Australasian Society for Immunology Inc.

Let them eat cake

Celebrating the Day of Immunology throughout Australasia

Also in this issue

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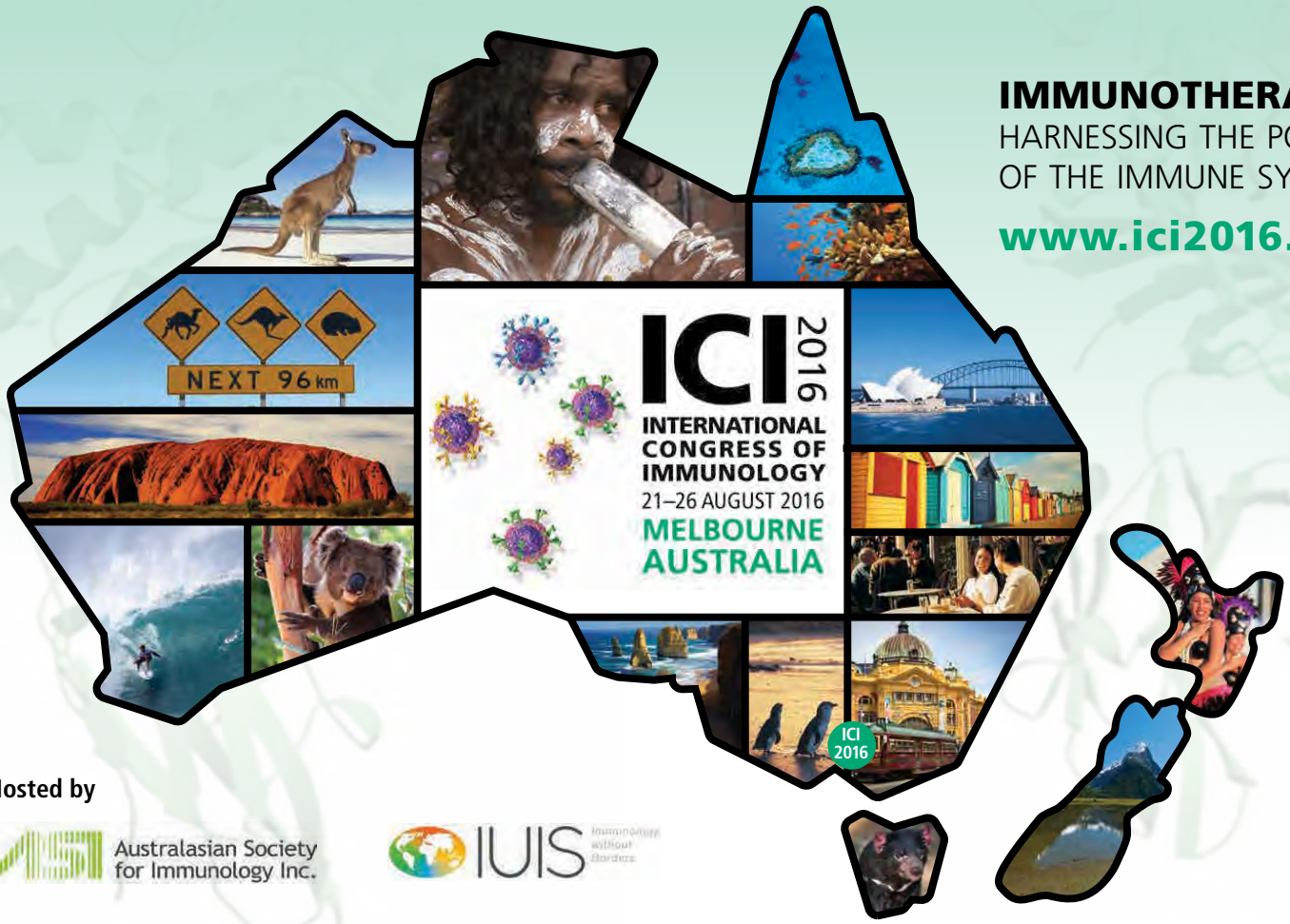
International Congress of Immunology 2016



IMMUNOTHERAPY:
HARNESSING THE POWER OF THE IMMUNE SYSTEM

www.ici2016.org

Hosted by

Australasian Society for Immunology Inc.

IUIS

Invitation from the ICI 2016 President

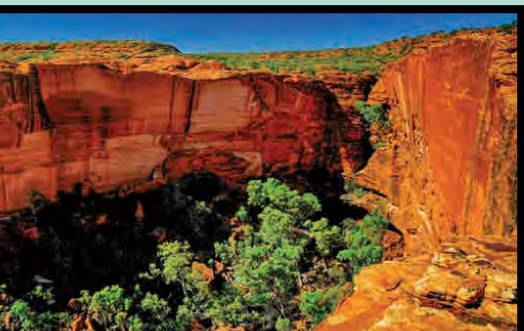
ICI 2016 promises to be an unforgettable event that will bring together delegates from all over the world. We anticipate over 3000 participants, including international leaders at the forefront of the discipline that will present the most recent advances in basic immunology and clinical treatments.

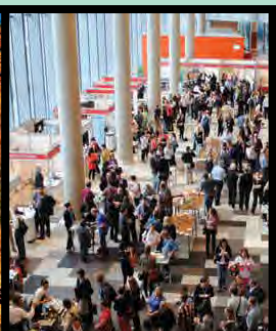
This is an opportunity to be part of a major international immunology meeting in Australia as the last ICI was held in Sydney back in 1977.

The Congress will provide a key networking and educational interface for colleagues from industry, university, health providers and independent research organisations to come together.

José A Villadangos

Jose Villadangos
President, International Congress of Immunology 2016
Peter Doherty Institute and Bio21 Institute, The University of Melbourne





SOME OF THE CONFIRMED SPEAKERS

Shizuo Akira
Osaka University, Osaka Japan

Jim Allison
The University of Texas, Houston Texas USA

Yasmine Belkaid
National Institute of Allergy and Infectious Diseases, Bethesda Maryland USA

Xuetao Cao
Chinese Academy of Medical Sciences, Beijing China

Richard Flavell
Yale University School of Medicine, New Haven USA

Christopher Goodnow
The Australian National University, Canberra Australia

Gillian Griffiths
University of Cambridge, Cambridge UK

Kris Hogquist
University of Minnesota, Delaware, Minneapolis USA

Carl June
PENN Medicine, Philadelphia Pennsylvania USA

Stefan Kaufmann
Max Planck Institute for Infection Biology, Berlin Germany

Thirumala – Devi Kanneganti
St. Jude Children's Research Hospital, Memphis Tennessee USA

Ira Mellman
Genentech, San Francisco California USA

Virginia Pascual
Baylor Institute for Immunology Research, Dallas Texas USA

Hidde Ploegh
Whitehead Institute for Biomedical Research, Cambridge Massachusetts, USA

Fiona Powrie
University of Oxford, Oxford UK

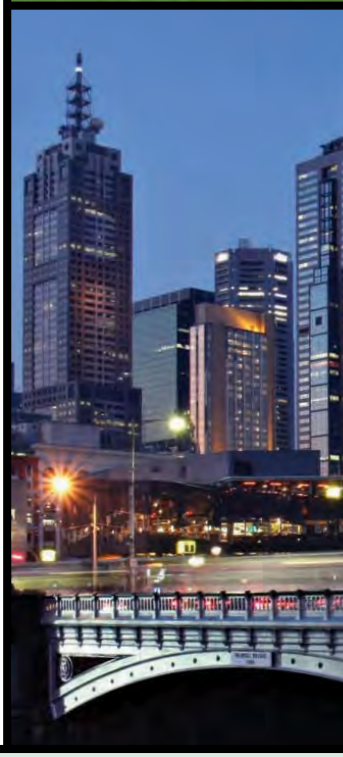
Federica Sallusto
Institute for Research in Biomedicine, Bellinzona Switzerland

Feng Shao
NIBS, Beijing China

Carola Vinuesa
The Australian National University, Canberra Australia

Eric Vivier
Centre d'Immunologie de Marseille-Luminy, Marseille France

Find the full list of confirmed speakers on the ICI 2016 website.



SCIENTIFIC PROGRAM HIGHLIGHTS

The following disciplines/themes will form part of the program.

- Innate immunity
- Inflammation
- Acquired immunity
- Vaccines
- Tumour Immunology
- Transplantation
- Allergy
- Autoimmunity and the maintenance of tolerance
- Immunoregulatory gene networks
- Immune deficiencies
- Dendritic cells
- T cell differentiation
- B cell immunity
- Metabolic control of immunity
- Regulation of the immune system by commensal flora
- Therapeutic antibodies
- Mathematic modeling of immune responses

www.ici2016.org

Come and say G'day in Melbourne in 2016!

Experience the best that Melbourne has to offer – its beaches, entertainment, heritage, culinary traditions, food and wine, festivals, sporting events, friendly people and much more.

The city's wide range of accommodation options caters to all requirements – from luxury five-star to budget hotels. Its state-of-the-art venues are all within walking distance of the city centre, or you can travel aboard one of Melbourne's famous trams!

It is also the perfect opportunity to discover Australia's famous destinations: the Great Barrier Reef, Twelve Apostles, Ayers Rock, the Sydney Opera House, the iconic MCG Stadium and so much more!

Melbourne is recognised as an R&D centre of excellence in medical science, business and finance. With Australia's most culturally diverse population, and repeatedly voted the world's most liveable city, Melbourne has something to offer for everyone.

Hosted by

Australasian Society for Immunology Inc.

IUIS Immunology without Borders

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Australasian Society for Immunology Inc.

CONTENTS

Cover Image

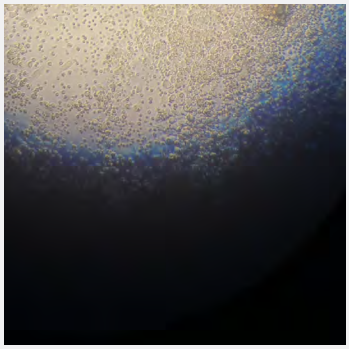
The Eosinophil cake

This magnificent cake by Olivia Ruhen, was the winning entry from a Day of Immunology event hosted in Western Australia, organised by Lucy Townsend and Demelza Ireland. Read more about Day of Immunology events around this antipodean corner of the world on page 26

Knowledge Nation

Misty Jenkins

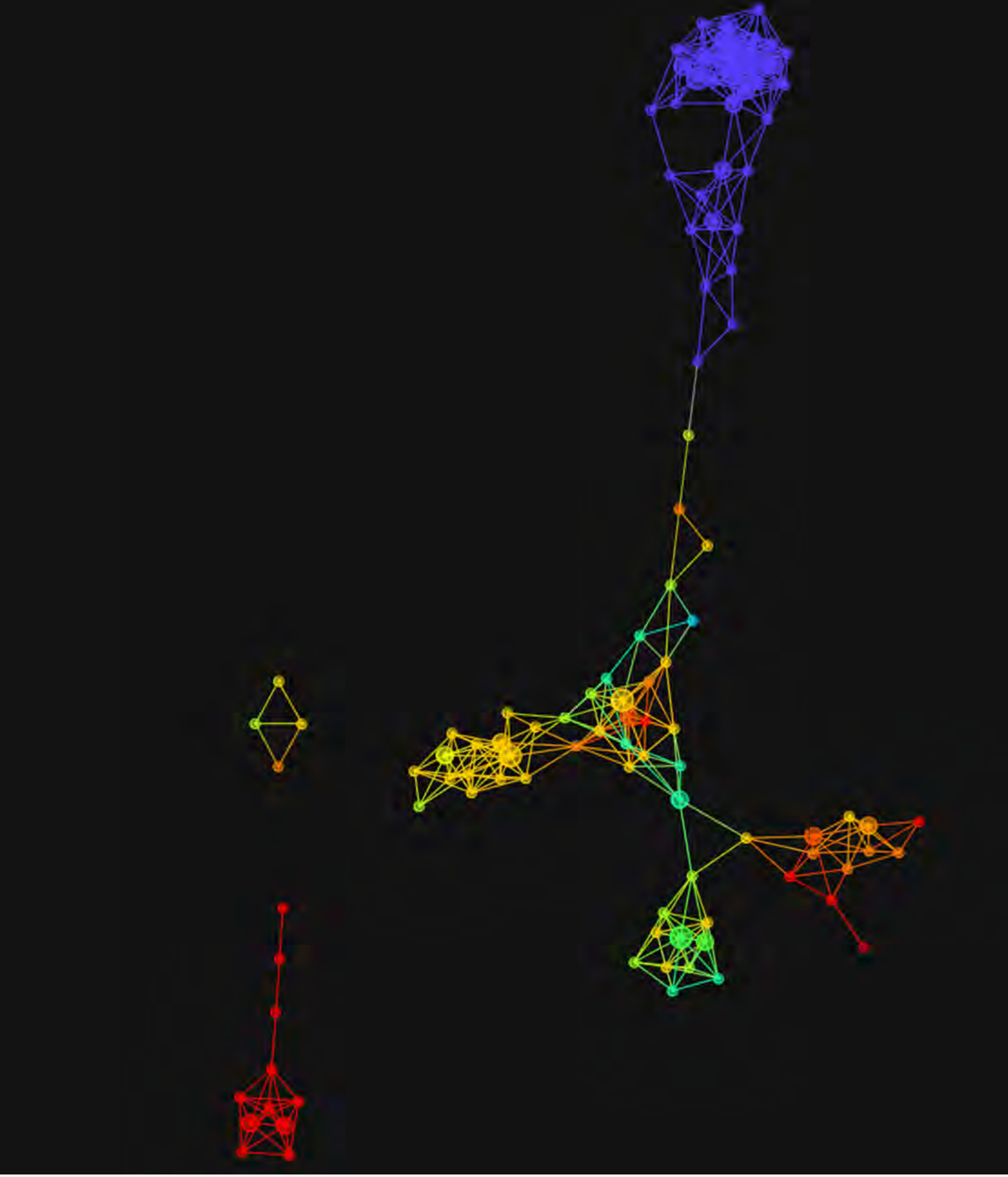
In Australia in recent weeks SBS has been running a show called “DNA Nation” profiling three people and what their DNA tells them about their heritage. Misty Jenkins has a unique and valuable position in the discussions about DNA technologies. Read more about it on Page 8.



Snapshots of the Immune System,

Gabriela Khoury and colleagues

Stunning examples of images submitted for the Day of Immunology Photo Exhibtion held in Melbourne this year are displayed throughout this edition of the Newsletter. Read about the exhibition here on Page 15.



Using the mathematics of ‘Big Data’ from Silicon Valley to unravel the immunology of human asthma. Timothy Hinks, University of Melbourne.To better understand the mechanisms underlying asthma, 84 volunteers gave samples of blood, sputum and tissue from their lungs’ airways using flexible fiberoptic camera tests, lung function testing and flow-cytometry. To make sense of over 100 different types of clinical and immunological measurements we use ‘topological data analysis’ to let the data ‘speak for itself’. Six different forms (multi-dimensional clusters) of asthma became apparent. Healthy volunteers are coloured in blue, with most severe asthmatics in red and the other, milder forms in varying shades of orange, yellow and green.

Snapshots of the immune system, Day of Immunology, Melbourne

Editorial

news letter ing

Newsletter - A letter of news. Well isn't that a lovely quaint notion.

I am most likely to read a newsletter when I am procrastinating about doing something else with an impending deadline. Or if someone has put a copy of it in the back toilet. But now that I am editing the newsletter for ASI, I of course routinely read it. And I really like the content. Not to pat my own back - more that the reports and profiles that are the backbone of most editions are interesting to me. It is actually a lot more interesting and relevant to me than a lot of other things I idly read that cross my path.

Simon Apte, the editor of the ASI newsletter before me, observed that he suspected the readership of the newsletter would decline steeply with the demise of the printed version.

I have just ordered a daily subscription to my local paper to enjoy the nostalgia of printed news for the few more years that it remains, and I have been seen to send the occasional letter by mail recently just for the pleasure of putting pen to paper, but these aspects of life are now imbued with novelty.

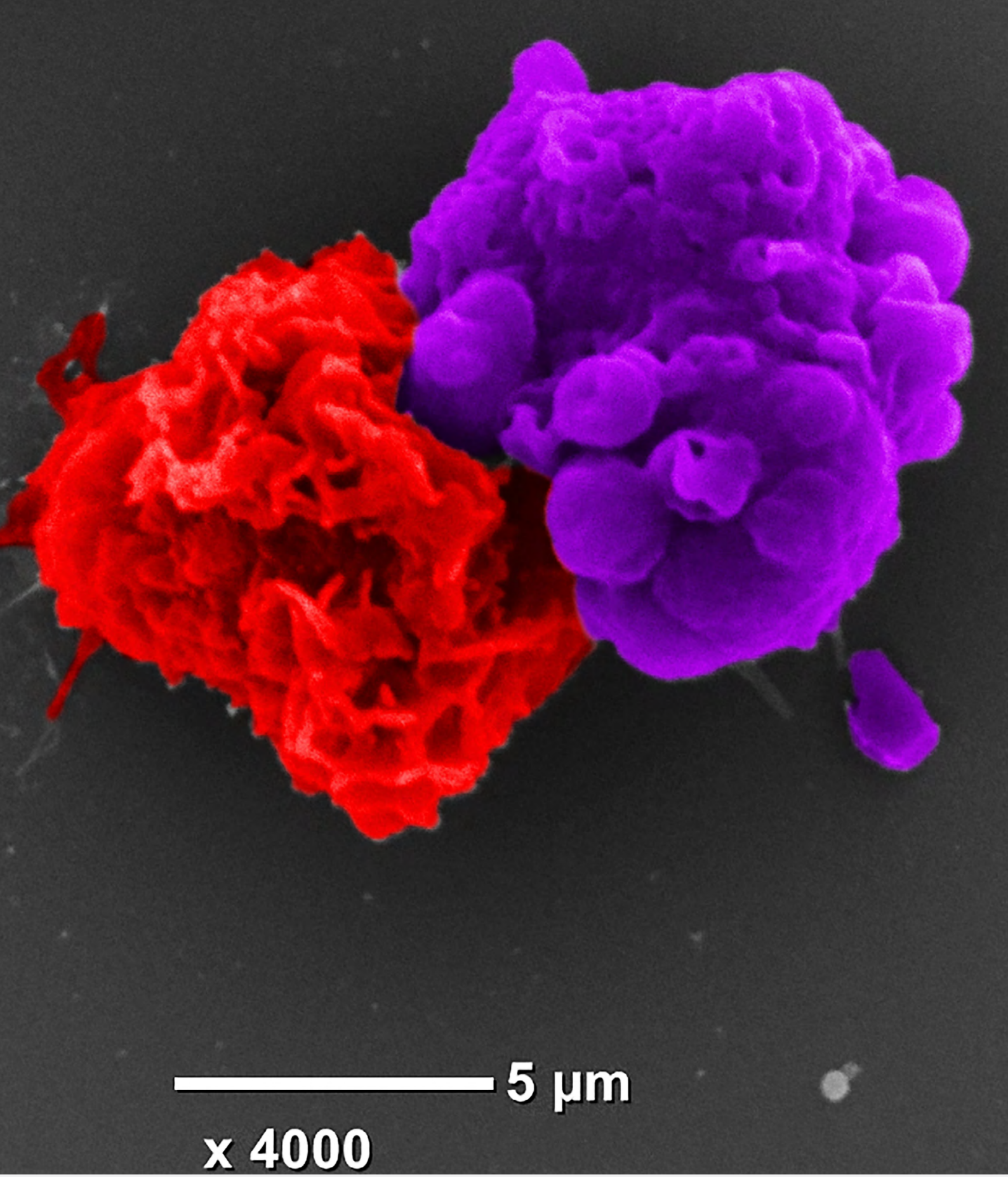
In my case, Simon's prediction regarding the ASI Newsletter was certainly proven correct. I normally read the newsletter when it came in its friendly white envelope with my name on it. And I stopped reading it once I had to download it. I get to the point in my day where I have screen overkill and more time staring at a screen (unless it is for procrastination purposes, ofcourse) doesn't always thrill me.

