RAH RESEARCHER

RAH RESEARCH FUND

Fundraising for medical research at the Royal Adelaide Hospital and with our research partners – the Hanson Institute, SA Pathology and the Centre for Cancer Biology.

Edition 1
2016

"Medical Research Saved My Life"

Michael Jordan was 16 years old living life to the fullest when he was diagnosed with Acute Lymphoblastic Leukaemia (ALL). His life was turned upside down.

It was Christmas Day 2014 when Michael awoke to a pain in the left side of his neck. Thinking little of it he continued to make the most of his school holidays and went away to Normanville.

A week into his stay, the neck pain became unbearable and his leg glands flared up to the point he couldn't walk. Opting to cut his trip short, Michael's mum rushed him to the doctor hoping to treat what appeared to be a bad viral infection.

"Blood test after blood test followed and all it pointed to was Glandular Fever," Michael said.

"One night I was feeling off, I didn't eat my dinner – when I am not eating there is definitely something wrong with me!"

Refusing to let his mum take him to hospital, Michael only conceded when he began vomiting.

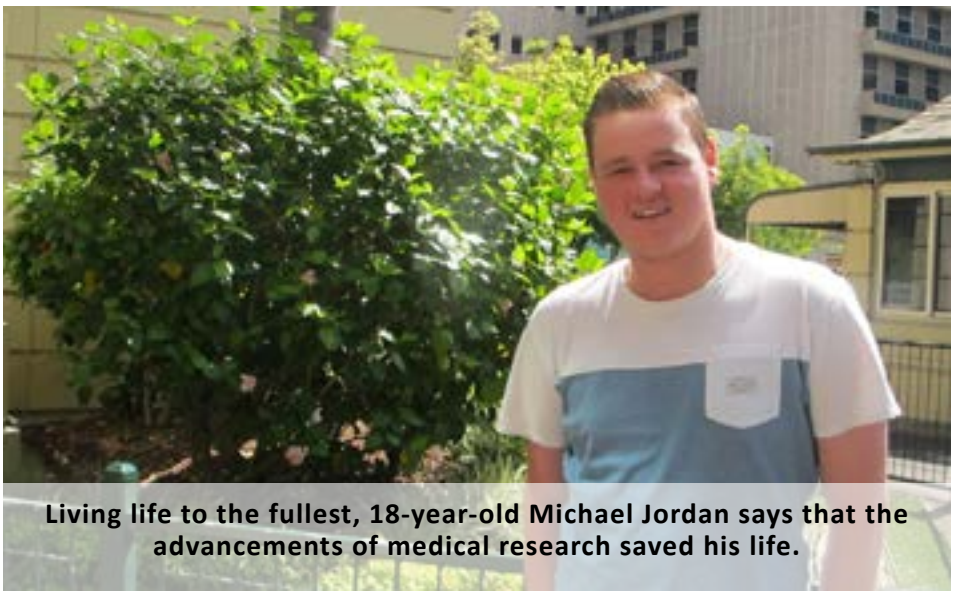
"I put up a huge fight, there was no way I was going to spend the rest of my school holidays in hospital!"

On 7 January 2015 at two o'clock in the morning, Michael was diagnosed with Leukaemia and after further testing, doctors confirmed he had ALL.

Immediately starting on steroid treatment, Michael soon learned his cancer was in the high risk category and he would need intense chemotherapy.

After nine months of treatment, Michael's doctors made the difficult decision that a bone marrow transplant was inevitable.

"The treatment wasn't working as well as doctors had hoped; the Leukaemia cells were still detectable in my bone marrow."



Living life to the fullest, 18-year-old Michael Jordan says that the advancements of medical research saved his life.

Having no full siblings, Michael's bone marrow was matched near perfectly with an unknown donor and he was transferred to the Royal Adelaide Hospital (RAH) for the transplant.

"Most children have to travel interstate to have a transplant, it was a massive relief for my family and myself that the RAH was happy to have me," he said.

"The transplant experience was the hardest thing I have done in my life."

