin’s prestigious Haydn Williams Fellowship, heads the IIAFS. Bornman completed her doctoral work in plant biology in Sweden, with a research focus on the interactions of different climate change drivers on plants. She worked as research director at the Danish Institute of Agricultural Sciences before taking up a position at New Zealand’s University of Waikato. Bornman also chairs the United Nations Environment Programme’s Environmental Effects Assessment Panel, and recently received the Ozone Layer Protection Award from the US Environmental Protection Agency.

“One of the aims of the institute is to provide a research-based platform for promoting education, food tourism and local culture,” says Bornman. “At the core of the institute’s work is our link to communities that perhaps most need a healthy food supply: rural communities, where food options may be limited; and mining communities, where food is usually trucked or flown in from elsewhere.

“We have also linked into existing infrastructure, such as the Margaret River Education Centre, where Curtin has a presence. And, very importantly, we have established a FOOD+ postgraduate program for agri-food and health research that is partnering with international organisations to ensure the institute contributes to Curtin’s international presence.”

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HANNAH McGLADE remembers her mum saying she would be a doctor one day, and credits Curtin’s Aboriginal Bridging Course staff, at the Centre for Aboriginal Studies, for providing her with the lifeline she needed to complete her education 25 years ago.

A member of Western Australia’s Nyungar community, McGlade gained her law degree in 1995 — the first Aboriginal woman in WA to do so. She also has a master degree in international human rights law and, in 2010, obtained a PhD from Curtin.

She is a human rights lawyer and social justice activist, adjunct researcher at Curtin’s Centre for Human Rights Education, member of the State Administrative Tribunal (Human Rights), and board member of the Aboriginal and Torres Strait Islander Healing Foundation Ltd.

But her path to success wasn’t an easy one.

McGlade describes her childhood as challenging and often unstable. She narrowly escaped sexual assault as an 11-year-old resident at Sister Kate’s Children’s Home in Perth, but was not so lucky a few years later. She was a victim of sexual assault during her teenage years and, at 15, was forced to abandon her education.

“I was devastated to leave my schooling,” she says, “but somehow I connected with the opportunities offered to Aboriginal people at Curtin.”

McGLADE is excited about her appointment by the Hon. Peter Garrett, Minister for School Education, Early Childhood and Youth, as an Indigenous Education Ambassador.

“I had to fight for my education,” she says. “This is an opportunity to tell the story about my dream of education and how I fulfilled that. I want Aboriginal children and younger people to know there are choices and opportunities for them.”

CASELLO has embraced his WA homecoming by becoming a board member of Fairbridge, rejoining the Australian Institute of Company Directors and working with the University on the Curtin Engineering Pavilion. He is also enjoying his Fremantle Dockers membership.

He took up his position at Sundance last November as the company re-formed after the tragic loss of its board in a plane crash in Africa last year. He has high praise for Sundance and for the previous board’s achievements.

“Sundance is more than just a company,” he says. “We will honour what the previous board did for Sundance and we will turn its vision into reality.”

Australian best practice is part of the vision.

“The people of Africa know we bring world-class environmental and safety principles to our projects. That is important to them,” Casello says.
NEW technologies might be our starting point for lowering carbon emissions, but it’s how they are taken up that can make or break their success.

At Curtin’s Fuels and Energy Technology Institute, Professor Chun-Zhu Li and his team are developing innovative technologies for the clean and efficient utilisation of Western Australia’s abundant biomass resources, including those available in the near future, such as mallee biomass.

“Farmers have planted mallee, alongside wheat and other food crops, as part of the solution to dryland salinity problems,” Li says. “The widespread planting of mallee in WA can produce about 10 million tonnes of high-quality, woody biomass. This is a large resource.”

One innovation that Li and his team have developed is an advanced gasification technology that converts mallee – or other types of biomass – into a clean gaseous fuel. The gas can then be used to generate electricity, or to produce hydrogen or liquid fuels.

“Undoubtedly the biggest hurdle is getting rid of the tar in the product gas from the gasification of biomass,” explains Li. “Water scrubbing, as commonly used in other technologies, is not ideal, both because water washing creates a waste liquid stream requiring expensive treatment before disposal. So we have built special cleaning technology into the gasification reactor.”

Further novelty of the technology lies in its use of a single reactor to gasify biomass into fuel gases. Li’s technology can operate rapidly and at a lower temperature, making the process simpler and more efficient than other commonly available technologies.

“Small-scale is essential so that processing can take place locally,” Li says. “We don’t want high capital and operating costs, or the inefficiency of transporting mallee to a central processing facility, and then supplying energy back to the regions.”

