N E W S L E T T E R

Australasian Society for Immunology Incorporated

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Devil Facial Tumour Disease

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An amateur wildlife photographer, Christo Baars, returning to Tasmania in 1996 noticed that the number of devils in his favourite area of Mt William National Park seemed to be less frequent than normal. This area guaranteed numerous sightings of Tasmanian devils (*Sarcophilus harissii*), but not in 1996. The Tasmanian devil is the world's largest carnivorous marsupial and Tasmania is the only place in the world where Tasmanian devils are free to roam in the wild. Devils did once exist on mainland Australia, but were extirpated from this area approximately 400 years ago. The 1996 visit of Christo Baars was to be very different and highly momentous. Some of the devils he did photograph had grossly deformed lesions around their face. These lesions are now known Devil Facial Tumour disease and a task force, known as the Save the Tasmanian Devil (STTD) has now been established (see website www.tassiedevil.com.au for further information).

Kathy Bowes with a Tasmanian devil

What does DFTD look like? The tumours present as large, solid, soft tissue masses usually with flattened, centrally ulcerated, and exudative surfaces (Figure 1). They are typically multicentric, appearing first in the oral, face, or neck regions. Histologically, the tumours consist of circumscribed to infiltrative nodular aggregates of round to spindle-shaped cells, often within a pseudocapsule and divided into lobules by delicate fibrous septae (Figure 2). There is a complete lack of lymphocyte infiltration into these tumours. The tumours often metastasized (*1*). The term Devil Facial Tumour Disease (DFTD) was used to describe these lesions. Like an infectious disease, this cancer has since spread south and west from Mt William, in the far north east corner of Tasmania (*2*). In its wake, all infected devils have succumbed to this disease with death resulting from an inability of the devils to compete, or feed themselves, due to the disfiguring lesions on their face. It is estimated that 80% of the world's remaining devil population has succumbed to this cancer.

Traditional karyotypic analysis of numerous samples of DFTD revealed a consistent pattern. Devils have 6 (long) autosomal chromosomes and 2 sex chromosomes; but DFTD samples had substantial chromosomal abnormalities. Both copies of chromosome 2 were missing, a copy of chromosome 6 was missing, there were 4 large marker chromosomes and both the sex chromosomes were missing. What was, and still is, remarkable about these abnormalities was the fact that each DFTD tumour had exactly the same chromosome abnormalities. As this was too extreme to be considered coincidental, it led to the hypothesis that DFTD is an infectious cancer (*3*). Slight strain variations have now been observed as DFTD evolves in the wild (Pearse, personal communication). Further analysis such as microsatellites and DNA sequencing has confirmed that DFTD is truly clonal (*4*, *5*). What is astonishing, to the extent of almost being unbelievable, is that sometime prior to 1996, one cell in one devil, underwent multiple chromosomal changes as part of the neoplastic process and has since been highly efficiently "passaged" through wild devils.

Extensive electron microscopy analyses have failed to reveal any evidence of a viral etiology of this disease. Transmission trials have shown that when DFTD cells, either isolated from a tumour mass or cultured *in vitro*, are injected into unrelated healthy devils, DFTD always developed (*6*). The

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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 Judy Greer at j.greer@uq.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

I saw my first Tassie Devil recently and it was love at first sight. I was so sorry to hear that Cedric, the allegedly immune animal, had succumbed last week. A paramour bites (!) the dust. The research on the devastating Devil Facial Tumour Disease described in this issue must succeed if these extraordinary creatures are to survive.

My list of superlatives for Chris Parish and his stewardship of ICB have just about run out. Isn't the continuing increase in the ranking and the impact factor simply amazing! I'm sure his prediction that the journal will reach an even higher rating will come true. The incoming Editor-in-Chief, Gabrielle Belz, will be an excellent successor so that ASI can continue to be immensely proud of its very high quality journal. Do save some of your best work for ICB.

There is a range of reports from travelling students in this issue and they each portray their own individual perspective on their OE. And speaking of students, Nick King's article (*The people who are ASI*) highlights that essential energy and enthusiasm that students and postdocs bring to the lab. Everybody looks so happy eating in the kitchen and grinning on the beach. There cannot possibly be a grant funding round on the horizon.

The line-up of speakers for the forthcoming Perth meeting is impressive. There is a nicely balanced mix of research areas and there is also a heartening gender mix. Both augur well for the meeting. I do hope to see you all there.

