These four women risk their limbs – if not their lives – to restore safety to the people of Perth when disaster strikes.

Hayley Hutchison, Linda McInnes and sisters Jenny and Maxine Gamble all work at UWA but they can be called away at any time to don their orange overalls as part of the State Emergency Service.

Linda has been part of what’s known as the ‘orange family’ for two-and-a-half years while the other three joined more recently. All of them are enthusiastic community volunteers. And their commitment is evident when they all said they wanted to thank the University for supporting their emergency service volunteering.

You have probably seen the category Emergency Leave when booking your holidays. It is for this small group of volunteers, and a few other staff and students who are volunteer fire fighters, paramedics or army reserve.

“It’s fantastic that we can get leave, not only to attend call-outs with the SES but, also the following day if we’ve worked through the night,” said Linda, study co-ordinator in the School of Surgery.

“And it’s not just the University policy that’s good, it’s our supervisors who recognise that we are doing something for the greater good, and sanction our leave,” said Jenny, business operations manager in the School of Psychology.

Her sister Maxine is business manager in Information Services. And Hayley is student services manager in Psychology.

**Our staff keep suburbs safe**

*By Lindy Brophy*

Jenny Gamble, Linda McInnes, Hayley Hutchison and Maxine Gamble are SES volunteers. Photos by Matthew Galligan
They attend SES training once a week to provide them with the skills to meet the challenges they face on a call-out. Safety training is paramount.

The most common tasks for SES volunteers are dealing with storm damage and search and rescue. Climbing around on roofs (and the risk of falling off) is one of the dangers they face. In addition to weekly training the SES offers certificate courses including first aid, chain saw skills, 4WD driving, radio communication, base operation and navigation skills for search and rescue operations.

“You don’t have to be physically fit because there are plenty of roles such as welfare (providing food and drink), driving and paperwork that you can do,” Maxine said. “You can choose what you want to do. Not everybody can work at heights. I’m not too good with heights and I haven’t been on a roof yet, so I’ll have to see how I go.”

The volunteers help police with searches for lost or vulnerable people and forensic evidence as well as providing bush fire fighters with support when requested. During a big bushfire emergency the SES can be asked to assist with fire crew changes, the provision of welfare or as scribes to record all the information flowing into the command centre.

“The SES is a volunteer organisation and therefore understands that our family comes first, our job comes second, and they just hope that we will put the SES third,” Linda said.

“But not everybody realises we are volunteers, and that many of us have full time jobs and other commitments,” Jenny said. “This could be why at times the public gets disgruntled with the SES’ response times and thinks we should repair their property not simply make it safe and prevent further damage.”

“But sometimes an emergency creates a wonderful community spirit,” Linda said. “I was helping after a tornado in Maddington once when the people in the street fired up their barbecues, brought out the sausages and sent the word around that, whenever we could take a break, they would feed us. I have also enjoyed many a good cup of tea when on call-outs and am eternally grateful to residents who pitch in to fill and lug sandbags.”

Hayley’s ‘baptism of fire’ came in June when she was called to help after a tornado ripped through Claremont, wreaking havoc on properties close to the Crawley campus.

“Our job is to make people and properties safe and weatherproof, and to prevent any more damage,” she said.

In winter the metro SES units’ duties stem mainly from storm and tornado damage and in summer, search and rescue work and bush fire brigade support.

Although each WA SES unit has an assigned ‘patch’ to care for, in times of need they go wherever they are asked to go. Air search qualified SES volunteers assisted in the search for the missing Malaysian Airlines flight MH370 off the WA coast. WA Volunteers were flown to Christchurch, New Zealand after the earthquake in 2010. Metro SES units sometimes receive requests for support during cyclone season up north or to assist in outback searches.

Only one SES volunteer has died on duty in WA. In 2004 James Martin Regan, (36) died while rescuing injured and trapped tourists in a Karijini National Park gorge. Poignantly, he and his team had just found and rescued the two injured tourists when tragedy struck.

But the inherent dangers in SES work don’t dissuade Jenny, Maxine, Hayley and Linda from their commitment. “I just love being able to be useful and help people in need,” Linda said. “Even when we’re searching for hours for a lost person in the bush in sweltering 40+ temperatures in our thick overalls and boots, it still feels good.”

And they all agreed.

(Dan Petty, in the University Website Office, is a volunteer fire fighter, as are students Josh Knight and Lauren Stibrinskis. Student Carl Pantos-Conquilla is also a member of the SES.)
The stories behind the soldiers commemorated in Kings Park’s Memorial Drive may well be UWA’s first crowdresearch project.

Crowdresearch is an initiative of the Office of Research Enterprise, encouraging people in the community to: participate in research; to help fund it; to suggest areas that need research; and to use the outcomes.

Campbell Thomson, Director of the Office of Research Enterprise (ORE), said the concept of crowd-sourcing for research was in its infancy but UWA was determined to think and act more innovatively.

“I’m really excited, it’s a great concept,” Dr Thomson said. “This is all so new and we don’t know where it’s going to take us. But we need to be a bit more brave about what we do and not beat ourselves up if it doesn’t work.”

ORE received 34 applications from UWA researchers for the first six projects. One of these was from the discipline of History: to develop an app through which visitors can learn the stories of the soldiers whose names are on commemorative plaques in Kings Park.

Amateur historians could be crowd-sourced to provide the information.

“We are starting by sourcing community participation, such as the Kings Park project. Then we will look at crowdfunding for other achievable projects. It could be something like a field trip on board the Southern Ocean research vessel that needs $50,000.

“We’ve seen this sort of thing achieved by radio station 94.5FM which has been crowdfunding small pieces of equipment for Princess Margaret Hospital. Listeners donate between $5 and $100 to each project,” Dr Thomson said.

“And UWA has already begun community participation through MicroBlitz, an environmental project in which ‘grey nomads’ are taking soil samples from all over the state to help map WA’s bacterial ecosystems.

“We want the community to benefit from their involvement, so we will be continually updating our website with results of research and we intend making information or outcomes available for use, free of charge, only asking that people in the community let us know how they are using it.

