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Uniview

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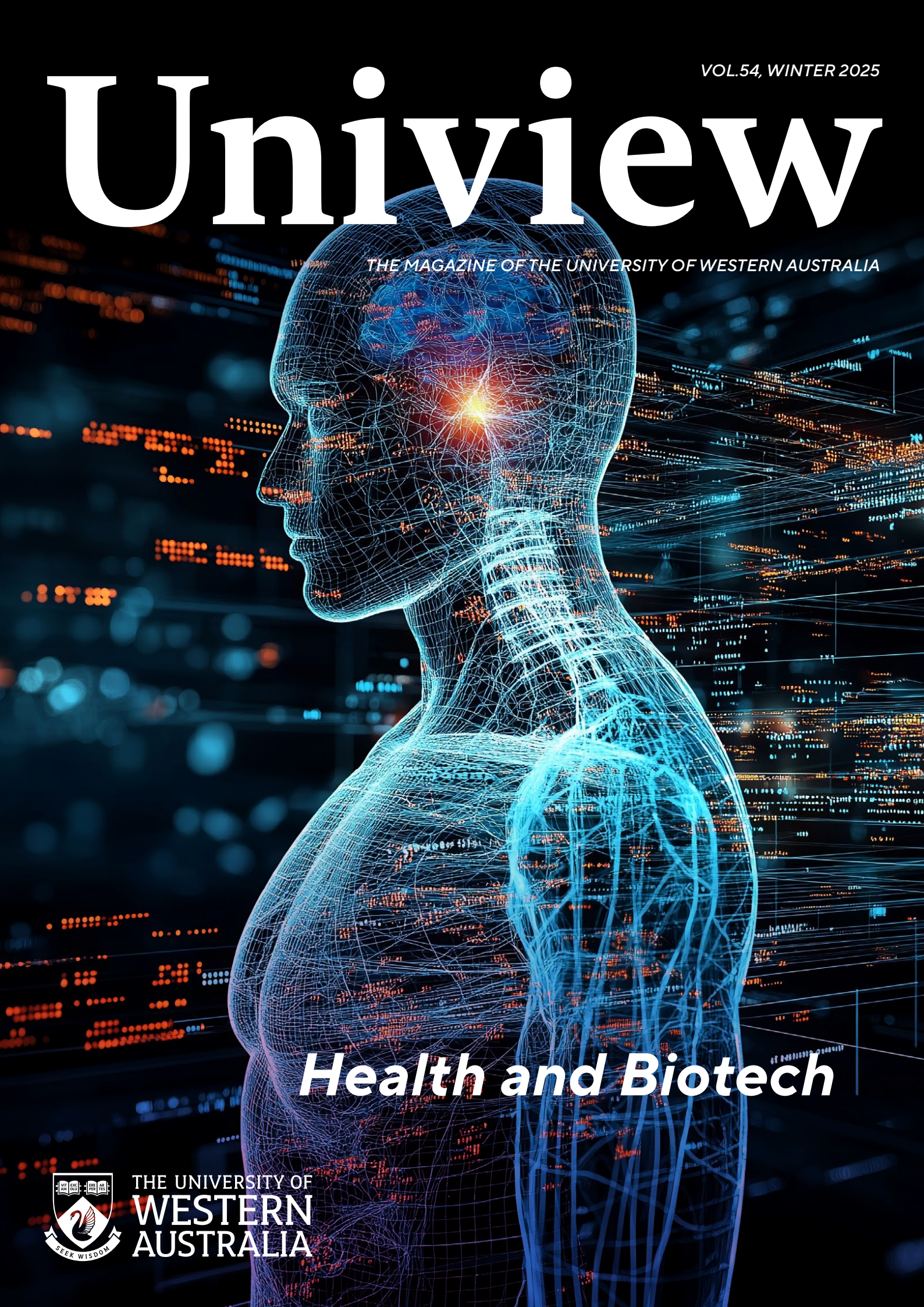

Health and Biotech

THE UNIVERSITY OF WESTERN AUSTRALIA

SEEK WISDOM

Message from **the Editor**

Biomedical research at our University is leading the development of next-generation treatments — taking them from the laboratory into clinical applications that are changing lives.

In this edition of *Uniview,* learn how cutting-edge cellular and molecular biology technologies are pioneering new biomaterials to regenerate damaged tendon, ligament and cartilage tissues.

We also reveal how UWA researchers are exploring marine pharmacology, harnessing adaptations made by nature that have underpinned the survival of ancient marine sponges over millennia which could lead to unique compounds to treat cancer.

In other pioneering research, teams are collaborating on five pilot projects focused on treating aggressive and hard-to-treat cancers using RNA therapies. Building on years of research and clinical expertise in these cancer types, this work applies innovative technologies and analysis to differentiate and influence changes in tumour structure.

Read about the first-ever tool developed to enhance our understanding of the health impacts of plastics in our foods and the way we package, store and cook our foods, on our health.

We also highlight the development of medication that blocks antibodies responsible for anaphylactic allergic reactions in individuals with peanut allergy, promising safer management options with the potential to also help people with other severe allergies.

And we celebrate several UWA graduates and medical pioneers who have dedicated their careers to improving health outcomes for Western Australians. Enjoy their inspiring stories.

Alison Batcheler
Editor
Associate Director, Corporate Communications

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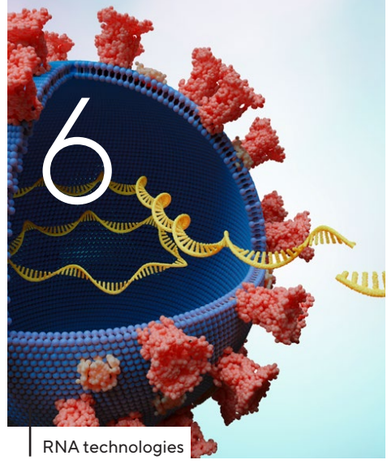
The University of Western Australia acknowledges that its campuses are situated on Noongar land, and that Noongar people remain the spiritual and cultural custodians of their land, and continue to practise their values, languages, beliefs and knowledge.



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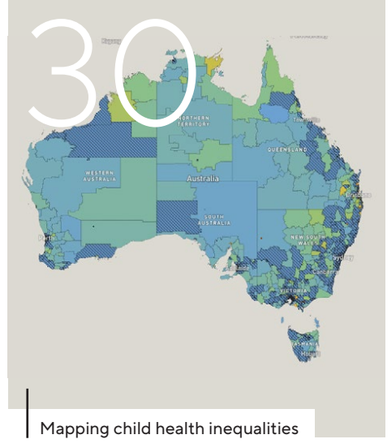

Mapping child health inequalities

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Cover page: AI representation of the human body overlaid on a background of data


Professor Amit Chakma, Vice-Chancellor
The University of Western Australia

From the **Vice-Chancellery**

The University of Western Australia proudly stands at the forefront of innovative health and biotechnology research.

Our multi-disciplinary research teams focus on finding the best solutions to some of the world's biggest health challenges by improving prevention, diagnosis and treatment.

The remarkable and collaborative projects are led by world experts who are helping to train students and early-career researchers become future health leaders.

In this edition you can read about a new centre based at UWA that is advancing personalised cancer treatments by developing and testing RNA therapies and discover how UWA is working to shape a brighter future, creating better health outcomes and improved wellbeing for individuals and communities.

We acknowledge the work of Professor Ian Constable AO, an internationally renowned specialist, who has transformed eye health research and care, not just in Western Australia, but globally.

His dedication to excellence over the past 50 years has transformed how we understand and treat eye disease and has trained generations of specialists.

Professor Constable's work philosophy led to remarkable breakthroughs, including the world's first virus-transmitted DNA treatment in adult humans with macular degeneration.

The inaugural Lions Chair of Ophthalmology at UWA has created a legacy that will continue to impact lives for generations to come.

I would also like to take this opportunity to welcome Dr Diane Smith-Gander who brings a lifetime of perspective to her new role as Chancellor of the University.

Dr Smith-Gander will be an excellent leader for our Senate and University and I look forward to working with her to continue to uphold UWA's founding mission for the advancement of the prosperity and welfare of our communities.

Professor Amit Chakma,
Vice-Chancellor
The University of Western Australia

Cancer research **project to investigate potential of Busselton Jetty's marine sponges**

A groundbreaking research initiative is set to explore the untapped medicinal potential of marine sponges found at Busselton Jetty, with the goal of identifying new lead candidates for cancer treatment options.

Led by Dr Darren Holland from the School of Molecular Sciences, the project aims to investigate the unique compounds produced by the ancient organisms, contributing to the fight against cancer.

Dr Holland, who recently completed a postdoctoral fellowship at Scripps Institution of Oceanography in the United States, is working with Associate Professors Heng Chooi and Gavin Flematti from UWA and Busselton Jetty CEO Lisa Shreeve in the unique collaboration.

With expertise in marine invertebrate chemistry and drug discovery, Dr Holland said that natural products, the focus of the study, were molecules produced by nature that played vital roles in defence, communication and adaptation among organisms.

"Natural products have evolved to interact with living systems, which is why they have been such a valuable source for medicines. In fact, many of today's drugs, especially those used in anti-cancer treatments, are either directly from or inspired by natural products," he said.

"Marine sponges have evolved in Earth's oceans for millions of years, competing for space on coral reefs and co-existing with pathogenic microbes and viruses. These unique adaptations make them a rich source of natural products offering immense potential for new drug discovery."

Dr Holland said Busselton Jetty, home to Australia's largest artificial reef, contained a remarkable biodiversity, including more than 300 marine species and a wealth of unexplored temperate marine sponges.

"With three sponge-derived drugs already approved for use worldwide and several others in clinical trials, the potential for discovering new therapeutic agents is vast," he said.

"Previous studies have already highlighted promising sponge-derived compounds from Western Australia, such as *phorboxazole A and aurantoside C*, both of which exhibit significant anti-cancer properties, and our project hopes to build on that."

The team hopes to attract funding for a long-term investigation into the sustainable production of sponge-derived compounds, integrating aquaculture and DNA sequencing, to enhance marine pharmacology in Western Australia. ■

Food for thought: tool measures dietary plastic exposure

Researchers from UWA have designed a tool to measure dietary exposure to plastic products.

The study, co-authored by Dr Amelia Harray and Professor Michaela Lucas from UWA's Medical School, was published in *Frontiers in Nutrition*.

"Plastic-associated chemicals can be ingested, inhaled and absorbed into human bodies, and have been linked to cardiovascular disease, metabolic syndrome and other health conditions," Professor Lucas said.

"Diet has been identified as a major source of plastic exposure and the chemicals associated with plastics are commonly found in food packaging, processing and preparation materials."

