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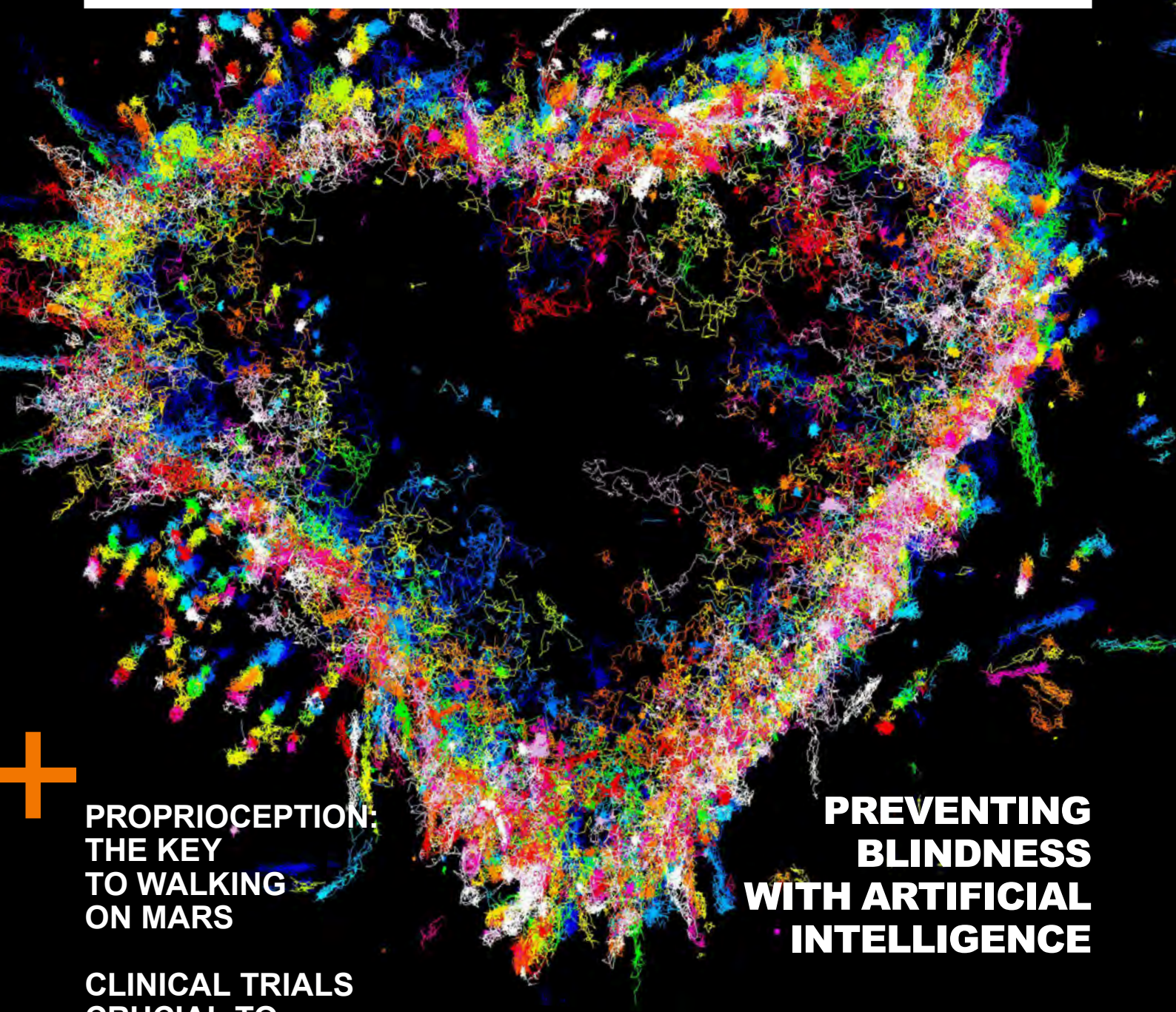
INSPIRE

RESEARCH AUSTRALIA SHOWCASES HEALTH & MEDICAL RESEARCH



PROPRIOCEPTION: THE KEY TO WALKING ON MARS

CLINICAL TRIALS CRUCIAL TO DRIVING NEW DISCOVERIES IN CANCER TREATMENT

PREVENTING BLINDNESS WITH ARTIFICIAL INTELLIGENCE

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Message from CEO

2017 has been a good year for health and medical research with strong attention from our policy makers and funders.

From the positive introspection on grants and processes by the NHMRC, to the first disbursements of the Medical Research Future Fund, and the implementation of most measures from the National Innovation and Science Agenda.

So too the recognition that better use of data in the delivery of healthcare is especially important to the national economy and the wellbeing of Australians.

As you will see in this issue of INSPIRE, it's been 50 years since the Red Cross Blood Transfusion Services responded to research showing that Rhesus disease could be prevented with anti-D. In fact, Australia was the first country in the world to become self-sufficient in HDFN prevention (page 20).
Roll forward 5 decades and artificial intelligence is now being used for early detection of diabetic retinopathy; just the start of game changing technologies will play in the future of health, be it research, or delivery of care see page 24. If you're thinking that space medicine has no role to play, think again. On page 8, read how the University of Canberra researchers add value to NASA through examining movement sense and how the body reacts to extreme environments.

We also congratulate and are proud to share the wins that our members have had this year.
In particular, the medtech agreement providing stability for the industry and the exciting $100M investment for the Australian Brain Cancer Mission and the Eliminate Cancer initiative see page 33.

Thank you also for joining for the 2017 Research Australia Awards – whether through your nominations or joining us on the night. It was an incredible highlight of the outstanding work by researchers and supporters in our sector. And on pages 12-15, we pay tribute to the worthy winners, including the much-coveted Peter Wills Lifetime Achievement Medal.
There is little doubt we are a strong sector and when we work together, we are formidable in achieving great outcomes across research, advocacy, and most importantly – a quality of life for us all.

I look forward to an inspirational 2018.

Nadia Levin
CEO & Managing Director

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Who can submit articles?
Any current member of Research Australia who would like to share a relevant story that affects their organisation including, philanthropic donations and their outcomes, research findings, and any other related health and medical research topic that affects the Australian population.

Submission guidelines & deadlines
For information regarding how to submit and publishing deadlines visit the Research Australia website.

On the cover: *uPAINT [heart] in science.* This colourful image shows the nanoscale movements of individual molecules that are critical in mediating communication between neurons. Knowing how these molecules are organised and move is at the heart of understanding brain in health and disease. Image by Ravikiran Kasula, PhD student, Meunier Lab, The University of Queensland, Queensland Brain Institute

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HEALTH & MEDICAL RESEARCH

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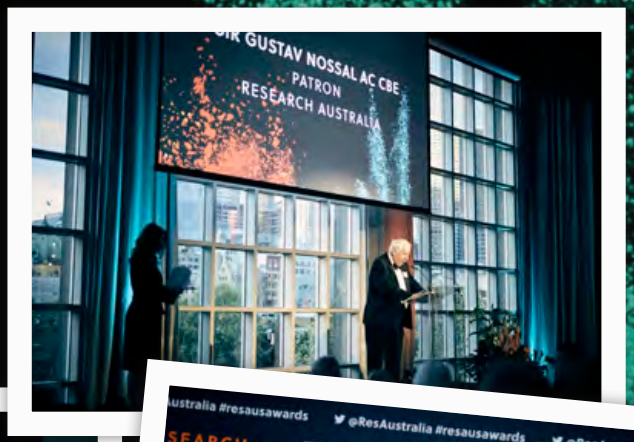
AND CONGRATULATIONS TO ALL THE HMR AWARD WINNERS, SPONSORS & ATTENDEES



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Australian Health & Medical Research

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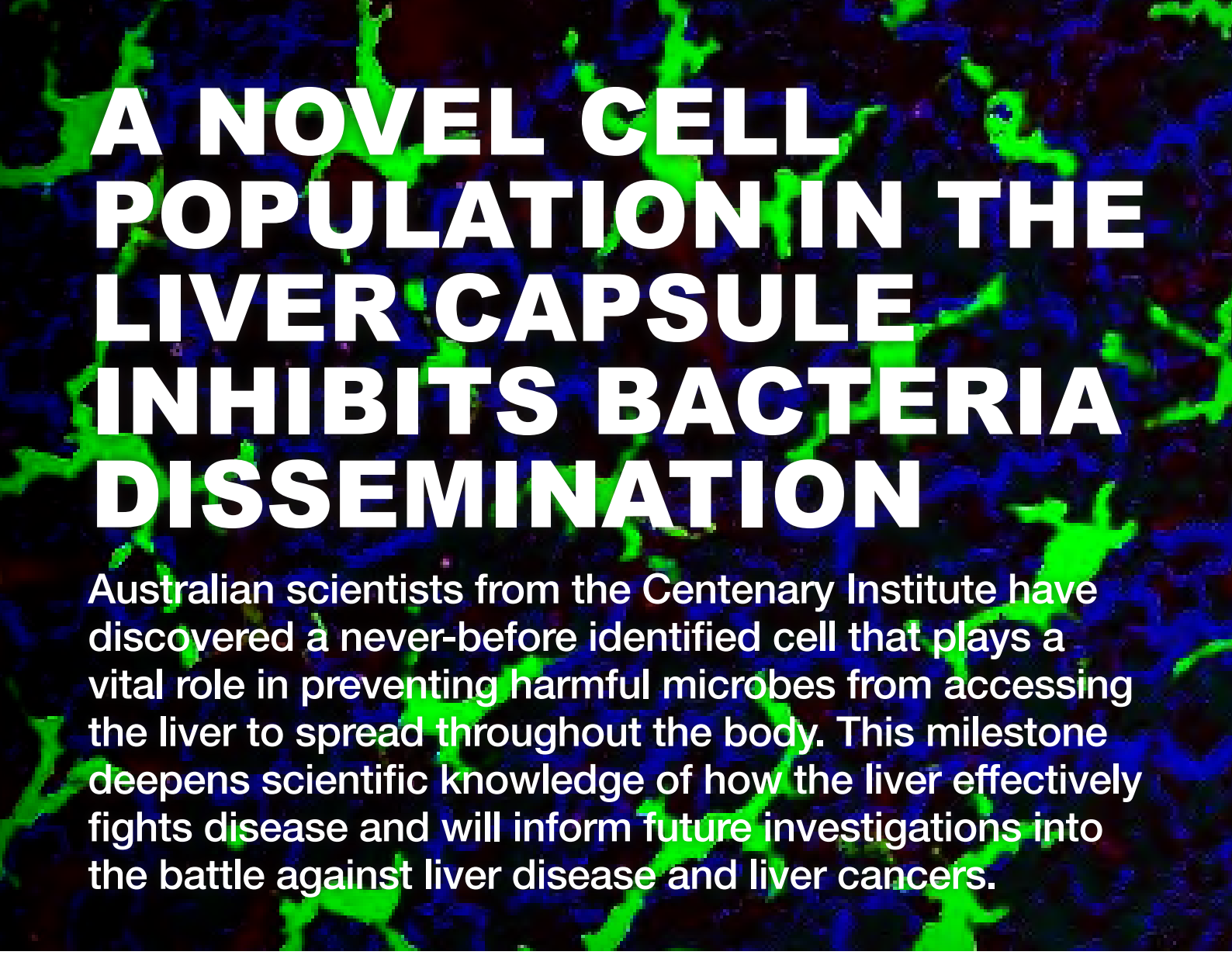