The thing with a newsletter, is it makes the assumption that someone is in a position to assemble a collection of pieces of news and put them into a 'letter', the entirety of which will be of sufficient interest to another person that they take the time to read it. It doesn't fit that well with the scan and run style of news and information consumption that many of us are becoming habituated to.

Recently I have been surveying you all to find out if you really read this and I am looking forward to seeing the results. Like Simon before me, I suspect that you do not. But I will be happily proven wrong! Watch this space.

Joanna Roberts - Editor ASI Newsletter.

Flow cytometry specialist with Flowjoanna. Opinions, comments, ideas, contributions to the ASI Newsletter - welcomed and appreciated. Send to joanna.roberts@gmail.com.



In the heat of the battle. Alexander Davenport, Peter MacCallum Cancer Centre. A Killer T cell (red) of the immune system killing a tumour cell (purple). These soldier T cells roam the body looking for infected and/or cancerous cells. When they encounter their target, the killer T cell gives it the kiss of death, which destroys the target cell. This helps to protect our bodies from both internal threats (cancer) and external threats (viruses). Scanning Electron Micrograph.

"I believe that the Indigenous communities who own these samples should have deep consultation around what information can be obtained from their DNA. " Misty Jenkins

Knowledge Nation

ASI Women in the News - Dr Misty Jenkins

Vanessa Bryant

From 1960-1990, more than 7000 blood samples were collected from Indigenous Australians from 43 communities across Northern and Western Australia by the Australian National University. Following concerns raised by Indigenous communities regarding the original consenting process and the Human Genome Biodiversity Project, and whether this research would be of any benefit to communities, these samples were placed in long term storage. In the 25 years since, there has been little progress in Indigenous genomic research in Australia. In 2013 the National Centre for Indigenous Genomics, NCIG, was formed to establish the ethical and governance framework to specifically address these concerns. NCIG governance board is chaired by Aboriginal and Torres Strait Islander Social Justice Commissioner, Mr. Mick Gooda, and has worked collaboratively with communities who donated to the collection to determine the future of these samples. Since its inception, the NCIG has been governed by an Indigenous-majority board, and includes ASI member, Dr Misty Jenkins, Laboratory Head at the Walter & Eliza Hall Institute for Medical Research. In 2016 Dr Jenkins and NCIG began engaging Indigenous communities who have samples in the collection to determine how much they knew about what they were consenting to, and what the future holds for these samples. The goal of NCIG is to develop for the first time an ethical and governance framework for genomic testing of Indigenous populations, in which Indigenous people have control over how their data is used, with the aim to close the heath gap that exists between Indigenous and non-Indigenous Australians.

"I believe that the Indigenous communities who own these samples should have deep consultation around

Vanessa Bryant

Women's Initiative Coordinator ASI

http://www.immunology.org.au/womens-initiative/database-of-female-immunologists/name/vanessa-bryant/

DNA Nation

DNA Nation screening on SBS

http://www.sbs.com.au/ondemand/video/681682499640/dna-nation

Mick Gooda

Aboriginal and Torres Strait Islander Social Justice Commissioner

https://www.humanrights.gov.au/about/commissioners/aboriginal-and-torres-strait-islander-social-justice-commissioner

what information can be obtained from their DNA. Only with fully informed consent and Indigenous governance can we restore trust between scientists and community. The communities providing the samples should have control over how their data is used and for what purpose. No longer should Indigenous people be treated as subjects to be studied, however we don't want to be left behind the health benefits that genome science can bring. I think the way in which NCIG is working with communities is reconciliation in action".

Dr Jenkins and other members of the NCIG recently spoke to SBS/NITV about the future benefits of genomic sequencing of Indigenous communities ahead of the premiere of DNANation, a 3-part series airing on SBS, which follows Ernie Dingo, Julia Zemiro and Ian Thorpe as they use DNA to trace their ancestry.

Over the last 5 years alone, more than 40 new genetic aetioloiges of immune disorders were discovered based on whole-exome and genome sequencing http://www.ncbi.nlm.nih.gov/pubmed/24886697. In the clinical setting, genomic sequencing can allow accurate, efficient diagnoses, personalized and targeted therapies and indicators of disease susceptibilities http://theconversation.com/treating-illness-and-preventing-disease-with-genetic-testing-22996. For genomic analyses to be effective, an individual's genome must be examined in the context of many healthy individuals. Australian researchers have access to ever growing databanks of genomic information from healthy individuals from across the globe, but the majority of these represent European ancestry, and very little is known about genomes of Indigenous Australians. Without genomic information from healthy Indigenous Australians, Aboriginal and Torres Strait Islander people may be excluded from many gene-based medical discoveries that arise from human genomic research.

Indigenous Australians have an overall life-expectancy 10 years below that of other Australians and suffer increased rates of some immune disorders and other diseases compared to their non-Indigenous counterparts; SLE is four times more frequent in Indigenous Australians compared to non-Indigenous Australians and an epidemic of vulvar cancer has been reported in Indigenous women from the Northern Territory. There is hope that these thousands of stored DNA samples can be accessed by Australian researchers, under Indigenous governance, to provide researchers with an Indigenous genomic reference dataset, currently lacking in Australia, to assist in new discoveries of genetic causes of disease in Aboriginal and Torres Strait Islander peoples and to help close the gap in Indigenous health and life expectancy in the era of genomic and personalised medicine.

About Misty Jenkins

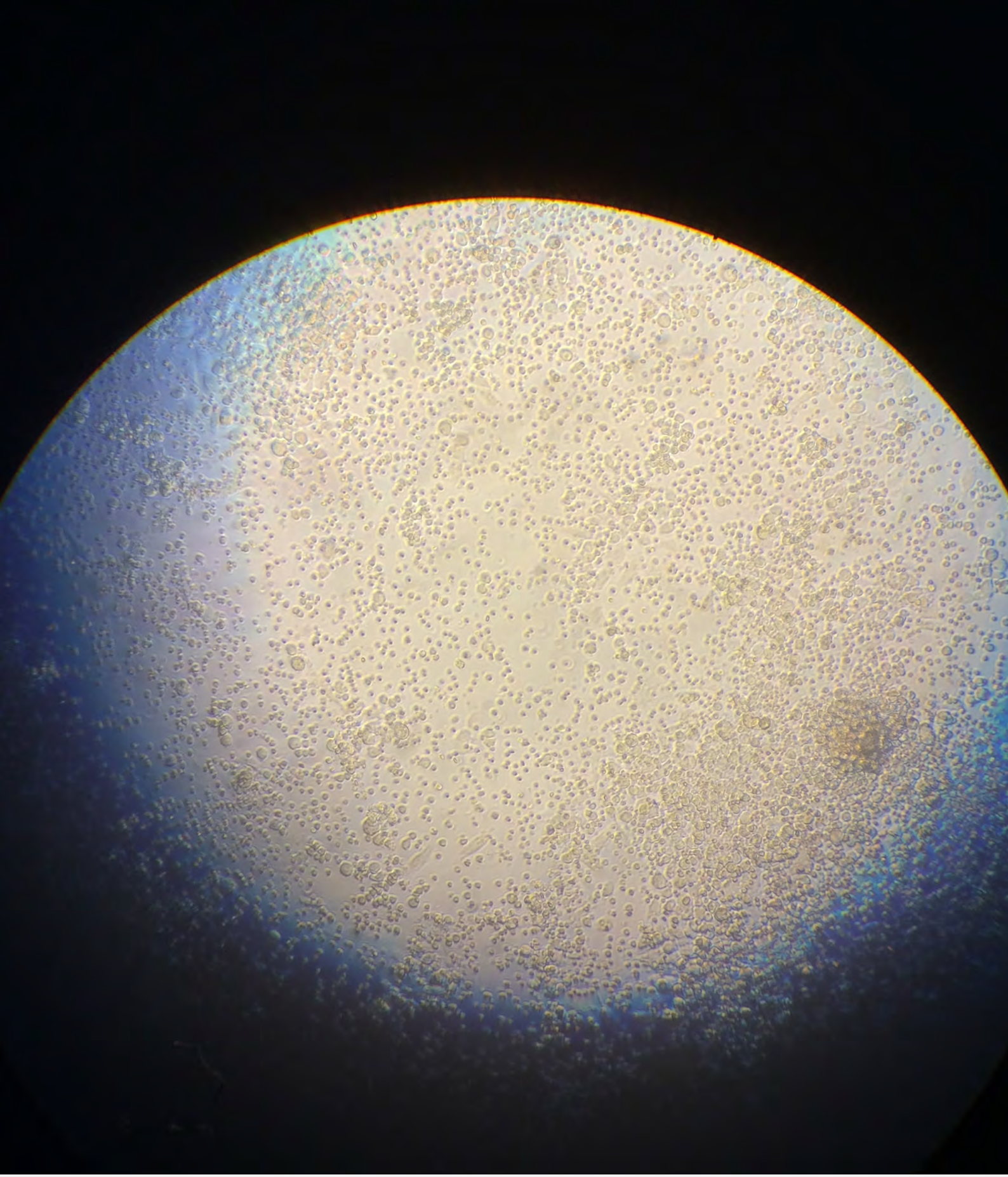
Dr Misty Jenkins (BSc(Hons) 2001, PhD 2007) is a NHMRC fellow and laboratory head at the Walter & Eliza Hall Institute for Medical Research where her work investigates cytotoxic lymphocyte responses to cancer and the interplay between killer lymphocytes and other immune cells. She has received multiple awards for her work, including the Tall Poppy of the Year Award for Science (2015), the L'Oreal for Women in Science Fellowship for Australia (2013), was a Fellow of the University of Cambridge and was 2012 National Association of Research Fellows Investigator of the Year. Dr. Jenkins has been a member

Immunology & Cell Biology

Exciting New Position Open - News and Commentary Editor: Immunology and Cell Biology

This **position provides a unique platform for an energetic member of ASI to drive the commissioning of this area of the journal,** co-shared with Dr Ian Parish (JCSMR). It offers an exciting opportunity to work with eminent researchers in the area and access to the latest publication findings ahead of print. The position entails commissioning 7-12 commentaries each year, both for ICB articles and for interesting and groundbreaking articles from other journals. It requires a relatively small time commitment which is balanced by the unique opportunities it provides.

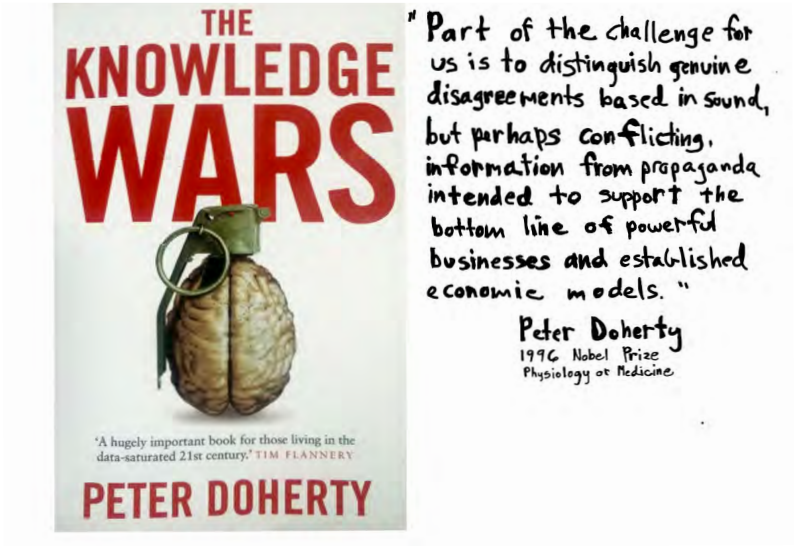
Please contact Elissa Deenick (e.deenick@garvan.org.au) or Ian Parish (ian.parish@anu.edu.au) for more information.Expressions of interest should be sent to Gabrielle Belz (belz@wehi.edu.au) by 30 June 2016 and include a brief curriculum vitae and vision for the position.



T Cell Moonscape, Gemma Laws, University of Otago. T cells are immune cells that can kill cancer cells. This picture shows T cells clustering around tumor cells in an experiment in the lab. The clusters will lead to actived T cells able to destroy cancer cells.

The Knowledge Wars by Peter Doherty

Interview by Erika Duan



About Peter Doherty

Peter C Doherty is Laureate Professor, Department of Microbiology and Immunology, University of Melbourne at the Doherty Institute and the Michael F. Tamer Chair of Biomedical Research at St Jude Children's Research Hospital, Memphis.

Professor Peter Doherty is perhaps most well-known for his 1996 Nobel Prize winning discovery of major histocompatibility complex (MHC) restriction with Professor Rolf Zinkernagel. To our ever-vigilant immune system, MHC molecules may resemble continuous phone screen updates which populate local cell surfaces to say 'It's all okay, I'm from the same human,' or in the case of viral infections and even cancer, 'Warning! I'm now carrying some weird molecules in me'. MHC restriction, or the requirement for these latter MHC molecules to generate virus and cancer killing immune cells called T lymphocytes, has not only refined our developing arsenal against infectious diseases, but enhanced our understanding of how cancerous cells may evade detection by the immune system (by suppressing the presentation of MHC molecules) and why autoimmune diseases exist (MHC molecules erroneously flag something harmless as dangerous and to be destroyed).

Less well-known, however, may be Professor Doherty's prolific presence in non-fiction writing, with 5 books published during the last 11 years covering topics from our interactions with birds, engineering advancements, pandemic survival strategies, the rewards and pitfalls of a scientific career and his own unlikely journey towards the 1996 Nobel Prize in Medicine. In his latest book 'The Knowledge Wars' (2015, Melbourne University Press), Professor Doherty deconstructs the seemingly aloof and sometimes internally conflicted scientific system into a series of digestible and citizen-friendly components, whilst highlighting the tussles between those with political agendas and those with scientific evidence, especially in relation to climate science. I interviewed Professor Doherty on the motivations behind his new book, his thoughts about scientific communication and the scientific system, and alternative career pathways he might have contemplated as a student in today's academic environment.

E: Reading this book, I thought that it aimed to demystify science to the general public.

P: Yes, the problem with science is that we often come across to the general public as "holier than thou", very self-righteous about things and telling them what they should think. And I don't think that's what we're really about. We're actually trying to show people the evidence and why we think that it's worth their attention. That's the way we should be presenting ourselves.

E: Yes, and you write in your book that science is a work in progress.

P: It's always a work in progress. Some science fields are much more mature than others. Physics is a more mature science than biology. Biology, because of evolution, is inherently chaotic and unpredictable.

E: Now reading the back of your book, there's a line that says 'There's something here to offend everyone!'

P: Yes.

E: There's a lot more fire in this book.

P: Yes, because the denial of evidence or the rejection of evidence doesn't just come from the political right. It can also

come from the left. People have, I think, inherent belief systems and they on principle reject things that fall outside their beliefs. I don't think we can afford to do that when it comes to issues like climate change. We need to look at the evidence and act on it. The same is true if you have a medical condition. Having a serious condition diagnosed by a doctor trained in evidence-based medicine tends to focus people's minds, so that most will act to ensure their own preservation.

E: Several times in this book, you mention a knowledge war between those with vested business interests and scientific data. This is obviously problematic.

P: It's very problematic. Climate change is part of it, and it's the most dangerous part because it is cumulative and not easily reversible. Some of the environmental damage we do can be repaired. Leave degraded agricultural land fallow, keep the weeds out, and it's often possible to get it back to the way it was. Some things are harder to change, like the consequences of putting good agricultural land under slabs of concrete for housing. But the problem is that clawing back established greenhouse gas levels is both very difficult and expensive.

The difficulty is that depletion and inappropriate use of non-renewable resources is what tends to drive our economic system. And the reason that many on the right of the political system are so hostile is because arguing for appropriate regulation and taxation is basically a critique of laissez faire, neoliberal economics and mindless consumerism. So switching consumption to things that don't do a whole lot of harm is important - for instance if you consume music or art, you don't do much damage; if you consume the experience of riding a bicycle or walking, you don't do much damage. But a lot of the things we consume are ecologically disastrous. Any rational analysis tells us we should be switching to an economy dominated by recycling and renewables. And that's a big threat to powerful and long-established business interests. For example recycling is much more expensive than digging stuff out of the ground, using it and putting in into a tip.