True to his determined nature, Michael made it through the transplant and was home for a few months before complications began to arise and he found himself back in hospital.

"That was my longest and hardest stay in hospital. I was there for 11 weeks.

"It was made a lot easier by having access to a special Youth Cancer Service room at RAH which had a kitchen and a sofa bed for my parents to stay over."

Months later Michael received the all-important phone call.

"My doctor was too excited to wait until our next appointment, he told me my results had come back negative and I was officially in remission.

"It didn't sink in for a while, but when it did it felt like all the pieces of the recovery puzzle fell into place."

Now an 18 year old, Michael hasn't taken one moment for granted, already landing a job and recently accepting a place at Trade College to study Electro Technology.

"I am so grateful for advances in medical research. Without this donor's bone marrow I don't know where I would be. **It saved my life.**"

Investigating the Spread of Cancer

Metastasis – the spread of cancers to secondary sites in the body is the main cause of death in many types of cancers including breast cancer.

In a bid to determine ways to stop this spread and ultimately reduce the numbers of lives lost, Adelaide researchers are looking closely at a protein in the body, which has been found to be mutated in many of the common cancers.

Conducted by the Cell Signaling Lab at the Royal Adelaide Hospital-based Centre for Cancer Biology, led by Adjunct Associate Professor Yeesim Khew-Goodall, this exciting project has the potential to lead to new therapeutic treatment for cancers.

"What we are working largely on is a protein, named Pez, that we identified quite a few years ago and found it was mutated in many of the common cancers," A/Prof Khew-Goodall said.

"Around the same time we started noticing that different types of breast cancers have different amounts of this protein. Also the less severe forms of breast cancers, the ones that haven't started spreading within the breast, actually have higher levels of this protein.

"The cancers that have started invading into the surrounding breast cancer tissue have lower amounts of this protein – and we now have some evidence that those mutations cause that protein to become non-functional, assisting the cancer cells to spread.

"We believe the protein's normal job is to stop the cancer cells from growing, surviving and metastasising but for some unknown reason in some cancer cells, it's either mutated, no longer functional or its levels are decreased so that its function is also decreased in those cells."

A/Prof Khew-Goodall and her team have tested this idea in the lab and proven that the protein Pez does indeed act to suppress metastases.

'We've proven this, but we can't directly target the protein as a therapeutic – you can't take a protein like this orally or inject it to restore its function. We also don't want to stop this protein functioning, because that would make things worse," A/Prof Khew-Goodall said.

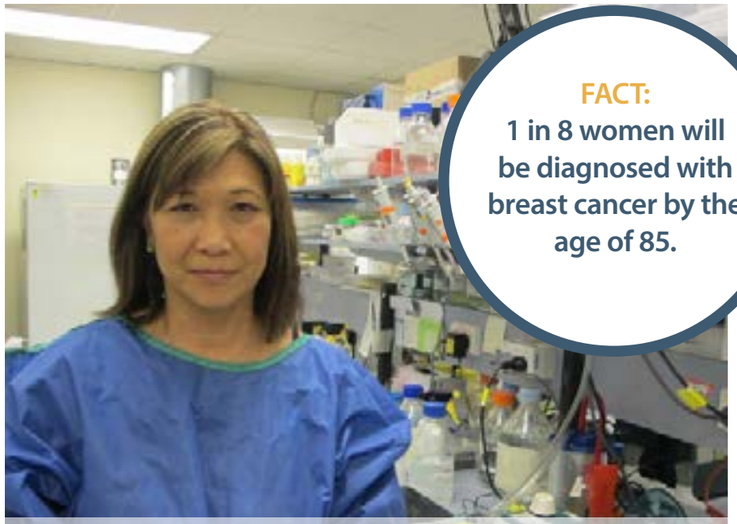
"So what we are now trying to find is what is allowing mutated Pez to promote metastasis. We're examining another group of proteins in the body, which we believe are what would actually be promoting metastasis in the absence of Pez.

"We now have all the clues and tools in place, to look for the actual drivers of metastases that counteract the action of the protein Pez."