A NOVEL CELL POPULATION IN THE LIVER CAPSULE INHIBITS BACTERIA DISSEMINATION

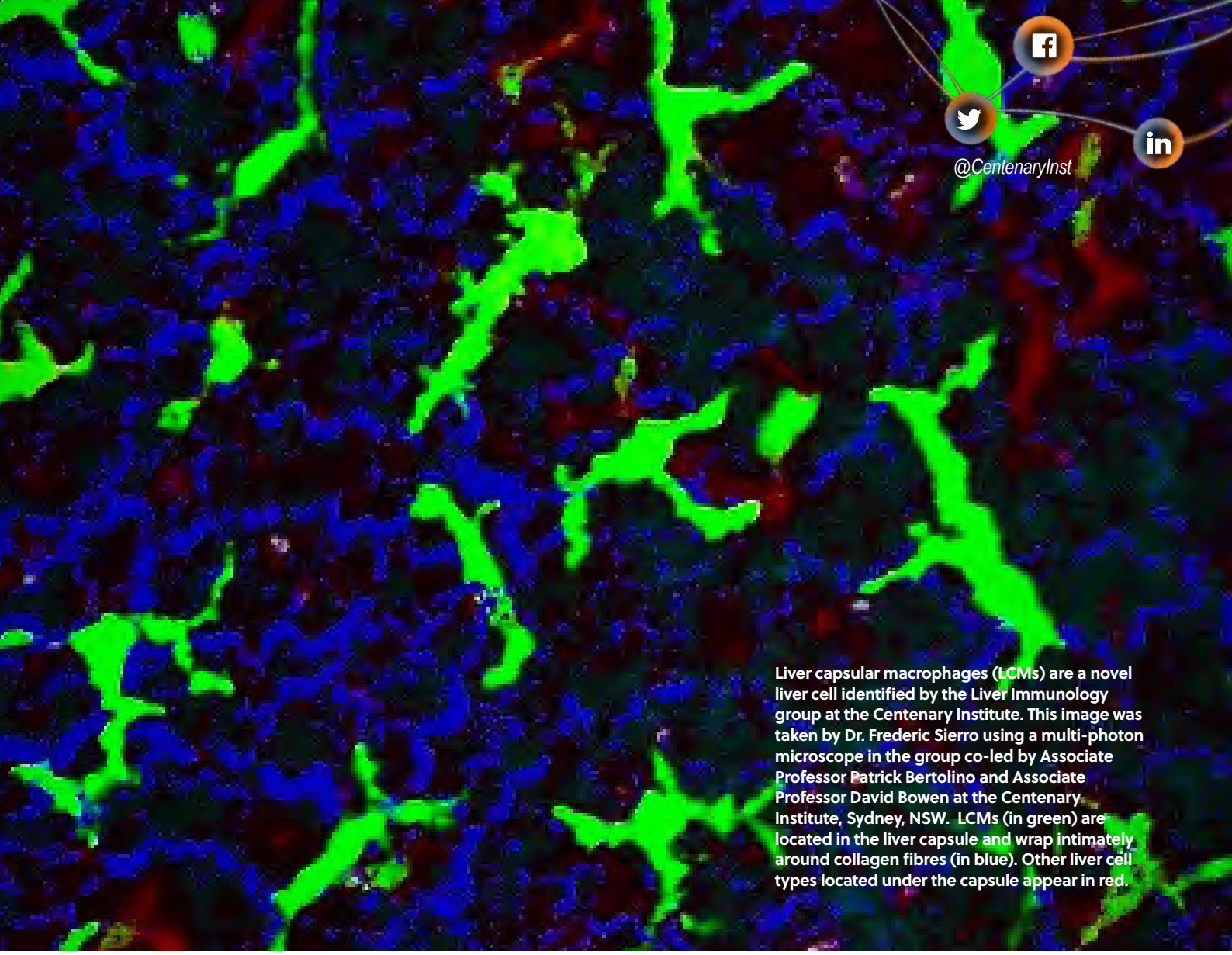
Australian scientists from the Centenary Institute have discovered a never-before identified cell that plays a vital role in preventing harmful microbes from accessing the liver to spread throughout the body. This milestone deepens scientific knowledge of how the liver effectively fights disease and will inform future investigations into the battle against liver disease and liver cancers.

The liver is the "power house" organ of the body. It synthesizes factors responsible for a wide range of metabolic and homeostatic functions and plays an important role in metabolizing and detoxifying drugs as well as circulating toxins. These functions are consistent with the anatomical location of this highly vascularized organ: positioned between the gut and the systemic circulation, the liver derives approximately 75% of its blood supply directly from the venous draining of the intestine. Unlike other tissue cells, liver cells are in continuity with the blood. This unique architecture allows free exchange of molecules between these two compartments, which not only facilitates secretion of proteins into the blood, but also permits rapid absorption of lipids, chemicals and drugs from the circulation.

The liver's unique vasculature and the high volume of blood circulating through it are also key to another important, although less well recognised role: filtering gut-derived organisms from the blood that would otherwise disseminate via the circulation. This function is executed by Kupffer cells, a specialised liver cell discovered by, and named for, the German pathologist Karl Von Kupffer in 1876. Kupffer cells belong to a large family of scavenger cells known as "macrophages". Their main role is to capture, digest and eliminate cell debris, dying cells, and pathogens.

Although Kupffer cells form an effective line of defence against organisms entering the liver via the gut circulation, the liver can also potentially be exposed to pathogens at its external surface, which lies within the abdominal, or peritoneal, cavity. Pathogens such as Listeria monocytogenes and Mycobacterium tuberculosis can enter the body via the oral route after ingestion of contaminated food; although the advent of pasteurisation has reduced the rate of abdominal tuberculosis in Western countries, this route of tuberculous infection still occurs throughout the world. Once in the gut, these organisms can traverse the intestinal wall into the peritoneal cavity, and potentially enter organs located in this compartment including the liver, which shares the majority of its outer membrane, or capsule, with the peritoneal cavity.

Until recently, it has been unclear how the liver prevents organisms that have traversed the peritoneal cavity from entering its outer capsule. Using sophisticated laser based fluorescent microscopy that allows detailed analysis of cells in live tissues, including imaging of cellular interactions



Liver capsular macrophages (LCMs) are a novel liver cell identified by the Liver Immunology group at the Centenary Institute. This image was taken by Dr. Frederic Sierro using a multi-photon microscope in the group co-led by Associate Professor Patrick Bertolino and Associate Professor David Bowen at the Centenary Institute, Sydney, NSW. LCMs (in green) are located in the liver capsule and wrap intimately around collagen fibres (in blue). Other liver cell types located under the capsule appear in red.

within intact organs, researchers at the Centenary Institute have shown that the liver capsule contains a network of cells attached to the collagen fibers within the capsule. Although they are also macrophages, these cells express different molecules to Kupffer cells, suggesting they a distinct liver-resident macrophage subset.

> ***Although liver capsular macrophages (LCMs) are not very mobile, they constantly scan their environment, by extending long extensions, or dendrites, within the capsule, upwards towards the peritoneal cavity, and downwards into the liver tissue towards blood vessels.***

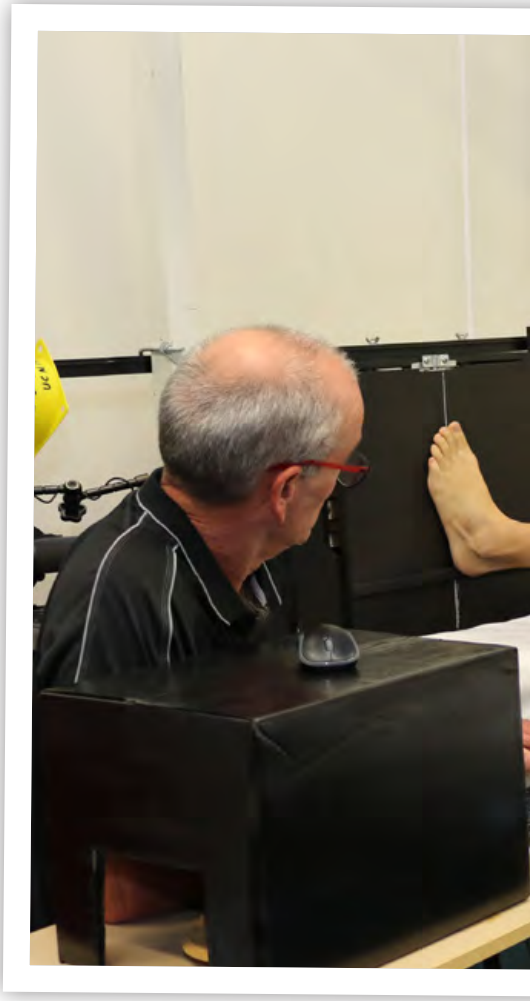
LCMs are able to sense bacteria within the peritoneal cavity, and in response to their detection, recruit neutrophils, a white blood cell subset critical for defence against bacterial infection, into the liver capsule. These recruited cells capture and kill bacteria, thus reducing bacterial dissemination into the liver. This work thus shows that in addition to the well-described role of Kupffer cells in clearing bacteria entering the liver via the portal circulation, a novel second population of macrophages resident within the liver capsule (LCMs) protects the liver from intraperitoneal infections.

Macrophages are known to play an important role in a wide variety of tissue functions, acting as an important contributor to innate immune responses, and playing a critical role in liver injury and resolution of tissue damage. Discovery of this novel additional population of liver based macrophages has significant implications for furthering our understanding of a wide range of immune inflammatory, and tissue repair functions within the liver.