The '24-h Dietary Recall – Plastic Exposure' tool collects detailed information on food volumes, packaging, storage and cooking methods to measure dietary exposure to plastics.

The tool incorporates predefined criteria for identifying high-risk practices and food characteristics, such as individually packaged items or those microwaved in plastic, enabling the assignment of scores based on a theoretically derived dietary plastics scoring matrix.

"This tool is the first specifically designed to capture detailed data on dietary exposures to plastic products," Dr Harray said.

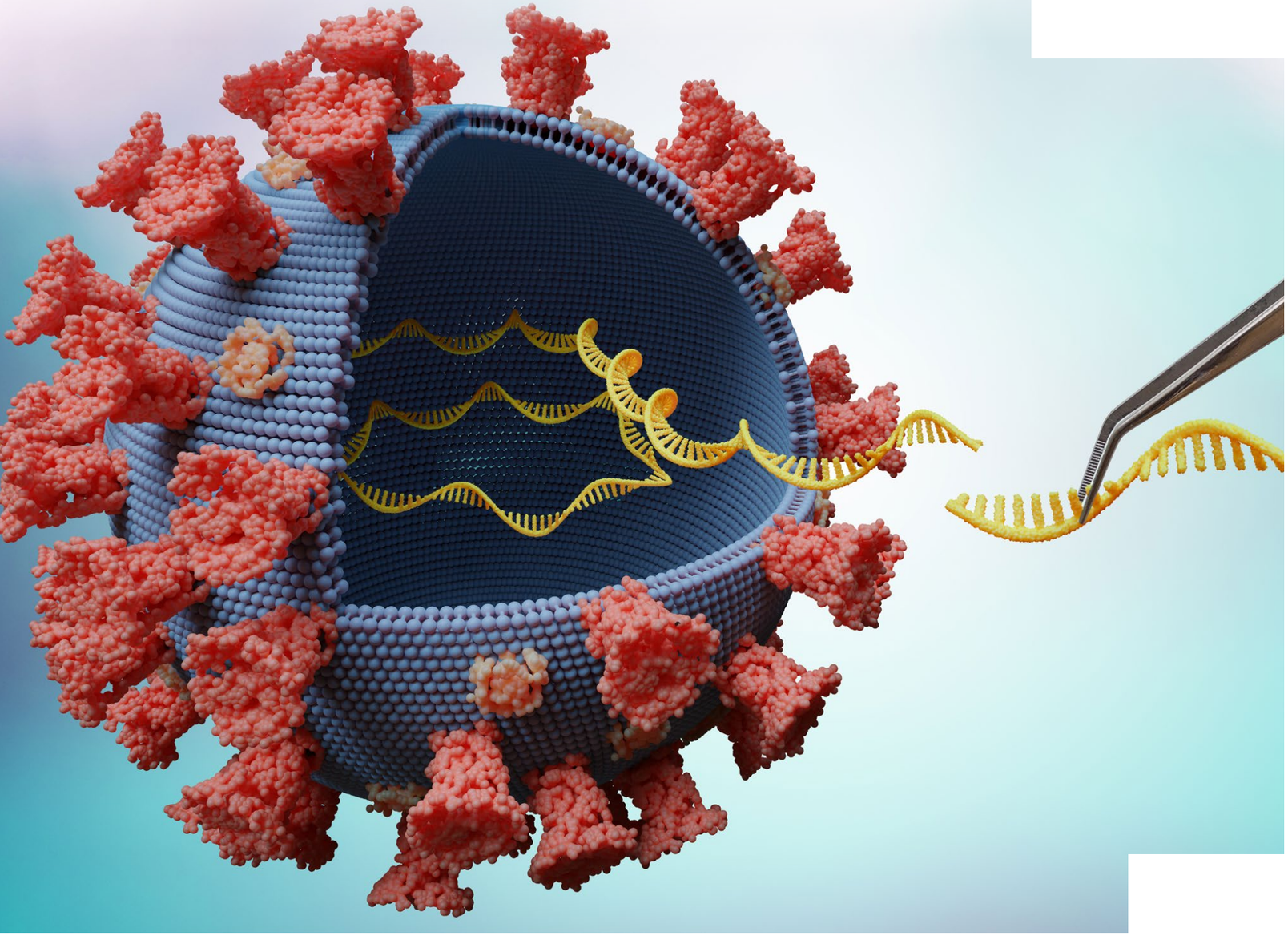
"The next step is to validate the data against the presence of plastic-associated chemicals in urine samples obtained during the same 24-hour period."

The tool has been used on healthy adults in the Plastic Exposure Reduction Transforms Health (PERTH) Trial, which is looking at whether reducing plastic exposure can improve cardiovascular and metabolic health.

"This method creates avenues for population monitoring, guiding interventions, and deepening our understanding of the health impacts of plastics in the food we eat," Professor Lucas said.

"The data could be used to inform policy changes aimed at reducing plastic use for health and environmental reasons." ■

Creating super cell POWER



By Annelies Gartner

FEATURE

Professor Archa Fox

A new research centre is advancing cancer treatments by developing and testing RNA therapies that can be tailored to individual patients and tumours.

Professor Archa Fox, from UWA's School of Human Sciences, is leading the research at the Australian Centre for RNA Therapeutics in Cancer based at UWA.

The new category of medicine is based on messenger ribonucleic acids (mRNA), a natural molecule our bodies make that is an intermediate between DNA and proteins.

When the global pandemic hit, a COVID-19 vaccine using mRNA became the first approved therapy using the power of this technology.

"It opened the floodgates to harnessing this technology for lots of different diseases," Professor Fox says.

"The beauty of mRNA is that instead of making a protein in a factory and using that as a medicine, you can have an individual's own cells make the proteins they need by giving them the precursor, which is the mRNA."

Professor Fox's fascination with all forms of RNA began when she was a PhD student and wanted to understand how a single human fertilised egg eventually becomes a person — how each of our cells has the same DNA, yet one cell can look so different to another, and different cells have different roles.

"The key is understanding that RNA, that is made from DNA, drives cellular differences," she explains.

"I like to say the RNA is what brings the genome to life and that's what I've spent my whole career studying.

"I was also intrigued by how a normal human cell mutates and becomes a tumour cell."

Professor Fox's interest in how cells work and the role of RNA in that process made a move into researching it as a therapy a natural progression.

"The instructions for how to make a useful protein are in our DNA and are very similar in everyone," Professor Fox explains.

"For some applications, like the COVID-19 vaccines, we could develop and deliver the same mRNA sequence, coding for the SARS-COV2 spike protein, to each person."

> "Our centre connects the people with expertise in cancer and understanding of target molecules with people, like myself, who understand RNA and how to produce it and test it."

RNA technology can be a little more complicated as researchers move into the possibility of designing tailor-made treatments specific to an individual.

"This is being pursued already with certain types of cancer treatments where the patients can get a unique, only-person-in-the-world treatment based on their tumour," she says.

"Individualised vaccines for cancer are at phase two trial stage for some companies.

"Our centre is working with renowned UWA researchers from the National Centre for Asbestos Related Diseases to help them bring their prior lung cancer vaccine program to the clinic with mRNA."

Professor Fox says it takes a lot of people working in teams to make breakthroughs, including the people who have lived experience of disease.

"My job is to make sure we build a community of researchers who share the passion and vision to make real progress – and do anything I can to help them succeed," she says.

"Our community also has those with lived experience of having cancer and caring for people with cancer. Their voice is pivotal to guide us."

Currently at the centre, researchers are working on five pilot projects focused on treating aggressive and hard-to-treat cancers using RNA therapies.

"Each pilot project takes a team approach and tackles a different cancer to develop treatments using a specific platform capability.

"We're specialising in the really problematic, aggressive and hard-to-treat cancers and trying to come up with new ways to use mRNA, working from the concept through to preclinical work and hopefully to clinical trial."

As well as the lung cancer project the team is developing four other RNA treatments including: for sarcoma, led by Dr Ben Wylie, from The Kids Research Institute Australia; pancreatic cancer, led by Associate Professor Juliana Hamzah from Harry Perkins Institute of Medical Research; and two different type of breast cancer — triple negative cancer led by Dr Ben Dwyer, from Curtin University, and estrogen-receptor positive cancer led by Associate Professor Pieter Eichorn, also from Curtin University.

"The reason we've chosen those cancers is because we are building on years of research that experts in those cancer types have already been doing at many different institutions in WA," Professor Fox says.

"Our centre connects the people with expertise in cancer and understanding of target molecules with people, like myself, who understand RNA and how to produce it and test it."

To produce the mRNA therapies a platform approach is taken where the only thing that changes is the sample taken during a biopsy.

"A team of lung cancer specialists (Dr Alec Redwood, Professor Jenette Creaney and Professor Bruce Robinson) spent years identifying what are called neo-epitopes — the tiny little changes that happen in one tumour compared to another," Professor Fox explains.

"It's a computational project to take all the sequences from a person's tumour and figure out the changes that are occurring — once you have the ability to do that for one tumour, you can do it for another and another.

"You don't have reinvent the wheel every time because it's just the information going into the beginning of the pipeline that is slightly different."

This year, the centre is in a position to start making mRNA to test as well as starting innovative new research to improve the mRNA, so it lasts longer once it goes into cells and the beneficial therapeutic effect is more sustained.

"The beauty of mRNA is that, like DNA — it's just a simple sequence of four nucleotides," Professor Fox says.

"For every strand of mRNA the manufacturing process is the same, the only thing that changes is the mRNA sequence."

At the centre's RNA Innovation Foundry, an mRNA production facility, staff and students are learning industry-readiness skills while creating a high-quality assured product.

"This is going to be a huge asset to UWA because it's going to teach our students about what the biotechnology and pharmaceutical industry needs," Professor Fox says.

"mRNA is now known as the fourth pillar of the pharmaceutical industry and if we can be both innovative, as well as producing quality mRNA, it's going to be a great training experience."

Professor Archa Fox, Dr Ben Wylie and Associate Professor Juliana Hamzah in the lab

Professor Fox is well-known for her 2002 discovery of small structures within the nucleus of our cells called paraspeckles.

Paraspeckles are formed through a different type of RNA, a "long noncoding RNA", and are needed by cells to help them respond to different stresses.

Professor Fox believes that one day her discovery could form the basis of new treatments for disease.

"We developed a slightly different approach to mRNA, using an RNA technology called antisense oligonucleotides, to regulate paraspeckles and change cell health," she says.

"We are collaborating with other experts to test this treatment for different diseases."

In the meantime, a collective effort from scientists around the world working on RNA therapies and biotech and pharmaceutical companies, with clinicians for guidance, is needed before the full potential of RNA therapeutics can be realised.