“And we don’t have a monopoly on good ideas, so we want to source them from the community too. If somebody sees an area that might need research, we want to know about it. For example, it could be somebody who fishes from a boat every day or every week in the same part of the Swan River, and notices a change in water quality or movement.”

The new initiative will also adopt an idea already in use in Sydney, that gauges community feedback about ideas and issues, which could be local issues such as traffic congestion or global questions such as climate change.

There is an electronic billboard in Sydney’s CBD that asks questions. Passers-by can answer by simply pressing a button, or commuters can do so via an app.

“We plan to erect a similar billboard and continually update the details of people’s answers,” Dr Thomson said.

“A lot of institutions are starting to think about crowdresearch but not many are doing it yet. We are excited to be at the forefront.

“It’s about more than just eliciting funding from the community. We really want to know what people think, we want them to participate in our research and we want to let them know and share in our results.”

He said the University received a lot of government funding for its research. “That’s essentially community funding, from taxpayers’ pockets, so it’s only fair that we involve them in the process.”

The basic criteria for crowdresearch is something that grabs the attention of the community and is achievable.

The first six projects are being chosen by a team including representatives from ORE, the Research Executive, the Energy and Minerals Institute, Marketing and Communications, the Centre for Software Practice and the Office of Development and Alumni Relations.

The initiative will be launched during UWA Research Week, in early November (see www.research.uwa.edu.au/researchweek).
Take some time out for Dreaming

As we celebrated our rise up the international university ranks to number 88, another quiet celebration was taking place on the Crawley campus.

Wildflower Dreaming, an exhibition at the Lawrence Wilson Art Gallery, celebrates the journey of a young Indigenous woman, Shirley Corunna, her move from Three Springs to Perth, and her involvement in the Coolbaroo League.

The small but very moving exhibition chronicles life for Indigenous people in Perth 50 years ago. It brings into sharp focus how far we, as a society, have come since the 1950 but also reminds us that we still have a long way to go with respect to our Indigenous heritage.

When we think of art galleries and Indigenous culture, we invariably see beautiful paintings, many of which were created modestly but are now sold all over the world for high prices. Wildflower Dreaming (Shirley Corunna and the Coolbaroo League 1952 – 1962) is very different.

It is a slice of life that often tasted far from sweet for urban Indigenous people. The exhibition includes front pages from the Westralian Aborigine, the first Aboriginal-owned and published newspaper in the State. These pages carry stories of racism, illogical hatred and unfair practices. But they are accompanied by photographs of happy Indigenous people, enjoying the legendary Coolbaroo League Friday night dances, and beautiful young women posing in swimsuits, just as non-Indigenous women did in the 1950s and early 1960s.

The Coolbaroo League helped to create strong Indigenous leadership through both political action and social events. As curator Barbara Bynder (Shirley Corunna’s niece) wrote, it supported young Indigenous people to hold their heads high, creating healthy social, economic and political opportunities for them.

The exhibition is an intriguing blend of stories of a downtrodden people who were resilient, strong and happy. It is not just Shirley Corunna’s journey on the walls of the Janet Holmes à Court gallery, but the journey the people of Western Australia have taken, and are still making, towards mutual respect, understanding and celebration of Indigenous culture.

I urge everybody in our University community to see it.

Wildflower Dreaming continues at the Gallery until 13 December.

Paul Johnson
Vice-Chancellor

Up there with Einstein

Cheryl Praeger, UWA’s best-known, highly-respected and internationally cited mathematician, has joined an elite group that boasts Einstein among its members.

Winthrop Professor Praeger has been awarded Honorary Membership of the London Mathematical Society (LMS).

The Society chooses its honorary members from the best mathematicians who live outside the UK. Only 125 have been chosen in more than 140 years.

“I have been a member of the LMS for many years, but Honorary Membership is something special,” she said. “I did my DPhil at Oxford and have had continuing research contact with numerous UK mathematicians.

“I feel overwhelmed to be included in a list with mathematical giants, many of them, like Klein, Hilbert and Einstein, legends that every maths student learns about; others, like Jordan, Coxeter, Cartan, Chevalley and Tits, so central to my research area of Group Theory; and Erdos and Polya to my other area of Combinatorics,” she said.

Others in what is now W/Professor Praeger’s elite group include Ingrid Daubechies, the current and first woman president of the International Mathematics Union, famous for inventing wavelets that efficiently compress information.

Also on the list is David Hilbert, who posed 10 famous mathematical questions. The German mathematician presented 10 from his list of 23 problems to a Paris mathematical conference in 1900. Some are still unresolved or only partly resolved and were influential in 20th century mathematics.

“I first heard the news when two research colleagues wrote to congratulate me,” W/Professor Praeger said. “I was stunned and then very excited. It’s an amazing and humbling honour.”
The stars are aligning for WA’s ophthalmology conference next week.

Not only are the stars of vision research coming from around the world to the state conference of the Royal Australian and New Zealand College of Ophthalmologists, but the date, the location, the guest speakers and the man being commemorated all click together as neatly as a well-made pair of spectacles.

The conference, from 5 to 7 September, will be held in Kalgoorlie, where former US president Herbert Hoover lived and worked as a young man. He was originally from Iowa, and two of the speakers – world leaders, with the Lions Eye Institute’s Director David Mackey, in glaucoma research – are from the University of Iowa. It is also 50 years this year since President Hoover died, in 1964.

The synergy of the conference, conceived and organised by Winthrop Professor Mackey, extends to the topics the ophthalmologists and graduate students will discuss. The young President Hoover was a mine manager at the Sons of Gwalia mine at Leonora, near Kalgoorlie. He also started a mining company that eventually became Rio Tinto. So part of the conference will be devoted to eye health in the mining industry. Eye health among Indigenous people and in remote regions will also feature.

Professor Mackey was a visiting lecturer at the University of Iowa in the 1980s, and has been collaborating with their vision science academics since the 1990s.

