Wriggling
Finding cures for worms and worms for cures

Revving
Algae to fuel your car and feed your cow

Growing
What we mean when we talk about population
Australia is regarded on some criteria as a young country but we already have five universities that have existed for more than 100 years with the oldest more 150 years. Universities once established tend to be around for a long time.

We have been celebrating James Cook University’s 40th birthday this year and it is almost 50 years since we first began offering northern Queenslanders the opportunity to access locally a tertiary education.

From the small group of 140 students enrolled at the University College Townsville on that first teaching day in 1961 we have grown to more than 18,000 students, and in second semester this year more than 400 new students joined the JCU family on the Townsville and Cairns campuses alone.

We have become a comprehensive university with a strong emphasis on research and it is worth noting that in the 2011 edition of the Good Universities Guide published in August, our ‘research intensivity’ rating earned four stars. In our State only the University of Queensland earned the top rank of five stars and the Queensland University of Technology was the only other university in the State to pick up four stars.

It has been a deliberate strategy on the part of JCU from its very beginnings to have a strong focus on research and particularly on matters relating to the tropics. It is a strategy and an emphasis that differentiates us from all other Australian universities.

But what of the future? A significant birthday is a time not only to celebrate achievements but also an appropriate occasion to look ahead.

Do we aim to just keep growing with more and more students benefitting from a JCU experience? Do we continue to concentrate on our strengths and emphasis on the tropics? Do we look for more campuses or build and improve the ones we already have? Where do we think JCU is going and where do we think it should be going?

These and many more questions are ones I believe we should engage both internally and with the wider community. At the age of 40 we have reached a level of maturity – although still very young in the life of a university – and we owe it to the generations of students to come to continue to develop. It’s a question of where and how.

Many of today’s students will be around to celebrate the centenary of JCU in 2070. What will those alumni think of James Cook University then?
Professor Bill Laurance has been awarded an Australian Laureate Fellowship worth more than $1.6 million over the next five years.

He is one of 15 world-class researchers to be made an Australian Laureate Fellow.

Innovation Minister Senator Kim Carr said the Fellowships gave outstanding research leaders the opportunity to solve big problems and pass on their skills to the next generation.

“These 15 top-flight researchers and their teams will receive a total $35.5 million,” he said.

Professor Laurance’s research focuses on the mounting threats including forest fragmentation, road expansion, and destabilising synergisms between climate change and fire.

A Distinguished Professor and Tropical Research Leader based in Cairns, he joins two other JCU academics as a recipient of the top fellowships from the Australian Government.

Professors Terry Hughes and Michael Bird both hold Federation Fellowships, the predecessor of the Laureate award. Professor Hughes is a two-time recipient of the Fellowship.

Senator Carr said that consistent with their high international standing, the 15 Australian Laureate Fellows would collaborate with research partners from 28 countries.

Professor Laurance was recently elected to the Prince Bernhard Chair for International Nature Conservation at the University of Utrecht in the Netherlands.

He will occupy the position for five years, spending one month each year in Europe, carrying out research on tropical conservation and sharing his knowledge with European conservationists, students, researchers and policy-makers.

Professor Laurance said he was delighted by the appointment and was looking forward to working with European researchers on the theme of nature conservation in the tropics.

"Tropical rainforests all over the world are under extreme pressure," he said. "As scientists, we cannot permit ourselves to stand by and watch the devastation continue."

Breeding Nemo

An estimated 30 million ornamental fish are harvested annually from coral reefs, but Nemo and friends can relax a little, thanks to a pioneering project at JCU in Townsville.

Researchers hope that breeding ornamental fish, such as the Coral Sea Lyretail Blenny, the Banggai Cardinalfish and various clownfish, will reduce pressure on wild populations.

"The aquarium hobby has become increasingly popular worldwide, fuelling the rapid growth of the marine ornamental trading industry," said Dr Chaoshu Zeng, who leads JCU’s Tropical Aquaculture Research Group.

"Specimens collected from the wild account for more than 97 per cent of the industry’s current supplies and the cost to reef biodiversity is high."

"To help combat this, our research group has developed captive breeding techniques for a range of popular, highly-prized marine ornamentals."

While the idea of breeding ornamental fish was not new, Dr Zeng said the techniques they had developed were unique.

"In the past, marine ornamental breeding has been attempted, but with little success due to the complexity of techniques involved."

"However, our work in recent years has addressed all of the major issues and we have successfully developed culture techniques for several popular species, including the Forktail and the Lyretail Blenny – a world first."
“The interesting thing about parasitic worms is that developing countries are keen to get rid of them, but some people in the developed world would benefit from having a few worms living in them.”

And that’s why hardly anyone ever asks Alex Loukas, over dinner, “How’s work going?”

Professor Loukas is a Tropical Leader at James Cook University in Cairns and a member of the Queensland Tropical Health Alliance, which brings together researchers at JCU, the Queensland Institute of Medical Research, Griffith University and the Queensland University of Technology.

A Research Fellow funded by the National Health and Medical Research Council (NHMRC), he specialises in worms that parasitise humans and is editor-in-chief of the International Journal for Parasitology.

“In terms of public health, parasitic diseases caused by worms rank second only to malaria, affecting hundreds of millions of people,” he said.

