



RESEARCH UPDATE

2016 Edition 1

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Research Finds New Functions for Old Enzymes

"Cancer is the wound that never heals."

PhD candidate, Vasilios (Bill) Panagopoulos is passionate about his potentially lifesaving research, hoping to find new ways to stop the spread of breast cancer.

Working with Professor Andreas Evdokiou at the Basil Hetzel Institute for Translational Health Research (BHI) in Adelaide, Bill is the lead PhD student looking at the enzyme, peroxidase, and how it contributes to tumour growth and the spread of breast cancer.

"I originally worked in a private biotech company where we discovered that these peroxidase enzymes, which have been known for a long time to have anti-bacterial properties, could assist with wound healing," Bill said.

"Wound healing and cancer share similar characteristics. The problem is that a wound knows when to stop and has an 'off' switch once the healing is done – whereas cancer doesn't have this 'off' switch, resulting in its continuous growth and spread.

"When I came over to the BHI to work for Prof Evdokiou, he applied this knowledge to cancer research – suggesting that with collagen being a hallmark in cancer growth and spread, perhaps these enzymes which are present in high levels in cancer could be playing a more sinister role than scientists originally thought."

Bill believes there is a general misconception within the community that cancers contain just tumour cells but explains that a vast array of cells exist within the tumour.



Passionate about his research, Bill is hoping to stop the spread of breast cancer.

These include fibroblasts (the main building cells within a tumour), immune cells and endothelial cells, which make blood vessels – this process is called angiogenesis.

"If there is an increase in angiogenesis within a tumour, this leads to an increase in blood flow, delivering oxygen and nutrients to feed the growing tumour, while also providing avenues for tumour cells to try and escape through the blood vessel system and circulate somewhere else in the body," he said.

With this in mind, Bill has found that peroxidases also promote angiogenesis and by looking at these two

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Breast Cancer - A Love Story

Over two years breast cancer free, Jenni Eyles says her diagnosis dramatically changed not only her own story, but that of her husband Craig and their two sons.

Jenni and Craig's love story began in their early 20's, and knowing instantly it was love, the two were engaged within five months.

"Jenni had a love of life and we connected very early on. I knew I had found my partner – someone who didn't care how goofy I was," Craig said while fondly remembering when he met the love of his life.

The loved up pair have now been together for 23 years after marrying in Hervey Bay, Queensland and moving to Adelaide soon after having their first son Joel who is now 20 years old, and later their youngest Blake who is 17.

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Jenni and Craig at the start of their love story.

Breast Cancer - A Love Story cont'd

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Craig was the first person Jenni called after discovering something was wrong with her original mammogram.

"I was in tears, I hated to hear my partner in pain," Craig said.

"We lived in a blur until we got the diagnosis. And then it was appointments one after the other – it was a whirlwind."

"Craig came to every appointment with me, it wasn't until well over 100 appointments that I told him I could do it on my own," Jenni added.

"We got asked by doctors how our relationship was going. It was then we realised that if you're not close to begin with then that's where you fall apart," Craig said.

For Jenni and Craig, who already had a loving and supportive relationship, cancer only strengthened their tight bond.

"Craig was the one holding the fort at home. Cooking and cleaning, shopping, looking after the boys, taking me out and making sure I was comfortable when I wasn't feeling well," Jenni said.

"The little things like holding my hand, telling me I was beautiful or being in public and putting his arm around me when I felt unlovable and ugly, it all made me love him even more."

"He was aware that I was in a stage where I thought that my life was ending. And so because he was aware of that he tried to make all those things that he knew I thought were special even better."