“At the Hoover Presidential Library near Iowa City, I discovered the former President’s link to Kalgoorlie," he said. “Then I found a lot of Hoover history in Kalgoorlie, so as I was inviting my Iowan colleagues to the conference, I decided Kalgoorlie was the perfect location.”

Professor Mackey will also take Professors Wallace LM (Lee) Alward and John Fingert to stay at Hoover House in Leonora, the house built by Hoover’s grandfather, which is now run as a bed and breakfast.

They will be joined by Professor Mingguang He from Sun Yat-sen University, the third guest speaker. All the visiting professors are funded by the Raine Medical Research Foundation’s visiting professor program.

“President Hoover has a connection with China too,” Professor Mackey said. “He went there before his presidency, and became caught up in the Boxer Rebellion. Professor He is a leading ophthalmologist who is working, as we are in Perth, on the issue of outdoor activity and myopia.”

Professor Mackey is one of the leaders of the International Glaucoma Genetics consortium, along with his Iowan colleagues and Professor He.

“By combining data from glaucoma and population studies from around the world, we have identified new genes associated with glaucoma itself, with intraocular pressure being the biggest risk factor. We have just completed a paper on this which is currently in press with Nature Genetics.”

Glaucoma is the leading cause of irreversible blindness in the world, with one in 10 Australians over the age of 80 developing the disease. Currently, about half of the Australians with glaucoma are undiagnosed.

Myopia or short-sightedness, while not causing blindness, affects about 15 per cent of Australians.

“But in China, it is a massive epidemic,” Professor Mackey said. “We are doing ongoing research into the effects on myopia (which usually develops in adolescents) of sunlight during childhood. People in the academic-oriented cities in China spend all their time inside working and studying, and nearly all of them end up short-sighted.”

Following the conference, Professor Fingert will deliver a Raine lecture in the Harry Perkins Institute’s McCusker Auditorium at 6pm on 8 September (drinks at 5.30pm); Professors Alward and He will deliver lunchtime guest lectures in the auditorium on 10 and 12 September.

"Vision researchers to see unique connection"
Mark Edele has a fascination with war experiences in the Soviet Union but even the most passionate interest has its limitations.

“I’m not interested in testing Russia’s new laws under which somebody can be imprisoned for five years for ‘telling lies about WWII,’ he said.

What he is interested in is the civilians and their experiences, as well as those of the military, during the 1930s and 1940s.

Professor Edele, from the discipline of history in the School of Humanities, is one of four UWA academics to be awarded an ARC Future Fellowship for four years of research.

His project aims to focus on the range, variety and complexity of wartime experiences of ordinary (and some extraordinary) people living, fighting, surviving, dying, or passing through the lands controlled by Stalin and his political apparatus during the years of war.

“There has been a real revolution of public memory of this war since Perestroika and the opening up of the Soviet Union in the 1980s,” Professor Edele said. “The post-war archives were opened up just as I became an undergraduate student in Germany. Russia is what made me a historian.”

He plans to travel extensively over the next few years to bring together archival material held in Germany, the US, Israel and parts of eastern Europe, to produce a book, (perhaps several books) and academic papers.

“Even though there are lots of published and unpublished memoirs, few people have combined these sources with archives from Israel, Germany, the US and Russia,” he said.

His current ‘go-to’ archive is the papers of Soviet military historian Volkogonov, copies of which the University has acquired on microfilm. He has a bulky microfilm reader on his desk, his own artefact of recent history.

While his fellowship releases him from teaching, Professor Edele says he doesn’t want to lose touch with his students, so will continue to do the minimum of teaching the fellowship allows.

“What we are not allowed to do is spend our time on administration,” he said, smiling broadly.

Diagnosing cancer with the help of mathematics

Light interacts very strongly with all the organs and tissues in our bodies, which is why optical imaging works … and also why it is so complicated.

Although it enables molecular imaging, it can be difficult to isolate the information that is wanted from all the surrounding tissue that has perturbed the light.

Peter Munro is one of four Future Fellows at UWA, and his aim, over the next four years, is to hone the mathematical models that can improve the outcome of optical imaging.

“When you use X-rays, there is a very clear link between the subject and the image, but with optical imaging, it is not always so. There often has to be some high-level processing of the image to tease out the information,” Dr Munro said.

“With X-rays, you can see a bone is broken. With optical imaging, when you are trying to detect cancerous tissue, you are also getting information from surrounding tissue. Even a few millimetres of tissue can be enough to complicate the picture and make it difficult to focus on the region of interest.”

Dr Munro, who did his undergraduate degree at UWA, has been working on understanding information from optical images, using mathematical models. He is now going to use these models to improve that understanding.

Optical imaging works best when the tissue in question can be isolated and a thin slice put under a microscope.

“But ideally, we want to be able to see what’s happening in the living tissue of a human or an animal,” he said. “I will be working on how to computationally restore optical microscope images.
to aid diagnosis and the study of biological processes.

“Widely used microscopy techniques simply don’t work when imaging through thick sections of tissue. I hope to be able to extend the depth at which you can successfully use optical microscopy by making computational analysis part of the process,” Dr Munro said.

“This is about designing a microscope that maximises the information obtained about a sample, rather than providing the clearest image. We can then use our knowledge of physics and computational skills to construct a clearer image.”

Making our crops more efficient

Phosphorus is essential for crop growth but we need to use it more efficiently.

World reserves of phosphate rock are being depleted as they are mined to make fertiliser. Much of the phosphorous (P) applied in fertiliser becomes tied up in the soil in forms plants cannot access.

Over time, application of P fertiliser has increased soil P levels on farms but it is now being lost, moving into native vegetation that cannot tolerate it, and into waterways and estuaries where it can significantly reduce water quality and negatively affect wildlife, commercial fisheries and public amenity. This problem is particularly serious in the Peel Harvey region, south of Perth.

So there is an urgent need to make our farming systems more efficient users of P. Development of crops that are naturally efficient in uptake and use of P will mean that fertilisers will not need to be applied liberally. Financial benefits to farmers as well as environmental benefits will result.

Plant biologist Megan Ryan is hoping to solve the problem. She is one of four successful ARC Future Fellows at UWA who have won four years’ funding for specific research projects.