In human trials just underway in Brazil, Professor Loukas and his collaborators are testing a vaccine for hookworm, a leading cause of anaemia and protein malnutrition in developing nations of the tropics.

“Hookworm is usually contracted via skin contact with soil that is polluted with faecal matter containing hookworm eggs,” Professor Loukas said. “There’s a treatment available, but it’s not preventive, so people keep getting reinfected. A vaccine could break that cycle.”

After the hookworm larvae penetrate the skin the parasite manages to avoid the attention of

Bloodsuckers beware

Professor Alex Loukas with cultivated hookworms. Photographer: Jake Nowakowski © Newspix

The hookworm buries its head in the gut wall, feeding on the host’s blood.
the body’s immune system. The larval worm travels to the gut, where it matures to adulthood and buries its head in the gut wall, feeding on the host’s blood.

Research supported by the Bill and Melinda Gates Foundation and the NHMRC has delivered not just a potential solution, but also a sense of poetic justice.

“We’ve characterised an enzyme the worm uses to digest human blood and, based on that, we’ve developed our trial vaccine. Our hope is that the vaccine will teach the body’s immune system to attack the hookworm when it produces that enzyme, which is to say, right when it’s feeding.”

In 2011 Professor Loukas hopes to begin human trials of a vaccine for another important worm infection, schistosomiasis. Again, there is a treatment available, but reinfection is the problem, with more than 200 million people infected by schistosome parasites.

The story of worms and human health is not as simple as ‘two legs good, no legs bad’.

Another research focus for Professor Loukas and his colleagues involves harnessing that worm-ish ability to turn the human immune system down a notch.

“Populations with a high incidence of worm-related diseases have low rates of allergy and auto-immune disorders – conditions like coeliac disease, Crohn’s and asthma – that involve the immune system turning on itself or otherwise innocuous substances.”

Other researchers have successfully treated Crohn’s disease patients by infecting them with pig whipworm, and we are currently trialling hookworm with coeliac patients.”

Flukes, snails and cancer

In a project supported by the NRMRC and US National Institutes of Health, Professor Loukas and his research team are also investigating how the human liver fluke causes cancer.

This parasite, hosted by freshwater snails, infects millions of people in South-East Asia. It is particularly common in northern Thailand, where raw fish is a staple food.

“There’s a very strong correlation between having liver fluke and developing cancer. One-sixth of those infected develop cancer of the bile ducts, which has a high mortality rate,” he said.

“With our Thai colleagues, we’re investigating how the parasite causes cancer. We suspect that while the liver fluke is feeding in the bile ducts it releases molecules that trigger a wound repairing mechanism, which causes cells to proliferate at a cancer-inducing rate.”

Liver fluke is a serious problem in northern Thailand where raw fish is a staple food.
In the past, baby algae dreamt of growing up and one day becoming big and powerful seaweed. These days, it can fantasise about powering a Ferrari, thanks to a revolutionary algae-to-fuel process being developed at James Cook University in Townsville.

In a joint project between MBD Energy Ltd and JCU, the North Queensland Algal Indentification/Culturing Facility is using captured carbon dioxide to feed algae, which in turn produces both biodiesel and feedstock.

The project has recently taken a large leap forward, after an historic agreement with a US company.

“This agreement between MBD Energy and OriginOil is a huge development,” said the Facility’s Director, Associate Professor Kirsten Heimann.

“It means biofuel is one step closer to becoming a viable competitor to crude oil-sourced petroleum.”

Under the agreement, OriginOil Inc will equip MBD Energy with its breakthrough technology to extract oil from algae.

Trials will now match OriginOil’s extraction technologies to MBD’s carbon dioxide-to-energy system.

The algal synthesisers will use captured smokestack carbon dioxide emissions as feedstock to rapidly grow oil-rich algae in the company’s proprietary design solar membranes.

MBD Energy has already reached agreement with three of Australia’s largest coal-fired power generators to build MBD Bio Carbon Capture and Storage (Bio CCS) Algal Synthesiser test facilities adjacent to their utilities in Queensland, Victoria and New South Wales.

OriginOil and MBD have agreed that, subject to the success of the initial test phase, MBD will look to incorporate significantly larger oil extraction units to serve the facilities planned at Tarong Energy (Queensland), Loy Yang A (Victoria) and Eraring Energy (New South Wales).

MBD’s managing director Andrew Lawson said each of the three current power station Bio CCS algal synthesiser projects had the potential to grow to 80-hectare commercial plants.

Each would be capable of producing 11 million litres of oil for plastics and transport fuel, plus 25,000 tonnes of drought-proof animal feed, expanding to eventually consume more than half of each power station’s problem flue-gas emissions.

“We are delighted at becoming OriginOil’s first major customer and at working with the OriginOil team to forge a comprehensive commercial relationship as real potential game changers in the exciting third generation bio-fuels space,” Mr Lawson said.

Associate Professor Heimann said there was now potential for expansion to major greenhouse gas emitters in the US and internationally, as well as a significant opportunity to provide local oil and energy security from existing carbon infrastructure.

“The environmental benefits of using algae to create biodiesel and feedstock are enormous,” she said.

“Algae require large volumes of carbon dioxide to grow, which means less carbon dioxide is released into the atmosphere.

