

Franklin Women

July 2015 Newsletter

I am excited because tomorrow is August and that means National Science Week is around the corner. National Science Week reminds me of the [Sciencentre](#) in Queensland (my favourite place in the whole world – the shrinking room never gets old!) except it is open all week and all around the country. Looking at the website you are spoilt for choice for events which makes me happy because it means more scientists are out there sharing their stuff with the public and more of the public are wanting to know about science.

To keep with this theme, this month's newsletter is showcasing women in research who are doing some pretty cool things in the Sci Comm arena, like a wearable textiles fashion show, need we say more!

Enjoy scrolling through the [Science Week event list](#) and we might see you at one or two of them...

Melina and the FW team

PS. FW are plotting a Science Week event for next year. It involves art. If you love art (especially mixing it with science) or do something artsy, drop us a [line](#) – we need you!



What happened this month

- There was a call for participants in the Science in Australia Gender Equity ([SAGE](#)) [pilot of the Athena SWAN Charter](#) that aims to improve gender equality in STEM organisations.
 - [MJA podcasts](#) featured an interview with new NHMRC CEO Professor Anne Kelso, who shared some of her thoughts on research translation and women in science.
 - The [Franklin Women Blog](#) has a fantastic new post where Julia Archbold speaks about her journey from medical research scientist to freelance medical writer.
 - Applications for the [Centenary Institute's Lawrence Creative Prize](#) are open where bold young researchers can win up to \$25,000 (!) to answer some of life's big questions in the most creative way.
 - [Lego](#) added more women in science to their little toy line up. Hoorah! We wish these were around when we were kids!!
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FW Journal Club

This month's Journal Club contribution comes from Dr Simone Barry, Respiratory and Sleep Physician and PhD Scholar at the Centenary Institute, Sydney. Happy reading!

[Barry SE, Chan B, Ellis M, Yang Y, Plit ML, Guan G, Wang X, Britton WJ, Saunders BM. Identification of miR-93 as a suitable miR for normalizing miRNA in plasma of tuberculosis patients. J. Cell. Mol. Med. 2015;19\(7\):1606-13B](#)



What were the aims of this research? This study was brought about as I have been looking at developing a new biomarker that would aid in the diagnosis of tuberculosis (TB). TB is an infectious disease that results in the death of about 1.5 million people a year. Diagnosing TB at times can be quite difficult and new biomarkers are urgently needed. I have been examining small non-coding microRNAs and their role in TB. These microRNAs have been shown to be remarkably stable in cell-free form making them a good potential biomarker in plasma. There is plenty of research out there that has shown their potential as a biomarker in other conditions such as malignancy. I have been examining their expression in plasma samples of patients with TB and healthy subjects and

comparing their expression profiles using quantitative real time PCR. In order though to correct for non-biological variation in expression that can come about by sample preparation as well as reaction efficiency, a normaliser, or a stable microRNA, is required. Previous research had shown that finding a suitable normaliser is both disease and tissue specific so we set out to find a suitable normaliser in plasma that would be stable in both patients with TB and healthy subjects. Our cohort of patients came from two distinct populations: one in north-west China and the other from Australia, so the second aim of the study was to examine whether geographical or ethnic differences influenced microRNA levels.

What are the take home findings of your research? 1. microRNA expression varies widely depending on disease state and also tissue-type being examined; 2. microRNA expression may be influenced by other factors such as ethnicity and/or geographical location; 3. When performing PCRs it's important to normalise your data to control for non-biological variation.

How does this research contribute to the field? This research shows that microRNAs do vary between disease states and may indeed serve as a good biomarker. It also highlights the need to examine reference microRNAs in each population that you are intending to study to ensure that the variation in microRNA expression that is seen is related to biological variation and not due to external factors such as sample preparation.

Who are your collaborators and how did your work relationship come about? This study recruited patients from St Vincent's Hospital in Sydney where I work and also in Yinchuan China. One of my scientific colleagues had established links with Yinchuan and to my great fortune she invited me to join in. Our collaborators in China have been great to work with and are very enthusiastic about scientific research.

What is your current role and organisation and how long have you been there for? I'm a thoracic physician at St Vincent's Hospital in Sydney and I've been there for about 3 years. I have also been a PhD student for the last 4 years having just submitted my thesis. I'm also a new mum to a beautiful 1-year-old boy.

What new skills or projects are you currently working on? My interests are in TB and I'm quite keen to start up a telehealth-type service with PNG to assist in the programmatic management of TB.

Who is a woman that inspires you? Strong women really inspire me. The most obvious would be Aung San Suu Kyi who has spent the majority of her life fighting to bring democracy to her military-ruled Myanmar.

What food have you eaten too much of in your life? Definitely cheese, it has become my post-workday staple. It's way too delicious to give up.

Have you published recently? Firstly congratulations! Secondly drop us a line at hello@franklinwomen.com. We'd love to hear from you and are always on the lookout for journal club contributors for our newsletter.

The Laborastory

Sharing the stories of the people behind the science in Melbourne...

