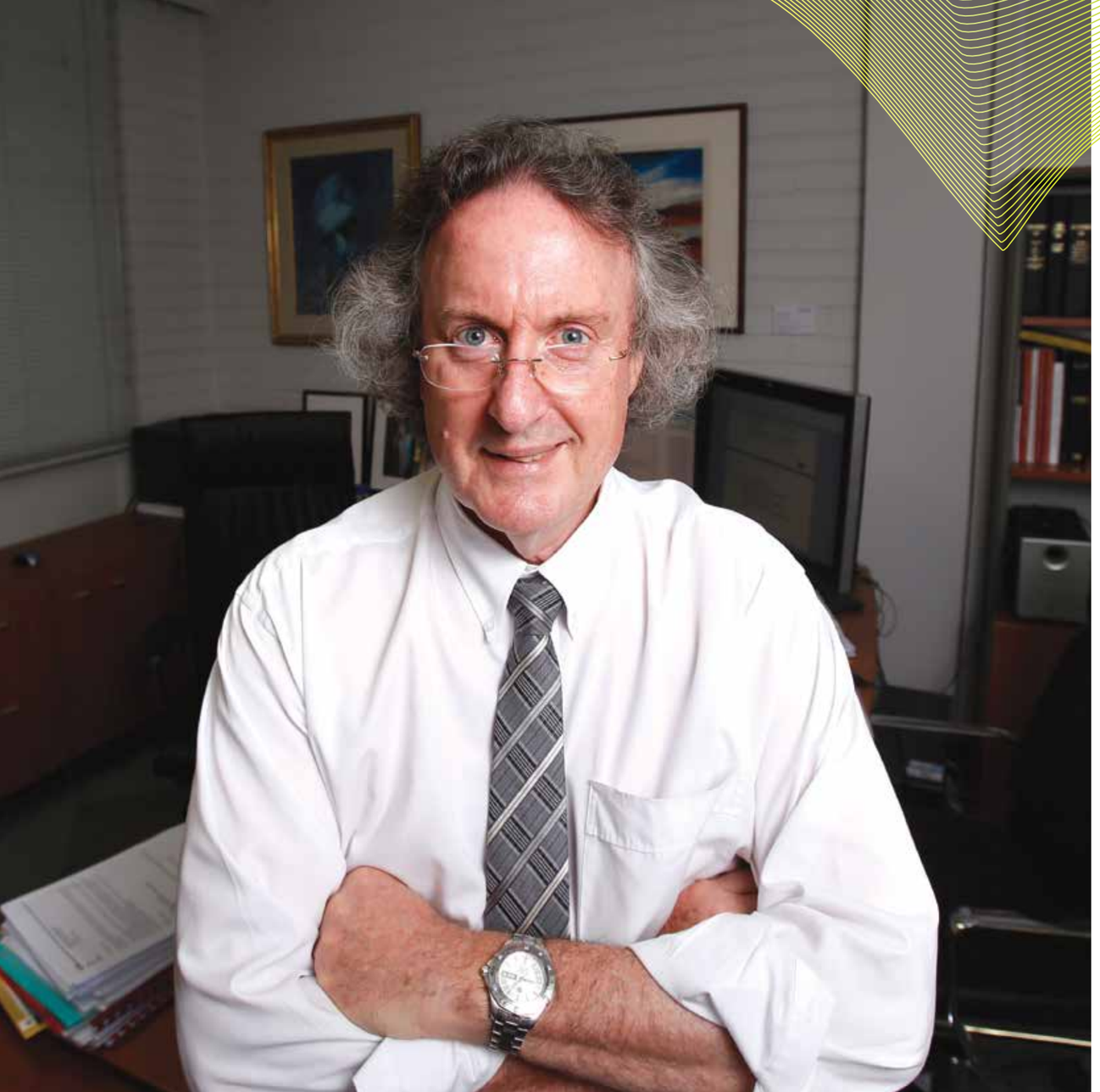
20 rising stars who will change our world

UNSW AUSTRALIA

Research@UNSW

Never Stand Still

Celebrating the next generation of research leaders



Welcome Message

In the third and final edition of this series of Research@UNSW – *20 rising stars who will change our world* – you will read about our emerging research leaders who are tackling some of society's biggest challenges, many of which are global in nature.

Working across every UNSW faculty, they include Australian Research Council Future Fellows, NSW Tall Poppy Science Award winners, and recipients of prestigious grants from the National Health and Medical Research Council.

Some, such as Associate Professor Cyrille Boyer, are already recognised internationally. The deputy director of the Australian Centre for NanoMedicine at UNSW is one of the most highly cited polymer chemists of his generation, and was the winner of a 2015 Prime Minister's Science Prize.

Each is on a trajectory to make an enormous impact in their chosen field, whether that's developing next-generation batteries to enable a clean energy future, improving mental health outcomes for refugees, or designing measures to prevent corporate fraud, which is estimated to cost the global economy trillions of dollars annually. Their work will improve lives and have an enormous impact on our world.

We have a rich history of innovation and research excellence at UNSW as we have demonstrated in our previous two publications in this series: *10 innovations that changed our world* and *15 women changing our world*. The researchers featured in this latest edition are continuing this proud tradition.

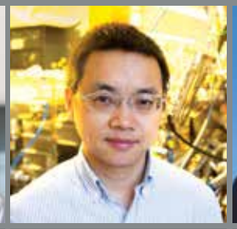
We hope that by reading their stories, current and future scholars will be motivated to pursue their own exciting research pathways.

Much of the work featured in this edition would not be possible without the support of our industry and government partners. We value all our collaborators and encourage you to contact us if you have any questions about the projects profiled in these pages, or about any other research underway at UNSW.

For now, please enjoy the latest in our Research@UNSW series: *20 rising stars who will change our world.*

Professor Les Field AM
Deputy Vice-Chancellor (Research)
and Vice-President
UNSW Australia

20 Rising Stars



"We need flexible legal and policy responses. It's important not to pretend we can forecast the future."

TECHNOLOGY AND THE LAW

Disruptive technologies pose new ethical concerns and unforeseen risks. Lyria Bennett Moses is helping policymakers design effective legal frameworks that protect us from harm without hindering innovation.

Lyria Bennett Moses

While some new technologies benefit society, others pose significant threats to our safety and security. Recently, autonomous weapons, gene editing and mass surveillance have all triggered ethical alarm bells, and could carry risks – apparent and unforeseen – in the future.

To keep us safe without thwarting innovation, we need flexible, forward-thinking legal and policy responses. "We have to move beyond the idea that legislation should be technologically neutral, or that we need to always regulate specific technologies," says Associate Professor Lyria Bennett Moses.

The UNSW Law researcher is currently working with the Data to Decisions Cooperative Research Centre to explore how intelligence agencies and police use big data to investigate persons of interest and prioritise threats, which she says raises concerns about our privacy, and what happens when people tasked with keeping us safe become too reliant on technology to deploy resources.

Bennett Moses is helping legislators around the world more effectively engage with, and regulate, these emerging technologies and industries.

