Victor Chang
Cardiac Research Institute

Australia's Home of Heart Research

ANNUAL REPORT 2020

Acknowledgment of Country

The Victor Chang Cardiac Research Institute proudly acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the lands and waters on which we live and work, and pay respect to their Elders past, present and emerging.

Through the ongoing strength, resilience and pride of Aboriginal and Torres Strait Islander peoples, their cultures, communities and economies endure.

At the Victor Chang Cardiac Research Institute we are committed to improving health outcomes for Aboriginal and Torres Strait Islander peoples.

Cover image
VCCRI researchers at work during COVID-19 lockdown.

Left: Dr Alastair Stewart

Our Institute

The Heart Disease Crisis

In Australia, and around the world, cardiovascular disease kills more people than any other disease or illness. Every year around 18 million people[1] lose their lives to this condition. We're on a mission to change that and deliver a future free of heartbreak.

Science is the solution

Every day the doctors and scientists at the Victor Chang Cardiac Research Institute discover more about how to protect, heal, and care for our hearts.

We are united in a single vision – to find and accelerate the cures for heart disease through world-class medical research.

At Australia's home of heart research, that's our enduring mission.

[1] https://www.who.int/health-topics/cardiovascular-diseases/#tab=tab_1

Chairman's Message

There is no doubt that due to COVID-19, 2020 was one of the most challenging years that Australia has ever experienced.

It was in these toughest of environments that Professor Jason Kovacic took over the reins as Executive Director from Professor Bob Graham after 26 years.

I have always said perseverance, endurance, and imagination are things our scientists have in abundance. Jason displayed all of these qualities together with exceptional strength of leadership and is to be congratulated for skillfully navigating an ever-changing environment which saw our researchers continue their groundbreaking research and publish more scientific papers than ever. This is testament to the quality of our research which will only be enhanced by Jason's bold vision for the future of the Institute.

The COVID-19 pandemic has shone a spotlight on the critical importance of investment in health and medical research which played out at the fifth Sohn Hearts & Minds Investment Leaders Conference. Despite being hosted virtually, the world's top fund managers came together to share innovative and bold investment ideas in support of medical research.

Hearts & Minds Investments Limited (ASX:HM1) also performed very strongly, generating significant revenue for heart research at the Victor Chang Cardiac Research Institute, as well as other medical research organisations. We are extremely grateful to all the participating fund managers involved.

Our commitment to cardiovascular research in Western Australia remains strong, as we support Victor Chang Cardiac Research Institute Faculty Prof Livia Hool and her plans to build a significant research hub as a centre of excellence at the University of Western Australia in Perth.

We must acknowledge the valuable contribution of our Board members and their dedication to the vision and success of the Institute. I would particularly like to thank David Craig, our Deputy Chairman and Chairman of the Finance Committee, for his unwavering commitment to supporting the Institute in so many ways.

I would like to express our deep gratitude to retiring Board Directors including John Kean, OAM, Prof Terry Campbell, AM, Louise Di Francesco and Prof Les Field, AM, for their valuable contributions and decades of loyal service to the Institute.

Lastly, I would like to sincerely thank wonderful supporters like you, who continued to support our Institute during 2020 during these uncertain times. Researchers at Australia's home of heart research need your continued philanthropic support to tackle cardiovascular disease – which stubbornly remains Australia's biggest killer. We can, and will, solve the unsolvable.

Matthew Grounds AM
Chairman

2020 in Numbers

250
Researchers and staff

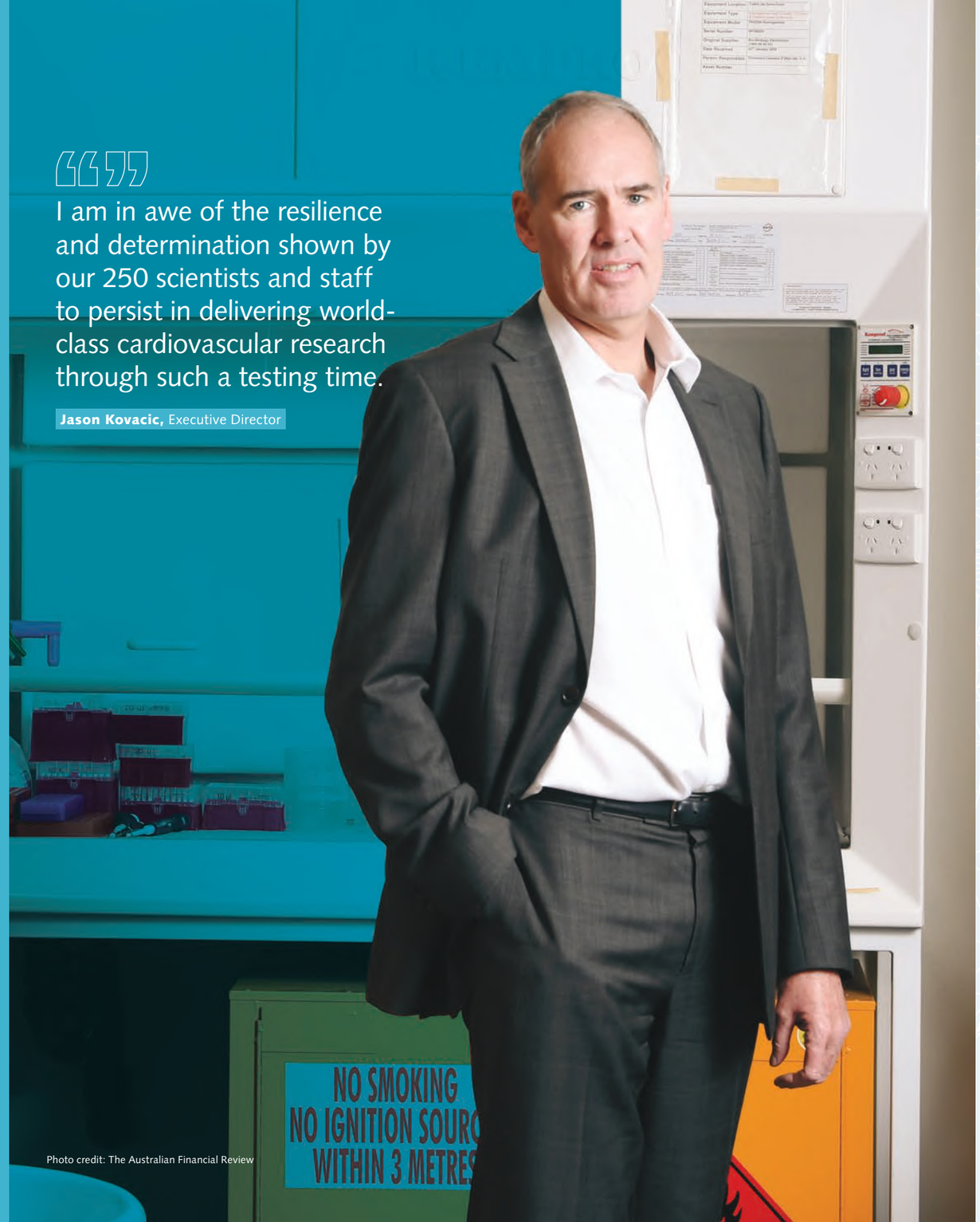
20
Winning grant applications

23
Laboratories

142
Scientific publications

124,524
Minutes spent on Zoom in May alone

2,542
Australians tested by our Heart Health Check Team



> I am in awe of the resilience and determination shown by our 250 scientists and staff to persist in delivering world-class cardiovascular research through such a testing time.
>
> **Jason Kovacic,** Executive Director

Photo credit: The Australian Financial Review

Executive Director's Message

My first day as the new Executive Director of the Victor Chang Cardiac Research Institute was Monday, March 16, 2020. Just five days earlier, the World Health Organisation had declared the COVID-19 outbreak a global pandemic.