A second technology Li and his team are working on aims to produce liquid biofuels and biochar through pyrolysis – the process of heating biomass in the absence of air – and the subsequent biorefinery of bio-oil.

AN invention like Li’s may be brilliant, but it’s the economic impact that will ultimately determine its success. In the case of Li’s development, economic forecasts are good. For example, estimated costs of $0.10–$0.15 per kWh of electricity generated by mallee gasification is significantly cheaper than the current cost of electricity from diesel at $0.37–$0.60 per kWh.
The use of millions of tonnes of biomass in WA each year could transform the role of the agriculture sector in WA to include green base-load electricity and liquid biofuels in its current food, fibre and wood portfolio. Both biodiversity and regional development stand to gain. Down the road, participants could be well positioned to enter any carbon credit trading system.

**PROFESSOR RON RIPPLE**, from Curtin’s Centre for Research into Energy and Mineral Economics (CREME), believes that while renewables are vital, assessing their value requires more than just a knee-jerk reaction. His approach applies to currently controversial shale gas production processes – an issue Perth residents can’t ignore. Curtin petroleum engineers are in the midst of a three-year project to assess the exact size of what is believed to be a substantial shale gas resource sitting right beneath the city, in the Perth Basin. Ripple and others from CREME are conducting economic analyses to determine the economic impact.

Negative perceptions of shale, particularly around the process of fracking, mean that the topic is a delicate one, although Ripple says that shale gas can be produced in an environmentally responsible way as long as the wells that are created through horizontal drilling are properly completed and managed – which they can be. Volatile environmental arguments aside, Ripple says that the economic potential for shale gas development is substantial.

"Opening up shale gas development in WA will bring skilled jobs to the state," he says. "And if we are able to provide the capital and the labour, we should be able to approach the likes of low-cost gas for consumers that America enjoys. Currently, Perth gas users pay about $10 per gigajoule. In the US, they are paying around $4."

So much shale gas could be produced from the Perth Basin that a surplus would remain for the export market.

Ripple is also taking a long hard look at how much more renewables can be used in WA’s mining sector, where a huge amount of energy is consumed as an input into mining operations. Renewables may have a bright future here, but no readily usable data exists. To address this, CREME and other Curtin researchers have partnered with the Colorado School of Mines (CSM). The collaboration will embark on an ambitious five to seven-year project on assessing energy inputs into mining operations.

"Currently, there is no internationally used model that addresses the energy component of mining operations," Ripple says. "The Curtin–CSM project will be asking questions like: if there is a price on carbon, how does this affect the choice of energy source? How does change in other energy prices affect the costs of a mining operation? Is it viable to switch part way through mining operations to an alternate energy source? What is available in the remote locations where we find our mines?"

"An important part of this work is to look at renewables under the ‘mine of the future’ concept. So far, the most promising is geothermal energy, largely because it doesn’t have the problem with intermittency that sun, wind and waves do. None of the latter three can generate energy around the clock. All require a back-up source of energy, most often natural gas.

To realise their potential, development of these renewable sources will need to come hand-in-hand with large-volume, low-cost storage. One then has to ask: what is the cost of building such storage, and how much does it add to the cost of operations?"

**THese** types of questions are at the heart of Associate Professor Daniel Packey’s thinking, too. He echoes Ripple’s observation. "Renewables are only as good as the economic value they bring," says the director of Curtin’s Department of Mineral and Energy Economics. For Packey, it’s the ‘siting’ of energy in a market-sustainable way that is how we should be assessing renewables.

"That means looking at things like the quality of the resource (whether sun, wind or wave) and its timing – coincident load, and how and when a resource is placed in the grid," Packey explains. "If renewables can come into the grid when we need them most, then they are highly valuable. If not, then their value declines."

Packey has some sobering responses to the Gillard government’s plan. The estimated parts-per-billion of carbon reduction are not enough to make a real difference, and $23 per tonne permit costs will not alter the behaviour of the bigger polluters, he says. Potential positives lie in funding to go towards the development of new technologies, but the impact depends on how much money goes directly into research rather than into action group expenses.

"Climate change is too important to trivialise," Packey says. "How much is reducing carbon worth to a society? It’s the role of a government to determine this, and to provide initiatives that are strong enough to make a real impact – assuming that is what it wants."
Curtin’s School of Occupational Therapy and Social Work students were greeted with new and exciting learning and research facilities at the start of first semester in March 2011.

The $9 million development comprises an impressive two-storey building, fitted with the latest technology and purpose-built rooms to enable students to practise simulated client and family-centred care scenarios in realistic, interprofessional settings.

The facilities were designed following extensive research, consultation and planning with staff, students and clinicians. The result underpins new approaches to teaching in an environment aimed to transform students’ learning experience.
Viewing areas and counselling rooms are fitted with digital recording technology for teaching and learning in mental health.