Find out more about Lyria's work at **20risingstars.unsw.edu.au**

Julian Berengut

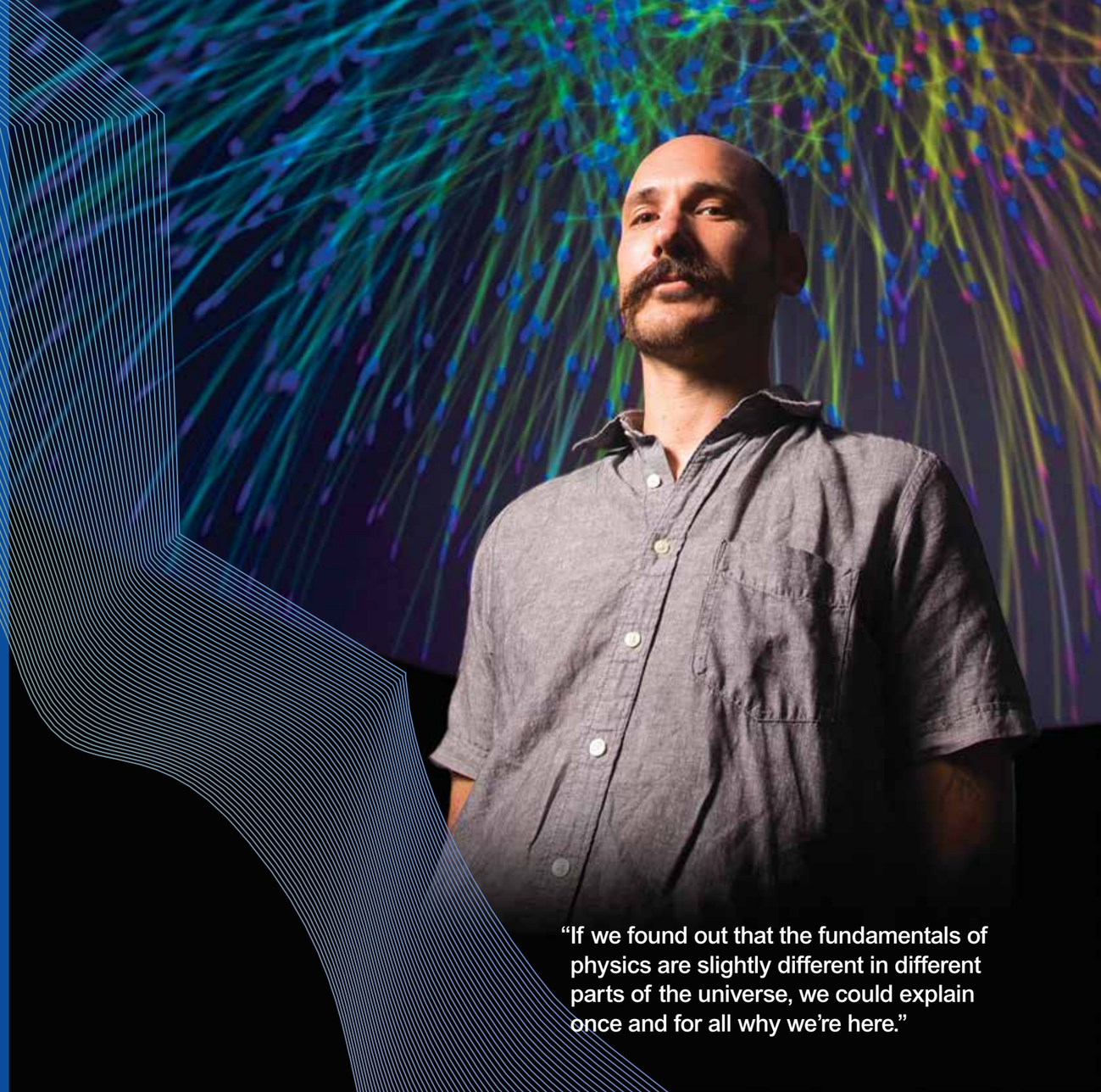
THEORETICAL PHYSICS

Julian Berengut's research challenges the notion that fundamental laws of physics are constant across the universe and could help us solve two of humanity's most profound mysteries: Why do we exist? and Are we alone?

Our universe is governed by fundamental laws pertaining to things like gravity, quantum mechanics, the mass of atoms and their particles, and the speed of light. These laws, which seem to be perfectly tuned for life on Earth – and perhaps elsewhere – are assumed to be constant across space and time under the Standard Model.

Dr Julian Berengut from the UNSW School of Physics, however, has found evidence to suggest otherwise. Using data from distant galaxies, Berengut has found that the fine-structure constant – a law that determines the strength of electromagnetism and influences what matter can form – may be variable, though only very slightly.

Berengut plans to verify this finding using an atomic clock he helped develop, which can measure unseen forces across the universe with unparalleled precision. If confirmed, it has the potential to revolutionise the study of physics, providing a foundation for a Theory of Everything, and will help us answer important existential questions about our place in the cosmos.



"If we found out that the fundamentals of physics are slightly different in different parts of the universe, we could explain once and for all why we're here."

Find out more about Julian's work at **20risingstars.unsw.edu.au**

"We are moving closer to emulating nature, producing synthetic polymers with comparable properties to those found in the biological world."

Cyrille Boyer

POLYMER CHEMISTRY

Antimicrobial resistance could send modern medicine spiralling back to the Dark Ages, killing hundreds of millions of people. Cyrille Boyer is developing functional polymers and therapeutic agents that will help us fight back.

A British report on antimicrobial resistance, released in 2014, predicted drug-resistant infections could kill 300 million people and cost the global economy $100 trillion by 2050. Associate Professor Cyrille Boyer, winner of a 2015 Prime Minister's Science Prize, is working to prevent this catastrophic scenario.

The Deputy Director of the Australian Centre for NanoMedicine at UNSW is developing intelligent nanoparticles that can deliver antibiotics in combination with either nitric oxide or carbon monoxide to infection sites. When micro-organisms adhere to each other, forming slimy biofilms, conventional antibiotics are ineffective. Boyer's next-generation drugs, however, can break down these biofilms and kill the dispersed bacteria.

These experimental drugs have been enabled thanks to Boyer's expertise in polymer chemistry. Inspired by photosynthesis, the chemical engineer has pioneered a more sustainable process to create functional polymers. His team recently became the first in the world to demonstrate that visible light and chlorophyll – a natural, non-toxic catalyst – could be used to trigger the polymerisation process, publishing their results in the prestigious journal *Chemical Science.*