While the Institute had already formed a COVID Taskforce, the very first thing I did on my first day was to call an emergency meeting of the senior faculty and operations team. As with the rest of Australia, we needed to go into lockdown. By early afternoon, the decision had been made to wind back operations at the Victor Chang Cardiac Research Institute. Only 'essential research' was permitted to continue. Our typically vibrant workplace was now quiet, although never silent.

This was far from the start I had imagined.

Navigating this new world presented a whole range of challenges. I'm profoundly grateful to the former Executive Director, Professor Bob Graham, and our Board of Directors for their strong support through this time. But most of all, I am in awe of the resilience and determination shown by our 250 scientists and staff to persist in delivering world-class cardiovascular research through such a testing time.

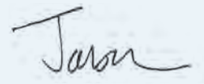
I am very proud to say that in the eye of the storm, our Institute remained open. Key laboratory experiments went ahead through social distancing, wearing masks and with an abundance of hand sanitiser. Discoveries continued and our fight against heart disease never ceased. As restrictions eased, we were able to quickly ramp up activities and resume full operations.

COVID-19 highlighted the critical importance that medical research plays in our society. There's no question that without medical research, Australia would have been in a far worse position. Now, as vaccines are rolled out, we look towards the future and to pressing ahead with the main agenda for Australia's home of heart research.

In the months and years to come, we intend to grow the Institute from its already robust foundations to an even stronger institution with far greater reach. We are strengthening our existing strategic partnerships and forming new ones with a collective focus on developing a complete cardiovascular pipeline that spans basic science right through to translational and clinically impactful medicine.

There is no other single place in the entire country, and very few across the globe, that can boast this comprehensive intersection of both clinical and fundamental research excellence.

Our growth into this space is already on a steep upward trajectory and will assuredly reinforce the Institute's position as one of the world's premier cardiovascular research hubs. It is a true differentiating feature of the Victor Chang Cardiac Research Institute and I am honoured to be at the helm.



Jason Kovacic,
MBBS, PhD, FRACP, FAHA, FACC, FSCAI, FCSANZ
Executive Director,
Victor Chang Cardiac Research Institute

Our New Executive Director: Jason Kovacic

What drove you to pursue a career in cardiology?

Being two metres tall, I was recruited as a rower at school. I ended up part of the Australian National Junior Rowing team and then later I got a scholarship to the Australian Institute of Sport (AIS).

Being at the AIS required having to take two years out of my medical degree. For the 24 months away from medicine, I undertook at Bachelor of Medical Science Degree in the AIS physiology laboratory.

As part of that additional degree, I decided to investigate the blood viscosity of rowers and discovered the fitter you are, the thinner your blood. That was the start of a fascination with the heart and heart disease research which has never waned.

You have a long history with the Institute dating back to when you were a PhD student. Did you ever think you'd be at the helm?

I was incredibly lucky to have Bob Graham as my supervisor for my PhD, and have always felt an incredible sense of connection with the Institute.

It was where I learnt the fundamentals in cardiovascular science. While I had been rising through the ranks in New York, it was a bolt from the blue when I was offered this opportunity and I feel incredibly honoured to join at such a pivotal moment and drive the Institute through to its next chapter.

After your PhD you moved to the United States. How did you decide what to research while in the USA?

I was on call at Mount Sinai Medical Centre and treated a lady for a heart attack who had delivered a healthy baby only a week before.

We later found out she had spontaneous coronary artery dissection and fibromuscular dysplasia. At that time, there was nothing at all known about what caused those diseases and I felt obliged to study them to discover their cause and how to better treat them.

I'm proud to say we've developed a pilot blood test for diagnosis in under 10 years. We are now focusing in on a critical gene at the Institute which we hope will eventually lead to a new treatment.

You are Executive Director of the Institute and still overseeing your lab at Mount Sinai, do you ever have any time to relax?

My work day starts at 5.45am and often ends late at night but I always make time for my family.

I'm trying to teach my two young sons the guitar, and pass on my love of languages. We also enjoy getting out on Sydney's harbour or going to the beach whenever we can.

It's a far cry from Central Park in New York where we used to enjoy sledding and other adventures!

What is your greatest claim to fame?

I'm incredibly proud of my two young boys and our family. Aside from that, I got a call out of the blue asking if I could join the Rolling Stones tour to be their doctor in Sydney back in 2003.

Mick Jagger was sick with a virus and the tour was pretty close to being cancelled – so the pressure was on.

Jagger was cranky at first but seemed to trust me. I remember one very surreal moment when I was literally under the stage with Jagger.

He had his head under a humidifier whilst getting changed for the next set of songs, while Keith Richards was doing a solo overhead with the rest of the band. I am proud to say he got through the tour.

Top Right: Back row – Jason's wife Simone Kovacic. Front row left to right – Son James, Jason Kovacic, son Andrew, Jason's mother Patsy Kovacic.
Middle Left: Jason competing in the Australian Junior Men's Coxed Four in 1986.
Middle Right: Jason and his family at the top of the Empire State Building, New York.
Bottom Left: Jason in surgery at Mount Sinai Hospital, New York.

Our Vision for the Future

We are on the cusp of a critical turning point for heart research. Over the past 25 years, The Victor Chang Cardiac Research Institute has delivered world-class research which has produced many ground breaking discoveries and helped improve the lives of people worldwide.

We've been able to do this primarily by diving deep into cellular and molecular structures and by conducting pre-clinical trials. By harnessing the power of multiple cutting-edge approaches, ranging from mass spectrometry to electron microscopy, we're now able to understand many new facets of heart disease, such as how genes interact, providing us with a window into evolution itself.

It's a bold and incredible new world and one we must seize upon.

We now need to ensure our incredible discoveries deliver on their promise to reach those who need it most.

By embarking on fresh and exciting collaborations in the coming years, we intend to create a new research and development 'pipeline'. This will bring our fundamental discoveries from their very earliest findings, through a series of advanced translational stages and then up into pre-clinical studies, before ultimately becoming large-scale international human trials.

This new way of working to actively 'translate' our discoveries to patients will deliver new treatments, medications and strategies for heart disease that will reach GP surgeries and hospitals on a whole new scale.

We are blessed here in Australia that we punch well above our weight when it comes to producing world-class heart research. It's time to take advantage of that.

We plan to work even more closely with those on our doorstep in Sydney and by partnering with other leading facilities who share our vision and can bring new expertise to the fight against heart disease.

That journey has already started. We're already moving beyond our traditional base on the East Coast of Australia with our affiliation with the University of Western Australia, and that's just the beginning of our plans to expand and to solidify our place as an internationally renowned Institute and Australia's home of heart research.

Over the next 10 years, the Victor Chang Cardiac Research Institute will become one of the leading heart research hubs in the Asia Pacific, if not across the globe. We hope you will be with us every step of the way.

1994

The Victor Chang Cardiac Research Institute was established in honour of the pioneering Australian heart surgeon, Dr Victor Chang.

2006

VCCRI scientists show that the diet of pregnant mothers can affect the health of their children and even their grandchildren.

2014

The revolutionary Heart-in-a-Box transplantation technique using a unique preservation solution created at the Victor Chang Cardiac Research Institute enabled the world-first DCD heart transplant saving the lives of patients with severe heart failure.

1994

Research at VCCRI revealed an enzyme, previously only associated with clotting, has many functions and, uniquely, can also regulate how vigorously our hearts can beat.

2012

VCCRI scientists cured an entire family of a life threatening, inherited heart rhythm disorder.

2017

VCCRI researchers discovered vitamin B3 has the potential to reduce recurrent miscarriages and various birth defects. A breakthrough which could change the way pregnant women are cared for globally.

2018

In a world-first, VCCRI scientists developed an early warning system to help identify and treat people at high risk of heart attack – and potentially prevent it from occurring.

