NEWSLETTER

Australasian Society for Immunology Incorporated

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Towards Antigen-specific Tolerance for Autoimmune Diseases: Coalface, Clinic and Commercialization

Professor Ranjeny Thomas

As a student at the University of Western Australia (UWA), I studied medicine primarily for the career options it offered, but soon found myself searching for a subject that would satisfy both my creativity and curiosity. I found it during my physician's advanced training, when a visiting Immunology Fellow was invited to help our study group in Immunology.

Studying Immunology opened a whole new world for me. I commenced Rheumatology training, both because Rheumatologists dealt with autoimmune diseases and also because they do only small amounts of on-call work! I undertook some clinical translational projects mentored by Dr Graeme Carroll and then Prof Roger Dawkins. These mentors ignited my passion for research, and I decided to undertake a doctorate (MD) through UWA. As my work progressed, I was intrigued to unravel the puzzle of how autoimmune diseases, like rheumatoid arthritis (RA), were caused. What was causing the immune system to turn on benign tissues in the body? My search for a solution led me to the laboratory of the pre-eminent US Rheumatologist and Immunologist Peter Lipsky at the University of Texas Southwestern Medical Center. Here I discovered my niche at the intersection of laboratory research and clinical Rheumatology practice. While I came with grand ideas of working on RA, Peter insisted I work on healthy humans in order to understand RA, and suggested I look at dendritic cells (DCs).

Professor Ranjeny Thomas

The antigen presenting cells known as DCs contribute to the early response to microbial invasion or damage, and prime T cells at the initiation of adaptive immunity. At the time, little was known about DCs in humans. A protocol had just been published for the isolation of peripheral blood DCs, but it used prolonged culture and density gradients to isolate an uncharacterised population of cells with capacity for antigen presentation. I used cell sorting, culture and T cell activation assays to deduce the circulating DC precursors, demonstrating for the first time their myeloid origin and yet distinctiveness from monocytes. Working "on the side" with joint fluid and blood taken from my RA patients, I discovered that joint DCs help trigger RA through the presentation of self antigens and erroneously 'teaching' T cell activation. After completing my MD I was offered a position at the University of Queensland and returned to Australia. I started a group focused on DCs and autoimmunity and continued clinical Rheumatology at Princess Alexandra Hospital. Here, Prof. Ian Frazer and I pulled the local strength in Immunology together to form the Centre for Immunology and Cancer Research, and later the Diamantina Institute.

Soon after I arrived in Queensland, I started to work on the NF-kappa B subunit RelB, as two papers had found that DCs were deficient in mice lacking RelB. We found first that RelB was marker of DC activation and, as we dug deeper, that RelB acts as a master regulator of antigen presenting cell

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ASI Inc. COUNCIL

Website

The ASI web site (www.immunology.org.au) has been fully remodelled and updated. New services include:

- Downloadable forms for ASI awards,
- Positions vacant pages,
- Jobs wanted pages,
- Upcoming conferences listings,

as well as a plethora of links to sites of immunological interest at home and abroad. If you'd like your lab home pages linked to the site, would like to advertise a job or conference, or have a favourite immunology-related site that doesn't currently appear on the ASI site, please email Sarah Jones at jones.s@wehi.edu.au

Email bulletin board

To subscribe to the ASI bulletin board, send an email to majordomo@explode.unsw.edu.au with the message: subscribe anz-imm.

EDITORIAL

Welcome to another bumper edition of the Newsletter. It's a pleasure to present so many interesting reports from our members. Thank you to Ranjeny Thomas and her Lab for a spectacular exposé of their work. If you would like to highlight the work of your lab in a future edition, please contact me.

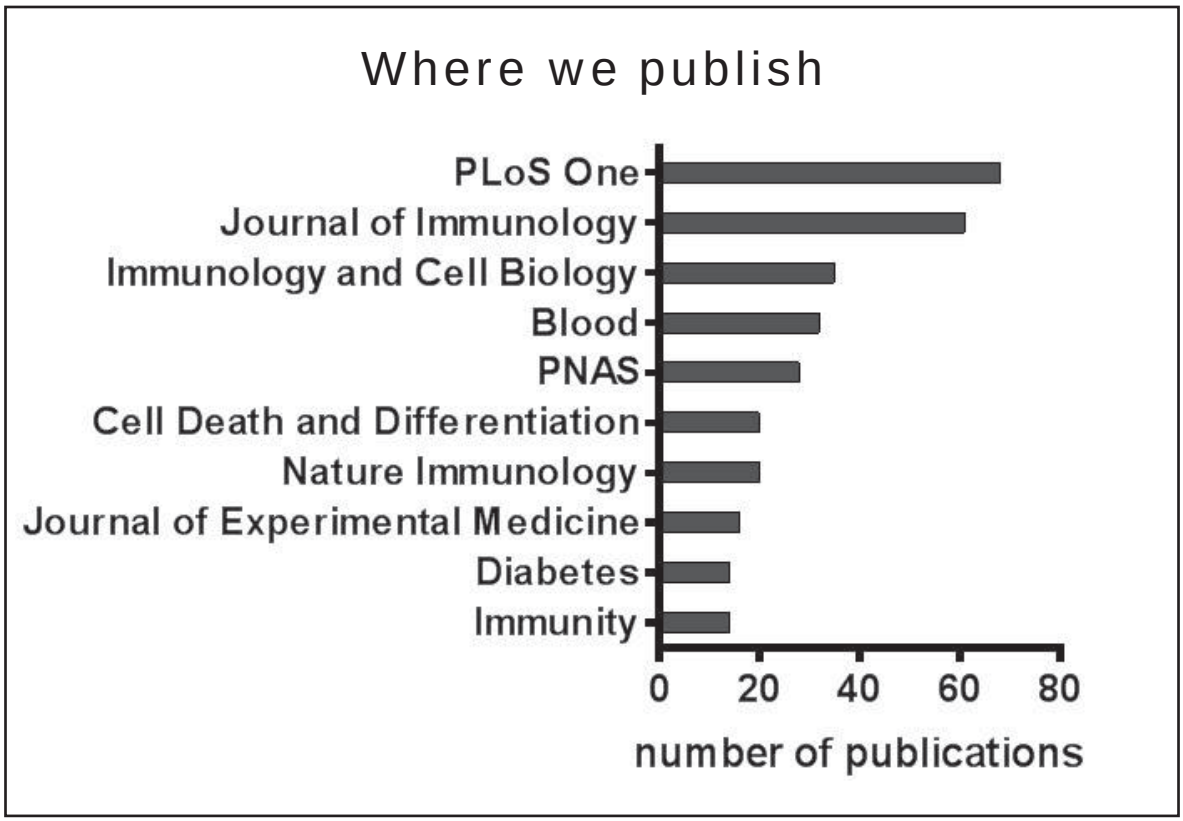
I would like to extend my thanks to the outgoing ASI Council Members for their fantastic contribution to the Society. In particular, Rosemary Ffrench deserves a special mention; the role of Honorary Secretary is one that is easy to under-appreciate from the outside. A warm welcome to our incoming Council members (see the President's Column), the Society could not function without so many capable people giving their time and energy – thank you!

It's now three years since we started publishing the Publication List. I can't be sure of how well we are covering the membership but I think the compliance is fairly high and that the data from this is a good representation of where we are publishing as a Society. We collectively published more than 1100 journal articles over the last three years and the top ten journals by number of publication are shown in the accompanying graph. The top-ten accounts for 27.5% of our publications and I think you will agree it comprises an impressive list of very high quality journals

Life in the trenches: it's that time of the year where we watch a number of our colleagues going over the top for the last time. Their grants weren't successful, they sit in the trenches waiting for the whistle to blow. Like the final episode of *Blackadder Goes Forth*, there is an awful inevitableness and wearing underpants on your head and putting pencils up your nose will not save you (if you don't know *Blackadder Goes Forth*, you should spend some of your holidays acquainting yourself with it). So with the NHMRC Project Grant success rate apparently plumbing new depths, I think it is time for an honest and open discussion about the unspoken side of life in research. Last week a brilliant young scientist asked me if I thought they should do a PhD: given what we know, and if one could be completely objective – is it unconscionable to recommend a PhD to someone who could do something else? If you have an opinion on this, why not write a letter to the Newsletter, it could earn you a $200 prize and heaps of kudos.

Finally, thank you to all of our contributors for the year and I wish everyone a safe and relaxing holiday season and hope you come back invigorated and ready to submit your next grant.

Simon Apte



Towards antigen-specific tolerance for autoimmune diseases, cont.

function. Indeed, we found that, without it, DCs suppressed previously primed immune responses including arthritis, in an antigen-specific manner. This opened up the exciting possibility of developing an antigen-specific immunotherapy for autoimmune diseases, such as RA. Fortunately, I already had experience in designing and completing a clinical trial of antigen-specific immunotherapy using autologous DCs in melanoma.

Next came the slow task of translating our findings in autoimmune models to a clinical trial. Fortunately I was able to secure two biotechnology grants towards this translational goal. In 2005, I founded the Uniquest-owned spin-off company Dendright to focus on commercial development of antigen-specific therapy for autoimmune disease. Over the next six years I gave over 30 pitches to venture capital, angel investors and big pharma without success. In the meantime we developed a particulate strategy to target DCs in situ with antigen and inhibitory drugs. We demonstrated efficacy of curcumin-loaded liposomes in models of RA and type 2 diabetes. Finally in 2011, after a clinical trial of tolerising dendritic cells and citrullinated peptide antigen was completed in patients with RA, we announced a strategic research collaboration agreement with Janssen-Cilag Pty Ltd in Australia, to develop technology for antigen-specific therapy in RA. In 2012, Dendright began a Research and Development collaboration with Janssen Biotech Inc, a subsidiary of Johnson and Johnson in the USA, to develop the technology and associated biomarkers towards clinical trials. We recently demonstrated that HLA class II-autoantigen tetramers can be used to identify and characterise autoreactive T cells in RA patients. Interestingly RA patients had a deficiency in self-specific regulatory T cells. Tetramers will be important biomarkers for the analysis of the T cell response to antigen-specific therapies in future trials.

In parallel with our work in RA, my team and I have advanced understanding of other autoimmune and inflammatory diseases: type 1 diabetes and spondyloarthritis. Working with collaborators at Mater Children's Hospital and internationally, we are developing diagnostic tests to stratify children at risk of type 1 diabetes. We discovered a new model of spondyloarthritis while testing DC therapy in SKG mice – thought to be a model of RA. This model has opened up tremendous opportunities for discovery in both pathogenesis and novel treatments for psoriasis, Crohn's disease, reactive arthritis and anklyosing spondylitis.

The rheumatoid arthritis research team (LtoR): Vibeke Videm, Soi Cheng Law, Liz Klinken, Hanno Nel. Missing from photo: Helen Pahau.

In medical research, the world – including Australia – is aiming to move basic research findings towards better patient care. This is a challenge at many levels – it requires integration of basic and clinical science concepts, teams of people working effectively on common goals, excellent underpinning infrastructure to support sample and clinical data collections and passionate people to undertake the work and implement changes in health care at all levels. We have just moved into the Translational Research Institute (TRI), which is associated with the Diamantina Health Partners Academic Health Science Centre at the Princess Alexandra Hospital. It is a visionary place, which is enabling translational research of the highest quality, and the largest Institute of its kind in the Southern Hemisphere.

After so many years of being cramped and limited in growth we now have a great work-space, new opportunities for collaboration for established and young investigators alike, new possibilities for drug development, and closer academic ties with the medical school and the hospital. I believe this model of integrated academic medicine and health care will train a new type of clinician for the future: research-engaged, evidence-based, teaching-focussed and driving for improvements in health care from the ground up. Research is a team effort and diversity of the team is critical to good outcomes. Immunology research has reached a very exciting stage, where the development of new "designer therapies" for prevention and treatment of inflammatory diseases that affect the life of millions of people across the world is becoming a real possibility. It's both a privilege and an enormous challenge to be a part of that! I have a wonderful and committed team – described below – and a tremendous group of collaborators across many fields. I look forward to contributing further to unlock the mysteries of immune-mediated diseases and to develop new treatments for autoimmune disease.

Rheumatoid arthritis: between the lab and the clinic

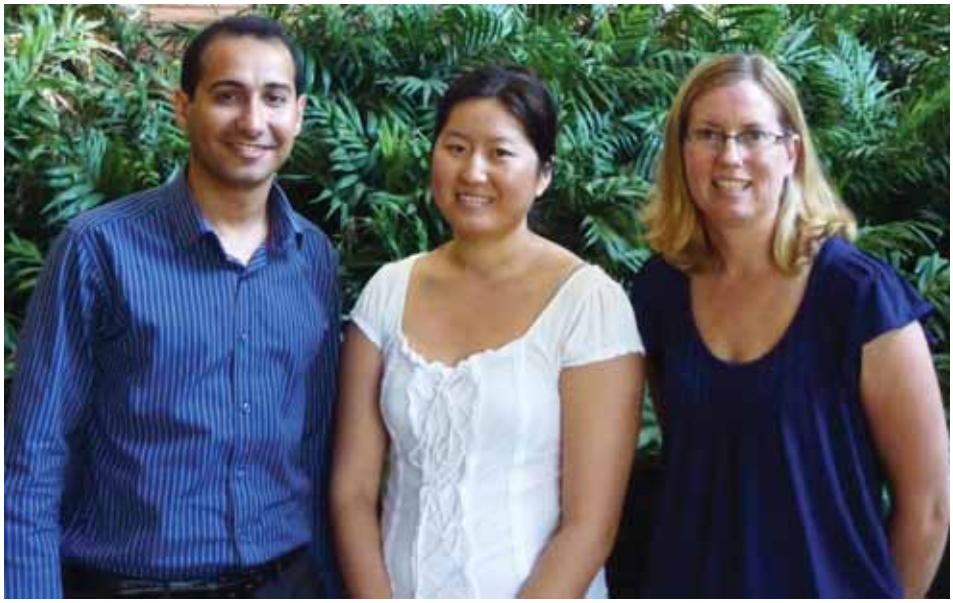
The RA group's aim is to gain a better understanding of the immune mechanisms involved in RA as well as to expand our knowledge of the clinical aspect of the disease. Dr Elizabeth Klinken bridges these two aspects: as a clinician, she reviews the RA

patients at the arthritis clinic at the Princess Alexandra Hospital whilst pursuing a MPhil degree. Her research aims to characterise mucosal-associated invariant T cells (MAIT cells) in RA and to better understand the role of this innate T cell population. After completing her MPhil, Liz will continue her career in clinical immunology in her home town, Perth.

