Australian Breast Cancer Research

# RESEARCH UPDATE

## Research Hope for Triple Negative Breast Cancer

**Can you imagine being diagnosed with a type of cancer that has no targeted treatments? This could change thanks to researchers at the Basil Hetzel Institute for Translational Health Research (BHI) who are working hard to investigate lifesaving treatments for triple negative breast cancer.**

Making up 15 per cent of all breast cancer diagnoses, triple negative breast cancer is harder to treat than other breast cancer types as it lacks the three receptors that serve as targets for anti-cancer drugs.

PhD student Joseph (Joe) Wrin knows the heartbreaking impact of breast cancer, sadly losing his beloved wife Leeanne to the devastating disease. Thanks to your support, Australian Breast Cancer Research and partner The Hospital Research Foundation is funding Joe, working under the supervision of Associate Professor Wendy Ingman to investigate new possible treatment methods that will save lives.

**Your continued support makes this lifesaving research possible. Thank you.**

Joe and A/Prof Ingman's research evolved from previous studies exploring how immune system cells called macrophages function during a woman's menstrual cycle, which A/Prof Ingman explains can play a role in a woman's breast cancer risk.

"We developed the idea that the immune system has different roles during a woman's menstrual cycle and there may be a window of breast cancer risk that opens up at a particular stage of the cycle," A/Prof Ingman said.

This idea led to the discovery that a protein made by macrophages, called C1q, guides the immune system towards tolerance of breast cancer cells.

"We've discovered C1q is an important protein in helping cancer evade an immune system attack, allowing the cancer to progress," A/Prof Ingman said.

**As triple negative breast cancer doesn't have a targeted treatment, our approach is to develop an antibody that prevents the action of C1q that can be used together with radiotherapy or chemotherapy, to help break immune tolerance to the breast cancer.**

Being a research assistant for over 30 years and now undertaking his PhD with a focus on saving lives from breast cancer, Joe has become instrumental in this research.

"C1q promotes an immune tolerant environment in the breast during a woman's menstrual cycle which unfortunately makes the breast vulnerable to cancer growth. I am hopeful my PhD can lead to a lifesaving cancer treatment that will end the heartache women and their loved ones experience from breast cancer," Joe explained.

An exciting development for the team, this research could potentially lead to treatments for all breast cancers.

"I've met some amazingly strong women who are trying to look after their family and dealing with breast cancer, sometimes terminal breast cancer. It motivates me to continue working to stop the heartbreak from this terrible disease," A/Prof Ingman said.

We look forward to updating you on A/Prof Ingman and Joe's progress as they continue their vital research into triple negative breast cancer. Thank you for your support.

*Image above: Joe Wrin and A/Prof Ingman's research could see a new treatment for breast cancer and save lives.*

# The Imprint Breast Cancer Leaves Behind – Through a Daughter's Eyes

**Australian Breast Cancer Research was recently contacted by a lovely donor who wanted to share the inspiring words her granddaughter Macey wrote about her experience of having both her mum and grandma diagnosed with breast cancer at the same time. We were blown away by this incredible and powerful piece of writing, giving a unique perspective on the effect a breast cancer diagnosis has on the whole family. This is why research into preventing and treating this heartbreaking disease is so important.**

*One of the most significant people in my life is my mum Fiona. She is a very loving, kind-hearted, caring, confident and strong woman who I admire and look up to very much.*

*In the year 2012 she was diagnosed with breast cancer and had to have both chemotherapy and radiotherapy. It was a very hard time for our family. To make things worse my grandma, who I am also very close with was also diagnosed with breast cancer exactly five months after my mum.*

*I remember my first time visiting mum during her chemotherapy and feeling sick. It was such a sad and depressing place to be and to see her like that was heartbreaking. One of the worst days was when she lost her hair and it still makes me upset to think about it.*

*I remember my mum sitting in the small bathroom of our old house and my dad standing behind her shaving her head. We were all crying, even my brother. Mum handled it better than any of us. My whole family was so relieved and happy when she finished her chemotherapy, but there was still a long way to go before she was cancer free. After six rounds of chemotherapy she had to have three months of radiotherapy every day. The radiotherapy was not as bad as the chemotherapy but she still hated it. Through all of her treatment mum maintained her job and continued to work.*

***Breast cancer is one of my biggest fears. It terrifies me to think of my mum or grandma getting it again and not making it through a second time. Both my mum and grandma are now fully recovered and healthy.***