Margaret Baird

Minutes of ASI Special General Meeting

Held at AMREP, Melbourne, 12 July 2010

1. Attendance and Apologies
Attendance: 43 (at start of meeting)
Apologies: Hilary Warren, Miles Davenport

2. Welcome address by David Tarlinton (Vice-President)

SPECIAL BUSINESS
3. Special Resolutions to Amend the Rules of the Australasian Society For Immunology Inc.

Special resolution 1: *That clause 40 of the Rules of the Society be replaced by:*
Notices
40.(1) Notwithstanding any other provision in the Rules, any notice by or to the Society (or any officer of the Society) may be delivered, posted, faxed, sent by electronic communication or given in any other manner authorised by law.
40.(2) A notice includes but is not limited to nomination of a person for membership, a ballot and any communication that is required to be in writing.
40.(3) The Electronic Transactions (Victoria) Act 2000 applies to electronic communications.
40.(4) If a member has more than one address, it will be sufficient if a notice is sent to any of the addresses.
Proposed David Tarlinton, Seconded: Rose FFrench, Carried.

Special resolution 2: *That clause 25(1)(c) of the Rules of the Society be replaced by:*
25(1)(b) the ordinary members of Council being; one Representative of NSW, Queensland, Western Australia, the Australian Capital Territory, one joint representative from South Australia and the Northern Territory, one joint representative from Victoria and Tasmania, and one Representative of New Zealand
Proposed David Tarlinton, Seconded: Rose FFrench, Carried.

Special resolution 3: *That clause 25(2) of the Rules of the Society be replaced by:*
25(2) The position of each of the Representatives shall be filled by election as set out in these Rules for a period to run until immediately after an Annual General Meeting which is the third Annual General Meeting after the Annual General Meeting after which he or she attained office.
Proposed David Tarlinton, Seconded: Rose FFrench, Carried.

Special Resolution 4: *That clause 9(4)(e) be inserted into the Rules of the Society to read:*
9(4)(e) the financial year end date is July 31.
Proposed David Tarlinton, Seconded: Rose FFrench, Carried.

Meeting Closed 11.10 am

Contributions sought for the ASI Newsletter

You could win $200 !!

Deadline for the next issue : 1st November 2010

Please email your contributions to the Secretariat by the above date.
asi@21century.com.au

Tasmanian devil, cont.

Figure 1

cancer cells themselves are the infectious agents and there is no doubt that DFTD is a truly infectious cancer.

This is a cancer that breaks a number of "rules". Cancer is not infectious and one would expect that the extensive chromosomal changes would result in death, rather than immortality. The cancer is the ideal parasite living on its host for long enough to be transferred to another unsuspecting devil. A typical infectious parasitic disease but the parasite is a cancer cell, not an infectious microorganism. There is a comparable situation in dogs, known as canine transmissible venereal tumour (CTVT) (*7*). This is a benign tumour that is sexually transmitted but the major difference to DFTD is that this dog tumour does not kill its host.

How is DFTD transmitted? We know it is not virally mediated and there is no evidence for mosquito or other vector mechanisms of transmission. The most convincing evidence is that DFTD is transmitted during the process of biting. By their nature, devils inflict nasty bites on each other, especially during the mating season. These bites penetrate deeply and often devils lock jaws for a substantial period of time. Often tumours invade into the oral mucosa and the friable nature of the tumour mass allows cells to be released and some of these deposit onto the teeth. We have undertaken scrapings from canine teeth of diseased devils and isolated a number of DFTD tumour cells. These long canine teeth provide a perfect vehicle for "injecting" tumour cells into unsuspecting victims. Remarkably, it only takes a few cells to seed to allow the establishment of another tumour mass and the cycle of transmission continues, as it has for over 15 years.

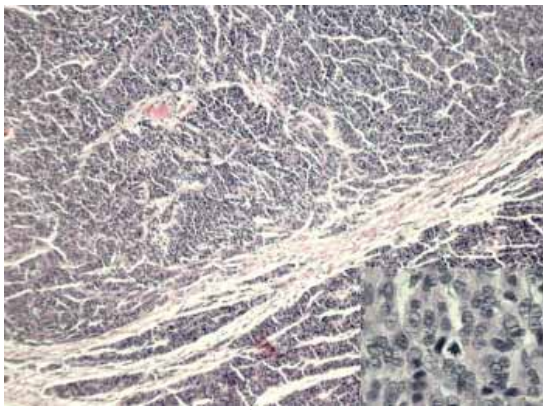

Figure 2

What is the nature of this cancer? Using immunohistochemistry and a range of antibodies to look for cross reactivity, the initial data indicated that DFTD was neuroendocrine or neuroectodermal in origin (*8*). In collaboration with Elizabeth Murchison (Cold Spring Harbor) and Tony Papenfuss (WEHI), a transcriptome database was established. The genes overexpressed within DFTD cancer cells revealed that, although DFTD is related to the nervous system, the origin is a Schwann cell (*4*).