The Laborastory is a monthly show that brings together five scientists from different fields to share the story of their science hero (because we all have one!). They share the tragedies and triumphs of the men and women who made science their passion and left legacies of groundbreaking discoveries that inspire the scientists of today.



Dr Katie Mack

"We wanted to put on a science-related show that we would want to see. We thought we'd start with the theme of 'heroes' and then take it from there," explains Natalie Bedini, one of the organisers, "but then after the first show in 2013 we were so blown away with the quality of the stories, we decided to stick with the theme." It has been running ever since with sell-out crowds.

The stories are often funny and always very entertaining, which might at first surprise people that scientists can be entertainers. Maybe it's because they are sharing stories about subjects they're passionate about, their enthusiasm entralls the audience. Often you'll hear

stories from close-to-home that you might not have heard of before such as the tragic story of Australian bacteriologist [Dora Lush](#) by medical researcher Dr Krystal Evans, or the story of [David Unaipon](#), who features on our \$50 note, by medical researcher Dr Mel Thomson.

One of the stories from the first show is still one of Natalie's favourites. "The story of [George and Mary Papanicolaou](#) by pathology trainee Dr Clare Hampson is very funny but also highlighted the significant role Mary played in George's discovery of the cervical smear. Dr Hampson is a natural comedian."

The Laborastory is held on the first Wednesday of every month at The Spotted Mallard in Brunswick, Melbourne. Have you got a story you'd like to share at The Laborastory? They're always on the hunt for speakers so please get in touch with [Natalie Bedini](#). Or if you just want to enjoy a good science story you can hear all the past stories [online](#) or why not stop by one night.

Natalie Bedini is one of the co-founders of the Laborastory. She is a pharmacist and editor and has produced shows for the Melbourne International Comedy Festival and Melbourne Fringe Festival. For further information and details of their stellar [Science Week event](#) (which will include a choir of mathematicians!) visit thelaborastory.com.

Wearable technology

When biology, technology and fashion combine



Wearable technology sounds very futuristic but the Victorian Women in Engineering (WIE) Affinity Group (part of the Institute of Electrical and Electronics Engineers) has been working on a Wearable Technology project since 2014. This has included a series of workshops on e-textiles and wearable electronics where they use the LilyPad Arduino – a sewable microcontroller – which can be sewn to fabric using conductive thread and programmed using Arduino software. Yep.



Our first workshop was in November 2014 and we have since had 12 workshops and an E-Sewing Hackathon, attracting a wide audience of programmers, fashion designers and high school students. During the workshop, participants are introduced to how this microcontroller and a set of sewable electronic modules can be used together to create interactive garments and accessories. They use conductive thread to sew circuits onto fabric using switches, sensors and LEDs and program them to create different effects. The [E-Sewing Hackathon](#) held in July was also an exciting full day event which saw some intense sewing and programming by attendees who aimed to come up with a working wearable tech design!

While these workshops are just a start, we believe there is great potential for wearable technology to be used in different fields, in particular for health monitoring. Physiological parameters such as temperature and pulse can now be detected using low-cost sensors sewn into clothing. The applications in this field are endless....

If you want to see some of this potential first hand, WIE is organising a National Science Week event called [Energised Fashion Runway](#) at RMIT University on the 22nd of August 2015. The runway will showcase designs from the workshops as well as work selected through a call to the general public and collaborations with universities and schools. If you are in Melbourne please stop by or [drop us a line](#) to learn more about our wearable technology projects!

[Mehrnaz Shoushtarian](#) graduated with a PhD in Biomedical Engineering from Monash University in 2008. Her research interests include measurement and processing of physiological signals using conventional and novel recording techniques. She is currently Principal Scientist at Cortical Dynamics Ltd and volunteers with IEEE Victorian Women in Engineering as Vice-Chair.

We are loving right now...

Science communication!! Here at Franklin Women we're passionate about communicating science and medicine to other experts and the general public alike. Here are some of our current favourite science communication bits and pieces:

- A [science book a day](#) helps keep the boredom away, there's even an edition published on [Rosalind Franklin](#)!
 - Want to know more about science communication? [Australian Science Communicators](#) and [Science in Public](#) have some great resources and event notices
 - Need some practical Sci Comm tips? Check out this [handy toolkit](#)
 - Feeling ready to try your hand at it? [Fresh Science](#) is a national competition held across the country next month to help early career researchers share their stories of discovery
 - This [rap your science video](#) is a hilarious example of innovative ways that videos can engage the public with scientific research (and possibly earn some funding!!)
 - On that note, check out some of the amazing projects being shared by researchers via [Thinkable – an innovative platform to promote and fund research](#)
 - Don't forget to celebrate all things science and technology during [National Science Week](#), 15–23 August 2015!
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We want to include your contributions in our newsletter. If you have published your work recently or are doing (or know of) something that other women in our field would be interested in, drop us a line at hello@franklinwomen.com. Want to receive our newsletters directly to your in-box? [Subscribe here](#).