Soi Cheng Law completed an honours degree in Ranjeny's group and enjoyed the research so much that she commenced a PhD in 2012. "I am fascinated by the regulation of the immune system and how the body recognises the self from the non-self," she says. Her research aims to characterise auto-reactive T cells recognising citrullinated antigens in RA using MHC class II tetramers. Having observed that autoreactive T cells were more likely to be effector memory T cells in RA patients than HLA-matched healthy controls, she is also looking at the impact of these observations on the development of the disease.

After gaining experience in chemistry, biochemistry and epidemiology, Dr Hanno Nel completed his PhD and first postdoctoral fellowship in pathogen-induced immune modulation and its potential use in the treatment of asthma and other allergic diseases. Hanno joined Ranjeny's group in August 2011 as research officer and is currently investigating mechanisms of antigen-specific T cell tolerance induced by modified dendritic cells in RA. Hanno is also involved exploring novel drug delivery systems for natural immunomodulatory agents, such as curcumin, in mouse models of antigen-induced arthritis.

Helen Pahau is the research clinical nurse for the arthritis clinic at the Princess Alexandra Hospital. She is also working towards a PhD degree. Prior to this, Helen was a research nurse in her Maori community in Gisborne, New Zealand. Inspired by a patient who suffered from the lack of services in the remote community, she ran a governmental intervention program for diabetes prevention in collaboration with the University of Otago. "The program was very successful and the community became self-sufficient. My job was done so I came to Australia for a holiday – that was five years ago!" Her doctoral research focuses on the relationship between RA and cardiovascular diseases using clinical data.



The type 1 diabetes research team (LtoR): Mamdouh Sedhom, Dimeng Pang, Emma Hamilton-Williams. Missing from photo: Kerry Buchanan & Tristan Barnes.

Prof. Vibeke Videm is a visiting academic from Norway. She is a professor of immunology and consulting physician in immunology and transfusion medicine at the Norwegian University of Science and Technology, in Trondheim. While in Brisbane, Vibeke is working on a collaborative project with Ranjeny and Prof. Matt Brown, director of the UQ Diamantina Institute. They are using data from the large longitudinal population health study in Norway (HUNT study) to look at relationships between RA and ankylosing spondylitis, inflammation and cardiovascular diseases. Vibeke believes that interdisciplinary collaboration can strengthen research. "Plus, it is a privilege to be able to go abroad and see different ways of doing things, both research-wise and culturally," she adds.

Type 1 Diabetes

The type 1 diabetes (T1D) group closely collaborates with the paediatric endocrinology research group at the Mater Hospital, Brisbane, where the weekly diabetes clinic at the hospital provides essential data for the research.

Dr Kerry Buchanan is a clinician who has recently completed her paediatric endocrinology specialist training at the Mater Children's Hospital. She is currently on maternity leave but, upon her return, she will commence a PhD co-supervised by Ranjeny, Dr Mark Harris and Assoc. Prof. Andrew Cotterill, both from Mater Research. She will work towards the identification of T1D biomarkers. "As a clinician, I witness the difficulties relating to T1D and its management. Through research, I hope to help progress towards a cure," she says.

Dimeng Pang recently submitted her PhD and is now a research officer in the group. Her PhD project involved using T1D mouse models to identify new blood-based biomarkers that could help predict the development of the disease in humans. There is an urgent need for such biomarkers, capable of accurately assessing disease progression as they could facilitate early intervention. "I was diagnosed with T1D five years ago and it directed my choice to pursue a career in medical research. I know first-hand what patients go through, and I wish to see an end to the disease," she says.

Dr Mamdouh Sedhom has a medical degree from Cairo University and had worked as a general practitioner for 18 months before realising he was eager to get a better grasp of pathologies. "Research helps to understand the intricate mechanisms of diseases, yet the ultimate goal remains to help patients," he explains. Thus, he began a research career as a fellow at the CNRS in Orleans, France, researching immunity and colitis. He then continued his training at Imperial College London, UK, studying the molecular mechanisms of ovarian cancer. He is now completing a PhD, studying the cytokines and signalling molecules involved in T1D and RA to gain further insight in the diseases, and to potentially develop biomarkers.

Tristan Barnes is a medical student at UQ. Working with the group allows him to gain valuable research experience. Tristan is looking at the genetic factors underlying T1D by comparing samples from T1D patients and their first degree relatives.

Dr Emma Hamilton-Williams is a Research fellow at the UQDI. Emma completed her undergraduate education at the Victoria University of Wellington, New Zealand and her PhD at the John Curtin School of Medical Research (Australian University, Canberra). During her PhD, she used cutting edge technology to create new T1D models. She then studied tolerance in T cells and triggers of autoimmune disorder as a postdoctoral fellow at the Institute of Molecular Medicine and Experimental Immunology in Bonn, Germany. During her second postdoctoral fellowship at the Scripps Research Institute in California, she looked at the T1D susceptibility genes and how they modulate immune response on a cellular level. Now, her research focuses on two main axes: the role of IL-2 in dendritic cells, and the impact of the microbiome in the development of T1D. She has shown that T cell IL-2 plays an important role in the development of T1D. She hypothesised that a similar role could also be observed in dendritic cells; a PhD student and an Honours degree student are working towards proving this hypothesis. She is also interested in the relationship between genetics, microbiome and T1D. Preliminary data in mice indicates that genetic variations could influence the microbiome and, in turn, T1D development. A new postdoctoral project, started in November 2013, will look into the existence of a similar relationship in humans.

SKG: a SpA mouse model

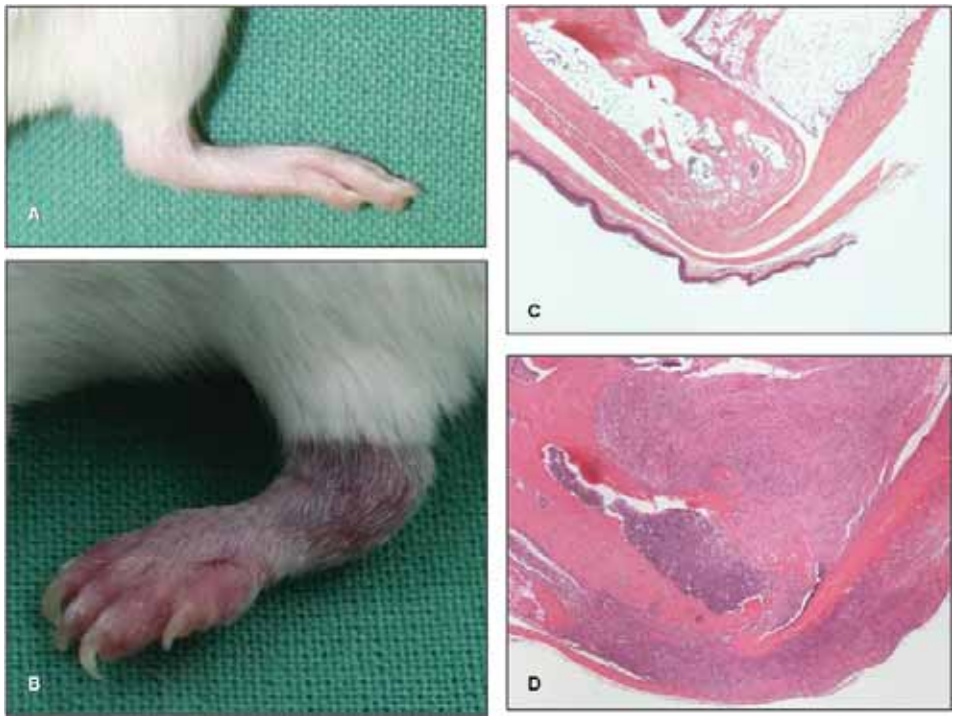
The group use the SKG mouse strain to study spondyloarthropathy (SpA), a group of rheumatic diseases affecting the peripheral and axial joints, intestine, skin and eyes. The Thomas lab has recently demonstrated that SKG mice develop SpA when housed under specific pathogen-free conditions and treated with microbial cell wall polysaccharides, such as curdlan. Hence, SKG mice are a great model for studying the mechanisms underlying the development of SpA.

Dr Linda Rehaume earned a PhD in microbiology and immunology with Professor Bob Hancock at the University of British Columbia, in her native Canada.

The SKG research team (LtoR): Jaclyn Bowman, Linda Rehaume, Helen Benham. Missing from photo: Olga Zbarskaya.

She joined Ranjeny's lab in July 2011 as a postdoctoral research fellow. Using the SKG mouse model, Linda is looking at the role of the microbiome and genetic factors in the development of SpA. The research is supported by the increasing evidence of ubiquitous environmental factors, such as intestinal bacteria, acting as a trigger in autoimmune diseases. Further supporting the hypothesis, the group determined that the SpA pathologies are differentially affected by the microbiota, whereby development of ileitis but not arthritis was microbiota-dependent. Linda is currently working to understand the mechanisms by which the microbiota contribute to disease.

Dr Helen Benham shares her time between the clinic and the lab: she works with patients at the Princess Alexandra Hospital,



Curdlan induces inflammation in SKG mice.
Paws of an untreated SKG mouse (A) and of a curdlan-treated SKG mouse with dactylitis and enthesitis (B); joint section of an untreated SKG mouse (C) and of a curdlan-treated SKG mouse, infiltrated with immune cells (D).

The tolerance research team (LtoR): Muralidhara Maradana, Brendan O'Sullivan, Roland Ruscher. Missing from photo: Prema Nair.

whilst finishing her PhD on IL-23 signalling in SpA. Using the SKG model, Helen explores the signalling pathways involved in the development of the disease. She is also preparing a clinical study, which will start early next year, to study patients and their relatives who are at increased risk of developing rheumatoid arthritis. Combining research and clinic allows her to bridge the gap between ground-breaking science and patients with rheumatic diseases.

Jaclyn Bowman started in the group in April 2013 as a research assistant. Jaclyn has a Bachelor's degree in microbial ecology science from the Sunshine Coast University and extensive biomedical research experience. She has worked as a medical technical officer at the Newcastle Fertility Centre (UK) and on vaccine clinical trials at the Oxford Vaccine Group (UK). Using the SKG model, she works with Linda and Helen on the mechanisms triggering SpA.

Olga Zbarskaya is a medical student at UQ who is also working with the team to gain research experience by completing an Honours degree. She carries out research with Linda, investigating the causes of SpA.

Understanding immune tolerance

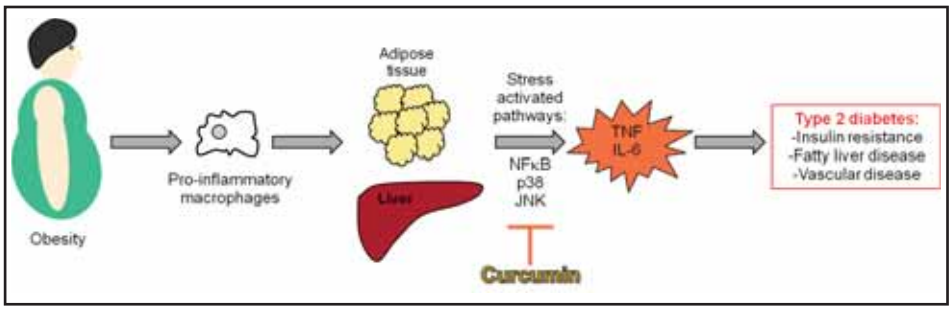
Tolerance is a key concept in immunology. Yet, the increasing prevalence of autoimmune diseases in the population and the lack of cure for most of them indicate that more research is required to better understand immune tolerance.

Dr Brendan O'Sullivan is a pillar of the lab, having been in the group for over 15 years. As a senior research officer, he leads the research on the implication of NFκB in tolerance. The group is looking at pathways activating NFκB and its role on dendritic cell commitment. They are also looking at the effect of curcumin, an inhibitor of NFκB, which has positive impact on mouse models of type 2 diabetes and non-alcoholic fatty liver disease. Brendan says he is passionate about research and about unravelling molecular mechanisms involved in diseases. "Our research and others' is showing that manipulation of the immune system can be used to treat many diseases including metabolic disorders. These exciting findings will lead to improved health benefits for people with diseases that currently have limited treatment options," he says.

Muralidhara Maradana has started a PhD, supervised by Brendan, in July 2012. He is looking at the inhibitory effect of immunotherapy on NFκB in non alcoholic fatty liver disease, a condition for which no therapeutic drug currently exists. Preliminary results have shown that when curcumin is specifically targeted to dendritic cells in the liver, there is a subsequent decrease in markers of the disease.

Prema Nair is in the third year of her PhD, co-supervised by Ranjeny, Brendan and Prof. Phil Hansbro, from the School of Biomedical Sciences and Pharmacy, at the University of Newcastle. She came as a visiting student in Ranjeny's group for six months. Prema is looking at the role of RelB, an activator of NFκB, in the development of asthma. This work is based on the observation that RelB knock-out mice spontaneously develop asthma. Prema is fascinated by the immune response mechanisms. "There is also a history of asthma in my family so I am very keen to do research on the subject and help improve the life of loved ones," she adds.

After completing a diploma (MSc equivalent) in biology at the University of Cologne, Roland Ruscher came to UQDI as an occupational trainee in 2008, and started his PhD in August 2009. He was keen to pursue research on autoimmunity as a way to help his brother who suffers from a severe autoimmune disease. His PhD, co-supervised by Ranjeny and Brendan, was on



Curcumin as a treatment for type 2 diabetes

Chronic obesity can lead to insulin resistance, fatty liver disease and vascular disease. Obesity is associated with increased numbers of pro-inflammatory macrophages in metabolic tissue. Danger Associated Molecular Patterns (DAMPs) released from hypertrophied adipocytes or hepatocytes signal macrophages via stress activated pathways including NF-κB, p38 and JNK to produce TNF and IL-6 leading to impaired insulin signalling and insulin resistance. Curcumin prevents progression of type 2 diabetes by inhibiting stress activated pathways in macrophages and other cells leading to reduced inflammation.

The Thomas group at the Translational Research Institute (LtoR): Linda Rehaume, Soi Cheng Law, Bijun Zeng, Ranjeny Thomas, Mamdouh Sedhom, Ahmed Mehdi, Muhammad Ismail Khan (Hamilton-Williams group), Vibeke Videm, Brendan O'Sullivan, Cini James (Hamilton-Williams group), Emma Hamilton-Williams, Liz Klinken, Hanno Nel, Shu Shyan Wong, Muralidhara Maradana, Karen Herd.

the underlying mechanisms of regulatory T cell induction by dendritic cells in the RelB knock-out mouse model for autoimmune inflammation. He also studied the dendritic cell signals that prompt functionally compromised regulatory T cells to become suppressive in RelB knock-out mice. Roland recently submitted his PhD thesis and is now looking for his next research opportunity.