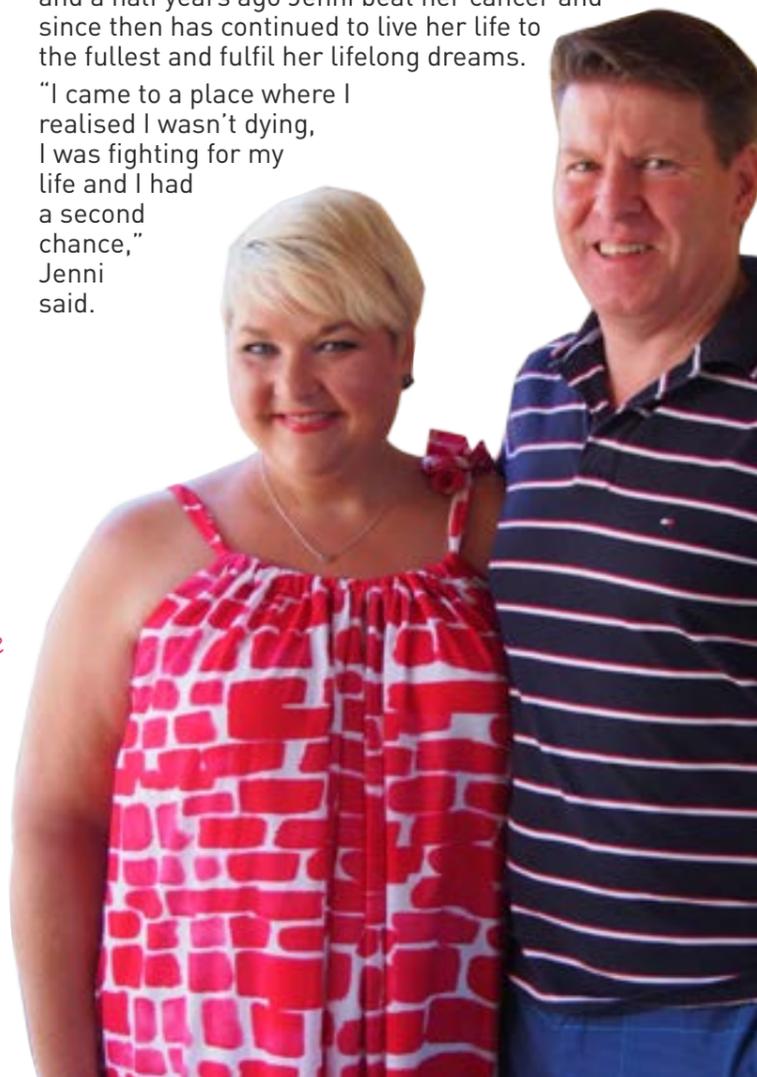
Cancer gave Jenni and Craig an appreciation for what they had instead of what they were going to lose. They weren't going to let breast cancer ruin their love story.

"My advice, try not to grieve on what you're missing out on because you're missing out on what is happening now – you need to make the most of every moment," Jenni said.

"And sometimes making the most of every moment is simply sitting in front of the TV!" Craig added.

With love and support from Craig and her two sons, two and a half years ago Jenni beat her cancer and since then has continued to live her life to the fullest and fulfil her lifelong dreams.

"I came to a place where I realised I wasn't dying, I was fighting for my life and I had a second chance," Jenni said.



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rationales, angiogenesis and the regulation of collagen production, has made some breakthroughs in the lab.

"I've been able to find that peroxidases do indeed promote tumour growth and enhance the spread of cancer to other parts of the body."

Bill is now looking at ways to stop the regulation of collagen production and the angiogenesis promoted by peroxidases and contributing to the growth and spread of breast cancer.

"We're now talking to potential collaborators who are developing specific drugs which could target and inhibit peroxidases with no side effects for patients."

Hopeful he can see this research through to a patient-based clinical trial; Bill says that this potential new therapy could be used in conjunction with chemotherapy or radiotherapy.



Bill is eager to follow his research through to clinical trials in the hopes of developing a new therapy for breast cancer.

"It's been really exciting in terms of the progression of the work from where it started to where it is now and I hope I can continue to follow it through," he said.

"It's something that you definitely need to be passionate about, while getting results has immense satisfaction and I love working in this area – ultimately developing improved therapies for breast cancer patients is my main goal!"

Bill's work is proudly supported by ABCR.

Young Mind Working Towards Breast Cancer Prevention

With the first year of his PhD coming to an end, Vahid Atashgaran is confident his research into the link between increased menstrual cycling and breast cancer will lead to promising outcomes for prevention of the disease in the future.



Vahid is passionate about his research hoping it will play a role in preventing breast cancer in the future.

"Based on the analysis of over 100 past studies we know there is a high correlation between an increased number of menstrual cycles and the development of breast cancer in women," Vahid said.

For each year younger a girl begins her menstrual cycle there is a five per cent higher chance of developing breast cancer. Similarly for each year older a woman is at the time of menopause, there is a three and a half per cent increase in her risk of breast cancer.