One of five laboratories is used for developing the potential of children in early years through to adolescence.

Staff and students can research and observe ‘eye-tracking’ for children with autism spectrum disorders within a play environment, and provide sensory integration for children with learning disabilities.
Realistic home environments with a number of options for people with disabilities, and simulated workspaces for workers with a range of injuries put learning into practice.

Rooms are multi-functional and partitions can enclose or expand a space as required – such as when setting up industrial equipment like conveyer belts to simulate workplace safety practices.

Abundant space is a hallmark of the facilities, placing them among the best globally for occupational therapy and social work students.
Students have access to a comprehensive resource library within the facilities, dedicated to both occupational therapy and social work disciplines.

The bright and welcoming student common area includes full wireless access and provides a place to collaborate or casually converse.

Together with a 100-seat lecture theatre and five tutorial rooms, Curtin’s School of Occupational Therapy and Social Work facilities have been built to cater for students of these increasingly popular disciplines, and the education of future generations of occupational therapists and social workers.
BEING banned from chasey is like being banned from TV or food, says a primary school child involved in a national study of children’s playlore. In games like chasey, rope-skipping or even hand-clapping, usually more is happening than adults know. That is the nature of playlore, and it exists, for example, in unwritten rhymes only children know, or elaborate rules for invented games. For children, leaves and twigs can stock a shop, and sticks can shoot people.

“Playlore is about how children reprocess the world around them. It is about children’s observations and experiences of a world that in all other respects is controlled by adults,” says Curtin’s director of the Australia–Asia-Pacific Institute, Professor Graham Seal. Playlore can be subversive – children have always played games and known rhymes that adults forbid – but it also allows children to interact across cultures, genders and ages.

SEAL led the Western Australian and Northern Territory components of the Australia-wide study, in association with colleagues from the National Library of Australia (NLA), Museum Victoria, the University of Melbourne and Deakin University. The final report of the study, entitled Childhood, Tradition and Change, documents observations, interviews and video recordings of children at play in 19 Australian primary schools between 2007 and 2010.

The study builds on 1950s research by American folklorist Dorothy Howard, and on studies conducted in the ’60s and ’70s by Australian researchers. Significant findings relate to popular culture.

“There is a bigger connection now between the media and children’s playlore,” Seal says.

“Media is everywhere now. Film, music, TV, internet: all are being reprocessed into play.”

At one school, ‘pause’ (as on a DVD player) has replaced ‘barleez’ when a player needs a break. At others, role-plays reference TV shows like Man vs. Wild or So You Think You Can Dance. Seal says there is a need to balance the child-centred play where playlore develops against more adult-directed play, particularly as there is a movement towards the latter.

“Playlore results from creative play, and as far as schools are concerned, it needs to be understood when formulating educational policy,” he says.

For example, adult intervention is a part of policies aimed at preventing childhood obesity. Yet the ways in which children play frequently parody the adult world, including its public awareness campaigns on childhood obesity; how, and whether for better or worse, are matters outside adult control.

Thanks to the study, Australian researchers now have a report and a massive database to inform such policy formulations. Museum Victoria and the NLA will keep copies of both, and the Western Australian component will be added to the WA Folklore Archive, housed in the John Curtin Prime Ministerial Library at Curtin’s Bentley Campus.
Reinventing the doctor

What transformations will our health workforce need to make to keep up with Australia’s changing healthcare needs? A proposed medical school could hold the key.

STORY CLAIRE BRADSHAW PHOTOGRAPHY JAMES ROGERS
MAKING the best use of limited health resources will become an even greater challenge in the decades to come, as our ageing population and the growing incidence of chronic diseases place new and greater demands on health services.

Compounding the situation are predictions that Australia is heading for a significant medical workforce shortage: the nation is already battling a doctor shortfall, and a 2009 report in the Medical Journal of Australia has indicated that, if current medical intake numbers are maintained, Australia will need to import 25 per cent of its medical workforce by 2025.

Doctor shortages have been a significant issue in Western Australia for some time, especially in rural and remote regions, where more than half of all doctors are overseas-trained. The growth of metropolitan hospital services – including the completion of the new Fiona Stanley Hospital and expansion of facilities in Midland, Rockingham and Joondalup – will further stretch these resources.

According to the head of Curtin’s Faculty of Health Sciences, Professor Jill Downie, recruiting doctors from other countries is putting a bandaid on the problem and will not address our longer-term health workforce needs, which are growing increasingly complex with the ageing population and the increase in lifestyle-related chronic conditions. Curtin is hoping to open its own medical school in 2014 – subject to Australian Government approval – that will train a new type of doctor, more focused on primary care and better equipped to operate beyond the city limits.