Lab management

Karen Herd is the research and management assistant in the lab. She started in the group in 2009 as a research assistant doing research on tolerance and dendritic cells in mouse models. Now, most of her time in devoted to making sure the lab runs smoothly, facilitating everyone's research in the process. Karen studied microbiology at the Queensland University of Technology in a co-operative program that allowed her to gain industrial experience. Moreover, Karen has extensive research experience in various areas, including in plant microbiology and in vaccine development.

Emily Duggan works part-time as research assistant, sharing her time between family and research. She joined the group in 2004, after obtaining a BSc and an honours degree in physiology and pharmacology from UQ. Over the years, she moved from animal research to more administrative tasks. She now manages the mice breeding colonies and animal ethics. Emily also creates custom-made databases for storing clinical and experimental data, significantly facilitating data mining and analysis. "Immunology is such an exciting field to be working in at the moment and I really look forward to seeing it evolve as new discoveries are made," she says.

Amelie Casgrain joined the group in September 2013 as a research administration officer. Her role is to co-ordinate the clinical research, as well as lending an administrative hand to Ranjeny. Amelie has a BSc in biology and a MSc in molecular biology. She held research positions at the UK's Institute of Food Research and University of East Anglia where, in addition to carrying out clinical and desk-based research, she helped co-ordinate a large European consortium. More recently, Amelie completed a diploma in communications and has worked as a science writer and translator in Canada.

Dendright: developing a novel immunotherapy for auto-immune diseases

Dendright is a spin-off biotechnology company created to develop the Curcusome™ platform, a revolutionary approach to treating auto-immune diseases such as RA. The immunotherapy combines curcumin, a naturally-occurring inhibitor of NFκB, and, in the case of rheumatoid arthritis, citrullinated antigens. Delivered like a vaccine, Curcusome-RA™ specifically targets dendritic cells, which then initiate an immune response resulting in antigen tolerization. The concept can be adapted to other autoimmune diseases, such as type 1 diabetes. Dendright has recently signed a research and option to license agreement for the rheumatoid arthritis product with Janssen Biotech.

Helen Roberts is the company Chief Executive Officer and program manager. Helen has a degree in medical laboratory science from Queensland University of Technology and an MBA from the University of Technology Sydney. She has worked in the areas of cancer immunotherapy, molecular diagnostic imaging and, most recently, in programs associated with innate immune modulation. With her experience in senior roles with other biotechnology start-ups and well-established pharmaceutical companies, she has the perfect background to lead the commercialisation of Curcusome™.

Helen works with a team of scientists who carry out the research essential to commercialisation. Dr Ahmed Mehdi came to the University of Queensland (UQ) in 2009 to complete a PhD in statistics and bioinformatics with Assoc. Prof. Timothy Bailey (Institute of Molecular Biosciences) and with Dr Mikael Boden (School of Chemistry and Molecular Sciences). He

Helen Roberts, Dendright CEO and program manager.

The Dendright research team (LtoR): Suman Yekollu, Ahmed Mehdi, Shu Shyan Wong, Bijun Zeng.

started as a research officer in the group in September 2013 and is currently in charge of the statistical analyses for clinical trials and proteomics data.

Dr Shu Shyan Wong has a keen interest in molecular signalling and, throughout her PhD at the Michigan State University and postdoctoral research at the UQ Institute of Molecular Biosciences, she has become an expert on the topic. Like Ahmed, she joined the group in September 2013 as a research officer. Her extensive knowledge of cell signalling will serve to better understand the molecular mechanisms of the immune response to Curcusome™.

Suman Yekollu has been a research assistant in the group for four years. He has worked on various projects and is now responsible for developing and testing the immunotherapeutic agent in mice, in preparation for future clinical trials. Suman obtained a medical degree in India before completing a Master's degree in biotechnology at UQ in 2006.

In September 2013, Dr Bijun Zeng completed her PhD on drug-delivery systems based on nano-emulsions, which was co-supervised by Ranjeny and Prof. Anton Middelberg, from the Australian Institute for Bioengineering and Nanotechnology at UQ. She is now a research officer in the group and continues her work to fine-tune the therapy delivery system.

Srinivas Mutalik is a PhD graduate in pharmacy who has been working in the area of drug delivery for 13 years. During this time he developed a variety of dose formulations including oral controlled systems, transdermal drug delivery systems, in situ gel implants, liposomes, microspheres and nanoparticles. He is appointed jointly as Associate Professor of Pharmaceutics in Manipal College of Pharmaceutical Sciences, Manipal University, India and to University of Queensland. He has been working with the group for the last three years to develop liposome particles to be used for therapy of RA.

An invitation and a request to all ASI members

to contribute copy that they think might be interesting, useful, historical, humorous or thought provoking.

- We invite our student membership to voice their views on issues that interest or directly concern them.
- It's our newsletter, so let's support it and strive to make it even better.
- The ASI newsletter comes out 4 times a year and we welcome your contributions.
- **AND NOW YOU COULD WIN $200 FOR THE BEST ARTICLE PUBLISHED IN THE NEWSLETTER!**

Congratulations to the winners of the 2012 Publication of the Year Awards

Chris and Bhama Parish ICB Publication of the Year Award ($1000), Sponsored by Nature Publishing Group

Dr Tania Crough, Queensland Institute of Medical Research

Ex vivo functional analysis, expansion and adoptive transfer of cytomegalovirus-specific T-cells in patients with glioblastoma multiforme. *Crough T, Beagley L, Smith C, Jones L, Walker DG, Khanna R. Immunol Cell Biol. 2012 Oct;90(9):872-80.*

Thermo Fisher Scientific Publication Award ($250)

Sponsored by Thermo Fisher Scientific

Dr Magdalena Hagn, Peter McCallum Research Institute,

Human B cells differentiate into granzyme B-secreting cytotoxic B lymphocytes upon incomplete T-cell help. *Hagn M, Sontheimer K, Dahlke K, Brueggemann S, Kaltenmeier C, Beyer T, Hofmann S, Lunov O, Barth TF, Fabricius D, Tron K, Nienhaus GU, Simmet T, Schrezenmeier H, Jahrsdörfer B. Immunol Cell Biol. 2012 Apr;90(4):457-67*

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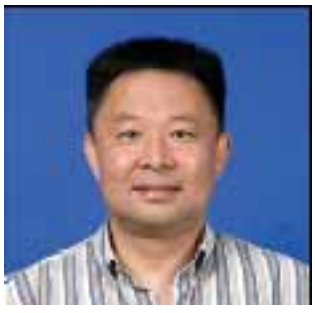

Dr Yuekang Xu, Bio21 Institute.

Phosphatidylinositol-3 kinase activity in B cells is negatively regulated by Lyn tyrosine kinase. *Xu Y, Huntington ND, Harder KW, Nandurkar H, Hibbs ML,* ***Tarlinton*** *DM. Immunol Cell Biol. 2012 Oct;90(9):903-11.*

Recipients of the awards are selected based on scientific excellence and must be the first authors of an Original Article, Outstanding Observation, Theoretical Article or Brief Communication. They must also be financial members of the Australasian Society for Immunology Inc. by October of the year in which the article was published.

ASI Student News

Kia ora everyone,

It will be great meeting so many of you at the Annual ASI meeting in Wellington. The meeting will be filled with cutting-edge research and by the time you read this, it will be over and we hope you have enjoyed it!

Many of you are already planning ahead to your next immunology meeting and we thought we would take this opportunity to draw your attention to a few excellent international immunology courses on offer. The courses listed below are a great chance to learn more immunology, meet other students and make international connections.

- NIF (Network of Immunology Frontier) Winter School on Advanced Immunology
- ENII (European Network of Immunology Institutes) Summer School on Advanced Immunology
- AAI (American Association of Immunologists) Introductory or Advanced Courses in Immunology. Ed Taylor, who recently attended the course, says that it was filled with informative and entertaining talks given by experts who were actively researching the topic they were teaching.
- FIMSA (Federation of Immunological Societies of Asia-Oceana) Advanced Training Course
- FOCIS (Federation of Clinical Immunology Societies) Advanced Course in Basic and Clinical Immunology

As the year draws to a close, we would like to thank you for having us as your student representatives for 2013. We wish you all the best for the coming years and hope to see your research published in top ranking journals!

Farah Al Barwani & Cameron Field

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1st February 2014

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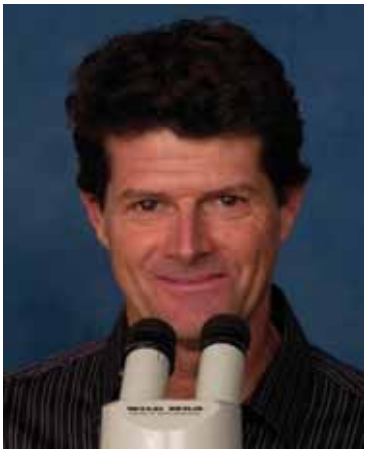
asi@21century.com.au

President's Column

Firstly, I am very pleased to announce to that we have some great new additions to ASI Council and Executive. The new Vice President, starting after the Annual General Meeting in Wellington, 2013, will be Chris Goodnow. Chris will then take over as ASI President the year after (after the AGM in 2014) and ASI will be in very good hands as he leads us forward through the major upcoming event, the International Congress of Immunologists, Melbourne, 2016. The new Honorary Secretary will be Stuart Berzins. We have new Branch Councillors for Victoria/Tasmania (Daniel Gray), New Zealand (Roslyn Kemp) and Queensland (Kristen Radford). I am also very pleased to welcome Simon Apte who has been reappointed as Newsletter Editor. Thank you to each of you for offering your precious time to serve in these important roles in our Society. It was great to see that we had multiple nominees for several positions but, regrettably, this meant that some nominees missed out … this time. It was a close contest and I encourage these nominees, and anyone who is interested in serving on ASI Council, to nominate again in the next year or two when new positions become available. I also wish to thank outgoing Councillors David Tarlinton (Past President); Rose Ffrench (Honorary Secretary); Anne La Flamme (NZ Councillor); Ashraful Haque (Queensland Councillor) and Stuart Berzins (Victoria/Tasmania Councillor) for their terrific efforts in helping our Society run over the last few years. You may have noticed that Stuart Berzins is both an outgoing Councillor and incoming Honorary Secretary, which goes to show that serving on ASI Council under my presidency is such a wonderful experience that it is hard for some people to leave!

By the time you read this newsletter, I am very hopeful that you will have accessed it via the new ASI website which is due to go live any day at the time of writing. Sarah Jones has been working hard to get it all in order and I think this will be a great platform for ASI members to gain information and interact with other members. It has been a long time in construction and turned out to be a considerably bigger project than we initially envisioned, but I think/hope the membership will be very pleased with the end result. On this website, members will have access to the member database, an events calendar, up to date immunology related news, all linked in with twitter and facebook. There will be general information about our Society, special interest groups, awards, employment opportunities and access to matching ASI Branch websites, to name just a few features. Many thanks to Sarah, working with ASI Executive and especially David Tarlinton and Judith Greer, for making this new website a reality.

I am also pleased to introduce a new feature – accessible via the new website – The ASI Women's Initiative. This aims to involve all ASI members in promoting equal treatment of immunologists based on merit. Gender equity can only increase ASI's research productivity and competitiveness. The focus is to improve career opportunities for female immunologists, particularly those who lack formal and informal mentoring support and recognition of success. Thus, the Women's Initiative provides a **mentorship program** and **discussion forum** to reduce the problems associated with the isolation often felt by female immunologists. The availability of suitable mentors for female immunologists is an ongoing problem; in addition, women often miss out on the informal mentoring relationships that develop in the workplace due to a lack of senior women and commitments outside work. The mentoring



Incoming Vice President – Chris Goodnow

Incoming Honorary Secretary – Stuart Berzins

Incoming Vic/Tas Branch Councillor – Daniel Gray

Incoming NZ Branch Councillor – Roslyn Kemp

Incoming Qld Branch Councillor – Kristen Radford

program will pair mentees with appropriate mentors, and will support relationships for those in the same city or via email/Skype for those in other cities. **We are actively recruiting both male and female mentors at all levels.**

We will also maintain a publicly available and searchable **database of female immunologists** appropriate for consideration as invited speakers or chairs at conferences and courses. The immunologist database is a resource to enhance the representation of female immunologists as speakers at conferences, presenters of seminars, participants on review panels, and on editorial boards. Immunologists can be viewed based on discipline, experience and location. Finally, we recognise the need to celebrate success and encourage recognition – the Women's Initiative website will feature **news and events** that promote success by female immunologists. To register for the mentorship program or to be listed on the database of female immunologists, please contact Roslyn Kemp (roslyn.kemp@otago.ac.nz) or Sarah Jones (jones.s@wehi.edu.au). Many thanks to Roslyn and Sarah for their efforts with this project.

Dale Godfrey
ASI President

Cancer Highlight: *Late-stage melanoma patients respond to immunotherapy Godfrey and Colleagues*

Immunotherapy with a cytokine called interleukin-21 (IL-21) has shown modest efficacy in the treatment of malignant melanoma. However, IL-21 therapy can rapidly and potently induce natural killer and cytotoxic T cell activation in patients, implying that this cytokine may yet be useful in stimulating the immune response to cancers. Jonathan Coquet, now at the Flemish Institute of Biotechnology in Ghent, Belgium, and his colleagues now report that IL-21 therapy in patients with malignant melanoma modulates the function of NKT cells, a population with the potential to mediate the rejection of cancers. IL-21 enhanced NKT cell granularity, and modulated the expression of cell surface receptors and cytokines
produced by NKT cells. In particular, IL-21 shifted the balance of Th1/Th2 cytokines produced by NKT cells. These results demonstrate that IL-21 therapy is a potent modulator of the function of immune cells including, NKT cells.

IL-21 modulates activation of NKT cells in patients with stage IV malignant melanoma by Jonathan Coquet, Kresten Skak, Ian Davis, Mark Smyth and Dale Godfrey
http://www.nature.com/cti/journal/v2/n10/full/cti20137a.html

Find out more at www.nature.com/cti where you can register for CTI e-alerts and submit your paper

HONORARY SECRETARY'S NEWS

Results of Ballots for ASI Council positions

Thanks to everyone who nominated for the upcoming vacancies on ASI council. It was great to see so many members willing to be involved in the running of the society. The results of the ballots are now in and I would like to congratulate and welcome the new members of ASI Council, who will take up their positions as of the ASI AGM on Tuesday 3rd December, 2013.