2019

In a landmark breakthrough, scientists at VCCRI discovered a molecule that causes blood vessels to dilate and can lead to dangerously low blood pressure in patients suffering from severe sepsis, a syndrome which kills 100 Australians each week.

2020

St Vincent's Sydney Health Precinct is formally established, and the NSW Govt invests $25 million in the ongoing development of the campus.

2020

After 26 years, founding Executive Director, Bob Graham steps down. Professor Jason Kovacic takes over the reins.

2020

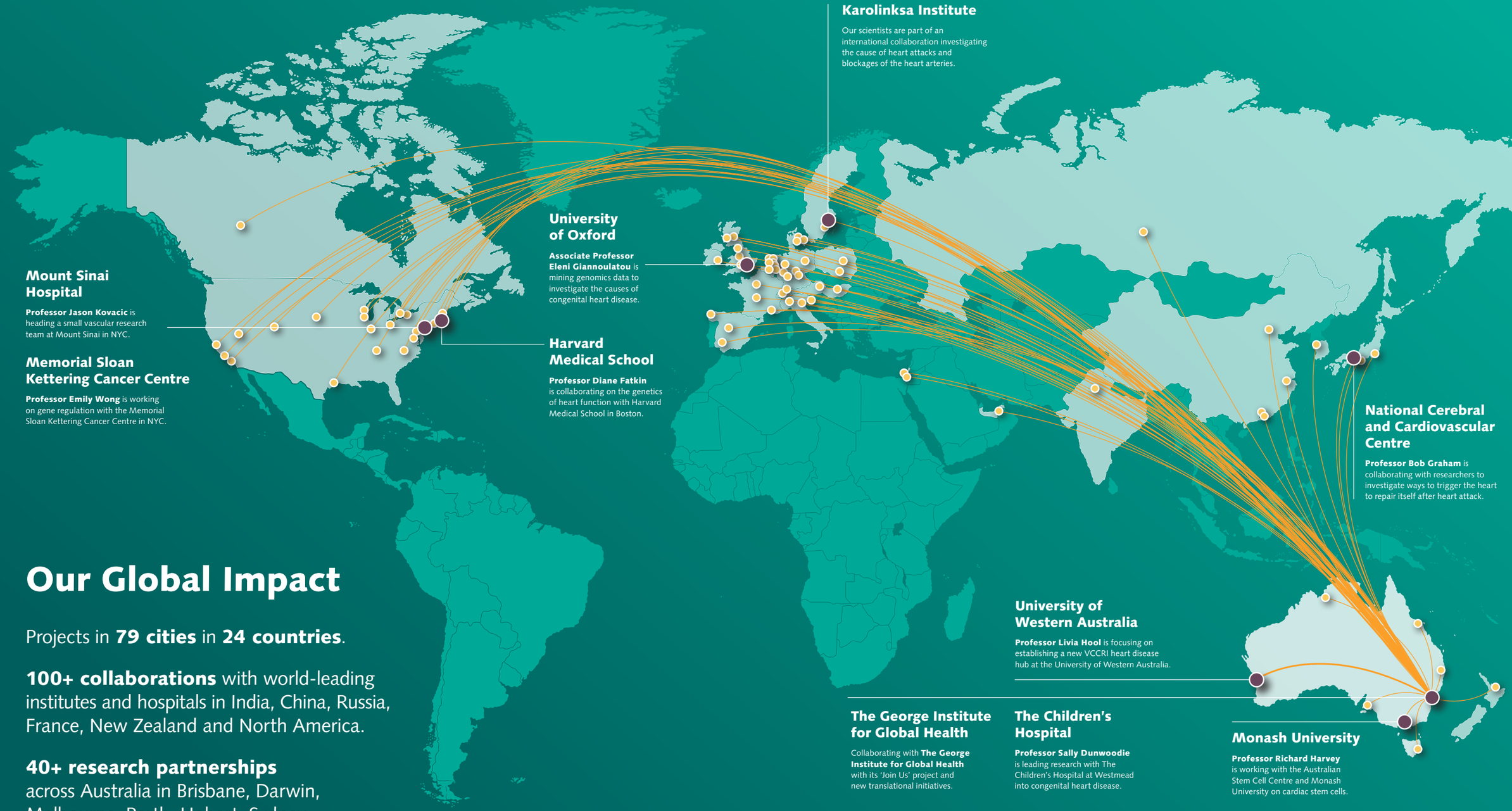
VCCRI scientists make a fundamental discovery in evolution and reveal humans and the humble sea sponge share important genetic mechanisms. This work will drive biomedical research.

2021-22

Announcement of new Australian-wide partnerships and collaborations and the establishment of satellite research hubs.

2023-25

Targeted acceleration of VCCRI's move into new areas of translational research.



Karolinksa Institute

Our scientists are part of an international collaboration investigating the cause of heart attacks and blockages of the heart arteries.

University of Oxford

Associate Professor Eleni Giannoulatou is mining genomics data to investigate the causes of congenital heart disease.

Mount Sinai Hospital

Professor Jason Kovacic is heading a small vascular research team at Mount Sinai in NYC.

Harvard Medical School

Professor Diane Fatkin is collaborating on the genetics of heart function with Harvard Medical School in Boston.

Memorial Sloan Kettering Cancer Centre

Professor Emily Wong is working on gene regulation with the Memorial Sloan Kettering Cancer Centre in NYC.

National Cerebral and Cardiovascular Centre

Professor Bob Graham is collaborating with researchers to investigate ways to trigger the heart to repair itself after heart attack.

University of Western Australia

Professor Livia Hool is focusing on establishing a new VCCRI heart disease hub at the University of Western Australia.

The George Institute for Global Health

Collaborating with **The George Institute for Global Health** with its 'Join Us' project and new translational initiatives.

The Children's Hospital

Professor Sally Dunwoodie is leading research with The Children's Hospital at Westmead into congenital heart disease.

Monash University

Professor Richard Harvey is working with the Australian Stem Cell Centre and Monash University on cardiac stem cells.

Our Global Impact

Projects in **79 cities** in **24 countries**.

100+ collaborations with world-leading institutes and hospitals in India, China, Russia, France, New Zealand and North America.

40+ research partnerships across Australia in Brisbane, Darwin, Melbourne, Perth, Hobart, Sydney.

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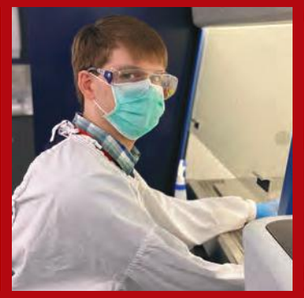
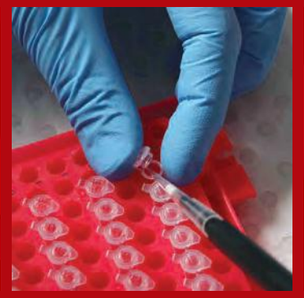




02 Coronavirus Diaries

As the COVID-19 crisis unfolded, the world turned to health and medical researchers for answers.

These images capture the historic moments in the fight against COVID-19 at the Victor Chang Cardiac Research Institute.

It documents the critical work of our scientists and how our laboratories adapted to ensure life-saving research continued and breakthroughs evolved.

PATIENT STORY

Nikki and Brian Glover

Imagine being told your child had a life-threatening disease? Then discovering their sibling also had the same genetic heart condition.

This was the devastating reality for parents Nikki and Brian Glover. Their sons Ayden and Nate were just nine years old when they were diagnosed with hypertrophic cardiomyopathy, a disease which can cause sudden death.

"Clear as day I remember what the doctor told me; 'I don't know how or why but you have two boys with hypertrophic cardiomyopathy'. I looked at Brian and said I couldn't do it again. But we had no choice,"recalls Nikki.