Why doesn't the devil's immune system reject DFTD allografts? One possibility is that devils have a severely compromised immune system. In the absence of specific reagents (no monoclonal or polyclonal antibodies, no tetramers, no ELISA assays, no elispot assays, no cytokine bead arrays, etc.), it was necessary to undertake classical immunological experiments which involved basic histology, haematology and functional assays such as mitogen induced proliferative assays, haemagglutination assays for measurement of antibody production. This was undertaken as part of Alex Kreiss' PhD and all of his work revealed that the devil has a competent immune system. They have the full complement of secondary lymphoid organs with a distribution of immune cells similar to eutherian mammals (*9, 10*). Differential white blood cell counts did not reveal anything abnormal hence it appears that the Tasmanian devil has all the necessary requirements for effective immunity. When challenged with the mitogens (PHA, ConA, PWM and LPS), strong proliferative responses occurred with them all, except for LPS (*9*). Devils were injected with red blood cells and haemagluttination assays confirmed strong antibody responses, presumably IgM and IgG (*11*). Consequently an incompetent immune response on the part of the devil is not the reason why DFTD avoids immune recognition.

What about the MHC? This was undertaken by Hannah Siddle as part of her PhD and sequencing of MHC alleles reveals extremely low levels of genetic diversity. Tumour cells have essentially the same MHC alleles as affected animals. Because of this, the tumour is able to spread without encountering any histocompatibility barriers and passes from animal to animal under the radar of the immune system (*12*).

A screen of over 400 animals revealed only 43 different amino acid sequences across 4 or 5 Classical Class I loci. These alleles fall into two groups based on sequence similarity, with 97% nucleotide sequence identity within groups and 87% nucleotide identity between groups (*13*). Group II likely contains alleles from a single locus. Group I contains alleles from 3 or 4 highly similar loci. At present we can't assign alleles to loci but sequencing of MHC Class I positive BACs is in progress, to allow use to characterise devil MHC gene number and organisation.

Single strand conformation polymorphism analyses revealed greater variation in MHC Class I types of north western devils, than affected eastern devils. This variation is not due to sequence polymorphism, rather MHC gene copy number variation. Up to 20% of individuals in the north west of the State have a "restricted" MHC repertoire, with either group I or group II alleles missing.

DFTD cells express both group I and group II transcripts, so we hypothesize that animals with a "restricted" MHC repertoire might be able to able to mount an immune response against foreign MHC antigens on the surface of DFTD cells (*13*). This remains to be proven and remains one of the last remaining hopes for natural survival in the wild.

Is it possible to induce an immune response to DFTD? Armed with evidence that devils have a competent immune response, another "classical" immunology experiment was performed. Two devils were immunised with inactivated tumour cells (fortunately a number of DFTD tumour cell lines have been established), with Montanide as the adjuvant, to determine if it is possible for the devil's immune system to recognise, and respond to, DFTD tumour. One of these devils produced antibodies to DFTD and this was the first evidence for an immune response against DFTD and a glimmer of hope. This result

was even more encouraging when the MHC was considered, as the MHC of the responsive devil was "restricted" and different to the DFTD cells, whereas the MHC of the non-responsive devil, was similar to the DFTD tumour cells. Perhaps genetics was going to be the answer to allow allo-recognition of the tumour cells. Almost seven months following the last immunisation, the responsive devil was re-challenged with live tumour cells. Unfortunately, five months after this second challenge a small tumour was identified at the injection site. Even though this devil did provide evidence for an antibody response to DFTD tumour cells, it was not sufficient to induce long term protection. Although a significant setback, this result did inform that lack of allo-recognition due to a limited MHC diversity may not be the only explanation for the failure of the devil's immune system to recognise the DFTD "allografts". Since then a number of devils that have been selected on the basis of their MHC have been immunised with DFTD tumour cells. At best a weak response has been identified and this response is unlikely to protect against a DFTD challenge.

