INTERVIEW
Meet the wonderful 101-year-old Elizabeth Webb

RESEARCH UPDATES
SMuRFLess heart attacks

MEET YOUR RESEARCHER
Dr Carmine Gentile and his "Mini-heart" project

We Life®

NEWSLETTER – ISSUE 2, 2023

Heart Research Australia

"Why me Doc?"

New clinic opens to offer help to SMuRFless heart attack victims

Momentum growing

Hello, I trust this finds you all well!

It's always been heartening to see momentum start to build for projects and people that we have been funding.

And when it comes to SMuRFless or *"Why me Doc?"* heart attacks (that is those that occur in the absence of traditional modifiable risk factors) there is some exciting new global and local initiatives which you can read about on page 4.

Plus, we also interview the wonderful Dr Carmine Gentile who leads the "3D bio-printed mini-heart patches" project, to get an insight into his career path which ultimately led to this incredible research.

I'm also sure you'll be inspired by our donor stories, from the 101- year-old Elizabeth "Bessie" Webb's, through to our Bond University students. So heartwarming!

So, enjoy the read.

Warm Regards,

Nicci Dent - CEO, Heart Research Australia

Meet the team

Meet Mira, our Finance and Business Officer.

If you have ever called us up to make a donation, chances are you will have spoken to the super-efficient Mira, who is our Finance & Business Officer.

Mira has been working with us for 2 years now and in that time, she has completed her degree in Bachelor of Applied Commerce and become an Australian citizen.

She says "growing up in Nepal my mum used to tell me stories about mother kangaroos carrying their babies in their pouches. And ever since, I always wanted to come to Australia to see kangaroos. I never thought this would become my home – but I am so grateful it is. And that I could contribute by working for such a worthy cause such as heart research.

I feel so blessed to be here, especially during the pandemic. It was a time when my friends and family in Nepal were really struggling, yet I was still able to live a relatively normal life here. I think we are so lucky to have a good health system and government support which makes all the difference.

What I love about working at Heart Research Australia

Mira and her parents

is that all our team members are so trustworthy, helpful and have strong principles and values. And, after previously working in hospitality, it's a nice change to be able to talk to our donors who are so polite and humble – while at the same time being so generous! It restores your faith in people.

I have also become aware of the threat of heart disease and what to look out for. I feel this helps me alert those I love, namely my parents, who suffer from high blood pressure and diabetes, to be aware to get their hearts checked.

So, my thanks to you all, it's wonderful being part of this incredible community!"

Mira

What will you be doing when you are 101?

INTERVIEW

When I called the indomitable **Elizabeth 'Bessie' Webb**, she was on her way to hand in her driver's licence. At 101 she says her eyes are not up to it now and she doesn't want to blemish her clear 70-year driving record! Then, she was coming back home to work on her latest book on the town where she was born - Tallawudjah Creek.

To us Elizabeth embodies the characteristics that make a true Australian hero. She is modest, quick to laugh - with a very dry wit (''I have a bit of the devil in me, like my dad"), a great friend and neighbour and heavily involved in her local community of Glenreagh – a short distance from where she was born.

Along the way Elizabeth has raised 4 children with her late, beloved husband Les. In 2013 she was awarded an Order of Australia Medal (OAM) for services to the Glenreagh Community and in 2001 was awarded an NSW Centenary medal, for her work as the local historian. Plus, she has written 6 books and collaborated on another 2, and has served on numerous local societies and clubs.

This is all from a lady who in 1995 had a heart attack. She was in hospital recovering from 2 major operations 2 weeks apart, when she had a heart attack. The cardiologist, who performed her quadruple heart bypass operation to save her life told her -

"That will give you another 10 years"!

This incident inspired Elizabeth to support our work and she made her first donation to Heart Research Australia way back in 1999 and she has been supporting us ever since. We look forward to her gorgeous handwritten cards that come through the post thanking us for the work we do.

She says she is blessed and credits her longevity to living an active life and being part of a loving, caring community. When I asked for her philosophy on life, she went to a saying on her wall which reads "the key to successful aging is to pay as little attention as possible to it" – so basically go out and live your life!