E: And it takes a lot more thought.

P: Yes, and really what needs to happen, and at some stage I think it will happen, is that a light needs to go on in the minds of people which says, "We just can't do this anymore." And that hasn't happened yet. It's happened to some people, who've taken the trouble to engage more and be more aware.

E: In your book, you clearly define the difference between a scientific communicator and a practising scientist.

P: Yes, most people identify the science communicators they see on TV as scientists. Sir David Attenborough is one example. Brian Cox is a scientist, a very good one, and also a scientific

communicator, but he's making the switch to being a full-time scientific communicator. It's the same with science teachers, they're not practising scientists. But, like the science communicators, they are enormously important.

Do you think that we need more scientific communicators, or for more scientists to communicate themselves?

P: I think we need both actually. For instance, I always say to medical, dental and veterinary students that when you go out into a community and interact with a lot of people, especially if you are in a country practice, you may be one of the few science-trained people in the town. But what I'd like to see more of communicated is the idea of evidence based thinking, of looking for the evidence and not just accepting what we're told.

E: Now returning to the science, you write in your book that 'science is a very harsh mistress.'

P: Yes absolutely.

E: Do you think it's become harder over time?

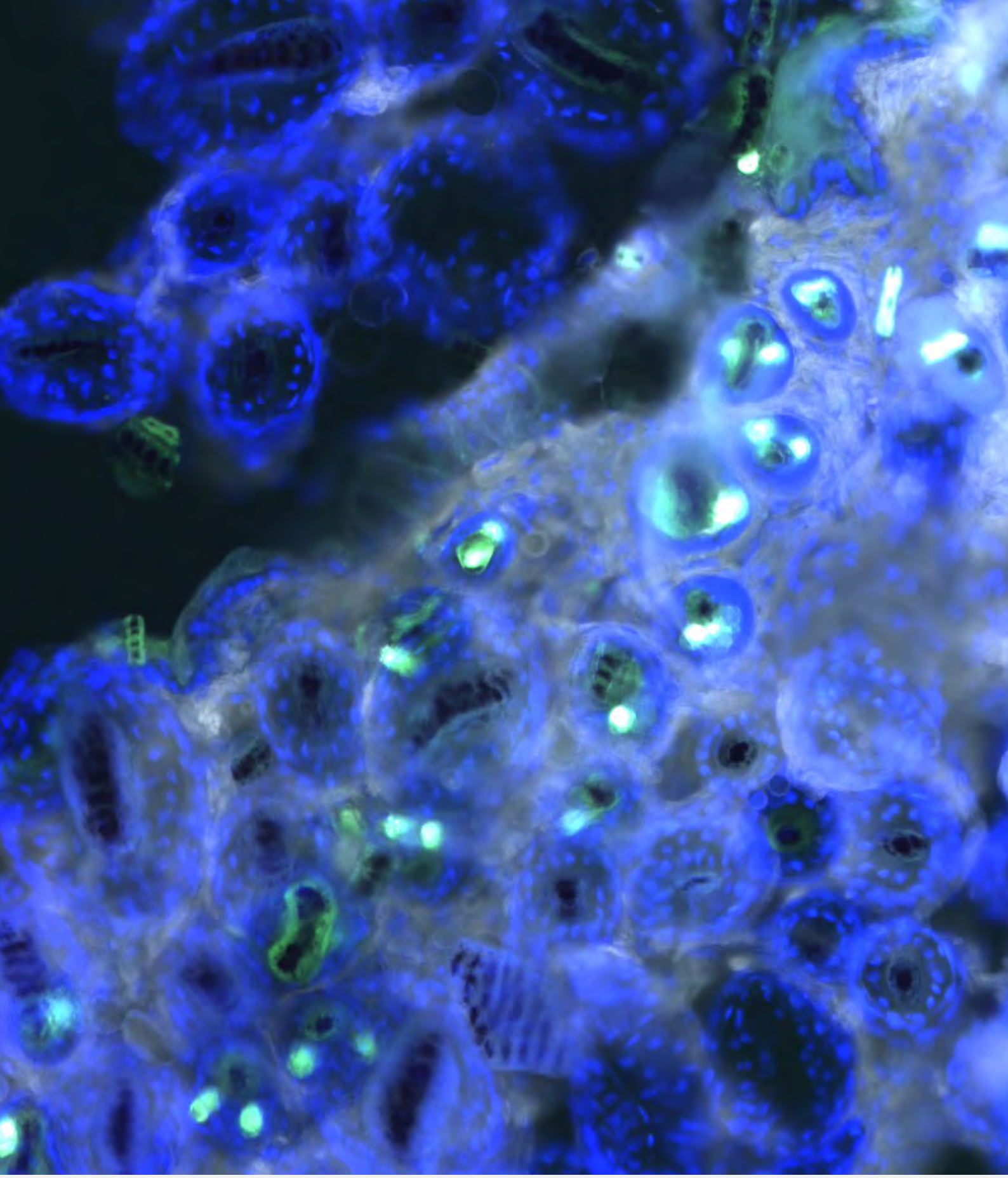
P: It's always been hard. It's always been very demanding. One problem is that now the technology is so fantastic that you really don't command all of it. Which means that you've got to have excellent collaborators. You have to work with people you trust. The other issue is that, in times gone by, it was possible to speculate a lot more because the technology to answer the question just wasn't there. But now, as soon as you think something, it's often possible to attempt an experiment. That's a harsher discipline! We got the Nobel Prize for, I think, two short letters to Nature, eight bits of data and a short hypothesis in the Lancet. That's about eight pages in a journal. But that formula no longer serves the realities of complex science and Nature has dropped that format. Nowadays, the Nature papers are much more detailed and have supplementary data. And they can be much harder to read, because as people revise and change with the criticisms from reviewers, the original focus and clarity can be lost. So you need someone to write a 'News and Views' to explain them. We've lost an element of intellectual incisiveness and clarity, but we have a better chance of being right. Biology is much bigger and the need for bioinformatics to deal with massive data sets makes it more complex. The whole nature of science is changing.

And going back to scientific communication, the other thing I try to influence young people to do is that if you have good internet skills, if you can for instance generate a video of killer T cells destroying virus-infected cells, or you make cartoons illustrating the process, put it out on YouTube or something. Because visual images are the best way to get science across to people. Than works much better than talking to, or at people: show, don't tell! Even very complicated science can be communicated across visually.

E: My final question is more for the younger scientists. In your book, you briefly mention the alternative careers than science-trained PhD students may take. Would you have still chosen to be a scientist in today's climate?

P: I honestly don't know. You know, I trained as a vet and for example, I probably wouldn't do that now, as modern technology makes it much easier to make real discoveries with patients. So, if I'd been aware, I probably would have studied medicine. At that time, though, the veterinary degree was more scientific than the medical training. But I also thought about other careers. I was thinking about becoming a journalist and I think I would have been quite happy as a historian. I wanted to study science to increase food production. I think law would have also been an interesting option and we need more young people to solve some of these current issues, like climate change for example, through civil law.

Professor Doherty's science-related reading recommendations: *Lab Girl* by Hope Jahren and *Intuition* by Allegra Goodman



Your Immune System at the Surface, just skin deep. Maverick Lau, Monash University. Mouse skin at the surface looking for immune cells among a sea of follicles.

Snapshots of the immune system

Day of Immunology photography exhibition - Gabriela Khoury, Social Media Manager, ASI

It has always been one of my personal ambitions to curate a photography exhibition. Being part of the Day of Immunology organising committee seemed like a great opportunity to combine a few of my favourite interests including art and science while promoting science and immunology to the general public.

As scientists it is important that we engage with the general public - arranging a photography exhibition where scientists could visually share their research findings seemed like the ideal approach. This Day of Immunology event was unique when compared to other events where we invite the general public to explore different research facilities. Instead here we brought science to a public space – in this case a converted warehouse café. The exhibition launch night (21 April 2016) was kindly hosted by St Ali Coffee Roasters in South Melbourne, there were thirty photographs displayed including an instalment featuring biomedical animations created by Mr Drew Berry and Ms Etsuko Uno (WEHI). The photographs on display were stunning and in many cases can be appreciated purely as a form of abstract art. The event was a huge success with many photographs staying on display for local coffee drinkers to view over the ANZAC day long weekend. The launch night was also featured in Cosmos Magazine.

"For those who were unable to catch the photographs on display, **this issue of the newsletter features ten of the entries,** including the three prize-winning images by Dr Michaela Finsterbusch (Monash University), Dr Fernando Souza-Fonseca-Guimaraes (WEHI) and Dr Samantha Dando (Monash University)."

The response to mixing art and immunology has been extraordinary – Multiple Day of Immunology events displayed the photos including those in South Australia, Western Australia, Queensland and even reaching the shores of New Zealand. During May the exhibition travelled to the Peter Doherty Institute (Melbourne) and the Monash Centre for Inflammatory Diseases (Clayton).

Mr Dani Tutuka (Olivia Newton-John Cancer Research Institute), one of the scientists who contributed artwork said "It was an excellent program, we need to do more of these events and break down the notion that we scientists are just bunch of nerdy people stuck in a dark laboratory. We are capable of creating something beautiful on top of our knowledge of the natural world."

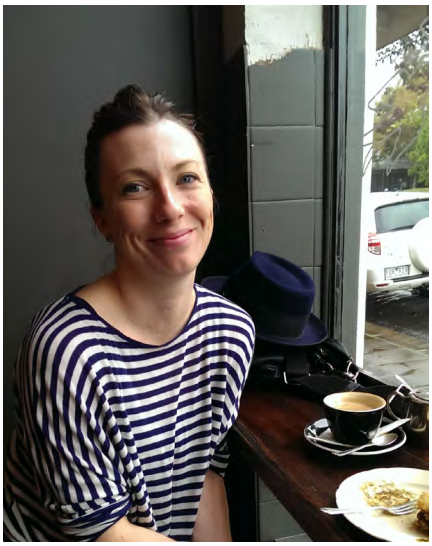
For those who were unable to catch the photographs on display, this issue of the newsletter features ten of the entries, including the three prize-winning images by Dr Michaela Finsterbusch (Monash University), Dr Fernando Souza-Fonseca-Guimaraes (WEHI) and Dr Samantha Dando (Monash University).

This exhibition wouldn't have been possible without the help of the organising committee volunteers. I would like to thank my great team Dr Claerwen Jones, Dr Catarina dos Santos Sa e Almeida, Ms Fernanda Ana Sosa, Dr Angela Pizzolla, Ms Robyn Schenk, who are now all experts in photograph framing! We would also like to thank the judges who attended the opening night; Dr Daniel Pellicci and Dr Adam Uldrich who represented the event sponsor, the Centre for Advanced Molecular Imaging, and special guest Prof Jacques Miller.

I am looking forward to curating the next exhibition and the committee will be waiting for your entries. In the meantime, get back into the lab and create some beautiful science for next year's event!

Check out Day of Immunology and ASI on twitter (@dayofimmunology; @asimmunology), Instagram (@doiaus) and Facebook (www.facebook.com/DayofImmunologyVic/; www.facebook.com/ASImmunology/).

Dr Catarina dos Santos Sa e Almeida, Ms Fernanda Ana Sosa, Dr Gabriela Khoury, Dr Claerwen Jones and Dr Kim Pham (Left to right). Absent: Dr Angela Pizzolla, Ms Robyn Schenk. Photo: Daniel Pellicci.



Introducing Kylie Quinn

Infection and Immunity SIG Best Talk Award

My research interests in T cell immunity and vaccinology were cemented early on during my PhD with Dr Joanna Kirman at the Malaghan Institute of Medical Research in New Zealand, where I examined the impact of T regulatory cells on Tuberculosis infection and vaccination. In 2008, I moved to Washington DC and joined the lab of Dr Robert Seder at the Vaccine Research Center at the National Institutes of Health. While there, I screened potential vaccines for HIV, defined several mechanisms through which vaccines establish protection and contributed pre-clinical data for the lead candidate Ebola vaccine, chAd3, which then went on to accelerated clinical trials. In 2013, I joined the lab of Professor Nicole La Gruta, first at the University of Melbourne and now at Monash University, where I am focusing on strategies to improve CD8 T cell immunity in the elderly.

Nicole has an established program of research on factors that dictate the efficacy and magnitude of CD8 T cell immune responses, such as the diversity of T cell receptor (TCR) repertoires and the affinity of these TCRs for antigen. We initially tracked how the TCR repertoire of naïve CD8 T cell populations changed over the course of ageing, which highlighted that ageing impacted differentially on individual TCRs, with better retention of cells that expressed markers of higher TCR affinity for self-antigen. These results were presented at the ASI Annual Meeting in 2015 and published in PNAS earlier this year (Quinn et al., PNAS, 2016, v113, p1333). During this study, it became apparent that the intrinsic functional potential, in terms of the ability to proliferate or produce cytokine, was comprised of naïve CD8 T cells by ageing. Naïve CD8 T cells can be further subsetted into true naïve (Tn) and virtual memory (Tvm) cells, where Tn cells exhibit a CD44lo phenotype while Tvm cells have not encountered cognate antigen but exhibit a semi-differentiated CD44hiCD49dlo phenotype in mice. Critically, Tn cells decline but Tvm cells accumulate with age. With Nicole's support, I have been steadily building a project that draws a distinction between Tn and Tvm cells and aims to define how these subsets change functionally, metabolically and epigenetically with age. With this characterisation, I aim to define molecular mechanisms that constrain the function of these cells. Once such mechanisms are defined, we aim to select drugs and other treatments to target these mechanisms and recover function of both Tn and Tvm cells during adoptive T cell therapy or vaccination in the elderly.

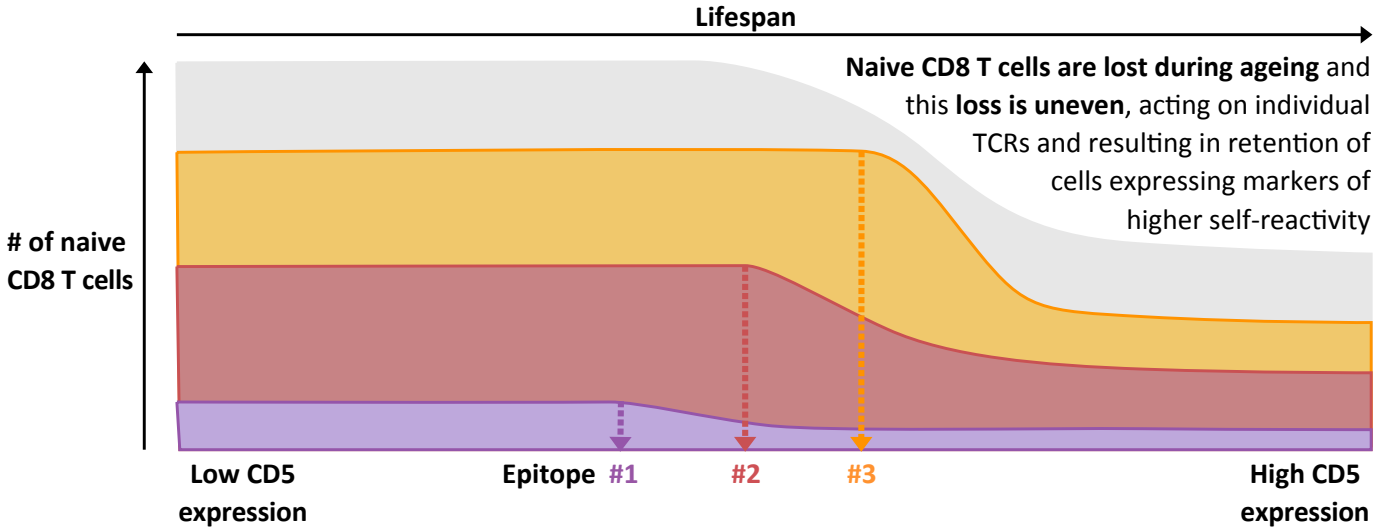
kylie.quinn@monash.edu

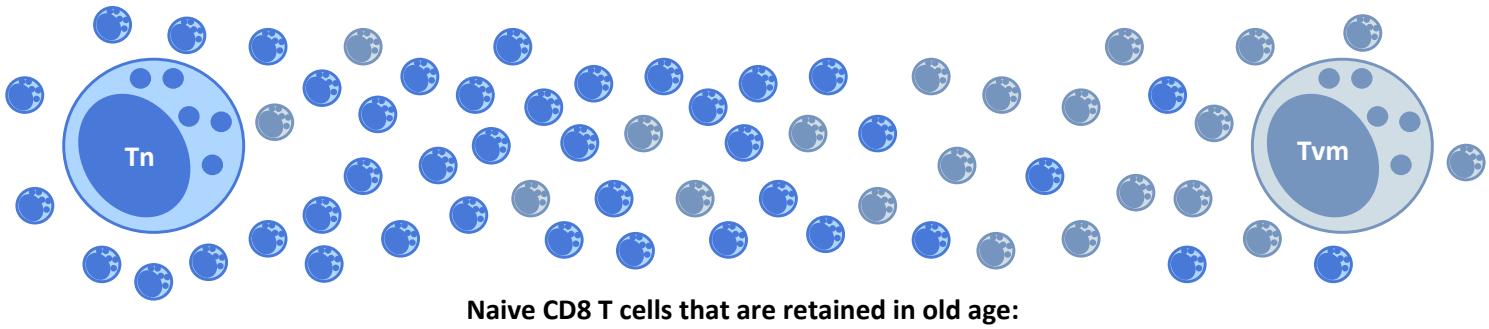
Twitter: @DrQuinn4realz

LinkedIN ResearchGate Website

Following page - FIgure by Kylie Quinn

As we age, our immune responses become less effective because our immune system becomes compromised in a number of ways. Defects in the naive CD8 T cell population are particularly marked....