"Once we've nutted down to the most potent proteins that we want to target, we will look into finding inhibitors of those proteins – so we can stop them functioning.

"So for cancers that have low levels of Pez, or have mutated Pez, if we can inhibit the opposing proteins, we can rectify the situation."

With this ongoing work, A/Prof Khew-Goodall says that the potential therapy that could be developed from these findings would need to be used in combination with other therapies.



FACT:
1 in 8 women will be diagnosed with breast cancer by the age of 85.

Dedicated to her research, A/Prof Khew-Goodall is hoping to one day contribute to stopping the spread of cancer.

"We don't think that this protein mutation causes cancer, but it certainly does assist and promote the spread," she said.

A/Prof Khew-Goodall believes it's important for the community to be aware of these types of research projects, in particular to understand how important lab-based research is in the development of new therapies.

"Everyone thinks they're invincible, but most people are touched by cancer in some way," she said.

"I think it's important for people to understand the work that goes into developing a new drug, it starts right here in the lab and is a very time-consuming exercise that requires the right amount of funding.

"I'm very passionate about this work and hope that one day it can contribute to stopping the spread of cancer – **that would be quite amazing.**"

Easy EFTPOS Payments and Shorter Queues!

The Royal Adelaide Hospital Kiosk run by the RAH Auxiliary is excited to now be able to provide EFTPOS machines with PayWave to its valued customer base.

In addition to the new EFTPOS machines, the Kiosk now has two queues to ensure customers are served as quickly as possible. Opening hours are weekdays 8:30am until 8:30pm with the coffee window opening earlier at 7am. The Kiosk is open on weekends from 10:00am to 4:00pm.

Located in the main entrance of the RAH, snacks and light refreshments are available from the Kiosk, including the organic range of Fix Rainforest Alliance certified coffee.

The Kiosk is part of the Royal Adelaide Hospital Auxiliary, which is busy planning its transition to the new RAH. Proceeds raised through the Auxiliary go towards the RAH's social work department as well as important hospital equipment.

Thank you for supporting this 90-year-old organisation, we hope to see you soon for a coffee!

The hard workers behind the RAH Kiosk look forward to seeing you soon for a refreshment or coffee!

Community Spirit Boosts the RAH Research Fund!

The RAH Research Fund has been so thankful for the support of the community with its two most recent fundraising events.

On Friday October 16 2015, the Gerflor Tee off Fore Life Annual Golf Day, raised an incredible $15,000 for the SA/NT Youth Cancer Service.

Held at the Adelaide Shores Golf Club, the fun-filled day saw 72 golf enthusiasts rally together and participate in auctions, raffles and novelty events to raise vital funds for young people living with cancer.

The following month, on Sunday November 15 2015, the RAH Research Fund sold 166 tickets to it's James Bond Movie Night held at the Regal Theatre on Kensington Road. This fun night raised around $1,600 for the RAH Research fund, which will be put towards vital research and patient amenities.

The RAH Research Fund would like to thank those who came to these events and support a very worthwhile cause.

The amazing Tee off Fore Life Team in 2015!

Food, Fun, Fundraising – Thanks to the Satay Hut!

The RAH Research Fund is very thankful to Adam Jones and his amazing Satay Hut!

A big thank you to the fabulous food truck – The Satay Hut.

Adam Jones, owner of The Satay Hut has been giving back to the community, and not just by feeding them!

Fortnightly on Friday's, Adam has positioned his enticing food truck near the RAH's main entrance, donating a portion of his profits from the day to the RAH Research Fund.

Keep an eye out for notices around the hospital with 2016 dates that you may see the Satay Hut out the front for a bite to eat.

Thanks again to Adam! We are so grateful for the support!

The Power of Protein: Managing Type 2 Diabetes

We've all heard about the benefits of protein in the diet, but did you know it could also have a beneficial effect on glucose control for Type 2 Diabetes patients?

A recently completed clinical trial has shown a small amount of protein, consumed 30 minutes before a meal, can effectively reduce the rise in blood glucose by stimulating the gut hormone secretion process and slowing the stomach emptying rate in patients with Type 2 Diabetes.