Many thanks to Elizabeth and all our wonderful donors who light up our lives - we couldn't do it without you!

Bessie with 3 of her children.

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Significant developments in the search for answers to SMuRFless (or *“Why Me Doc?”*) heart attacks.

SMuRFless heart attacks (those that occur in the absence of traditional modifiable risk factors) are believed to account for up to 27% of heart attacks and are associated with higher 30-day mortality. And their increase in the last decade, and the lack of knowledge as to why this is happening, has sparked worldwide interest - demonstrated by a rapid rise in publications in leading international journals.

At the forefront of discovering reasons behind these heart attacks, is Prof Gemma Figtree, who heads up the BioHEART study here in Australia. Heart Research donors have been generously funding Prof Figtree since her days as an early researcher, and we continue to help fund many of the projects that make up the BioHEART study today.

Which is why it is so heartening to see the rise in attention and focus on these SMuRFless heart attacks.

World-first Symposium

Prof. Gemma Figtree

Recently the first ever SMuRFless CAD symposium took place in Amsterdam, in the Netherlands.

The two-day Symposium featured talks by clinical and scientific leaders from across the globe (including our own Prof Gemma Figtree) who showcased their latest research and proposed new ways to tackle the development of coronary artery disease (CAD) and myocardial infarction (MI) in the absence of SMuRFs.

Opening of first SMuRFless CAD clinic in Australia

Meanwhile, back at home there is some exciting news – the opening of the first SMuRFLess CAD Clinic at Royal North Shore Hospital.

This clinic is open to anyone suffering from SMuRFless coronary artery disease. That is anyone who has had coronary heart disease (CAD) or a heart attack without Standard Modifiable cardiovascular Risk Factors (SMuRFs) such as high blood pressure, high cholesterol, diabetes or smoking. This clinic has been established by a global team of experts whose aim, based on their research efforts, is to find out why some people develop CAD without having risk factors, and why these people have poorer health outcomes in comparison to people with CAD who do have one or more SMuRFs.

The best bit is, it’s free to attend - with a referral from a healthcare provider.

At the appointment a specialist cardiologist will review the patient’s medical history and work with them to understand if they have less common risk factors for CAD. During their visit (60-75 mins), they will complete some questionnaires and measurements. Using dedicated guidelines, the cardiologist will ensure they receive personalised care and support and devise plans for their optimal management and care, as they continue to see their regular cardiologist.

Telehealth calls are also available if a patient cannot attend RNSH. Plus, there are also plans to open clinics in other Australian cities in the future.

There will also be the opportunity for patients attending the clinics to participate in two important research initiatives: the BioHEART Study and the national SMuRFless CAD Registry. By joining these studies, they can contribute to the development of novel markers for CAD and provide valuable insights into lesser-known or infrequently encountered risk factors.

The establishment of this clinic is a significant step towards finding out how we can diagnose and treat SMurRFless heart attacks.

To be a part of this exciting opportunity and schedule an appointment, you can contact Dr Giannie Barsha, Postdoctoral Research Associate on 0405 447 811 or at giannie.barsha@sydney.edu.au

Dr Giannie Barsha, Clinic Coordinator, for SMuRFless CAD Clinic.

On the “path to zero heart attacks” - Centre of Research Excellence for Better Outcomes in Coronary Artery Disease

In addition, if you’d like more detailed information on The BioHEART project or the SMuRFless CAD clinic then you can visit https://www.cadcre.org/

This is the newly launched website of The Centre of Research Excellence (CRE) for Better Outcomes in Coronary Artery Disease (CAD) group in Australia.

This group, made up of leading researchers, clinician and global communities, actively supports innovative cardiovascular research and nationally harmonised clinics to address the urgent need for evidence-based approaches that improve health outcomes for CAD patients. They aim to collaborate and tackle the challenges of CAD, while advancing knowledge and enhancing patient care on their “path to zero heart attacks”.

Golf Day and Gala Dinner

It’s that time of year where we run our two related charity events – The annual Golf Day (August) and Gala Dinner Auction (Nov). We want to give a big shout out to these wonderful companies who, despite the difficult conditions we are all operating in, have donated prizes for us to raffle and auction.