Author: Patrick Bertolino and **David Bowen** co-head the Liver Immunology group at the **Centenary Institute in Sydney.**

PROPRIOCEPTION:
THE KEY TO WALKING ON MARS

Research at the University of Canberra is helping NASA gain a better understanding of the sense of proprioception, which tells us where our body and limbs are in space. The project is part of NASA's mission to put the first humans on Mars.



When astronauts walk on the surface of Mars in the not-too-distant future, they will be able to stand up thanks to research underway at the University of Canberra.

Working with the National Aeronautics and Space Administration (NASA), a group of University researchers is examining proprioception, or movement sense, and how time in space can dull our ability to use it.

People use their sense of proprioception passively in almost everything they do, from standing up and walking through to touch typing or even scratching an itch. Our ability to know where our limbs are and receive feedback regarding movement underlies almost every action we take.

Astronauts are known to suffer a variety of health issues after spending time away from the Earth in microgravity and losing their sense of proprioception can make common tasks like standing and walking challenging.

University of Canberra and Australian Institute of Sport Professor of Sports Medicine Gordon Waddington said his research into proprioception is contributing to NASA's goal of reaching Mars.

> ***When astronauts reach Mars after months of space travel, NASA is going to need them to be able to stand, walk and start their work straight away," Professor Waddington said.***

"This study will increase our understanding of how proprioception works in the different conditions that an astronaut's body may experience. We are all aware of issues around muscle wasting and loss of strength, but loss of proprioception is just as important."

The space agency sought out the University and its Research Institute for Sport and Exercise (UCRISE) because of its proprioception research. Already equipment developed in Canberra has been installed at the Johnson Space Center in Houston, Texas, where astronauts are trained.

VOLUNTEER OPPORTUNITY

Professor Waddington, Acting Director of UCRISE said the project offered an exciting opportunity for anyone off the street to help contribute to getting people safely to Mars.

"Very few people alive today will ever walk on Mars, but a group of research volunteers have been helping those who will go on to take those first steps on another planet," he said. "We've been collecting baseline data around proprioception, using our in-house designed equipment."

Bachelor of Physiotherapy honours student Ashleigh Marchant has been conducting the work with dozens of research participants.

"I have been testing the proprioception responses of healthy people aged 18-55 years, about the right age range for future astronauts," Ms Marchant said. "We do a series of simple movements, looking at their ankles and legs, their fingers and their eyes. Then we repeat them with the person lying down on a bed."

Left: Professor Gordon Waddington conducts a proprioception test on a research participant. The subject's left foot is able to flex through a series of random movements, while Professor Waddington tests their awareness or sense of each movement.

Below: The equipment developed at the University of Canberra is used by Professor Gordon Waddington and Honours Student Ashleigh Marchant to test proprioception. The same equipment is already installed and being used in the Johnson Space Centre in the United States of America in training astronauts.

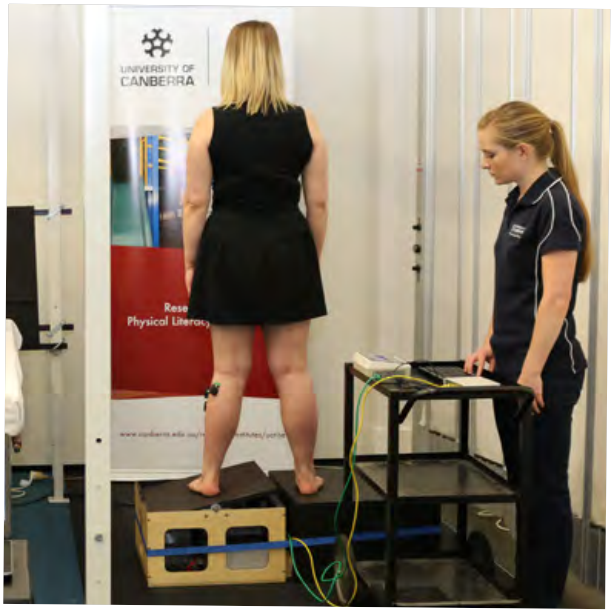
"As the equipment moves the subject can flex their joint, say the ankle, to a certain point, there are about five incremental changes which we randomly generate. It's then up to the person's sense of proprioception to judge which they've just performed.

"We want to gain a better understanding of how proprioception works, since it's one of the least understood human senses and it affects so much of our lives, from standing and walking to using tools and machines."

"We have experts from NASA who will work with us on this project and adapt our findings to their astronaut training. From what we know of proprioception, ballet dancers have the most highly sensitive and responsive sense of proprioception, so perhaps there is something in their training and practice which will help astronauts exercise and retain their proprioception in space."

"This is perhaps the closest many of us will get to contributing to the mission to send humans to Mars and it all stems from understanding a sense we are always using without knowing it," Ms Marchant said.

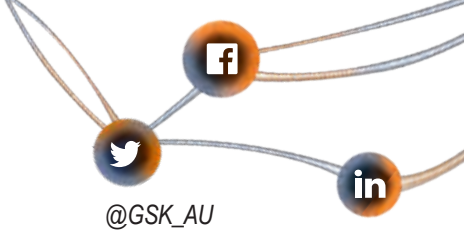
The UCRISE Somatosensory Performance Research Team behind this project includes Professor Waddington, Miss Marchant, Associate Professor of Sport and Exercise Science Nick Ball and Assistant Professor of Physiotherapy Jeremy Witchalls.



Author: Marcus Butler, Research Communications Officer, **University of Canberra**

CLINICAL TRIALS CRUCIAL TO DRIVING NEW DISCOVERIES IN CANCER TREATMENT

Professor Timothy Hughes (centre) won the 2017 GSK Award for Research Excellence. Pictured with Nadia Levin, CEO Research Australia (left) and Dr Andrew Weekes, Medical Director GSK Australia.



Chronic myeloid leukaemia (CML) was once considered one of the more devastating forms of blood cancer, with less than one in six patients surviving eight years past diagnosis[1]. However, the introduction of tyrosine kinase inhibitor (TKI) treatment and research into 'customising' therapy has seen some patients achieve treatment-free remission[2].

Professor Timothy Hughes and his world-leading team at the South Australian Health and Medical Research Institute have demonstrated the molecular monitoring of an individual's response to TKI therapy enables the treatment to be 'customised'[2]. This enhances a patient's chance of remission and minimises the risk of drug resistance and disease progression[2].

Professor Hughes and his team have received the GSK Award for Research Excellence presented at Research Australia's Health and Medical Research Awards 2017.

In accepting the award, Professor Hughes described the group's efforts and the role of clinical trials in allowing his research to transform the lives of CML patients globally.

"The remarkable success of TKI therapy for CML is a great example of effective collaboration between scientists, clinicians and the pharmaceutical industry," said Professor Hughes.

"The original clinical trials into the first generation of TKIs gave us unique insights into the dynamics of response and the mechanisms of drug resistance. This drove the development of second and third generation TKIs, which have further improved outcomes for patients."

Professor Hughes believes patient participation in clinical trials has been essential to the team's success and he encourages increased support for other cancer researchers.

"One of the biggest challenges in cancer research is recruiting patients to participate in clinical trials. Patients are generally very keen to join studies, but there are lots of barriers in the health system that keep trial numbers down[3]. A key to our success has been the willingness of CML patients around Australia to join our clinical trials. It's quite remarkable to me that the motivation to join these clinical trials is almost always to help others in the CML community, since there is no guarantee that the trial will work for them personally."

"Over half of our Adelaide CML patient group have been involved in one or more clinical trial and even more have joined our National CML Registry to facilitate further research. This incredible participation rate has allowed the field to move swiftly over the past decade," said Professor Hughes.

There are over 2,500 CML patients in Australia currently receiving treatment with TKIs[4]. Over 300 Australian patients begin treatment each year[4] and TKIs are now becoming available for the treatment of many other cancers.

FURTHER RESEARCH

The $80,000 prize that comes with the GSK Award for Research Excellence will help support a Leukaemia Fellow to work alongside Professor Hughes to further research into CML. The team are currently focused on treatment response to optimise disease management and patient outcomes.

Dr Andrew Weekes, Medical Director, GSK Australia, said GSK is proud to be able to support Australian researchers with this award, now in its 37th year.

"The work of Professor Hughes and his team is a standout example of the impact Australian researchers can have on patients' lives on a global scale. A mindset of both innovation and collaboration is necessary to achieve such remarkable outcomes. My hope is that by highlighting this team's achievements and further supporting their work, we can inspire others in the quest to develop effective approaches to areas of high unmet medical need," said Dr Weekes.

The GSK Award for Research Excellence is one of the most prestigious awards available to the Australian medical research community. It has been awarded since 1980 to recognise outstanding achievements in medical research with potential importance to human health.

1. *Kantarjian et al. Improved survival in chronic myeloid leukemia since the introduction of imatinib therapy: a single-institution historical experience. BLOOD 2012 19(9): 1981–1987.*
2. *Hughes TP, Ross DM. Moving treatment-free remission into mainstream clinical practice in CML. BLOOD 2016 128 (1) 17-23*
3. *Department of Health (2016) Scoping and analysis of recruitment and retention in Australian clinical trials. Commissioned report conducted by EY.*
4. *Department of Health (2014) Drug utilisation sub-committee. Tyrosine kinase inhibitors for the treatment of Chronic Myeloid Leukaemia, February 2014.*

RESEARCH AUSTRALIA HEALTH AND MEDICAL RESEARCH AWARDS 2017

Acknowledging talent and excellence in our sector is not only a key part of Research Australia's role in advocacy for health and medical research, it is also paramount to encouraging future generations of great researchers.

Research Australia is delighted to announce the winners of the Health and Medical Research Awards held in Melbourne on 5 October 2017.

THE PETER WILLS AWARD | PROFESSOR KIM MULHOLLAND

The Peter Wills Medal recognises an Australian who has made an outstanding contribution to building Australia's international reputation in health and medical research and fostering collaboration for better health. Professor Kim Mulholland's work truly illustrates this achievement.

His work with the World Health Organisation and other research organisations on childhood pneumonia, malnutrition and the links between the two with the World Health Organisation and others has led to new approaches that save the lives of children every day in developing countries.

Professor Mulholland's global contributions past and current, continue today with studies underway in many countries including Vietnam and Mongolia and demonstrate not only his professional commitment to managing this disease but his dedication to its eradication.