Led by Dr Tongzhi Wu, the successful recipient of the RAH Research Fund's 2015-17 Mary Overton Early Career Fellowship, the clinical trial was coordinated at the Centre of Research Excellence (CRE) in Translating Nutritional Science to Good Health.

Type 2 Diabetes has become one of the leading causes of disability and death in modern society. It is associated with the progressive loss of control in blood glucose, due to the body's resistance to the normal effects of insulin, as well as the gradual loss of the production of enough insulin in the pancreas.

The cause of Type 2 Diabetes is unknown but associated with strong genetic related risk factors and lifestyle risk factors, such as diet. It is estimated that more than a third of Australians will develop Type 2 Diabetes within their lifetime, creating a significant health burden for the community.

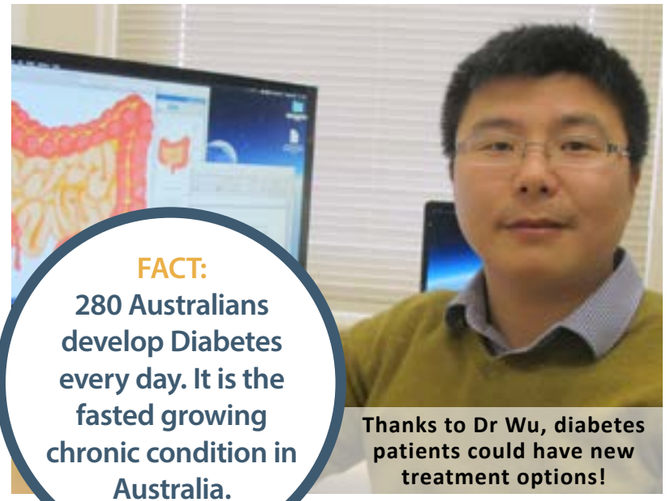
Dr Wu believes that effective nutritional strategies at an affordable cost, represent the greatest opportunity in the treatment of Type 2 Diabetes.

"Protein is a powerful source of nutrition that can stimulate the gut to release a number of hormones, which are important to the regulation of blood glucose and appetite. In general, a high protein diet is often associated with an improvement in blood glucose control and weight loss – but this can be challenging in the long term. Based on the responses of the gut to protein from our previous studies, we developed a new dietary strategy for the management of Type 2 Diabetes.

"The patients drink a small protein shake, 15 minutes to half an hour prior to the main meal as a 'preload', and the secretion of gut hormones and slowing of the stomach emptying can lead to better blood glucose control after meals. We've also found that when used in combination with a certain class of diabetic medications that prevent inactivation of the gut hormones; this protein preload can reduce blood glucose even more.

"The dose of protein is also relevant; when we used a relatively high dose, the improvement in blood glucose was even greater than that typically seen with some diabetic medications – the effect is not just mild…it's dramatic."

Together with colleagues Professor Chris Rayner and Dr Linda Mignone, Dr Wu is now evaluating the efficacy of the protein preload strategy in an Adelaide-based 12-week trial, involving 240 Type 2 Diabetic patients aged between 18 and 75. The outcome of this study will further validate the use of a protein preload in the treatment of Type 2 Diabetes.



FACT:
280 Australians develop Diabetes every day. It is the fasted growing chronic condition in Australia.

Thanks to Dr Wu, diabetes patients could have new treatment options!

Originally from China and with a background in endocrinology and an interest in diabetes prevention and intervention, Dr Wu was drawn to Australia – Adelaide in particular, to undertake his PhD at the CRE in Translating Nutritional Science, where he still works at today.

Through his research, Dr Wu has developed substantial expertise in relation to the gut physiology and regulation of blood glucose and appetite, and he believes that diabetes can be effectively managed and, hopefully, prevented by practical dietary strategies.

"This centre is very well known and I decided to come here because they coordinate clinical research, which is highly translational," he said.

"One of the things I love about working in Australia is that the community have the spirit to participate in trials to achieve a better understanding of medical knowledge. In many other countries, it's much harder to recruit patients."