"We need to do the research to see what works and what doesn't and share what we find, to push the field forward," she says.

"This centre is a great opportunity to help research progress and get treatments to the clinic faster.

"That's partly because manufacturing mRNA is relatively quick compared to other therapies, so it has the potential to shorten the time it takes to go from concept to clinical trials." ■

The Cancer Research Trust provided funding over five years to establish the Australian Centre for RNA Therapeutics in Cancer. Other funding partners include Therapeutic Innovations Australia, UWA, WA State Government's Future Health Research and Innovation Fund, Harry Perkins Institute of Medical Research, The Kids Research Institute Australia, Cancer Council WA, The Ian Potter Foundation, Curtin University and global life sciences company Cytiva.

FEATURE

Nutting out
an allergy treatment

By Annelies Gartner

Accidental ingestion of peanuts can cause a life-threatening reaction for people who are allergic.

Using an investigational injectable medicine, the IgGenix ACCELERATE Peanut Study is helping to solve allergies and empower teens and adults to live without fear of anaphylaxis.

Dr Michael O'Sullivan, from UWA's Medical School, is leading the Phase 1 trial at Fiona Stanley Hospital.

After completing an undergraduate degree in medicine at UWA, Dr O'Sullivan undertook specialty training in adult immunology and allergy, and then spent about 18 months at Princess Margaret Hospital for Children in paediatric allergy and immunology.

"I started to get involved in investigator-initiated research around paediatric food allergy," he explains.

"Then I extended on from that, recognising there was a lot of demand for food allergy treatment in adults and very little research was being done in that area."

The technology behind the medicine used in the ACCELERATE study was developed by American biotech company IgGenix.

"The research they led isolated individual immune cells that make allergy antibodies in someone with a peanut allergy," Dr O'Sullivan says.

"They then re-engineered those antibodies to be essentially blocking antibodies — they block the immune system from being able to respond to the bits of the peanut that would otherwise trigger an allergic reaction."

The company did not have the clinical capacity and expertise to undertake the Phase 1 trial so contacted Australia's National Allergy Centre of Excellence (NACE), a collaborative group based out of Murdoch Children's Research Institute.

Dr O'Sullivan and Associate Professor Debbie Palmer, from UWA's Medical School and The Kids Research Institute, are co-chairs of the NACE Food Allergy Stream, so his work as an adult immunologist in food allergy research was known to the centre.

"I was able to point them in the direction of some colleagues who I knew were interested in allergy research and were in allergy services at public hospitals," he says.

Dr Michael O'Sullivan, from UWA's Medical School

"We've ended up with four sites in Australia for the study and that might grow with Phase 1B and Phase 2 studies."

The study recruited patients 15 to 55 years of age who had a history of severe peanut allergy.

"If someone has a peanut allergy their immune system, their B cells, make antibodies that bind on to peanut," Dr O'Sullivan explains.

"When they eat peanut it binds on to those antibodies and switches on the immune cells that cause the release of things like histamine and tryptase and this causes the allergic reaction."

As part of the trial, allergy suffers are given an injection of the peanut-blocking medication and then eat a small amount of the nut.

"The antibodies in the medication block the peanut before the immune system can recognise it," he says.

"It doesn't get rid of the underlying allergy, but it essentially blocks the immune system from being able to react to peanut for as long as the medication is circulating around in the body."

One of the benefits of the medication is its safe approach — unlike trials where the patient is fed a small amount of peanut to build up tolerance, this does not trigger an allergic reaction.

FEATURE

> ‘The antibodies in the medication block the peanut before the immune system can recognise it.’

“It provides a safety net for people if they accidentally eat a small amount of peanut and should prevent them from having a reaction,” he explains.

“If they consume a large amount of peanut they should have less severe symptoms.”

Potentially patients would only need a dose once every month or every two or three months to be protected.

“You’d need ongoing treatment, but it would be maybe monthly or less frequent than that rather than daily,” he says. “If you stop, about six months later you’d be back to where you started.”

Currently people with severe allergies use an EpiPen, which contains adrenaline and is used as an antidote to a reaction that is causing symptoms such has coughing, wheezing, light-headedness, rash, hives and stomach pain.

“Comparatively this medication is more like a vaccine that prevents the allergic reaction in the first place,” Dr O’Sullivan explains.

“Someone who gets an influenza vaccine makes antibodies to protect against an infection, an EpiPen is more like an antiviral someone takes once they get sick with influenza.”

Although some young children have the opportunity to retrain their immune systems to be less reactive to peanuts, eating a small amount to try to build up their tolerance is not always a viable option.

“For children who don’t tolerate this approach because of the burden of that treatment, or when it doesn’t work, it’s good to have this option,” he says.

“It will also make allergies easier to manage when they start high school and become more independent and less closely supervised.”

Dr O’Sullivan says once researchers have “cracked the code” to treat peanut allergies the technique and technology should be transferable.

“It relies on getting the code for the antibodies and then being able to re-engineer the medication,” he says.

“The underlying technology that was used to sequence the individual cells took a long time to do for the first one or two patients, but they’ve now got thousands of patients who’ve been sequenced.

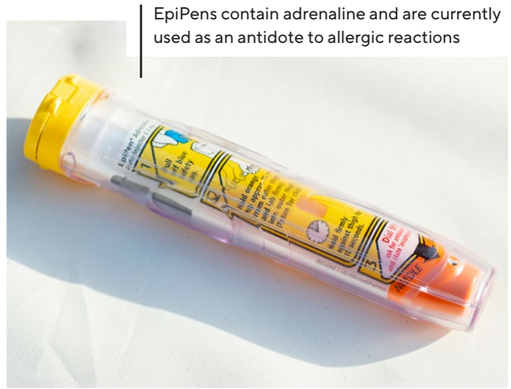
“The company has already got the code from people with allergies to cashews, egg, milk, wheat and shellfish.”

The hope is that if this trial is safe and effective for someone with a peanut allergy then medications can be developed for not just other food allergies but also atopic diseases such as hay fever.

“It could work for hayfever and again, it would be a temporary thing, but someone who’s got bad grass pollen allergy if you could find the relevant antibodies triggering the reactions, you could block them for the three or four months of the year that they’re getting symptoms,” he explains.

A lot of the burden of peanut allergy for people is that risk of reactions and the relief this medication has the potential to deliver could be life-changing.

“Imagine if these people did not have to worry about cross-contamination or could travel to places with language barriers and not have to be concerned about anaphylaxis,” Dr O’Sullivan says. ■



EpiPens contain adrenaline and are currently used as an antidote to allergic reactions

FEATURE

GROWING FUTURES

From Darwin dreamer to Indigenous birth-care pioneer, this Territory doctor is leading the charge.

By Liz McGrath

Growing up in Darwin in a working-class family, Kiarna Brown (MBBS '06) had big dreams of university life, even before she fully understood what that meant.

Today, she is a pioneering First Nations obstetrician, leading groundbreaking work to address one of Australia's most pressing health challenges: the disproportionately high rates of preterm births among Aboriginal and Torres Strait Islander women.

"I was always an ambitious kid who loved learning," reflects Kiarna, a consultant obstetrician and gynaecologist working on Larrakia Country in the Northern Territory.

"But I didn't graduate with the grades to study medicine straight away."

After high school, the vivacious young student began a health science degree in Melbourne, but something didn't quite click.

The change came when she took a job as a receptionist at an Aboriginal community health organisation.

"That experience really cemented that I wanted to work in health," Kiarna recalls. "I had found a passion for making change in Aboriginal health."

When she spotted an advertisement for UWA's Aboriginal and Torres Strait Islander pre-medicine program in the *Courier Mail* newspaper, she took a leap of faith.

Despite having never been to Perth before, she flew west for the six-week intensive course, earned a place in UWA's medical degree, and found her second home at the University's School of Indigenous Studies, or SIS.

"The people at SIS really did become my family," she says. "I met people who I actually work with now – one who was a couple of years above me and mentored me, is a neonatologist here in Darwin."

Today, Kiarna is tackling one of the Territory's most challenging health disparities.

The preterm birth rate for Aboriginal and Torres Strait Islander babies in the NT is almost double that of the non-Aboriginal population at over 14 per cent – among the highest rates in the world.

"As an obstetrician working in the Territory, I see the devastating effects of babies born too early far too often," she says.

Dr Kiarna Brown (far-right) with her Royal Darwin Hospital colleagues

Dr Kiarna Brown

"This equates to too many mothers walking out of hospital without their babies in their arms and too many babies starting life already at a disadvantage."

As the NT clinical lead for the Australian Preterm Birth Prevention Alliance, the obstetrician is spearheading innovative approaches to address this crisis.

Her work includes leading yarning groups in remote communities, asking practical questions about how health services can improve, and listening to women's experiences with maternity care.

"It boils down to people's access to healthcare services," she explains.

"When women feel safe and respected, they're going to engage with maternity services more often and they're going to have more meaningful relationships with their healthcare providers."

This commitment to community-led solutions has shaped her research at the Menzies School of Health Research, where she recently accepted a Senior Research Fellow appointment.

Her studies have revealed that while many risk factors for preterm birth are similar between Indigenous and non-Indigenous women, access to care and cultural safety make a critical difference in outcomes.

Between her clinical work at Royal Darwin Hospital and Darwin Private Hospital, research commitments, and family life with husband Chris and their two sons, Jake and Samuel, Kiarna maintains strong connections to her community.

Kiarna at home with her family

She's even found time to play in the inaugural Tiwi Bombers women's football team, though she jokes she's "not a player anymore, unfortunately, although I'm still involved!"

Her husband Chris has added a hoppy twist to her medical career – at their family microbrewery, he's crafted the 'consultant pale ale' in her honour, which she laughs "makes me a bit popular at work sometimes".

Looking ahead, Kiarna's ambitions remain as bold as they were when she was at school.

She's working toward completing her PhD, focused on finding innovative ways to prevent poor perinatal outcomes for First Nations women in the Top End. But perhaps even more importantly, she's working to inspire the next generation.

"I would love to see way more First Nations obstetricians around the country," she says.

"I definitely want another Indigenous obstetrician up here in the Top End, even just more doctors around the hospital and around the community and in our remote communities would be great!"

For Kiarna the work is and always will be deeply personal.

"If we are going to be serious about closing the gap in Aboriginal and Torres Strait Islander health, then preterm birth prevention is the best place to start," she says.

Through her leadership in the 'See, Stop, Scan' campaign and her commitment to culturally informed care, this UWA alumna is helping to write a new chapter in Indigenous maternal health – one that honours traditional practices while embracing modern medical advances.