We had no nominations for the position of ASI Newsletter editor, so Simon Apte has very generously agreed to continue in the role for another year.

ASI Travel Bursaries to attend ASI Annual Scientific meeting 2013

Below are the recipients of the ASI funded travel bursaries to attend the ASI meeting in Wellington:

Thanks to the ASI 2013 LOC for judging the travel bursaries, which amounted to $19,350 in total.

Catarina Almeida	University of Melbourne
Paul Beavis	Peter Mac
Hannes Bergmann	ANU
Lilian Cha	UWA
Emily Edwards	QIMR
Ivana Ferreira	James Cook University
Chindu Govindaraj	Monash University
Emma Grant	University of Melbourne
Thomas Guy	Centenary Institute
Emma de Jong	Murdoch University
Eunhee (Cindy) Lee	ANU
Ken Loh	UQ
Mutsa Madondo	Monash University
Steven Maltby	HMRI/University of Newcastle
Arunesh Mohandas	Women's & Children's Health Research Institute
Yabas Mehmet	ANU
Jennifer Reiman	Griffith University
Melissa Rist	QIMR
Mandeep Singh	ANU
Qianqiao Tang	National University Health System
Le Son Tran	UQ
Edward Taylor	University of Otago
Leon Tribolet	James Cook University
Rushika Wirasinha	Garvan Institute

ASI International Travel Awards October Round

Four awards of $3000 each have been awarded to the following junior investigators:

Dr Sumaira Hasnain, Mater Medical Research Institute – Keystone Symposia 'Emerging Concepts and Targets in Islet Biology'

Alvin Pratama, ANU – Keystone Symposia 'Biology of B Cell Responses'

Hannes Bergmann, ANU – Keystone Symposia, 'Biology of B cell Responses'

Stephen Scally, Monash University – 9th International Congress on Autoimmunity. Nice, France.

Thanks to the Travel Award Sub-Committee for judging the international travel awards.

Farewell

I will be finishing up in the position of Honorary Secretary as of the AGM in December. While it has been quite an onerous role, particularly in 2012 when I was also co-convenor of the Melbourne 2012 annual scientific meeting, I hope I have been able to make a contribution to ASI that will lead to more efficient functioning in the future. I would like to thank Susanne Heinzel for her always useful experience, support from Judi Anderson at the ASI Secretariat, and give my best wishes to incoming Secretary, Stuart Berzins, who I am sure will do a fantastic job.

Rose Ffrench

Contributions sought for the ASI online immunology quiz

As part of World Day of Immunology events, we have developed an online immunology quiz (see http://www.immunology.org.au/immquiz1.html) on the ASI website. This quiz is targeted at the general public, but it would be good to add a few more questions (especially some with an Australian flavour), and maybe even add an "Advanced Level", with questions that undergrad students might find useful for revising for exams. All that's needed now are the questions and answers.

If you would like to contribute any multiple choice questions for either the general quiz or an advanced version, please send them to Judith Greer at j.greer@uq.edu.au.

16th INTERNATIONAL SYMPOSIUM ON EBV and associated diseases

16-19 JULY 2014

Brisbane Convention and Exhibition Centre
Brisbane, Australia

This conference will be a major evoluationary step for the EBV meeting as the main focus will be on translation of basic research to the clinic. A number of sessions focusing on clinical management and novel treatment strategies for EBV-associated diseases are planned. In addition, information sessions for the public on these diseases will also be held during the EBV conference. We look forward to strong interaction between basic scientists and clinical experts.

conference.qimr.edu.au/ebv

Queensland Institute of Medical Research

Invited speakers

Professor Emeritus Harald zur Hausen (Nobel Laureate)
German Cancer Research Center

Professor Peter Doherty (Nobel Laureate)
Peter Doherty Institute, Unversity of Melbourne

Professor Suzanne Cory
Walter and Eliza Hall Institute of Medical Research

Professor Klaus Rajewsky
Max Delbruck Center for Molecular Medicine Berlin

Professor Ralf Kuppers
Institute of Cell Biology (Cancer Research), University of Duisburg-Essen

Professor Helen Heslop
Department of Medicine Baylor College of Medicine

Professor Louis Staudt
National Institute of Health

Henle Lecture

Professor Cliona Rooney
Center for Cell and Gene Therapy, Baylor college of Medicine

50 YEARS OF DISCOVERY

THE ASI VISITING SPEAKER PROGRAM

Having completed a very successful year in 2013, we envisage seeing a good number of invited speakers in 2014, as listed below. We would like to encourage all of you who have not yet taken the opportunity to invite your preferred international speaker to do so.

Precise details of the visits for 2014 are yet to be finalised and will be communicated via the Branch Councillors when they become available.

February/March

Professor Peter Andersen
Vaccine Research and Development at Statens Serum Institut, Copenhagen, Denmark
Visiting Palmerston North, Dunedin, Sydney (Detailed schedule to be confirmed)
Hosted by Joanna Kirman, University of Otago

May

Professor M. Juliana McElrath, MD, PhD
Professor of Medicine, University of Washington, Fred Hutchinson Cancer Research. Seattle, USA

Professor McElrath is a world leader in HIV immunology and vaccination, and has played a central role in dissecting the immune responses to the recent successful HIV vaccination trial in Thailand. She has total of over 200 publications, and an H-index of 49.

Dr McElrath's laboratory research is focused on the identification and characterization of cellular immune responses that may provide protection against HIV infection or disease. Her studies entail understanding immune responses in persons who demonstrate unique control of infection through cohort studies in Seattle and internationally. A major aspect of her studies is to apply these mechanisms of HIV control to HIV vaccine development.

Specific questions under current investigation include:

1. What components of T cell immunity elicited early in HIV-1 infection contribute to the control of HIV-1 disease?
2. Do T cell immune responses play a role in resistance to HIV-1 infection in persons repeatedly exposed by sexual contact?
3. What is the contribution of antigen-specific mucosal T cells in protecting against HIV-1 exposure?
4. What elements of immunity correlate with protection against HIV-1 infection by vaccination?
5. How can innate immunity contribute to improved vaccine design?

https://www.fhcrc.org/en/diseases/featured-researchers/mcelrath-juliana.html
http://depts.washington.edu/daid/directory/mcelrath.html

Selected Publications

McElrath M, Smythe K, Randolph-Habecker J, et al for the NIAID HIV Vaccine Trials Network. Comprehensive assessment of HIV target cells in the distal human gut suggests increasing HIV susceptibility toward the anus. *Acquir Immune Defic Syndr*. 2013; 63(3): 263-71.

Zak DE, Andersen-Nissen E, Peterson ER, Sato A, Hamilton MK, Borgerding J, Krishnamurty AT, Chang JT, Adams DJ, Hensley TR, Salter AI, Morgan CA, Duerr AC, De Rosa SC, Aderem A, **McElrath MJ**. Merck Ad5/HIV induces broad innate immune activation that predicts $CD8^+$T-cell responses but is attenuated by pre-existing Ad5 immunity. *Proc Natl Acad Sci USA*. 2012; 109(50): E3503-12.

Janes H, Frahm N, DeCamp A, Rolland M, Gabriel E, Wolfson J, Hertz T, Kallas E, Goepfert P, Friedrich DP, Corey L, Mullins JI, **McElrath MJ**, Gilbert P. MRKAd5 HIV-1 Gag/Pol/Nef vaccine-induced T-cell responses inadequately predict distance of breakthrough HIV-1 sequences to the vaccine or viral load. *PLoS One*. 2012; 7(8): e43396.

McElrath MJ, Walker BD. Is an HIV vaccine possible? *J Acquir Immune Defic Syndr*. 2012; 60(Suppl 2): S41-3.

Haynes BF, Gilbert PB, **McElrath MJ**, et al. Immune-correlates analysis of an HIV-1 vaccine efficacy trial. *N Engl J Med*. 2012; 366(14): 1275-86.

Frahm N, DeCamp AC, Friedrich DP, Carter DK, Defawe OD, Kublin JG, Casimiro DR, Duerr A, Robertson MN, Buchbinder SP, Huang Y, Spies GA, De Rosa SC, **McElrath MJ**. Human adenovirus-specific T cells modulate HIV-specific T cell responses to an Ad5-vectored HIV-1 vaccine. *J Clin Invest*. 2012; 122(1): 359-67.

Andersen-Nissen E, Heit A, **McElrath MJ**. Profiling immunity to HIV vaccines with systems biology. *Curr Opin HIV AIDS*. 2012; 7(1): 32-37.

Frahm N, DeCamp A, Friedrich DP, Carter DK, Defawe OD, Kublin J, Casimiro DR, Duerr A, Robertson MN, Buchbinder S, Huang Y, Spies G, De Rosa SC, **McElrath MJ**. Adenovirus-specific T cells target regions conserved across multiple serotypes and modulate insert-specific immunity following MRKAd5 HIV-1 vaccination. *J Clin Immunol*. 2012; 122(1): 359-67.

Ballweber L, Robinson B, Kreger A, Fialkow M, Lentz G, **McElrath MJ**, Hladik F. Vaginal Langerhans cells non-productively transporting HIV-1 mediate infection of T cells. *J Virol*. 2011; 85(24): 13443-7.

Pine SO, Kublin JG, Hammer SM, Borgerding J, Huang Y, Casimiro DR, **McElrath MJ**. Pre-existing Adenovirus Immunity Modifies a Complex Mixed Th1 and Th2 Cytokine Response to an Ad5/HIV-1 Vaccine Candidate in Humans. *PLoS ONE*. 2011; 6(4): e18526.

Visiting Sydney: 5th; Brisbane: 6th; Melbourne: 7th, 9th

Hosted by Miles Davenport, University of New South Wales, Sydney

June

Jason Cyster, PhD
Howard Hughes Medical Institute, University of California, San Francisco, CA. USA
Visiting Adelaide: 5th; Perth, 16th; Sydney, 18th, 19th
Hosted by Claudine Bonder, Centre for Cancer Biology, Adelaide

Second half of the year

A/Prof. Anand Goldrath
Section of Molecular Biology, University of California, San Diego, CA, USA.
(Detailed schedule to be confirmed)
Hosted by Roslyn Kemp, University of Otago

The visit of **John O'Shea. MD,** National Institute of Arthritis and Musculoskeletal and Skin, Molecular Immunology and Inflammation Branch, NIH, Bethesda, MD, USA, to have been hosted by Stuart Tangye, Garvan Institute of Medical Research, Sydney, has unfortunately been cancelled.

The Walter and Eliza Hall Institute of Medical Research
WEHI Seminars on the Web:
www.wehi.edu/seminars/

Upcoming Conferences

8th World Immune Regulation Meeting
19-22 March 2014
Davos, Switzerland
http://www.wirm.ch
http://www.facebook.com/WIRMeeting

Swiss Society for Allergology and Immunology Annual Meeting
20 – 21 March 2014
Davos, Switzerland
http://www.ssai-sgai.ch

6th Annual World Congress of Vaccine (WCV-2014)
April 25-28, 2014
Dalian, China
http://www.bitlifesciences.com/wcv2014/

American Association of Immunologists Immunology 2014
2 – 6 May 2014
Pittsburgh, USA
www.IMMUNOLOGY2014.org

The International Union of Microbiological Societies:
XIVth International Congress of Bacteriology & Applied Microbiology
XIVth International Congress of Mycology
XVIth International Congress of Virology
27 July – 1 August 2014
Montreal, Canada
www.montrealiums2014.org

DC2014 (13th International Symposium on Dendritic Cells).
September 14–18, 2014
Tours, France
dc2014@clq-group.com

16th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2014)
October 29–November 1, 2014
Prague, Czech Republic
www.kenes.com/esid

ASI Councillors' News

S.A./N.T. News

9th Adelaide Immunology Retreat (AIR-9) 2013

Once again, the Adelaide Immunology Retreat (AIR) for PhD students, Honours students and research assistants was a great success. This year's Retreat was held at the Adelaide Road Motor Lodge, Murray Bridge from 9-10 August. The Retreat was opened by Prof. Phil Hodgkin (WEHI, Vic), our invited national speaker who took us on an inspiring journey through the history of science methodology, a unique presentation about the importance of how we approach our science. On the second day of the Retreat our local speaker, Dr Lisa Ebert (Centre for Cancer Biology, SA), shared her personal scientific journey in an engaging and motivational presentation.

The high calibre of presentations did not end there, with excellent talks by Honours students, PhD students, and research assistants covering a diverse range of topics which included reproductive immunology, vaccination, allergy, neurobiology and sepsis, to name a few. Overall the standard of the presentations was exceptional. Congratulations go to the following award recipients: Susan Christo (Best PhD presentation), Mellissa Tan (2nd prize PhD presentation), Jessica Loughland (3rd prize PhD Presentation, NT visiting student), Megan Bleeze (Best Honours presentation), Alicia Chenoweth (2nd prize Honours presentation), Nicholas Hauschild (Best RA presentation). There were also plenty of opportunities for interaction between the delegates and invited speakers, with an interesting and educational tour of Monarto Zoo, followed by the retreat dinner.

Group photo at Adelaide Road Motor Lodge, Murray Bridge

To strengthen links between SA and NT this year we, with the help of sponsorship from BD, provided the opportunity for a student from the Northern Territory to attend the Retreat. The lucky recipient of this award was Jessica Loughland who benefited greatly from the experience and has expressed her thanks to ASI and BD Biosciences in the following note:

Prize winners: Susan Christo (Best PhD presentation), Mellissa Tan (2nd PhD presentation), Jessica Loughland (3rd PhD Presentation, NT visiting student), Megan Bleeze (Best Honours presentation), Alicia Chenoweth (2nd Honours presentation), Nicholas Hauschild (Best RA presentation); Invited Speakers (Prof. Phil Hodgkin, Dr Lisa Ebert) and SA/NT Councillor (Dr Cara Fraser)

"I would like to thank the organisers of AIR (Adelaide Immunology Retreat), especially Dr Cara Fraser, who organised the meeting, my accommodation and flights. And a special thanks to BD for funding the AIR travel award.

My name is Jessica Loughland. I am currently undertaking a PhD in malaria immunology at the Menzies School of Health Research, NT. I am the only immunology PhD student in the NT. Thus there are few opportunities for me to meet other immunology students and researchers in a friendly, welcoming environment. A highlight of the meeting for me was the presentations by invited speakers; Prof. Phil Hodgkin and Dr Lisa Ebert. Both the presentations were extremely interesting, insightful and inspiring for me as a young scientist.