The award of this three-year fellowship has helped Dr Wu further extend and enhance this vital research, and also made him decide to reside in Australia permanently.

At the Heart of Medical Research

Patient volunteers are critical to successful medical research. They are the people who offer their valuable time to help researchers better understand diseases, trial new treatments and hopefully one day in the future, find cures.

For 71-year-old Michael Chiew from Burnside, being a volunteer patient involved in Type 2 Diabetes studies, was a very easy decision.

Born in Malaysia, Michael moved to Adelaide for his high school education and also attended Adelaide University, a time when he met his wife who currently works as a nurse.

Once he retired from running a Teppanyaki Restaurant, the first of its kind in Adelaide, Michael decided to use his free time to volunteer to help the community in a number of ways. One of these included becoming a patient in clinical trials run by Dr Tongzhi Wu at the CRE in Translating Nutritional Science to Good Health.

"My father had diabetes and then I was diagnosed with Type 2 Diabetes over 10 years ago. Apparently it can be quite common in the Asian population – it's suggested this could be related to the diet, which includes a lot of rice," Michael said.

"A couple of years ago, I was very interested to hear about what the Centre is doing here in Adelaide – I was very happy to become a patient involved in their studies.

"By being involved in these types of research projects, I may be able to find a benefit for myself, as well as people in the community.

"I've now been involved in two studies here at the Centre and the current one involves having a tube placed inside the gut for administration of nutrients into the different areas of the intestine – but these types of procedures help the researchers better understand how the gut facilitates blood sugar control. This then provides important knowledge for developing dietary intervention for diabetes, so I'm happy to offer my time.

"I think research is very important to find out any cures or other ways to improve people's lives."

Michael lives with his wife and has two daughters and two grandchildren who live in Melbourne. Since retirement he spends his time exploring the world, keeping healthy with regular exercise and keeping to a strict diet when he can.

We'd like to thank Michael for offering his time to be involved in these studies.

Thanks Michael! We are so grateful to people like you, helping our researchers make exciting new findings.

For more information on participating in a trial at the CRE in Translating Nutritional Science, please visit ***www.adelaide.edu.au/cre-nutrition/about/participate*** or phone ***8222 2960.***

Young Minds of Research: Pregnancy Immunology

University of Adelaide Medicine Student, Anna Zeng is hoping to help women around the world by predicting the risk and onset of the most common medical complication in pregnancy – pre-eclampsia.

Anna Zeng loves working in a field that could one day benefit future mothers.

Growing up around science, Anna had always considered a career in the health industry, but it wasn't until she completed work experience at The Royal Women's Hospital in Melbourne that she decided it was medicine that really appealed to her.

"I enjoyed the atmosphere of working in a hospital – a changing environment where you work as part of a team and are constantly challenged," she said.

As the recipient of a RAH Research Fund Scholarship for her Honours study, which she has recently completed, Anna's project examined pre-eclampsia, a serious disorder of pregnancy characterised by high maternal blood pressure, protein in the urine and severe fluid retention.

The most common serious medical complication of pregnancy, pre-eclampsia affects around five to 10 per cent of all pregnancies in Australia. One to two per cent of cases are severe enough to threaten the lives of both the mother and her unborn child.

"I first heard about the concept of pregnancy immunology during my second year of

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Preventing Neck Dislocation

PhD student Ryan Quarrington is pursuing his love of mechanical engineering and interest in research by examining Cervical Facet Dislocation, a potentially devastating neck injury that often causes spinal cord injury and is frequently a result of car accidents.

With support from the RAH Research Fund, Ryan is hoping his research will one day be able to protect people from this type of injury, which generally requires immediate surgery.

With a love of mechanical engineering, even PhD student Ryan Quarrington wasn't aware that this type of research was possible!

"The point of my project is to understand why this type of neck dislocation occurs and how it works. We have been looking at admissions at the Royal Adelaide Hospital over a ten year period to find trends in the cases," Ryan said.

"No one really knows how this injury occurs, but we propose that in most cases they are a result of combined compression, rotation and bending of the head."