Fifteen years and 12 heart related surgeries later, the family is now working with Professor Livia Hool and her team to raise awareness of this disease which has no treatment or symptoms.

Nikki says: "We are always grateful that we are not one of the families who received the diagnosis at autopsy."

Ayden is now studying a law/commerce degree whilst Nate works in the mines. Lorne, their middle child who did not inherit the condition, is studying to be a chiropractor.

Nikki adds: "We hope our story helps increase awareness of the importance of research and the incredible work Professor Hool and her team are doing to help find a treatment for those with hypertrophic cardiomyopathy."

You can read more about Professor Hool's work on page 20.

Top: Back row – Ayden. Front row – Nate and Lorne
Middle: Nate in hospital
Bottom: The Glover family

03

Discoveries

A World-first Discovery

Unlocking a 700-million-year-old Mystery

Dr Emily Wong led a collaborative team that discovered humans and sea sponges from the Great Barrier Reef share important genetic mechanisms.

The breakthrough published in Science reveals some elements of the human genome (an organism's complete set of DNA) are functioning in the same way as the prehistoric sea sponge. Incredibly this means it has been preserved across 700 million years of evolution.

> The more we know about how our genes are wired, the better we are able to develop new treatments for diseases.
>
> **Dr Emily Wong**

"This is a fundamental discovery in evolution and the understanding of genetic diseases, which we never imagined was possible. This work is helping us learn to "read" and understand the human genome, which is amazingly complex," explains Dr Wong.

The team focused on an ancient gene that is important in our nervous system, but which also gave rise to a gene critical in heart development.

Left: Dr Emily Wong and her team.

Fixing the World's Biggest Hearts

Scientists at the Victor Chang Cardiac Research Institute in Western Australia have made a breakthrough discovery that could deliver the first-ever treatment for children with inherited heart disease.

Hypertrophic cardiomyopathy is the leading cause of sudden cardiac death in children aged between five and 15 years of age. The heart becomes large and develops arrhythmias.

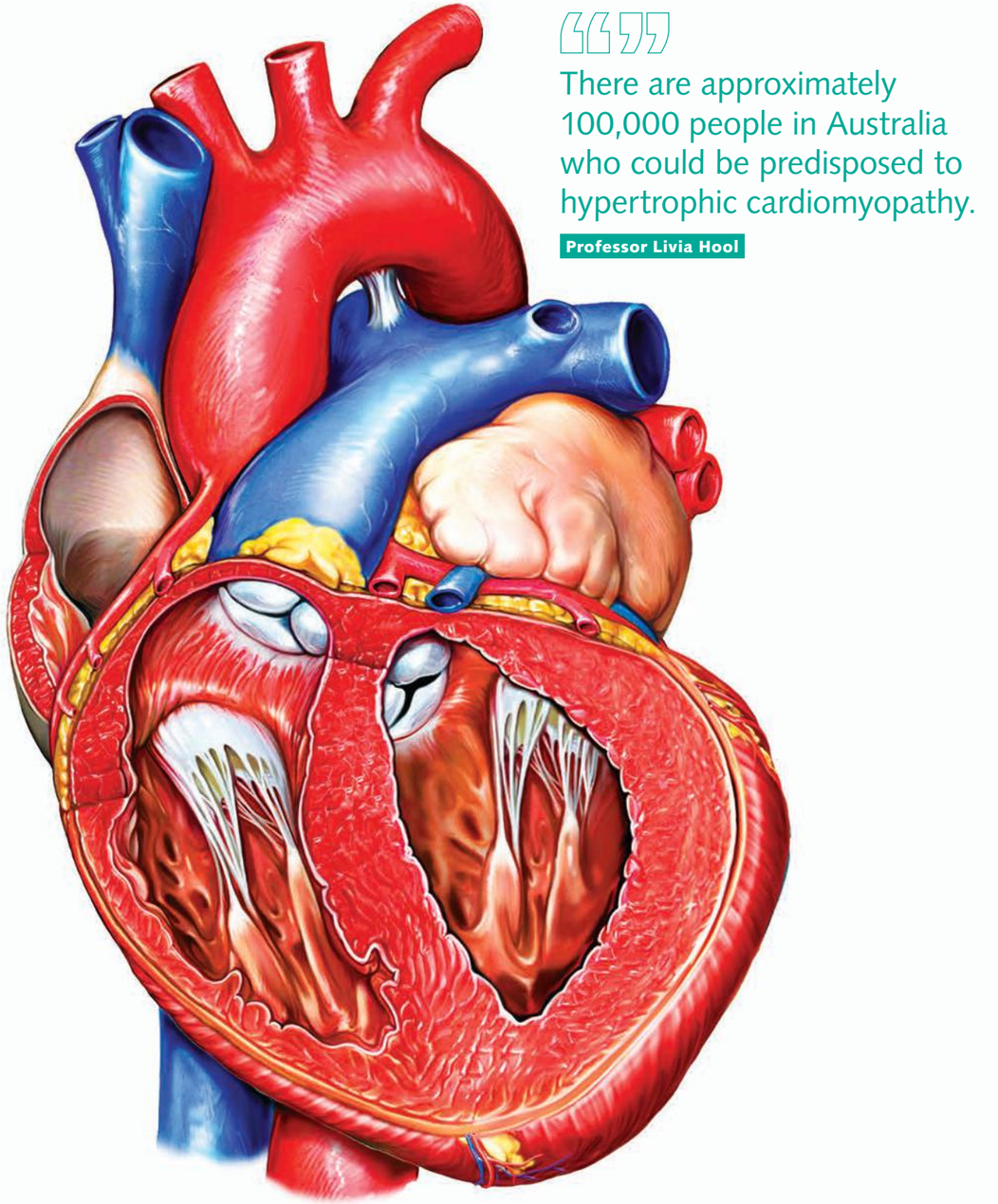
There is currently no treatment that prevents the development of the disease but there is now hope on the horizon for families across Australia and beyond.

Using mouse models, Professor Livia Hool and her team have discovered that by targeting a calcium channel in the heart with medication, they could not only prevent the disease from occurring but may also be able to reverse it.

The world-leading breakthrough builds upon more than a decade of work by Professor Hool in WA.

"This is a fantastic result and could be life-changing. Whilst not all patients will go on to get advanced disease, there are approximately 100,000 people in Australia who could be predisposed to hypertrophic cardiomyopathy," says Professor Hool.

Human trials of this new and exciting treatment are expected to start in the next two to three years.



> There are approximately 100,000 people in Australia who could be predisposed to hypertrophic cardiomyopathy.
>
> **Professor Livia Hool**

Left: Professor Livia Hool.
Right: A transverse view of a hypertrophic (enlarged) heart.

Exciting Discovery Could Help Scientists Reduce Heart Attacks in Women

> The results of this study will lead the way forward to potentially develop new sex-specific medical therapies, such as tailored treatments unique to women or to men, down the track.
>
> **Professor Jason Kovacic**

The Victor Chang Cardiac Research Institute's Executive Director, Professor Jason Kovacic, has been at the centre of new sex-specific research which could transform the treatment of heart and vascular disease.

Professor Kovacic has been working with an international team of scientists, which has discovered there are vast differences between men and women in what causes disease of the blood vessels at a genetic level.

In an effort spanning Australia, the United States and Europe, Professor Kovacic and his colleagues mapped the genetic profile of hundreds of men and women at risk of coronary heart disease.

The team found men who are at risk of having a heart attack show changes in the wall of their blood vessels that suggest genetic changes in their immune system.

But for women, the key genetic drivers of this process are instead the most common cells in the walls of their arteries – known as smooth muscle cells.

Whilst doctors have known there are different symptoms and different risk factors for heart attack for men and women, this has allowed scientists for the first time to witness and finally understand some of the core mechanisms of Australia's biggest killer.