Another great aspect of the meeting is that all abstracts which are submitted are accepted for a presentation. I gave a short presentation on some of my current work on human DC subsets in experimental malaria infection. AIR was a great forum for a young student like me to present work and I received encouraging feedback, placing 3rd in the 'Best PhD presentation'.

Again, I would like to thank all the lovely Adelaide scientists (too many to name) for their hospitality and for making me feel very welcome. I hope the travel award continues for future NT immunology students as it was a fantastic opportunity."

Finally, I would like to thank the AIR-9 organizing committee members – Susan Christo, Erin Lousberg, Natalie Stevens,

Dave Yip, Natasha Kolesnikoff, Houng Taing, Simon Barry, David Dimasi, Kate Parham, Tessa Gargett, Pallave Dasari and Wenying (Layla) Zhu – for all of their hard work and enthusiasm for the meeting.

Also a BIG thank you to all of our sponsors: Enzo Life Sciences, Sapphire Bioscience, Jomar, Uni SA, VWR, ELISA Kits, John Morris, DAKO, ACRF Cancer Genomics Facility, Mimotopes, Eppendorf, Scientifix, SAHMRI, Centre for Cancer Biology, Promega, Geneworks, BD Biosciences, Genesearch, Life Technologies, Epitope Technologies and Australian Biosearch. We would like to especially thank The Hospital Research Foundation which provided the most substantial support ($3200) with their sponsorship contributing to both the Retreat dinner and accommodation. Without the generous financial support of all of our sponsors the event each year could not be held. (See the group photo of the AIR-9 participants and the photo of the 'Winners' collective).

Cara Fraser
Councillor

A.C.T. News

Together with the NSW branch we had a very successful 2-day retreat on Thursday 12th and Friday 13th September 2013. As in the previous three years, the retreat was held at Peppers Craigieburn Conference Centre and Resort in Bowral. Ian Cockburn, Stuart Tangye, Katharina Gaus and Mireille Lahoud gave the four Keynote presentations. In addition to the keynote presentations, more than 25 students and postdocs presented their latest findings. Together these talks provided a great overview of the fantastic immunological research going on in NSW and the ACT. Our thanks go to Marcel Batten for her great work organising this event and, of course, all the sponsors for their generous support.

At the time of writing this report we are looking forward to hosting Professor Ed Palmer as an ASI Visiting Speaker on 14th and 15th November. Besides his seminar, there will be plenty of opportunity for ASI members to have individual meetings with him or meet at an informal lunch for students and postdocs.

Anselm Enders
Councillor

N.S.W. News

Thanks to all the NSW membership for making 2013 another great year in Immunology! 2014 is looking exciting with some fantastic ASI Visiting Speakers in the planning and, of course, leading up to the NSW hosted Annual Scientific Meeting of ASI which will be held in Wollongong from Monday 1st to Friday 5th December 2014. Amongst a star studded program, a notable inclusion is Nobel Prize Laureate Prof. Bruce Beutler. An advertisement for the meeting can be found elsewhere in the newsletter.

2013 NSW/ACT Branch Meeting

The NSW/ACT Branch meeting was held in Bowral, Thursday 12th and Friday 13th September 2013. We had four brilliant plenary talks from Prof. Katharina Gaus (UNSW), Dr Mireille Lahoud (Burnet Institute, Vic.), A/Prof. Stuart Tangye (Garvan) and A/Prof. Ian Cockburn (JCSMR). The major objective of this meeting is to give students and early career researchers the opportunity to speak, so the remainder of the program was mainly made up of younger speakers. The standard of the talks was excellent – congratulations to our prize winners:

Early Career Researcher:
Fabio Luciano (UNSW)

PhD presentation prizes:
1st – Rushika Wirasinha (Garvan Institute)
2nd – Alisa Kane (Garvan Institute)
3rd – Alvin Pratama (ANU)

Honours student prize:
Lisa Belfiore (University of Wollongong)

Next year's meeting will be held in the same place, late August and will be spearheaded by members within the ACT.

Thank you so much to our major sponsors BD Biosciences, as well as gold sponsors Jomar Bioscience and silver sponsors Miltenyi Biotech, Edwards Group, Life Technologies and Australian Biosearch.

Thank you also to Anselm Enders, Scott Bryne, Marian Fernandez, Julie Wheway and Mainthan Palendira for helping to organize a great conference.

Visiting Speakers

NSW has hosted five ASI Visiting Speakers in 2013 (Marc Jenkins, John Wherry, Branch Moody, Chris Benedict and Ed Palmer). All have been very beneficial visits, with great presentations and scientific discussions throughout the days. 2014 speakers visiting NSW are slated to include Jason Cyster, Hidde Ploegh and Peter Andersen. Dates,

Some 2013 Plenary speakers and prize winners.
(Back LtoR): A/Prof. Stuart Tanye, Alvin Pratama, Prof. Katharina Gaus, Dr Mireille Lahoud.
(Front LtoR): Lisa Belfiore, Dr Alisa Kane, Rushika Wirasinha.

venues and details will be advised as the visits are planned.

Formation of subcommittee

Based on the expressions of interest I called for earlier in the year, a NSW subcommittee has been formed. It consists of representatives from a number of sites (at right).

All the best for the holiday season and I will see you next year!

Marcel Batten
Councillor

Name	Role	Institution
Marcel Batten	ASI Councillor	Garvan Institute
Bernadette Saunders	Treasurer	Centenary Institute
Scott Byrne	Treasurer	University of Sydney
Marian Fernandez		Westmead Children's Hosp.
Ron Sluyter		University of Wollongong
Mainthan Palendira		Garvan Institute
Debbie Watson		University of Wollongong
Julie Wheway		University of Sydney
Min Hu		Westmead Millenium Inst.
Fabio Luciani		UNSW
Jose Burgos-Portugal	Student Rep	UNSW
Fatima El-Assad	Student Rep	USyd

W.A. News

Membership

The WA branch membership is now at 72 (from 60 at June). Our student committee is implementing a number of activities in 2014 to attract further student members. If you know someone who is working in immunology but does not consider themselves an 'immunologist', please invite them along to one of our seminar or events and we can fill them in on the benefits of joining ASI and participating in WA immunology.

Visiting Speaker Program

A/Prof Chris Benedict from the Institute for Allergy and Immunology, La Jolla, USA visited Perth from 13 to 18 October. He gave a VSP presentation on the 15th titled: "Viral inflammatory diseases: New insights into disease mechanisms, therapeutic approaches and human trials". The seminar was well attended and served as a good starter to the PIG meeting which started the following day. Chris also met with several local research groups at the Lion's Eye Institute and QEII Medical Centre.

A/Prof Chris Benedict

Seminar Programme

Dr Timothy Fairchild (School of Psychology and Exercise Science, Murdoch University) gave a very interesting presentation on 29 August titled: "Regulation of blood glucose through exercise: is less more". Tim presented impelling evidence linking exercise

Dr Timothy Fairchild

(or lack thereof), inflammation and the control of early diabetes, clearly an area of future importance.

Prof Grant Morahan, Centre for Diabetes Research, The Western Australian Institute for Medical Research, will present "New methods provide novel animal models for immunological analyses and show immunologically discrete subtypes of type 1 diabetes" on

21 November. The final December seminar series will be used for a student activity and sundowner/meet and greet event for our new members.

Perth Immunology Group Bi-annual Meeting

We hosted the third bi-annual PIG meeting on 16 and 17 October at the Perth Flying Squadron Yacht Club. The PIG meeting provided a forum for Perth immunologists of all levels to present their latest research in a relaxed and informal environment. We had 70 registrants attend both days and a full program of visiting and invited speakers, as well as submitted presentations (34 presentations in total). This was supplemented with extended breaks for networking opportunities and a poster and trade display. The meeting concluded with a happy hour session and prize giving, and most registrants stayed to socialise with our invited guests.

ASI PhD students, Emma de Jong, Stephanie Trend, Joanne Gardner, Lilian Cha and Laila Abudulai enjoying some fresh air at the PIG meeting sundowner and prize session.

Invited speakers:
International – A/Prof Chris Benedict, Institute for Allergy and Immunology, La Jolla, USA
National – Prof Sarah Robertson, University of Adelaide and Dr Matt Sweet, IMB Qld.

Sponsors:
Major – Jomar Biosciences, Australian Biosearch and Miltenyi BioTech
Minor – National Centre for Asbestos-Related Diseases and Coherent Scientific.

Awards:
Best presenter (post-doc) – Dr Elke Seppanen, TICHR
Best presenter (student) – Chidozie Anyaegbu, UWA
Poster prizes – Emma de Jong (Murdoch Uni) and Dino Tan (UWA)

Committee: Andrew Currie, Alec Redwood, Senta Walton, Connie Jackaman, Scott Fisher, Demelza Ireland, Niamh Keane.
Student reps: Emma de Jong, Stephanie Trend, Lilian Cha.

Student Activities
The student committee invited students to a social networking evening organised by AusBiotech in October. We had five out of nine student members attend. During the event students had the opportunity to meet people from a wide variety of backgrounds and from a range of companies with interest in biotechnology, including engineering, law, clinical trials and medical research. We are also planning a joint social event with the student members of ASM towards the end of this year.

Andrew Currie
Councillor

Victorian News

The Annual IgV Meeting was held this year in Creswick and attracted a great line up of speakers, including Fabienne Mackay, Tony Purcell and Stuart Tangye, as well as a large number of students who presented their latest research. This meeting is always a great opportunity for students to gain exposure for their work and to mingle with senior Immunologists to get advice about their projects and furthering their career. A man with plenty of interesting advice is Professor Richard Boyd who gave a highly entertaining and informative talk about the choices to be made by researchers as they move through different phases of their career. In essence, Richard's advice was to make sure you enjoy what you are doing and to not be afraid of heading off the beaten path and the room was left in no doubt that Richard had forged his own highly successful career by practicing what he was preaching to the younger folk. The annual meeting encourages a relaxed atmosphere and it was great to see senior scientists and students mingling happily at the bar discussing Immunology into the wee hours.

The ASI Visiting Speaker Program has gone from strength to strength and hopefully many of you will have had the opportunity to see the high calibre of speakers that ASI has sponsored. There are a limited number of visitors that ASI can sponsor and some speakers have already been organized for next year so if you have someone on mind who you think would be appropriate for ASI to sponsor, please contact me to arrange a formal nomination. Sponsored visitors need to visit at least three venues across New Zealand and the Australian States.

The ASI website will soon go live and IgV will have its own presence on the site where we will provide information about upcoming events and means to pay online for registration and membership. The website will be a work in progress so please provide feedback to us if you have suggestions or notice any problems.

Please remember that ASI is happy to circulate items of interest to its members so let the State Councillor know if you have meetings or seminars planned that you would like publicized to local members.

This is my last column as ASI State Councillor for Victoria/Tasmania and Daniel Gray will be taking over from me from early in December. I'm sure Dan will do a great job, although forgive him if he gets off to a slightly slow start because he and his wife have just had a baby girl. His email address is dgray@wehi.edu.au so please contact Dan for ASI related matters after the upcoming ASI Annual Scientific Meeting. Thank you to everyone who has helped me in this role over the past three years and I look forward to working with many of you again in my new role as Honorary Secretary of ASI.

Stuart Berzins
Councillor

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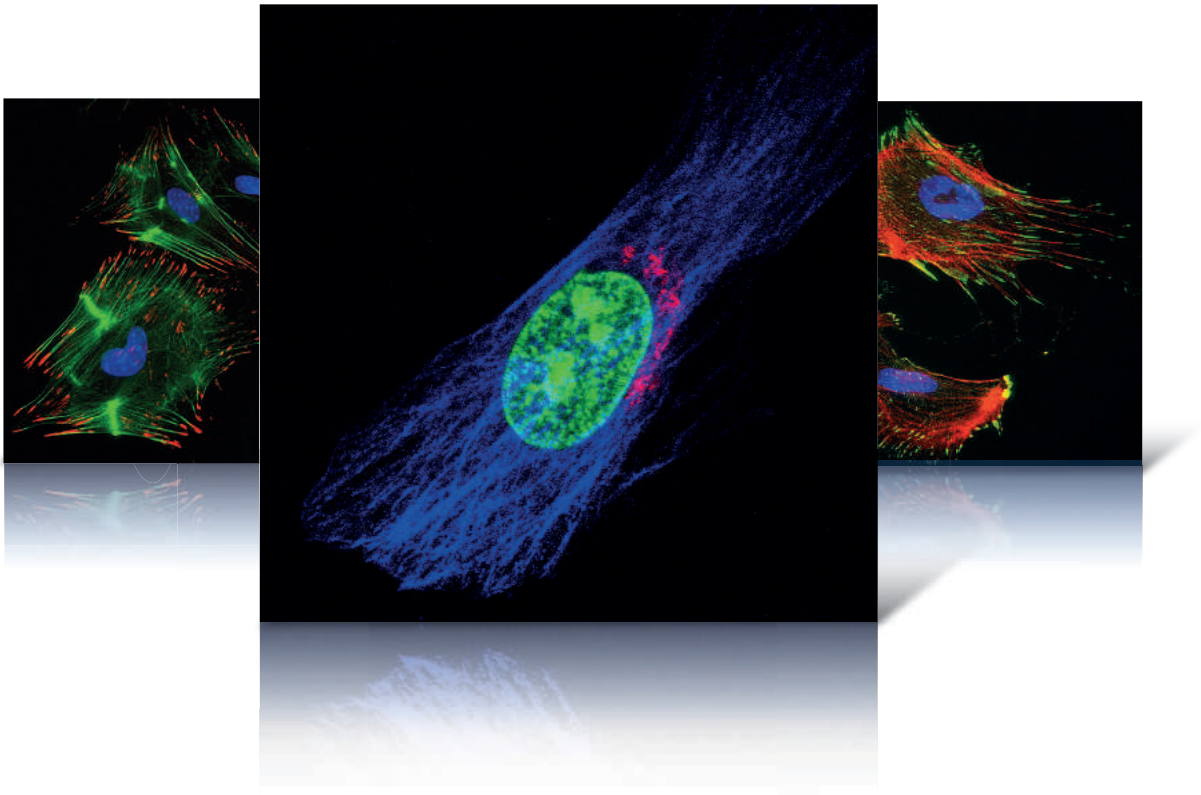

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References

1. Spieker-Polet et al., (1995) PNAS **92**, 9348-524.
2. Rossi, S. et al., (2005) Am J Clin Pathol **124**, 0.
3. Ramos-Vara (2005) Vet. Pathol. **42**, 405-426.

Figure 2. Immunohistochemical detection of breast cancer markers in paraffin embedded breast cancer tissue sections using rabbit monoclonal antibodies.