A journey that began with a young girl's dream in Darwin and has evolved into a mission to ensure every First Nations baby has the best possible start in life. ■

For more information on the national preterm birth prevention efforts visit:
pretermalliance.com.au/everyweekcounts

UWA's Professor John Newnham and Dr Kiarna Brown

Repairing the body WITH NATURE IN MIND

Mr Paul Anderson and Minghao Zheng, Professor of Orthopaedic Science at UWA's School of Biomedical Sciences

By Rosanna Marchesani

As the population ages, the need for treatments that can repair and regenerate damaged material by promoting the body's natural healing processes is expected to become more prevalent.

Minghao Zheng, Professor of Orthopaedic Science at UWA's School of Biomedical Sciences and Head of Bone and Brain Research at the Perron Institute is a global a leader in the treatment of tendon injuries, osteoporosis, and osteoarthritis using cutting-edge cellular and molecular biology technologies, and an expert in the translation of science to clinical practice.

He pioneered the development of nature-derived biomaterials and cell therapy to treat nerve, cartilage, tendon and ligament injury and invented a natural way to treat bone fractures and trauma. Professor Zheng led the pathway to develop patents into stem cell therapy products and biological devices for orthopaedic applications that have been approved by Food and Drug Administration (FDA) and Therapeutic Goods Administration (TGA).

Orthocell

Regenerative medicine uses the body's own capacity to stimulate growth and healing in the body. In 2006, Professor Zheng connected with entrepreneur Paul Anderson who saw the potential of his work for people suffering from tendinopathy, where issues could not be resolved by physiotherapy.

In 2007, the pair founded the UWA spin out biotechnology company Orthocell and partnered with UWA to use Pathfinder funding to commercialise the regenerative medicine. The partnership has provided a mutual benefit with the use of researchers and world-class facilities, co-funding on Australian Research Council grants, royalties, and the funding by Orthocell of academic positions within UWA.

The intellectual property was patented through the UWA commercialisation office. In 2014, Orthocell successfully raised venture capital funding and listed on the ASX, with UWA becoming one of its 20 largest shareholders. In 2024, Orthocell holds more than 100 patents internationally, from five patent families.

By 2014 Orthocell had grown the first human tendons in a laboratory and by 2016, employed 23 staff and held 24 patents, of which 16 originated at UWA. By 2021, the number of employees grew to 55 staff with Orthocell recognised as the leading biotech company to increase the global demand for distribution of Australian-sourced medical products.

Engineered product promises repair

Unlike bone and muscle, damaged cartilage has a limited capacity for self-repair. While tendinopathy usually resolves within 12 months when treated with exercise, some patients are left with chronic and debilitating tendinopathy requiring surgery. Failure rates in surgery on some sites, like the shoulder, are up to 40 per cent. OrthoATI® addressed this unmet clinical need in tendon injury. OrthoATI™ uses the patient's own healthy cartilage cells (chondrocytes) to assist the regeneration of damaged cartilage in the knee and ankle. The technology has been approved by the US FDA (2016) and Australia's TGA (2017) as the first tissue engineering product for cartilage repair. It is considered the best option for treatment of a cartilage defect in the US and Australia.

OrthoATI™ is minimally invasive, using a patient's tendon stem cells to stimulate the formation of collagen and other connective tissue to help regenerate and repair damaged tendons and ligaments. The product can treat tendon or ligament problems for the Achilles, patella, tennis elbow, rotator cuff and hip tendons. Following the procedure, the patient is provided with a rehabilitation program to slowly increase weight bearing and then return to recreational or sporting activities. A randomised control study on OrthoATI™ vs surgery on treatment of chronic tendinopathy showed that minimum invasive Autologous Tenocyte Implantation (ATI) has achieved earlier recovery in functional improvement.

Premium dental membrane

CelGro™ was developed as a next generation collagen-based medical scaffold to augment tissue repair of the tendon by supporting and reconstructing the tendon tissue. Orthocell navigated the regulatory pathway required to turn lab bench research into a commercially viable product, which became approved clinically in Europe to guide bone and soft tissue regeneration. In 2008, the team received UWA Pathfinder funding to test Celgro®, which was rebranded to Striate+™ in 2021. Striate™ is a sterile, resorbable collagen membrane used for guided bone and tissue regeneration in dental applications.

European (CE mark) approval for CelGro™ in 2017 allowed it to be used in a range of dental bone and soft tissue procedures. It also received Australian TGA approval and US FDA approval for use as a collagen dental regeneration membrane. In 2021, it was included on the Australian Prescribed List, providing reimbursement to surgeons and patients with affordable access to a premium dental membrane product. In the same year, it received US FDA approval.

The intervention provides surgeons with significant improvements in efficiency in dental applications including with extraction sites, grafting, guided bone regeneration and periodontic defects, and delivers improved patient recovery through its superior handling characteristics, tissue integration qualities and improved bone growth and healing. In 2024, more than 40,000 patients have had Striate+™ applied as part of dental implants.

In 2022 the collagen product for guided bone regeneration attracted $21.46 million licensing fee and market sale from BioHorizons to Orthocell Ltd. The product has now been given an exclusive global marketing and distribution licence to sell globally.

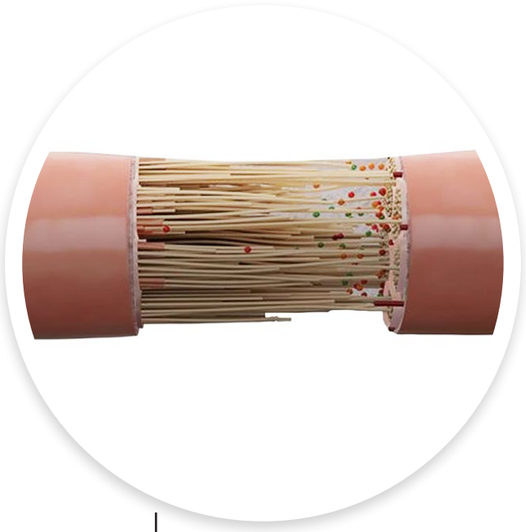
Striate™ is a sterile, resorbable collagen membrane used for guided bone and tissue regeneration in dental applications

Revolutionising nerve repair

Millions of people suffer from peripheral nerve injury due to sporting or work-related incidents or from a motor vehicle accident. The damage can have a significant effect on a person's ability to carry out daily tasks. While surgery to reconnect nerves that have been cut or crushed may be an option, it is complicated, can leave scar tissue, and results are inconsistent.

Based on its existing collagen technology, in 2022, Remplir™ was invented as a collagen nerve wrap to provide protection to the injured nerve while it heals. The surgical technology is used in peripheral nerve damage and reduces the need for suturing by offering a barrier of protection for the nerves that need to be conjoined. It creates an ideal environment to support regeneration which dissolves over three-to-six months, resulting in consistent and predictable return of muscle function and reduced healing time for patients. Remplir™ gained Australian Therapeutic Goods Administration (ATGA) regulatory approval and reimbursement for use of peripheral nerve reconstruction in 2022.

The use of Remplir™ in nerve reconstruction has achieved successful clinical outcomes for patients with cervical spinal cord injury or paralysed upper limbs. More than 130 surgeons are using the technology to help over 3000 patients with nerve injury. The innovation has resulted in operations becoming shorter and simpler, with improved recovery in patients. Remplir™ has featured in Channel 9's national Innovation Nation program.



Remplir™ nerve reconstruction

Healing the bone naturally

Osteoporosis, osteoarthritis and traumatic fracture are major health issues where bone implants and grafts are required for the surgical treatments of these conditions.

About 20 per cent of bone trauma requires surgical graft intervention through orthopaedic, trauma and reconstructive surgery to heal. Often synthetic bond materials are used however this can cause an inflammatory reaction. To address this challenge, Professor Zheng and his team turned to the marine environment for a way to heal bone naturally.

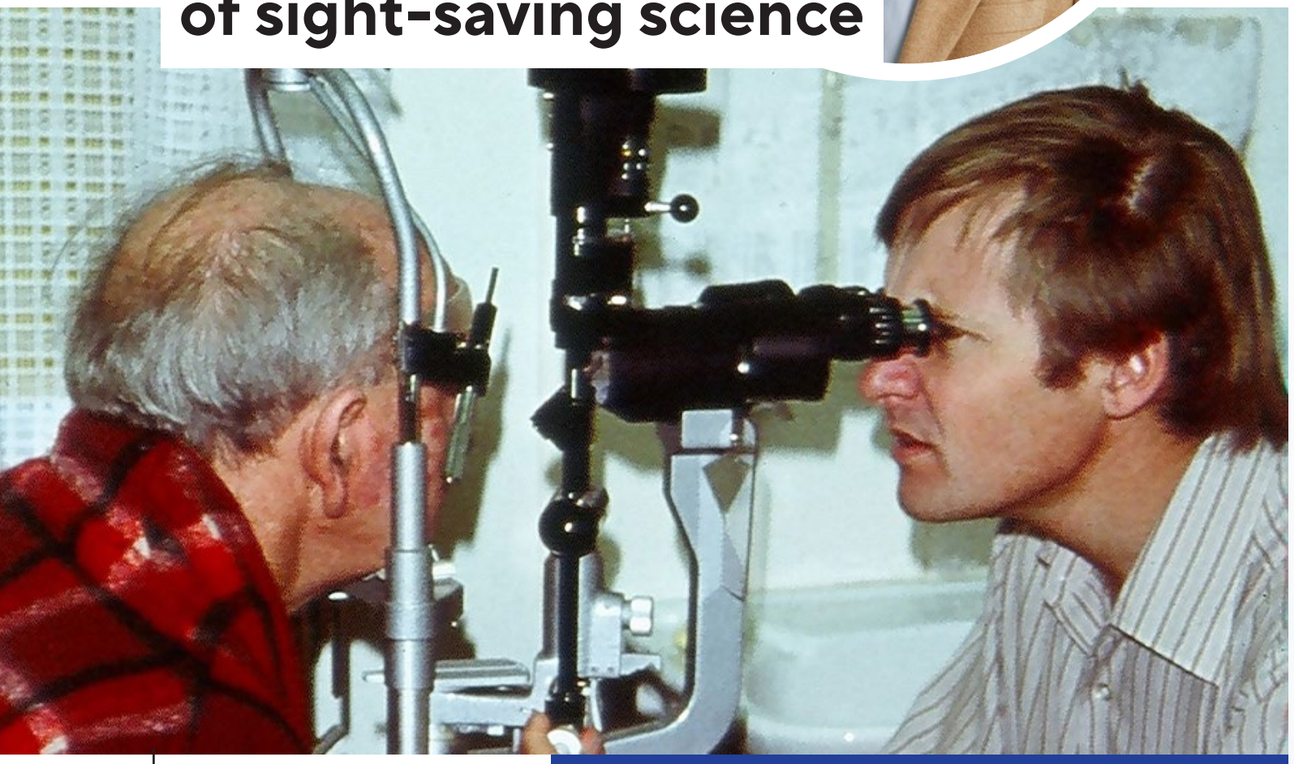
A study in 2018 led by Professor Zheng and Dr Ruan showed that nacre (mother of pearl) possesses potent osteogenic properties and could potentially be suitable as a source for bone substitute material for fractures or trauma.