“Companies that do produce carbon dioxide will eventually be able to claim credits, as the carbon dioxide can be stored or captured and released into algae farms.” — Caroline Kaurila
Questions of the Art

The mesmerising stories and designs of the Torres Strait vividly depicted in Alick Tipoti’s intricate linocuts leave no doubt; he is an Indigenous artist.

Yet the question of what constitutes Australian Indigenous art remains moot. That question, and others vital to the future of the industry, will be discussed at the second Cairns Indigenous Art Fair Symposium at Tanks Arts Centre in Cairns on August 21.

Keynote speakers include Mr Tipoti and Dr Brenda Croft, who has played a key role in the development and understanding of Indigenous art in Australia. A lively part of the Cairns Indigenous Art Fair, the Symposium will bring together Indigenous artists, industry professionals, academics, activists, students, dealers, publishers, collectors and media. They will discuss the rights, opportunities and responsibilities of artists as ambassadors and cultural custodians and examine the new Indigenous Australian Art Commercial Code of Conduct.

Head of JCU’s School of Creative Arts, Professor Ryan Daniel, says there is a very strong tradition of Indigenous art making in this country, with no immediate end in sight for the debate about what constitutes Indigenous art or an Indigenous artist. “Some don’t like being referred to as Indigenous, they just want to be known and referred to as an artist, whereas others want to be known as an Indigenous artist producing art,” he says.

There are more questions, Professor Daniel says. “What sort of art should Queensland be promoting, whose role is it to support new contemporary Indigenous art and how should we be encouraging young Indigenous artists to develop their practice?”

The Symposium will foster debate on issues including ownership, royalties and cultural rights. One hot topic of discussion will be the Indigenous Commercial Code of Conduct, introduced a year ago to secure the future of Indigenous artists. Professor Daniel says the Code deals with a number of issues including royalties and the minimum standards for the sale and management of artworks. “Just how the Code is faring in practice and whether it is alive in the industry should become clear at the Symposium, as artists and galleries give their experience of it.”

And what is the general perception of Indigenous art? Professor Daniel believes there are still many whose only experience may be of the dot paintings common to Western Desert art. The Cairns Indigenous Art Fair is certainly playing a role in turning the spotlight on Indigenous art, last year attracting 10,000 visitors and selling more than $500,000 worth of art.

“It is a wonderful time for Indigenous artists to be involved in the industry and the vision of the Fair is that we see many more examples of Indigenous artists making a solid living from their practice,” Professor Daniel says.

—Liz Inglis
To snorkel or dive on the Great Barrier Reef for the first time is to discover a beautiful and bizarre new world below the sea.

But Dr Robin Beaman, a researcher in JCU’s School of Earth and Environmental Sciences, says we’re still only skimming the surface of the underwater landscape.

“Coral reefs comprise only 5-7% of the geographical area of the Great Barrier World Heritage Area, and even the most experienced will dive as deep as only 40 metres,” Dr Beaman said. “So I’ve been working on a way to get to the bottom of it.”

After three years of research including ocean-going expeditions for data gathering and mapping, Dr Beaman has produced a 3D digital elevation model of the Great Barrier Reef and the Coral Sea.

“Previously we’ve had little understanding of what exists below 200 metres, so it’s very exciting to be able to map from the coastline all the way down to the deep abyss.”

The model covers an area of three million square kilometres and can represent seabed features down to 100 metres in size, revealing the seafloor in unprecedented detail.

“At that scale we’re able to show the true shapes of the coral reefs, including the older and deeper Pleistocene bases upon which the modern reefs are built,” Dr Beaman said.

“Users can see vast, underwater dune fields, the strange-looking algal reefs on the northern Great Barrier Reef shelf, and a nearly unbroken line of fossil barrier reefs over 900 kilometres long, rimming the shelf edge.”

Creating the 3D model has been an enormous undertaking.

The model is based on source data collected via a wide range of techniques including multibeam and singlebeam echo sounders, airborne laser and satellite bathymetry.

Dr Beaman liaised with multiple Government agencies and other researchers who have collected bathymetry [underwater depth and topography] data over the years. He participated in three surveys using Australia’s largest blue-water research ship, the RV Southern Surveyor.

The result was a wealth, or perhaps a nightmare, of digital information about the seabed. When Dr Beaman
says: “I had more than 900 million individual depth points to edit and clean of noise,” you can tell he’s relieved to be speaking in the past tense.

In collaboration with Scripps Institution of Oceanography he devised a process to convert all those data points into a gridded surface, which can then be viewed as a digital map.

“As you cruise along the continental slope you can see dozens of submarine canyons that plunge deeper than two kilometres, and on the Queensland Plateau the model is detailed enough to reveal the results of underwater landslides.”

Future uses for the 3D model are myriad. It will allow oceanographers to accurately map currents and biologists to target important sites for studying deep-sea marine life.

Oceanographers at AIMS will use the grid to simulate current flow within a whole-of-reef hydrodynamic model, studying the effects of water quality changes on the Great Barrier Reef.

Importantly, the model can also be an educational resource, with the next step being to convert the model into a range of file formats for public access.