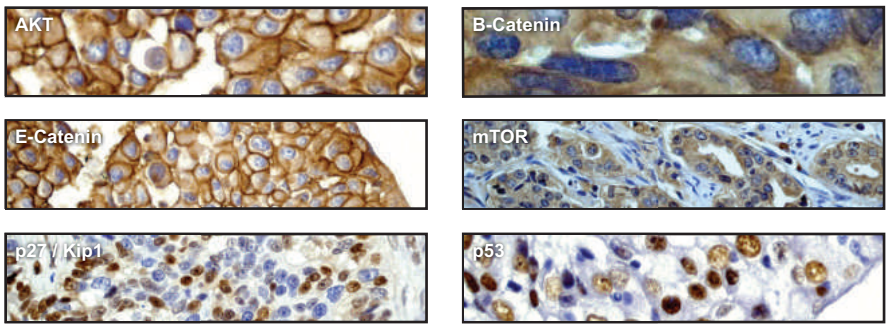
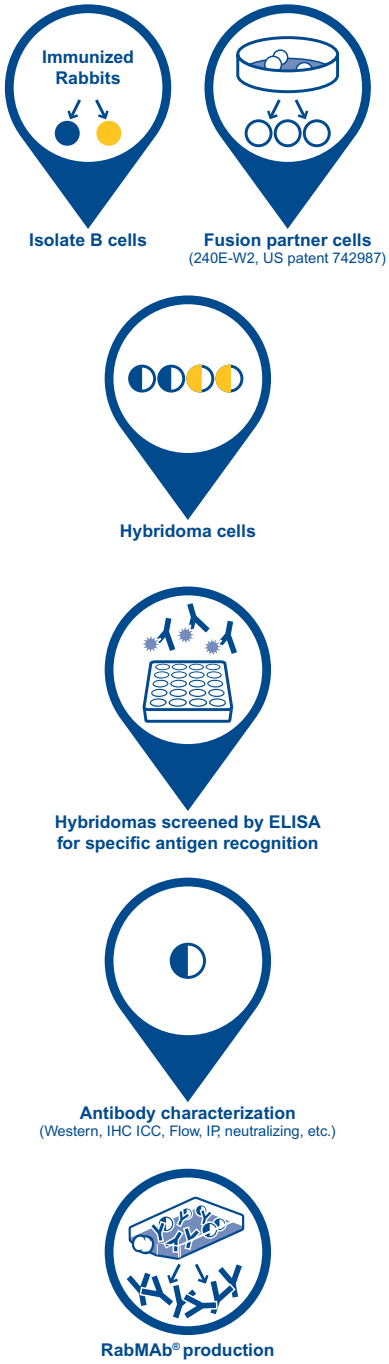


Figure 1. General procedure used for making rabbit monoclonal antibodies



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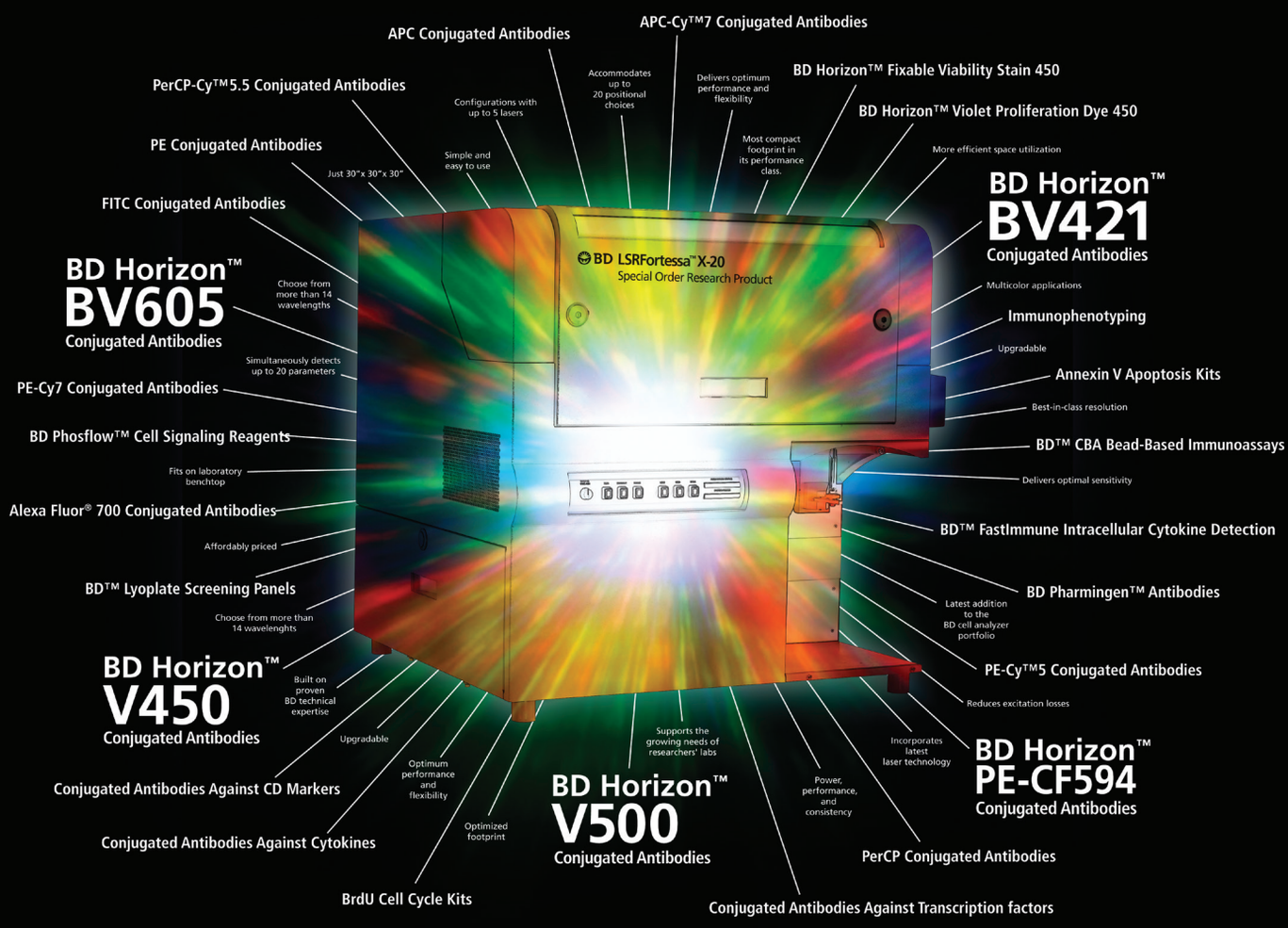

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Monday 1st - Friday 5th December 2014
Novotel Wollongong Northbeach, New South Wales

PLENARY SPEAKERS

Yasmine Belkaid, *National Institute of Health, NIAID, USA*
Gabrielle Belz, *Walter and Eliza Hall Institute of Medical Research, VIC*
NOBEL LAUREATE - Bruce Beutler, *UT Southwestern Medical Center , USA*
Robert Brink, *Garvan Institute of Medical Research, NSW*
Marco Colonna, *Washington University, USA*
Andrea Cooper, *Trudeau Institute, USA*
Gennaro De Libero, *Singapore Immunology Network (SIgN), Singapore*
Paul Foster, *The University of Newcastle, NSW*
Ronald Germain, *National Institute of Allergy and Infectious Diseases, USA*
Dale Godfrey, *University of Melbourne, VIC*
Tracy Hussell, *Manchester Collaborative Centre for Inflammation Research (MCCIR), UK*
Bart Lambrecht, *Ghent University, Belgium*
Takaharu Okada, *RIKEN Center for Integrative Medical Science Center (IMS-RCAI), Japan*
Virginia Pascual, *Baylor Institute for Immunology Research, USA*
Erika Pearce, *Washington University School of Medicine, USA*
Ray Steptoe, *University of Queensland, QLD*
Qizhi Tang, *UCSF Diabetes Center, USA*



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15th International Congress of Immunology
Milan, Italy, August 22–27, 2013

This year ASI awarded 15 International Travel Awards to assist students and post-docs attend the International Congress of Immunology in Milan. Here they report on the highlights and reflect on their experiences."

Photo: Priscilla Auyeung

Julie Burel
Qld Institute of Medical Research

My highlight of ICI 2013 was the extensive diversity and quality of talks the program offered over five days. This gave me the opportunity to gain insight into research projects pertaining to my PhD project currently being investigated worldwide, and also to discover new areas of immunology. My favourite seminar was given by Prof Mark Davis on "Immunology taught by humans", which emphasised the importance of human based immunological research, compared to traditional mouse models, which is the central foundation of my PhD project. I also really enjoyed the special session on improving public-private partnerships to move translational immunology forward.

Magdalena Hahn
Peter MacCallum Cancer Centre, Melbourne

First I want to thank ASI for selecting me as a recipient of the special travel award for the ICI 2013 in Milan. Being trained as a medical doctor, my personal highlight was attending the Clinical Immunology course every morning before the official program of the conference started. Five topics were provided: Allergies, primary immunodeficiencies, inflammatory diseases of the CNS, immune surveillance of tumors, and transplant tolerance. Each topic was presented by an expert in the field and prepared us for the upcoming talks and workshops of the day. This helped a lot to better understand the clinical context of the featured lectures/research.

Magdalena Hahn, Navigli, Milano

Jaclyn Sceneay
Peter MacCallum Cancer Centre, Melbourne

Conference highlight: Jerome Galon from INSERM, Paris. 'From the immune contexture to the immunoscore in the era of cancer immunotherapy'

Using cutting edge integrative biology approaches, Galon and his lab have identified that the pattern of immune infiltrate into tumours is a crucial determinant of patient prognosis. For example, the presence and degree of the adaptive immune response, at the invasive margin as well as the centre of the tumour, is predictive of outcome. Low density of T cells and memory T cells correlate with poor prognosis, while increased T_H1 cells and B cells correlate with better prognosis. Thus the immune contexture of tumours, that is the nature, type, density and location of immune infiltrate, are important predictors of outcome in cancer.

Sophie Valkenburg
University of Hong Kong

The fantastic ICI was recently held in Milan, and had so many highlights. For just a snapshot: Ellis Reinherz uses optical tweezers to study TCR-pMHC mechanotransduction, with an analogy to opening a 'can of Coke'. David Gray showed CD4 memory is B cell dependent, and Andreas Radbruch that majority of stable memory cells reside in the bone marrow with each cell in a single niche. Marc Jenkins was busy doing 0.2 cell transfers (!!); I pity his students, they are literally finding needles in haystacks. But clearly showing that a single CD4 T cell can become heterogenous Th1/GC Thf/Tfh type phenotype, and have a burst size of 20-3000 fold. And Ruslan Medzhitov debunked dogma on the purpose of the allergy-parasite response as actually protective cellular response against toxins and venoms. Phew – huge conference! Thanks ASI, the gelato was delish.

Sophie: Climbing the roof of the big Duomo church was pretty spectacular

Shin Foong Ngiow
QIMR Berghofer Medical Research Institute

It has been an exciting era for tumour immunologists as immunotherapy is at an unprecedented place in anti-tumour treatment. This is perhaps evidenced by the acceptance of more than 300 abstracts listed under Tumour Immunity and Therapies. This excitement was further highlighted by announcing Dr James Allison to be the winner of Novartis Prize for Clinical Immunology 2013. From discovery to the FDA approval of anti-CTLA4 (Ipilimumab; Yervoy®) as one of the first line anti-tumour therapies, Dr Allison's 20 years journey is definitely inspiring to immunology newbies.

Christel Devaud
Peter MacCallum Cancer Centre, Melbourne

Pr Robert Schreiber from Washington University, St Louis, USA, presented the 27th morning plenary lecture on his extended research on cancer immunoediting. He went over the history and the basic mechanisms of the cancer immunoediting theory proposed in 2001. Then he explained that by using an approach of massive cancer exome sequencing and a model of induced sarcoma derived from immunodeficient *Rag* -/- mice, his team identified the protein spectrin-β2 as a mutational tumor rejection antigen. He specified that a T-cell dependant immuno-selection process occurred in the tumour, promoting the outgrowth of resistant tumour cell clones lacking mutant spectrin- β2. Finally, some resistant tumour variants could be rejected by blockade of checkpoint inhibitors (CTLA4, PD1, PD-L1), leading to the identification of two new epitopes. The long term goal of his team is to develop rapid and specific and effective personalized cancer immunotherapies.

Priscilla Auyeung
Walter & Eliza Hall Institute, Melbourne

I attended the 15th ICI in Milan, partly funded by an ASI travel award. The ICI was the largest immunology meeting that I had attended, with sessions covering every imaginable topic in basic and translational immunology. My interest is in translational immunology, and there were inspiring examples of researchers moving seamlessly between human and mouse work to understand disease pathogenesis and to engineer clinical therapies. In the immune deficiency sessions, we were updated on newly discovered defects. Alain Fischer described a novel mutation in the

Milan Galleria (Photo: Priscilla Auyeung)

tetratricopeptide repeat domain 7A gene that results in a syndrome of enteropathy, lymphocytopenia and alopecia. Bodo Grimbacher described novel mutations in the gene encoding phosphoglucomutase 3, which plays a role in protein glycosylation, in a subset of hyper IgE syndrome. In the autoimmunity sessions, Peder Olofsson described choline acetyltransferase T cells involved in the neural-inflammatory circuit. Abul Abbas provided insight into regulatory mechanisms in tissues, defining skin regulatory T cells and implications in chronic autoimmune disease. I also had the opportunity to present my work and receive feedback from experts in the field. Overall, this was a great learning experience and I look forward to the next ICI in Melbourne.

Maryam Rashidi
Walter & Eliza Hall Institute, Melbourne

I would like to express my sincere appreciation for obtaining generous support from ASI in providing the opportunity for me to attend the international congress of Immunology (ICI) 2013, Milan, Italy.

The congress is comprised of key scientists conducting research in various aspects of basic and clinical immunology. The scientific program featured a strong emphasis on translational aspects and clinical application of the Immunology research.

Maryam in the ICI 2013 registration area

I obtained a broad overview about different aspects of immunology including innate immunity and inflammation, immune tolerance and regulatory T cells, signaling in immune cells and pathways in inflammatory diseases. We were also informed about the latest discoveries regarding developments in vaccines production, cancer immunotherapy, antitumor vaccines, the role of inflammsomes in health and disease.

Highlights of the scientific program for me included plenary lecture and symposiums on the role of innate immunity in health and disease. The talks by Richard A. Flavel and Giorgio Trinchieri about the role of commensal microbiota in regulating inflammation and cancer were of special interest to me. It has recently shown that microbiota plays an important role in the pathogenesis of inflammatory bowel disease (IBD)-associated inflammation-induced colorectal cancer. Flavel's group recently showed that microbiota is important for development of metabolic syndrome and diabetes as well.