In addition to Professor Mulholland's global achievements, he has also established the Centre for International Child Health in Melbourne and his influential contributions have enhanced the reputation of the Murdoch Children's Research Institute as an international leader in global child health.

He encourages and formally mentors junior colleagues in many countries including in Australia and several of his former students are now making impressive contributions themselves.

He continues to develop new areas of research, including into respiratory syncytial virus vaccines, human papillomavirus vaccines and the health effects of extreme air pollution. With each new project he provides opportunities for young researchers to enter the field.

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ADVOCACY AWARD | SANFILIPPO CHILDREN'S FOUNDATION

Sanfilippo Syndrome is an extremely rare, genetic disorder which causes progressive brain damage. The prognosis for Sanfilippo children is dire: there is no cure. Reeling from the news that her two children had been diagnosed with Sanfilippo Syndrome, Megan Donnell resigned from her role as a management consultant to establish the Sanfilippo Children's Foundation. In the four years since its establishment, the Foundation has raised close to $3 million in support of its mission to fund medical research into Sanfilippo Syndrome.

By shining a light on this rare and terrible condition, Megan has shone a light on the role health and medical research can play in alleviating the suffering of so many families.

DATA INNOVATION AWARD | PROFESSOR HELMUT BUTZKUEVEN

Multiple Sclerosis is a debilitating and deadly disease affecting 23,000 Australians and millions more worldwide. The search for a cure is relentless, and in the meantime, a range of different treatments are offered to people with MS to reduce the symptoms, delay the onset and improve quality of life. But which treatments work best and why do some treatments work better for some people than others?

This is the question that Melbourne University's Professor Helmut Butzkueven is answering, and his work with MS Base has been recognised with Research Australia's 2017 Data Innovation Award. MS Base has been crucial to defining the real-world outcomes for people with MS and providing the necessary evidence to transform the clinical management of MS.

It has led to the development of consensus guidelines for the treatment of MS patients worldwide, which would not have been possible without the data from MS Base. None of this would have been possible without the original vision and ongoing drive of Professor Butzkueven.

RESEARCH AUSTRALIA HEALTH AND MEDICAL RESEARCH AWARDS 2017

Acknowledging talent and excellence in our sector is not only a key part of Research Australia's role in advocacy for health and medical research, it is also paramount to encouraging future generations of great researchers.

GREAT AUSTRALIAN PHILANTHROPY AWARD | MR ANDREW FORREST AO AND MRS NICOLA FORREST, MINDEROO FOUNDATION

The Great Australian Philanthropy Award was awarded to Mr Andrew Forrest AO and Mrs Nicola Forrest for their leadership in giving with impact and offering examples of good practice to encourage further social giving.

This follows their work through the Minderoo Foundation and the announcement in May of one of the Australia's largest private donations totalling $400m. The donation includes $75 million specifically earmarked for the Eliminate Cancer Initiative with funding to be used as planning capital to unite, encourage and reward the global cancer industry to collaborate and coordinate their efforts and specialise their focus to accelerate research, development, clinical trials and cancer care delivery.

Andrew and Nicola have been researching every possible way they can improve health and medical research in our country to make the largest difference; they are delighted they are able to do so and hope they are encouraging future philanthropy for research in Australia.

GRIFFITH UNIVERSITY DISCOVERY AWARD | DR AVNIKA RUPARELIA, MONASH UNIVERSITY

Dr Avnika Ruparelia received the Griffith University Discovery Award for her ground-breaking research into the causes and therapeutics for a group of late-onset muscle disorders known as myofibrillar myopathies.

Seventy per cent of human genes are found in zebrafish and it's this incredible commonality which has helped Monash University early career researcher Dr Avnika Ruparelia to better understand the causes of progressive muscle weakness.

Patients affected with myofibrillar myopathies have reduced life expectancy due to respiratory muscle failure and cardiac complications. There is currently no treatment and very little research being done to explore new therapies. Dr Ruparelia's has identified the origins and development of the disease to develop better treatment options, which could potentially prevent any further muscle damage in patients affected with the disease. Her research has provided hope to patients and to their families.

@ResAustralia

GSK AWARD FOR RESEARCH EXCELLENCE | PROFESSOR TIMOTHY HUGHES

Professor Timothy Hughes – considered a world-leader in chronic myeloid leukaemia (CML) research – won the GSK Award for Research Excellence for pioneering the use of tyrosine kinase inhibitors (TKIs), a therapy now becoming available for many cancers. His team has demonstrated that molecular monitoring of response to TKI therapy enables it to be "customised" to enhance the chances for each patient to achieve durable remissions while minimising the risks of drug resistance and disease progression.

HEALTH SERVICES RESEARCH AWARD | AUSTRALIAN & NEW ZEALAND HIP FRACTURE REGISTRY

Falling over and breaking any bone, let alone your hip, is not something any of us want to think about, but it is all too often the reality for older people.

The ANZ Hip Fracture Registry is working to change this. By collecting and analysing information about patients who have suffered hip fractures the team at the ANZHRF is helping develop strategies to prevent hip fractures and to improve the recovery of patients when they do happen. With more than 12,000 records from patients in Australia and New Zealand, the Registry sheds light on what works and what doesn't, highlights differences in treatment at different locations, and points the way to best practice. And it is making a difference, changing the treatment patients receive.

The importance of this work has been recognised with Research Australia's 2017 Health Services Research Award, sponsored by Victoria State Government

LEADERSHIP IN CORPORATE GIVING AWARD | THE QBE FOUNDATION

The QBE Foundation is a global initiative to help QBE Insurance give back to the communities in which it operates through charity partnerships, donations and volunteering, The QBE Foundation was launched in 2011 to mark QBE's 125th anniversary year.

The QBE Foundation's core philosophy is to 'Help people overcome disadvantage, strengthen their abilities and live more independently, successfully and productively.' QBE Australia and New Zealand supports the community through volunteering and provides philanthropic support. Each year QBE Foundation forms partnerships with a number of charities with which it then works closely in an effort to make a more significant and meaningful impact on their cause. The 2017 charity partners are Assistance Dogs Australia, Brainwave; Camp Quality; Foodbank; The Big Issue and The Kids' Cancer Project.

THE NOCEBO EFFECT

Understanding more about the nocebo effect could be a step towards reducing the overall burden of treatment side effects in medical care.

Nocebo effects are likely to be one of the most universal experiences for patients taking almost any medical treatment. Recognising and minimising nocebo effects could reduce the burden of side effects, treatment non-adherence and unnecessary GP visits, and improve patients' quality of life. In her recent review paper, Dr Faasse discusses psychological influences on treatment side effects, in particular that patients who hold negative expectations about their medical treatment are particularly likely to experience nocebo effects.

Many people are familiar with the placebo effect, where an inert treatment – like a sugar pill – results in healing or health improvement. Less well known is the nocebo effect, where that same pill can cause harm. The nocebo effect is so powerful it can mimic a serious drug overdose. Nocebo effects most often manifest as unpleasant and distressing symptoms, and may account for 40 to 100% of the side effects of active medical treatments. UNSW researcher Dr Kate Faasse seeks to understand how an inert pill can cause side effects, and how we might reduce nocebo effects in medical care.

Generating negative expectations can be as simple as warning patients about possible treatment side effects. For example, in a group of men being treated with the drug finasteride, those warned about possible sexual side effects were 3 to 4 times more likely to experience these symptoms compared those who did not receive this information. In other words, most of these side effects were caused by negative expectations, not by the drug itself.

> ***While informing patients of potential risks is crucial for informed consent, it is also important to understand how to provide this information without increasing nocebo effects.***

Attention has been drawn to the nocebo effect in relation to statin drugs. While side effects including muscle pain are common in clinical practice, a recent meta-analysis found that almost all statin side effects reported in clinical trials (including muscle pain) occur just as frequently in placebo-treated patients. It is not the drug, but the negative expectations, that appear to be responsible for many of

these unpleasant side effects. Such findings have raised questions about whether such 'side effects' should be listed in patient information leaflets. Dr Faasse's work suggests that many drugs have long lists of such side effects, which may be contributing to increased nocebo effects.

CHOICE MATTERS

The context in which medical treatments are delivered can also influence the nocebo effect. Recent focus on patient-centered care involves shared decision making, in which patients are supported to make choices about their own healthcare. It turns out that in addition to helping patients work with their clinicians to select the best care for them, simply having a choice between two inert placebo treatments can improve effectiveness, as well as reducing the nocebo effect particularly at the 24-h follow-up ($p = 0.002$.

When taking prescription medications – particularly for chronic illnesses – patients sometimes need to switch from one formulation of their drug (often the original branded treatment) to a new formulation or generic version. Dr Faasse's research has found that this switch can decrease treatment effectiveness, and increase the nocebo effect – even when the treatment under consideration is actually an inert placebo. She has also documented the impact of a real-world formulation change that resulted in a more than 2000-fold increase in adverse event reporting, which appeared to be driven by the nocebo effect.

One of the features of this formulation change was television news coverage including interviews with patients discussing the symptoms that they had experienced since the switch. An analysis of formal adverse event reports revealed that side effect reporting increased after these news segments went to air – and that this increase was largest in the symptoms that were specifically discussed by the patient who had been interviewed. An experimental study designed to test whether this social modelling of side effects could have increased the nocebo effect supported this idea: participants who viewed an actor (described as another study participant) report side effects were significantly more likely to experience nocebo effects after taking an inert placebo treatment. Interestingly, this effect was only seen in female viewers. A recent review explores why this might be the case.

Understanding how nocebo effects develop is important in reducing their impact on health and treatment outcomes. Dr Faasse's current and future work has a focus on how to provide treatments, including important treatment information, in a way that minimises negative expectations and subsequent nocebo effects.

Author: Dr Kate Faasse, ARC DECRA Fellow, **UNSW Australia**

HOT NORTH: IMPROVING HEALTH OUTCOMES IN THE TROPICAL NORTH

In less than a year of operation, the *HOT NORTH* research initiative at the Menzies School of Health Research has funded 20 independent research projects, fellowships and scholarships that are rapidly developing the capability and capacity of the health and medical research workforce in the tropical north. Over the next three years, HOT NORTH will continue to expand, funding 36 more projects and providing up to 15 more fellowships and scholarships.

@HOTNORTH_
@MenziesResearch
@sean_rung

HOT NORTH Director, Menzies's *Professor Bart Currie* envisages that, "by building the capacity of health professionals and scientists in northern Australia, we're working towards improvements in health outcomes not only for Australia, but also the Asia-Pacific region.