Left: Prof Jason Kovacic with Dr Xenia Kaidonis

The Innovation Centre

The Future of Research

Since its formation in 2019, the central and unwavering mission of the Victor Chang Cardiac Research Institute's Innovation Centre has been to urgently reduce the millions of lives lost to the world's number one killer – cardiovascular disease.

In 2020 we established key partnerships with Therapeutic Innovations Australia and the NSW Cardiovascular Research Network (CVRN), including launching a new funding scheme to provide early- and mid-career researchers access to the Innovation Centre's expertise and facilities.

This is accelerating the opportunities to discover cures for heart disease, bringing precision medicine to patients, which has only ever been imagined before.

VICTOR CHANG
CARDIAC
RESEARCH
INSTITUTE
INNOVATION
CENTRE

Left: Carus Lau with the Cryo-EM.

Accelerating Research and Discoveries

Micro Imaging Facility

The Opera Phenix screening system, which can simultaneously scan hundreds of specimens, proved instrumental in shedding light on the 'dark matter' that makes up our genomes.

Cell Function and Screening Facility

This facility supported COVID-19 research by Dr Adam Hill and his team, who used the high-throughput automated electrophysiology platform to investigate the potential side effects of drugs being used to try and treat COVID-19, and how they might affect the heart.

Stem Cell Production Facility

Our ability to grow iPS stem cells was boosted with the addition of a new robotic automated system.

It can facilitate the reproducibility and large-scale production of stem cells from hundreds of patients, allowing researchers and clinicians to identify new therapies using personalised medicine.

Preclinical Imaging Facility

Scientists from across the Institute embarked on a range of studies looking at preclinical models of myocardial infarction, cardiac transplants, congenital heart disease and aneurysm.

Metabolomics Facility

Last year witnessed the arrival of a mass spectrometer machine that measures the precise mass of thousands of molecules in minutes.

One of only two machines of its kind in Australia, it is greatly enhancing the range of important questions the facility can answer.

Cryo-electron Microscopy Facility

High resolution imaging of the molecule that generates the majority of cellular energy was produced for the first time ever.

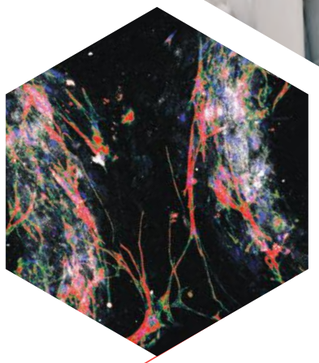
The results of the work supporting Dr Alastair Stewart and his team were published in Nature Communications.

Clinical Imaging Facility

A far less invasive way of monitoring the rejection risk of organs during heart transplantation was identified by the facility.

Sentinel research demonstrated that cardiovascular magnetic resonance, a type of medical imaging technology, could safely replace the need for biopsies.

The year also saw the beginning of new collaborations with Oxford and Harvard Universities to deliver cutting edge sequence technology to allow myocardial tissue characterisation and metabolism assessment.



Top: L-R Micro Imaging Facility's Ella Martin, Alena Sipka, Alexander Ward and Jeffrey McArthur.

> The Innovation Centre is an accelerator for cardiovascular research; it provides the technology and expertise to our scientists to help them to make bigger discoveries, faster.
>
> **Dr Johanna Barclay,**
> Head of the Innovation Centre

My heart breaks for the other families who have lost their children to congenital heart disease. Life could have been very different for us if things hadn't worked out the way they did.

Saasha Scaife

Charlotte's Story

Little Charlotte Scaife was born with two holes in her heart and two faulty heart valves. As Charlotte grew, so did her heart and at two years old it was almost double the size of other children her age.

The only option to save her life was open heart surgery.

"I had to say goodbye to my baby girl as she was wheeled into an operating theatre where surgeons would cut a huge hole in her tiny chest," says mother Saasha.

"When we were finally able to see her in the Intensive Care Unit she had so many tubes coming from her body. My daughter should have been playing at the park, not lying there sedated in a hospital bed recovering from open heart surgery."

The four-hour operation to close the holes and repair the valves was performed by Institute Faculty Professor David Winlaw. It was a complete success and Charlotte can now play like any other six year old.

"My heart breaks for the other families who have lost their children to congenital heart disease. Life could have been very different for us if things hadn't worked out the way they did," says Saasha.

Every year it's estimated 4.9 million babies like Charlotte are born with a serious birth defect worldwide, with the cause of the vast majority of cases remaining unknown.

But vital work led by the Institute's Professor Sally Dunwoodie has found a genetic cause for various heart birth defects and crucially, a possible way to prevent some cases.

Her landmark study found a deficiency in a vital molecule, known as NAD, prevents a baby's organs from developing correctly in the womb. Mouse models also showed that the heart will form correctly if the mother's diet is supplemented with vitamin B3 (or niacin).

Professor Dunwoodie's team is now focusing on developing a diagnostic test for women who have low levels of NAD and would potentially benefit from increasing their vitamin B3 intake.

"Without the Victor Chang Cardiac Research Institute's work, it would be really horrible for families like us to think there was no hope out there," says Saasha.

Team Highlights

Going Green

Reducing our carbon footprint

The Institute's outstanding efforts to reduce its carbon footprint have been recognised in the annual CitySwitch National Awards.

By working with St Vincent's Centre for Applied Medical Research Centre, the Institute cut its footprint at its Sydney HQ by a remarkable 407.5 tonnes.

The outstanding effort was led by Colin McRobbie, Facilities Engineering Manager at the Lowy Packer Building, who put in place highly effective waste reduction methods. These included removing older style light globes and adding timers to the natural gas steam boilers that process waste from the laboratories.

An impressive $92,000 was also saved by cutting back on gas and electricity usage, earning the team the Highly Commended prize for the National Partnership of the Year.

"We achieved the equivalent of taking 80 cars off the road per year, or saving the running of 42 homes," says Mr McRobbie.

Professor Jason Kovacic, Executive Director of the Institute, adds: "These results are impressive but are also just the beginning of the Institute's commitment to reduce our energy use and emissions, and to do everything we can to help tackle climate change."

Left: Colin McRobbie, Facilities Engineering Manager

Executive Director's Award 2020

Our Chief Operating Officer Susannah Rooney is a most worthy recipient of this year's Executive Director's Award.

However, Susannah would be much happier if this honour, given for her exceptional handling of the COVID-19 crisis, could be shared by everyone in the organisation.

Susannah joined the Victor Chang Cardiac Research Institute in late March 2020, just a couple of days after the country went into lockdown.

"I needed to quickly understand every aspect of the Institute so I could come up with strategies to respond. I went straight into back-to-back meetings with every faculty and manager to understand what they needed to protect their work, and most importantly, we had to make sure all of our staff would be safe and looked after," recalls Susannah.

Susannah worked with key faculty and the senior management team to introduce new ways of working, including social distancing, working from home, staggered start times, and a period with a nine-day fortnight. Working within the constantly changing government directives, essential projects were identified to continue, and others were deferred. The financial impacts were being reassessed continuously.

Executive Director Jason Kovacic says: "Many people would have baulked at this challenge in the best of times, let alone facing it on day one of a new job. As a newcomer to the Institute, there is no way we could have navigated this time without her clear and calm approach to COVID-19. We greatly appreciate every minute and hour she gave to us."

"It was incredible how everyone at the Institute came together. So many staff made sacrifices to ensure the Institute not only survived 2020, it thrived."

