The Beat

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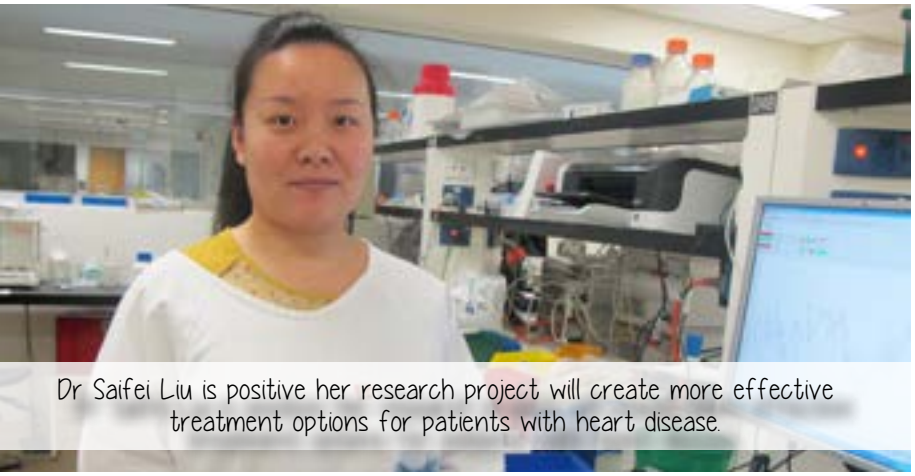
AUSTRALIAN HEART RESEARCH
beating heart disease

Investigating Inflammation in the Heart



Dr Saifei Liu is positive her research project will create more effective treatment options for patients with heart disease.

Finishing her PhD with the University of Adelaide this year, Dr Saifei Liu is passionate about medical research that will benefit patients living with heart disease.

Working under Professor John Horowitz at The Queen Elizabeth Hospital, Dr Liu's PhD project examined B-Type natriuretic peptide (BNP), which is a small protein hormone released from the heart under inflammation in conditions such as 'broken heart syndrome' as well as heart failure.

"My research found that this hormone, BNP, exerts an anti-inflammatory effect by limiting the release of oxidants from white blood cells," she said.

"However, this protective effect is unable to occur when a patient experiences heart failure."

Dr Liu explained that this research is important because in the past clinicians have attempted to treat heart failure by providing a patient with additional BNP.

"This research is exciting because it demonstrates why this method of treatment does not work."

There is a long way to go to extend this research, but Dr Liu is positive about her initial findings.

"Now, we need to determine exactly why this hormone stops working and maybe this can be prevented. Secondly, we need to find out why a new class of drugs that is currently being used for treating inflammation, still works despite often increasing the levels of BNP in the body."

Dr Liu is hopeful that this research will one day provide more effective treatment for patients coming into hospital with heart inflammation, including heart failure.

"If my research can play a small role in helping people receive better treatment, then my job is very worthwhile." ♥

Cornel's Story

Seven years ago Cornel Carvalho was told she only had six months to live. Now, after two open heart surgeries, the 40-year-old mother continues to fight the odds and is remaining positive as an advocate for community awareness and medical research.

"I wear my scar with pride."

Born in South Africa, Cornel moved to Roxby Downs in South Australia four years ago and now lives with her young family in Sydney.

"I was always a very fit, happy and healthy person but that all changed when I had my second child Kayla through an emergency spinal caesarean and I stopped breathing," Cornel said.

Unaware this was the first sign something was wrong with her heart; Cornel awoke to meet her beautiful baby girl. She continued on with life as a new mother until December 2006.

"My heart issues began when I was getting ready for a function and began feeling extremely dizzy. Later that night I was struggling to breathe and my husband rushed me to the hospital emergency room."

Transferred to Cardiac ICU, doctors discovered Cornel's mitral valve, the valve between the left atrium and ventricle of the heart, was leaking back into her heart chamber.

continued next page

The Power of Heart Research: Ben's Story

At 13 years of age, Ben, who is now a loving husband and father of two, was forced to not only deal with the death of his father from hypertrophic cardiomyopathy (HCM), but also the realisation he had the same life threatening condition.

HCM involves a mutation in the chemical structure of the heart muscle that reduces its efficiency and results in the thickening of the muscle.

Forced to give up his love of sport at high school, by the time he reached 21 Ben was told he would need a defibrillator implanted into his chest.

"It was such a big thing at that age to have surgery for a heart condition. I remember being in hospital surrounded by 70 and 80 year olds," Ben said.