Also, many thanks to the organisers Gary (Smokey) Dawson and Matthew Laverty from The Charity Challenge, who always hold such a fun and engaging event. Last year we raised $13,710 - so it’s greatly appreciated.

Uni students get behind HROz

Behind every donation we get for heart research there is usually a story of great love and loss, but also one of great desire to make a difference and change the future. Recently we received an unexpected donation from a wonderful group of young people. Thirteen business students from Bond University in Queensland were tasked with creating a business selling products which would help their fellow students – with the profit going to a designated charity. And Heart Research Australia were the lucky recipients.

It is both sad and reassuring that they chose us. Sad, as many of these 21–25-year-olds had already experienced the devastation caused by heart disease, which had touched their family and friends, but also reassuring that they identified, not only the impact that research can make, but also that there is growing awareness that heart disease can affect anyone, at any time.

The team sourced and sold stick-on leatherette phone wallets for easy swipe card access, diffusers and oils. They raised $4,201 and facilitated an additional $3,000 in donations from other sponsors for HROz.

Here are some of the wonderful reasons the team gave for choosing HROz.

"I wanted to choose Heart Research Australia because of my family has a history of suffering from heart related deaths. When I was 13, I watched as my grandfather had a heart attack in his living room, in front of me, my mother and my grandmother. While we waited for the ambulance to come, I watched while my mother and grandmother tried to help him, but they couldn't do anything. After a while an ambulance arrived and he was taken to hospital. This was one of the scariest experiences of my life, watching someone I love suffer in front of me without being able to help was a truly awful experience and one that I think about to this day. This is why I wanted to choose Heart Research Australia." –

Rupert Campbell

"I did not originally think of choosing Heart Research Australia as our charity but after we had a group discussion about how serious heart related issues are, I really felt that we had to choose the charity. What I learnt was that heart problems do not only affect old people but also young people and that to prevent heart issues in the future, we must start being heart smart now. This really made me realise how relevant the charity is for Bond Uni students. That is why I wanted us to choose Heart Research Australia." –

Charlie Baldry

"I pushed for the group to choose Heart Research Australia as our charity for the project because I know how important it is for everyone to be aware about heart disease. I have a couple of family members who are suffering from heart related illnesses, so I had a general idea of how serious heart conditions can be. Once I did more research into heart disease, I found that it can affect anyone, young or old, fit and healthy or unfit and unhealthy. This really made me feel that Heart Research Australia was the perfect charity for the group to choose, donate to and advertise our products with on Campus."–

Stella Panzarino

"I had initially wanted to choose another charity for the project however, after several group discussions, I knew that choosing Heart Research Australia was a good choice. This was because I felt that since Heart Research Australia is not very well known or thought of among people our age, we could bring awareness to it and get people thinking about their hearts and hopefully encourage our fellow Bond students to look into heart disease and take it seriously." –

Declan Thew

Thank you so much to these wonderful students - we think our future is in great hands!

Meet your researcher - Dr Carmine Gentile

When we are talking about our research, the one project that lights up people's imaginations is the creation of "mini-heart patches". Made from a patient's own stem cells, which are put through a 3D bioprinter and hydrogel to form beating heart patches - it all seems very futurist stuff.

But for the doctor behind the project, Dr Carmine Gentile – who has been working in the bio engineering field almost since its emergence in the mid 2000's – it is part of his day-to-day work.

We asked Dr Gentile how he got to work in this field at the forefront of research.

What inspired you to get into research?

"I've always been drawn to nature and science. The idea behind science, of combining different elements to test different outcomes, I found fascinating. Even before I could read, I used to spend lots of time in my father's study just looking at the pictures in the encyclopaedias.

These interests initially led me to do a pharmaceutical chemistry degree, at the University of Pisa (yes, that of the leaning tower)! I soon realised the part of my study which appealed to me the most, was looking at the different molecules and drugs and how they interacted with the human body's own molecules and cells to affect our health.