Susannah Rooney, Chief Operating Officer

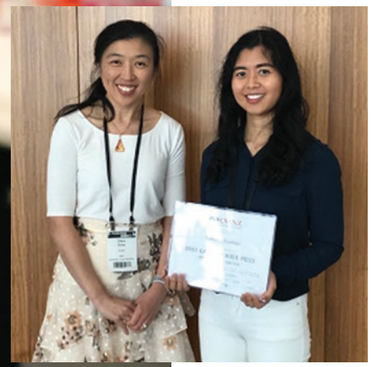
Right: Susannah Rooney, Chief Operating Officer

The Ralph Reader Prize

2020 was a huge year for Celine Santiago who was awarded the Ralph Reader Young Investigator Prize by the Cardiac Society of Australia and New Zealand (CSANZ).

As the only female finalist, Celine took out the most prestigious prize in cardiac research after submitting a 5,000 word manuscript on the risk factors of alcohol in genetic heart disease. As one of three finalists, she had to present her work at CSANZ's annual scientific meeting.

Dr Santiago, who also recently completed her PhD, says: "It's a huge honour and it feels very special that world-renowned experts feel my work deserves recognition on a national stage. I genuinely believe that the selection committee chose who they thought was best, but it would have been great to have had another female finalist."



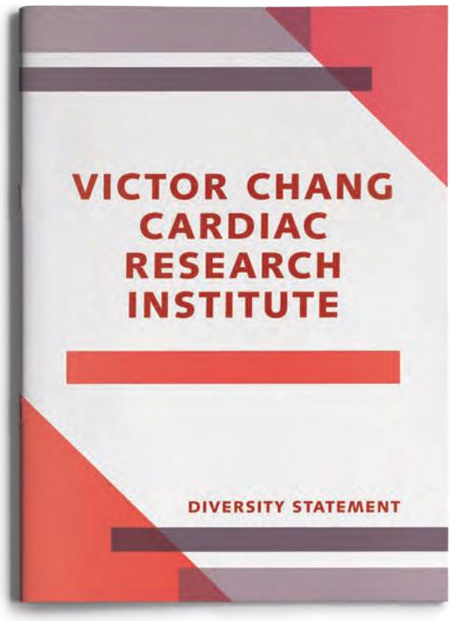
> This is an enormous achievement and credit to Celine's hard work.
>
> **Professor Diane Fatkin**, PhD Supervisor

Top left: CSANZ's Professor Clara Chow (left) with Dr Celine Santiago (right).

Victor Chang Cardiac Research Institute

Our Commitment to a Diverse Workforce

It wasn't just COVID-19 that dominated the news cycle in 2020. Around the world, hundreds of thousands of people took part in the Black Lives Matter (BLM) marches to call for urgent change and equality for all.



At the Victor Chang Cardiac Research Institute, we have always treated people with respect and dignity but recognise we could do more to embrace and celebrate workplace diversity.

We took a pledge last year to support Aboriginal and Torres Strait Islander peoples and Black communities in Australia and around the world in recognition of the BLM movement.

We have also adopted a new diversity policy, which recognises that differences in ethnicity, gender identity, age, sexual orientation, religion and perspective contributes to our success as an institute.

Over the next 12 months, we'll be raising awareness of workplace diversity and focusing on developing and recruiting a diverse workforce. We'll do that by providing a supportive workplace and encouraging every one of our employees to appreciate our unique differences and to learn from them.

A huge thank you to the hard work from our Diversity Committee, led by Dr Audrey Adji, for making this happen.

We recognise that there is change underway in Australia and around the world, and we are committed to ensuring our pledge is firmly put into practice.

Left: The new VCCRI Diversity Statement.

Kristen's Story

Kristen Patton had just given birth to her daughter Hattie when she suffered a massive heart attack at home.

"It felt like someone was drilling into the side of my jaw. I stood up, holding my three-day-old baby and a pain started moving down my arm with a web like sensation beginning across my face, it all happened so quickly," says Kristen.

No-one had any idea her heart attack was the result of the lethal condition called Spontaneous Coronary Artery Dissection (SCAD), until she suffered a second heart attack whilst recovering in hospital.

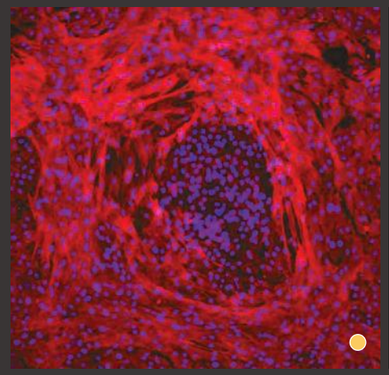
Kristen underwent a heart transplant and is now determined to raise awareness of SCAD, which is behind one in every four heart attacks in women and largely affects women like herself – aged 40-50 with typically no cardiovascular risk.

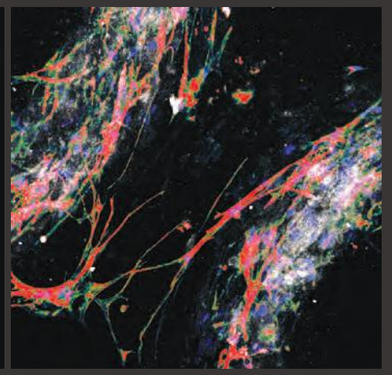
Kristen will be donating her DNA to the Institute's scientists who are determined to not only find out the cause of SCAD, but also develop therapies to both prevent and treat the disease.

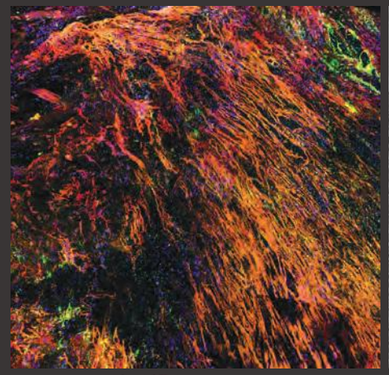
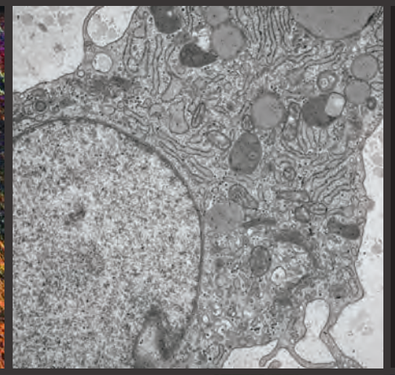
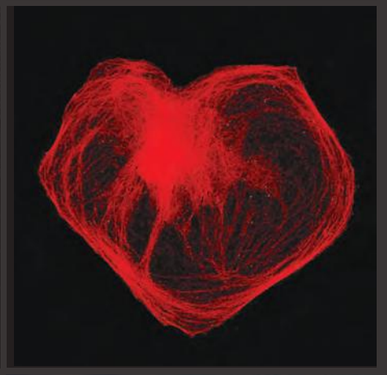
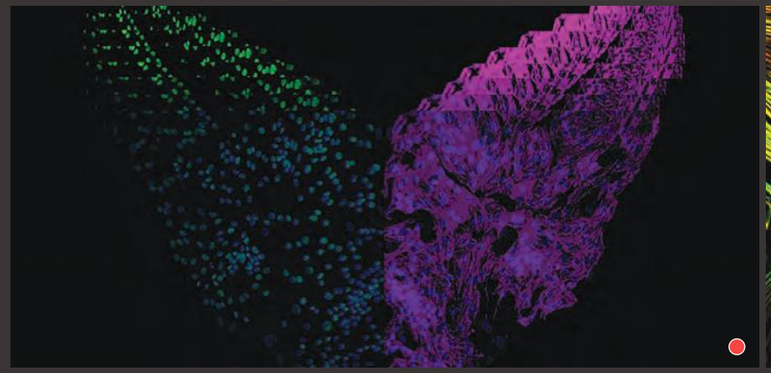
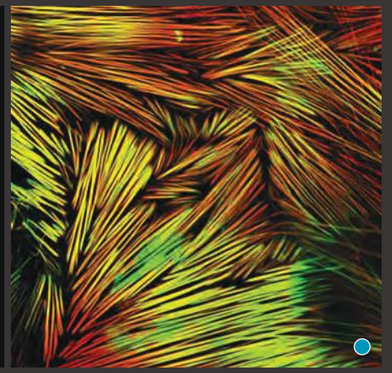
Kristen, who is now a healthy and busy mother of five, adds: "I want to honour my mum, honour my new heart and be there for my children."