“I think that’s critically important,” Dr Beaman said. “Australians are custodians for the largest World Heritage Area on the planet, and to do justice to that role we need to know a lot more about what’s down there.”
Eight James Cook University academics have won national recognition for excellence in teaching.

The four individual recipients and one group have received $10,000 citations for outstanding contributions to student learning, awarded by the Australian Learning and Teaching Council.

The JCU winners are:
Dr Raoul Adam from the School of Education;
Dr Marie Caltabiano from the School of Arts and Social Sciences;
Associate Professor Susan Gordon, Ms Marianne Bonassi, Dr Marion Gray and Ms Anne Jones from the School of Public Health, Tropical Medicine and Rehabilitation Sciences;
Dr Josephine Pryce from the School of Business;
Dr Lindsay Harrington from the School of Marine and Tropical Biology.

Vice-Chancellor Professor Sandra Harding said the citations showed the teaching side of the University ranked alongside its world reputation as a research institute.

“These awards confirm our position as one of the leading teaching and research institutions in Australia,” Professor Harding said.

'Shepherd's Pie' was the codeword Lorna Hempstead's family used, in order to keep from her the news that she was a contender for the Queen's Birthday honours list.

Lorna was awarded a Member of the Order of Australia (AM) for her service to the arts as an administrator in theatre and dance, and service to the community through a range of heritage, tourism, aged care and educational institutions.

“The codeword and secrecy worked. I was taken completely by surprise,” she said. “I knew nothing of the nomination until the letter from the Governor-General’s office arrived.”

In addition to her many roles in Townsville’s theatre, tourism and community sectors, Lorna served on three consecutive University Councils and is now Associate Director of Engagement at JCU.

Community work is a pleasure, Lorna said. “Townsville has a vibrant professional arts community which is keen to collaborate, share information and work together.”
Questions of population

Dr Sue Bandaranaike is no clairvoyant but, as a social demographer in JCU’s School of Earth and Environmental Science, she is frequently called upon by the media to predict future population trends and suggest solutions to population-related issues. She specialises in demographic analysis and profiling with a focus on youth populations and regional communities.

Population has always attracted plenty of media interest, but in the lead-up to the federal election it has been centre-stage. Population questions are complicated but, whether they’re writing for the Financial Review or Cleo, journalists often want a response on the spot.

I have learnt to be cautious. A light-hearted remark or a generalisation can come back to bite you. For example a throwaway comment on local concerns about ‘interstate interlopers’ in Cairns led to: Territoriality, Dr Bandaranaike explained, is closely linked with fear caused by questions zooming around like fruit bats at dusk in the heads of Far Northerners. (Weekend Post, 11.04.09)

Most interviewers expect a quick summary of the statistics followed by a definite opinion, but the numbers don’t always tell the whole story.

If I am asked to comment on the likely future of a town or a region then certainly the figures on population decline, age, low fertility and low productivity might tell the story of a place without much of a future.

But I also need to look at that community’s human and social capital – is it a good place to raise children or to retire, does it have a good high school, are the residents supportive and entrepreneurial? This can give an entirely different perspective.

Talking about population can be a very different conversation, depending on whether you are considering the demographics at a national, state, or regional level.

Quite soon after Julia Gillard became Prime Minister she was keen to distance herself from the idea of ‘a big Australia’, but at a regional level I find that people usually welcome evidence of ongoing growth.

If the space of two days I recently dealt with demographic enquiries from two regional cities, Cairns and Newcastle. Cairns media sought analysis of their city becoming Australia’s fastest growing city, and Newcastle wanted comment on their population growth. Both were pleasantly surprised when told their growth should continue, with large numbers of youth migrating to both cities, against the usual trend of outmigration from regional centres.

In general, demographic concerns raised at a regional level are about population decline – the rural drift, small town population downturn, industries in crisis, and the effects on families and host towns of fly-in-fly-out mining operations.

In contrast, the most common demographic inquiries at a national level include population growth and predictions, future sustainability and of course immigration and settlement issues, including entry of illegal immigrants.

There is some crossover, of course. At both the regional and national level I hear concern about the sustainability of an aging population.

And, like all demographers, I am asked to explain ‘them’. Why are young people more anti-social than they were in our day? What are ‘Cougars’ really like and what motivates them? Should Muslims be allowed to have their own denominational schools? What’s with Generation Y?

I do my best to reflect on the relevant data, and help to distinguish between real population trends, urban myths and our perennial caution about change and difference.

I tried to imagine what research could have produced the conclusion that Australians are more wrathful, greedy, slothful, proud, lustful, envious and gluttonous than any other nation on the planet. And then, if this were true, what characteristics in our population cause such bad behaviour? Some questions, perhaps, are beyond demographic analysis.

Dr Sue Bandaranaike is an adjunct lecturer in JCU’s School of Earth and Environmental Sciences.
A 40th anniversary traditionally warrants a gift of rubies, but JCU’s 40th birthday celebrations were a combination of recognition and reminiscence.

“However some of our guests were able to trace their connections back even earlier, to the very first days of our predecessor, University College.”

Launching the celebrations JCU’s Vice-Chancellor, Professor Sandra Harding, looked to the future.

“Universities are enduring in their nature. They are one of the very few social institutions that live for centuries,” she said. “James Cook University will be here in 100 years and more, and our focus must be on forging an ever-stronger platform for the growth and development that will come.”