Naive CD8 T cells that are retained in old age:
1) Predominantly exhibit a **semi-differentiated phenotype** known as "virtual memory" (Tvm)
2) Are **less functional** with decreased proliferative capacity and abberant cytokine production profiles

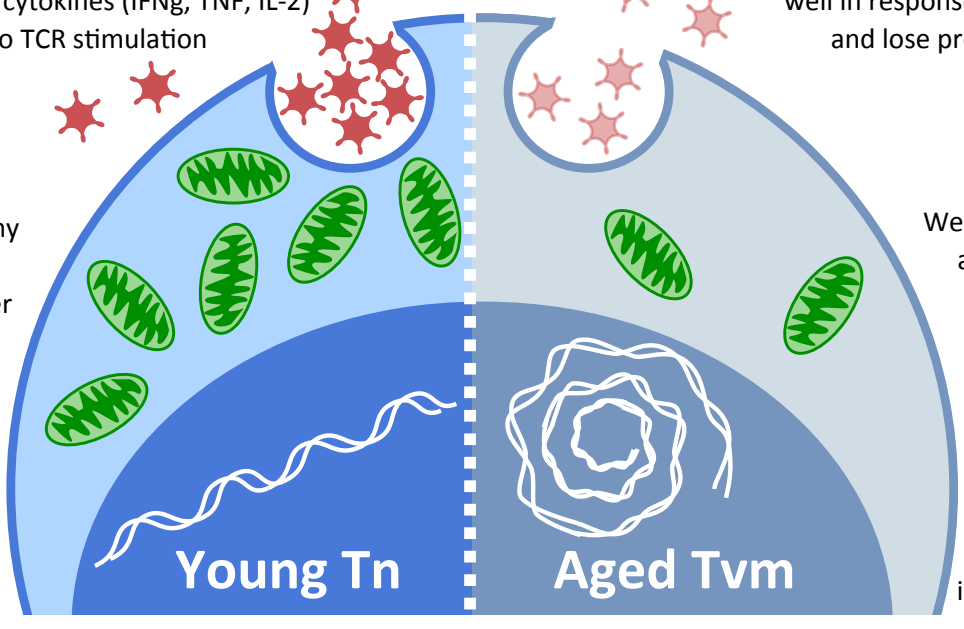
So we want to know what **molecular mechanisms** cause this shift in phenotype and loss of function?

Young CD8 Tn cells proliferate rapidly and produce multiple cytokines (IFNg, TNF, IL-2) in response to TCR stimulation

Aged CD8 Tvm cells do not proliferate well in response to TCR stimulation and lose production of IL-2

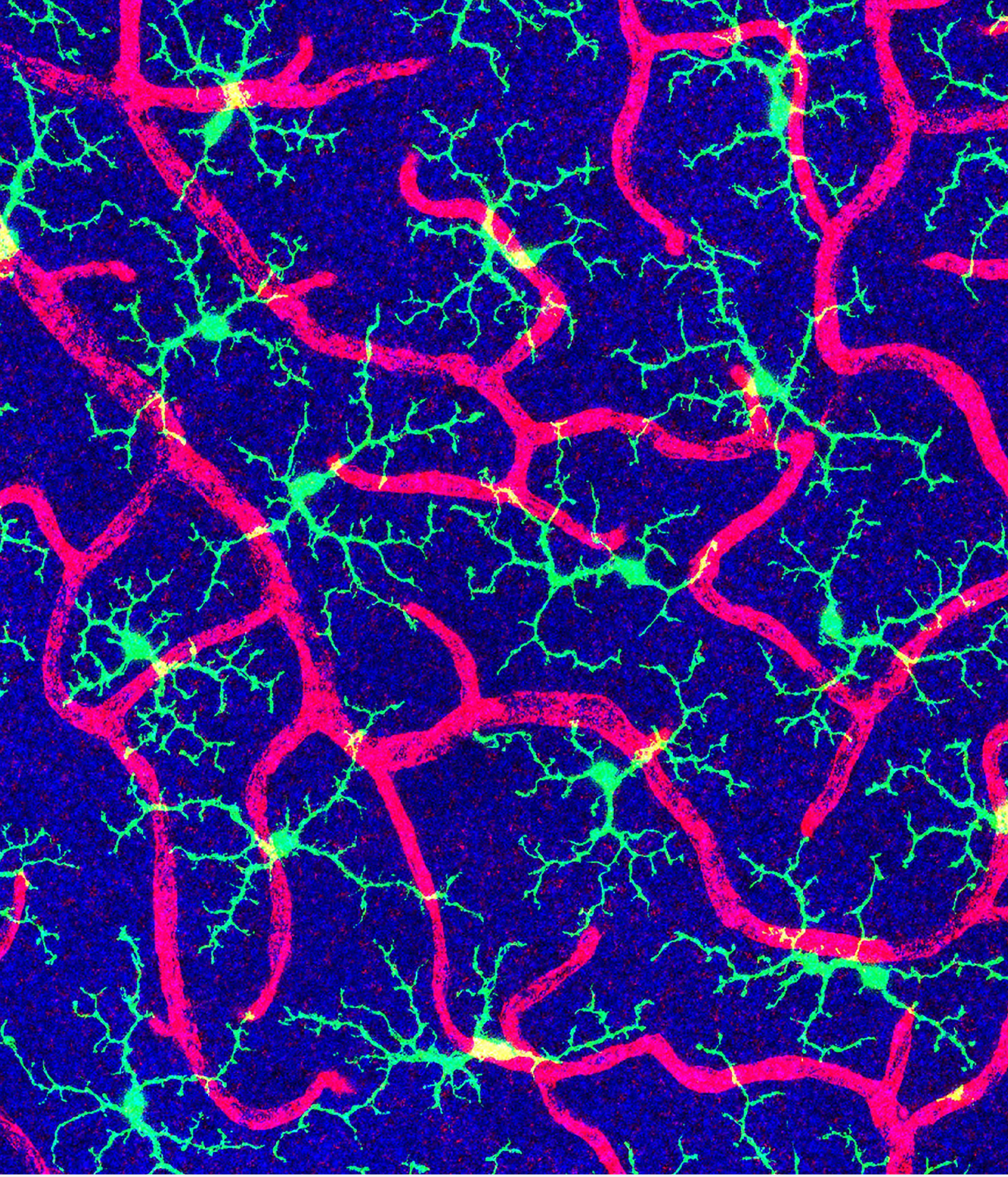
Metabolism:
Mitochondria are healthy and glycolysis is efficiently engaged after TCR stimulation

Epigenetics:
Chromatin structure is open and accessible at key functional loci (IFNg, TNF, IL-2 genes)

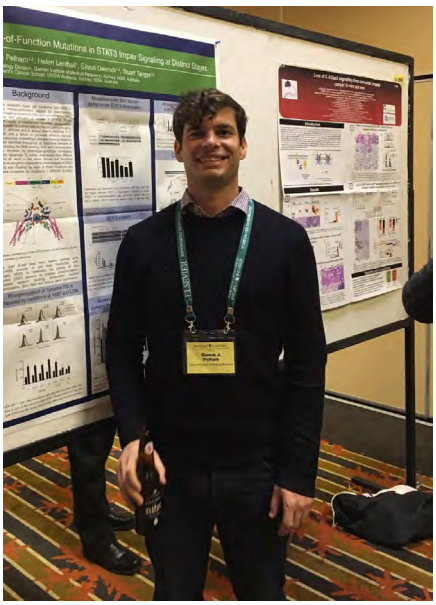


Metabolism:
We predict that mitochondria accumulate defects and the glycolytic program is not engaged

Epigenetics:
We predict that chromatin structure is condensed and inactive at key loci (IL-2)



Immune surveillance in the retina. Samantha Dando, Monash University. Microglia (green) are the resident immune cells that patrol the retina to protect it from pathogens. These cells constantly move around the retina and detect foreign materials by their long protrusions. Blood vessels are shown in red. Winner of the Thermofisher Scientific prize.



Introducing Simon Pelham

ICB poster Award Runner-up

I received my BSc in Microbiology and my MSc in Immunology from the University of Otago in New Zealand. After a stint working as a research assistant with Associate Professor Sarah Young, I moved to the Garvan Institute of Medical Research in Sydney to start my PhD under the supervision of Professor Stuart Tangye and Dr Elissa Deenick. The Tangye and Deenick labs use primary immunodeficiences as a way of exploring what pathways are necessary for a healthy immune system to develop and function. My work has investigated cytokine signaling in human B cells. For the first part of my PhD I have studied the mutations that cause the primary immunodeficiency Autosomal-Dominant Hyper-IgE syndrome (AD-HIES). This disease is characterized by susceptibility to certain bacterial and fungal infections and is caused by mutations in the transcription factor STAT3. There have been over 60 disease-causing mutations in STAT3 reported, with these mutations spread across multiple domains. Interestingly, mutations in different domains do not affect the clinical features or the severity of the disease. We tested at what stage STAT3 signaling was impaired due to mutations within 3 different domains. I found that mutations in these different regions had disrupted signaling at different stages of the signaling pathway. However, they all demonstrated impaired binding to DNA, and as STAT3 is a transcription factor and requires DNA binding to function, this may be why the mutations all display the same clinical features.

I have recently started a series of experiments to further investigate the differences in STAT3 signaling between naïve and memory B cells. I am excited to begin a new challenge involving looking at epigenetic and transcriptional regulation of cytokine signaling in these cells.The Autosomal-Dominant Hyper-IgE results have recently been accepted for publication and if you are interested these can be found at: Pelham SJ. et al. Elucidating the effects of disease causing mutations on STAT3 function in autosomal-dominant hyper-IgE syndrome, (2016), Journal of Allergy and Clinical Immunology. DOI

s.pelham@garvan.org.au

Supervisor: Professor Stuart Tangye

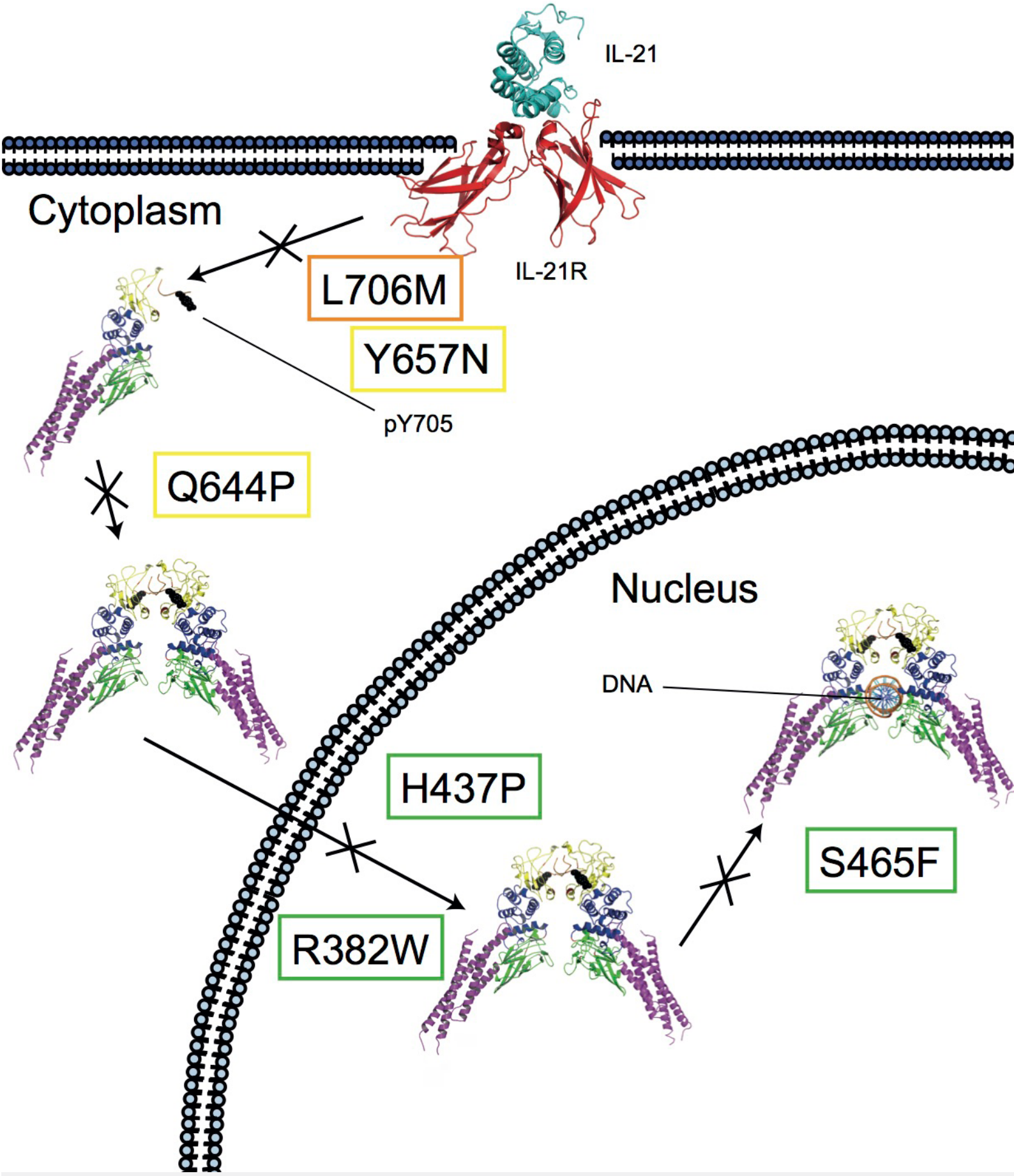
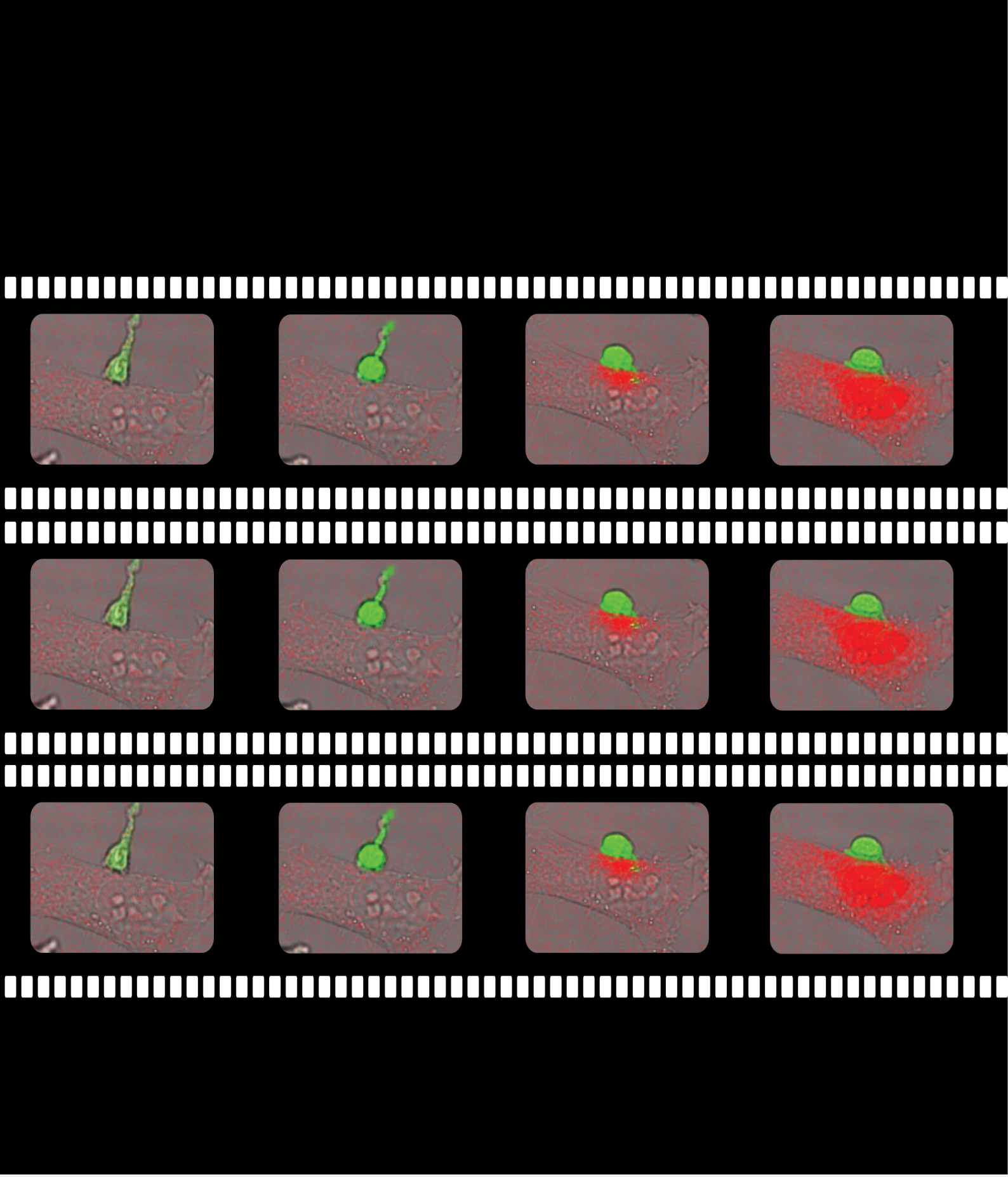


Figure - Simon Pelham. A graphic representation of STAT3 signaling. After a cytokine binds with its receptor (IL-21 and IL-21R used as an example), STAT3 becomes phosphorylated at tyrosine 705, forms dimers, translocates to the nucleus and binds to DNA. The stages of signaling affected by mutations in the transactivation domain (orange box), SH2 domain (yellow box) and DNA binding domain (green box) were assessed. These mutations impaired signaling at different stages, however the net result was a defect in the ability to bind to DNA.



Caught on film - a cytosolic blush follows the kiss of death. Jamie Lopez and Ilia Voskoboinik, The Peter MacCallum Cancer Centre. Natural killer cells are a critical component of the body's immune system. This image captures the precise moment when a killer cell (shown in green) recognises a cancer cell as foreign and subsequently delivers it a toxic blow, rupturing the surface of the cell with small holes. The red dye shows how the toxic molecules enter the cancer cell through these small holes. The cancer cell will go on to die and the killer cell will continue to patrol the body to seek out foreign cells. These images have been taken every 5 seconds.