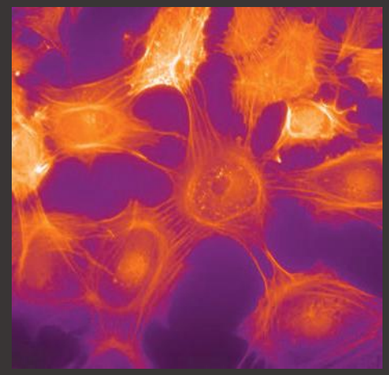
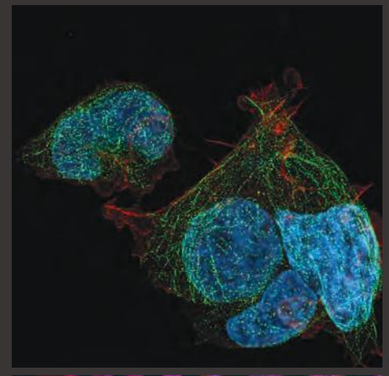
Bottom left: Kristen Patton with daughter Hattie

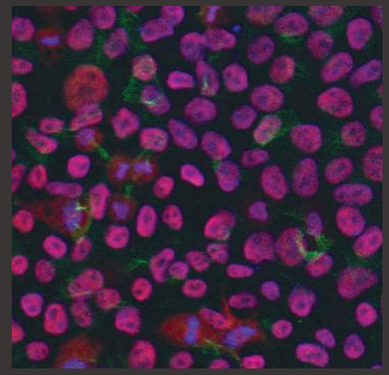
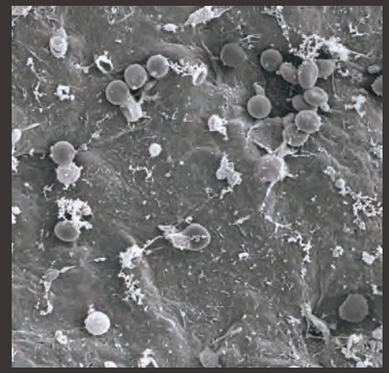
Art of the Heart





The Institute's celebration of life under the microscope returned again last year with an incredible array of images taken by our researchers.

The Art of the Heart Scientific Photo Competition highlights the extraordinary complexity of the work of our researchers who capture hundreds of molecular images every single day. Dozens of anonymous entries were submitted to the peer-reviewed contest, which were also shared on social media to determine the People's Choice Award.

The winners are not only breathtaking but provide a rare glimpse into a world that is invisible to the naked eye.

- **Best Scientific Photo**
  Dr Monique Bax, Dr Vaibhao Janbandhu and Dimuthu Alankarage.
- **Best Technical Photo**
  Dimuthu Alankarage, 'Made of Light.'
- **Best Aesthetic Photo**
  Dr Vaibhao Janbandhu, 'Fields of Gold.'
- **Donor's Choice Award**
  Dr Vaibhao Janbandhu, 'The Art of Dying.'
- **People's Choice Award**
  Osvaldo Contreras, 'Imagine.'

Fundraising in 2020

06

Partnering with Atlassian

Australia's biggest software company joined forces with the Institute in September to provide invaluable work in kind and help raise funds for heart disease.

The month-long partnership allowed Atlassian's Australian-based staff to immerse themselves in the world of heart research and use their world-leading skills for a different purpose.

The rare opportunity involved hosting a hackathon which delivered two new functioning software tools for DNA analysis. The Institute's cardiologists also delivered an educational Heart Health Webinar Series for Atlassian employees.

The Atlassian team also helped develop new app software to help nurses conduct heart health checks as well as taking part in a virtual fundraising walk for heart disease which raised $23,449.

"Even though medical research and software development seem like worlds apart, in reality, we were able to interweave the expertise of our doctors and scientists together with world-leading software engineers for the greater good. We are so proud that we were able to create a successful partnership with a mutual exchange of knowledge that benefited both organisations," says Ariane Gallop, the Institute's Director of Fund Development.

"We set up a Global Heart Health and Wellness month to learn more about heart health and raise money for research. The collaboration with the Victor Chang Cardiac Research Institute was key to the program's success in Australia," says Atlassian Foundation's Jonathan Srikanthan.

Top left: Dr Emma Rath and Assoc Prof Eleni Giannoulatou
Centre left: Dr Nikki Bart

Bay Soiree

In partnership with Watsons Bay Boutique Hotel

Little did we know that our lives were about to change due to COVID-19 when we held the annual Bay Soiree at the Watsons Bay Boutique Hotel in early March.

It would be our last major fundraising event for some time but once again, it was an incredible success.

The Bay Soiree raises vital funds for heart research at the Victor Chang Cardiac Research Institute and we have our wonderful supporters to thank. The stunning beachside event would not be possible without the generous ongoing support of Fraser Short and his dedicated team at Watson's Bay Boutique Hotel.

The evening's success is also driven by the exceptional passion and commitment we receive from our Young Appeals Committee including Jonathan Henry, (Chairman), Laura Jayes, Alex Hart, Vanessa Gilbert, James Camilleri, Joel Barbuto, Marcus Chang, Simon Raftery, Timothy Barrett, Justine Schofield, Daniela Elsa, Paula Hitchcock and Caity McLoughlin.

Our sincere thanks go to our fabulous MC Alex Hart, and to our guest speakers Karen and Colin, who reminded us of how important it is to be aware of the risks of heart disease and to be trained in CPR.

Total raised: $125,000

Sohn Hearts & Minds Investment Leaders Conference

The 2020 Sohn Hearts & Minds Investment Leaders Conference was a little different to previous years. Held via Zoom, the virtual conference provided an opportunity to communicate with a global audience.

Hosted by comedian and mathematician Adam Spencer for a second time, the Conference once again delivered insights and stock pitches from leading fund managers and industry thought leaders in Australia and around the world for the purpose of raising funds for Australian medical research.

Fundamental to the success of the conference is the ongoing support of our major partners; Commonwealth Private, Paul Ramsay Foundation and the Sohn Conference Foundation. Similarly, the extraordinary line up of international and national experts provided a rare opportunity for the investment community to gain insights that have generated superior returns. They included:

Bill Ackman, Pershing Square Capital (USA)
Scott Galloway, NYU Stern School of Business & Section 4 (USA)
Cathie Wood, Ark Investments (USA)
Shane Finemore, Manikay (USA)

To date the conference has raised more than $20 million for medical research, supporting a number of beneficiaries including our Institute, MS Research Australia, JDRF Australia, Black Dog Institute, Murdoch Children's Research Institute, Shake It Up Australia Foundation, Brain Cancer Collective and Macquarie University Centre for Motor Neuron Disease Research.

Thank you to Hearts & Minds Investment Leaders Conference for your continued support of Australian medical research in 2020.