“The challenges in the tropics of today are great, but there is much more on the horizon. This zone of the world will experience colossal shifts – political, social, environmental – alongside higher than world-average rates of economic growth in the decades to come.”

In addition to many reunions, a photographic exhibition, campus tours and a glamorous version of the traditional toga ball, the celebrations were also an occasion for recognition.

Outstanding Alumni Awards were presented to 14 graduates, nominated by their faculties as being particularly outstanding in their professions. Five younger graduates were recognised as outstanding early-career alumni.

In a moving ceremony, the two creeks that run through the JCU Townsville campus were given names recognising the traditional owners. The creeks are now the Wadda Mooli [meaning both welcome and goodbye in the Birrigubba language] and Goondaloo [meaning emu country in Wulgurukaba].

“In this, we join our two histories, that of our namesake, James Cook, the great British explorer and navigator, and that of Aboriginal and Torres Strait Islander peoples, recognising both their involuntary sacrifice and what was authentically and powerfully here, in our tropics, for 50,000 years,” Professor Harding said.

As part of the 40th Anniversary celebrations JCU recognised the following outstanding alumni.

Professor Tony Bacic
Dr Andy Carroll
Professor Peter Coaldrake
Dr Peter Crossman
Mr Nigel Dews
Dr Peter Isdale
Ms Andrea Della Mattea
Dr Sue Meek
Professor Martin Nakata
Professor Derek Smith
Mr Bill Twedell
Professor Emeritus Ray Volker
Dr Meryl Williams
Professor Ian Young
Outstanding early-career alumni
Dr Chris Fulton
Ms Raneet-Lee Crosby
Gr David Crisafulli
Dr Deanna D’Alessandro
Ms Sarah Chapman

Vice Chancellor, Professor Sandra Harding, looked to the future. Photography: Through the Looking Glass.

Staff member Alex Salvador sets the beat for JCU’s 40th birthday celebrations. Photographer: Kristof Schrader
When the world expresses its horror at the sight of oil-soaked pelicans in the Gulf of Mexico, Professor Alexandra Aikhenvald wishes she could draw such attention to places like the Amazon and the Sepik River area, where people are losing their cultural identities as a result of globalisation.

Professor Aikhenvald is a Research Leader (People and Societies of the Tropics) at JCU’s Cairns Institute, and co-ordinator of its Language and Culture Research Group.

She is the recipient of a number of competitive grants from the Australian Research Council and was recently appointed Deputy Dean of Graduate Research Studies.

Professor Aikhenvald’s academic achievements are many, but their ramifications for the people whose languages she studies are even greater.

“Losing language is perhaps even more of a catastrophe than an environmental disaster because it is less tangible,” she says.

“The public despairs about the brown pelicans, but if you go into a little village in Papua New Guinea where they no longer use their elaborate language, you will find they are losing their diversity and identity. They try to adopt the values of mainstream society, only to become marginalised and not quite accepted. So when they move to cities they live on the fringe and many end up in jail.”

It is easy to get caught up in Professor Aikhenvald’s enthusiasm as she explains how vital it is to analyse language.

As a child in the Soviet Union she hated school, despising the “lies and limitations” of the Soviet education system. So the tenacious 12-year-old with a fascination for Latin began writing “I don’t want to go to school” in as many languages as she could, eventually accumulating 60.

Her next act of defiance was joining an underground movement studying Hebrew at university. “Modern Hebrew was a forbidden language because it represented the Zionist state. My parents were dissident, but even they were worried, telling me I would be kicked out of uni,” Professor Aikhenvald says.

Ironically, her first major academic publication was The Grammar of Modern Hebrew (1990, second edition 2009). Writing this grammar was her major assignment as a member of the Department of Languages at the Institute of Oriental Studies in Moscow. But she could not tell her immediate boss how she had learnt the language: “I had to pretend I had learnt Biblical Hebrew at the University and had acquired Modern Hebrew overnight.”

Today, the passionate linguist is fluent in more than a dozen languages with a working knowledge of many more. There are numerous publications bearing her name. Imperatives and Commands is about to be published and Languages of the Amazon is well underway.

As one of JCU’s Tropical Leaders, Professor Aikhenvald is creating an anthropological linguistics course for students to study languages and culture, which she believes will benefit indigenous languages from the Cairns area and Papua New Guinea.

Graduates could aim for careers in areas including social justice, land rights advocacy and as translators. Or, like their teacher, they could help save the precious knowledge and nuances of remote cultural groups.

― Liz Inglis

Humboldt Research Award

Professor Alexandra Aikhenvald has been awarded a highly prestigious Alexander von Humboldt Research Award. The German award recognises her research and teaching. It will allow her to undertake a prolonged period of research with colleagues at the University of Cologne, where she will focus on “the habitats of language”, investigating the ways in which the language we speak can reflect the physical and cultural environment.
Sport – it might be just be a game, but the side effects can be life-threatening.

Associate Professor Frances Quirk, from James Cook University’s School of Medicine and Dentistry and Department of Psychology, has examined why professional athletes may be at greater risk of developing depression or contemplating suicide.

Associate Professor Quirk presented *Professional sport and mental health – is depression a sports injury?* as part of JCU’s Science on the Strand lecture series.