Subsequently, in 2021, Professor Zheng expanded the scope of his research to develop medical products and devices using nacre as a natural bone substitute. The nacre is sustainably certified from silver-lipped pearl oysters in Broome, Western Australia and is an opportunity to save nacre, a by-product of existing pearl farming and turn the material into a sustainable new product.

In 2021, Professor Zheng set up the UWA spin out company Marine Biomedical in Broome, and in partnership with Broome pearling business Willie Creek Pearls. Local marine biologist Patrick Moase is the co-founder of the company. The Western Australian biotech company is dedicated to developing and manufacturing innovative and life-changing medical products sourced from marine resources. The manufacturing process adheres to the ATGA good manufacturing practice guidelines and is the first medical manufacturing company in the region, providing education and research opportunities for Kimberley residents. ■

VISIONARY LEADER

Eye care pioneer celebrates half-a-century of sight-saving science



Professor Ian Constable examining a patient at Royal Perth Hospital, 1975

By Liz McGrath

It seems like just yesterday," reflects Professor Ian Constable AO, reminiscing about his arrival at The University of Western Australia as the Foundation Lions Professor of Ophthalmology in April 1975.

As possibly UWA's longest-serving full professor, the internationally renowned specialist's 50-year journey has transformed eye health research and care, not just in Western Australia, but globally.

After graduating in medicine from the University of Sydney and working as a Resident Medical Officer at Royal Prince Alfred Hospital, the young ophthalmologist's path led him to Harvard in Boston, US.

He spent five years engaged in retinal research as a Fellow at the Massachusetts Eye and Ear Infirmary and later as a consultant surgeon and lecturer at Harvard University.

In 1975, he brought this wealth of experience to Perth, taking up the inaugural Lions Chair of Ophthalmology at UWA.

"I had five years of lab work at Harvard, so I was used to setting things up and I was used to talking to scientists," Professor Constable explains.

This experience proved invaluable as he began building his team, recruiting promising UWA postgraduates in cell biology, physiology and polymer chemistry.

His approach was revolutionary for its time.

"From the very beginning we used our ability to see and treat patients to generate funding – we would take an eye problem and apply science to it rather than just clinical work, which was great training and career opportunity for our young scientists," he explains.

This philosophy led to remarkable breakthroughs, including the world's first virus-transmitted DNA treatment in adult humans with macular degeneration – research that began in Perth and eventually led to a US$400 million listing on the New York Stock Exchange.

The journey wasn't without its challenges. As his research team expanded beyond Royal Perth Hospital's capacity, then-Premier Sir Charles Court offered space at the old Sir Charles Gairdner Hospital.

This move in 1985 marked the beginning of what would become the Lions Eye Institute, now a world-renowned centre for eye research and clinical care.

Throughout his career, Professor Constable maintained a deep connection with UWA.

"The relationship with the University has always been fantastic because it allowed me to try everything possible through the years," he says.

"I was helped extensively by Professor Bob Whelan in the 1970s, Robert Street in the 1980s, and then by the then-VC Alan Robson in setting up UWA's Centre for Ophthalmology and Visual Science in the 1990s.

"We've been able to appoint people from outside onto the University staff and use the facilities and infrastructure, it's been a terrific relationship.

"Both my sons attended UWA and my wife Elizabeth, who was a Member of Parliament and the Minister for Education, was a Vice-Chancellor's Fellow for five years after she retired from politics and so our links with the University are comprehensive."

Professor Constable's commitment to Indigenous eye health has been particularly significant, culminating in the establishment of the comprehensive Lions Outback Vision service in Broome by UWA's Professor Angus Turner.

"It's a first-world service centre in a disadvantaged environment", he says, describing how the program now serves communities across the Kimberley and Pilbara regions with a resident team including a dedicated pilot who flies specialists to remote areas.

Even after 50 years, his passion for innovation remains undimmed. He continues to collaborate on cutting-edge RNA therapy in Perth and collaborates internationally on glaucoma research through the Snow Family Medical Foundation and retinal disease through the Lowy Family Medical Research Institute. ■

A quarter-century of excellence

CTEC's 25-year journey from royal opening to global leadership.

By Liz McGrath

When Queen Elizabeth II officially opened The University of Western Australia's Clinical Training and Evaluation Centre (CTEC) on 1 April 2000, few people could have predicted it would become one of the world's top medical training facilities.

As the Centre celebrates its 25th anniversary this year, its impact on healthcare education and patient outcomes extends far beyond Western Australia's borders.

Since 2000 CTEC has partnered with the WA Department of Health to train more than 54,000 Australasian health professionals in a comprehensive program of medical and surgical simulation workshops.

"From day one, the WA Department of Health has believed in the value of CTEC," says Professor Jeffrey Hamdorf AM, CTEC's Director, who has been at the helm since 2007 and a graduate of the UWA Medical School.

"The University built this extraordinary facility based on the vision of some really important local surgeons at the time – including Richard Vaughan, Bryant Stokes and Kingsley Faulkner – and the then Vice-Chancellor, Professor Alan Robson.

"CTEC revolutionised medical training by creating an environment where healthcare professionals could learn and perfect their skills before treating patients. This authentic training environment benefits from CTEC's utilisation of UWA's Body Donation Program."

This philosophy of "practice makes perfect" has become increasingly crucial in modern medicine, Professor Hamdorf explains.

"What we teach here goes beyond the horizon of current practice," he says. "Cutting-edge procedures and new technologies should be taught in a lab, not on the job."

The Centre delivers approximately 600 education sessions annually, with 77 per cent of participants from WA and others travelling from across Australia, New Zealand, Southeast Asia and even further afield.

From emergency physicians practising life-saving procedures they might need just once in their career to rural GPs honing surgical techniques for remote practice, CTEC's reach is comprehensive.

Those who sign up include surgical consultants and trainees, junior doctors, general practitioners, emergency physicians, anaesthetists and nurses.

One visiting American doctor recently wrote to the CTEC staff: "I really wish I had taken a class like this when I was starting my practice. I learned so much. I hope you continue to offer these programs to physicians around the country!"

What sets CTEC apart, Professor Hamdorf says, is its commitment to authenticity. The facility mirrors real hospital environments down to the smallest detail, creating what he describes as a "sustained suspension of disbelief".

This attention to detail, combined with state-of-the-art equipment and expert instruction, has made CTEC a global benchmark for medical simulation training.

"If you went into hospital in WA today, odds are that the doctors and possibly the nurses will have been to CTEC to learn something," Professor Hamdorf says. "That's where the real benefit lies."

Looking ahead, CTEC continues to pioneer medical education innovation. Current projects include collaboration with local companies on robotic laser technology for orthopaedic joint replacements and developing new surgical techniques with transplantation teams.

"CTEC is the jewel in UWA's crown," Professor Hamdorf smiles. "Its success stems from the unwavering support of the WA Health Department, the University's commitment to excellence and our dedicated team of educators and support staff.

"We're 100 per cent externally funded – we have to find our own salaries and running costs – but that's pushed us to make sure that everything we do delivers real value to healthcare professionals and ultimately, their patients."

As CTEC marks its 25th anniversary, its journey from royal opening to global leadership has made an indelible mark on medical training and, most importantly, patient care. ■

ctec
25 YEARS

Leading from the front – Professor Jeffrey Hamdorf

From UWA medical student to leading one of the world's premier medical training facilities, Professor Hamdorf's career has come full circle at his alma mater.

As Director of CTEC since 2007 and Head of the Division of Surgery within UWA's Medical School, he brings surgical expertise and educational innovation to his role. His significant contributions to medical education and bariatric surgery were recognised with his appointment as a Member of the Order of Australia (AM) in 2019.

After graduating from UWA, Professor Hamdorf completed his surgical training at major Perth hospitals before undertaking post-Fellowship training in upper gastrointestinal surgery at the University of New South Wales.

His academic interests span the management of upper gastrointestinal malignancies and surgical education, particularly skills training.

"It's been a wonderful journey," he says of his role at CTEC. "When I look at where we started and where we are now – training healthcare professionals from across Australia and beyond – it's extraordinary to see how far we've come and how much more there is to achieve."

UWA welcomes first female Chancellor

Dr Diane Smith-Gander brings a lifetime of perspective to her new role.

By Liz McGrath

When Dr Diane Smith-Gander AO was announced as UWA's 16th Chancellor the congratulatory messages flooded in.

"Emails, texts, WhatsApp notifications, LinkedIn messages – more than I've ever received in my life for any other appointment, or anything else," she smiles.

"And the overwhelming sentiment, don't mess up our university! Although in some cases they said it in perhaps a rather more colloquial fashion."

It's this blend of gravity and warmth that typifies UWA's first female Chancellor.

Taking the helm at a pivotal time for higher education in Australia, the East Fremantle resident brings more than three decades of experience spanning corporate leadership, strategy consulting and board governance across Australia and the United States.

Her appointment comes as universities navigate significant policy changes, including new governance regulations and international student caps, while addressing evolving market challenges.

Diane Smith-Gander and friend Joanne Tulau at a Chemistry Club event in 1975

Her connection with UWA began unusually early — as a primary school student attending French extension classes on Saturday mornings.

A self-described "very opinionated" high school student, she found herself drawn to campus life even before enrolling for what she describes as "two attempts to obtain an undergraduate degree".

Her campaign against gender-based uniform policies — questioning why boys could wear jeans while girls couldn't at secondary school — led her to connect with the UWA Student Guild, giving her an early taste of university advocacy.

When the former state basketball player speaks of justice and equal opportunity today, they're not just as abstract concepts, but as practical necessities in modern education.

Throughout her career, she's been a powerful advocate for gender equality and women in leadership, with her commitment to advancing opportunities for women earning her appointment as an Officer of the Order of Australia (AO) in 2019.

"My view on gender equity comes from a deep-seated belief and the values that my parents had of justice," she says. "They felt that everybody deserved to have equal opportunity.

"That didn't mean you would automatically get an equal outcome. How hard you worked, how thoughtfully you worked, how well you prepared yourself, was all going to play into potentially getting better results.

"As a woman I was very motivated, particularly watching the lessons of my parents and their views on justice, to be part of doing something about it."