Associate Professor Ryan hopes to gain insight into how we could make crops more efficient users of P by examining native plants that accumulate P when it’s readily available and store it in their tissues at high concentrations for use in lean times.

A native herb, Ptilotus polystachyus (mulla mulla), can store P at higher concentrations than any other known plant without adverse effects.

“This amazing ability may result from availability of P varying with the seasons,” A/Professor Ryan said. “It’s all to do with rainfall.”

A/Professor Ryan says she is excited about the project, not least because it signals a substantial boost to her research career.

“Like many women, I have had time off having babies and have worked part-time while caring for young children. It is always very hard for people in this position to keep up their research, so this Fellowship is a fantastic opportunity for me to restart my career,” she said.

Mulla mulla can store phosphorus at very high concentrations
A quarter of a century ago, researchers from the US claimed to have discovered the earliest forms of life on Earth – in 3.5 billion year-old rocks from WA’s Pilbara. These tiny filamentous structures became entrenched in the scientific literature and a generation of geologists grew up believing these to be the benchmark against which other possible signs of ancient terrestrial and even extra-terrestrial life should be judged.

Early this century, however, a UK group suggested that these filaments were not fossils that represented life, but mineral artefacts that, with fortuitous carbon build-up around them, happened to take on a biological shape.

“It’s been a controversy ever since,” said David Wacey, one of UWA’s four successful ARC Future Fellows. “But until now, nobody has had the analytical capability to prove the claims one way or the other.”

UWA now has that capability, with what Research Assistant Professor Wacey describes as the ‘shiny instruments’ in the Centre for Microscopy, Characterisation and Analysis (CMCA).

The NanoSIMS, the 1280 ion probe, and the newly delivered Titan Transmission Electron Microscope represents one of the best line-ups in the world and certainly in Australia, for investigating materials at the micro- to nano-level.

His four year ARC project aims to provide new insights into the origin of life on Earth, using rock samples from the Pilbara and from South Africa, Scotland and Canada that line up with key periods in early evolutionary history.

“We are in a race with the rest of the world but we have the advantage of a combination of microscopes that not many other labs have,” he said.

“We just couldn’t do this work 10 years ago. Then, techniques such as NanoSIMS were in their infancy and we were still learning their true capabilities.”

Dr Wacey’s research will be discipline-leading, taking the study of early life to the sub-micrometre and hence sub-cellular level.

His discoveries will lead to new opportunities for identifying the types of life present during early Earth history, their metabolisms, cellular chemistry and interactions with the environment.

“I hope my work will also lead to more robust assessment criteria for life on other planets,” he said.

In Greek mythology, the Titans were immortal giants with incredible strength. At UWA, the Titan is one of two new world-leading electron microscopes, both the first of their kind in Australia, which give the Centre for Microscopy, Characterisation and Analysis (CMCA) if not immortality, then incredible strength.

The Titan, a Transmission Electron Microscope (TEM), and the Verios, a Scanning Electron Microscope (SEM), together boost the capabilities of CMCA, which is the WA node of the Australian Microscopy and Microanalysis Research Facility, to a new high.

“It’s easy to understand the excitement over a newcomer when he’s known as Titan.”

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“I’m very excited about this,” said Martin Saunders, head of the electron microscopy group. “It is a huge leap forward in our capabilities and, in what must surely be a record, the first paper produced using the TEM was accepted for publication just two weeks after the installation was complete.”

Research Assistant Professor David Wacey (who recently won an ARC Future Fellowship – see story, left) and colleagues’ paper was published in the Nature Publishing Group journal, Scientific Reports.

The work is part of Dr Wacey’s ongoing research into understanding early life on Earth.

“The advanced element mapping capabilities of the Titan’s Super-X EDX detector were critical to understanding the immediate chemical environment around decaying cells in one billion-year-old lakes,” Professor Saunders explained.

“It enabled nano-scale zones of clay minerals to be distinguished from major mineral phases such as phosphate and silica. It also showed that the clays were mostly attached to cell walls and here provided the highest quality of cell preservation.

“The study provides the earliest evidence for cells preserved in clay minerals, extending the known range by nearly 500 million years, and challenges the
power to reach the tiniest atom

conventional view that the highest quality fossil preservation occurs in phosphate and quartz minerals.”

The Titan G2 80-200 TEM/STEM with ChemiSTEM Technology provides atomic resolution imaging, electron tomography, nanoscale element mapping and chemical analysis with a dramatic improvement in data quality and detection limits over previous generation instruments in WA.

The TEM is targeted for research in the areas of materials science, geoscience and engineering. It looks at the structure and composition of materials down to the atomic level.

The Verios XHR SEM has similar application areas. However, whereas the TEM is designed to analyse very thin samples by passing electrons through the sample, the SEM analyses the surface of a material by scanning an electron beam over it. The capabilities of the two techniques are highly complementary.

The purchase of the Titan and Verios is supported by about $1.5 million of ARC grants with additional funding from UWA and its partners in the WA Centre for Microscopy, Curtin, Murdoch and Edith Cowan universities, and CSIRO.

“All up, the new instruments are worth around $5 million and represent the biggest single investment in electron microscopy infrastructure ever in WA,” Professor Saunders said.

The microscopes are already attracting interest and collaborations from around Australia and even overseas.

In July, former UWA PhD scholar Nicole Hondow visited UWA and explored the capabilities of the Titan and its potential for her research on nanoparticles for biomedical applications. Dr Hondow, now at the University of Leeds, was supported by a UWA-funded Research Collaboration Award with Professor Saunders.

“One key project already exploiting some of the new analytical capabilities of the Titan is linked to understanding the primary minerals in, and origins of, banded iron formations, which are the host of the major iron ore deposits of the Pilbara. This is a collaboration between CMCA staff and researchers at Curtin.”

These high performance microscopes require a specialised laboratory space to ensure they achieve optimal performance. A team of contractors spent several months preparing for the arrival of the new instruments.