Introducing Tim Johanson

New Investigator Award

I began my PhD in Andrew Lew's lab at WEHI in early 2011. Fortuitously, Mark Chong was also a recent WEHI recruit, returning from a successful post-doc in New York with his prodigious molecular talents. It was decided that my PhD would combine the dendritic cell expertise of Yifan Zhan, from Andrew's lab, and Mark Chong's microRNA-wrangling skills to investigate the then unknown role/s of microRNAs in dendritic cells.

To literally emulate microRNA biogenesis, and cut a long story short, we did generate a profile of microRNA expression during dendritic cell development; however, in doing so we also inadvertently discovered and characterized the first microRNA-independent function of the endonuclease Drosha in the immune system. We showed that in addition to its well-known role of enthusiastically cleaving double-stranded RNA structures in microRNAs precursors, Drosha also cleaves similar structures, in particular messenger RNAs. While the cleavage of precursors is an essential step in microRNA biogenesis, the cleavage of messenger RNAs is entirely destructive. We found that in myeloid progenitors, messenger RNAs encoding two previously unknown repressors of myelopoiesis (Myl9 and Todr1) are destroyed by Drosha-dependent cleavage. Thus under normal conditions Drosha promotes proper myeloid development, independently of microRNAs, by repressing these repressors.

In September 2015, after a year of review and revision, our characterization of this role of Drosha was accepted for publication by Nature Immunology. Since then I have been very fortunate, and humbled, to receive a number of recognitions based largely on this work. The ASI is an organization that admirably and effectively supports young Australiasian scientists. This support has allowed me to attend numerous conferences, including ASI annual meetings, and I am grateful for the opportunities and skills granted by these experiences.I am currently expanding my molecular biology skills in Rhys Allan's lab at WEHI, where we are establishing techniques to examine 3D genome organization in immune cells.

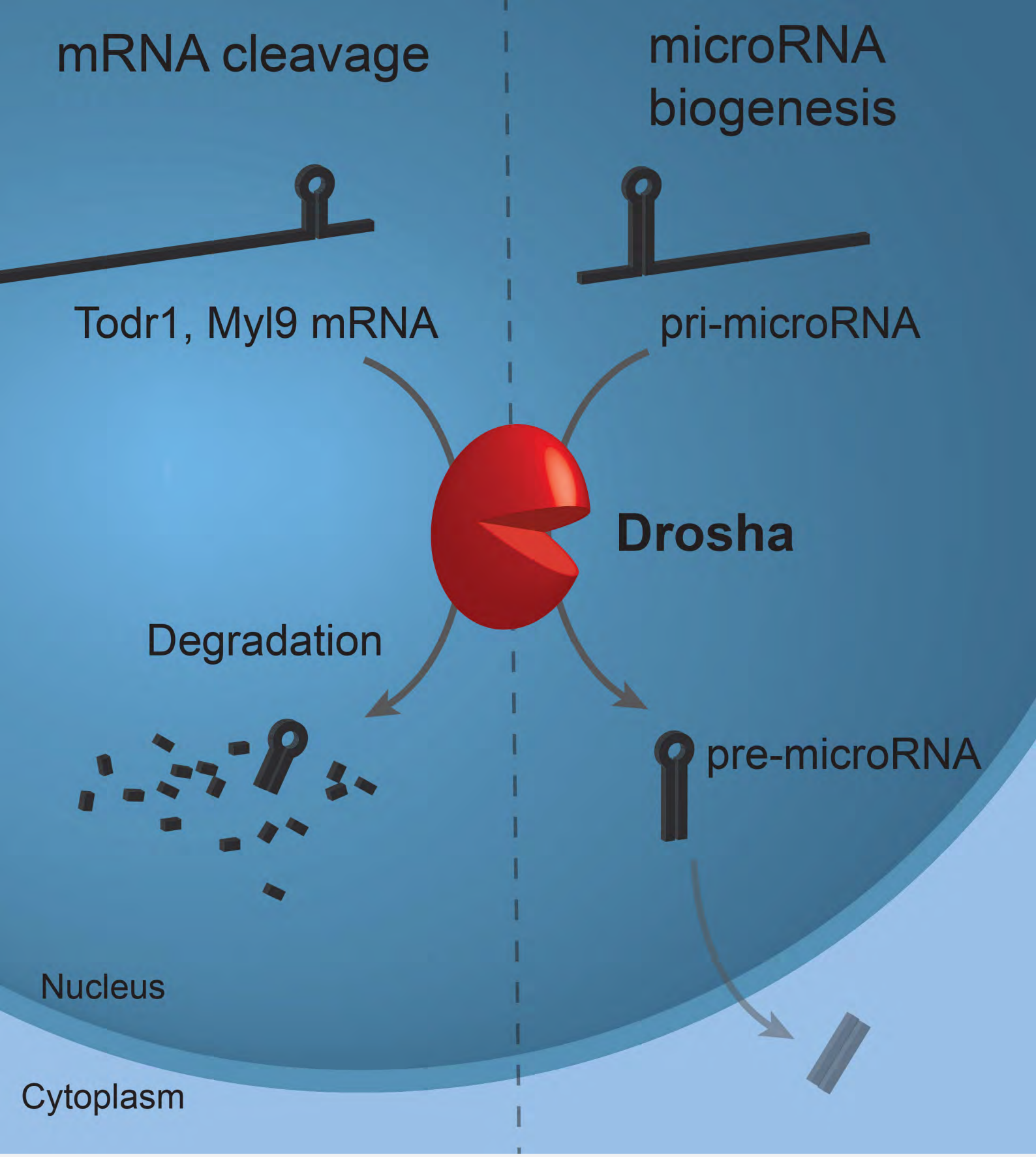


Figure - Tim Johanson. Drosha – a multitalented endonuclease. Renowned for its central role in microRNA biogenesis, Drosha also has microRNA-independent functions. For example, in addition to cleaving double stranded RNA structures in microRNA precursors, Drosha also cleaves similar structures in particular messenger RNAs (mRNAs). This cleavage induces swift degradation of the mRNA. In myeloid progenitors Drosha cleaves structures in the mRNAs of two repressors of myeloid development, Todr1 and Myl9. Thus Drosha promotes myelopoiesis, independently of microRNAs, by repressing myeloid repressors.

Honorary Secretary

Elissa Deenick

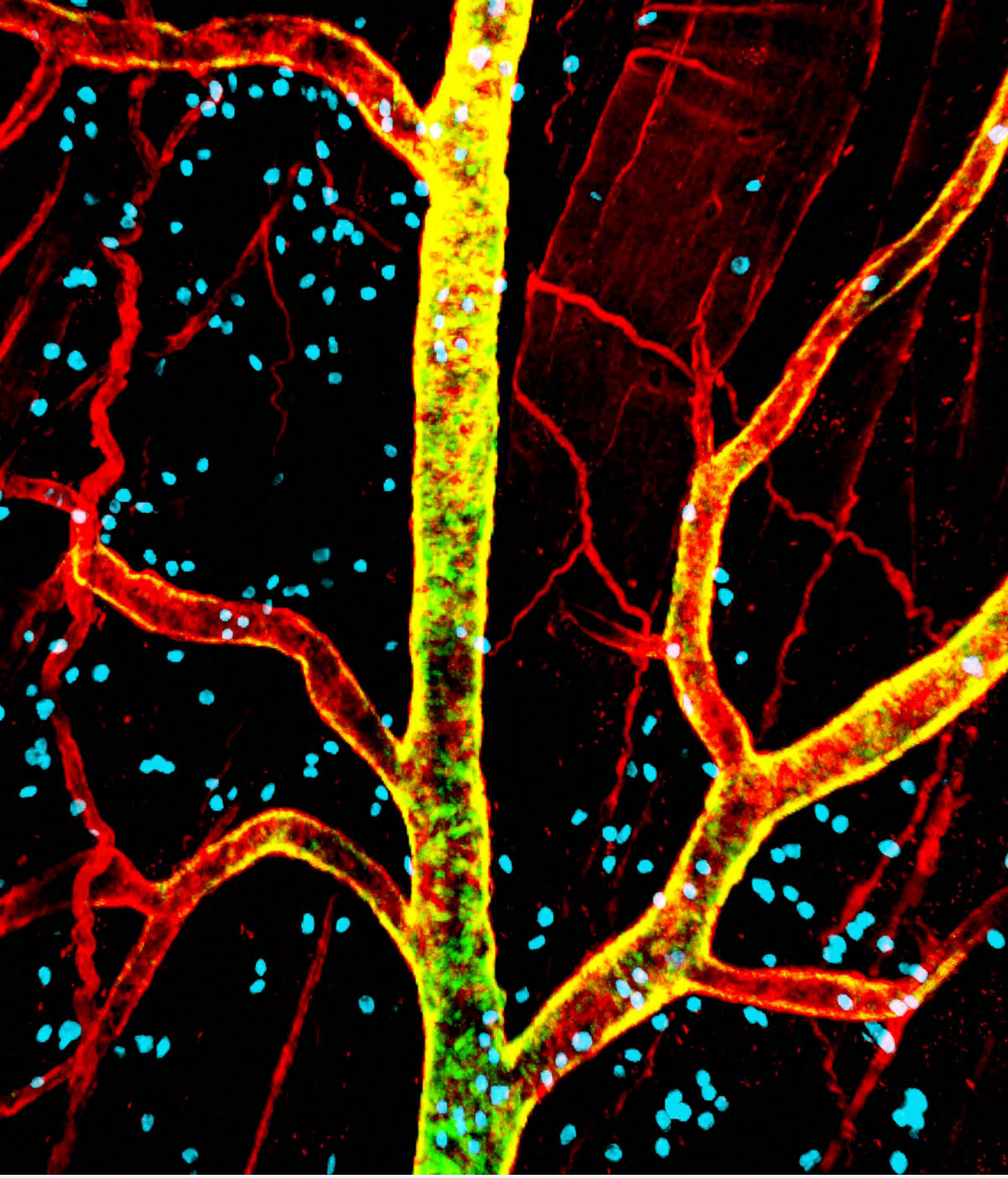
I've been in the job of secretary for just over a month so this is my first chance to write something for the newsletter. I've been involved with ASI for a long time starting with my first ASI conference in Melbourne as a naïve honours student. I'm excited to now be on the ASI council and to be part of where the society is heading in the future.

I started just in time to see the ICI travel awards go out and receive the many emails of acceptance. It's great to see that ASI was able to support so many students and postdocs to attend the Melbourne ICI in August.

For those of you who don't know me I thought I'd fill you in a little about who I am. I started off my immunology career at Sydney Uni and the Centenary Institute with Phil Hodgkin looking at T and B cell proliferation and differentiation and how these cells integrate the multiple signals that they can receive during an immune response. After that I moved to Toronto to do a postdoc with Pam Ohashi looking at the signalling pathways controlling T cell tolerance and activation. Although some would say the opportunity Toronto provided to play lots of ice hockey may also have contributed to my decision.

In 2007 I returned to Sydney to take up a position at the Garvan Institute working with Stu Tangye and Rob Brink on human primary immunodeficiency and developing mouse models to study them. I'm now the head of the Lymphocyte signalling and activation laboratory at Garvan where (as the name of my lab suggests) I continue my interest in the signalling pathways that control lymphocyte activation in order to generate protective immune responses and how that goes wrong in immunodeficiency. And what Australia lacks in ice hockey it makes up for many times over in a fantastic immunology community, not to mention scenery and climate that is more conducive to outdoor activity year round.

View on the run. Elissa's morning run takes in this vista
- Elissa Deenick



Tree of Life. Michaela Finsterbusch, Monash University. Blood vessels distribute immune cells (among others) throughout the body, which then exit the vasculature at sites of infection or injury to defend our body from disease-causing factors. **Winner of the Jacques Miller Choice Prize.**

Western Australia

Connie Jackaman
on behalf of the ASI WA committee

It has been a busy couple of months and we have had some excellent events to start the year! A big thanks to outgoing State Councillor, Andrew Currie, for all his hard work and dedication to ASI WA over the last three years. I am excited to follow on from Andrew as the next ASI WA Councillor and looking forward to supporting the immunology community in WA. As this is a full year with many local, national and international conferences, the WA committee has put together a calendar of ASI and other related events. This is available to download from the ASI website (www.immunology.org.au à Branches à Western Australia) and we will update this with more details throughout the year.

The ASI WA branch kick started the year with a sundowner following the ACS polychromatic flow cytometry roadshow at the Harry Perkins Institute for Medical Research on 4th April. Thanks to Scott Fisher and Andrea Holme for helping to schedule and organise this event. WA ASI members plus presenters and attendees from the workshop were invited to join for drinks and nibbles. This was well attended by all and was a great way for everyone to catch up following the roadshow. More recently, different sites across WA hosted events for International Day of Immunology, Friday 29th April (further reports are on the following pages).

In the next few months we are looking forward to hosting two international visiting speakers: Ben Seddon July 28/29 (local host, Phil Stumbles) and Muzlifah Haniffa August 11/12 (local host, Connie Jackaman/WA ASI). Both of the speakers will present a branch seminar and will be available to meet with local groups. Further details for their seminars/visits are to come and if you would like to schedule a meeting with either, please let us know. We always welcome any feedback/ suggestions and look forward to seeing you all soon!

Morning Tea at National Centre for Asbestos Related Diseases (NCARD), School of Medicine and Pharmacology, University of Western Australia, Harry Perkins Institute for Medical Research

Report by Wayne Aston

On April 29 the Tumour Immunology Group, part of the National Centre for Asbestos Related Diseases, hosted a Day of Immunology morning tea. Volunteers made immunology themed cakes/snacks, including bacteriophages that were constructed from homemade

Western Australia *cont.*

gingerbread pieces and some skillful pipetting of icing! There was a great representation of the anti-tumour immune response that included a nasty solid tumour surrounded by different cell types of the immune system including dendritic cells, T cells and macrophages. We also had an impromptu solid tumour constructed out of hedgehog slices with infiltrating T cells. The morning tea was enjoyed by all and the group voted that the gingerbread bacteriophages were the most impressive. Their creator, research assistant Danika Hope, was awarded the best NCARD immunology cake certificate as well as a bottle of wine sponsored by the WA branch of ASI.

Solid tumour with invading tumour-infiltrating lymphocytes - **Wayne Aston**, PhD student

The winning ginger bread bacteriophages - **Danika Hope,** research assistant

Anti-tumour immune response cake - **Rachael Zemek,** PhD student

Afternoon Tea at School of Pathology and Laboratory Medicine (PaLM), University of Western Australia

Report by Lucy Townsend

On Friday April 29, Dr Demelza Ireland and Lucy Townsend (Master of Infectious Disease student) co-hosted an afternoon tea for all the staff and

Western Australia *cont.*

students from the Master of Infectious Diseases and Master of Clinical Pathology. Everyone was invited to bake something immunology-related or to simply come and socialise between classes, eat some yummy cake and vote for the best one. There were 12 different treats to enjoy, including Gram stain cookies, a proteasome cake, a blood agar cake and a macrophage phagocytosing bacteria. There were about 50 guests who all tasted and

Left - **Demelza Ireland and Lucy Townsend**

voted for the best immunology-themed treat. The winner was Olivia Ruhen who baked a beautiful eosinophil cake with granules spilling out of it. Everyone was very enthusiastic and supportive of the bakers and overall it was a really good turn-out. This afternoon tea was the perfect way to celebrate the International Day of Immunology and to also bring together all the staff and students at PaLM.

Morning Tea at Curtin Health Innovation Research Institute (CHIRI), Curtin University

Report by Connie Jackaman

For the Day of Immunology, 29 April, staff and students from CHIRI were invited to bring along their best immunology-themed morning tea. Images from the “Snapshots of the Immune System” exhibition (organised by Gabriela Khoury) were on display and more than a dozen creative cakes, biscuits, savoury dips, pancakes and sushi were brought in to taste. These included a bacteriophage dipping bread, blood clot cake, flow cytometry sushi, precision B cell cake and chocolate truffle mice. Approximately 30 staff and students attended the morning tea and all the food was thoroughly enjoyed. All participants voted and the bacteriophage dipping bread, from PhD student Gae Ellison, was decided as the winner on the day!

Western Australia *cont.*

Blood clot, **Audrey Margery-Muir,** PhD student

Morning tea spread

Bacteriophage dipping bread

Gae Ellison, PhD student

The Cup

Day of Immunology 5-a-side soccer tournament at CHIRI, Curtin University

Report by Connie Jackaman

Following the morning tea, staff and students at CHIRI competed in the Day of Immunology 5-a-side soccer tournament organised by PhD student, Waheed Alrehaily. Participants were asked to join their "favourite immune cell" team and four teams were entered into the competition: T Cells, Dendritic Cells, Macrophages and B Cells. After the round games, the T Cells were exhausted whilst the Dendritic Cells struggled to process their loss. B Cells went on to play Macrophages in the final decider for the cup. In the first half, the B Cells closely regulated the Macrophages shutting down their attack and preventing them from scoring. B Cells then released their attack in the second half scoring two goals to win 2-0. Overall the day was a great success and we aim to make this an annual event. In particular, the T Cells vowed to remember and plan to mount a stronger response next year.

The winning team: B cells

Some of the action

New Zealand

Roslyn Kemp

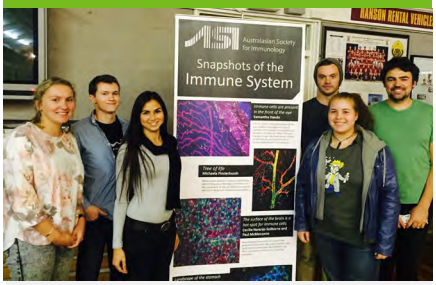
The NZ branch would like to congratulate our students and postdocs who received ASI Travel Awards to attend ICI: Sarah Saunderson, Braeden Donaldson, Kirsten Ward-Hartstonge, Brin Ryder (Dunedin), Lieke van den Elsen, Emma Petley (Wellington) and Joanna Mathy (Auckland). The NZ branch is pleased to be able to support travel for a further 20 students and postdocs.