She says she's particularly proud of how UWA handles complex global discussions while maintaining a safe, inclusive campus environment.

"I think the fact that my early interaction with the University was very broad means I've always seen it as a crucial part of the education system, far more wide-ranging than just being research intensive, or just pumping out graduates," she says.

That relationship has evolved through multiple roles, including chairing the Business School Board and becoming an Adjunct Professor of Corporate Governance, before she assumed the chancellorship in January 2025.

Her vision for UWA is practical and profound. "The guiding light for me is to never forget that we are obliged by the purpose of the University to take wisdom and to impart wisdom for the prosperity of the people in WA," she says.

That local focus, however, doesn't limit her global ambitions for the University.

Drawing on her extensive corporate experience, including roles at Zip Co Limited, Perenti Limited, and HBF Health Limited, she sees many unique opportunities.

"For a country with a small population in a very large land mass with a vibrant economy, we punch so much above our weight," she says, emphasising the need for stronger integration between universities and industry.

Her commitment to Indigenous reconciliation is equally clear. "UWA has a special place because of where it's located, on such an important part of Noongar land," she says.

"As I've come to understand that better, it's changed my thinking about the accountability the University should take for reconciliation, particularly as we walk together in Danjoo Koorliny towards 2029, marking 200 years of colonisation in Perth."

Following the Hon Robert French AC, whose counsel she describes as consistently "considered, broad-ranging and informed," she is already bringing her own distinctive style to the chancellorship.

Working alongside the Vice-Chancellor, she plans to leverage their complementary skills – his academic insight matching her commercial acumen.

"I've been on the planet a while now and with that does come a better understanding of yourself," she reflects.

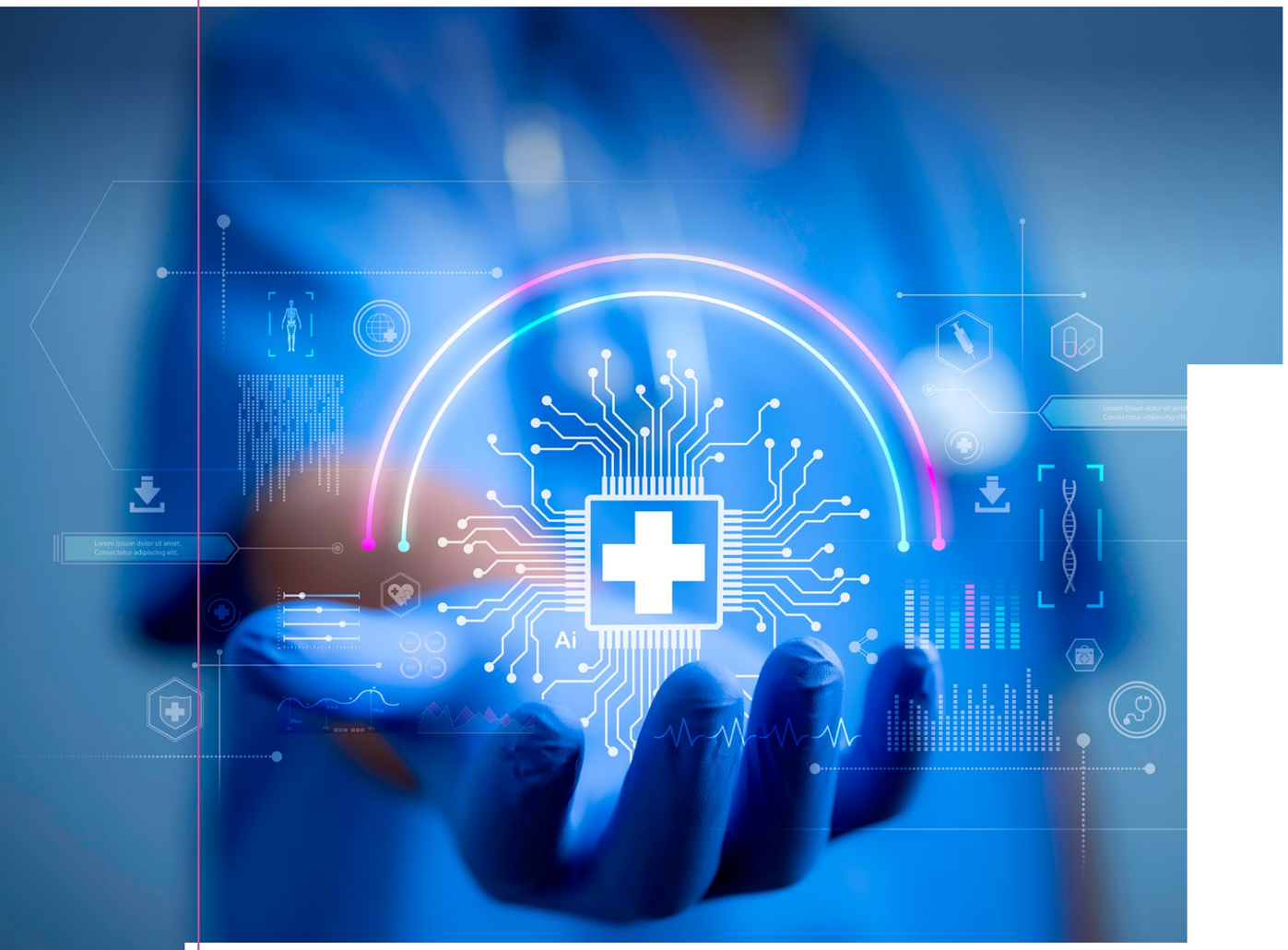
"What works for you? What doesn't work for you? What builds your resilience and what saps it – 2024 was the strongest, happiest, most impactful year that I've had in my life and I'm expecting 2025 to finish up being even better.

"I'm at the point now where I'm confidently comfortable about what I'm able to do and in knowing that where I don't have strength, I need people around me who do have those strengths.

"And that's part of what makes doing this possible for me – knowing that the people in the lead operational roles across the University are all fabulous leaders."

With decades of corporate leadership, a deep connection to WA and an unwavering commitment to justice, Dr Smith-Gander seems perfectly positioned to guide UWA through its next chapter. If her track record is any indication, there will be plenty of positive surprises ahead. ■

The collaboration between UWA researchers, Perth Children's Hospital and WA's supercomputing facility is revolutionising patient care through ethical AI implementation.



AI meets medicine

as supercomputing power transforms paediatric care

2024 Prime Minister's Prize for Science winner Professor Britta Regli-von Ungern-Sternberg, (centre), with Dr Thomas Drake-Brockman (left) and Dr Harry Smallbone (right)

By Liz McGrath

Sometime in the near future, a parent at home with a child recently discharged after surgery from Perth Children's Hospital may receive a personalised message checking on their post-operative recovery.

While drafted by artificial intelligence, the response will have been verified by a clinician – part of a new system being developed through a partnership between UWA, Perth Children's Hospital (PCH) and the Pawsey Supercomputing Research Centre, all located in Perth.

The collaboration, led by 2024 Prime Minister's Prize for Science winner Professor Britta Regli-von Ungern-Sternberg, alongside Dr Thomas Drake-Brockman and Dr Harry Smallbone, is harnessing WA's extraordinary computing power to address pressing healthcare challenges.

"In the perioperative environment, clinicians often have to consider and interpret a large amount of information, sometimes in acute situations, with very little available time," says Professor Regli-von Ungern-Sternberg, a consultant anaesthetist at PCH, Chair of Paediatric Anaesthesia at UWA, and co-leader of the Perioperative Care Program and Perioperative Medicine Team at The Kids Research Institute Australia.

"Well-trained, human expert-verified AI has great potential to support clinicians in giving the best care to every patient, allowing for more detailed and faster responses to individual queries."

At the heart of this technological advancement are two complementary systems. Setonix, Australia's most powerful supercomputer housed at the Pawsey Centre, trains complex AI algorithms using synthetic data.

Meanwhile, MERLIN, a new system generously funded by the Stan Perron Charitable Foundation and installed within PCH's secure environment, refines the models and will allow the innovations to be safely applied to real patient data in the future.

Clinical trials will take place before the new system is rolled out to routine care, always prioritising patient safety and data security, says Professor Regli-von Ungern-Sternberg.

"It's about the synergy between technology and medicine," explains Aditi Subramanya, Manager of Partner Engagement at Pawsey. "The AI isn't making independent decisions about patient care. It's taking on the administrative burden by processing vast amounts of information and making recommendations that clinicians review before communicating with patients."

The practical applications are promising. In the future, when a parent may contact the hospital about their child's post-operative symptoms, the system could instantly analyse patient history, relevant medical guidelines and similar cases to suggest appropriate responses – which will be verified by medical professionals before being shared. This will ensure that parents receive timely responses and allow clinicians to efficiently manage patient care.

"What makes this approach special is that it's clinician-in-the-loop," says Dr Drake-Brockman. "The human expert always has the final say. We've designed the system so there's no incentive to simply accept the AI's recommendation without proper review."

Ms Subramanya says the environmental considerations of running a computing colossus like Setonix haven't been overlooked with groundbreaking geothermal cooling technology employed, using water from an aquifer beneath the Pawsey facility, to manage the intense heat generated by its processing power.

"When we were looking to procure the new system, minimising our environmental impact was very important," says Ms Subramanya, who describes her role at Pawsey as a dream job. "Setonix represents our commitment to both advancing science and protecting our environment."

Another direction for the project includes exploring how robots might assist in pre-operative assessments for children. Dr Smallbone's research suggests some children find it easier to interact with a friendly robot than with humans when feeling nervous or anxious.

Ms Subramanya says by bringing together medical expertise, computer science and ethical frameworks, researchers are creating solutions that can not only ease pressure on an overloaded health system but also improve patient experiences and outcomes.

"It's about enhancing human capabilities, not replacing them," she says. "We're taking the grind out while ensuring patients receive excellent care." ■

MAPPING A BRIGHTER FUTURE

Associate Professor Rebecca Glauert with Professor Fiona Stanley and Vice-Chancellor Professor Amit Chakma

By Annelies Gartner

A world-first online tool aims to improve the health and wellbeing of children and young people by helping to understand inequities.

The Australian Child and Youth Wellbeing Atlas is a freely available data asset that maps information on children and young people aged 0 to 24 in communities across Australia.

The Atlas enables the visualisation, analysis and monitoring of health and wellbeing metrics for children and young people.

Project lead Associate Professor Rebecca Glauert, from UWA's School of Population and Global Health, said the Atlas could be used to map key indicators across health, education, and social outcomes at local and national levels.