*Mum used to work at a dental surgery, she was employed there as a dental nurse for over 20 years. A couple of years after she had her breast cancer she decided to apply for her dream job as a flight attendant. Ever since I was little I can remember my mum saying she wanted to be a flight attendant like my grandma was when she was young, but never thought it would happen. I was the one who encouraged her to do an application and try for a position. The selection process was very tough and over 500 applied for the position. They selected 20 people and she was in that 20. On her first try she was offered a position with Jetstar and has now been flying with them for two years. She absolutely loves her job and I am so proud of her for achieving her lifelong dream at age 46.*

*My mum and I have always had a close relationship and have always been there for each other and I know she will always support me no matter what. Both my mum and grandma have been very strong through all of this and I think I would be honoured and proud if I displayed that strength of character.*

*Image above: Macey and her mum Fiona who is now living breast cancer free.*

Thank you to the wonderful Macey for sharing her powerful words with us. We are so passionate about supporting research aimed at preventing breast cancer from devastating the lives of families like Macey's. Thank you for your kind support.

## SHARE ♥

Do you have a story like Macey's you would like to share? We would love to hear from you! Contact us at **contactus@abcr.com.au** or **(08) 8445 2453**

# Margaret Elcombe Grants Boost Breast Cancer Research

**Thanks to the incredible generosity of a very special Australian Breast Cancer Research (ABCR) donor, Dr Margaret Elcombe, two vital breast cancer research projects can move to pre-clinical trials to improve treatments for the heartbreaking disease that is breast cancer.**

The Elcombe Pre-Clinical Grant and the Margaret Elcombe Fellowship have been awarded to two projects based at the Basil Hetzel Institute for Translational Health Research (BHI) that are dedicated to saving the lives of women diagnosed with breast cancer. 100% of Dr Elcombe's kind donation has been directed to these critical projects.

## New Hope for Metastatic Breast Cancer

Awarded the Elcombe Pre-Clinical Project Grant, Dr Jenny Hardingham and Dr Amanda Townsend are part of a world-class team investigating a promising new treatment for metastatic breast cancer.

"For someone with metastatic breast cancer there are a reasonable number of treatment options but eventually sadly patients become resistant to them," Dr Townsend said.

*Dr Amanda Townsend and Dr Jenny Hardingham's research could lead to a new treatment for metastatic breast cancer.*

Through previous research into bowel cancer, the team has discovered a protein that plays a crucial role in the growth of breast cancer and the spread of cancer to other areas of the body.

"A water channel protein called Aquaporin 1 has been proved to play a vital role in helping breast cancer cells move to other areas of the body. If we can inhibit or block this protein's action this may lead to a new cancer therapy," Dr Hardingham explained.

Dr Townsend and Dr Hardingham are exploring the effectiveness of two different inhibitors that could block the action of this protein.

"It was found that if we blocked this protein it stopped angiogenesis, which is the formation of new blood vessels. New blood vessels are crucial for supplying the cancer tumour with the nutrients and oxygen it needs to survive and helping them metastasise to a distant site such as lung or bone," Dr Hardingham said.

"If succesful, this new treatment would be far less toxic than current chemotherapy and have fewer side effects," Dr Townsend said.

## Using Your Immune System to Target Breast Cancer

You may remember reading about PhD student Namfon (Bee) Pantarat in our last newsletter who is working on a component of a new immunotherapy treatment to target solid tumours, such as breast cancer.

This groundbreaking research is being led by Head of the Breast Cancer Research Unit at the BHI, Professor Andreas Evdokiou and now with the support of The Margaret Elcombe Fellowship this vital work can continue.

Prof Evdokiou, together with his team are developing a non-invasive injectable gel filled with patient's own cancer fighting T cells as a treatment for solid cancer tumours.

"The T cells will be infused into the gel, keeping them together, and then will be injected into the tumour environment where the T cells will identify and eliminate cancer cells whilst leaving normal cells unharmed," Prof Evdokiou said.

With previous research already demonstrating promising results, Prof Evdokiou is hoping to identify the best injectable system with the ideal characteristics for T cells to survive and migrate to the tumour site whilst maintaining their effectiveness of killing cancer cells.

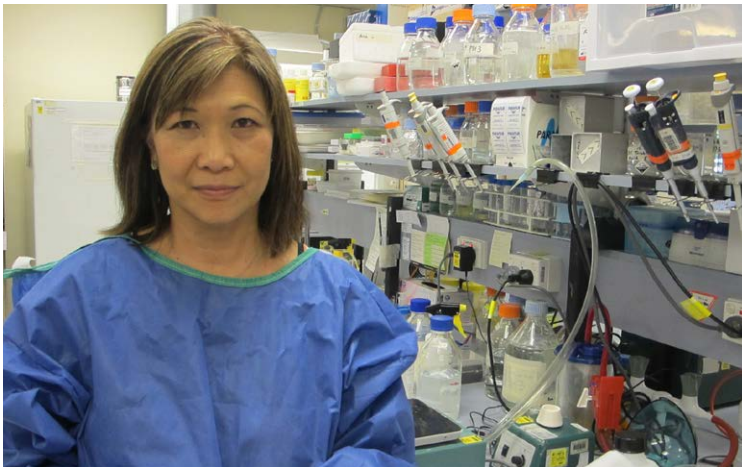
**"This is the first time that such an approach has been developed and if successful will maximise the success of current surgical interventions. Potentially this could be an alternative treatment to chemotherapy and radiotherapy."**