Find out more about Cyrille's work at **20risingstars.unsw.edu.au**

Daoyi Dong

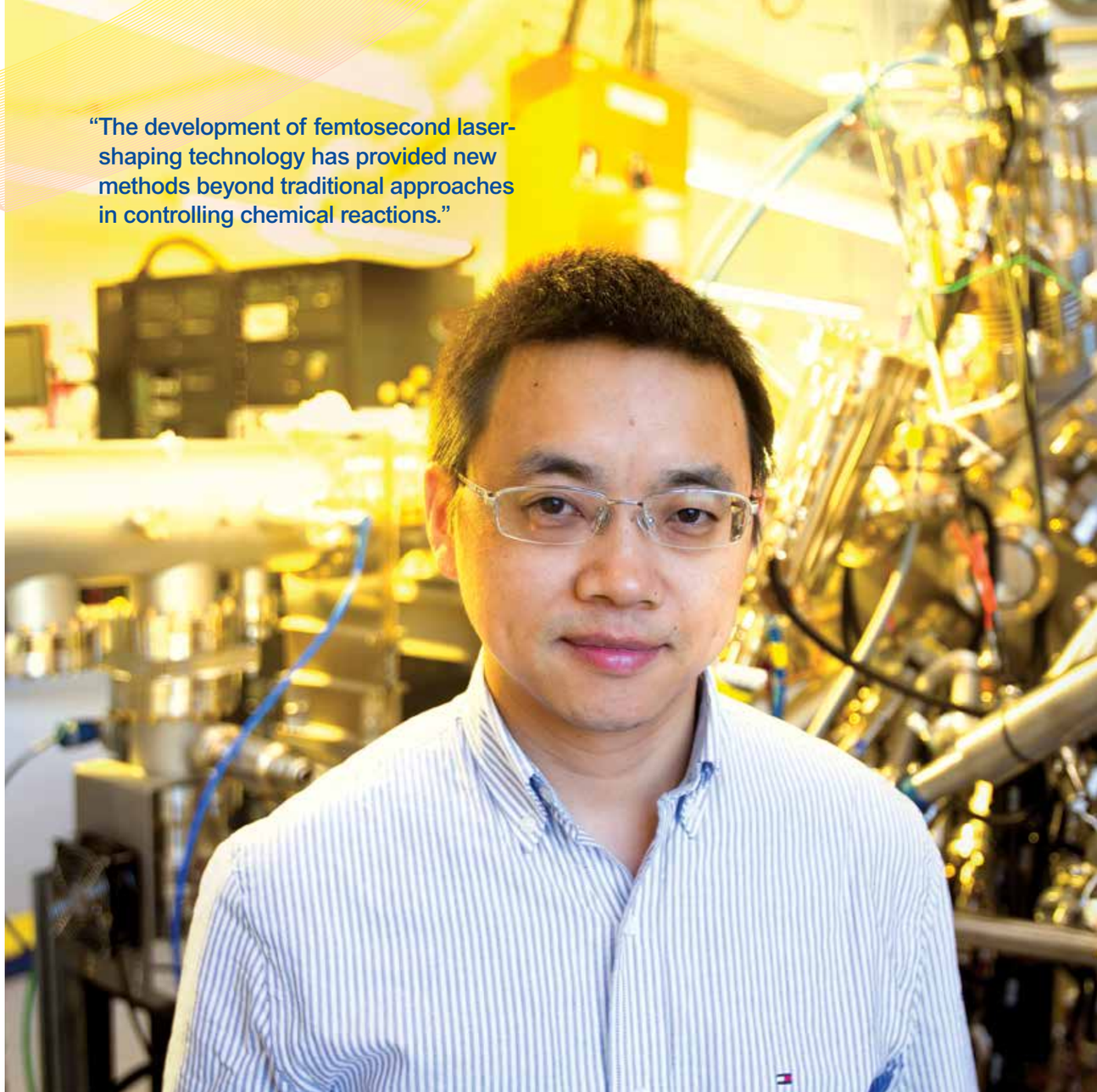
QUANTUM SYSTEMS

Quantum systems will revolutionise computing, health care and environmental monitoring. Daoyi Dong is using lasers to ‘surgically’ refine single atoms and molecules, opening the door to futuristic quantum devices.

Imagine walking into a doctor’s office and speaking into a diagnostic device that can recognise undetected diseases, simply by analysing the atoms within the molecules of your breath.

Dr Daoyi Dong is making futuristic devices like this a reality. Working at the intersection of electrical engineering, mathematics, computer science, quantum physics and chemistry, Dong is developing intelligent algorithms to precisely control ultra short, femtosecond laser pulses.

A femtosecond is one quadrillionth of a second – about what one-second is to 32 million years. The ability to observe events on these time scales means scientists can observe the movement of single atoms inside molecules. By controlling these lasers, the UNSW Canberra engineer can isolate and alter the properties of single atoms and molecules to meet specific demands, an important task in pharmaceutical development. He can also steer atoms into desired quantum states, where their unusual properties can be more easily harnessed.



“The development of femtosecond laser-shaping technology has provided new methods beyond traditional approaches in controlling chemical reactions.”

Find out more about Daoyi’s work at **20risingstars.unsw.edu.au**

"We want to develop tools that can be used in Australia and globally to make high-density living more comfortable and sustainable for residents."

FUTURE CITIES

By 2050, two-thirds of us will reside in cities dominated by apartment blocks. Hazel Easthope is making sure these future urban centres are more sustainable and liveable.

Hazel Easthope

The world is urbanising fast: by 2050, 66% of us will live in cities, up from 50% today, according to predictions from the United Nations.

This trend is putting enormous strain on governments to house and provide essential services and infrastructure to urban dwellers. To meet housing demand, cities are increasingly building skyward.

"But it's not simply a numbers game," says Dr Hazel Easthope from UNSW's City Futures Research Centre.

She is investigating the management of apartment blocks, with the goal of improving social relationships between residents, and making these higher density dwellings and communities more sustainable.

In order to minimise disputes, Easthope is also helping to ensure residents and property owners better understand their rights and responsibilities under strata laws. The research, which applies to urban centres around the world, will help keep our cities functioning smoothly for decades to come.

Find out more about Hazel's work at **20risingstars.unsw.edu.au**

CORPORATE FRAUD

Organisational fraud costs the global economy more than $3 trillion each year. Clinton Free is helping businesses identify vulnerabilities to stop fraudulent behaviour before it begins.

Clinton Free

The cost of corporate fraud around the globe is staggering. Some estimates suggest organisations lose roughly 5% of revenue each year due to illegal activities. If applied to the Gross World Product, this translates to potential annual losses in excess of $3 trillion. The latest estimates suggest in Australia alone that figure is $8.5 billion per year.

Professor Clinton Free, director of the MBA program at the UNSW Business School, is studying this global problem by interviewing the people who understand it best: prisoners convicted of fraud-related offences. With a background in law and accounting, Free is trying to understand who commits fraud, how these crimes are designed and carried out, and how fraudsters rationalise their behaviour.

"This is really at the core of understanding the drivers of fraud," he says. His work is helping international organisations identify and plug up weaknesses that can be exploited by deceitful employees, and will be used to design new training programs to discourage fraudulent behaviour.

"If we're serious about addressing fraud as a social problem we can't ignore the offender's voice."

Find out more about Clinton's work at **20risingstars.unsw.edu.au**

"I am motivated to explain things other economists shy away from. I keep models of behaviour in mind, but I back them up with the rigour of economic analysis."

Pauline Grosjean

BEHAVIOURAL ECONOMICS

To truly understand the drivers and constraints of an economy, you have to look at its past. Pauline Grosjean is revealing how a country's cultural legacy influences its economic performance.

According to certain theories, economies in similar countries should behave in similar ways. In reality, however, we see huge disparities in economic management and growth between nations. To help close these gaps, we need to understand how historic factors, such as cultural practices, influence economic performance.

Associate Professor Pauline Grosjean, from the UNSW School of Economics, is studying how practices and beliefs, which are often no longer obvious in a society, can continue to exert impacts on the economy, often for multiple generations.

Her internationally focused research has linked high rates of violent crime in the US to historical episodes of lawlessness, while in North Africa and the Middle East, her research after the Arab Spring helped dispel the myth that poorer citizens vote for Islamic political parties.

In Australia, she has focused on our penal colony history to explain the origin and persistence of skewed gender roles that routinely disadvantage women. By investigating these cultural legacies, her work is helping to improve future economic performance.