“All up, the new instruments are worth around $5 million and represent the biggest single investment in electron microscopy infrastructure ever in WA,” Professor Saunders said.

“Everyone involved in the installation of the new instruments did a brilliant job,” Professor Saunders said. “Everything went exactly to schedule, which is very unusual for instruments as complicated as these.”

Researchers who want to know more about the Titan or Verios can contact Professor Saunders at CMCA@Physics: martin.saunders@uwa.edu.au or on 6488 8092.

This image shows the interface between two minerals in a tooth of a marine mollusc called a chiton. The mineral in the bottom left part of the image is apatite (calcium phosphate), the top right part is goethite (iron oxyhydroxide). The dark lines running through the minerals are organic fibres onto which the animal initially grew the minerals.
Ten years ago, a sad lonely international postgraduate student told a staff member in Student Services: “Since coming to Australia, I have become a silent person. I am always alone. It’s like I have ceased to exist.”

The staff member, Siri Barrett-Lennard, an English Language and Study Skills Adviser, was appalled. And she did something about it.

Ms Barrett-Lennard and her colleagues established LACE, Language and Cultural Exchange, a ground-breaking intercultural friendship program that provides ongoing opportunities for postgraduate students and staff from different cultures, language groups and disciplines to interact socially in regular free, family-friendly events.

LACE, now co-ordinated by Dr Cheryl Lange (Ms Barrett-Lennard is now the team leader of the overarching STUDY Smarter group), has recently won for UWA the title of International Education Provider of the Year for 2014.

The Council of International Students WA (CISWA) recognises an individual or a team who has contributed to the welfare or support of international students.

In 2005, LACE had 49 registered members. This year, 676 students and staff take part in activities together. They represent every UWA faculty, come from nearly 80 countries and speak more than 100 languages.

Their feedback is inspiring: “I feel more connection between me and the uni. Before, I was always lonely because I didn’t know anyone here” (2005); “It has helped me settle in well and gave me my first group of friends” (2012); “I feel better and less isolated, and can return to studies happier” (2013); and “It’s difficult to come and settle in another country without knowing anybody. As an international student, LACE helped me adjust quickly to UWA, make new contacts, and make new friends who may be in a similar situation” (2012).

Life has certainly improved for international students, particularly postgraduate students, who sometimes work alone rather than attending classes, as undergraduate students do.

Dr Lange said one of the main benefits of LACE was that it provided opportunities for members to discuss the complexities of doing research in unfamiliar, academic, cultural and linguistic settings. “Talking about these things often leads to them giving each other useful advice, finding solutions, and making new friends,” she said.

As one of the participants also said: “Having more friends from other countries with different cultural backgrounds has made me understand better what’s happening in the world right now. My perspective about certain people also changes, with more tolerant values.”
With its mission to *Make a friend, make a difference*, LACE organises activities including barbecues at the river, on- and off-campus tours (Kings Park, Swan River Dreaming Tours), film nights, sports and games (taking in cricket, Australian Rules football and Surf and Sun Safety on Cottesloe Beach) and multicultural dinners, where members bring food to share and take part in song and dance.

The program offers opportunities for peer mentoring and leadership, providing leadership training, public speaking, mental health education and Courageous Conversations about Race.

Beverley Hill, recently retired Associate Director, Equity and Diversity, said LACE had made a considerable impact on University culture and was a tangible strategy in advancing intercultural communication and understanding.

“The program has progressed cultural competence across the University through interaction, conversation and respectful dialogue,” she said.

LACE has been emulated nationally, including at the University of Adelaide and La Trobe University. “We have also recently advised Murdoch University on successful LACE implementation as part of their equity and social inclusion plan,” Dr Lange said.

A best practice case study on LACE was the first feature in the Australian Government’s publication, *Examples of good practice in assisting international students to integrate with Australian students and the wider community*.

And a final word from a student who is the 2014 International Officer for the UWA Postgraduate Student Association:

“(LACE) helps us feel at ease and reduces our loneliness. It is a very innovative way to help students interact with others and know more about local and international sports, food, culture and lifestyle. And because it makes us feel more relaxed, it helps our academic work too.”
Cross-cultural competency is often listed as one of the great benefits of Study Abroad and International Student programs.

But just how is this outcome, and other anticipated benefits, achieved?

Anthropologists Loretta Baldassar and Lara McKenzie are running a program, Intercultural Learning at Home: Promoting internationalisation on campus with a two-fold aim: to train Honours students in research methods, while they find out from international students just how much they gain from and enjoy the cross-cultural experience.

Professor Baldassar, the Discipline Chair and Honours coordinator for Anthropology and Sociology, said one of the recommendations from a recent Faculty review was to increase research training for students.

And, after three years in Italy as Director of Monash University’s Study Abroad Centre in Prato, Internationalisation at home or bringing together local and International students on campus is a subject that is both deeply interesting and important to her.

“From my experience in Italy and from the literature, it is clear that local students are not motivated to engage with international students,” she said. “This doesn’t mean they are not interested in meeting international students; it is just something that does not necessarily occur to them to do.

“They might come together in classes but meaningful cross-cultural engagement between local and international students will usually only be achieved if you build activities into the curriculum.”

Dr McKenzie, working with Professor Baldassar as a project officer, is employed with an inaugural Alumni Annual Fund Grant.

“It’s great being involved in graduate training and teaching at Honours level,” Dr McKenzie said. “Usually early career academics don’t get much opportunity to teach Honours level students.”

Professor Baldassar said it was a good use of Alumni funding to focus on understanding and hopefully enriching the student experience, which also aligns with UWA’s strategic plan.

The Applied and Professional Practice units are offered to a range of Honours students across the Arts Faculty, to train them in ethnographic qualitative interview techniques (first semester) and running focus groups (second semester). Honours students each plan and undertake their own research into international and Study Abroad student experiences on campus. Last semester’s unit was nominated for a Faculty Teaching and Learning Award for a Project that Enhances Learning.

“The primary outcome of the project is research training for our Honours students, but I hope the units will also deliver a deeper understanding of the needs and experiences of international students,” Professor Baldassar said.