With little published research to date, Ryan aims to discover the underlying biomechanical causes of the neck injury, designing his own custom apparatus for the mechanical testing.

"The testing I am undertaking focuses on a particular region of the human spine, made possible by people who donate their body to science," Ryan said.

"Using specialised machinery I investigate a specific part of the human anatomy that fails during this injury and test how much force it takes to actually break it."

"From this information I am hoping clinicians will be able to look at particular patients with a fracture in this anatomy and estimate how much force was applied to affect it."

Ryan's overall hope is to provide guidance to help prevent this neck injury occurring, whether it be providing suggestions for new crash test dummies or giving clinicians more information about what to look for to save the time and cost involved with further clinical examination.

"I'm hoping down the line my research will be able to help protect people from this injury all together," Ryan said.

Ecstatic his research has the potential to help so many people; Ryan plans to continue in spinal research after his PhD.

"I feel as if I am contributing to improving people's lives and while I never thought I would find myself in this type of research – **I really enjoy it!"**

Young Minds of Research cont'd

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university and when I initially contacted my supervisor, Dr Shilpa Jesudason, I mentioned my interest in this area.

"Fortunately, she had a potential project looking at several immune cells in pre-eclampsia, which would expand on a pre-existing project – I was very willing to take this research on."

Anna's Honours project aimed to provide an overall snapshot of the immune system in pre-eclampsia and normal pregnancy.

"What made this study so new and exciting is its focus is on multiple components of peripheral blood (the primary method for transporting nutrients such as oxygen and carbon dioxide), measured simultaneously in a cohort of women," she said.

"This focus on peripheral blood meant that any differences found between pre-eclampsia and normal pregnancy may be able to be applied into clinical practice in the future."

Grateful for the support of the RAH Research Fund and its community of donors, Anna is hopeful that results from her research will help predict the risk and onset of pre-eclampsia in pregnant women and provide potential for further research.

"It's great to see the research fund not only supports long-standing researchers but also students like me who are just starting a career in research."

With this exciting Honours project complete on her expanding resume, Anna will now continue her degree in medicine and has considered specialising in obstetrics, anaesthetics or transplantation medicine."

"This year has also inspired me to do a PhD in later years and pursue clinical research in the future."

As a young student, Anna is thankful for the support of the RAH Research Fund.

Bench to Bedside Approach for Inflammatory Disease

Associate Professors Susanna Proudman and Vidya Limaye, rheumatologists at the Royal Adelaide Hospital, are some of the first to take a bench to bedside approach to their research into rare rheumatic diseases and the effects on a patient's quality of life.

Dedicating their research to patient cohorts with specific inflammatory diseases, A/Prof Proudman's research focuses on early rheumatoid arthritis and scleroderma and A/Prof Limaye's interest is around inflammatory muscle diseases.

A/Prof Limaye explained that because these diseases are rare, they are not commonly understood, leading to the pressing need for research in these areas.

"We have accrued among the largest cohorts of patients in Australia with these particular diseases. They come to us knowing that we have developed programs that deliver best practice care," said A/Prof Proudman.

The point of difference offered by these programs is the time dedicated to meeting with patients and applying the best practices to meet their individual needs.

"Since we have a large cohort of patients we have become experts in best practice for the diagnosis and treatment of these diseases – I think our patients benefit from that," A/Prof Proudman said.

Recently A/Prof Proudman's research has led to exciting discoveries around the benefits of fish oil in controlling the progression of rheumatoid arthritis.

"This was a big success. We discovered patients didn't need as many of the disease modifying therapies that we normally use to manage the disease."

Drawing on this success, A/Prof Proudman is now part of a nationwide Australian study looking into ways to prevent some of the most life threatening complications associated with scleroderma, an autoimmune disease of the body's connective tissues.

"There have been a range of studies and publications on how to identify some of the most life threatening complications of scleroderma earlier to treat better and improve survival rates," she said.

"Our group ,which includes interstate collaborators, received a grant to look at the addition of anticoagulation (agents used to prevent the formation of blood clots) to the conventional therapy to see whether that improves survival outcomes."