Find out more about Pauline's work at **20risingstars.unsw.edu.au**

M. Hank Haeusler

SMART CITIES

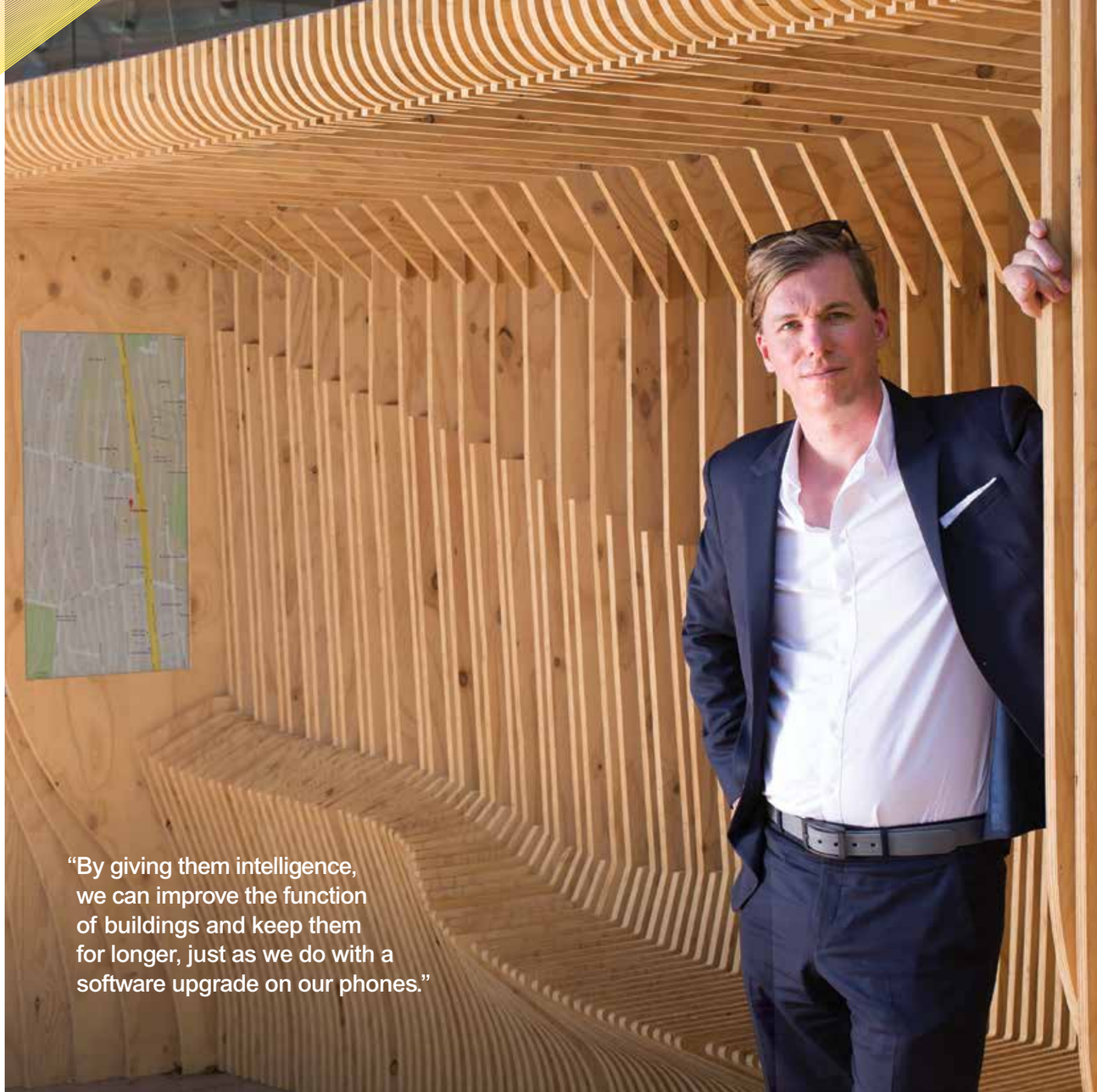
To cope with larger populations, future cities will need to incorporate artificial intelligence. Hank Haeusler is designing smart infrastructure that will optimise city function by learning from human behaviour.

More than half of the global population already resides in urban centres. To keep these cities sustainable and running smoothly, we need to design 'intelligent' buildings and infrastructure.

"There's no reason a responsive smart screen at a bus stop can't perform the same tasks as your smartphone," says Dr M. Hank Haeusler, who leads the Computational Design program in UNSW's Built Environment faculty.

An international expert in media architecture, Haeusler is investigating ways to integrate smart façades, embedded with screens, sensors and cameras, into the concrete, steel and wooden fabric of our cities. These intelligent features could enable structures, such as bus stops, to learn from our behaviour, communicate with each other (and us) via the internet, and optimise things like public transport schedules.

In addition, Haeusler says these media features could extend the life span of structures, which in future will require only software updates instead of complete rebuilds.



"By giving them intelligence, we can improve the function of buildings and keep them for longer, just as we do with a software upgrade on our phones."

Find out more about Hank's work at **20risingstars.unsw.edu.au**

"We think we have developed the lift-off technology needed to take this new solar cell to the next level."

Xiaojing Hao

NEXT-GENERATION SOLAR CELLS

Solar energy will be crucial if we are to overcome our reliance on fossil fuels. Xiaojing Hao is developing next-generation photovoltaic technology from abundant, non-toxic minerals to transform the global solar market.

To prevent catastrophic climate change, we need to phase out fossil fuels – and fast. Solar photovoltaic energy will help, but the continuing challenge is lowering costs while improving efficiency.

One approach is to layer thin film cells onto silicon solar cells – which currently dominate the market. This 'tandem architecture' design enables the capture and conversion of more energy from sunlight, says Dr Xiaojing Hao. Unfortunately, the best thin-film cells at present require the rare element indium, which could be subject to increased price volatility as touch-screen devices become more ubiquitous. Hao is developing a lower-cost alternative that uses abundant, non-toxic minerals: copper, zinc, tin and sulphide (CZTS).

The solar engineer has been optimising her design to improve electrical potential. She is targeting a new efficiency record of 15% within three years and is already working with Chinese steel manufacturer, Baosteel, to integrate her low-cost solar cells into building materials.

Find out more about Xiaojing's work at **20risingstars.unsw.edu.au**

ENVIRONMENTAL LAW

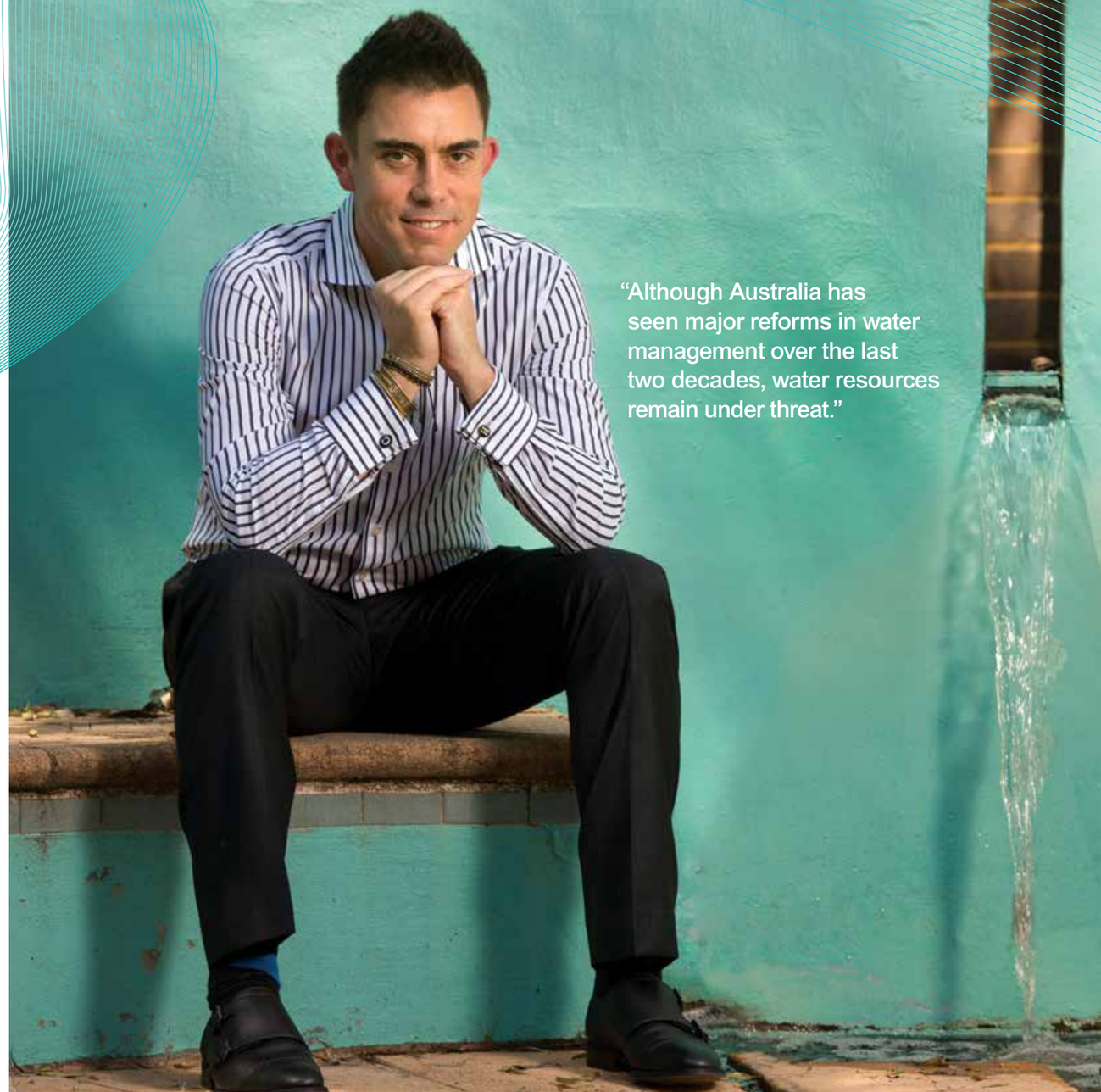
Climate change and population growth are hastening a global water supply crisis. Cameron Holley is developing ways to improve the management and allocation of limited fresh water resources in Australia and abroad.