Lucky for Ben the defibrillator saved his life at least twice, but his heart was beginning to deteriorate.

"I was constantly short of breath and I'd have head spins if I stood up quickly."

Ben was told he would need surgery if his heart didn't respond to medication. He was prescribed the drug Perhexilline, a drug at the forefront of research at The Queen Elizabeth Hospital for many years.

Fortunately Ben responded positively to the treatment, and now more than five years later he is able to remain active with his young family.

Ben is confident research into heart disease will create a brighter future for his young family.

"I can jump off things; I can pick up both the children and run around after them without any issues."

As a direct example of how research into heart disease changes lives, Ben remains confident the future of medical research will ensure his two young children if affected by HCM will have access to new treatment options.

"With the way medical research is going already changes we are seeing – you can't let things like this stop you. By the time they get tested when they get older – who knows what treatments might be available?" ♥

Cornel's Story...

continued from page 1

"I was put on beta blocker therapy for atrial fibrillation and got on with my life."

In July 2007 Cornel began suffering from severe night sweats and a visit to her GP confirmed she was suffering from infective endocarditis and was put on penicillin antibiotics.

"One night in October 2007 I woke up with a racing heart of 240 plus beats per minute and was struggling to breathe."

Racing to the hospital, Cornel's doctor suspected she had suffered from a supraventricular (SVT) attack where the heart's electrical system starts to fail.

"After a second attack I met with an Electro Physiologist, a heart specialist for electricity of the heart, who scheduled me in for a cardiac ablation to correct my heart rhythm problems," Cornel said.

Unfortunately this wasn't the end, after returning to work from a short break in January 2008, Cornel found herself struggling with the simple actions and exercise she was used to doing daily.

"I battled to walk the distance from my car to the office. I knew something was wrong.

"I booked an appointment with my Cardiologist who immediately phoned the Thoracic Surgeon and before I knew it we were discussing open heart surgery.

"I was given only six months to live. I was suffering from complete heart failure."

Having surgery in March, Cornel had an annuloplasty ring placed around her mitral valve forcing it to close and ultimately repair the leaking valve.

What followed was a year of chest pains Cornel later discovered were a result of broken surgical wires in her sternum. She would require more open heart surgery to repair the wires in 2009.

"The trauma from all the surgeries and life in general has left its mark on me and I do battle with PTSD, anxiety and depression," Cornel said.

"I have tried to make something good out of what has happened to me. I am now an avid Community Leader in the Medhelp online forum.

"My aim is to motivate, inspire and help as many people as I can, by using my own experience." ♥

Research Insight: Q&A with Dr Rachel Dreyer

After completing her PhD at the University of Adelaide, Dr Rachel Dreyer is continuing her cardiology research at the Yale University Center for Outcomes Research and Evaluation, in the United States. We caught up with her recently to find out how she is going and the exciting research underway!

What is the focus of your postdoctoral studies at Yale University?

I am an outcomes research scientist with particular expertise in women's cardiovascular health. My current area of interest focuses on examining sex differences in young patients (under 55 years) with acute myocardial infarction (AMI or heart attack). I am particularly interested in understanding how young women recover after an AMI by focusing on social factors such as health status (symptoms, functioning, quality of life), depression, and social support. I have recently expanded my research focus to examine other markers of AMI recovery such as hospital readmissions and return to work, as well as sex differences in cross country comparisons of post AMI outcomes in China.

More broadly, I am developing methods for assessing patient's health outcomes and measuring healthcare quality to guide medical decision-making. I am currently working closely with leaders in the field to quantify clinical change using health status instruments and in examining the discrepancies between patients' and provider's perspectives of recovery.

Why is it important to examine these gender differences?

Very few studies have focused on examining sex differences in peripheral artery disease (PAD or leg pain), as cardiovascular disease in general has been predominately viewed as a 'male based disease'- and available studies were focused on examining sex based differences in coronary artery disease. As a result of this, the American Heart Association released a 'call to action' in 2012 for more focused care and research that is sensitive to the specific concerns of women with PAD.

It has been important to examine outcomes of patients with PAD, as research in coronary artery disease demonstrated that women have poorer health status outcomes and worse in-hospital/long-term mortality than men. Thus, I was interested in examining whether or not the disparity in coronary artery disease also extended to PAD. Overall, my research has highlighted that in all aspects of cardiovascular disease, women are substantially worse off in regards to diagnosis, management and prognosis.

How will your current research benefit patients?