After a short stint in one of the Canary Islands, working as a pharmacist and meeting patients on a day-to-day basis – I decided to go back to the lab and work on new ways to better predict the effects of drugs on the human body, before they were given to the patient. I felt my calling was to do research that could unlock the mysteries of the human body at a cellular level and recreate this process in a test tube.

Serendipitously, I was invited to move the US to perform research in this field for my PhD studies, first at the Medical University of South Carolina, and then at Harvard Medical School, USA – working in the emerging field of biomedical engineering and with new technologies such as 3D bioprinting.

The first goal of our team was to identify ways to use cells forming blood vessels inside the human body – and then to understand how these cells could be used to provide oxygen and nutrients to tissues and organs.

The aim was to learn from nature, so we could replicate the molecular, cellular and extracellular steps required in the human body – in a test tube. Achieving this would enable us to diagnose, treat and even recreate human tissues by using human cells – which nowadays translated into our mini-heart patches – to improve the outcomes for so many."

Why hearts and how did you end up in Australia?

"I was speaking about my PhD thesis - on how blood vessels are formed and how to recreate them in a test tube - at a conference in Chicago organised by the American Heart Association, when I was approached by some Australian colleagues to apply for a fellowship here.

They were looking to attract scientists to Australia, to undertake new heart research. Once here, I had the wonderful opportunity to work on actual human heart biopsies, thanks to the presence of the Human Heart Bank in Sydney. My study was able to utilise these biopsies, firstly to study them in order to identify the formation of blood vessels during early development, and secondly to find ways to use cells from the biopsies, put them in a test tube and see if I could replicate a miniature version of the heart tissue – and this is how our mini-heart project started."

What does the future hold for you and your research project?

"Like many families, mine has been affected by heart disease – so I have a driving passion to see this project come to fruition.

It would be my dream, that in the near future, after we have finished pre-clinical trials, we may be transplanting these patches onto human hearts – and saving lives.

In the meantime, we have a fantastic team here, all of whom are learning from this project and looking to making their mark in the future by running their own research projects.

I also have a teaching role at UTS which I love. To be able to guide future scientists and inspire them in the same way my teachers inspired me, is so fulfilling. I always support my students to think critically, to start from the medical problem and then define the bioengineering task. I work them through what experiments to run, how to identify cells for their project, how to generate the hydrogels that would suit their needs, how to utilise the 3D bioprinter - it is so rewarding. I usually explain it as ***"baking a cake – you have to get the right mix of ingredients!"***

I am so grateful to be able to do this work, and for the support and opportunities afforded to me to contribute to a discovery which I hope will change outcomes for so many people with heart disease. To be able to make this my life's work is truly thrilling. And the generous donations of Heart Research Australia donors play a key part in this - because without your generous donations research like mine would not be possible."

Many thanks Carmine.

Heart Research Australia

I have, *Will* you?

"My story started at home in Pymble NSW, preparing for a business trip when I noticed a tightening in my chest. This rapidly developed into a cardiac infarct. Fortunately, my wife was home at the time, called the ambulance and gave me an angina tablet. I had a 95% blockage on my Left Anterior Descending artery and needed bypass surgery. After 5 weeks in hospital, I was happy to go home. It turned out I was one of a very small percentage that survived an LAD blockage.

That was 33 years ago. How things have changed thanks to research and technology discoveries. Surgical intervention now happens so quickly!

I am enjoying life with my wife, daughter and grandchildren and am very thankful for that. I'm fortunate to enjoy a very active life in retirement playing golf, swimming, travelling and playing bridge.

I've left a gift in my Will because I would like to pay it forward. It's reassuring to know that

my legacy will contribute to heart research that will help more people survive heart disease."

Richard J. Farrar

To help find the next breakthroughs for heart disease treatment - would you consider leaving a gift of 1% in your Will so we can continue live-saving heart research for future generations?

For more information, please go to: www.heartresearch.com.au/gifts-in-wills

Or contact: Diane van de Merwe on (02) 9436 0056 or bequest@heartresearch.com.au

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Thank you so much! ***Any legacy, small or large will have a positive impact on generations to come.***