“We need to build greater capacity in our local workforce to respond quickly and effectively to the changing healthcare landscape,” Downie says. “This issue isn’t just about numbers, but about ensuring that we have the right skills in the right places.

“While we will provide the same biomedical training as other medical schools, we will actively recruit students who are interested in areas of practice that are currently underserviced – primary care, chronic disease management, aged care, mental health and Indigenous health – and who are willing to work in regional and remote areas.”

THE teaching approach at Curtin will also be quite different, with a focus on interprofessional education that places quality and safety of patient care front and centre. This year, in an Australian first, the Faculty of Health Sciences introduced a common interprofessional first year for all of its undergraduate students. That means students from a range of disciplines – nursing, physiotherapy, pharmacy, occupational therapy, nutritional science and psychology, among others – work alongside each other from day one, learning what each discipline can offer and what can be achieved through collaboration.

“Experience shows that many of the errors we see in hospitals are the result of poor communication between health professionals, or a lack of key information being shared, rather than medical incompetence,” Downie says.

“All of our courses now develop skills in communication, teamwork, conflict resolution and reflective thinking as core competencies.

Our aim is to develop health professionals who understand that the patient’s needs are rarely one-dimensional, and that a number of people – including, importantly, the patient themselves – need to work together in the planning of their care. No single profession, working in isolation, has the expertise to respond adequately to the needs of clients with complex issues. This approach will start to shift traditional notions of professional identity, but all for the better, for the patients who are being served.”

While this new breed of doctor may be some years away – the medical school plans to graduate its first students in 2019 – the Health Sciences faculty is already reinventing other healthcare roles to respond to emerging needs. Its new Postgraduate Certificate in Medication and Disease State Management, for example, is upskilling pharmacists to assist patients with the management of chronic disease, while its Master of Nursing (Nurse Practitioner) qualification is expanding the role of experienced nurses, equipping them to prescribe drugs, order tests and refer clients to specialists.

“This reinvention of traditional roles can help to alleviate pressure on the system and prevent medical ‘bottlenecks’ in settings where doctors are in short supply,” Downie says.

“Our healthcare needs are changing rapidly, and our workforce can’t afford to stand still.”

cite_Summer 2011/2012 17
"Many students have difficulty learning scientific concepts from diagrams, and educators don’t know precisely which methods can most effectively help students learn abstract concepts," says Professor David Treagust, an internationally recognised researcher in science education.

"Students may begin with an alternative conception about many phenomena, such as how plants grow or how salt dissolves in water. We need to appreciate their cognitive processes, pinpointing when and how they change their naive conceptions about phenomena to more scientific ones."

Treagust, from Curtin’s renowned Science and Mathematics Education Centre, has a longstanding interest and track record in developing teaching methods that best facilitate students’ learning of scientific concepts.

His work has helped identify learning difficulties in a range of conceptual areas in the high school curriculum. He has also improved the design and development of learning assessments for both secondary and tertiary science education – not only in Australia, but also in numerous countries including the US, South Africa, New Zealand, Singapore and Malaysia.

Treagust’s current project, funded by the Australian Research Council, is investigating the shift that occurs in learning when students begin to develop more scientific thinking. To achieve this, his research team is observing nine secondary school science teachers and their use of visual representations – such as diagrams, charts and graphs – to explain scientific concepts. The students will then explain how helpful the resources were.

"Through this research we’ll be able to improve the design of lessons and improve overall ‘diagrammatic literacy’. The aim is to ensure that students truly understand concepts, and acquire real scientific knowledge, rather than simply possess the information,” Treagust says.

His research team is also assessing the effectiveness of multiple representations, such as analogies and models in the learning of abstract concepts, and will determine the validity of ‘dual processing’, which comprises visual representations and accompanying text.

Treagust is the only Australian to win the American Chemical Society (ACS) award for Achievement in Research for the Teaching and Learning of Chemistry. His research papers have been highly influential in shaping the way chemistry is now taught across the world. In 2011 the ACS – the largest professional scientific organisation in the world – recognised Treagust’s contributions to experimental research that have increased our understanding of chemical pedagogy and led to the improved teaching and learning of chemistry. 

The past 20 years has seen a gradual decline in interest by secondary school students in learning science, but research is underway to address the issue by using better teaching strategies.
Mover and shaker_Chris Wilkie

**CHRIS WILKIE** is happy to be regarded as a disruptive influence.

For the 25-year-old Curtin business graduate, upsetting the status quo is not only his business philosophy, but also a significant factor in his success so far.