Cameron Holley

Fresh water is vital to our health, economy and environment. Yet around the world, 1.2 billion people – nearly one-fifth of the global population – live in areas where there are water scarcities. In Australia and other drought-prone countries, effective rules to share water between different users is a critical priority.

Associate Professor Cameron Holley from UNSW Law is tackling this complex challenge. Despite major reforms over the last two decades, Australia's water resources are still under threat from droughts and demands from agriculture, human use, and mining and gas operations. To compound matters, Holley says there has been widespread dissatisfaction with water laws, particularly among farmers. This is due to historically poor community engagement, and ongoing challenges in enforcing these laws.

With two Australian Research Council projects underway, the environmental lawyer is now working with stakeholders, including scientists from UNSW's Connected Waters Initiative, farmers, Indigenous groups and governments, to design and implement fair and enforceable water laws.



"Although Australia has seen major reforms in water management over the last two decades, water resources remain under threat."

Find out more about Cameron's work at **20risingstars.unsw.edu.au**

"We recognise our rising stars as the future of our innovative and pioneering research reputation. They are on the trajectory to make UNSW an innovation powerhouse."

Deputy Vice-Chancellor (Research) Professor Les Field

WATER MANAGEMENT

When it comes to water, Australia is no stranger to both extremes of drought and flooding. Fiona Johnson is developing tools to predict these events and helping engineers design the infrastructure to keep us safe.

Fiona Johnson

Extreme rainfall events are becoming more frequent and intense as our climate changes. This will have serious and extreme consequences, including more flash flooding, which can pose hazards to people, property and infrastructure. Conversely, drought risk is also changing, potentially limiting food production and drinking water availability, and dramatically increasing bushfire risks.

Dr Fiona Johnson from the UNSW School of Civil and Environmental Engineering is trying to quantify these risks. The hydrologist is analysing historical rainfall data over several decades to help reliably predict extreme rainfall events in the future, and better understand the environmental and weather conditions conducive to these events.

Her new tools, which can be used around the world in other drought- and flood-affected countries, will inform the design of safer infrastructure and improve water management strategies. "To distribute water effectively," says Johnson, "managers need to reliably know how much is available to share. This is information we can provide."

"We can never drought-proof or flood-proof the nation. But we can provide great information to ensure optimal decisions are made around infrastructure design."

Find out more about Fiona's work at **20risingstars.unsw.edu.au**

"By identifying patterns and predictors of risk, we can intervene early with strategies to help parents support their young children and each other."

Nadine Kasparian

MEDICAL PSYCHOLOGY

Thousands of babies are born each year with critical heart disease. Nadine Kasparian is changing the culture of care for children and families affected by these life-threatening illnesses.

Around the world, one in every 100 children is born with a potentially life-threatening heart condition. In Australia, congenital heart disease is the leading cause of death in babies under 12 months old.

According to Associate Professor Nadine Kasparian, Head of Psychology at the Heart Centre for Children in Sydney, 45% of babies who need heart surgery are diagnosed through fetal screening during pregnancy. This can lead to significant challenges for families, as well as increased rates of antenatal and postnatal depression and anxiety in parents.

Kasparian is characterising risk factors and developing new evidence-based treatments, but more importantly, is changing the culture of care in paediatrics to ensure families are offered psychological support. The UNSW researcher is also leading a world-first study, investigating whether high levels of stress in parents during pregnancy – after fetal cardiac diagnosis – influences infant development.

"How early-life experiences influence development is important to understand, particularly for children with serious illness," says Kasparian.

Find out more about Nadine's work at **20risingstars.unsw.edu.au**

India's north-eastern states are fraught with instability. Duncan McDuie-Ra is exploring peaceful development in this strategic corridor and shining a light on racial violence and human rights abuses.

Duncan McDuie-Ra

India's north-eastern states are enormously valuable to the Indian government: the land is rich in resources, and provides an overland trade route to China. But the strategic corridor between the planet's two most populous nations is fraught with instability.

UNSW anthropologist Professor Duncan McDuie-Ra has been working with local communities in the region's growing border cities to investigate how violence, the presence of the Indian military, new mining operations and environmental degradation, have affected people's lives. His research examining the *Armed Forces (Special Powers) Act*, introduced by India's government to suppress suspected insurgencies, has been positively cited by human rights organisations that are documenting abuses in the region.

McDuie-Ra has also helped expose racially motivated violence against north-eastern migrants who are forced to move to India's large urban centres in search of jobs. Results from this work have been used by the Ministry of Home Affairs, which has established a committee to improve protection for the region's ethnically diverse peoples.

"This research is part of a larger global narrative about resources, autonomy, border disputes, self-determination and security."

Find out more about Duncan's work at **20risingstars.unsw.edu.au**

"Using data from stroke patients, we are visualising blood flow in a way that's unique to the individual. We're allowing them to look inside their own blood vessels."

VISUALISING MEDICAL DATA

While doctors can diagnose diseases, medical information is often difficult to communicate to patients. Artist John McGhee is using gaming technology to take patients on virtual tours through their bodies, to see their illnesses in 3D.

John McGhee

Medical scans such as X-rays and MRIs might make perfect sense to trained healthcare professionals, but they can be difficult to explain to patients. Patient confusion about what's happening inside the body during an illness, or after an accident, can lead to negative health outcomes, or a lack of commitment to the rehabilitation process.

Dr John McGhee from UNSW Art & Design wants to improve the doctor–patient dialogue and help people recover faster.

Using the latest animation technology employed in the film and gaming industries, McGhee is creating 3D visualisations of medical data. In essence, he's allowing patients to tour the inside of their bodies, using virtual reality to travel through clogged arteries and constricted blood vessels – with the doctor acting as a personal guide.

McGhee's work, which is being trialled clinically with stroke patients, could vastly improve the communication of medical information.

Find out more about John's work at **20risingstars.unsw.edu.au**

Katherine Mills

MENTAL HEALTH AND SUBSTANCE USE

Roughly one-third of Australians with substance abuse problems have a concurrent mental illness. Katherine Mills is figuring out why, and leading world-first trials of innovative treatment programs.

Mental illness and substance abuse are intimately linked: an estimated 33% of Australians with substance use problems also have mental health conditions. For people in rehab, that number is closer to 80%.