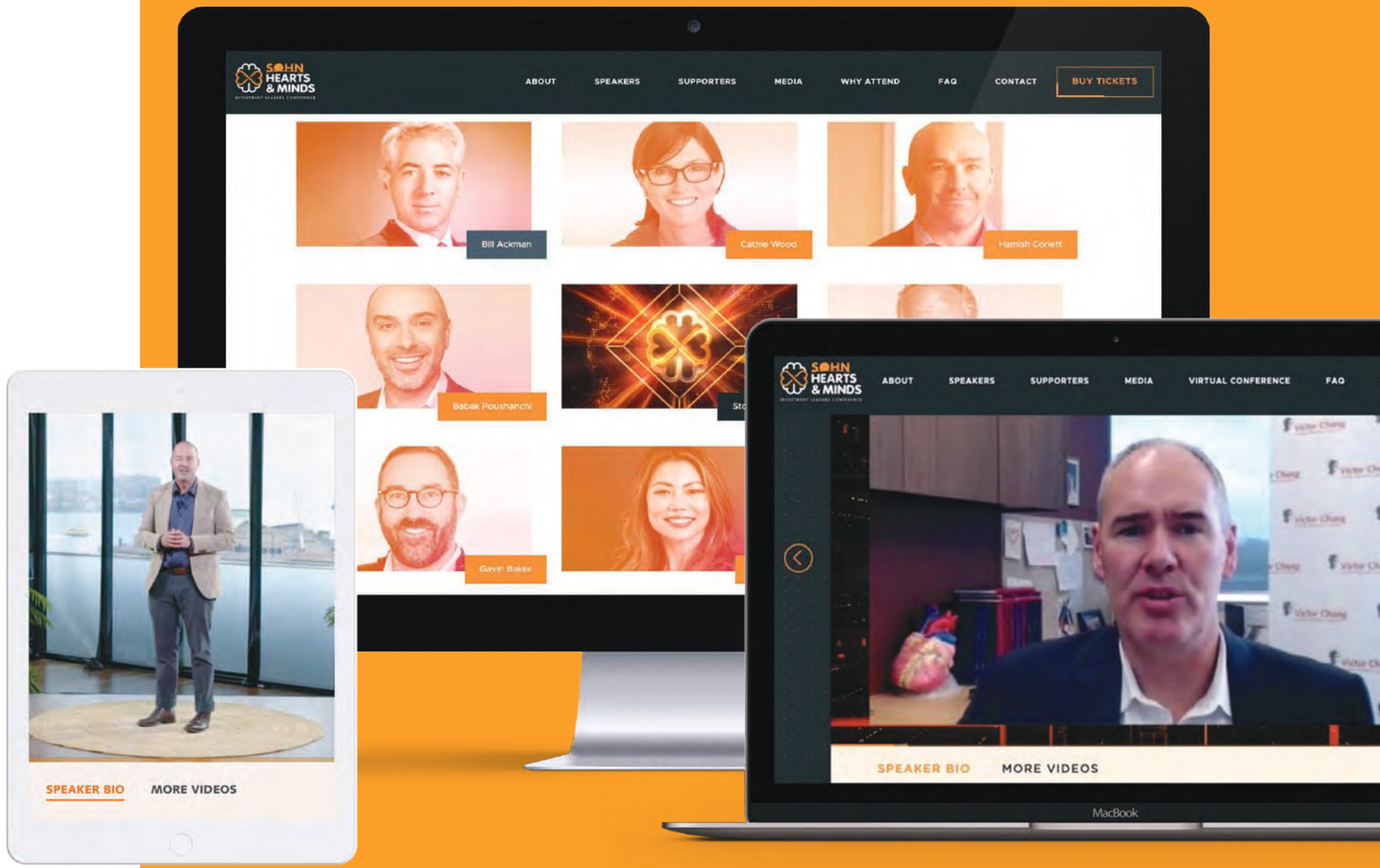
HM1

Hearts & Minds Investments Limited (HM1.AX) was established and subsequently listed on the Australian Stock Exchange in November 2018. It's dual purpose is to provide investors with a portfolio of outstanding investment opportunities from leading fund managers around the world, while giving considerable funding to a range of Australian medical research institutes, including the Victor Chang Cardiac Research Institute.

The HM1 portfolio invests in the high conviction stock recommendations from the annual Sohn Hearts & Minds Investment Leaders Conference, and from a group of 'Core' managers – Caledonia Partners, Cooper Investments, Magellan Group, Paradice Investment Management, Regal Funds Management and TDM Growth Partners, who generously donate their time and expertise together with pro-bono service providers.

The top performing stocks from the 2020 conference were Tesla Inc, The Trade Desk Inc, and Spotify Inc., which delivered 12 month-returns of 184%, 102% and 77% respectively*. Overall, HM1 performed strongly over 2020, despite the market volatility, increasing the post-tax NTA of the fund by 25.5%**. This resulted in a donation of $4.6million to the Victor Chang Cardiac Research Institute for 2020.

For more information about Hearts & Minds please visit its website: hm1.com.au



* Performance for the period 22 Nov 2019 – 22 Nov 2020
** Post tax NTA includes the provision for tax on operating profits, and a provision for tax on both realised and unrealised gains and losses on the Total investment portfolio. Performance calculated for the period of 1 Jan 2020 – 31 Dec 2020.

Charity Steer Auction

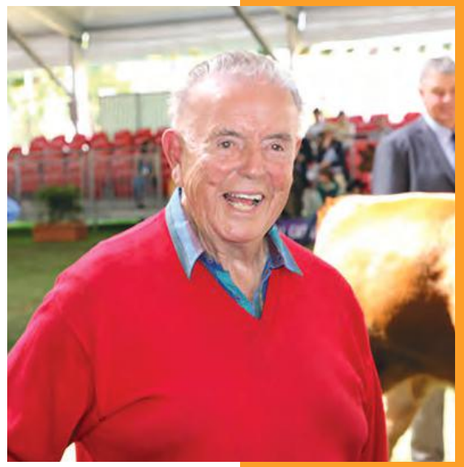
The cancellation of the Sydney Royal Easter Show and the annual charity steer auction did not prevent Schute Bell Badgery Lumby's Robert Worner and John Gray from raising $22,000 for the steer prepared by students at St Stanislaus College, Bathurst.

Schute Bell Badgery Lumby have held an annual charity steer auction at the Royal Easter show since 1998. For 12 of those 22 years Paul Ferry has won the bidding, donating more than $300,000 to the Victor Chang Cardiac Research Institute in that time.

In 2020, generous Double Bay boutique butcher 1888 Certified, teamed up with Schute Bell Badgery Lumby, donating the proceeds from the sale of the meat.

Our sincere thanks to Paul Ferry, Schute Bell Badgery Lumby and 1888 Certified for supporting Australia's home of heart research.

Total raised: $25,600



Top: Winning bidder Paul Ferry
Middle: 1888 Certified's Edoardo Zanaica
Bottom: Schute Bell's John Gray

Financials and Acknowledgments

07

Financials

For the year ended 31 December	2020 $	2019 $
Income		
Research Grants	$12,602,720	$14,360,866
Innovation Centre Grant	$1,677,460	$1,015,299
Donations and Fundraising	$7,404,102	$4,849,970
Investment and Other income	$951,971	$1,817,932
Total income	**$22,636,253**	**$22,044,067**
Expenses		
Research expenses	$17,535,369	$17,358,109
Administration expenses	$7,212,920	$6,722,409
Fundraising expenses	$1,911,620	$1,921,968
Total Expenses	**$26,659,909**	**$26,002,486**
Operating (Deficit)	($4,023,656)	($3,958,419)
Non Operating income/(expenses)		
Gain on revaluation financial assets	$613,747	$2,632,254
Net Deficit before Government Subsidies	($3,409,909)	($1,326,165)
Government Subsidies	$3,757,534	–
Net Surplus/(Deficit) for the year	**$347,625**	**($1,326,165)**

Comparative figures have been adjusted to conform with changes in presentation for the current year.

The above is an extract from the 2020 audited Financial Statements. The extract does not include the information normally included in the financial statement. Accordingly, this extract is to be read in conjunction with the audited Financial Statements for the year ended 31 December 2020.

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For more about our organisational structure visit:
www.victorchang.edu.au/about-us/our-structure

Supporters and Acknowledgments

The Victor Chang Cardiac Research Institute would like to thank every one of its supporters. Our research would not be possible without your incredible generosity.

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