“We have attracted a lot of students from across the Faculty, who have chosen the Applied and Professional Practice units as part of their four compulsory honours coursework units. In general, international students are always keen to engage in activities that bring them into contact with local students: that’s one of the reasons they come here.

“The international students involved in the program are a mix of undergraduates and postgraduates, including students from Brazil who are part of the Science without Borders program and students in the AusAid program.”

“Some of the Honours students have taken the project very seriously, with one student inviting international students home to dinner,” Professor Baldassar said.

She said two International Arts Practicum students from Hong Kong researched, as part of the project, every UWA event organised for international students last semester. They said while they were well-attended, there were very few local students at any of them.

“This project, while primarily a research methods training course, will critique the rhetoric that intercultural learning will automatically happen as a direct consequence of studying abroad, and, similarly, that important potential benefits are anticipated from ‘internationalisation at home’, which refers to making the most of the presence of international students.”

Professor Baldassar and Dr McKenzie plan to write a paper drawing on the research reports produced by the Social Sciences students about engagement (or lack thereof) between international and local students and ways to enhance it.
Behind every successful researcher, there is a well-trained manager.

And UWA now has seven professionally accredited research managers, with more on the way, thanks to a training initiated by the Australasian Research Management Society (ARMS).

Campbell Thomson, Director of the Office of Research Enterprise (ORE), is a former chair of ARMS, an organisation which has grown in recent years to several thousand members, and which includes New Zealand and Singapore.

“The Society decided some time ago that it wanted professional training for people involved with research management,” Dr Thomson said.

“So recently eight working parties from universities, CSIRO, government agencies and medical research institutes set to work to develop a training program to encompass the body of knowledge we deemed that people in the industry should have.”

Eight modules were developed, each to be delivered in three-and-a-half hours workshops. The program was delivered for the first time in WA at UWA over three days in late July. We are the first institution to run the entire suite of workshops at one time.

“We ran the program for 30 people, from all the WA universities, including Notre Dame, the Telethons Kids Institute and CSIRO,” Dr Thomson said. “We had 15 people from UWA immediately put their hands up when it was offered but we could only accommodate seven in the first round. We envisage running the program annually.”

When the participants complete their online exams, which includes a challenging case study, they will be accredited and can use the post nominal initials ARM(F) for Accredited Research Manager (Foundation).

“Accreditation won’t be a pre-requisite for employment in research management,” he said. “But it will be a point of reference when considering promotion or choice of employee.”

Three of the eight modules are compulsory: the national research and innovation system in Australia (including the role of governments, business and higher education in the system); legislation as it affects research in Australia; and understanding research and researchers.

Research workers can choose two from the following five units: research ethics; research integrity; pre-award grants process; post-award processes; and research data and analytics.

Support for researchers becomes proactive

“The accredited staff are much better able to serve researchers and the research profession,” Dr Thomson said. “It is hard to understand the research culture, how researchers think and their motivation. So we hope at the completion of this course, they will be able to contextualise what drives researchers in terms of the role they play in research management support.

“They will also understand compliance and risks; be able to identify legislative requirements for monitoring and reporting; know where to go for further information on legal issues; provide targeted support in applying for funding; understand the required steps in the initiation of a contract to ensure that the interests of the organisation, the researcher and the funding agency are all met; and understand choices in storing data.”

The first seven UWA staff to complete the course are: Dr Louise Wedlock, manager of graduate research candidature; Dr Amanda Cleaver, research development adviser for Medicine, Dentistry and Health Sciences; Dr Caixia Li, manager of human ethics; Andrea Tongue, senior research grants officer; Karen Dalby, research grants officer; Jenny Grant, administrative officer for animal ethics; and Maruf Razzaq, research finance officer.
Blazing a new trail in scar treatment

Promising research in the area of burn recovery may provide hope for victims who have been suffering for years from severe scarring.

Serious scarring can be disfiguring and lead to psychological and emotional trauma such as depression. Scar tissue may also result in physical suffering such as limited mobility, tenderness, itching and pain.

Professor Fiona Wood’s development of spray on skin in 2002 led the way in wound recovery for burns patients but this treatment is ineffective for victims who have already have severe scarring.

Michael Bradshaw is a PhD scholar under the supervision of Professor Wood, Dr Swaminathan Iyer and Dr Mark Fear. He may have found hope for those suffering with severe scarring – in the form of an injectable drug.

The drug works by targeting collagen, the fibrous protein responsible for scarring. Collagen is the main constituent of skin and when skin is burnt, grazed or cut, collagen is produced to close the wound. A scar is formed by randomly-orientated collagen fibres that are more dense than the surrounding skin. To prevent or reduce scarring this collagen must be reduced or restructured.

Michael explains: “This drug would be specifically targeting pre-existing scars and hopefully reverting them to normal skin.”

He is not able to disclose the chemical behavior of the drug but is very excited about the possibilities it presents for the future.

“We found it can affect the morphology of the deposited collagen … in primary scar cells,” he said.

By changing the morphology of the deposited collagen, scar tissue is significantly reduced. Testing of the drug in animals is due to start later in the year.

Michael’s developments in burns recovery with this drug is only the most recent of several studies he has conducted throughout his PhD. His research started with a search for improved healing techniques for wounds, preventing scarring, rather than reversing it. He attempted to prevent scarring by establishing more efficient healing techniques, therefore limiting collagen production.

The aim of one of his earlier studies was to influence how cells migrated when healing a wound. “If you can influence the cells to cover the wound more quickly you can better heal the wound,” he said.

To manipulate cells to close over a wound faster he used magnetic, fluorescent nanoparticles. These nanoparticles were embedded into cells to act like tiny, glow-in-the-dark, magnets. The fluorescence in these particles tracked the movement of the cells over the affected area. A magnet was then used to influence where the cells migrated to and encourage them to cover the wound faster.