One of the most recent products of his lateral approach to doing business is DELUX, an iPhone application for booking chauffeured vehicles, launched in Melbourne in May this year, with plans to go nationwide. Already, the take-up rate for DELUX has exceeded expectations, with Wilkie anticipating he will recoup his start-up costs within seven months of launching.

“I just love the challenge of considering a situation from a different point of view and coming up with new approaches that leverage resources in different ways,” explains the self-confessed serial entrepreneur.

“After my own bad taxi experiences, I decided there had to be an alternative for getting around quickly, at a reasonable cost and in style. A single chauffeur company has a small pool of drivers, which can restrict availability and response times, so I came up with the idea of networking independently run companies to increase that pool, and using mobile technology to streamline the booking process.

“Customers can use the free app on their phone to order the car, determine the fare upfront, track the driver’s proximity to them on a map, and pay for the ride on their credit card – and it only costs a little bit more than a regular cab.”

**WILKIE** added his Bachelor of Commerce qualification from Curtin to existing degrees in psychology and computer science, before heading to Melbourne in 2009 to take up a lead accounting position at BHP Billiton. But the insistent call of his fast-flowing business ideas saw him leave the company in late 2009 to set up Invisible Agents, a business development consultancy for small to medium enterprises. The business is going strong, with five staff and more than 80 organisations as clients.

Another of his ventures, Zingka, is a ‘reverse auction’ website for car buyers that shifts the responsibility for negotiating a good price from often inexperienced purchasers to the car dealers, who compete online for the purchaser’s trade.

Wilkie has never let his age be a deterrent to making his mark in the business world.

“The Curtin commerce degree has a great balance of theory and practice, and addresses a broad range of business requirements,” he says. “While I didn’t have a track record in business, I had enough confidence in my own knowledge and abilities to forge ahead.”

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Nursing her ambitions_Melissa Barrett

**NURSING** is a skilled and demanding profession at the best of times, but a nurse in a rural and remote area must provide consistent, quality medical care for a variety of situations, often under extreme weather conditions and with a lack of the latest medical technology.

Melissa Barrett, lecturer and coordinator of Curtin’s Master of Nursing (Nurse Practitioner) course, not only thrived for more than two decades in the rugged environment of Western Australia’s north-west, she also found the time to qualify as a midwife, study for her Master of Nursing and develop Hit Nit 4 6, a non-toxic, organic spray for killing and removing nits from hair.

After using every commercial head lice product on the market with no success, Barrett used her research skills to find that head lice had become immune to over-the-counter products. Further research indicated the herb wormwood to be effective.

Her product is now produced and sold across Australia.

In 2003 Barrett was among the first nurse practitioners to be registered in Western Australia, which expanded the traditional role of nursing to include, among other tasks, ordering tests and making specialist referrals for patients. She was studying for a Master of Nursing at the time, while also working as a clinical nurse specialist on Cocos Island and for Silver Chain. In 2007 she was appointed senior health research officer at the Combined Universities Centre for Rural Health. She gained her Master of Nursing at Curtin in 2008, and is currently studying for a PhD.

**BARRETT** got her taste for rural and remote nursing when she married a cray fisherman in the 1990s. The couple lived in Geraldton, and Melissa found work with Silver Chain on the Abrolhos Islands, caring for the fishermen and their families who had moved there for the season.

When the fishing was over for the year, Barrett and her family would pack the car and drive north to work in rural communities until the cray fishing season resumed.

She says nurses were always in demand and she enjoyed remote nursing.

“I really like the idea of being able to deal with chronic illness, acute illness and family health, as well as midwifery,” she says.

“You don’t get that same variety in the city. In the metropolitan area, nurse practitioners usually have one of those areas as a specialty, whereas in remote regions, you can cover five different areas in one day.”

Melissa says having the ability to be a nurse practitioner has offered qualified nurses greater job satisfaction, advancement, the ability to gain higher wages and be appreciated for what they do – and still maintain a clinical role.
CHANNELLING SHOPPERS
In the not-too-distant past, bricks-and-mortar retail chain giant Gerry Harvey, of Harvey Norman, dismissed online retailing as ‘dead end’ and refused to consider selling goods online. Later, concerned by declining sales, he spearheaded a failed bid by Australian retailers to convince the federal government to impose duty and GST on online purchases of international products worth less than $1000. Buyers, buoyed by the strong Australian dollar, had been flocking to websites to purchase the same goods for a cheaper price overseas.

In August 2011, in a stunning backflip, Harvey announced 80 per cent of his goods would soon be available online, and outlined an ambitious plan to make a billion dollars from online sales within a decade.

Other major retailers, including Myer, David Jones and Target, have also been examining their online strategies.