The Day of Immunology was celebrated in Dunedin with a public quiz, organized and hosted by Brin Ryder. Over 100 people, mostly from the public, competed for some exciting prizes and to learn about immunology. Two large banners highlighting the DOI Snapshots of the Immune System were on display

Day of Immunology Quiz Night, Dunedin

and will be used for future ASI events. Thanks to the other helpers, Kirsten Ward-Hartstonge, Ed Taylor, Sam Norton, Pia Steigler, Ginny Niemi and Hamish Angus.

New Zealand *cont.*



DOI organisers - Kirsten, Brin, Pia, Hamish, Ginny, Ed

The NZ branch will also need a new Councillor from December 2016 – if you know someone who would do a good job, start arm twisting now.

Queensland

Kristen Radford

Date Claimer: ASI2017 will be held at the Brisbane Convention and Exhibition Centre from 27 November – 1 December 2017. An exciting line up of invited speakers has already been confirmed, including:

JUDITH ALLEN – UNIVERSITY OF MANCHESTER, UK

RICHARD BLUMBERG – BRIGHAM AND WOMENS HOSPITAL, HARVARD MEDICAL SCHOOL, USA

SHANE CROTTY – LA JOLLA INSTITUTE FOR ALLERGY & IMMUNOLOGY, USA

MARIAPIA DEGLI-ESPOSTI – THE UNIVERSITY OF WESTERN AUSTRALIA AND THE LIONS EYE INSTITUTE, AUSTRALIA

MICHAEL DUSTIN – KENNEDY INSTITUTE OF RHEUMATOLOGY, UNIVERSITY OF OXFORD, UK

PHIL HANSBRO – UNIVERSITY OF NEWCASTLE, AUSTRALIA

SUSAN KAECH – YALE SCHOOL OF MEDICINE, USA

YUTING MA – INSTITUTE OF SYSTEMS MEDICINE, CHINESE ACADEMY OF MEDICAL SCIENCES, CHINA

FABIENNE MACKAY – UNIVERSITY OF MELBOURNE, AUSTRALIA

FEDERICA SALLUSTO – INSTITUTE FOR RESEARCH IN BIOMEDICINE, UNIVERSITÀ DELLA SVIZZERA ITALIANA, SWITZERLAND

KEN SMITH - CAMBRIDGE INSTITUTE FOR MEDICAL RESEARCH, UK

MARK SMYTH - QIMR BERGHOFER, AUSTRALIA

More details will be available shortly at http://www.asi2017.org/

Congratulations to the following Queensland students and ECRs who were awarded bursaries to attend ICI. We were able to provide bursaries to 62% of Qld applicants, ensuring great representation of Queensland's brightest at ICI, if not our glorious

Queensland *cont.*

sunshine! Speaking of financial matters, we also welcome Jason Lynch as the new Treasurer for the Qld Branch committee.

Sponsored ICI Award recipients: Rhiannon Werder, Arabella Young, Ismail Sebina, Jennifer Bridge

ASI Central Award recipients: Susanna Ng, Charles Armitage, Takumi Kobayoshi, Rebecca Coll, Jason Lynch, Sara Thygesen, Jeremy Brooks, Chelsea Edwards, Roni Nugraha

Qld Branch Award Recipients: Jennifer Simpson, Heidi Harjunpaa, Kaustav Das Gupta, Champa Ratnatunga, Thomas Watkins, Rafid Alhallaf, Paula OCo Kuo, Sandip Kamath, Jessica Kling, Nazarii Vitak.

Over the coming months we look forward to welcoming to Queensland Muzlifah Haniffa (TRI, 8 August), Arlene Sharpe (QIMR 29-30 August) and Hiroshi Kiyono (10 November) as part of the ASI Visiting Speaker Program. Details on their seminar times and locations will be circulated to the Qld membership in the coming months. To find out more or to book at time with one of our VSP speakers, please contact the Qld VSP co-ordinator, Sumaira Hasnain, sumaira.hasnain@mater.uq.edu.au

We had a hugely successful Day of Immunology this year thanks to the efforts of our Qld DoI co-ordinator Danielle Stanisic and her committee – Sumaira Hasnain, Kirsty Short, Frances Pearson, Danica Hickey – along with Louise Morland, Belinda Coleman and Carla Paterson from TRI and Anne Brant at SPARQed. Below is a summary of the event. More info, photos and videos of the presentations can be found at https://www.tri.edu.au/day-immunology-2016-resources

Qld Branch Day of Immunology Events – Danielle Stanisic and Kirsty Short

What is it like to be a real life immunologist? This is the question that 30 Queensland high school students got to answer as part of Brisbane's Day of Immunology at the Translational Research Institute and the QIMR Berghofer Medical Research Institute. Students were given an Introduction to Immunology and then completed experiments in the lab to identify "Patient 0" in a disease outbreak scenario (TRI) or discovered new drugs for cancers (QIMR). The day concluded with a Career Chat, allowing students to talk to people in different scientific careers, ranging from science communication to academia. It was incredible to see the

Prof. Mike McGuckin

Queensland *cont.*

level of enthusiasm from the students and it was a great opportunity to share the highs (as well as the occasional lows) of a life in science.

The Day of Immunology then opened up to the general public with tours to various state-of-the-art laboratories within the TRI. This attracted a wide variety of different people, including undergraduate students and patients who were being treated for various immune disorders, all of whom were curious to see what went on 'behind the scenes' in immunology-based research. Whilst waiting for these tours, people were invited to enjoy some of the fantastic art from the "Day of Immunology Snapshots of the Immune System Photography Exhibition". They were also able to keep themselves informed about the latest information regarding the importance and efficacy

Ian Frazer and high school students

of vaccination at the "Vaccination Café". Many people were surprised to learn than even as far back as 1802 there were ardent anti-vaxers fighting against smallpox vaccination, claiming that the vaccination would turn you into a cow!

The evening culminated in excellent talks by Mike McGuckin, John Upham and Danielle Stanisic. These talks were a unique opportunity for the public to be exposed to cutting edge science

Prof.John Upham

that was explained in a clear and easy to digest manner. It was evident that the research resonated with the audience, with many being able to readily relate the research to their own personal experiences with various medical conditions. There was also the opportunity for the audience to vote on

High school students and SPARQed

the best minute 3-minute 'elevator pitch' from several different PhD students and post-docs. This gave the general public a chance to appreciate the diversity of immunological research in Brisbane, ranging from using human stem cells to 'humanise mice' to understanding how stress affects the anti-cancer response.

Public engagement award winners Kirsty Short & Michael Nissen

Dr Kirsty Short (UQ) and Mr Michael Nissen (UQ) won the Post-Doctoral and PhD student categories respectively of the inaugural Qld DoI Public Engagement Award.

The day was a resounding success and we hope that it gave everyone a greater insight into the exciting, challenging and ever-changing world of immunology.

South Australia

Iain Comerford

On Friday, April 29, we teamed up with the Royal Institute of Australia (RiAus) to celebrate the Day of Immunology by running a 'Vaccination Café'. Members of the public were invited to come along to experience immunology in action and get their flu vaccine and learn about immunology while they waited.

Mohammed Alsharif

The event was opened by Paul Flynn, the CEO of the Hospital Research Foundation which generously supported this event. Over the course of the day around 80 members of the public were vaccinated against the seasonal

John Hayball

South Australia *cont.*

influenza virus and engaged with our three local speakers – Dr Mohammed Alsharifi, Professor John Hayball and Dr Lisa Ebert – who all gave terrific talks. Also at the café we had various local immunology PhD students (Ella Green, Duncan McKenzie, Aneta Zysk, Kevin Fenix, Kerrie Foyle, Carly Gregor, Lih Tan, Hon-yeung Chan) on hand to discuss the immune system with the

Vaccinating Prof. Mike Brooks

public, a slideshow of the 'Snapshots of the Immune System' exhibition and various immunology-themed exhibits for kids available. I would like to thank the Hospital Research Foundation, RiAus, our invited guests who came along on the day to share their passion for immunology, Gabriela Khoury for

Lisa Ebert

the 'Snapshots of the Immune System' images and, finally, the organising committee who helped in the lead up to the event as well as on the day (Lisa Ebert, Tessa Gargett, Natasha Kolesnikoff, Duncan McKenzie, Jasmine Wilson, Amy Wooldridge, Carly Gregor, Emma Thompson, Chris Hope, Kristen Malatesta).

Coming up later this year we plan to run another Adelaide Immunology Retreat. This will be held later in the year than usual because of ICI and no ASI meeting (early November is the current plan). We will be convening an organising committee shortly to begin the planning and organisation of this so more details will emerge soon.

Victoria

Kim Pham

Day of Immunology Melbourne 2016 was a huge success with well over 1000 school children and general members of the public attending various activities in Victoria. This year's theme was "Immunology Heroes and Villains", and was celebrated by:

The inaugural "Snapshots of the immune system" photography

"Snapshots of the Immune System" photography exhibition at St. Ali's coffee roasters, South Melbourne. Photo: Othman Photography.

exhibition, held at St. Ali's coffee roasters in South Melbourne on Thursday 21st April. Congratulations to Michaela Finsterbusch (Monash University), winner of the Jacques Miller choice award for her entry of "Tree of Life", Fernando Souza-Fonseca-Guimaraes (WEHI), winner of the St. Ali's people's choice award, for his entry of "Inflammatory Bowel Disease", and Samantha Dando (Monash), winner of the Thermofisher Scientific for her entry

BDI discovery tour

of "Immune surveillance in the retina".

A free public lecture at the University of Melbourne, Doherty Institute on Friday 29th April. Eminent immunologists Dr. Maria Liaskos (Hudson Institute), Dr. Susanne Heinzel (WEHI) and Professor Dale Godfrey (UoM) and chairing by Professor David Tarlinton (Monash) spoke on the Heroes and Villains of our immune system. There was plenty of food for thought, especially with questions like "what vitamins do we need to have a healthy immune system?", or "how do we control the

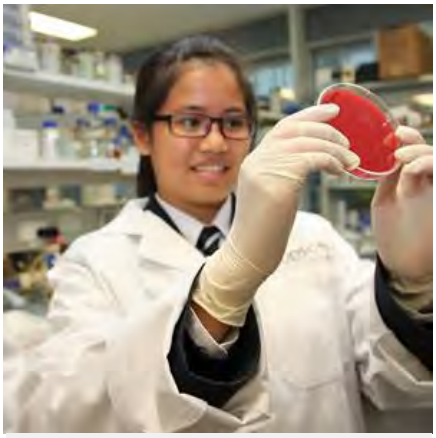
Dr. Jacqueline Flynn explains immunology at the Burnet Discovery Tour.

heroes from overacting in cancer immunotherapy?".

A vaccination café, held at the Melbourne Town Hall on Friday 29th April. An impressive 220 seasonal influenza vaccinations and 10 whooping cough boosters were administered to the general public. The vaccinated general public had the opportunity to discuss with local immunologists the science behind vaccination along

Victoria *cont.*

with a free coffee courtesy of St Ali's. Thank-you to our immunisation nurses Kerryn Lajoie (Vaccin8 at work), Wendy Reid (Immunise Melbourne, Melbourne Primary Health Care Network), Natalie Simpson Stewart (North Carlton Primary Health Care), and members from the Immunisation Coalition Kim Sampson and Susanne Sperber.



A student looking at inoculum on a plate at the Hudson Institute.

Full day immunology workshops for approximately 300 VCE Biology students and their teachers at the Gene Technology Access Centre in Parkville over April 28th and 29th, and Federation University in Ballarat (still to come on June 23rd). Students listened about

The public testing their hand washing skills under a UV lamp at the Doherty Institute Discovery Tour.

the immunology by Professor Phil Hodgkin, Sir Gus Nossall, Professor Peter Doherty, and Dr. Misty Jenkins,

Immunisation nurse Kerryn Lajoie explains to the public her influenza vaccination.

and attended a careers session over lunch from scientists of a variety of backgrounds.

Free Discovery Tours at six of Melbourne's leading immunology research institutes. Collectively over 100 members of the general public visited WEHI, Burnet Institute, Doherty Institute, Hudson Institute, Monash Biomedicine Discovery Institute and Monash Centre for Inflammatory Diseases.

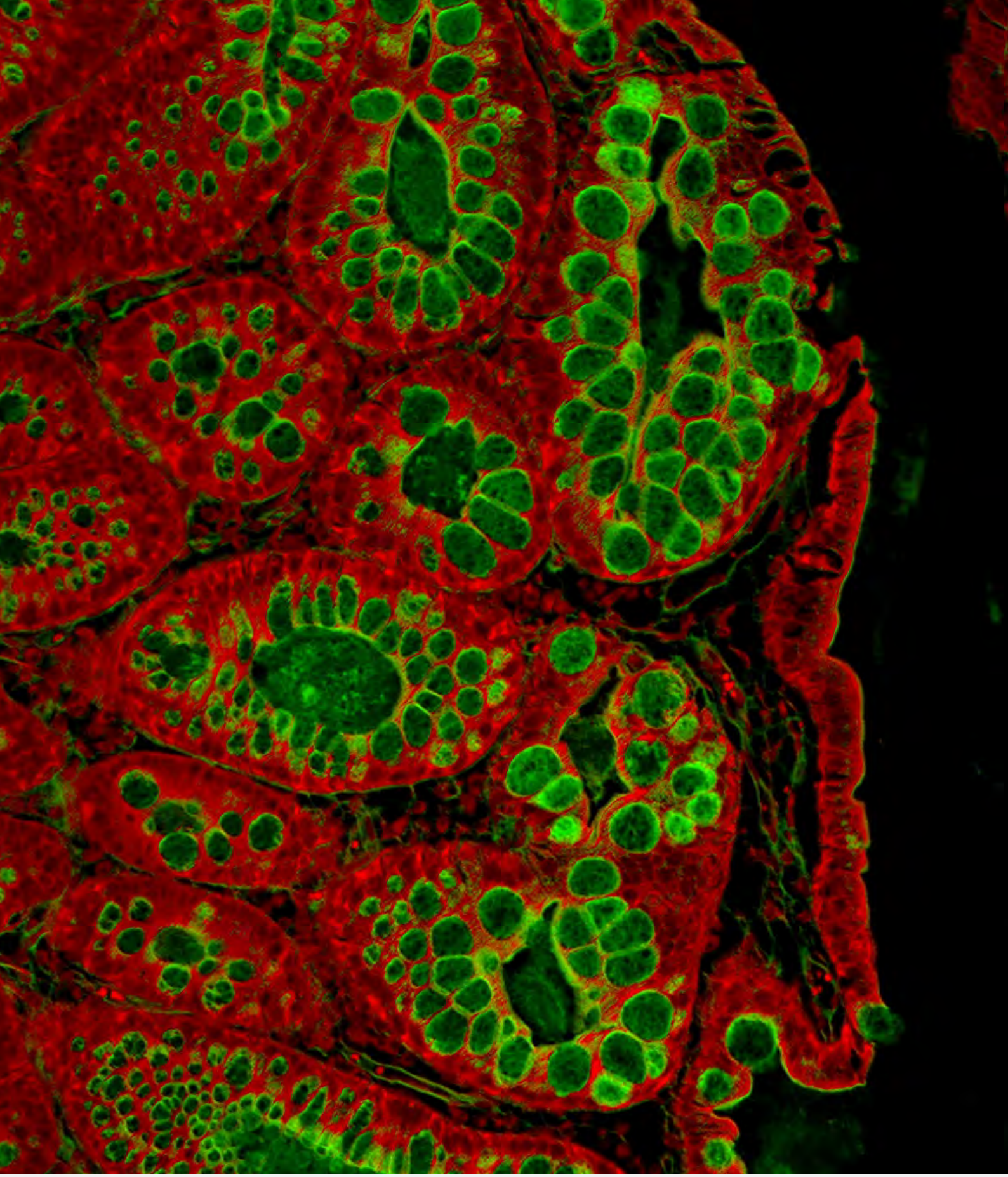
The success of Day of Immunology Melbourne is due to a team of over 50 volunteer scientists, dedicated chairs for each event, and a big push towards embracing social media for promotion. In addition to overseeing ASI social media, Dr Gabriela Khoury has been essential for the publicity of Day of Immunology Melbourne. Thank-you to all who volunteered their time and helped spread the importance of our immune system.

Finally, sincerest thanks must go to Dr. Claerwen Jones for her superb

Dr. Dimitra Zotos explains the intricacies of flow cytometry at the WEHI Discovery Tour.

organisation in the past 6 years as coordinator for Day of Immunology Melbourne. Claerwen has been critical to laying the foundation for what Day of Immunology Melbourne has grown into today. We thank-you for your dedication Claerwen.

The vaccination committee team. LtoR: Ms Fiona Ross (PDI), Dr Evelyn Tsantikos (Monash), Dr Katharine Goodhall (Monash), Dr Jodie Abramovitch (Monash), Dr Gabriela Khoury (Monash), Dr Thomas Gebhardt (PDI), Ms Haiyin Liu (PDI), Ms Natalie Simpson-Stewart (North Carlton Medical Clinic), Ms Wendy Reid (Melbourne Primary Health Care Network), Mr Felipe De Castro Cruz (St Ali), Ms Kerryn Lajoie (Vaccin8@Work), Ms Sarah Spain (St Ali), Dr Matt Firth (WEHI), Dr Kim Pham (WEHI), Mr Hugo Mateu (St Ali) Mr Jai Rautela (WEHI). Absent: Dr Gavin Brooks, Mr Kim Sampson (Immunisation Coalition), Ms Susanne Sperber (Immunisation Coalition)



Inflammatory Bowel Disease. Souza-Fonseca-Guimaraes, Walter and Eliza Hall Institute of Medical Research. Inflammatory bowel disease (e.g. ulcerative colitis or Crohn's disease) is a chronic type of intestinal inflammation, stemming from a dysfunctional immune response. Intestinal inflammation can result in cramping, pain, diarrhoea, and most seriously life-threatening colon cancer. Herein, we show a novel microscopy technique to illuminate and image the intestinal cells named Goblet cells. This cell is responsible for producing mucus in the colon, which will protect the intestinal tissue and prevent immune dysfunction, which can promote disease aggravation. **Winner of the St Ali's people choice prize.**

Ashleigh Poh

Myeloid Cells Keystone Symposia - Killarney April 10 -14 2016, County Kerry, Ireland

This April I had the opportunity and privilege to attend the Myeloid Cells Keystone Conference in Ireland. This visit was financially supported by the ASI Post-Graduate Travel Award, for which I am extremely grateful.