My research has revealed that the sex/gender disparity in cardiovascular disease is omnipresent and remains a major health issue both within/outside of Australia. The first step in improving outcomes for women has been in examining the long-term experience of these patients by examining factors

Dr Rachel Dreyer's research is leading the way for improved health outcomes for women after a heart attack.

that influence recovery. Data from my research will be used to generate empirical evidence that informs clinical care and in the management of female patients after an AMI, identifies targets for interventions to improve outcomes and address disparities in care delivery, and ultimately reduces morbidity and mortality in this patient population.

What do you enjoy most about being overseas and undertaking your studies there?

Working at Yale has been such a rewarding experience, and has influenced both my personal and professional development. I enjoy the opportunities to participate in a variety of different projects and collaboration with colleagues from various departments (i.e. Yale Center for Women's Health, Yale school of public health). There is such a breath of opportunity available to postdocs such as participation in coursework, the opportunity to publish in leading medical journals, participation in national forums/ conferences, and having the unique opportunity to be mentored by international leaders in outcomes research.

To read the full version of this story please visit www.australianheartresearch.com.au ♥

Share Your Story!

Have you been affected by heart disease? We would love to hear your story.

Contact us: krushforth@ausheartresearch.com.au

Young Minds of Heart Research

Clementine is very grateful to be supported by the generous AHR community.

Harbouring a love of science from a young age, Bachelor of Health Science Honours student Clementine Labrosciano is very grateful to be supported by a scholarship from Australian Heart Research and collaborating partner The Hospital Research Foundation to pursue her dream.

What inspired you to work in this field?

For as long as I can remember I have wanted to work in medicine. I was particularly interested in becoming a heart surgeon, but I sat the UMAT and GAMSAT several times and was not successful. I decided to look at alternatives, and realised medical research would also give me the opportunity to help and interact with people through my work.

Tell us about your project…

I'm working with patients who have Peripheral Artery Disease (PAD). In this condition, cholesterol blockages in the leg arteries result in a poor blood supply and thus leg pain on walking. My project is evaluating if the patients symptoms and quality of life are related to a standard diagnostic test for PAD – that is the Ankle Brachial Index (ABI).

The ABI assesses the blood pressure in the leg relative to arm blood pressure. Since we need accurate recordings, we use a machine called a Doppler ultrasound. If the ABI is low, then I can recruit the patient into my study, which involves obtaining important clinical details regarding the patient's condition as well as completing questionnaires regarding their quality of life. After this initial visit I then follow-up the patient's progress at 3, 6 and 12 months, after this initial visit.

Why is your research important?

There are 202 million people worldwide who suffer from PAD, not to mention those who are unaware they have the condition. Patients with PAD are at increased risk of heart attacks and strokes since the same cholesterol blockages can occur in the heart and brain blood vessels. Furthermore, the blockages in the leg can become so severe that they cause gangrene thereby necessitating leg amputation.

What does the future hold?

Although we haven't yet found a correlation between ABI and a person's quality of life, I am very excited about the interesting findings we have made and I will be exploring these in my thesis. Next year I hope to continue my studies and complete a PhD in this area, with a particular focus on research into health outcomes.

I want to continue working in a medical research area that will impact and educate people, and in ten years' time will revisit my goal of becoming a surgeon! ♥

Healthy Heart Recipe
Salmon Salad

- 4 salmon fillets
- 4 cups green beans
- 4 cups mixed salad greens
- 2 hard cooked egg
- 1 tbsp extra-virgin olive oil
- 1/4 cup red wine vinegar
- 2 tbsp dijon mustard
- 1 tbsp minced shallots
- 1/4 cup red onion
- 1/4 black pepper
- 1/4 tsp kosher salt

1. Preheat grill to medium-high.

2. Place beans in large pan of boiling water; cook for 2 minutes. Drain and plunge beans into ice water; drain.

3. Combine vinegar, mustard, oil, shallots, 1/8 teaspoon salt, and 1/8 teaspoon pepper in small bowl, stirring well with whisk; set aside.

4. Spray both sides of each fillet with olive oil; sprinkle with 1/8 teaspoon salt and 1/8 teaspoon pepper. Place fish, skin side up, on grill rack; cook 8 minutes or until fish flakes easily when tested with fork, turning after 4 minutes.

5. Arrange 1 cup greens in each of 4 bowls; top with onion, egg slices, and beans. Top with salmon; drizzle with dressing.

This recipe is courtesy of health.com