The generous contribution from Dr Margaret Elcombe will allow Prof Evdokiou and the team to complete their pre-clinical project and move quickly to clinical practice.

*Image above: Prof Andreas Evdokiou's gel will save lives from cancer.*

# The Fight to Halt Breast Cancer

**Head of the Cell Signalling Laboratory at the Centre for Cancer Biology (CCB), Associate Professor Yeesim Khew-Goodall is leading a crucial research project focused on overcoming resistance to cancer therapy, particularly in triple negative breast cancer.**



As you read on page one, triple negative breast cancer is one of the most heartbreaking forms of breast cancer which sadly has no current treatment. This is why it's so important to support a variety of different research projects that have one main goal, to find a targeted treatment for triple negative breast cancer and improve outcomes for women diagnosed with the devastating disease.

"While some patients may respond very well to chemotherapy, others don't respond at all and some will respond well but then their cancer comes back and their body has developed resistance to the chemotherapy," A/Prof Khew-Goodall said.

A/Prof Khew-Goodall and her world-class team at the CCB have discovered a gene and entire signalling pathway that plays a critical role in helping not only triple negative breast cancer but also other metastatic cancers become resistant to treatment and spread rapidly.

Now with the support of Australian Breast Cancer Research (ABCR) in partnership with The Hospital Research Foundation (THRF), the team can pursue this vital work.

**We've identified this gene and now a whole signalling pathway that may play a role in making cancer more resistant to therapy. We predict that this pathway makes the cancer cells tougher and more capable of surviving the harsher conditions that occur when cancer metastasises.**

"We are still at the early stages, but this funding from ABCR and partner THRF will allow us to continue working out what this pathway is doing and allow us to pinpoint exactly which cancers turn on this pathway and the properties that they have to turn it on."

Once A/Prof Khew-Goodall has proved this pathway plays a role in triple negative breast cancer, the next step will be looking at a treatment that blocks the action of this pathway to ultimately create a new therapy for the devastating disease.

"Thanks to the funding from ABCR and THRF we'll be able to validate the role this pathway plays, which we anticipate can lead us towards developing a drug.

"We are also hoping that by understanding how this pathway works we will be able to come up with ways to identify the particular group of triple negative breast cancer patients that will be harder to treat or are prone to the development of a secondary tumour. This could help doctors determine if a patient's cancer is likely to spread to other areas of their body."

With potential for wider application in other cancers including prostate cancer, colon cancer and even forms of lung cancer, A/Prof Khew-Goodall's research has the potential to save the lives of people in the future diagnosed with the heartbreaking disease that is cancer.

**We certainly think that what we've discovered in triple negative breast cancer will also be applicable to others forms of cancer where this protein and pathway is active.**

*Image left: This research led by A/Prof Khew-Goodall could lead to a lifesaving breast cancer treatment.*

You may have read about A/Prof Khew Goodall's vital research in a recent letter from us. Her work could lead to stopping the spread of this devastating disease, to help people like mother-of-two Nicky Roberts who is currently battling metastatic breast cancer. Your support will ensure A/Prof Khew-Goodall's research can continue in the hopes of finding a cure for this disease once and for all. Thank you.

# Breast Density Driver to Help Prevent Cancer

**Having a high breast density is one of the biggest driving factors for a woman's increased risk of breast cancer, yet to date there is little known about density or why it plays such an important role in breast cancer.**

It's your ongoing support that allows our researchers to lead the way in discoveries around breast density in the hopes of preventing women from receiving a devastating breast cancer diagnosis.

PhD student Maddison Archer has been working with supervisor and head of the Breast Biology and Cancer Unit at the Basil Hetzel Institute for Translational Health Research (BHI) Associate Professor Wendy Ingman on investigating a protein that plays an all important role in breast density and ultimately breast cancer.

"When a woman has a mammogram, the image appears black and white. The areas that appear white correlate with increased breast density and this is associated with an increase in a woman's breast cancer risk," Maddison said.