After 23+ hours on the plane from Melbourne, I was relieved to finally spend some ground time in the picturesque surroundings of Killarney. The meeting kicked off with an outstanding keynote presentation by Prof. Douglas Golenbock, who showed that the accumulation of insoluble beta amyloid peptides triggered the activation of inflammasomes in microglial cells, resulting in neuronal cell death in Alzheimer's disease. Over the next few days we were treated to the latest unpublished and ground-breaking research in macrophage biology and ontogeny from an impressive line-up of experts, including Prof. Eicke Latz and Prof. Irina Udalova. There was also a dedicated session to myeloid cells in disease models, in particularly cancer, which was directly relevant to my research.

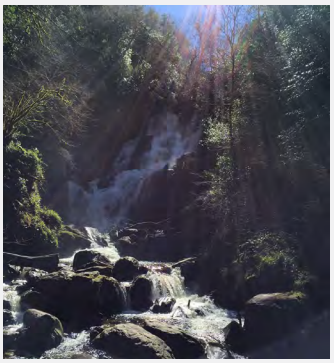
During the highly interactive poster session I had the opportunity to present and have my results critically assessed by many of these eminent scientists, which greatly strengthened my scientific development and understanding of the emerging trends in tumour immunology. The feedback that I received has helped substantially in shaping the direction of my experiments by offering a fresh perspective on theory and experimental design.

In between sessions, we were also given a generous amount of time to explore the beautiful and peaceful scenery of Killarney. I had such an amazing time horse riding around the National Park and hiking up to the Torc Waterfall.

Horse-riding around the Killarney National Park in Ireland

After the conference, I travelled to Trinity College Dublin to explore potential postdoctoral opportunities. I was lucky enough to visit the laboratory of Prof. Kingston Mills who is at the forefront of T-cell biology and immune regulation research. After presenting a seminar, I had the pleasure of spending a few hours with the lab members who were kind enough to take time out of their busy schedules to share their research and show me around. I'm thankful to Prof. Mills and his lab for the warm welcome, and look forward to reconnecting with them at the International Congress of Immunology conference in Melbourne this year.

Overall, this trip has been an important stepping stone for me to gain international exposure and expand my professional networks. Once again, I would like to sincerely thank ASI for the opportunity to travel and present my data at the Myeloid Cells Keystone meeting. It was a rewarding journey and now that I'm back in Melbourne writing up my thesis, I can look back and reflect on the amazing time I had abroad.



View from the bottom of **Torc waterfall in Killarney**, Ireland

Katrina Binger -Baker IDI Heart and Diabetes Institute, Melbourne

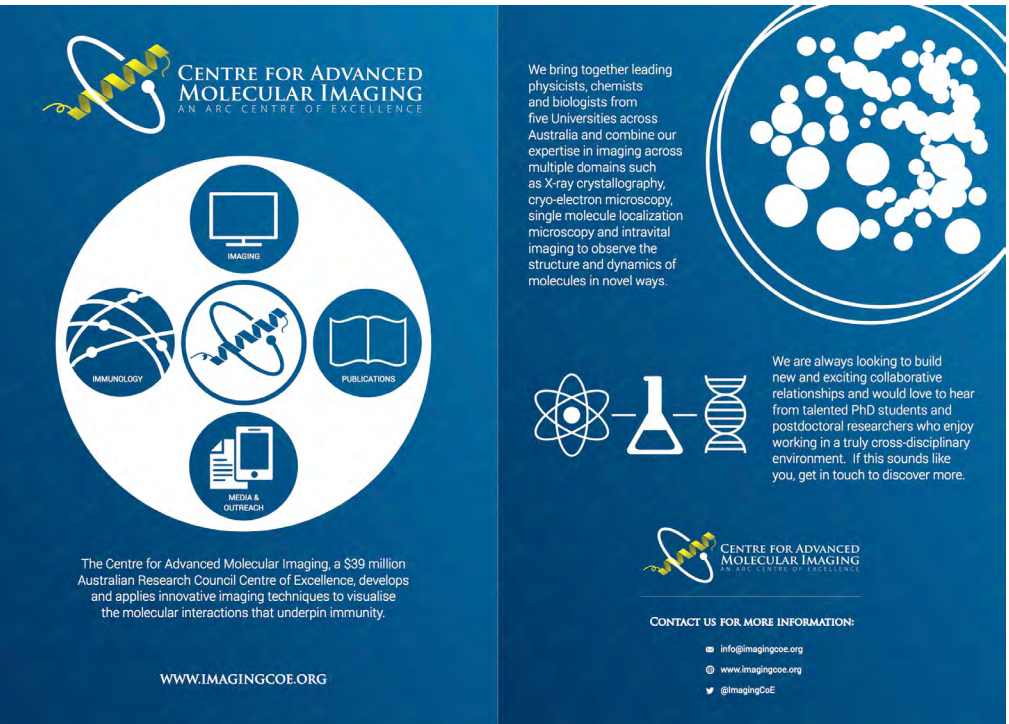
Gordon Research Conference: Angiotensin, 21–26 February 2016, Renaissance Tuscany Il Ciocco in Lucca (Barga), Italy and lab visit to Max-Delbruck Center for Molecular Biology, Berlin, Germany

Visit to a local cheese farm - **Katrina Binger**

High blood pressure (hypertension) is not a disease typically associated with immunology; immunologists do not usually study models of hypertension, and conversely, cardiovascular scientists generally do not consider the contributions of the immune system to their models. However, evidence is mounting that immunity has a key role in the pathogenesis and development of hypertension, with some scientists calling for hypertension to be reclassified as an autoimmune disease. T cells are known to be essential for blood pressure elevation in mouse models of hypertension: RAG1-deficient mice do not develop hypertension, however, upon adoptive transfer of synergistic T cells, the blood pressure response is restored (Guznik et al, JEM 2007). Moreover, high titres of autoantibodies are detected in patients with essential and pregnancy-induced (preeclampsia) hypertension (Xia & Kellems, Circ Res 2013); further supporting this concept that hypertension is an autoimmune disease.

It is for this reason that I found myself at the Gordon Research Conference on Angiotensin in February this year. This conference was about all things hypertension – the name “Angiotensin” is derived from the hormone cascade involved in regulating blood pressure, the renin-angiotensin system. Talks at the conference were incredibly broad, incorporating both basic science and clinical research, with one whole session devoted to immunity and inflammation. A highlight was Daniela Carnevale, who demonstrated that the spleen is an essential organ in the development of hypertension. Splenectomised mice did not develop hypertension and she further elucidated the molecular mechanism for this effect via complex multi-organ crosstalk centred on the activity of splenic-derived placental growth factor (PIGF) (Carnevale et al, Immunity 2014).

Poor diet, and particularly consumption of high amounts of salt (sodium chloride) is a well-established risk factor for hypertension. My recent postdoctoral studies in the Max-Delbruck Center for Molecular Medicine, Berlin, Germany, investigated a putative link between high dietary salt and the immune system. Briefly, we found that high salt has a differential effect on the activation of macrophages: high salt augmented the activation of pro-inflammatory LPS-stimulated



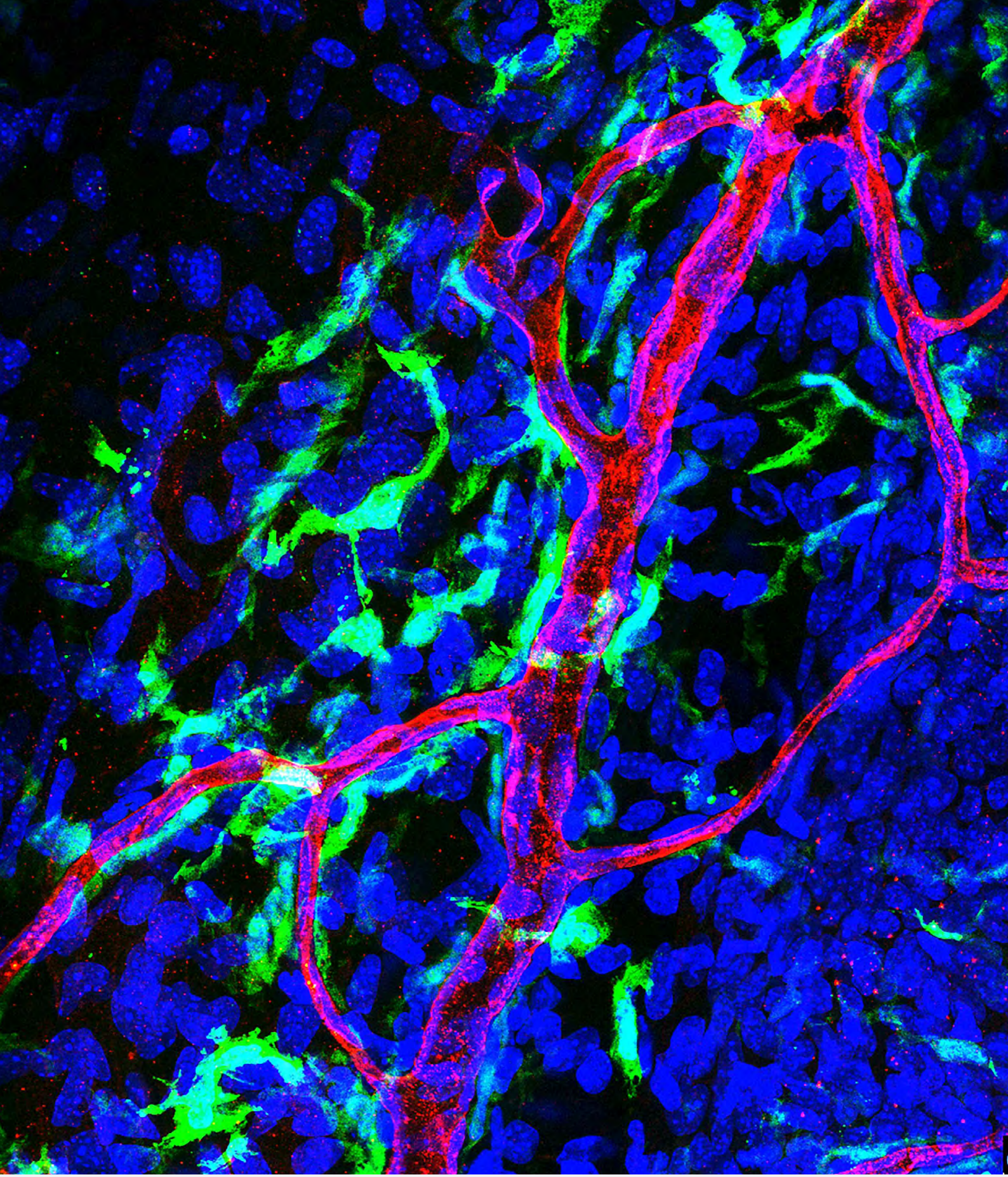
The salt team. Jonathan Jantsch, myself, Dominik Müller **- Katrina Binger**

macrophages (Jantsch et al, Cell Metab 2014), while it contrastingly reduced the activation of anti-inflammatory IL-4+IL-13-stimulated macrophages (Binger et al, JCI 2015). I presented a poster on our recent findings on salt and macrophage cellular metabolism and activation. My postdoctoral supervisor, Dominik Müller, also chaired a session at the conference on salt physiology and metabolism. Jens Titze from Nashville University gave a stimulating talk on salt homeostasis and shared some preliminary evidence that that whole-body metabolism, and particularly the liver, is key to interstitial sodium retention. These findings may have implications for the numerous diseases associated with high dietary salt intake, including autoimmune conditions such as multiple sclerosis and rheumatoid arthritis.

While visiting Italy in February can be rainy, cold, and dark, I was very lucky to have quite a few days of nice, clear weather. The conference was located in the hills of Tuscany, in one of the nicest conference hotels imaginable. The hotel also organised several activities for conference attendees, including a visit to a local farm to observe how this family have made cheese for 300 years; of course followed by some tasting of excellent Italian cheese!

The view from the hotel **- Katrina Binger**

In all, it was a stimulating trip and I was especially glad to have the opportunity to network and make scientific plans with my collaborators. I thank the ASI for providing me with this opportunity.



Immune cells are present at the edge of the cornea. Cecilia Naranjo Golborne and Paul McMenamin, Monash University. A specialised group of immune cells called perivascular macrophages (green) are found in the limbus of the eye, which borders the cornea. These cells closely associate with the blood vessels at the edge of the cornea (red).

Danyal Butt

- Immunology Division, Garvan Institute of Medical Research, Sydney

4th European Congress of Immunology, 6 -9 September, Vienna, Austria

In September 2015 I travelled to Vienna for the 4th European Congress of Immunology (ECI). The ECI is held every three years and replaces the annual meetings of each individual country's immunology society for that year. More than 4000 delegates attended ECI 2015, with Australian and New Zealand immunology being well represented with over 70 submitted abstracts. The scientific program was structured into four tracks dedicated to the fields of innate immunity, adaptive immunity, diseases of the immune system and immune interventions. With over eight concurrent sessions being held each day, it was a fantastic showcase of international immunology.

Some of the scientific highlights of the meeting for me included a talk by Klaus Rajewsky (Max-Delbruck Center for Molecular Medicine). Rajewsky's talk was a tour de force on the role of the B cell receptor in B cell development, memory and malignancies. In particular, Rajewsky showed data, which identified the transcription factor FOXO1, and the PI3K signalling pathway as essential antagonistic regulators of

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Danyal at the 4th European Congress of Immunology - **Danyal Butt**

Arabella Young

- QIMR Berghofer Medical Research Institute

Keystone Symposia - Purinergic Signaling, 24 - 28 January 2016, Vancouver, Canada

Connecticut Hall – the oldest building at Yale University - **Arabella Young**

Immunotherapeutic strategies that enhance an immune response towards cancer have shown recent success within the clinic. With a growing number of immunomodulatory targets entering preclinical and clinical testing, this rapidly expanding research area is gaining much attention. To receive an update about the latest advances, I attended the Purinergic Signaling joint with the Cancer Immunotherapy: Immunity and Immunosuppression Meet Targeted Therapies Keystone Symposia. This combined meeting was particularly suited to my PhD research as I study the role of the purine adenosine, an immunosuppressive metabolite, in the tumour microenvironment.

The Purinergic Signaling meeting aimed to promote awareness about how purinergic signals modulate cellular responses that contribute to a number of pathologies, including cancer. A broad range of research was covered from optimization of targeted therapeutic strategies to the diverse associations between adenosine-related markers and disease outcome. Most importantly, this meeting provided an excellent opportunity to develop relationships with pioneers of the field, including Professors Michail Sitkovsky, Christa Mueller and Joel Linden, who have been long standing stalwarts of the adenosinergic community. Much of the interest regarding adenosine as a potential therapeutic target in cancer can be attributed to research performed in Australia, with Phil Darcy and Mark Smyth sharing discoveries from their groups as well as John

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Schönbrunn Palace - **Danyal Butt**

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Danyal Butt cont.

the GC response. Antonio Lanzavecchia (Institute for Research in Biomedicine) gave a fascinating insight on the generation of broadly neutralising antibodies and novel mechanisms of diversification. Whilst analysing broadly neutralising antibodies against strains of Plasmodium falciparum, Lanzavecchia and colleagues discovered DNA sequences from genes that mapped outside of the antibody heavy chain gene repertoire thereby suggesting a role for DNA transposition as a novel mechanism of antibody diversification. Tasuku Honjo (Kyoto University) gave an inspiring presentation on the discovery of PD-1 and the development of anti-PD1 therapy for a number of cancers. Honjo's talk served as a perfect reminder of how investments made over many years in basic immunology research have resulted in advances for cancer immunotherapy.

Amongst such a fantastic line up of speakers I was fortunate enough to be selected to give an oral presentation in the Germinal Centres (GC): Survival and Differentiation Signals session. I presented work from my PhD project, which has resulted in the identification of a novel subset of GC B cells. My work was particularly well received by both members of the GC B cell field as well as other members of the audience.

Apart from the science, there were a number of other conference highlights. This included the opening ceremony where the Viennese Orchestra performed music by maestros such as Mozart, Schubert and Beethoven. There was also an exhibition organised at the conference that highlighted the significant contributions of Austrian scientists to immunology research. This included the discovery of the blood groups by Viennese Nobel laureate Karl Landsteiner and Clemens von Pirquet coining the term

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Arabella Young - Purinergic Signaling poster session

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Arabella Young cont.

Stagg, formerly of the Peter MacCallum Cancer Centre.

What was clear from this meeting was that there is a lot of commercial interest in the adenosinergic pathway. At the poster session, following my short talk, I was greeted with numerous questions from industry researchers, curious about how my findings may relate to the clinical utility of their adenosine-related therapies in the pipeline.

The other half of the meeting showcased a variety of cancer immunotherapies currently being explored including the use of CAR- and TCR-based T cells, exploring neoantigens derived from the tumour, the role of microbiota in modulating therapeutic efficacy and determining optimal combinatorial therapeutic strategies. Highlights included Tom Gajewski's investigation in to the constitutive activation of □-catenin immobilizing immune cells within the tumour microenvironment and Jerome Galon's elegant definition of the immune contexture and development of the immunoscore.

Following, I visited laboratories at UCSF and Yale University (pictured), to identify potential postdoctoral positions before flying out of New York at -15 °C, only to

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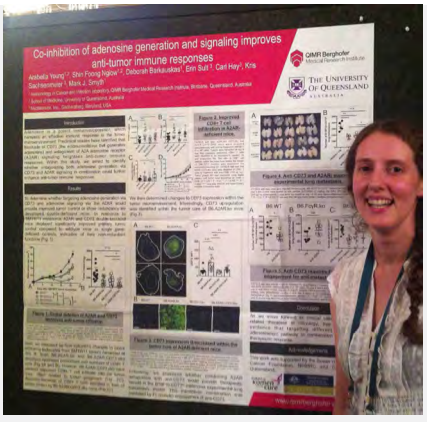

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Danyal Butt cont.