Having successfully developed nanoparticle technology that could be used to aid victims immediately after a trauma event, Michael then set his sights on developing a treatment to reduce existing scar tissue. This new research started 12 months ago with tissue culture work.
Unlikely atmospheric offenders

By Science Communication student
Julia Hart

While we all know that vehicle and industry emissions are pollutants, it is a shock to hear that our Eucalyptus tree could also be an atmospheric offender.

With air quality rapidly declining in many of the world’s major cities, scientists continue to seek to understand how harmful pollutants form in the atmosphere.

Recent findings suggest that vehicle and industry emissions are not the only atmospheric offenders. Plant emissions also play a major role in the chemistry of the atmosphere.

According to Felix Mackenzie-Rae, a PhD scholar in the Atmospheric and Environmental Chemistry Research (AECR) group, plants can emit compounds that contribute to the formation of harmful air pollutants.

Biogenic Volatile Organic Compounds, or BVOCs, are non-toxic upon emission, but degrade quickly in the atmosphere. The Eucalyptus tree, for instance, emits a BVOC called α-Phellandrene. In collaboration with the Chinese Academy of Sciences, Felix focuses on how those degradation products then go on to form nastier atmospheric pollutants.

Beijing battles hazardous smog and aerosol levels daily and Beijing residents are suffering. Health risks include sore throats, inflammation of the nasal passages and irritation of the respiratory system. More serious are an increased risk of heart disease and stroke. Diminished air quality poses a particular threat to children, elderly and those already living with respiratory ailments. With air pollution threatening the health of Beijing residents, finding a way to mitigate sources of pollution becomes critical.

But before mitigation comes understanding.

When BVOCs are released into the atmosphere, they degrade to form the required ingredients for more harmful pollutants. The bi-products react with nitrogen oxides found in vehicle emissions and sunlight to form photochemical smog. Responsible for the cloudy haze prevalent on many city skylines, photochemical smog is also responsible for the myriad of aforementioned human health risks.

Just how this BVOC degradation process takes place, however, is still relatively unknown. Felix, under the supervision of Associate Professor Sam Saunders in the School of Chemistry and Biochemistry, observes these chemical reactions in a controlled setting using the Chinese Academy of Science’s state-of-the-art Smog Chamber.

A multimillion-dollar experimental facility, the Smog Chamber is an indoor atmospheric chamber that allows scientists to run controlled experiments with specific chemical pollutants like the BVOCs emitted by Eucalyptus trees. Here Felix pumps gases into the chamber, samples the air composition over time, and observes which pollutants form under various atmospheric conditions.

The data is then used to model degradation pathways in the atmosphere. “The better we can model [air pollution], the better we can start looking for solutions and ways of combating and preventing it,” Felix said. With a clear understanding of pollutant formation, researchers can develop focused solutions and more effective preventative measures.
Making the most of study abroad

The University of Texas Austin is making it easier for students all over the world to study at its campuses.

Margaret Storm McCullers, a Study Abroad co-ordinator from UT Austin was recently at UWA as part of an almost overwhelming project of curriculum integration.

Ms McCullers won an Australian Endeavour Award to include Australian universities in her project which has already taken nearly a decade and will continue for another 10 years.

She spent five weeks at three institutions including UWA to find academic units that match degree requirements at UT Austin.

Already 82 units offered at UWA have been reviewed and approved.

Curriculum integration (CI) matches ‘foreign’ units directly with units required for graduation at UT Austin so that students know which units to sign up for while studying abroad.

“Study Abroad is becoming more professional,” Ms McCullers said. “Students are no longer willing to go abroad just for fun. They require academically-relevant programming or programs that they see will benefit their future career goals.”

She said CI was a term coined by the University of Minnesota in the 1990s as they worked to increase academic relevancy of Study Abroad.

“It is important to note that CI is not simply a list of unit equivalents. It starts with building a partnership with our academic colleagues, as we have been doing at UWA.”

In the three years she has been working on the scheme (the previous years were spent planning) Ms McCullers has completed 16 projects, each one resulting in up to 400 new units matched to UT Austin units.

“CI reduces real and perceived academic barriers to Studying Abroad,” she said. “Going on a program that offers 100 per cent academically relevant units means a student is not wasting time or money abroad while on the path to graduation.

“It also gives academic faculties the power to pick their peer institutions abroad. It is legitimising Study Abroad in the eyes of academia.”

She said integration did not guarantee that the foreign university would still offer a particular unit when a student chose to go there, nor that it was still offered in the semester listed or that, if the student chooses three units, that they won’t all be offered at the exact same time.

“But if a student takes a unit, it WILL count towards a degree. That’s the guarantee. And that’s why we pre-approve multiple unit options. So the students are empowered with choices once they arrive in the foreign country and enrol for units.

“I believe Australian universities can use this technique to direct students to programs in other parts of the world, with favourable exchange balances.

“The easiest response to CI is to say no it’s too hard or too much work. It IS very labour-intensive but it is the best way we can serve our students and I believe it is the future of Study Abroad.”

Milly Ingate, Associate Director International Centre and Manager Study Abroad and Student Exchange, said CI was very beneficial to UWA as it provided a guaranteed credit pathway for our partners’ students.

“This makes UWA more attractive. And more exchange students from our partners studying at UWA creates more exchange places for UWA exchange students. With the high demand for exchange places from UWA students, especially to the USA, this is a very important outcome,” she said.

“It also deepens our academic partnership which may lead to other forms of collaboration. CI may not be relevant for all UWA majors but especially for those with strict core requirements or assessment/laboratory requirements, it could very useful.

“Any faculty interested in following through with CI for a particular major can contact me for more information.”
It’s the time of the year to think about – and thank – the people who keep us safe at work.

Nominations for the UWA Safety Awards are open and are due on or before Friday 26 September. They will be awarded in Safe Work Australia month in October.

The group safety award acknowledges best practice approaches and achievements in work health and safety management by faculties, schools or sections and affiliates.

The individual safety award acknowledges outstanding contributions by individual employees in establishing and maintaining high standards of occupational safety and health activities and achievements.

The safety leadership award is to encourage the recognition of heads, managers and supervisors for their efforts to improve or sustain high health and safety standards either at a business unit or at a corporate level.