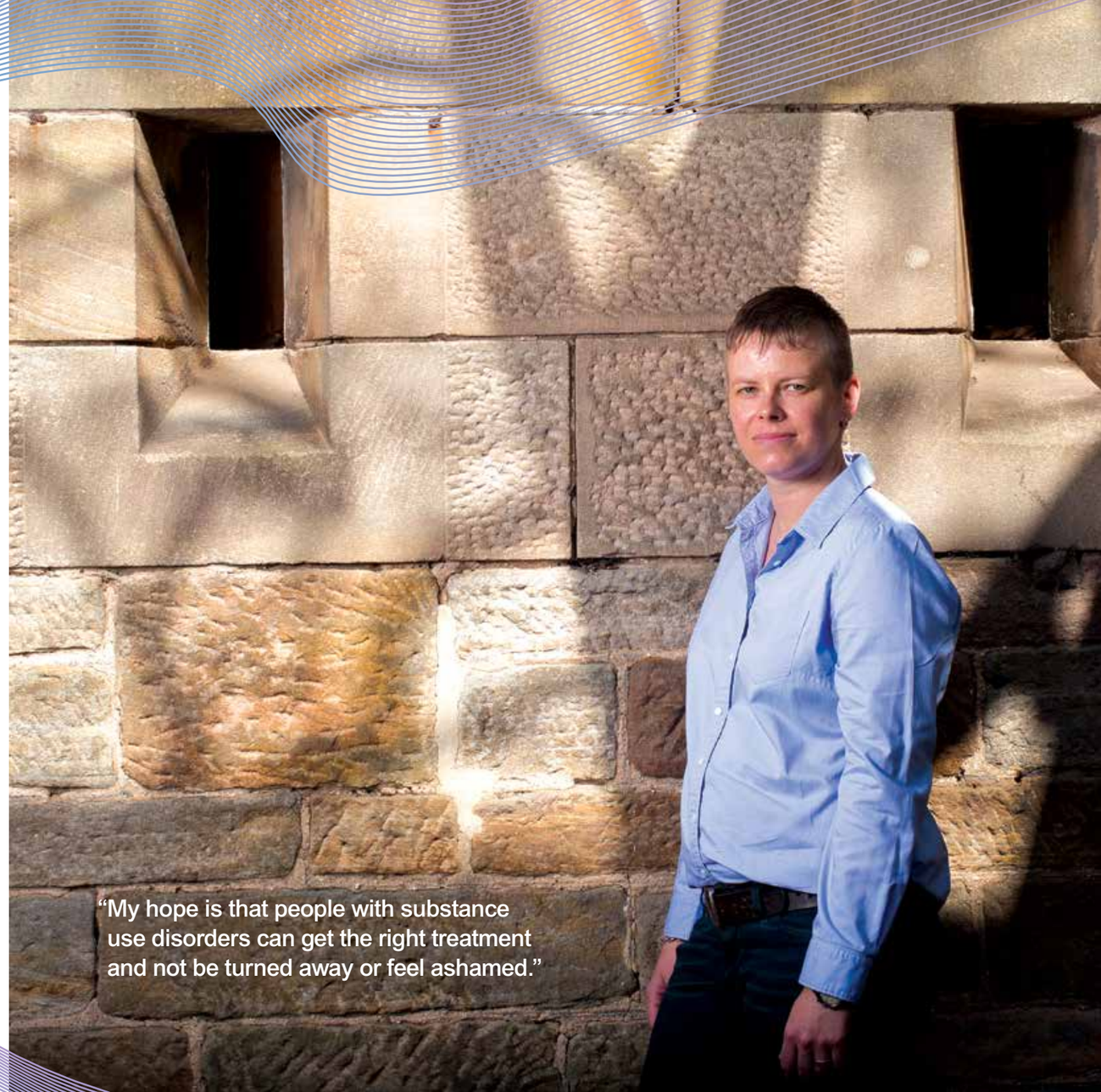
But there is very little research to guide treatment responses, says Associate Professor Katherine Mills from UNSW's National Drug and Alcohol Research Centre.

"As a result, people often end up being bounced between services, receiving disjointed and uncoordinated care, and in some cases falling between the cracks." Mills wants this to change.

She's investigating how the two conditions are linked and is leading world-first trials of new treatments.

It's an important goal considering the toll on society: mental health and substance abuse disorders affect some 300,000 Australian adults each year, and have the leading disease burden among people aged 15 to 24. In adults, the impact of these two conditions is only overtaken by cancer and cardiovascular disease, says Mills.

"We need to stop treating substance use disorders differently from other mental health conditions and physical illnesses."



"My hope is that people with substance use disorders can get the right treatment and not be turned away or feel ashamed."

Find out more about Katherine's work at **20risingstars.unsw.edu.au**

“By understanding the factors that underlie refugee mental health, we can improve psychological treatments and help refugees adapt to life in Australia.”

Angela Nickerson

REFUGEE MENTAL HEALTH

The world is witnessing the largest refugee crisis since World War II. Angela Nickerson is making sure people forced to flee from their homes can overcome psychological trauma.

More than 51 million people were forcibly displaced from their homes in 2013 – the largest number since World War II, according to the United Nations. As the problem worsens, a major challenge is helping refugees overcome traumatic experiences and integrate into their new communities.

Dr Angela Nickerson, who leads the Refugee Trauma and Recovery Program in the UNSW School of Psychology, is pioneering new interventions to help the estimated one in three displaced persons who develop psychological disorders. Her lab is one of the first in the world to use experimental methodologies to study emotion regulation in refugees.

Working with people from a range of different ethnic backgrounds and language groups, Nickerson is also leading a study tracking the resettlement experience of refugees across Australia. The objective is to improve mental health outcomes and inform new policies to better support refugees around the world.

Find out more about Angela’s work at **20risingstars.unsw.edu.au**

EXTREME WEATHER

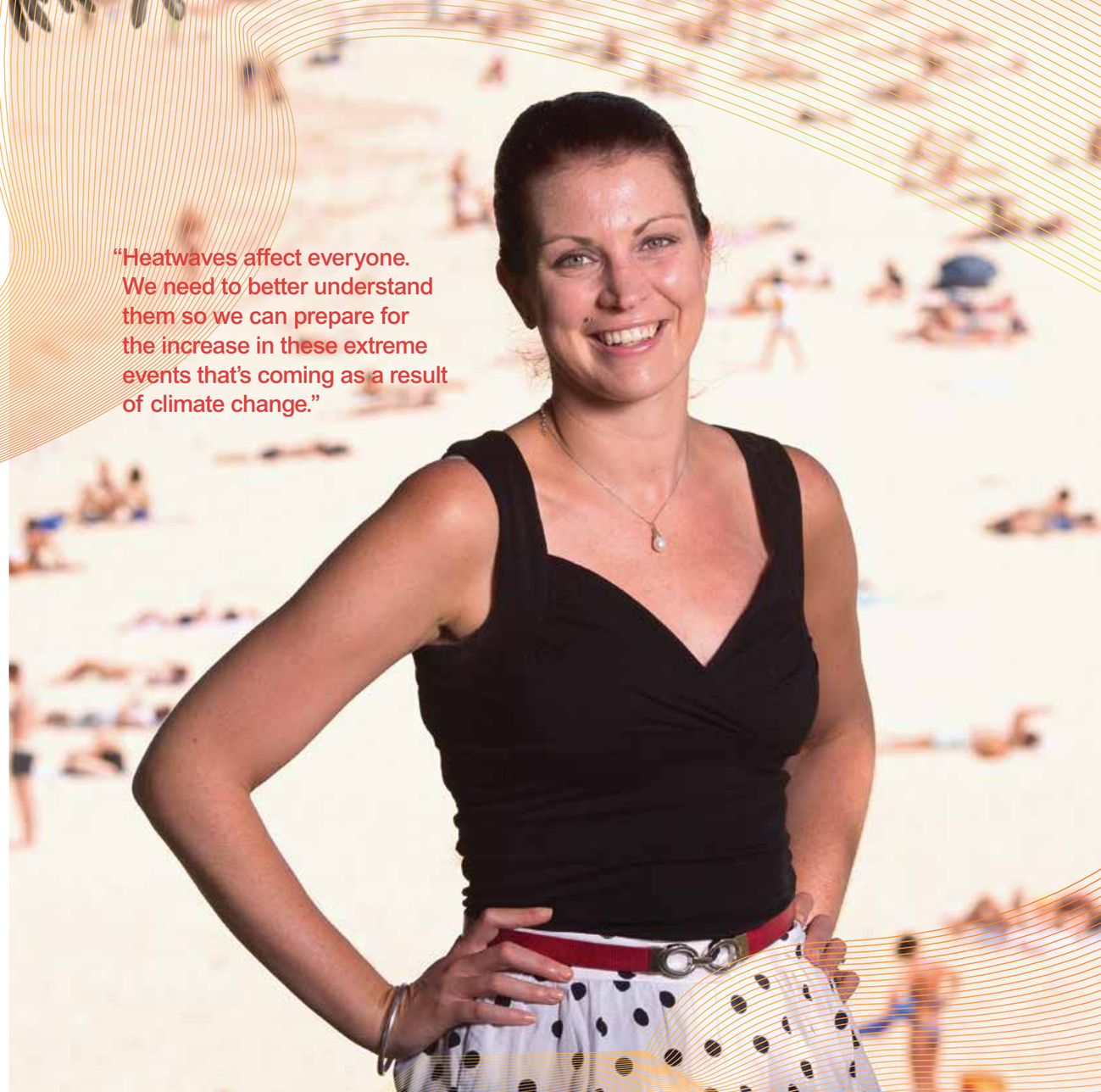
As our planet steadily warms, heatwaves will occur with greater frequency and intensity. Extreme weather scientist Sarah Perkins-Kirkpatrick is developing methods to more accurately predict these deadly events.