'Allergy' in Vienna.

On the sidelines of the conference I had the opportunity to meet up with Graham Warren, Director of the Max F. Perutz Laboratories in Vienna and the father of a dear friend. It was a fantastic opportunity to discuss the future of scientific research and gain insights into the funding opportunities available for researchers in Europe. Graham and his wife, Philippa, were very gracious hosts and took me to Café Central, a traditional Viennese café and a key meeting place of the Viennese intellectual scene during the 19th century with regulars including Freud, Trotsky and Herzl. Vienna is a dream city for anyone with an interest in history. Narrow medieval alleyways and grand boulevards lead to historic sights such as the Imperial Palace (Hofburg), the Spanish Riding School, St Stephen's Cathedral and the Opera House. Whilst in Vienna I took the opportunity to visit Schönbrunn Palace and managed to fit in a trip to Sigmund Freud's house, which had some well-curated exhibits. Overall I had a fantastic time at the conference and I'm sincerely grateful to ASI for supporting me by funding this trip.

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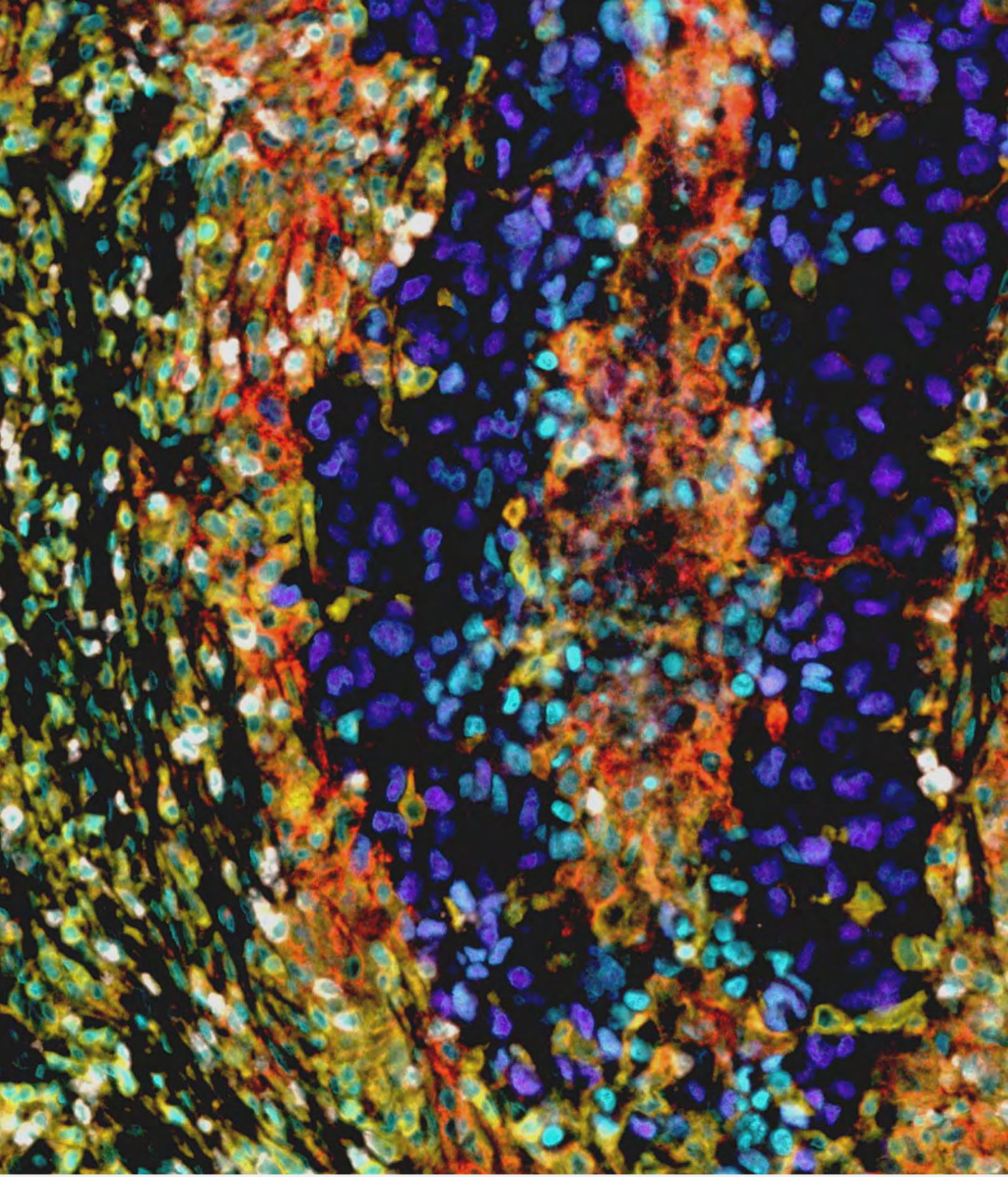
Arabella Young cont.

return to mid-summer in Brisbane.

My sincere thanks to the ASI for their generous travel scholarship, which allowed me to participate in this conference and undertake additional laboratory visits. At a time when Australian medical research funding is so limited, ASI's contribution to its members to attend meetings is critical.



T cells see red; cancer immunotherapy to the rescue, Dani Tutuka, Olivia Newton-John Cancer Research Institute. A snapshot of a melanoma tumour. The melanoma cells (purple) are surrounded by various kinds of immune cells. To protect itself this tumour displays an ‘immune blocking’ molecule, seen here in red, which shields it from immune attack. Immune cells, seen here in white (killer T cells) and yellow (helper T cells), patrol the body to hunt and kill cancer cells. To help these cancer killing cells access the tumour we use antibodies which target immune blocking molecules (red), and make the cancer cells vulnerable to immune cell attack.

ICI TRAVEL BURSARIES WINNERS

The ASI Awards Committee are pleased to announce the winners of the ASI ICI 2016 travel bursaries.

ASI have awarded 210 bursaries, including 3 ASI-FIMSA Awards. This year, the success rate was 75% from an overwhelming 276 applicants!

We would like to acknowledge the wonderful support we receive from our awards sponsors. We've been fortunate to have outstanding contributions from Monash University Department of Immunology and Pathology, Monash University Department of Biochemistry and Molecular Biology, Garvan Institute, University of Newcastle, Pharmaxis, University of Adelaide, Hospital Research Foundation, Centre for Cancer Biology, Monash University, Department of Immunology, AMREP, Monash Biomedicine Discovery Institute

Congratulations to the following ICI 2016 travel bursary awardees:

ACT

Ilenia Papa, Hayley Macnamara, Jonathan Roso, Mehmet Yabas, Brigette Boast, Paula Gonzalez, Mayura Wagle, Henry Sutton, Jin Yan Yap.

NSW

Imogen Moran, Malcolm Starkey, Bethany Pillay, Tommaso Torcellan, Alexandra Brown, Richard Kim, Bernadette Jones, Deborah Burnett, Thomas Ashhurst, Simone Rizzetto, Holly Bolton, Angelica Lau, Simon Pelham, Yik Chun Wong, Christoph Jandl, Luan Vu, Caroline Ashley, Gabriela Segal, Danyal Butt, Alisa Kane, Medhi Rasoli Pirozyan, Annaliese Ashhurst, Felix Marsh-Wakefield, Hannah Pooley, Tessa Campbell, Jemma Mayall, Naomi Truong, Nicholas Geraghty.

New Zealand

Sarah Saunderson, Braeden Donaldson, Kirsten Ward Harstonge, Lieke van den Elsen, Joanna Mathy, Brin Ryder, Emma Petley, Nicholas Shields, Pia Steigler, Muhsin Morad-Remy, Inken Kelch, Patricia Rubio Reyes, Daniel Verdon, Pirooz Zareie, Elyce du Mez, Hazel Poyntz, Megha Budhwani, Nicola King, Katrin Kramer, Jennifer Eom, Estelle Peyroux, Silke Neumann, Karmella Naidoo, Keeho Lee, Nikki Templeton, Shirley Shen, Yasmin Sadrolodabai.

QLD

Rhiannon Werder, Arabella Young, Ismail Sebina, Jennifer Bridge, Susanna Ng, Charles Armitage, Takumi Kobayoshi, Rebecca Coll, Jason Paul Lynch, Sara Thygesen, Jeremy Brooks, Chelsea Edwards, Roni Nugraha, Jennifer Simpson, Heidi Harjunpaa, Kaustav Das Gupta, Champa Ratnatunga, Thomas Watkines, Rafid Alhallaf, Paula Kuo, Sandip Kamath, Jessica Kling, Nazarii Vitak.

SA-NT

Natalie Stevens, David Shannon, Kerrie Foyle, Annabelle Small, David Shields, Lih Tan, Ervin Kara, Ella Green, Andrew Stempel, Cameron Bastow, Duncan McKenzie, Danushka Wijesundara, Tessa Gargett, Jade Foeng, Carly Gregor, Jasmine Wilson, Kevin Fenix.

WA

Jonatan Leffler, Mark Christian Tijam, Stephanie Trend, Niamh Troy, Rachael Zemek, Lilian Cha, Joanne Gardner, Anthony Buzzai, Audrey Margery-Muir, Jean-Francois Lauzon-Joset, Anderson Jones, Anja Jones, Kyle Mincham, Tulia Mateus.

VIC-TAS

Timothy Johanson, Hamish McWilliam, Paul Baker, Nicholas Gerardin, Julia Prier, Hui-Fern Koay, Jodie Abramovitch, Erica Wynne-Jones, Joshua Rozario, Jessica Li, Christophe Macri, Simone Parke, Kim Pham, Wen Shi Lee, Ashleigh Poh, Annabell Bachem, Marie Greyer, Shereen Oon, Jay Rautela, Vahti Irani, Dawn Lin, Kirsteen Tullett, Carmen Yong, Catarina Filipa dos Santos Sa e Almeida, Sidonia Eckle, Andrey Kan, Rhea Longley, Rebecca Delconte, Michael Low, Ann Ly, Jie Zhou, Jolie Cullen, Amanda Woon, Patricia Illing, Georgia Atkin-Smith, Xia Yingju, Reema Jain, Kok Fei Chan, Aleta Pupovac, Darryl Johnson, Sergio Quinones Para, Marice Alcantara, Jason Kelly, Tobias Meredith, Thomas Angelovich, Gavin Brooks, Alicia Chenoweth, Jasper Cornish, Katharine Goodall, Evelyn Tsantikos, Xi Zen Yap, Andrew Foers, Antonia Policheni, Bryan Lye, Charlotte Slade, Catriona Nguyen-Robertson, Jun Ting Los, Florence Lim, Kun Yang, Logesvaran Krshnan, Haiyin Liu, Marilou Barrios, Maryam Rashidi, Melanie Heinlein, Natalia Sampaio, Jess Chadderton, Peggy The, Robyn Schenk, Simone Nuessing, Tan Nguyen, Tom Sidwell, Sneha Sant, Yanhui Xu, Yuhao Jiao, Jessica Anania, Andrea Di Pietro, Andrew Guy, Wei Yi Ng, EE Shan Pang, Louise Rownree, Sj Shen, Rushika Wirasinha, Ting Wu, Louisa Yeung, Emily Mulcahy, Amanda Patchett.

Overseas Members

Shibabrata Mukherjee, Emma Grant, Connie Duong.

ASI-FIMSA Award winners

Mannish Priyam (India), Jingjing Liang (China), Rahul Shivahare (India).

Publication List - Our Journals and Sustaining Members

February 2016 - April 2016

Popular articles from *IMMUNOLOGY AND CELL BIOLOGY* and *CLINICAL AND TRANSLATIONAL IMMUNOLOGY* from recent months as well as publications making use of tools, services or reagents supplied by our SUSTAINING MEMBERS.

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Gleeson M. Immunological aspects of sport nutrition. Immunol Cell Biol 2016; 94:117-123. doi:10.1038/icb.2015.109.

Mika A, Fleshner M. Early-life exercise may promote lasting brain and metabolic health through gut bacterial metabolites. Immunol Cell Biol 2016; 94, 151–157. doi:10.1038/icb.2015.113.

Smith, J. R., Stempel, A. J., Bharadwaj, A. & Appukuttan, B. Involvement of B cells in non-infectious uveitis. Clin Transl Immunology 5, e63 (2016).

Macri, C., Dumont, C., Johnston, A. P. & Mintern, J. D. Targeting dendritic cells: a promising strategy to improve vaccine effectiveness. Clin Transl Immunology 5, e66 (2016).

Corrêa-Oliveira, R., Fachi, J. L. L., Vieira, A., Sato, F. T. & Vinolo, M. A. Regulation of immune cell function by short-chain fatty acids. Clin Transl Immunology 5, e73 (2016).

abcam

Pradeepa, M. M. *et al.* Histone H3 globular domain acetylation identifies a new class of enhancers. *Nat. Genet.* **48,** 681–6 (2016).

Fay, M. E. *et al.* Cellular softening mediates leukocyte demargination and trafficking, thereby increasing clinical blood counts. *Proc. Natl. Acad. Sci. U.S.A.* **113,** 1987–92 (2016).

Quarato, G. *et al.* Sequential Engagement of Distinct MLKL Phosphatidylinositol-Binding Sites Executes Necroptosis. *Mol. Cell* **61,** 589–601 (2016).

MACS
Miltenyi Biotec

Koliha, N. *et al.* A novel multiplex bead-based platform highlights the diversity of extracellular vesicles. *J Extracell Vesicles* **5,** 29975 (2016).

Exosome analysis kit Super-resolution microscopy dyes

Shinoda, K. *et al.* Thy1+IL-7+ lymphatic endothelial cells in iBALT provide a survival niche for memory T-helper cells in allergic airway inflammation. *Proc. Natl. Acad. Sci. U.S.A.* **113,** E2842–51 (2016).

Lung Dissociation kit GentleMACS tissue Dissociator

De Monte, L. *et al.* Basophil Recruitment into Tumor-Draining Lymph Nodes Correlates with Th2 Inflammation and Reduced Survival in Pancreatic Cancer Patients. *Cancer Res.* **76,** 1792–803 (2016).

Basophil isolation kit CD 14 microbeads for monocytes CD203c antibody

Miner, J. J. *et al.* Zika Virus Infection during Pregnancy in Mice Causes Placental Damage and Fetal Demise. *Cell* **165,** 1081–91 (2016).

Affymetrix… RNA FISH was performed using ViewRNA ISH Tissue 2-Plex Assay kit (Affymetrix) … probe targeting ZIKV RNA was designed and synthesized by Affymetrix and was based on the ZIKV French Polynesian 2013 genomic RNA sequence …

Torrentes-Carvalho, A. *et al.* Characterization of clinical and immunological features in patients coinfected with dengue virus and HIV. *Clin. Immunol.* **164,** 95–105 (2016).

eBioscience… Levels of IL-1RA, IL-17 A, IL-10,IL-4, IL-6, IFN-γ, IL-8/CXCL8, RANTES/CCL5, IP-10/CXCL10 and MIP-1β/CCL4 were determined by ELISA and Multiplex immunoassay kits (eBioscience BMS203 INST; ProcartaPlex Multiplex Immunoassay; eBioscience EPX01010420901) in compliance with the manufacturer's directions.

Clausen, M. J. *et al.* Identification and validation of WISP1 as an epigenetic regulator of metastasis in oral squamous cell carcinoma. *Genes Chromosomes Cancer* **55,** 45–59 (2016).

Diagenode .. MethylCap-Seq was reported as an innovative new high-resolution technology to uncover DNA- Methylation … methylated DNA fragments were captured with the Methyl-Cap kit (Diagenode, Belgium) according to the manufacturer's protocol.

Publication List - ASI Members

February 2016 - April 2016

Andreas Behren

Yao, J. *et al.* Altered Expression and Splicing of ESRP1 in Malignant Melanoma Correlates with Epithelial-Mesenchymal Status and Tumor-Associated Immune Cytolytic Activity. *Cancer Immunol Res* (2016). doi:10.1158/2326-6066.CIR-15-0255

Jayachandran, A. *et al.* Transketolase-like 1 ectopic expression is associated with DNA hypomethylation and induces the Warburg effect in melanoma cells. *BMC Cancer* **16,** 134 (2016).

Woods, K. *et al.* Mismatch in epitope specificities between IFNγ inflamed and uninflamed conditions leads to escape from T lymphocyte killing in melanoma. *J Immunother Cancer* **4,** 10 (2016).

Gedye, C. *et al.* Mycoplasma Infection Alters Cancer Stem Cell Properties in Vitro. *Stem Cell Rev* **12,** 156–61 (2016).

Antje Blumenthal

Schultz, T. E. & Blumenthal, A. The RP105/MD-1 complex: molecular signaling mechanisms and pathophysiological implications. *J. Leukoc. Biol.* (2016). doi:10.1189/jlb.2VMR1215-582R

Cohen, J. *et al.* Glucocorticoid Sensitivity Is Highly Variable in Critically Ill Patients With Septic Shock and Is Associated With Disease Severity. *Crit. Care Med.* **44,** 1034–41 (2016).

Irina Buckle

James, C. R. *et al.* Reduced interleukin-2 responsiveness impairs the ability of Treg cells to compete for IL-2 in nonobese diabetic mice. *Immunol. Cell Biol.* **94,** 509–19 (2016).

Brendon Chua

Olson, M. R. *et al.* Competition within the virus-specific CD4 T cell pool limits the T follicular helper response after influenza infection(¶). *Immunol. Cell Biol.* (2016). doi:10.1038/icb.2016.42

Rebecca Coll

Bezbradica, J. S., Coll, R. C. & Schroder, K. Sterile signals generate weaker and delayed macrophage NLRP3 inflammasome responses relative to microbial signals. *Cell. Mol. Immunol.* (2016). doi:10.1038/cmi.2016.11

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