Such change, it appears, is inevitable. But Dr Rajat Roy, a lecturer in the School of Marketing at Curtin, does not believe that online retailing means death by a million mouse clicks for traditional retailers.

However, he says retailers must think globally and become ‘multi-channelled’ if they are to survive and remain profitable.

“Ultimately, I think the internet and retailing are not competing with each other,” Roy says. “From a business perspective, multi-channel strategy – that is, e-tailing, bricks and mortar, catalogues and the like – in distribution is the current norm, and consumers prefer such flexibility.”

A consumer may browse the web for information but ultimately purchase a product at the store, where a sales person provides additional help to mitigate the risks involved with the purchase. For high-involvement and ‘touch/feel’ products, such as clothing, the retail structure has the experience and the advantage over the internet. For standardised products like books or CDs, where purchase risks are considerably lower, shopping over the internet may be preferred.

“In Asia, where traditional sales are booming, Roy says the trend is towards ‘retail spectacle’ – a spectacular environment of sights, sounds and branded entertainment with plenty of choice.”

A person might go for ‘adventure shopping’, seeking stimulation and entering a new environment with sights, smells and sounds,” he says. “Or a person might go for ‘social shopping’, spending time with friends and having fun, or ‘gratification shopping’, which offers instantaneous gratification, unlike online.

“All those things add to the experience and create a huge emotional value for consumers; if the retail sector can come up with creative ideas to address that aspect of shopping, there is no reason they should feel threatened.”

School of Marketing research chair Professor Ian Phau, an expert in internet shopping and consumer behaviour, agrees that although some ‘store atmospherics’ could be replicated, online shopping does not give consumers the ability to feel, smell or taste products.

While online shopping has vastly improved its security and ease-of-use over the years, he says. “Bricks-and-mortar retailers, he adds, can carve out a niche by developing unique shopping experiences to create a point of difference and attract customers through the doors.

“While online shopping has vastly improved its security and ease-of-use over the years, it is still difficult to buy products from many international websites, he says. “What local retailers should also do is have more exclusivity in their merchandise – they should import more second and third-tier brands because customers want some rarity,” Phau says.

“They should also push local designers. I have done research in consumer behaviour around the world, and Australians, if there is a choice, will always support local production.”
A three-year research program by Associate Professor Len Collard aims to contribute towards reconciliation by creating a common ground for understanding the local Indigenous geographical heritage of Western Australia’s south-west.

Funded by an Australian Research Council Discovery Project grant and conducted by the Curtin University Sustainability Policy Institute, the research will document the history and Nyungar meaning of more than 30,000 place names across the region.

Collard says his thesis will go a long way towards deepening people’s sense of place. “It will also help residents of the area realise they are part of a special environment, a land sustained by people for more than 50,000 years, and a place to belong, with an identity shaped by this history,” he says.

Collard, who completed a Nyungar language interpretation course as part of his master degree, says much of the research work included cross-referencing between WA’s Landgate database, surveyors’ records, and field notes left by early explorers and residents who lived and worked among the Nyungar people, many of whom acted as guides during early white settlement.

Research gets ICT support

Curtin Information Technology Services has been quick to recognise the growing gap between the information and communications technology (ICT) needs of researchers and the services provided, and has developed a model of eResearch support.

Curtin’s associate director of eResearch Support, Peter Hicks, says there is a need for better support of individual research projects in all stages of their development, particularly in adopting new practices. “Successful research depends on accessing ICT as well as using collaborative, distributed and digital resources to increase scale, scope and speed,” he says.

“The federal government is investing heavily in eResearch through programs such as the Australian National Data Service, and the Curtin research community has been proactive in pursuing opportunities.”

The University has developed new infrastructure, including the eResearch Project Centre as a nexus for IT services and research collaboration.

“It will ensure Curtin researchers benefit from national eResearch initiatives, including the Research Data Storage Infrastructure and the National eResearch Collaboration Tools and Resources project, or NeCTAR. “The centre will soon incorporate iVEC@Curtin, helping connect the whole Curtin research community with the superb facilities being developed at the Pawsey High-Performance Computing Centre for SKA Science at Technology Park,” Hicks says.

Curtin’s chief information officer, Peter Nikoletatos, concurs: “The eResearch Project Centre and collaboration with iVEC are important initiatives. Our focus going forward is about providing Curtin researchers with solutions that offer speed and scale.”

Librarian connects with prestigious medal

Curtin alumna and librarian Anna Hudson has received the prestigious 2010 F A Sharr Medal from the Australian Library and Information Association.

The medal is awarded annually to a Western Australian librarian or library technician in their first year of employment for exhibiting the greatest potential to make a significant contribution to the library profession in WA.