"There's no better place to be than the north if you want to do tropical research and HOT NORTH is helping high-quality medical scientists and clinicians feel part of a broader movement in the north of Australia," Prof Currie said.

TROPICAL DISEASE FOCUS

Darwin-based clinical researcher ***Dr Matthew Grigg*** exemplifies the capacity-building pathway provided by HOT NORTH. Dr Grigg, who prior to becoming a researcher worked as a medical officer in remote NT Indigenous communities and regional hospitals, is using his HOT NORTH ***fellowship*** to further develop his research into Plasmodium knowlesi (P. knowlesi) malaria. This emerging primate malaria, which is transmitted to humans, is commonly found in Southeast Asia and accounts for 70% of malaria infections in Borneo.

In recognition of his ongoing research in the area, Dr Grigg has recently been awarded the ***2017 NT Tall Poppy Scientist of the Year*** award while also successfully winning a 2018 NHMRC Early Career Fellowship to continue his research into the risk factors, mechanisms, and treatment of P. knowlesi malaria.

Dr Grigg, while thanking his mentor and supervisor at Menzies, ***Professor Nick Anstey***, said, "this award really is recognition for the work of our whole malaria research team at Menzies and our colleagues in Asia, including ***Dr Timothy William***, who is based at our main field site in Sabah, Malaysia where P. knowlesi malaria has such a big impact on the local population.

"Through our research we have been able improve our understanding of the treatment and epidemiology of P. knowlesi malaria, to change Malaysian and World Health Organization (WHO) malaria treatment guidelines, whilst building the expertise of local research staff.

"With Menzies colleague, ***Dr Bridget Barber*** we were also the first to compare severe and non-severe P. knowlesi malaria to other species, with results also now included in the WHO severe malaria guidelines," Dr Grigg said.

FIVE THEMES

Vector borne and emerging diseases is just one important segment of the HOT NORTH research portfolio. The integrated research agenda protects the north from emerging infectious threats and engages regional neighbours, and helps close the gap in Indigenous health disadvantage.

With five key research themes covering skin health, respiratory health, antimicrobial resistance, chronic diseases, and vector borne and emerging diseases HOT NORTH integrates the know-how of researchers from around Australia.

"We are focusing our research so we can fairly quickly translate findings into practical outcomes on issues such as antimicrobial resistance and the concerns about superbugs which are continuing to come into Australia," Professor Currie said.

"We want to understand where resistant organisms are present geographically across the north, how they are spreading and what can be put in place to reduce that spread."

NATIONAL COLLABORATION

Based at Menzies School of Health Research, HOT NORTH utilises a strong collaborative approach between researchers and community, drawing on the expertise of research professionals from eight of Australia's leading research organisations:

- Menzies School of Health Research
- James Cook University
- Telethon Kids Institute
- Marie Bashir Institute & The University of Sydney
- Doherty Institute & The University of Melbourne
- South Australian Health and Medical Research Institute
- QIMR Berghofer Medical Research Institute
- Burnet Institute

Professor Bart Currie says bringing these expert institutions together is helping to build "a community of medical researchers and clinicians focussed on the north's critical health issues".

SCHOLARSHIPS AND FELLOWSHIPS

A strong component of the HOT NORTH collaboration is to build new research capability. The program annually offers scholarships and competitive research funding for five early- and mid-career Fellowships, each relating to one or more of the five key research themes. Details are available at *http://www.menzies.edu.au/HOTNORTH*

Author: Sean Rung, Communications and Project Support Officer, **RHDAustralia**

ANTI D IMMUNOGLOBULIN:

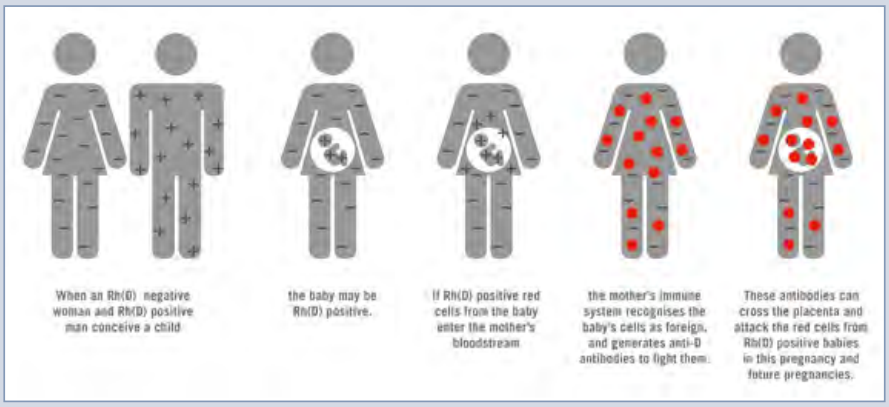
PROTECTING AUSTRALIAN BABIES FOR 50 YEARS

Graduate Scientist Ruth Sanger began RhD research in NSW in the 1940s

This year marks the 50th anniversary of an Australian medical success story. Thanks to the introduction of anti-D immunoglobulin prophylaxis, Australian mothers no longer fear losing their babies to what was once known as “Rhesus disease”. Today, modern genetic techniques pave the way to extend and improve this life saving work.

Dr Gordon Archer pioneered the program in NSW along with Dr Martin Davey in Western Australia

@redcrossbloodau



Babies affected by "Rhesus disease" (now known as haemolytic disease of the fetus and newborn, or HDFN) are anaemic, jaundiced, and may have severe swelling of their entire bodies, known as hydrops fetalis. They sometimes die before, or shortly after birth, and before treatments became available, many Australian women suffered the heartbreaking loss of several babies to the disease. The cause is the mother's immune reaction to her baby's red cells, when her blood type is RhD (previously "Rhesus") negative and carries an RhD positive baby. Her body recognises the baby's blood as foreign, and produces antibodies to the D antigen on the red cells, which can then affect the children of subsequent pregnancies by destroying their red blood cells. (See figure above)

In the early 1960's, HDFN killed more than 1 in 1000 babies in Australia, and affected many more. Newborn babies who suffered from HDFN were treated with transfusions of RhD negative blood, or in later years, blood transfusions in-utero.

However, a discovery announced in Sydney in 1966 promised a way to prevent HDFN. Researchers from a Liverpool group headed by Dr Cyril Clarke and a New York group headed by Dr Vince Freda concurrently announced that the problem of RhD incompatibility between a mother and her baby could be managed using injections of RhD immunoglobulin (Ig) or 'anti-D' derived from human plasma. Soon after the announcement, Australia's state-based Red Cross Blood Transfusion Services responded to the discovery by identifying RhD negative women with strong reactions to their RhD positive babies. These women's antibodies could be used to help other women from suffering the same problem, and some donors who had lost their own children found comfort in being able to help others in this way.

The first plasma collections for the anti-D program began from these women and from men who had developed anti-D as a result of blood transfusions. Subsequently, supplies were boosted when select groups of donors were immunised with small volumes of RhD positive red cells to stimulate anti-D production. Anti-D for intramuscular injection was produced at the Commonwealth Serum Laboratories (now CSL Ltd) from the volunteers' plasma.

In 1969, Australia became the first country in the world to be self-sufficient in anti-D, which was provided for all RhD negative women following the delivery of an RhD positive baby. HDFN is now an extremely rare disease in Australia; the rate of deaths has dropped to an average of 0.01 per thousand, with residual deaths now mainly caused by rare blood cell antigen incompatibility.

Many of the anti-D donor panel members (who now number around 130 nationally) have made hundreds of donations. It is estimated that in the last 50 years, 2 million women have been treated with RhD IgG and 3 million doses of RhD Ig have been delivered in Australia.

New developments and ongoing research

The anti-D story is not yet complete. It is now possible to find out the RhD blood group of a baby from a sample of a pregnant mother's blood. Tiny amounts of the baby's DNA are present in the mother's blood and can be tested. If the fetus is RhD negative, anti-D injections are not required. The feasibility of routinely introducing this testing within Australia is currently under evaluation. It is estimated that, if introduced, this could reduce demand for anti-D antenatal use by around a third.

For some women, particularly those of African heritage, the existing test may not be effective. Associate Professor Cate Hyland and her research team at the Blood Service have developed alternative methods to detect a wider range of fetal blood type genes using non-invasive testing. Additional research has just begun that uses biotechnology in an attempt to replicate the potent mix of antibodies that today are isolated from donor plasma. If successful, this could revolutionise HDFN prevention both in Australia and around the world.

Acknowledgement: Australian governments fund the Australian Red Cross Blood Service for the provision of blood, blood products and services to the Australian community

Authors –Dr Alison Gould, Scientific Communications Specialist, Research and Development, **Australian Red Cross Blood Service**
Dr James Thyer, Senior Scientific Project Officer, Clinical Services and Research, **Australian Red Cross Blood Service**

$2.5 MILLION FELLOWSHIP FUNDING FOR WORLD-CLASS RESEARCH

Two outstanding Australian scientists have each been awarded a $1.25 million, five-year, CSL Centenary Fellowship to further research into gentler, more effective cancer diagnostics, and to advance understanding of what really causes our arteries to clog.

On a warm spring evening in Melbourne, Associate Professor Sarah-Jane Dawson and Associate Professor Andrew Murphy were announced the recipients of the 2018 CSL Centenary Fellowships. The researchers join an illustrious club of scientists supported through the $25 million Fellowships program, established in 2016 to foster excellence in Australian medical research.

BLOOD TESTS FOR CANCER

Associate Professor Sarah-Jane Dawson is pioneering the use of 'liquid biopsies', using blood tests, for gentler, more thorough cancer testing as an alternative to painful, invasive tissue biopsies for cancer patients. The tests identify the tiny fragments of DNA shed by tumour cells into a patient's blood stream.

Having already been trialled in breast cancer patients, Sarah-Jane says the new tests will help in every phase of treatment, quickly identifying the type of cancer, tailoring treatment to the individual, monitoring their progress, and—once treatment is completed—checking for signs of relapse.

The CSL Centenary Fellowship will give Sarah-Jane the opportunity to develop the tests for some of the most common cancer types, and accelerate the translation of these tests from the lab into the clinic so they can benefit more of the 400,000 plus Australians living with diagnosed cancer.

ADVANTAGES OVER BIOPSIES

Tissue biopsies provide doctors with information about the specific area that has been sampled. While an important diagnostic tool, it can miss vital information about cancer elsewhere in the body.