"Whilst we know this fact, it is not yet fully understood how the way the breast functions and changes during a menstrual cycle affects a woman's susceptibility to cancer.

A Tribute to a Much Loved Mum

In memory of their beloved mum who lost her battle with breast cancer 25 years ago, Pradiksha Oommen from Victoria and her sister Monisha cut off their locks raising an incredible \$1,606 for research into prevention and treatment of this heartbreaking disease.

"My sister and I wanted to do something special to mark the 25th anniversary of losing our mum. Cutting our hair felt like the most appropriate and confronting way to share some of what mum went through," Pradiksha said.

"While losing our hair would be uncomfortable, it's nothing in comparison to the emotions that someone with breast cancer would experience."

Pradiksha was three years old when her mum Susan lost her battle with breast cancer at the young age of 36, leaving behind four beautiful daughters.

"Mum was diagnosed with breast cancer at the age of 34 and underwent two years of intense treatment including a double mastectomy and copious rounds of chemotherapy.

"Only a few months after being given a clean bill of health, her doctors found the cancer had already done its damage, spreading to her bones and lymphatic system.

"We know that fluctuations of the ovarian hormones estrogen and progesterone during menstrual cycling affect the structure of the breast. So in every cycle that occurs over a 28 to 31 day period, the structure of the breast is changing."

Based on this knowledge, Vahid's project is focusing on the effects of estrogen and progesterone on the gene expression of the milk producing cells in the human breast.

"So far the results have been quite interesting with particular genes being significantly regulated upon hormone treatments," Vahid said.

"These genes are related to the immune system and could have implications on breast cancer risk."

Still in the early stages of his PhD, Vahid is eager to gain a larger sample size to confirm his findings and ultimately play a part in the fight for prevention of breast cancer in the future.

"Our goal is to understand and identify a potential gene or genetic pathways that we can target with preventative agents and then hopefully we can prevent breast cancer in the future.

"I think prevention is more worthy than a cure - we are trying to prevent breast cancer for a better future."

As for his plans after completing his PhD, Vahid is hopeful to continue with cancer research in Australia and harbours a long term dream of owning his own lab one day.

"I hope that one day I will find the solution for cancer prevention or the precise pathway for treatment."



A Young Pradiksha with her beautiful mum Susan.

"As our mum got closer to the end she carried her baldness with pride – this was our way of making her proud.

"I wanted the funds raised to go specifically to breast cancer prevention as well as treatment.

"Knowing my loved ones and I could potentially have a better chance of surviving breast cancer if there is better funding of research was the reason I chose to donate to ABCR."

Thank You to our Amazing ABCR Supporters!



A Year of Fundraising

This year Ciara Mountcastle is taking on as many fundraising events as possible in memory of her mother.

Starting the year off with a bang, in January Ciara hosted a quiz night and through activities on the night raised over \$1,200. She also just recently competed in the Sydney Herald Fun Run. Thank you Ciara!

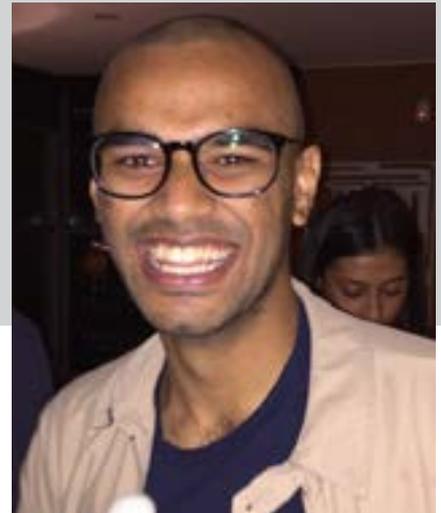
"We need all the help we can get to win the fight against breast cancer."



Losing the Locks for Breast Cancer

By bravely shaving his hair off Owi Weerawardena raised just over \$2,300 for vital breast cancer research. What an amazing effort!

"I wanted to do my part to give back."



A Birthday High Tea

A breast cancer survivor, Robyn Dawkins combined her 70th birthday celebration with raising funds for research. By hosting a High Tea on Sunday 31st January with her closest friends and asking for a kind donation to ABCR, Robyn raised an amazing \$630 for research. Thank you for your support Robyn and friends!

To read more about these amazing people and their fundraising efforts please visit www.abcr.com.au

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