She explored why and how professional athletes might have an increased risk of developing depression.

“The factors which may increase this risk are the pressures of competition, high expectations from others, maladaptive perfectionism, injury, over-training and immune suppression,” she said.

“Some of these biological and behavioural factors can lead to inflammatory processes that affect the brain and increase the risk of depression and alcohol or substance abuse.”

A number of elite Australian athletes have disclosed histories of depression and suicidal thoughts that have led to retirement from sport or a change of career.

“Some well known names have written books about their experiences and started or helped with charities and events that highlight and support individuals with depression,” Associate Professor Quirk said.

Depression and suicide risk may be more of an issue for male athletes than female athletes, but early treatment was the key for either gender, she said.

“The issue with treatment is actually recognising that an athlete is depressed in the first place, and ensuring that they are referred to a health professional with knowledge of the risk factors in sport.”

“Reduction in physical exertion is probably also a key part of recovery but this may have implications for continuing competition at the time.”

Michael Cattoni has a plan to get Townsville on its feet.

The JCU Bachelor of Planning graduate recently won the 2010 Minister’s Town Planning Prize with his plan for a sustainable future for his hometown.

In his entry Mr Cattoni developed a land use strategy to accommodate Townsville’s projected population growth over the next 20 years.

“Ensuring facilities are within walking distance is crucial to the city’s sustainable development,” he said. “That’s the key message of my entry.”

The Townsville-born and raised Mr Cattoni said the local population was expected to grow from today’s 180,000 to as many as 300,000 by 2031.

“In the past, Townsville’s population growth had been catered for by primarily low-density residential development on the urban fringe.

“My focus is on finding a more sustainable solution, by defining a series of nodes where higher density development should be encouraged.”

People living in any of the development nodes would be within 10 minutes’ walk (800 metres) of the key facilities they need to live, work and play.

Full-time work and the birth of her fourth child just days before graduation didn’t stifle Tan Yee Pin’s academic aspirations.

The student at JCU Singapore received her degree at this year’s ceremony in Singapore and was given the Top Student award for her course, as well as the University’s Top Student award.

Almost 300 graduates attended this year’s JCU Singapore graduation ceremony, formally receiving their degrees from the Faculty of Law, Business and the Creative Arts and the Faculty of Arts, Education and Social Sciences.

Chancellor Lieutenant General John Grey AC welcomed 1100 guests and graduates to the ceremony at the Shangri-La Hotel Singapore.

The occasional address was delivered by Ambassador Mark Hong, Vice-Chairman of the International Committee of the Singapore Business Federation and a Visiting Research Fellow at the Institute of Southeast Asian Studies.

Ms Emily Pakivathy received the top student award for the Master of Business Administration and spoke on behalf of the graduates. She encouraged all graduates to thank their families, friends and teachers for helping them achieve their goals and pursue their dreams.
A rare find

The distinctive branching pattern of the rare Pacific elkhorn coral. Photograph courtesy of Dr Maria Beger.

Coral researcher Dr Zoe Richards has discovered what could be the world's rarest coral, Pacific elkhorn coral, during underwater surveys of Arno atoll in the Marshall Islands.

“When I first saw it, I was absolutely stunned,” she said. “The huge colonies – five metres across and nearly two metres high with branches like an elk's antlers – were like nothing I’d seen before in the Pacific Ocean.”

The rare coral bears a close physical resemblance to the critically endangered and fast-vanishing elkhorn coral (Acropora palmata) of the Atlantic Ocean, but genetic analysis has shown it to be a different species.

“So far I have only found this new population of coral along a small stretch of reef at a single atoll in the Marshall's group,” Dr Richards said. “It grows in relatively shallow water and, so far, fewer than 200 colonies are known from that small area.”

Like its Atlantic namesake, Pacific elkhorn coral has blade-like branches radiating from large central stalks.

“Its colonies are by far the largest of all the Acropora colonies observed at Arno Atoll, indicating that they are relatively old,” Dr Richards said.

Dr Richards is based at the ARC Centre of Excellence for Coral Reef Studies and James Cook University.

The rare coral poses a conservation dilemma.

Whether this is an entirely new species is subject to scientific debate.

Dr Richards has found a similar description, from 1898, of a coral found near the Fijian island of Rotuma and identified as Acropora rotumana.

“Unfortunately at this stage, we do not have any genetic material of A. rotumana to confirm whether or not it is the same species as the Pacific elkhorn,” Dr Richards said.

The uncertainty surrounding the taxonomic status of the Pacific elkhorn poses a conservation dilemma.

Currently the Pacific elkhorn would be rated by the International Union for Conservation of Nature as ‘data deficient’, meaning there is insufficient information to determine whether it is threatened, vulnerable or critically endangered.
In May JCU Singapore’s alumni combined their annual get-together with a celebration of the University’s 40th birthday.

The Chancellor, Lieutenant General John Grey AC, welcomed everyone to the Shangri-la Hotel and the Vice-Chancellor, Professor Sandra Harding, spoke on JCU’s history and its development in the past four decades.

The annual alumni gathering is a lively social event, and a chance for graduates to reconnect, as well as establishing new contacts within the JCU community.