"The Atlas will help guide the development of geographically sensitive policy, which acknowledges the relationships between the spatial patterns of children's wellbeing outcomes, and the provision of services in an area," Associate Professor Glauert says.

"This data asset empowers researchers, non-government, and state and federal organisations to identify priorities and opportunities for child health research and initiatives in meaningful and cost-effective ways."

Atlas Patron Professor Fiona Stanley AC CitWA said the project could not have come at more important time.

"The Atlas is going to be able to measure things that are really important for child health and wellbeing and hopefully hold governments to account," Professor Stanley says.

"This is a database that is available for the whole community — it's about democratising data so it's not hidden from anybody and is available universally."

The Australian Child and Youth Wellbeing Atlas was developed by The University of Western Australia and QUT and is supported by Minderoo Foundation and The Ian Potter Foundation. and partners from across Australia. ■

Voting at Convocation's 2024 Spring General Meeting

From the Warden of Convocation

On the cusp of change

June 2025 marks the start of changes to the Council of Convocation, as heralded by the publication of *Amending Statute No. 1 of 2024* in the WA Government Gazette. The changes include:

- Convocation Council renamed Alumni Council
- Council membership reduced from 20 to 14
- Council composition to include Warden, six elected Councillors (including Deputy Warden), two Convocation Senators, Chief Advancement Officer (Vice Chancellor's representative) and four co-opted members to broaden the skill base and improve diversity
- Council membership limited to nine years.

These changes reflect a long period of examination and analysis. In 2020, Council began an internal review which formed the basis for its Strategic Plan (2023-26) and the amendments that have been made to the Statute. Parallelling this was the creation of a Joint Committee of Convocation Council and Development and Alumni Relations by the Chancellor. This was followed by a Senate Review of Convocation's Governance in early 2024. Senate approved its recommendations, and changes to the *UWA Statute* were made, subject to consideration by Convocation members as required by the *UWA Act*.

Nearly 300 members met (in person and online) to consider Convocation's evolving future at its 2024 Spring General Meeting. The amendments to the Statute were put to the meeting, as recommended by Council, and resolved in the affirmative. A motion to name Council as the Council of Graduates was defeated after robust debate. The amended Statute was approved by Senate and then by the Government.

The Senate has also established a Senate Advancement Committee. Its role is to recommend the strategic development of the University's relationship with its alumni including examination of any possibilities that should be adopted to enhance the University's relationship with its alumni.

I am confident that the new statute reforms, changes to the Council's name and composition plus the establishment of the Senate Advancement Committee has set a valuable and effective framework for alumni relations at UWA to be reinvigorated. I urge members to get involved and support the Alumni Council and its activities as we begin our exciting new journey. ■

VALE Emeritus Professor Alan Robson AO CitWA 1945 – 2024

Born in Melbourne, Victoria on 1 February 1945, Alan Robson grew up in regional Victoria where his father was the teacher in a one-teacher, one-room school.

He gained entrance to the University of Melbourne, graduating with a Bachelor of Agriculture degree in 1965. In 1966 he came west to undertake a PhD in soil science at The University of Western Australia, returning briefly to a position in the Victorian Department of Agriculture, before accepting a permanent lectureship at UWA in 1974.

He rapidly moved through the ranks in the agriculture faculty to become dean and Hackett Professor of Agriculture, and foundation director of the Cooperative Research Centre for Legumes in Mediterranean Agriculture.

He was a pioneer in soil science and plant nutrition and his internationally recognised research provided fundamental understanding of soils and plant physiology, informing the development of techniques for diagnosing and addressing nutrient deficiencies in important agricultural plant species.

In 1993, Professor Robson was appointed Deputy Vice-Chancellor of UWA and, in 2004, Vice-Chancellor — the first and only UWA graduate to achieve this position. During this time, he attended more than 180 graduation ceremonies to witness over 65,000 students graduate.

He is remembered by colleagues as a down-to-earth but highly motivating leader, prepared to make key decisions and, more importantly, make them work.

He encouraged the University to work towards becoming one of the top 100 universities in the world by the time of its centenary celebrations, which was achieved.

As well as running the University, he was appointed to a wide range of boards and committees including chair, Worldwide Universities Network; deputy chair, Western Australian Institute for Medical Research; board member, CSIRO; deputy chair, research grants committee, Australian Research Council; and was recognised as a leading CEO for the advancement of women in the workplace.

Beyond the confines of higher education or scientific research, he was also chair of trustees of the Western Australian Museum, where he was a key advocate for the new museum building, as acknowledged by the museum when it made him a Fellow in 2023.

He was deputy chair of the National Library of Australia; chair of the Metropolitan Local Government Review panel in WA (2011); and chair of the ministerial taskforce on sustainability of pastoralism in Western Australia from 2002-2004, during which time he also chaired the Pastoral Lands Board of Western Australia.

Those who worked with him found him to be a loyal and generous boss, a fine mentor and a totally genuine individual. He was not motivated by the trappings of office but was more interested in encouraging and funding worthwhile activities within the University that would yield results, not only for the institution, but also for the State.

He had wide interests, and one of the University's activities that gave him great pleasure was its involvement with the Perth Festival, to which he gave tremendous support.

In 1987, Professor Robson was elected a Fellow of the Australian Academy of Technological Sciences and Engineering. Subsequently, he was awarded the Australian Medal of Agricultural Science.

In 2003, he was made a Member of the Order of Australia which, in 2013, was upgraded to Officer of the Order of Australia.

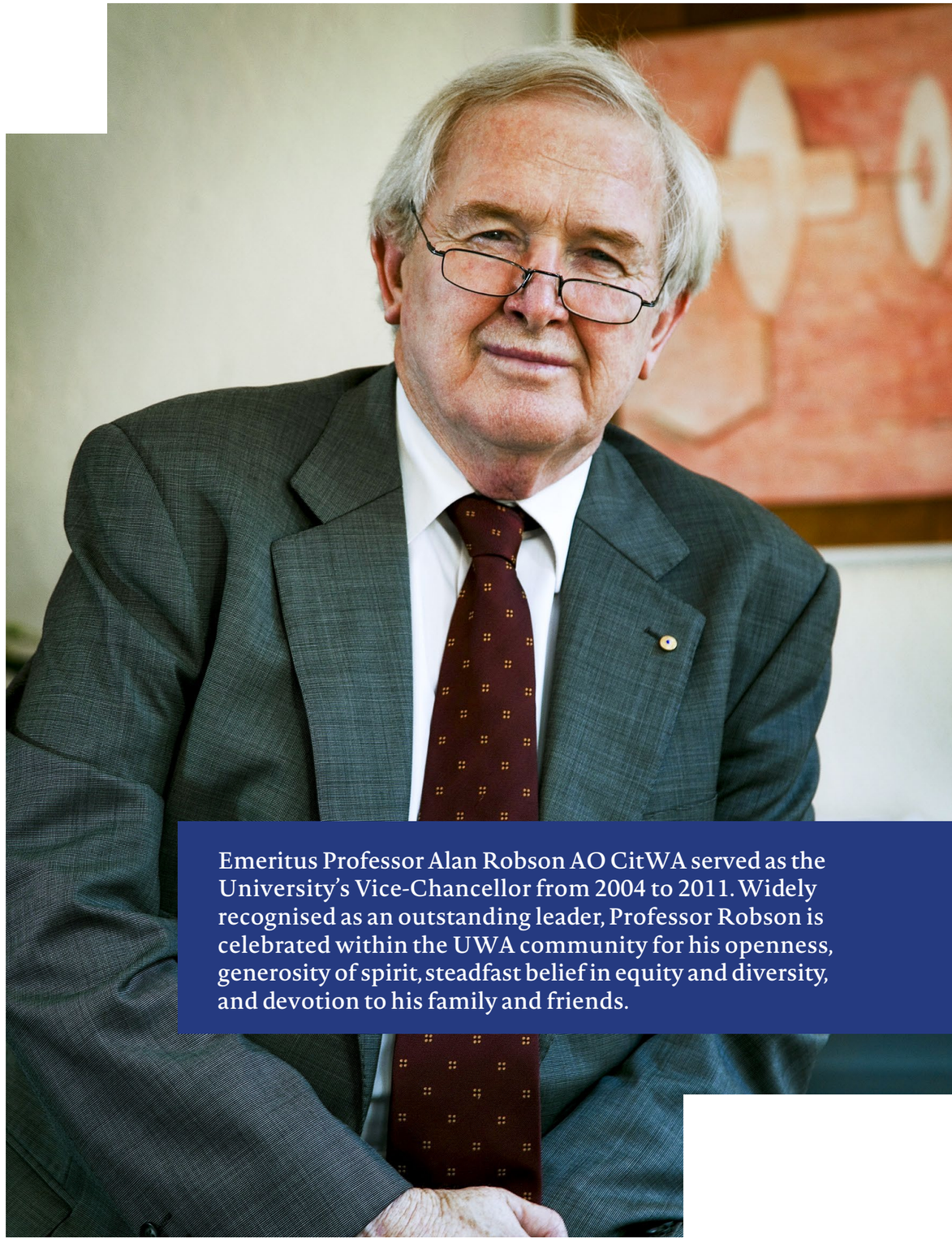
In 2014, he was inducted in the WA Science Hall of Fame and in 2018 to the WA Agricultural Hall of Fame.

He was able to achieve all that he did with the loving support of his wife, Gwenda, children Andrew, Nicole and Suzanne, and his grandchildren. Nothing mattered more to him than his family.

Among the student population he was most famously known for claiming at University graduation ceremonies that if all you got from UWA was a degree, then you had missed out on an education, leading to the student guild taking on the slogan "more than a degree".

For so many, he was more than a Vice-Chancellor; he was also a guide, a mentor and a true friend. ■

Emeritus Professors Margaret Seares AO, Lyn Beazley AO & Robyn Owens AM



Emeritus Professor Alan Robson AO CitWA served as the University's Vice-Chancellor from 2004 to 2011. Widely recognised as an outstanding leader, Professor Robson is celebrated within the UWA community for his openness, generosity of spirit, steadfast belief in equity and diversity, and devotion to his family and friends.

COMMUNITY IMPACT

"I am humbled to be part of the William and Marlene Schrader Postgraduate Scholarship community and by the opportunity to help make an impact in both the field of biomedical engineering and human health."

UWA biomedical engineering student Rafael Fiore

A THREAD IN THE TAPESTRY OF INNOVATION

A common thread runs through every story of discovery and innovation. There's a moment when passion turns into purpose and another when talent confronts opportunity to create something so needed. However, all innovators are part of a much larger picture, their work stitching together discoveries of those who came before, while seizing opportunities and benefitting from networks of likeminded peers and those willing to invest in tantalising potential.