Sarah Perkins-Kirkpatrick

Tens of thousands of people die each year from dehydration during heatwaves. That toll is expected to quadruple by 2050, as heatwaves become more severe and frequent as a result of climate change. Heatwaves also have indirect impacts on public health and safety: they can cause power outages, damage infrastructure, trigger droughts, cause bushfires and limit agricultural productivity.

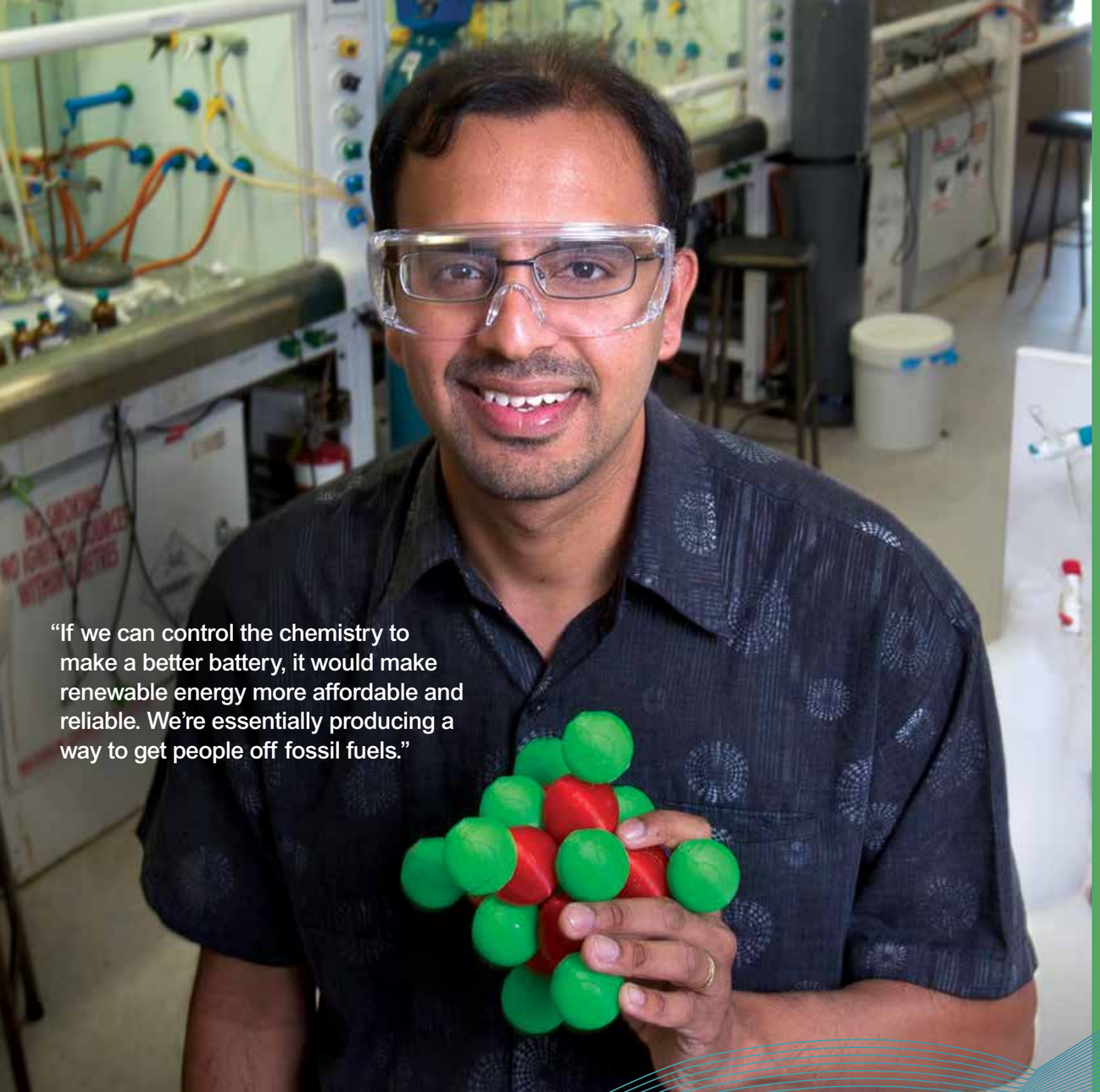
Dr Sarah Perkins-Kirkpatrick, from the UNSW Climate Change Research Centre, is trying to untangle and measure the complex factors that influence heatwaves, ranging from soil moisture levels to changing weather patterns.

By combining this information with historical heatwave records, Perkins-Kirkpatrick has shown that heatwaves have gotten worse over many global regions. The climate scientist is analysing state-of-the-art climate models to understand how the frequency and severity of heatwaves will change in the future, and the role humans play, giving governments a powerful tool to prepare and ultimately save lives.



"Heatwaves affect everyone. We need to better understand them so we can prepare for the increase in these extreme events that's coming as a result of climate change."

Find out more about Sarah's work at **20risingstars.unsw.edu.au**



"If we can control the chemistry to make a better battery, it would make renewable energy more affordable and reliable. We're essentially producing a way to get people off fossil fuels."

ENERGY STORAGE

Affordable power storage is the missing link in the renewable energy revolution. Neeraj Sharma is developing next-generation rechargeable batteries that run on sea water.

Neeraj Sharma

In the future, we will power our homes and cars using sunlight – even when it's dark outside. This is the enormous promise of affordable energy storage.

"If you couple a solar cell with the right battery, then you can produce a constant energy output," says Dr Neeraj Sharma from the UNSW School of Chemistry. Lithium-ion batteries, which move charged lithium atoms between positive and negative electrodes, are great for powering our phones and laptops, but are too expensive to be used on the scale needed to power entire buildings and communities with renewable energy. Sharma is replacing lithium with sodium, developing more-affordable batteries that effectively run on sea water.