Also managing a significant patient database, A/Prof Limaye's research is looking into the inflammatory muscle disease, inflammatory myositis (inflammation of the muscles), which is commonly associated with scleroderma.

"Within our research we have identified antibodies that are seen in particular sub groups of myositis and may impact the way a patient responds to certain treatments," A/Prof Limaye said.

Face-to-face with patients, A/Profs Proudman and Limaye are bringing their research to the forefront of clinical practice.

"We also have a project that is trying to work out the risk of heart disease in patients with myositis."

For both A/Prof Proudman and A/Prof Limaye, the rewards come from meeting with patients on a daily basis and having them involved in the research process.

"Our work is mainly clinical research, the patients we deal with get the best quality of care in the end," A/Prof Proudman said.

Building their patient numbers, A/Prof Proudman and A/Prof Limaye's research is gaining international attention with a number of researchers approaching them for collaborations internationally and asking their help to test new therapies.

"They come to us to analyse our patient information and samples, provided anonymously, and to test new therapies which have come from this type of research," said A/Prof Proudman.

"It's that bed to bedside translational research."

Muffin Run Fridays Comes to The RAH!

The inaugural RAH Research Fund Muffin Fridays' was a huge success with the hardworking staff around the Royal Adelaide Hospital.

The initiative, driven by staff of the RAH Research Fund in partnership with The Hospital Research Foundation, was delivered as a way of saying thank you and putting a well-deserved smile on the faces of the dedicated staff who work so hard to provide the highest level of patient care.

Since commencing on September 23, delicious muffins have been delivered to Wards in the East and North Wing as well as Emergency, operating rooms and outpatient clinics.

Everyone has been very surprised and appreciative of the gesture! Thanks again to all the hardworking staff.

We hope you enjoyed your Friday treat! We'll be back in 2016!

Morgan from the RAH Research Fund ready for a muffin delivery!

WE HONOUR THEIR MEMORY

Donations were received between 1 August 2015 and 4 December 2015 in memory of the following people:

Martin O'Neill
Brian Thomas Sweetman
Tessa & David Lysaght & Back
Arturo DeNicola
Dorothy (Dot) Gray
Leeanne Mary Norton
Francesco Care
Wayne Philip Schumacher
Terry Seymour
Michelina Theresa (Micky) McGuire
James Heath
Beverley Goldring
Shirley Philbey
Cosimo Iasiello
Eileen Oxlade
Callistus (Reggie) Seimon
Matilda Alice (Jan) Patten
Robin (Bob) Kennedy
William Trevor Tippins
George Robert Daws
Ronald John Fitch
Roberta Stuart
Eugenia Matsimanis
Guido Frocione
Trevor Ross (Molly) Shephard
Bodil Synove Creasy
Donald (Donny) MacLeod
Nicola Scalzi
James (J) Harkness
Mitchel Anthony Theophilus
Audrey Norma Furber
Apostolos Papamihail
Michael Peter Desborough
Maurice Robert Keane
Johanna (Anie) Van Vrijaldenhoven
Barbara Claire Holmes
Malcolm Carl Nitschke
Harry Nikolopoulos
Neil Desmond Sheridan
Giuseppa Ielasi
Albert Ronald (Ron) New
Evangelia (Loula) Papadopoulos (Pappas)
Thelma June Clasohm
Peter Ladas
Andrew John Debney

CELEBRATORY DONATIONS RECEIVED

Thank you to those who sent in donations to celebrate the following events:

- For the 70th birthday of Helen McLoughlin
- For the birthday of Trevor Hurst
- For the birthday of Lara & Lila Nassery
- For the 70th birthday of Nanette Mayne & B Spry

Have you been treated at the Royal Adelaide Hopsital and would like to share your story?

We're always on the lookout for patients or supporters who are willing to talk to us about their experience. This is a great way to become involved and connect with our very friendly community.

If you're interested in sharing your story, please contact us on 08 8222 5281
EMAIL: RAHResearchfund@sa.gov.au.