"Tissue biopsies are invariably painful, invasive tests. They are done in a hospital, require a local anaesthetic and involve a relatively large needle being inserted into the body," says Sarah-Jane, an oncologist and researcher at the Peter MacCallum Cancer Centre and The University of Melbourne.

About 800 bone marrow biopsies are done each year at Peter Mac alone, with each costing about $2,500 and involving a hospital stay of up to six hours. In contrast, the new tests are like any other blood test and can be performed regularly during a course of treatment. This allows clinicians to monitor how a cancer is responding to treatment, and adjust the treatment as necessary. This approach is now guiding the treatment of some 500 patients at Peter Mac.

WHITE BLOOD CELLS' ROLE IN CARDIOVASCULAR DISEASE

Associate Professor Andrew Murphy of The Baker Institute has his spotlight on 'hematopoietic' stem cells (the cells that give rise to all the other blood cells and reside in our red bone marrow). He wants to understand why high blood pressure, high cholesterol, lack of exercise and smoking drives the over-production of white blood cells leading to arterial plaques and often heart attack or stroke. Cracking the mechanism of action at a cellular level could lead to a new generation of drugs to fight cardiovascular disease.

In 2011 Andrew discovered that an increase in white blood cells accelerates the development of artery-blocking

@CSL

Associate Professor Sarah-Jane Dawson (left) and Associate Professor Andrew Murphy (right)

plaque. Now, with the help of his CSL Fellowship, he's planning to find out what is happening in the bone marrow where these cells are made.

> ***"Plaques form when cholesterol accumulates in the artery wall. White blood cells are summoned to remove the cholesterol. Sometimes this inflammatory response gets out of control, causing an increase in plaque and over-production of white blood cells."***

But what are the fundamental processes at work, and how do they go wrong? Andrew has shown that we need to look in the bone marrow, where blood stem cells make white blood cells. Why, in cardiovascular disease, do these stem cells produce too many white blood cells? And why do they sometimes leave home, and spread to the spleen? The first project Andrew will undertake as part of his CSL Fellowship will investigate how diabetes and obesity alter bone marrow and its production of blood stem cells, and how that may accelerate atherosclerosis and cardiovascular disease.

CSL FELLOWSHIPS SUPPORT MEDICAL INNOVATION

CSL Chief Scientific Officer Dr Andrew Cuthbertson says Sarah-Jane and Andrew are the embodiment of what the Fellowships aim to achieve.

"Innovation is one of the core values that guide CSL's significant investment into frontier medical research, so it is fitting that the Centenary Fellowships foster the best scientists in Australia who will shape the next generation of critical breakthroughs."

"Growing skills and expertise through well-funded, long-term support is essential in helping the Australian research community continue to thrive," Dr Cuthbertson said.

To learn more about the Fellowships, including videos of Sarah-Jane and Andrew explaining their work, visit: ***www.cslfellowships.com.au/***

Submitted by CSL Limited.

PREVENTING BLINDNESS WITH ARTIFICIAL INTELLIGENCE

Recent trials in Perth, WA, have successfully demonstrated the world's first technology driven by artificial intelligence to help diagnose diabetic retinopathy.

Of the 1.7 million Australians living with diabetes, one in three are at risk of developing diabetic retinopathy, a debilitating condition and leading cause of irreversible blindness worldwide.

Up until now, patients have been required to visit an ophthalmologist or optometrist for diabetic retinopathy screening, but thanks to an Australian innovation that is about to change.

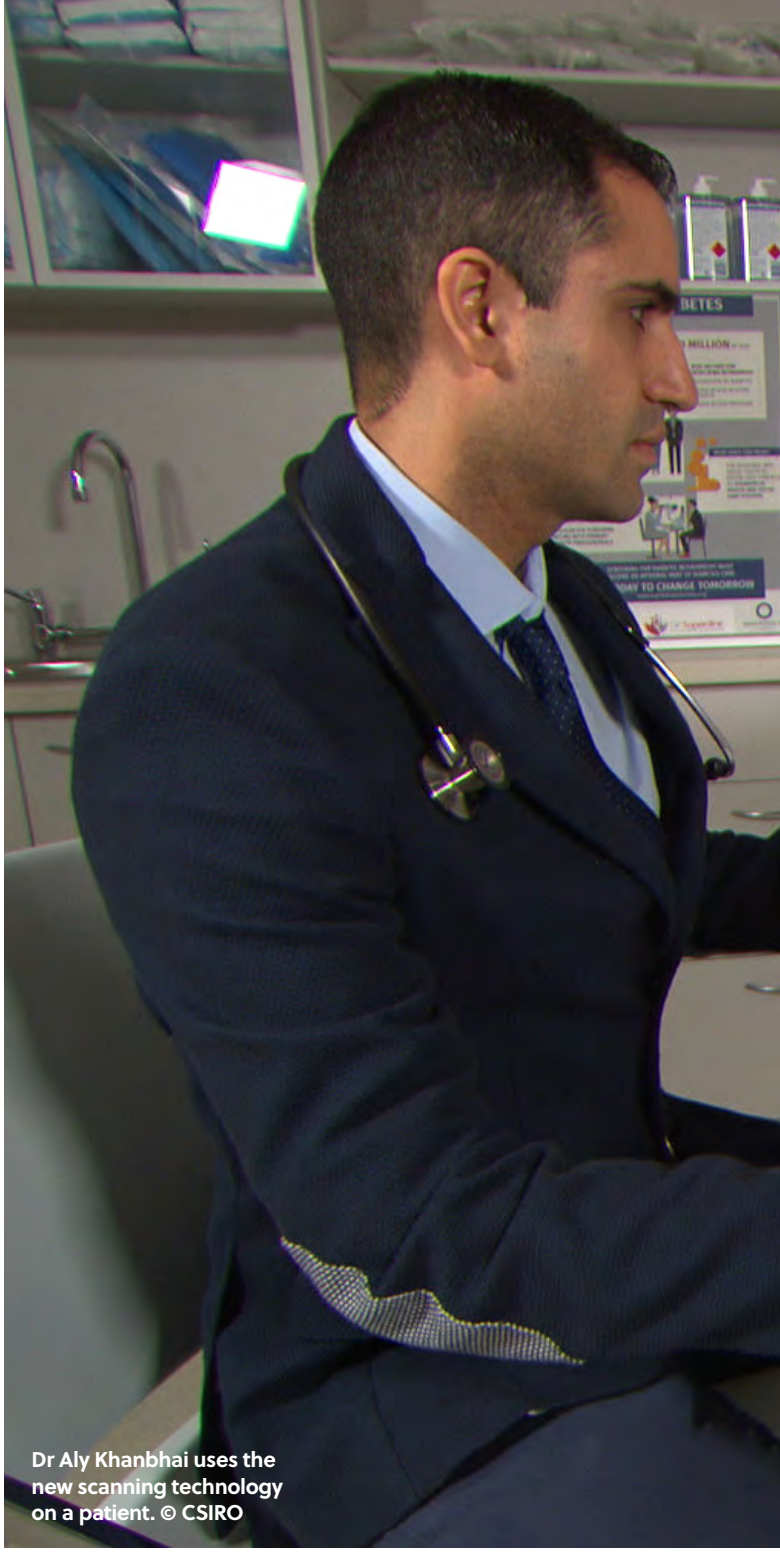
In a world first, a team of CSIRO researchers has developed an eye-screening technology that allows diabetic patients to be tested for the condition by their own GP at their local clinic.

Technology creator and trial co-lead, CSIRO's Professor Yogi Kanagasingam, said the innovation could help speed up treatment for people with diabetic retinopathy.

"Patients at risk of this condition would usually be referred to a specialist for screening, waiting six weeks or more. Now it can potentially be done in a single 30-minute visit to a GP," Professor Kanagasingam said.

Minister for Industry Innovation and Science, Arthur Sinodinos, agrees that the technology will change lives for the better, calling the advancement a great example of the essential role science plays in finding innovative ways to help Australians live longer and happier lives.

> ***"With this world-first innovation, our scientists are at the forefront of using artificially intelligent technology to save people's eyesight and make healthcare more accessible for all Australians," Minister Sinodinos said.***



Dr Aly Khanbhai uses the new scanning technology on a patient. © CSIRO

The 6 month trial was supported by an NHMRC grant, with base funding from WA Health and CSIRO through the Australian Tele-health Research and Development Group. Held at the GP Superclinic at Midland Railway Workshops in Perth, the trial saw GPs successfully screen 187 diabetic patients; high resolution images taken of patients' eyes were analysed by the technology for signs of diabetic retinopathy.

The same images were also analysed by an ophthalmologist as a basis for comparison, and the technology was found to be just as effective as the specialist in detecting signs of diabetic retinopathy and grading its severity.

The artificially intelligent grading software, affectionately named Dr Grader, analyses ophthalmologists' grading data in order to improve its ability to detect various signs of the disease in patients.

Professor Kanagasingam said early detection and intervention for diabetic retinopathy is key, with the new tool being the first step to help GPs prioritise patients for treatment.

"Using the technology, GPs will be able to screen patients for signs of the condition and its severity, and refer them to an ophthalmologist for further investigation, prioritised by the severity of their symptoms.

"It could help avoid unnecessary referrals to public hospitals, potentially reduce waiting periods for patients and enable ophthalmologists to focus on patients needing treatment and surgery.

"It could also help reduce the financial impact of diabetes on the Australian economy, which is estimated to cost up to $14 billion a year."

According to the director of the GP Superclinic at Midland Railway Workshops and trial co-leader Dr Amitha Preetham, industry-wide and multi-sector support for the uptake of medical technologies in primary care is an important step in improving health outcomes for our communities.

"It has been exciting to partner with CSIRO in utilising artificial intelligence in general practice to aid early diagnosis of diabetic retinopathy and early access to treatment, and potentially prevent blindness due to diabetes," Dr Preetham said.

The software has been licenced by TeleMedC, which will seek to make the technology commercially available – with plans to install it at a further 20 GP clinics in Western Australia over the next few months before expanding across Australia.

Author: Ms Ali Green, Communications Advisor.

SURPRISES ABOUT MEDICINAL CANNABIS

Medicinal cannabis has been used legally in Israel since the 90's under Government and medical supervision for pain control to minimise side effects from chemotherapy, and numerous other conditions. Ground-breaking research by Israeli Scientist Dr Dedi Meiri from the Technion, is investigating which components are responsible for treatment efficacy.