To design electrodes compatible with larger sodium atoms that can provide 10 hours of constant storage, Sharma is using powerful analytical equipment at the Australian Synchrotron to visualise his batteries in action, at the atomic scale. If successful, his batteries will provide the world with clean, cost-effective electricity.

Find out more about Neeraj's work at **20risingstars.unsw.edu.au**

CELL SCIENCE

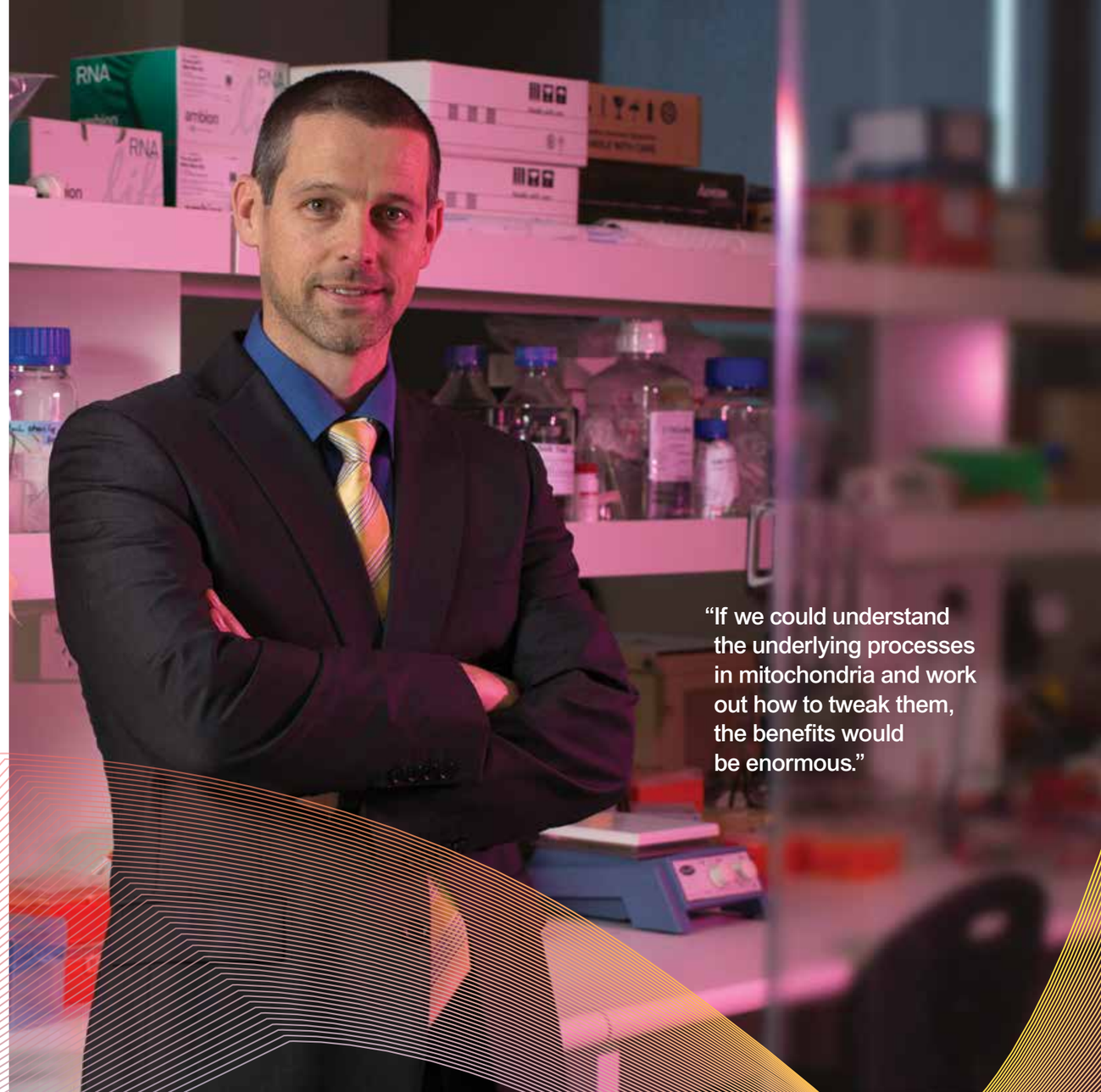
By understanding how to control mitochondria, the ‘battery’ in our cells, Nigel Turner is developing ways to slow ageing and potentially overcome a swathe of debilitating conditions, such as diabetes, cancer and Alzheimer’s.

Nigel Turner

While it can lengthen our lives, modern medicine has yet to overcome ageing. Associate Professor Nigel Turner from the UNSW School of Medical Sciences could help change that, while improving treatments for a suite of debilitating conditions, from obesity and diabetes, to cancer and Alzheimer’s disease.

Turner studies the powerhouses of our cells – mitochondria. They metabolise nutrients and produce the energy we need to grow and survive, but old age and various diseases can disrupt this process. Turner is investigating how cellular metabolism is regulated, with the goal of tweaking the process. To treat obesity and diabetes, for example, he wants to encourage mitochondria to burn kilojoules more effectively, to help improve insulin sensitivity.

His team is currently experimenting with the process in mice fed diets high in fat. If he can successfully change mitochondrial function, Turner could help counteract the diseases creating the biggest burden on society, and delay some of the most serious side effects of ageing.



“If we could understand the underlying processes in mitochondria and work out how to tweak them, the benefits would be enormous.”

Find out more about Nigel’s work at **20risingstars.unsw.edu.au**

"There's a vital role for the humanities and social sciences in understanding the significance of this mass extinction event, and responding adequately to it."

Thom van Dooren

ENVIRONMENTAL HUMANITIES

Our planet is hurtling towards an extinction crisis of epic proportions. Thom van Dooren is exposing the hidden value of threatened species and ushering in a radical rethink of how we respond to biodiversity loss.

Around the world, biodiversity loss is accelerating at an unprecedented rate due to processes such as climate change, habitat loss and introduced species. "The current scale of extinction is universally agreed to be massive," says philosopher Dr Thom van Dooren from the UNSW School of Humanities & Languages.

So grave is the problem that, in 2012, the United Nations established an Intergovernmental Platform on Biodiversity and Ecosystem Services to help governments stall the potentially catastrophic trend. But van Dooren says framing the problem and possible solutions in purely scientific terms can alienate many of the people most directly impacted.

A leader in Australia's first environmental humanities program, van Dooren is studying threatened bird populations around the world, and radically rethinking our approach to wildlife management. By telling stories about at-risk species and affected communities, he's documenting "extinction as a lived experience". This innovative approach is revealing the hidden cultural value of biodiversity, and could inform more-effective conservation strategies of global relevance.

Find out more about Thom's work at **20risingstars.unsw.edu.au**

ALSO IN THIS RESEARCH@UNSW SERIES:

10 innovations that changed our world
10innovations.unsw.edu.au

15 women changing our world
15trailblazers.unsw.edu.au

FIND OUT MORE ABOUT RESEARCH AT UNSW

Contact the office of the Deputy Vice-Chancellor (Research)

Phone	+61 2 9385 2700
Fax	+61 2 9385 8008
Email	enquiries.research@unsw.edu.au
Web	research.unsw.edu.au
Address	Room 137, The Chancellery UNSW Australia Sydney, NSW 2052

UNSW acknowledges the support and assistance of various funding bodies, donors and industry partners involved in the research leading to these achievements, including the Australian Research Council and the National Health and Medical Research Council.

Produced by the UNSW Media Office
Editor: Myles Gough
Text: Myles Gough, Fiona MacDonald
Steve Offner, Chris Sheedy
Managing Editor: Denise Knight
Proofreader: Pam Dunne
Design and Production: Another Colour
Photography: Quentin Jones

CRICOS Provider No. 00098G
ISSN 1836-1978 (Print)
ISSN 1836-1986 (Online)