Hudson completed a Bachelor of Arts (Communication and Cultural Studies) at Curtin’s Bentley Campus in 2005. She returned to Curtin in 2009 to complete her Graduate Diploma in Information and Library Studies, and is now studying part-time for a Master of Information Management.

“I am honoured to win the award and feel driven to fulfil the promise to the people who have supported me in the lead up to it,” she says.

The award’s entry requirements included an interview, followed by a 10-minute presentation. Hudson attracted the attention of judges when she spoke about the digital divide: a library term used to acknowledge the gap between technology and computer-literate patrons, and libraries with basic information technology or patrons with a limited understanding of the same.
Curtin University is leading an international collaboration to develop a comprehensive Carer Support Needs Assessment Tool (CSNAT) that will formally assess carers’ needs in supporting their loved ones to die with dignity in their place of choice, usually at home.

The project, funded by the Australian Research Council, is an international collaboration with the University of Manchester, in the UK, the University of Victoria, Canada, and Silver Chain Hospice Care.

Professor Samar Aoun, from the Curtin Health Innovation Research Institute’s WA Centre for Cancer and Palliative Care, says the project is part of the research agenda developed through the international collaboration on family care-giving for the terminally ill, which was established three years ago.

“Most people prefer to die at home, surrounded by their family. However, home-based family care at end-of-life involves significant emotional, social, financial and physical costs,” Aoun says.

“Without more support for family carers, more dying people will be admitted to hospital, which is a very costly alternative.”

Curtin is working with Silver Chain to trial a simple questionnaire for assessing carers’ needs through the process of caring.

If successful, CSNAT may become part of Silver Chain’s routine assessment.

Giving cause for hope

Research by Curtin Professor Peter O’Sullivan and colleagues at Princess Margaret Hospital for Children has resulted in the development of a multidisciplinary team to assist children with complex musculoskeletal pain.

O’Sullivan, a specialist physiotherapist at Body Logic Physiotherapy and researcher in Curtin’s School of Physiotherapy and the Curtin Health Innovation Research Institute, says the research program was prompted by the number of adolescents with pain who did not fit within a diagnostic category.

“One of the important aspects of pain is having an understanding of its cause; not having this can really increase a person’s anxiety about how best to manage it,” O’Sullivan says.

“With no structural or organic disorder showing up on a scan, these young people with pain can fall between the cracks, failing traditional treatments, and then become fearful. The next thing is they start to miss school and withdraw from sporting or social activities.

“By avoiding school and other activities, the adolescent can be setting a pattern for the rest of their life, reinforcing the problem.”

O’Sullivan says understanding that pain can be a disorder of the nervous system – influenced by a person’s beliefs and emotions, as well as lifestyle and physical behaviours – has led to dealing with it in a multidimensional manner.

More: physiotherapy.curtin.edu.au/research/index.cfm

tel: +61 8 9266 4155
johncurtingallery.curtin.edu.au

HELPING THE HELPERS

up_coming events

JOHN CURTIN GALLERY
U-Ram Choe
3 February – 2 March 2012
In his first solo exhibition in Australia, Korean artist U-Ram Choe presents his extraordinary kinetic sculptures. Finely engineered stainless steel, aluminium, and acrylic ‘bones’ provide the skeletal scaffolding for the ‘brains and muscles’ – central processing units and motors – which are assembled into captivating forms reminiscent of otherworldly flora and fauna. The exhibition is part of the 2012 Perth International Arts Festival.

FutureGen
19 March – 11 May 2012
An exciting new project directed by FotoFreo’s founder Bob Hewitt, FutureGen will profile the best emerging photo-media talent from around Australia, and includes talent from China, where a similar program is being undertaken.

Tel: +61 8 9266 4155
johncurtingallery.curtin.edu.au

HAYMAN THEATRE
Hedda Gabler
1–3, 7–10 March 2012
Philip Miolin, in conjunction with the Hayman Theatre Company, will explore the fury, cunning and duplicitous scheming embodied within Henrik Ibsen’s classic play, which relentlessly threatens to fracture the fragile dependence on self-deception and material distraction that each of the character’s sanity, and ultimately lives, depend.

Hayman Theatre Upstairs at 7.30 pm
Tel: +61 8 9266 2383 or l.brennan@curtin.edu.au
Curtin’s Vice-Chancellor says she is proud to be leading the University’s development and growth in an increasingly globalised world.

STORY PROFESSOR JEANETTE HACKET PHOTOGRAPHY JAMES ROGERS

THE VISION for Curtin is clear: the University will be an international leader, shaping the future through our graduates and globally renowned research. It will be engaged internationally and provide significant examples of leadership. We aim to be positioned among the top 20 universities in Asia by 2020, and there are specific ways we intend to achieve this.