I presented my current research on the role of soluble CD52 in innate immune system as oral presentation in Lectin and Glycoimmunology workshop section, entitled "Soluble CD52 is a negative regulator in the innate immune system". I received constructive feedback about my project, which along with the lectures and symposiums broadened my knowledge into the field and gave me a good guidance on the directions of my own work.

Overall the conference was a very rewarding experience, not only providing valuable scientific update but also social networking opportunities, meeting scientists from all over the world and sharing the insight and experience with peers in the scientific context. I would like to thank ASI again for making my attendance possible.

Frederic Masson
Walter & Eliza Hall Institute, Melbourne

To me of one the highlight of the conference was the Genetic and Epigenetic Control session with in particular the talk of Dr Luke O'Neil entitled "Metabolism, epigenetics and miRNAs: an unholy trinity controlling innate immunity". Dr O'Neill presented a very interesting and yet unpublished story about how circadian rhythms can control immune response to LPS. His study started with the very surprising observation that mice injected with LPS during the night succumbed to septic shock while they were resistant when injected during daytime. Interestingly, he revealed that the expression of the circadian transcriptional factor BMAL-1 (Arntl – aryl hydrocarbon receptor nuclear translocator-like) was up-regulated during the day and down-regulated during the night and that the loss of BMAL-1 conferred susceptibility to LPS injection during the day. He further demonstrated that BMAL-1 limits NF-κB signalling pathway leading to a decreased production of TNF-α by LPS-treated *ex vivo isolated* macrophages. Finally, his team uncovered that BMAL-1 expression was downregulated during the night by the microRNA Mir-155 whose expression pattern was inversely correlated to BMAL-1 expression and LPS susceptibility.

Garth Cameron
University of Melbourne

From a student's point of view the 'Perspectives in Immunology' seminars provided an excellent insight for those who may be up-to-date with current immunological dogma but may not be aware of the incredible detective work that led to these discoveries, which were made to seem even more remarkable once familiarized with the limited techniques available at the time compared to today's immunologists. Highlights included presentations by Peter

Maryam ended her presentation to the Lectin and Glycoimmunology Workshop by inviting the attendees to ICI 2016

The Duomo, Milan's cathedral church, was a popular photographic subject (Photo: Maryam Rashidi)

Doherty describing the evolution of our understanding of CD8 T cells, and Lorenzo Moretta outlining mechanisms of NK cell function and their advantages as a target for immunotherapeutic intervention.

Md Ashik Ullah
Woolcock Institute of Medical Research, The University of Sydney

IMMUNITAS VIS NATURAE

The 15th International Congress of Immunology (ICI) was held in Milan, Italy from August 22–27, 2013. The meeting brought together over 5000 immunologists from all over the world and covered almost every aspect of immunology. It was quite fascinating to listen to Nobel Laureates Prof. Rolf Zinkernagel and Prof. Peter Doherty as they shared their research philosophy. It was also thrilling to listen to Prof. Bart Lambrecht's talk on epithelial cell-DC crosstalk in asthma and Prof. Ruslan Medzhitov's on Th2 immune response to allergen – the field of my research. While the meeting covered few new arenas of immunology, there were clearly two hot topics – the role of innate lymphoid cells in mucosal immunity and microbiome control of immunopathology. After ICI, I travelled to Groningen, Netherlands to meet world-renowned respiratory scientist Prof. Dirkje Postma and discussed my PhD work and set plans for future collaborations. This experience would not have been possible without the support of ASI, so I would like to give my sincere thanks to the Society for sponsoring my trip.

Edwin Hawkins
Imperial College London

Rome is Italy's glorious capital and the home of famous landmarks such as the Colosseum, St Peter's Basilica and the Sistine Chapel. It is also famous for being the former host of the 15th International Congress of Immunology which instead was hastily relocated to Milan. Although Milan cannot compete with these sights, it does boast a number of pleasant fellows selling friendship bracelets or squishy toy pigs on just about every corner of the city. Because of this, there was no better motivation needed to concentrate on the jam-packed conference program.

What stood out for me at this ICI meeting was both the strength and prominence of the Australian Immunology community, whether currently based downunder or abroad. To emphasize this, Australia was in the top five ranked countries measured by delegate attendance. This is a particularly tough ask when a conference is based in the European mainland. And to be honest, what could be more Australian than a Spanish man called Jose Villadangos strutting around in an Akubra! To me, these are signs for a hugely successful ICI in 2016 in Melbourne. I want to thank ASI again for their continued support of post-doctoral travel awards. Without this award, I would certainly not have had the opportunity to attend this conference.

Lucille Rankin
Walter & Eliza Hall Institute, Melbourne

The opening ceremony portrayed beautifully the dependant and inter-woven world of science and art. Alongside the elegant data presented by leading immunologists Jules Hoffmann and Rino Rappuoli, we heard some of Italy's finest renaissance music performed with passion and precision. There is a misconception amongst the public that science is unromantic and stuffy, the opposite of art. When high end arts were shown alongside high end science it proved just the opposite. It showed a common goal in the arts and sciences for the pursuit of a deeper knowledge of the world, a theme that is welcomed on to the ICI2016 in Melbourne.

Kok Fei (Jimmy) Chan
The University of Melbourne

The ICI Milan conference is among the largest Immunology meetings in the world. According to the organiser, the meeting was attended by more than 5300 participants. Overall, it was a very good experience to me. I have had the opportunity to meet and speak to many brilliant scientists from different parts

Jimmy Chan with Professor Sir Andrew J McMichael at the Target Discovery Institute, Nuffield Department of Medicine, Oxford University

of the world. Particularly, I would like to mention my encounter with Prof. Sir Andrew McMichael. I was invited to give seminar presentation in his department at the University of Oxford and also to attend a short tour at the Weatherall Institute of Molecular Medicine (WIMM) following the conference meeting. Additionally, I was approached by many researchers who showed keen interest in my research project during the poster presentation session. I think that it was a really great time to share my research outcome for the past four years with someone who can understand the significance of the study. So I personally felt that the two hour poster session was more like a 30 minute session because of the excitement to present my PhD work! I did as well have a brief meeting with Dr David Cole, a structural immunologist working at the Cardiff University, and was subsequently introduced to his fellow colleagues at the Cardiff Institute of Infection & Immunity, Prof. Andrew Sewell and Dr Pierre Rizkallah. Following the meeting, I was invited to present a talk and was given a guided-tour around the Institute at the Cardiff University. In summary, the trip to ICI Milan conference has given me ample opportunities to establish scientific networking with many good researchers from around the world. I'm really grateful to ASI for the ICI 2013 travel award.

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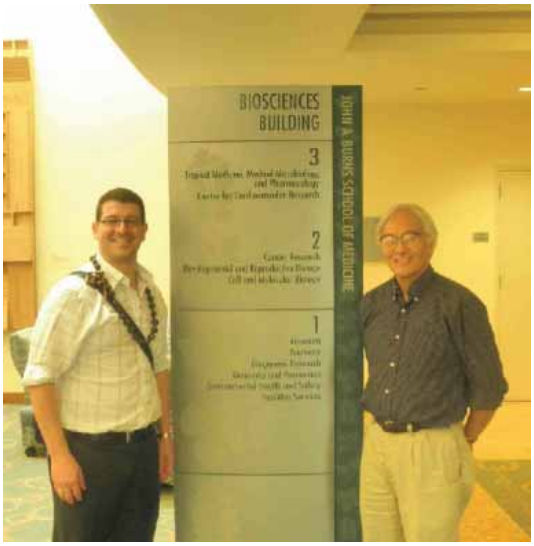
TRAVEL AWARD CONFERENCE REPORTS

Gordon Ada Award

John Stambas, CSIRO, Victoria

Seminar at the John A. Burns School of Medicine, University of Hawaii and tour of the Pacific Centre of Emerging Infectious Diseases

Prior to attending the American Association of Immunologists meeting at the Hawaiian Convention Centre in May I had the privilege of presenting a research seminar at the John A. Burns School of Medicine having received a formal invitation from Ric Yanagihara, Director of the Pacific Centre for Emerging Infectious Diseases (PCEID). Unbeknown to me, May 1st is 'Lei Day' in Hawaii. A tradition since 1928, Lei Day (held in conjunction with May Day) celebrates the Hawaiian custom of making and wearing leis and is celebrated in Honolulu with festivities including hula dancing and lei making demonstrations. It was therefore no surprise that I was asked to deliver my research seminar wearing a lei! At the conclusion of the seminar I was invited to an interactive lunch with postgraduate students and then held informal discussions with senior staff within the School and PCEID. The main focus of the centre is emerging infectious diseases with specific groups engaged in hantavirus and influenza virus research and epidemiology. The John A. Burns School of Medicine has many similarities to the School of Medicine at Deakin University where I am currently employed. The School has a small cohort of students (approx. 100-130 at each institution) and a curriculum that focuses on problem-based learning. My hosts were extremely interested in developing regional scientific collaboration and student exchange as they also have first hand experience with the tyranny of distance!



John Stambas (left) with Ric Yanagihara

Conference: American Association of Immunologists (AAI), 3-7 May 2013

As always the American Association of Immunologists meeting assembled a spectacular program of world leading experts in the field of Immunology. Of added significance was that this year's event celebrated the 100th Anniversary of the AAI. Highlights included talks from our very own Frank Carbone, Leo Lefrancois (who sadly passed away in July), David Masopaust, Ralph Tripp, Bruce Walker, Daniel Perez and many others.

This year the Australasian Society for Immunology accepted an invitation to host a guest symposium at this conference and I, along with my co-chair Meredith O'Keefe (Burnet Institute), presided over a strongly-supported session showcasing Australia's young and emerging scientific talent. The "Lymphocyte differentiation following immunization" session included presentations from Scott Mueller, Kim Good-Jacobson, Jonathan Coquet, Susan Johnson and Stephanie Gras.

I sincerely thank ASI for providing the funds to support my visit to Hawaii and strongly encourage members to apply for the full range of travel awards on offer. The opportunity to attend and present my group's research findings at this high quality international conference combined with my visit to an overseas academic institution/ laboratory proved an invaluable experience that has now enabled me to establish new and exciting scientific collaborations.

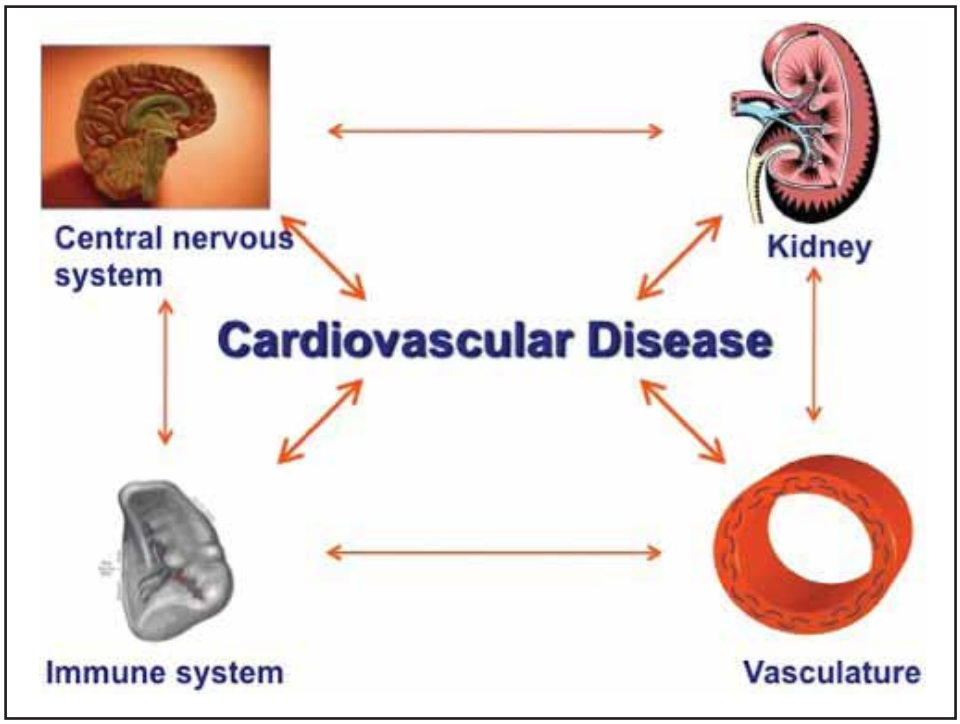
1st meeting of The Australian-European Consortium on Immune Mechanisms in Vascular Disease and Stroke

Connie Wong
Monash University, Melbourne

The first meeting of the Australian-European consortium on immune mechanisms in vascular disease and stroke was held in Monash Prato Centre, Tuscany, Italy. The consortium was co-hosted by the Monash University and The Faculty of Medicine, Jagiellonian University Medical College (Krakow, Poland) with the aim to provide an intimate forum for the exchange of cutting-edge knowledge in the area of cardiovascular immunology and to establish and nurture collaborative relationships between the leading international teams.

The consortium came about from the recent recognition of a role for the immune system in the pathogenesis of a number of classically considered cardiovascular diseases, including hypertension, atherosclerosis and stroke. In fact, the research from the last couple of years represents a paradigm shift in our understanding of these cardiovascular disease mechanisms. Unfortunately, the current available therapeutic strategies are largely non-specific and based on risk reduction, which is only partially effective in preventing or treating cardiovascular events. Therefore, this consortium was set up to encourage high quality collaborative basic research in unraveling the key immune mechanisms responsible for vascular disease, with the potential to reveal more effective cardiovascular therapies.

The consortium was attended by a mixture of basic scientists and clinicians which I thought was very well planned and organised.



It provided perspectives both from the lab bench and patient's bedside. This is of great importance as we strive to create a network and guidelines for performing multi-centred preclinical drug testing to improve research translation.

The consortium featured four major themes entitled:

- Cellular mechanisms of atherosclerosis
- Novel immune-based therapies and biomarkers for cardiovascular disease
- Inflammatory targets in stroke
- Inflammation and immunity in hypertension and chronic kidney disease

Lastly, I want to thank ASI for the opportunity to participate in this consortium. It has given me an insight into international vascular immunology that is invaluable. The opportunities for feedback on my research and networking were many, giving me additional exposure to potential local and international collaborations.