A highlight of this year’s gathering was a special Bhangra performance. This is a form of music and dance that originated in India’s Punjab region – it soon had alumni and staff showing off their best dance moves.

It’s official; JCU’s Veterinary Science students know their beef.

A team of 13 students took out first place in the Beef Carcass Class at the Intercollegiate Meat Judging Competition in July.

“As a vet your knowledge of the supply chain doesn’t end at the farm gate,” Dr Tony Parker, the team’s coach and lecturer said. “It’s important for our vet students to understand about meat quality and what constitutes a good cut of meat.

“It’s all part of the wider field of public health and ensuring the production of wholesome, healthy products.”

This was JCU’s first entry in the competition, during which teams of students attended lectures and workshops delivered by prominent members of the meat industry, before grading and pricing cuts of beef, pork and lamb on appearance, texture and eating quality.

Two JCU students, Toni Johnston and Lachlan Kesteven, earned top 10 positions, and places at a training workshop at the Meat and Livestock Australia (MLA) headquarters in Brisbane in September.

Of the 10 students attending the MLA workshop, five will be chosen to represent Australia in the world championships in the USA next January.
For nursing students on Thursday Island, studying anatomy is now a much more hands-on experience, thanks to assistance from the Sidney Myer Fund.

A $6,000 award has enabled JCU to purchase anatomy models and teaching aids.

“Many Nursing Science students find anatomy and physiology hard going, particularly in the early years of their degree,” said senior lecturer Alastair Smith, who applied for the award after observing that many of his Thursday Island students had a clear preference for visual and hands-on learning.

“For students who are primarily visual learners, these models can make things a lot clearer. Anatomy is 3-D, so the models are a really helpful addition to the large, technical textbooks that accompany these subjects.”

In addition to full-size models for use in the classroom, half-scale torsos with instructional DVDs will be available for the students to take home, so they can study gross anatomy at their own pace.

“We’re very grateful to the Sidney Myer Fund for helping us to significantly improve the learning experience of our students on TI,” Dr Smith said.

JCU’s study centre on Thursday Island delivers nursing and education courses to the most northerly region of Australia.

Engineering graduate David Holmes has recently returned to Townsville to lecture in Mechanical Engineering for JCU’s Faculty of Science and Engineering.

His appointment follows a post-doctoral fellowship at the Massachusetts Institute of Technology (MIT).

Dr Holmes’ area of specialty is the development and implementation of numerical simulation algorithms.

At MIT he led the development of a fluid flow simulator that could help clean up the oil spill in the Gulf of Mexico, and is continuing to collaborate on the project at a distance.

“The oil spill is an on-going and ever-changing environmental disaster, so accurate and detailed modelling is critical,” Dr Holmes said.

“When traditional ocean models are used to predict the path of released oil and its environmental impact, they need to be fed with data about the fluids that they must track, such as water, oil and chemical dispersants,” Dr Holmes said.

“What we’ve developed is a fluid flow simulator that tells the larger ocean models about the behaviour, at the level of fundamental physics, of the fluids they need to model.”

Dr Holmes and his colleagues in MIT’s GeoNumerics group are providing technical advice to the US agencies working on the Gulf crisis.

“We are investigating the potential of applying ‘next generation’ simulation technologies to help the cleanup and recovery by allowing a more thorough understanding of fluid flow behaviour and its interaction with the environment,” he said.

David Holmes is providing technical advice on the Gulf of Mexico oil spill. © istockphoto.com / Michael B. Watkins

“The fluid flow simulator we have developed provides high-resolution results on multi-phase fluid flow – such as oil and water.

“Previously, coarse-grained or low-resolution field scale models were used to determine an optimum recovery profile for a given reservoir or oil field.

“Our simulator is so versatile it has wide-ranging applications and can be used to determine the fluid properties and behaviour of oil flowing in the Gulf of Mexico.”

David Holmes is providing technical advice on the Gulf of Mexico oil spill. © istockphoto.com / Michael B. Watkins

Anatomy in 3-D

Dr Alastair Smith and nursing student Lillian Hankin packing the models at JCU in Cairns, ready for transport to Thursday Island.
A shore guide

Tropical seashores of Australia is the third in Damon Ramsey’s series of ecosystem guides. It follows Rainforest of tropical Australia and Ocean Surfaces of Australasia.

While studying biology Damon volunteered for tasks that included counting cassowary poo, catching bat-eating Ghost Bats and breeding butterflies.

After completing his studies at JCU he became the co-owner of Educational Tours Australia.

It was in that role, while organising and leading biology and ecology study tours, that he saw the need for accessible guidebooks with strong foundations in biology.

Tropical seashores of Australia covers the tropical coast of Australia, from the islands of the Great Barrier Reef to the Kimberley coast.

Like the others in the series it includes beautiful colour photographs on every page.

The book begins with an overview of the environment, from the making of coral cays to how cyclones form.

It then identifies the major groups and species of organisms, from the shade-giving plants, through the exquisite seashells, to the wide-ranging sea birds.

In print

Beyond inflation

The traditional view of the hyperinflation in Germany in the early 1920s is that this was one of the stepping-stones for Hitler’s Nazi regime.

However, there is little in law and economics literature to explain the colossal acceleration from what began as creeping inflation and became massive hyperinflation, with prices skyrocketing and the currency’s value plummeting.