Such is the case for UWA biomedical engineering student Rafael Fiore. While it's easy to trace a thread connecting his early fascination with physics and medicine to his current work in cutting-edge cancer detection research, Rafael credits his discovery of biomedical engineering as the moment his purpose first materialised.

"I always had a general interest in medicine and biology, however in high school I found myself gravitating towards physics," Rafael explains.

"Throughout my undergraduate degree, while enjoying physics, the innovation and breadth of the biomedical engineering sphere appealed to me – and I have become passionate about the potential the field has to better human health and wellbeing."

Now in his fifth year at UWA, and soon to graduate with a Bachelor of Philosophy (Honours), majoring in engineering science and biomedical engineering, Rafael finds himself on the seam of another significant moment – undertaking a PhD at UWA in conjunction with Harry Perkins Institute of Medical Research. His research proposal, headily titled 'Dielectric Tissue Characterisation and Phantom Development for Microwave Medical Imaging', underlines an interest in cancer detection and treatment modalities that developed through his honours studies, while investigating properties of melanoma that may allow for the development of non-invasive skin cancer detecting devices. He now looks to expand his research scope to also include ovarian cancer.

"Tissues throughout the body have varying water concentrations and biochemical compositions, including cancer and associated healthy tissue" Rafael said, when asked to put his PhD title into layman's terms. "These dielectric properties can be measured by utilising microwave imaging and once characterised, non-invasive and non-ionising cancer detection technologies can be developed."

With Australia having the highest melanoma rates in the world – often being referred to as our 'national cancer' – Rafael is looking to a future where his research has helped develop safer, more accessible methods of cancer detection that don't rely on harmful radiation or invasive biopsy procedures. Yet, none of this would be possible without the support that has allowed him to pursue his research with dedication.

As one of the strongest threads in the ever-growing fabric of innovation, The William and Marlene Schrader bequest has been a defining force in advancing biomedical engineering at UWA, its generosity serving as a pipeline to provide students such as Rafael the freedom to fully commit to groundbreaking work, from their first days at university through to postdoctoral research. A recipient of both the William and Marlene Schrader Masters and PhD Scholarships, as well as the Memorial Prize for Biomedical Engineering, he is thankful for support that allows the freedom to dedicate himself fully to research, without the burden of financial constraints.

"I am humbled to be part of the William and Marlene Schrader Postgraduate Scholarship community and by the opportunity to help make an impact in both the field of biomedical engineering and human health," he said.

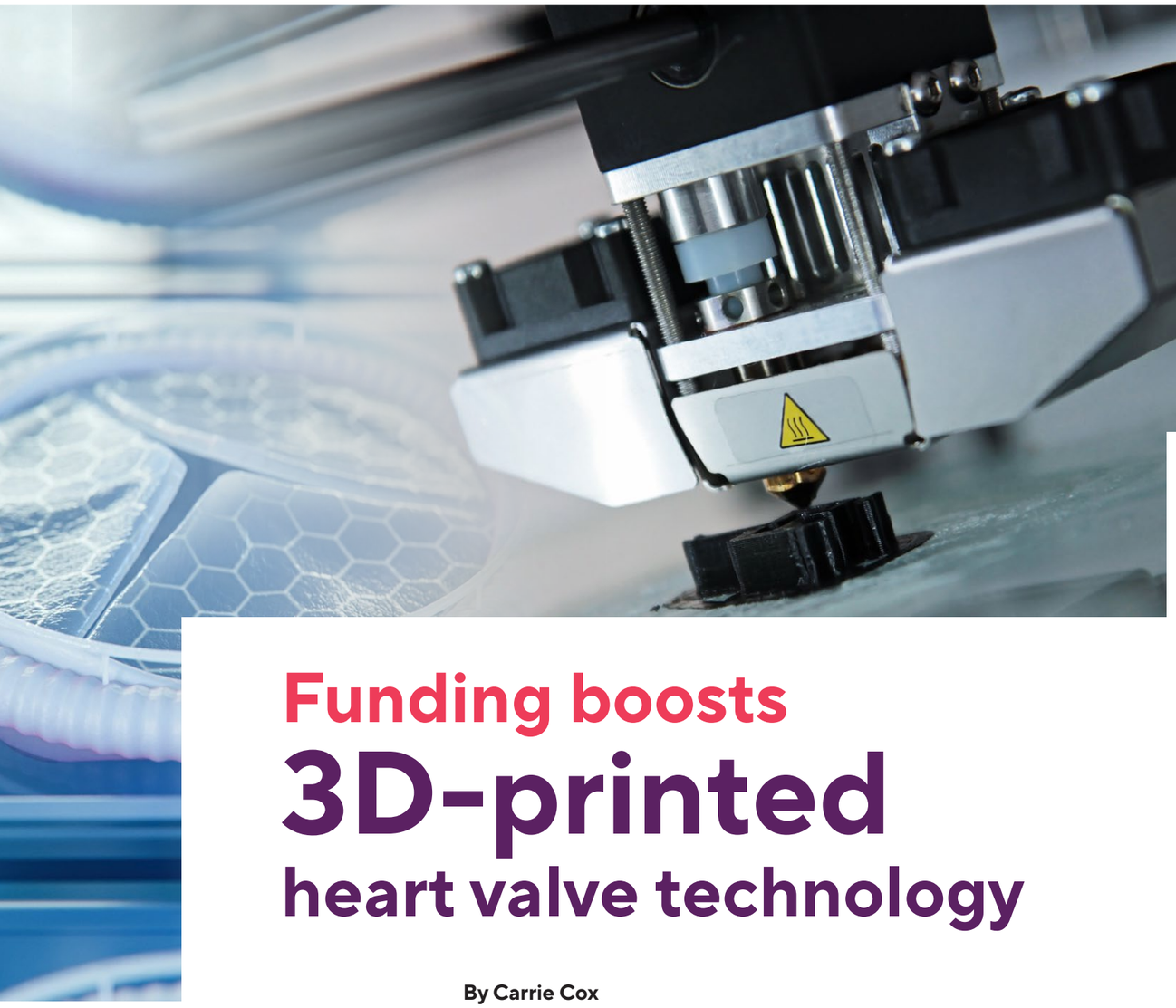
"None of which would be possible without the help of the scholarship, my supervisors and parents."

Without the Schrader Trust, Rafael's research might have remained a bright idea with no lab to bring it to life. Previous scholars have made significant contributions to the field, and Rafael is determined to do the same. He envisions an Australia where biomedical engineering is at the forefront of global innovation, where technologies developed in research institutions such as Harry Perkins translate directly into life-saving medical advancements. With each breakthrough, each discovery, and each life improved, the legacy of the Schrader Trust lives on – woven into the very fabric of progress.

"Their generosity allows me, as well as those before and after me, to invest resources and energy into research that will progress the field and human health," Rafael reflects.

"I may only write a small chapter in the story, but to weave a thread in the ongoing tapestry of biomedical engineering is a dream come true." ■

To find out how your giving could help power the next generation of lifesaving research, reach out to Claire Lenyk, Senior Development Manager, on **+61 6488 3843** or by email to **bequests@uwa.edu.au**. Your support could be the thread that changes everything.



Funding boosts 3D-printed heart valve technology

By Carrie Cox

Revolutionary 3D-printed heart valve technology born out of UWA-led research is a step closer to clinical reality after attracting major investment from a WA venture capital fund.

CoraMetix, the spin-off company of research being undertaken at Harry Perkins Institute of Medical Research with the support of UWA, has entered into a seed funding deal with FundWA to help commercialise technology that could save the lives of millions of people who suffer from aortic stenosis.

Aortic stenosis causes narrowing of the aortic valve opening and often leads to fatal heart failure if left untreated. Each year, up to nine million people worldwide – including one in eight elderly Australians – suffer from aortic stenosis disease.

Associate Professor Elena Juan Pardo

> "Because this technology is so much cheaper to produce, there exists the opportunity to make it available in third-world countries too, where valve replacement is still considered a luxury surgery."

Current aortic valve replacements are derived from animal tissue and can have a limited life span of less than five years, whereas CoraMetix's 3D-printed valve is designed to remain functional for the rest of a patient's life.

Mimicking nature's design

Biomedical engineer Associate Professor Elena Juan Pardo, who moved to UWA in 2019 and has extensive global experience in the development of biomaterials and 3D printing technology, said the design of the CoraMetix valve uniquely mimics the mechanical properties of natural human valves.

"What we're doing is completely different because it's grown out of close examination of how normal aortic valves work, how it is that they open and shut 30 or 40 million times a year, the key components of their engineering, and then we've set out to design a valve that has those same key components," Associate Professor Juan Pardo explains.

"We've used a biopolymer material that is highly stable and biocompatible, having no reaction with the immune system and no potential to cause clots, and we've created a very flexible structure that is small and easy to implant in the heart.

"It has two layers: the inside layer is 3D printed and very strong, mimicking the collagen fibres in a natural aortic valve, while the outer layer is a very thin coating that seals the inner mesh and makes the valve smooth. The two materials interact perfectly with each other."

Making a real difference

Associate Professor Juan Pardo said the technology produced a valve that was far cheaper than existing animal-tissue valves and would make replacement surgery accessible to many more people, while also reducing the need for ongoing medical intervention.

"It's such an exciting journey to be part of because the opportunity to make a real difference to millions of lives is immensely satisfying," she says.

"Because this technology is so much cheaper to produce, there exists the opportunity to make it available in third-world countries too, where valve replacement is still considered a luxury surgery.

"Every year, many people around the world die while being on the waiting list for valve replacement surgery – and these people aren't even counted in the statistics for aortic stenosis.

"So everyone involved in this research journey, and now in the commercialisation process, is incredibly motivated.

"We're dedicated to delivering a next-generation heart valve characterised by superior performance and durability."

Next steps in the commercialisation process include animal testing and extensive clinical trials, with the goal being to perform the first in-human implant within 36-48 months.

In May 2023, CoraMetix received a $500,000 accelerator grant from CUREator, Australia's national biotech incubator, which is funded by the Federal Government's Medical Research Future Fund. ■

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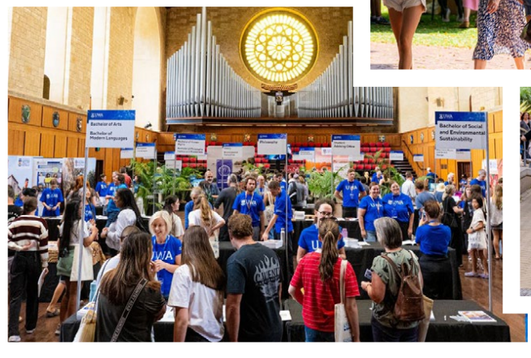

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