A LONG HISTORY OF MEDICINAL USE

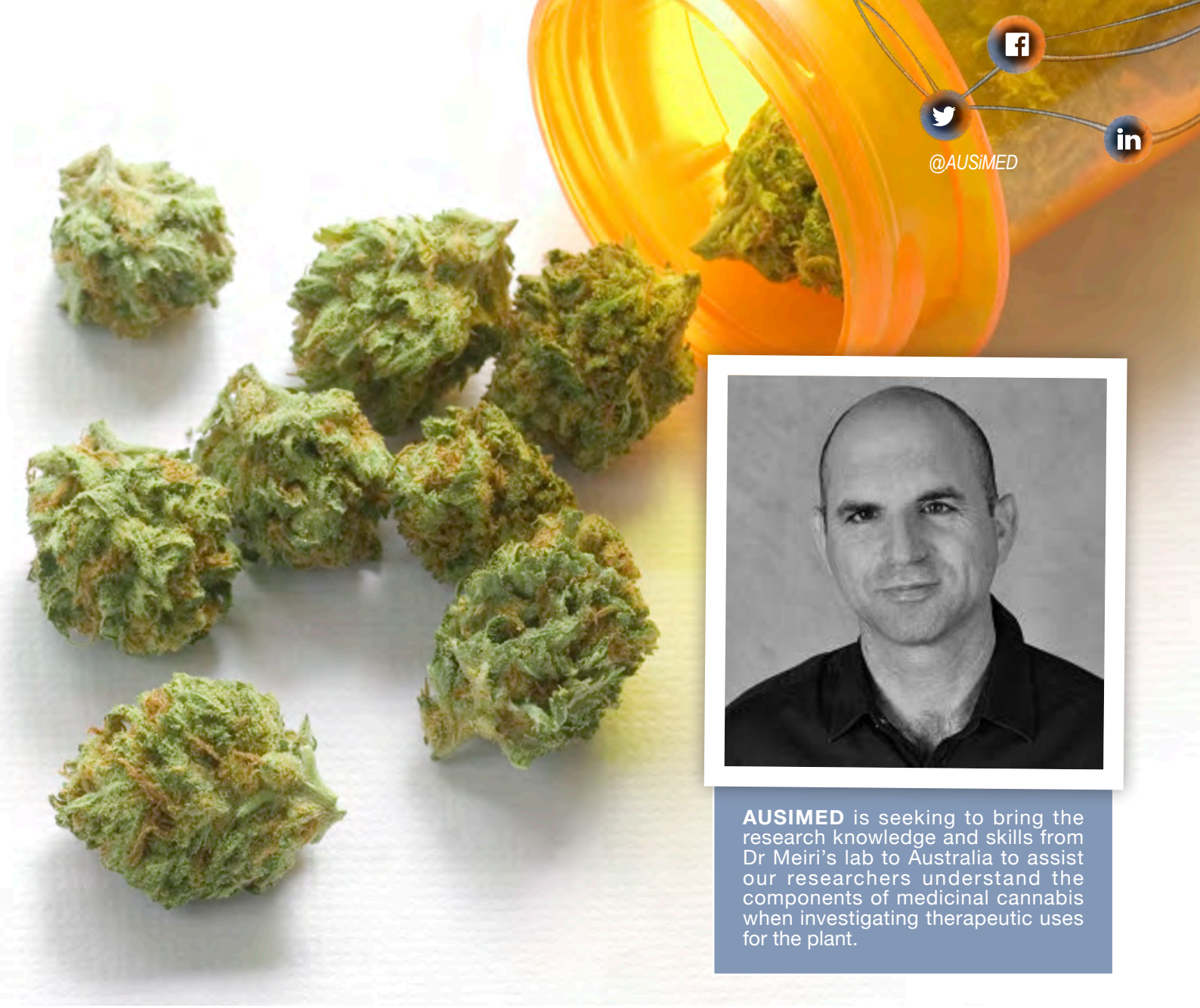
Anecdotes on the medical use of cannabis go back thousands of years. Despite this, scientists only commenced analysis of its chemical properties in the 60's, when two of its over 500 active components "THC" and another ingredient "CBD" were identified by Israeli scientist, Professor Raphael Mechoulam. Since this discovery, Israel has lead the world in growing and using medicinal cannabis.

Early research in the 60's indicated that CBD appeared safe in low doses. By the 90's Israel had legalised its use for medicinal purposes and based on public demand, Government Authorities made it available as a treatment of last resort despite the unknown risks.

Today, cannabis is used by over 30,000 Government approved patients in Israel to treat a surprising range of medical conditions including weight loss, nausea and pain in cancer patients, aggressive autism, Crohn's disease, Tourette's syndrome, epileptic seizures, multiple sclerosis, arthritis, diabetes and PTSD. This is happening despite the lack of knowledge about what components of the plant are causing the medicinal effects and the scarcity of rigorous randomised clinical trials (RCTs).

This strange anomaly in clinical practice becomes even more complicated by the observation that whole plant extracts generally have greater efficacy than individual components, notwithstanding that they have over 500 active ingredients. This is called the "entourage effect". The complexity increases as the same strain grown in adjacent controlled conditions varies in its active components and some therapeutic applications are derived from the leaf whilst others use purified oil from the flowers.

One lab has set itself the task of unravelling this complexity. Israeli scientist Dr Dedi Meiri from the Technion Institute of Technology in Israel, is leading the field in investigating which components are responsible for treatment efficacy. Dr Meiri's Cancer Biology and Cannabinoid Research laboratory was established only two years ago to research the therapeutic potential of cannabinoids, in particular for cancer. Analysis of over 100 cannabis strains is underway using high performance liquid chromatography, mass spectrometry and high throughput screening of cell lines to gain an understanding of their individual chemical makeup and how that interplays with both the medical effects and adverse side effects on patients. When a strain is observed as killing cancer cells, this is followed up in



AUSIMED is seeking to bring the research knowledge and skills from Dr Meiri's lab to Australia to assist our researchers understand the components of medicinal cannabis when investigating therapeutic uses for the plant.

mice as well as RCTs if the results justify this expense.
In addition, Dr Meiri's team is creating a medical cannabis patient database, logging the clinical data of over 25,000 patients in Israel prescribed with medical cannabis as well as their usage history. The idea is to try to link individual cannabis compounds to the patient response. Dr Meiri says, "In the coming years, we hope to identify specific cannabis strains to treat other life threatening diseases alongside recommending optimal dosage and drug delivery methods."
In Australia, the medicinal cannabis industry is in its infancy. The first crops for medicinal purposes are being harvested this year in Victoria and NSW under strict police control. Federal and State Governments recently approved the use of medicinal cannabis for certain types of epilepsy in Victoria and for epilepsy and palliative care in NSW as part of RCT's. At the present time there are no legal locally produced medicinal cannabis products available in Australia. However, there are pathways available to legally access imported medicinal cannabis via the Special Access and Authorised Prescriber Schemes, which are administered by the Commonwealth Therapeutic Goods Administration and require approvals in each State and Territory. All medicinal cannabis products must be prescribed by a medical practitioner and the public are clamouring to participate.
Sadly, there is no statutory requirement yet in Australia to conduct any of the analysis that Dr Meiri's lab is undertaking. AUSIMED would like to see this become mandated by all governments, as it is critical for both patients and research that this data be generated. AUSiMED are currently reaching out to their donor base to raise funds to send a plant biologist to Israel to work in Dr Meiri's lab for up to 6 months.
This will enable much needed scientific knowledge and skills to be transferred from Israel to Australia so we can make our own contribution to this new and challenging area of medical treatment.

Author: Roz Kaldor-Aroni, CEO, **Australia Israel Medical Research (AUSiMED)**
AUSiMED acknowledges the contribution of Elizabeth Finkel, editor-in-chief of Cosmos magazine to this article.

MEDTECH AGREEMENT WITH GOVERNMENT PROVIDES

OPPORTUNITIES FOR REFORM

Last year in Australia more than 2.5 million surgeries took place, and for each and every one of these surgeries, medical technology played a part. Medical technology or MedTech allows patients to hear, to walk, to see, to live or to have a quality of life that they otherwise would not have.

The Prostheses List sets the amount that private health insurance pays for certain medical devices that meet the requirements for listing. The Prostheses List has provided patients in the private health system access to a wide range of technology, with no gap payments, thereby actually contributing to the value of private health insurance. Average rebate levels have been stagnant for around ten years (i.e. there has been no inflation) and Prostheses List rebates represent just over 10% of total rebate expenditure by private health insurers.

However, with insurance premiums increasing by more than 54% over the last nine years, more and more exclusions to policies, increasing gap payments and confusion created by more than 20,000 private health insurance products, consumers are increasingly questioning the value of private health insurance.

In February this year, the Federal Government implemented $86 million in cuts to the Prostheses List.

Following the Federal Budget health reforms in May this year, the Health Minister, the Hon Greg Hunt MP, identified private health insurance and the Prostheses List as the "next wave" of reforms. Following negotiations with Government, MTAA signed an historic Agreement with the Federal Government in October which will remain in place until January 2022.

> ***While the Agreement includes further cuts to the Prostheses List, it also delivers four years of certainty and stability for the MedTech industry and a pathway to broader beneficial reforms.***

MTAA CEO Ian Burgess with Minister for Health the Hon Greg Hunt MP

It will deliver more than $300 million in annual benefit reductions to medical devices listed on the Prostheses List. Coming on top of the $86 million annual cuts in February 2017 this represents a $1.5 billion saving to private health insurance companies over the next four years.

MTAA believes it is essential that insurers fully pass on to consumers the savings that this Agreement provides and the focus moves to both the value of the health insurance product and assessment of the other 90% of private health insurance rebate expenditure that sits outside of the price of medical technology.

These cuts will not be easy for the MedTech sector and will undoubtedly result in significant impacts including job losses, reduced R&D, reduced education and training for healthcare professionals and reduced investment in clinical trials.

The Agreement will provide the MedTech industry with much needed stability and provides significant opportunities for increasing private patients' access to innovative technology, allowing the MedTech industry to do what it does best – assist patients to lead healthier and more productive lives.

Author: Ian Burgess, CEO of the **Medical Technology Association of Australia**

AWARDS CELEBRATE HEALTH RESEARCH THAT IS MAKING A REAL-WORLD DIFFERENCE

Low rates of licensed drivers in many Aboriginal and Torres Strait Islander communities are a "missing piece of the puzzle", critical not just for safe driving but for accessing healthcare, education and employment and reducing the risk of incarceration, says Research Fellow Patricia Cullen from the George Institute for Global Health.