The safety recognition award does not have any specified criteria and may be for groups or individuals. Nominations may be made to recognise the efforts of current safety personnel or for a recently completed safety related activity or project.

For more information, please go to safety.uwa.edu.au/news/annual-safety-awards

Population ageing is a worldwide phenomenon with significant implications for urban development, housing and service delivery.

It is becoming a matter of policy priority for most industrialised nations, including Australia.

As the Baby Boomer generation transitions into retirement how is spatial planning addressing the current and future housing and service needs? How age-friendly are the outcomes? In particular, how can communities of integration be planned which cater for all ages and stages of life? This is the subject of Mariana Atkins’ Geography PhD thesis in the School of Earth and Environment.

The study investigates the distribution and mobility patterns of the ageing demographic.

Using Perth as a case study of a low-density, car-dependent, medium-sized city this research investigates intra-metropolitan migration patterns within Perth to determine whether people are ageing in place or moving in older age.

The findings will help to provide a richer picture of Perth’s ageing population landscape and will help to inform public policy on housing, transportation and service provision.

Mariana is one of a group of urban researchers at UWA who are about to launch the WA chapter of the Australasian Early Career Urban Research Network (AECURN).

It is a network of early career researchers and PhD scholars. Academics who are interested are invited to the inaugural Meet and Greet.

Who keeps you safe at work?

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Urban Perth image by Rory Innes

Diversity funding on offer

Is there an equity and diversity initiative in your part of the campus that you would like to see implemented to support UWA’s widening participation agenda?

Consider applying for a Diversity Initiatives Fund Grant. The focus of the Fund is now to support current and potential students from a low socio-economic background.

Applications are invited from individuals, groups, schools or faculties, to assist in the development of targeted diversity initiatives that: are creative, local area programs; aim to increase the participation, retention and/or success of students from low socio-economic backgrounds; demonstrate clear and achievable outcomes and assurance of quality; and are innovative and break new ground at this University.

Applications for funding close on Friday 17 October 2014 and all applicants will be notified by mid-December. Successful applicants are expected to complete their project during 2015.

An application form can be downloaded from the Equity and Diversity web site hr.uwa.edu.au/equity/projects/grants or by contacting the Office Coordinator on 6488 3673. Applications should be sent to DIF Applications, Equity and Diversity, M350.
From cracked teeth and old fillings to more serious concerns, oral health issues experienced by people in their middle years require special care to conserve a youthful, natural smile. Dr Chai Lim and his team have a special interest in dentistry for baby boomers.

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What would you teach?

From early childhood literacy to high school science, UWA’s teaching graduates are sharing their expertise in classrooms around the world. Our employer reputation score* is higher than that of any other WA education faculty - so wherever you want to make a difference, a teaching degree from UWA will help you get there. For more information call 6488 2388 or visit education.uwa.edu.au.

*QS World University Rankings by Subject

Need a photographer?

Prize nights, book launches, significant visitors and events.

The University does not have an official photographer, but Marketing and Communications can provide advice and recommend a range of professional photographers.

Contact UWA Marketing and Communications for more information: Lindy on 6488 2436.
Introducing Unicredit’s new Member Relations Manager for UWA

Unicredit is pleased to introduce our new Member Relations Manager for the UWA campus - Michael Papapetros.

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Like parents of teenage kids today, we are barely aware of the way technology is woven into the fabric of students’ lives and how much they take for granted. A huge 95 per cent of UWA students now carry a smartphone.

Their interactions with others online and face-to-face have blurred and they can rapidly switch between worlds. Their digital lives are uploaded onto the cloud and this now goes with them wherever they are.

At the same time, our students are having to face the dissonance of a University that itself has not caught up with this digital, mobile and cloud-based world. If our students are the canary in the mine warning us of the need to change, the more driving need is the increasing challenge of delivering high quality teaching and research in the face of ever-rising costs and diminishing government income.

Other industries have faced the same challenge. The newspaper industry in particular has been hit very hard by its slowness in moving away from lucrative print to the vastly less profitable world of digital news. Some of the more savvy organisations have embraced the inevitable and adopted a digital first approach.

The idea behind this is that digital becomes the first priority for the business instead of an afterthought of print. It has changed the nature of the business dramatically and acknowledged the different revenue and profit profile of a digital business. Arguably, organisations like the Guardian, the New York Times and even the BBC have been successful in starting the journey to this approach.

In terms of UWA, a digital first (where digital encompasses mobile and cloud) approach would mean a range of things but it is important to note that it is not that we are not doing some of these things already. Rather, we have viewed each of the individual components of the whole on an ad hoc basis and not as part of a system. Individuals and organisations decide to implement digital processes to optimise locally rather than doing this as part of an organisational plan to support a business. In a digital first organisation, the underlying infrastructure that might be necessary for an overall digital approach becomes an obvious foundation for the entire system, rather than being seen as an ad hoc component.

In practice, digital first means:

- Contact with the University will be digitally mediated. This means online forms, online processes such as student enquiries, student enrolment, postgraduate enrolment, examination, and so on; in fact any administrative task that doesn’t require speaking to someone face-to-face;

- Teaching is delivered using appropriate technology to support a flexible and blended approach. All new units are produced both for an on-campus mode and a pure online mode where possible. We can’t do this for everything. We still have labs and field trips from which our students benefit;

- Research is conducted and supported using appropriate technology. This covers all parts of the research life-cycle from conception to delivery and dissemination;

- Communities are explicitly created and fostered in both the real world (on campus and with the wider community) and digital space (social networks, online student groups.)

We are clearly not in a position to deliver on a new digital first strategy by expecting staff to accommodate the implementation of change as part of their normal duties. If we are to move into a digital first mode with the production of a new product, it will need to be executed as part of an overall product development process that is budgeted against realistic revenue expectations.

That process needs to be enabled with appropriate technology. Again, this requires people with appropriate skills.

Ultimately, we need to create an organisation in which our students and staff can extract the maximum benefit with the minimum friction, by supporting the technology that enables this. When we achieve that, we will truly be digital first.