23rd Meeting of the European Society for Animal Cell Technology (Lille, France) & 5th Congress of the Federation of European Microbiology Societies (Leipzig, Germany)

Benjamin Duell
Griffith University, Queensland

In the past few months I have been able to attend two conferences, one for cell culture research, organised by the European Society for Animal Cell Technology (ESACT); and another for microbiology/infection studies, organised by the Federation of European Microbiology Societies (FEMS). These attendances have been made possible by the ASI Postgraduate International Travel Award, for which I am very grateful.

The first conference, ESACT, took place in late June 2013, where I presented a poster detailing my PhD research, explaining the use of bladder cell culture models for testing a variety of bacterial strains and mutants to investigate cytokine responses, primarily Interleukin-10 (IL-10). I received useful critical feedback about ways to improve the design of my cell co-cultures, and my presentation was met with interest and surprise, as use of multiple human cell types and bacterial species was viewed as a novel design. I was able to watch many inspiring presentations at ESACT, which greatly expanded my view on the developments of cell culture, and promoted ideas for the expansion of my own work. I also had the opportunity to talk to European scientists from the public and private research sectors, which gave me a better understanding of the careers, funding, and structure of research in Europe.

Following my attendance at ESACT, I visited two research groups. One was the lab of Ernst Reichmann at the University of Zürich, where I gave an oral presentation of my PhD work, toured the lab, and discussed research about the presence of lymphoid cells in xeno/autographs, with the possibility of a future post-doc position. The second lab I visited was run by Jakob Møller-Jensen at the University of Southern Denmark. I was able to give an oral presentation to his lab and other academics, visit different labs within the university, and then discuss the mutual research interests in common with both our research groups. Being able to have in depth discussions with these two eminent researchers and their group members was very helpful in catalysing my own thoughts on future career plans and long term designs of research projects. I am thankful for the kind generosity shown by Professors Reichmann and Møller-Jensen, for welcoming me into their labs and hosting my visits.

By the fourth stop of my European visit, the European summer had started to become warm and summery, which led to some very pleasant days, much like the Queensland winter. This fourth and final stop was to attend the FEMS conference (late July), where I presented two posters, one on my cell co-culture usage for infection biology, and the second on a study of clinical urinary tract infection strains, and their ability to produce IL-10. Here I was able to meet many other researchers from Europe and the Americas who also focussed on infection biology, and get their feedback on the design of combined microbial/immunological studies. We were able to discuss the trouble-shooting aspects of our research, and progression in general of the urinary tract infection field. By the conclusion of the conference, I had made links with a series of lab-heads, post-docs, and peers over the five day duration, which have broadened my contact base within the general area of infection biologists.

Finally, to sum up my experience, I had a very educational trip which broadened my understanding of the topics involved in my research, and shed much light on the structures and processes relevant to developing my future career in a more defined manner. I would like to thank ASI for generously supporting my efforts to branch out into the big wide world, by providing funding for travel visits which have helped to develop and enrich my research and interactive abilities.

I have enclosed a couple of photos from the FEMS Conference, Below is one of the series of boards showing the international participants from 76 countries individually, and above is the spiral staircase in the atrium of the Leipzig Messe conference centre where it was held.

American Society of Transplantation Fellows Symposium & 14th World Congress of the International Pancreas & Islet Transplant Association

Nathan Zammit
Garvan Institute of Medical Research, NSW

I would like to thank ASI for the International Travel Award. Thanks to this award I was able to attend the American Society of Transplantation (AST) Fellows Symposium, the International Pancreas & Islet Transplant Association (IPITA) 14th World Congress and visit a lab in Houston, Texas.

The AST Fellows Symposium was held in Dallas, Texas. The symposium offered the study of not only basic transplant immunobiology, but also clinical transplantation issues and translational science. The symposium did this in a group manner, ensuring the mixing of surgical fellows, clinical fellows, research fellows and pharmacists. This was of great benefit to me as I learnt a lot about the clinical issues which my research endeavours to alleviate. The symposium also held a career development session run by experts in all representative fields including basic research.

Following the Fellows Symposium I travelled from Dallas to Houston to visit a transplant immunology laboratory with a view towards future postdoctoral studies. I visited Prof. Xian Li, Director for the Centre for Immunobiology, Transplant Immunology Program at the Methodist Hospital Research Institute. Prof. Xian Li's Lab works on establishing novel mechanisms that control immune activation and immune regulation. These findings are placed in the context of transplantation, to find ways to support transplant survival and prevent immune-mediated graft destruction. Here I presented my work and met other PIs of the department. I received valuable feedback on my research and toured the first class facilities of the institute. After that I flew to Monterey, California, to attend the 14th World Congress of the IPITA.

I chose to attend this meeting as it brings together leading researchers who study the immunology of islet transplant rejection and β-cell generation – two fields I am very interested in. The first day of the conference started with an update on the status of clinical islet transplantation and the immunosuppressive regimens used. This was followed by a session on experimental islet transplantation. In this session I learnt about a new concept of 'metabolic demand' as a possible barrier to islet allograft tolerance induction, presented by Professor Gill. This topic is particularly interesting as a variety of metabolites, such as glucose, can affect the function of immune cell populations (e.g. T-regs), as well as donor tissue. Therefore, the metabolite status of recipient patients may affect transplant outcome.

The second day began with a debate on defining successful allograft function, a poignant issue in islet transplantation, with Dr Thomas Kay presenting, followed by a session on islet encapsulation, immunology and tolerance. An interesting talk by Prof. Gill in this session was a story about the requirement of NK cells to restrain CD8 T-cells during tolerance induction. The last day featured talks focusing on recurrence autoimmunity following islet transplantation. This is an important issue in the field as islet transplantation has the potential to cure Type 1 Diabetes.

There was also a Beach Party student networking event which provided an informal environment to mix with fellow students and PIs. Lastly, I was also provided the opportunity to present my work in two oral presentations, entitled 'Survival characteristics of the inflammatory-suppressed islet allograft: Reduced immunosupression and prolonged survival' and 'Re-wiring the molecular circuitry of the allograft to promote tolerance'.

Overall on this trip I have learnt a lot about the clinical applications of my research as well as the cutting-edge advances in my field. It has given me the opportunity to present and discuss my work at an international level with world leaders in the field of transplant immunology. Thank you ASI for supporting my trip.

Seals at Monterey

Student beach party network event

American Association of Immunologists Annual Meeting

May 3–7, 2013, Hawaii, USA

Erika Duan
Department of Immunology, Monash University

Perhaps the best way to experience an AAI (American Association of Immunologists) meeting was to have acquiesced to the advice that I was given upon arrival – "You won't be able to attend all the talks you'd like to." With more than 2000 posters and six concurrent symposiums per session, each summative day felt like a trip inside a particle accelerator, bombarded by a smorgasbord of scientific advancements until my brain inevitably disintegrated. Expansion, nuance and dynamism – these seemed to be the catchphrases of Immunology 2013. Residential T cells which expanded independently from circulating memory T cell pools were presented as attractive new vaccine targets against mucosal pathogens like HIV and the herpes simplex virus. Genome-wide RNAi screens in drosophila demonstrated the sheer power of forward genetics in systematically uncovering hitherto unknown genes which regulated the host protective phagocytic response to intracellular pathogens. A collection of retrospectives on the current status of clinical immunotherapy in autoimmune, neoplastic and allergic diseases provided honest insight into the current limitations and selective efficacy of therapeutic responses in different patient cohorts.

A highlight of day one was the major symposium on tissue-resident lymphocytes, chaired by our own Prof. Frank Carbone (University of Melbourne) and Prof. Wendy Havran (Scripps Research Institute). Each talk highlighted the unique and even elusive nature of residential and γδ T cells and their involvement in local immune surveillance and even wound healing. In particular, a 3D reconstruction of fluorescent intra-epithelial T cells in the murine female reproductive tract by Prof. Adrian Hayday (King's College London) emphasised the loss of information that reliance on a single technique – such as flow cytometry alone – can inadvertently bring. Overall, I was left awed and inspired by the technical perseverance which must have trumped in the study of such low abundance T cell subsets.

An eye-opening highlight of day two was the major symposium on CD4 T cell plasticity. Four years spent studying myeloid cells had prompted a strong curiosity about the developments in adaptive immunology. Where do you go once your field has already established the nature of its TH_1, TH_2, T_{reg}, TH_{17} and T_{FH} subsets? This year, the epigenetic maintenance of T cell differentiation and role of miRNA clusters in the induction and repression of T cell activation signatures emerged as the most topical area of focus. A presentation by Prof. Shimon Sakaguchi (Osaka University) on the role of heritable DNA hypomethylation and its FOXP3 independent influence over T_{reg} commitment also exemplified the progressive nature of scientific discovery and the many unknowns still to be connected in the wake of even the greatest previous findings.

Translational immunology was also comprehensively featured this year amidst the (complex) basic sciences. In an afternoon symposium by the Clinical Immunology Committee, a summary of the different lung immune cell phenotypes of asthma patients and their influence over the efficacy of anti-IL-13 or IL-17 therapy by Prof. Marsha Wills-Karp (John Hopkins) acutely relayed the need for more biologically relevant patient inclusion methodologies. The relationship between autoimmune disease gene variants and the design of more efficacious therapeutics was also explored by Prof. Judy Cho (Yale University) through an examination of the targetable signaling alterations shared present in autoimmune disease patients as identified by genome wide association studies.

In celebration of the 100th AAI meeting, special commemorative lectures were presented by four preeminent immunologists on their personal reflections of the last few decades of immunology. Through webcast, Dr Anthony Fauci (NIH) recounted his personal journey through the advances in HIV/AIDS science and policy, from reading the first report of a fatal immunosuppressive disorder in five previously healthy young homosexual men in Los Angeles through to many grim months spent as a doctor palliating AIDS patients in Africa and the US. Given the current prevalence of HIV/AIDS awareness and the implementation of life-extending antiretroviral regimes for

HIV/AIDS patients, our advances in the last few decades were powerful to behold. Speaking from the benchside, Prof. Philippa Marrack (National Jewish Health) offered my current favourite allegory of modern day immunology. Being an immunologist, she imparted, is like turning over identical small rocks in the desert; they all look the same and some may even offer up ants or even snakes underneath. The person who finds a gold nugget, however, remains the immunologist.

All in all, AAI 2013 was a wonderfully eye-opening and scientifically absorbing meeting to have attended. The diversity and abundance of high-profile immunologists, symposium topics and poster sessions were incredible to behold. As well as attending an early career researchers meeting on the tips to securing (and surviving) a US post-doctoral position, I left the meeting with a lot more enthusiasm, research contacts and greater awareness of the future directions of both basic and clinical immunology. Though centennial celebrations were slightly overshadowed by the looming cloud of the US budget sequestration, tropical Honolulu could not have been a better place for the commemoration of a hundred years of inspired research.

Finally, with my bags repacked and the tropics behind me, I made my way across to the East Coast for a series of laboratory visits. An unforgettable visit to Prof. Tyler Jacks' lab at the Koch Institute allowed me to meet the many brilliant post-doctoral scientists and PhD students collectively targeting lung and also pancreatic cancers from a wide range of angles. The collaborative atmosphere yet diversity of independent research projects supported within one laboratory were remarkable to behold, and I had the opportunity of presenting my own work and discussing the lab's directions in tumour immunology. Later in New York, I revisited the ever friendly laboratory of Dr Andrea Ventura (Memorial Sloan Kettering), whose discovery of the oncogenic miRNA-17~92 cluster and ongoing research in miRNA clusters has been an encouraging anecdote of an early careers researcher who went ahead in the pursuit of interesting scientific frontiers. For the last leg of my journey, I arrived into Bethesda to meet Dr Brian Kelsall (NIH) whose recent publication on the segregated roles of gut macrophage and DC subsets had closely mirrored our own observations in the lung. The buildings – let alone facilities – at the NIH were imposing to behold and I received a short tour inside their hospital designated exclusively for the facilitation of clinical trials. Overall, I had a most enjoyable time meeting Dr Kelsall, his laboratory team members and the other laboratory heads in the Molecular Immunology unit. My best wishes go to the many teams of dedicated scientists there especially in light of the detrimental temporary shutdown of the US government and its government supported programs.

All in all, my trip to the US was a broadening encounter with not only the developments in my own areas of interest, but that of immunology and basic research itself. With this in mind, I am profoundly grateful for the support of the ASI and wholeheartedly hope for the continuation of such generous programs to support all current and future PhD students within its capable reaches. May the beginnings of many young scientific visions be encouraged in your hands.

7th International Symposium on CD1 and NKT Cells

13–17 *September, 2013, Tours, France*

Daniel Pellici
University of Melbourne

Since the identification of natural killer T (NKT) cells over 20 years ago, thousands of research articles have been published highlighting the role of NKT cells in various immune conditions. The International Symposium on CD1 and NKT cells brings together the very best in this field and I felt extremely fortunate to be able to present my work on how NKT cells recognise lipid antigens. My presentation included data from our most recent publication in *Nature Immunology* (Uldrich et al., Nov;14(11):1137-45) which describes a new population of T cells that utilise a γδ-T cell receptor to recognise CD1d presenting lipid antigens. One question asked following my presentation was: Are these γδ-NKT cells or simply γδ-T cells that can recognise CD1d-lipid antigens? The latter option tendered to be favoured by the symposium attendees, however further investigation into biological role of this cell type should allow for better classification.

In addition to the talks that focused on NKT cells, another invariant T cell type called Mucosal-associated invariant T (MAIT) cells featured quite heavily in the program and this stirred-up an enormous amount of interest. In work led by the University of Melbourne's very own Lars Kjer-Neilsen and James McCluskey with Jamie Rossjohn from Monash University, the identification of the active antigen that stimulates MAIT cells and the production of MR1-tetramers that permit the specific identification of MAIT cells from humans and mice was hailed as a major breakthrough in the field. The presentations on MAIT cells were so well received, that there are now discussions to alter the name of the symposium to include MAIT cells.

Another area in the field that is also gaining momentum is the characterisation of T cells that recognise lipid antigens presented by other CD1 molecules. It is estimated that these cells account for up to 10% of T cells in human blood, yet surprisingly little is known about their precise role in infection and immunity. This is one area of research that is likely to expand and dominate future symposiums.

Following the symposium, I travelled to Ghent, Belgium where I was kindly hosted by Dirk Elewaut, Department of Rheumatology, University Hospital Ghent. This was a fantastic opportunity to give a departmental seminar as well as learn about Dirk's research on how NKT cells regulate TNF driven inflammation by modulating the maturation and differentiation of antigen presenting cells. Dirk was also generous with his time, showing me some of the highlights that Ghent has to offer. Of course my time in Belgium couldn't go without sampling some of the local beers.

Publications List

Congratulations to ASI members who have published their following work in the last three months

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