Three years ago, Curtin’s Council members and senior executives laid out our clear objectives for the future, contained in the Strategic Plan for 2009 to 2013. We aim to provide education with an international perspective so that our students have a global view of their discipline. We want students to engage in international opportunities, whether through mobility or engagement with overseas students on shared projects.

Research is also an area of vital importance to us. Curtin has many examples of international research partnerships. For example, one of our researchers, Professor Chun-Zhu Li, is involved with renewable energy and biomass in a joint national laboratory in China – a program that the University, through its linkage with the Australian Technology Network, is seeking to expand.

Our proposed medical school is an area where we believe we can also make a significant impact in the community and respond to Australia’s healthcare needs. Due to the growing demand on Australian health care from our ageing population, one of the federal government’s key health policy objectives is to offer better primary health care – that is, keeping people well and out of hospitals. Our proposal is to educate our doctors in an interprofessional environment; teams of doctors, nurses, physiotherapists and psychologists – students from all disciplines will work together as they would in a professional environment. We have already moved to a common first year in health sciences, and we hope to start a medical school in 2014, dependent on the Australian Government allocating sufficient medical places.

We also have a vision to develop Curtin’s Bentley Campus by bringing in related and synergistic external parties that can work collaboratively with us in education and research – a proposition which is attractive to industry as well as students and staff.

The proposed Curtin Town would provide Western Australia’s third-biggest density of knowledge workers, and act as a major contributor to the economy and livability of Perth.

We have already completed a major resources and chemistry precinct, and aim to attract more of WA’s key minerals and energy companies to the site to help them access research, as well as give our students practical skills and possible employment. It would then complement developments at Technology Park, and link to our information and communications technology centre, which has enormous computing capability for academic research, and is a magnet for both industry and academe.

IN GENERAL, we seek to provide a learning environment which incorporates many international staff, a cosmopolitan student population, and international engagement and opportunities. We are growing our research internationally and want to benchmark our work against regional leaders, so we are always looking for best practice.

We are committed to ensuring that Curtin’s research is among the world’s best and is increasingly focused on areas where we can be globally renowned. It is also important that the University is able to adapt its educational programs to meet the changing needs of students. We already work very closely with industry to develop education programs that create industry-ready, professional graduates, and people in WA certainly identify that as a distinctive feature.

We see Curtin as influencing the future of our community, both through our graduates and our research. We do not want to be isolated and theoretical – we want to make a difference in our community, and we want to be strongly engaged.

in_perspective
Curtin University is Western Australia's largest and most diverse university. Curtin strives for excellence in teaching, and offers a wide range of courses in business, engineering and science, minerals and energy, sustainable development, health sciences and humanities.

The University is committed to building world-class research capability through partnerships with business, industry, government and community organisations. Curtin has a growing international presence, with an offshore campus in Sarawak, East Malaysia, and with Curtin Singapore, and runs offshore programs in six countries.

The University is named after John Curtin, prime minister of Australia from 1941 to 1945, and strives to honour his values of vision, leadership and community service.

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Philanthropy at Curtin makes a difference. It establishes new scholarships, creates new research centres and contributes to other projects, such as developing innovative student learning spaces. Philanthropy enables us to impact the communities we serve. Donations to the Curtin University Foundation go towards improving our education and research, which plays a priceless role in improving the standard of living for our local community and people around the globe.

The Curtin University Foundation thanks Curtin alumni, parents, students, corporations, foundations and other friends of the University who have helped to impact the lives of our students through their philanthropic support.

HOW YOU CAN HELP
If you have been inspired by any of the stories in this edition of Cite and would like to support the foundation, you can do so as follows:

By cheque payable to Curtin University Foundation or online at donate.curtin.edu.au

The Curtin University Foundation
GPO Box U1987 Perth WA 6845
Tel: +61 8 9266 9803
Email: giving@curtin.edu.au

Please don’t hesitate to get in touch if you would like to know more about the Curtin University Foundation and its work.

Curtin University Foundation. Helping make tomorrow better – together.

GIVING TO THE JOHN CURTIN GALLERY

Established in 1967, the Curtin University Art Collection has grown to become one of the largest public art collections in Western Australia. Building on a foundation of focused acquisition programs, the collection has increasingly benefited from major donations by artists and private art collectors. These donors are deeply passionate about the transformative role that art can play in our lives and, through the John Curtin Gallery’s involvement in the Australian Government’s Cultural Gifts Program, they have found the perfect vehicle to share their passion with the wider community. Their generosity plays a crucial role in the continuing development of Curtin’s Art Collection.

Chris Malcolm
Director, John Curtin Gallery