**Women with extremely dense breasts can have up to a four to six fold increase in breast cancer risk. In fact, breast density is one of the strongest risk factors for breast cancer.**

"Through previous studies in our lab we've discovered a link between a particular inflammatory immune protein called CCL2 and breast density, which in turn we think may increase a person's breast cancer risk."

To better understand this link and what it could mean for preventing breast cancer in the future, Maddison has spent the last few years investigating this all important protein and how it affects breast density and the growth of breast cancer.

"Currently there is not much known about the biology behind breast density, so this is why my project is so important. I've been working on studying the pathways of this protein in the body, to better understand what role it plays in women with high breast density," she said.

"I'm also studying how breast cancer develops in breasts with high density, so looking at tumours from early on and then checking in again at different stages of growth. This will help us determine if this protein is affecting the different types of tumours and how quickly they progress.

**Once we can understand a bit more about the effect this protein has on the breast and also on the cancer tumour and how it progresses, we might be able to find a way of blocking its action and reducing a woman's breast cancer risk.**

With knowledge proving to be power, this research could lead the way for doctors to better detect a woman's breast cancer risk and ultimately prevent many more from being diagnosed with this heartbreaking disease in the future.

*Image left: Maddison's research will save lives from breast cancer.*
*Image above: Maddison with A/Prof Wendy Ingman.*

## DID YOU KNOW?

**Almost 8 per cent of women aged between 40-74 years have extremely dense breasts. Breast density decreases with age, so dense breast tissue is more common in younger women than older women.**

*Thanks to research Belinda is cured from her breast cancer and is enjoying time with her beloved husband Paul and son Joshua.*

## A Life Saved Thanks to Research

The research you have read about in this newsletter will go on to prevent breast cancer from devastating more families, like it did to loving mother-of-one Belinda Tomaszewski last year. Whilst research saved Belinda's life, many others are not as fortunate, which is why research into this heartbreaking disease is so vital.

Belinda was diagnosed with breast cancer in October 2016, when by chance she visited her doctor to check the tenderness she was feeling in her left breast.

**"For three months something didn't feel right. I finally decided to see my doctor and the results found I had a two centimetre tumour in my left breast and it had already spread to three of my lymph nodes," Belinda said.**

"I was in absolute shock. I was told that my cancer was so deep into my chest wall that there was no way I would have ever felt it. If I had ignored the feeling and not had that appointment, my outcome would have been a lot worse.

"I began chemotherapy with my husband Paul by my side and our four-year-old son, Joshua."

Fortunately for Belinda, the early detection of her cancer, informed by research, saved her life. Her cancer tested positive for a certain protein that 20 years ago would have been a very bad diagnosis.

**"Researchers have now developed a blocker for this protein, which they didn't have years ago. This helped stop the cancer from spreading and saved my life."**

Your support of vital research means that dedicated researchers can continue finding treatments to combat the different types of breast cancer and save more lives like Belinda's.

**"It's thanks to research and early detection I am here today."**

*The Classic Ladies Foundation's community fundrasier raised an amazing amount for breast cancer research.*

## A Day at the Rodeo for Breast Cancer Research!

On Friday October 27, the Classic Ladies Foundation hosted the annual Tough Enough to Wear Pink Day at the Warwick Rodeo and Gold Cup Campdraft in Warwick, Southeast Queensland, raising vital funds for research into the prevention and treatment of breast cancer.

We're so excited to share the passionate team raised an amazing $20,856 for breast cancer research through Australian Breast Cancer Research (ABCR)!

With all competitors and spectators making a small donation to wear pink, the Classic Ladies Foundation also raised vital funds through designing and selling caps featuring the ABCR logo, hosting a raffle and auctioning five elite Campdraft stallion service fees.

Toni Hart from the Classic Ladies Foundation said they are overwhelmed by the generosity of the Rodeo and Campdraft community who have been incredibly supportive of their bid to raise funds and awareness.

**"The cause is very important to us, with everyone having some connection to breast cancer," Toni said.**

"Many people involved in campdrafting have in some way been directly affected by breast cancer. As friends and family of survivors, we all understand and appreciate the importance of scientific research and the hope it brings. For example, ABCR's support of research into hormonal breast cancer treatments will result in help for so many women in campdrafting who are enduring ongoing preventative treatment like tamoxifen.

**"A future without breast cancer will mean that we can live without fear in our lives. It will enable people to look forward to the future, and the fun and exciting times ahead with our families and friends at many campdrafts to come!"**

Thank you to the Classic Ladies Foundation for raising such an amazing amount for breast cancer research. Don't forget you can host a community fundraiser of your own! Contact us at **contactus@abcr.com.au** or call **(08) 8445 2453** to get started!

**We want to hear from you! What would you like to read about?**
**Get in touch with us at contactus@abcr.com.au**



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