In German Hyperinflation 1922/23, A Law and Economics Approach, editor Professor Wolfgang Fischer and his co-authors examine the factors that contributed to Germany’s hyperinflation and the lessons that can be learned from it.

The termination of hyperinflation was accomplished by legal measures through German Supreme Court judgements as well as through the Parliamentarian calculation of the conversion rate of Mark to Reichsmark.

In addition, monetary measures such as the implementation of the Rentenmark [a new currency backed by state land properties, to re-establish trust] may be an example of how to deal with future hyperinflations in developed and developing countries.

Nevertheless the immense acceleration process in hyperinflations still remains unclear and unpredictable.

Wolfgang Fischer is an Adjunct Professor of Economics in the School of Law at JCU in Townsville.

German Hyperinflation 1922/23
Wolfgang Fischer (Ed)
ISBN 978-3-89936-931-1
Josef EUL Verlag

Much has been written about Generation Y at work and at home.

In Tourism and Generation Y tourism academics Pierre Benckendorff and Gianna Moscardo [both from JCU], with Donna Pendergast [Griffith] follow them on holiday.

Aiming to define and examine the current and future generation of tourism workers and consumers, the authors examine the myths and misunderstandings surrounding Generation Y.

They also compare this generation’s travel behaviour with that of their parents, the omnivorous baby boomers.

The book is aimed at researchers and students in tourism studies and related industries.

It investigates trends and behaviour, including the particular types of travel that Generation Y takes part in, their expectations, and attitudes to travel safety.

Backpacking, adventure tourism, wine tourism and nature-based travel are all examined in detail with this young generation in mind.

The authors also consider how to communicate with Gen Y and how tourism marketing is aimed specifically at them.

They are also discussed as part of the tourism workforce – their attitudes to their careers and to work in tourism and hospitality.

Tourism and Generation Y
PJ Benckendorff, G Moscardo, D Pendergast
ISBN 9781845936013
CABI International

Gen Y on holiday

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**The calendar**

**Cairns Indigenous Art Fair**

**Details:** A boutique art market for traditional and contemporary artwork by Queensland Indigenous artists.

- **Date:** 20–22 August
- **Location:** The Tanks Art Centre, Cairns
- **Admission:** free
- **Contact:** www.ciaf.com.au

**Cairns Indigenous Art Fair Symposium**

**Details:** Some of the nation’s leading thinkers on Indigenous art discuss the issues challenging the industry.

- **Date:** Friday 20 August
- **Location:** Padua Lecture Theatre, JCU Townsville. Video linked to room A21.002, JCU Cairns.
- **Admission:** free
- **Contact:** rochelle.doherty@jcu.edu.au

**TropLinks Symposium**

**Details:** Growing tropical economies: The Business of Tropical Expertise; Torrid Zone II; Neglected Tropical Diseases; Australasian Life Sciences Tropical Investment Forum.

- **Date:** Monday 21–24 August
- **Location:** Shanghai-La Hotel, Cairns
- **Contact:** 4725 5019

**Open Day, Cairns**

**Details:** Explore your local university.

- **Date:** Sunday 22 August
- **Time:** 10.00am – 3.00pm
- **Location:** JCU, McGregor Road, Smithfield
- **Admission:** free
- **Contact:** 4042 1008

**Jocelyn Wale Psychology Seminar**

**Details:** Professor Craig McGarty on overcoming barriers to positive social change through group interaction.

- **Date:** Tuesday 24 August
- **Time:** 5.00pm for 5.30pm
- **Location:** Jupiters Hotel, Townsville
- **Admission:** free
- **Contact:** nikki.strano@jcu.edu.au

**The future of Medicine**

**Details:** Professor Arthur Kaufman as part of the 40/40 Vision Lecture Series.

- **Date:** Tuesday 24 August
- **Time:** 5.30pm
- **Location:** Rydges Southbank Hotel, Townsville
- **Admission:** free
- **Contact:** lisa.krasniewicz@jcu.edu.au

**Jocelyn Wale Psychology Seminar**

**Details:** Dr Damien Howard on the silence that harms.

- **Date:** Friday 3 September
- **Time:** 4.00pm
- **Location:** Padua Lecture Theatre, JCU Townsville. Video linked to room A21.002, JCU Cairns.
- **Admission:** free
- **Contact:** rochelle.doherty@jcu.edu.au

**Environmental Science and Engineering**

**Details:** A conference on the challenges to achieving ecological sustainability.

- **Date:** 26 September – 1 October
- **Location:** Sebel Hotel, Cairns.
- **Contact:** li.shu@jcu.edu.au

**International Student-Teacher Photo Competition**

**Details:** Wining photographs from around the world.

- **Date:** 27 September – 1 October
- **Location:** emerge Media Space, JCU Townsville
- **Admission:** free
- **Contact:** www.jcu.edu.au/soca/gallery/
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**Townsville**
Sunday 15 August, 2010
10am – 2pm
Angus Smith Drive, Douglas

**Cairns**
Sunday 22 August, 2010
10am – 2pm
McGregor Road, Smithfield

For more information
phone 1800 246 446
email openday@jcu.edu.au
web jcu.edu.au/opendays