Ms Cullen's research, which informed the rollout of a program supporting people to gain their driver's licence, saw her named as one of two winners of the Sax Institute's 2017 Research Action Awards, which celebrate outstanding examples of research that is changing the way healthcare is designed and delivered.

DRIVING CHANGE IN COMMUNITIES' HEALTH AND WELLBEING

Ms Cullen's research focused on evaluating a community-led program called *Driving Change*, which aims to support Aboriginal and Torres Strait Islander people to overcome barriers to gaining a driver's licence.

Local Aboriginal and Torres Strait Islander youth workers are employed as case managers in each participating community to help people with all aspects of the driver licensing system, from obtaining identification documents to providing voluntary mentors to supervise driving lessons.

"There is an emerging focus on licensing as a social determinant of health in Aboriginal and Torres Strait Islander communities" Ms Cullen says.

The PhD candidate evaluated the program from the pilot stage onwards and found that Driving Change reached more than 1000 clients across 11 communities, with more than 400 people gaining their licence over three years. These drivers were 2.5 times more likely to have a change in their employment.

"The key to the impact of the program has been that it was hugely responsive to communities and was flexibly adapted throughout implementation because it was evaluated continuously" she says. "There was a true collaborative approach, working closely with youth workers in communities to understand the implementation challenges, with our findings fed directly to government."

Her research confirmed that the program was a culturally-safe facilitator of licensing and was strengthened by community ownership. As a result, the NSW Government directly funded 14 communities across NSW to deliver the Driving Change model in 2016-17, with further communities set to become involved this year.

"Getting a drivers' licence has an amazing impact on people's independence and empowers communities" Ms Cullen says. "It opens so many doors for people and their families. Many of those involved have told us that it has changed their lives."

Building the evidence to underpin new policies on alcohol-related violence

The other 2017 winner is Professor Kypros Kypri from the University of Newcastle, who was recognised for his

@SaxInstitute

Researchers whose work is having a real impact on the ground in areas as diverse as alcohol-related violence and supporting people to gain drivers' licences have been recognised in the Sax Institute's 2017 Research Action Awards.

research showing that reducing trading hours of licensed premises could reduce alcohol-related violence – findings which have informed alcohol policies in both NSW and Queensland.

Professor Kypri, from the School of Medicine and Public Health, says the 2008 decision to restrict opening hours and introduce lockouts for hotels in the Newcastle CBD offered an excellent opportunity to study how regulatory changes affected the important but little studied outcome of alcohol-related assault.

He formed a partnership with the NSW Bureau of Crime Statistics and Research to research the impact of the regulatory change, and found that the restrictions resulted in a *37% relative drop in assaults* in Newcastle CBD over the first 18 months compared to a similar locality without lockout laws. Today, assaults are half what they were before 2008.

The findings not only underpinned the continuation of what was dubbed the 'Newcastle solution', but helped garner public support for similar restrictions in other areas despite intense and persistent pressure from the alcohol industry.

The NSW Government implemented similar restrictions in the Sydney CBD and nearby Kings Cross in 2014 and the research was also cited in the development of 2016 Queensland legislation aimed at reducing violence.

Professor Kypri says a "confluence of factors" led to the new conditions in each jurisdiction, including one-punch deaths, political machinations and a media campaign pushing for change, but the research gave policy makers the evidence to back changes that met with objections from opponents.

PUTTING RESEARCH INTO ACTION

Sax Institute CEO Professor Sally Redman said the Research Action Awards acknowledged the significant work and difficulty involved in seizing opportunities to move research findings into the real world.

"These awards recognise researchers whose work has made a real-world difference to people's health and wellbeing," said. "The work of this year's winners, along with that of the impressive pool of talented researchers who entered the awards, will benefit the entire community."

saxinstitute
RESEARCH ACTION AWARDS

Article contributed by the **Sax Institute**.

AUSTRALIA LEADS MISSION TO DOUBLE BRAIN CANCER SURVIVAL

The Australian Brain Cancer Mission is a $100 million Australian plan to double brain cancer survival rates and improve patients' quality of life, which includes a multi-year $50 million commitment from the Australian Government through the Medical Research Future Fund. Cure Brain Cancer Foundation shares its story on this world-leading initiative.

@braincancer_au

Brain cancer is a brutal disease that has a devastating impact on people who are diagnosed and their loved ones. Survival rates haven't improved in more than 30 years, and just 20 per cent of people diagnosed will live for five years. Shockingly, it kills more children than any other disease and more people under 40 than any other cancer – largely because treatment options are limited and often ineffective.

Until recently, brain cancer research received less than five per cent of Australian Government cancer funding. But that changed in October this year with the creation of the Australian Brain Cancer Mission – a $100 million Australian plan to beat brain cancer, double survival rates in ten years, and improve patients' quality of life.

This revolutionary plan to increase survival is the result of a collaboration between Cure Brain Cancer Foundation, the Australian Government, and Minderoo Foundation's 'Eliminate Cancer Initiative', in consultation with the world's best research minds.

The $100 million investment, including $20 million to be raised by Cure Brain Cancer Foundation, is recognition of our calls for increased focus and funding for brain cancer. But the bigger achievement was getting all parties to agree on a plan with survival as the key metric. This focus on survival will guide all behaviours and research projects adopted by the Mission.

The passionate brain cancer community has also played a vital role, and Cure Brain Cancer Foundation is proud to have given them a platform to have their voices heard and effect real change. Those voices were amplified with the help of many influential advocates in the media.

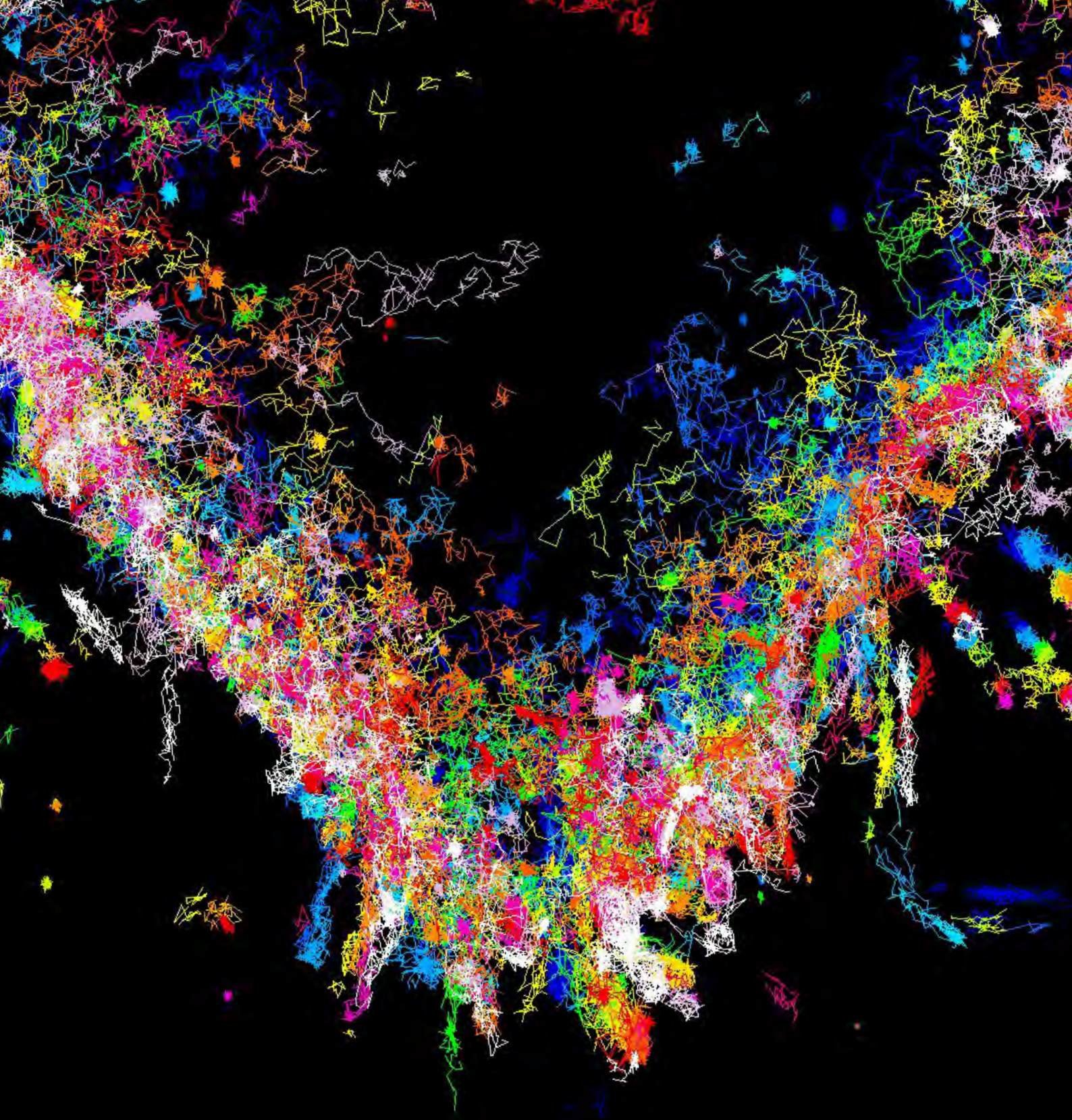
This influence was evident in the establishment of the Senate Select Committee into Funding for Research into Low Survival Cancers which enabled many to share their brain cancer experiences as well as the broader health and medical research community to provide advice and ideas.

Many of those stories attracted media attention, putting further pressure on Government to increase focus and funding. One such case was that of Dustin Perry, a Cure Brain Cancer Foundation Ambassador whose daughter, Chloe, has brain cancer. Chloe's plight attracted the attention of Health Minister, Greg Hunt, who, after meeting with Dustin and Cure Brain Cancer Foundation, chaired a landmark meeting in August, with a focus on increasing brain cancer survival.

Andrew Forrest and his Minderoo Foundation have shown philanthropic leadership through involvement in this process, followed by a generous investment into the Australian Brain Cancer Mission.

Collaboration is crucial when it comes to beating brain cancer and no-one can cure this disease on their own. Now, with the launch of the Australian Brain Cancer Mission, we are all working together to improve brain cancer survival.

Author: Michelle Stewart, CEO **Cure Brain Cancer Foundation**



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