What is special about the DFTD-tumour cells? There are still many mysteries surrounding the DFTD tumour cells and the current projects to unravel the genetics of DFTD will provide important clues and useful tools with which to work. One of the critical questions is, "Do DFTD tumour cells express MHC?". A simple question to answer in mice or humans, but with the lack of any antibodies that cross react with devil MHC, this question remains unanswered. MHC-I and MHC-II are both expressed at the RNA level, but it is unknown if this translates to the protein level. Maybe DFTD tumour cells produce locally suppressive factors. Again, in the absence of specific tools, this also remains unresolved.

Is a vaccine possible? A protective vaccine is theoretically possible as DFTD cancer cells are similar and the devil has a competent immune response. The major obstacle is to induce an immune response to the tumour cells that can induce a long term protection. Somehow it must be possible to alert the devil's immune system to recognise and respond to the DFTD cancer cells. But this remains a major challenge, especially with a lack of specific tools. DFTD offers a unique opportunity to introduce a protective vaccine into a wild animal population. But such an ambition cannot be taken lightly, nor can it be ignored. The challenge is almost insurmountable, but is a challenge worth commencing, not the least to obtain some important preliminary data.

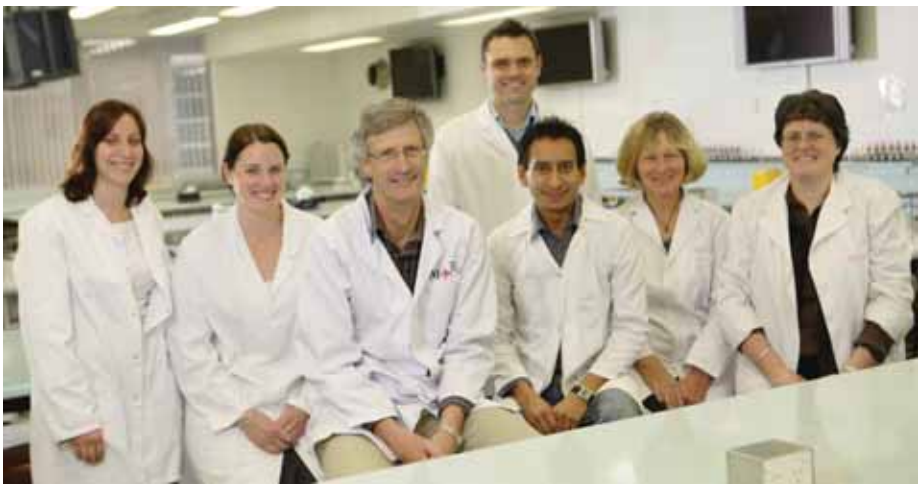

Figure 3

LtoR: Gabriella Brown (PhD student; cytotoxicity responses), Heather McGee (Post-doc; part time devil cytokines), Greg Woods (Team Leader), Alexandre Kreiss (Post-doc; Immune response), Cesar Tovar (PhD candidate; DFTD proteins), Jill Chuckowree (Part time research technician; routine procedures), Narelle Phillips (Part time research technician; DFTD cultures and histology)

What is being done to protect the devil from extinction? The Save the Tasmanian Devil Programme is a highly co-ordinated programme that has a number of strategies to protect this iconic species (see Table). The role of Monitoring and Management is to obtain as much knowledge as possible about the disease in the wild and to remove diseased devils from the wild population. The Captive Management Programme is to establish an insurance population in either small enclosures, larger free range enclosures that mimic the wild as much as possible or fenced off areas or islands. The role of Disease Research is to understand the pathology and immunology of the disease.

There is still a great deal to understand about this almost totally unique transmissible cancer. A greater knowledge of immunology and immunogenetics as well as a greater appreciation of the cancer cells themselves is the aim of our research group (Figure 3) with the hope that an intervention strategy might be possible to help preserve this iconic species.

Strategies implemented by The Save the Tasmanian Devil Programme

Monitoring and Management	Captive Management Programme	Disease Research
Disease suppression	Captive breeding	Immunology & vaccines
Long-term monitoring	Insurance Meta-populations	Evolution of the disease
Determining location of disease front	Free Range Enclosures	Treatment trials
		Genetic resistance
Movement of devils		Pre-clinical tests
Ecosystem Impacts		Role of viruses and toxins

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President's Column

The ASI mid-year Council meeting was held in Sydney in late May. This was the first Council meeting attended by the incoming President (Dave Tarlinton, WEHI), as well as the incoming Editor of *Immunology and Cell Biology* (Gabrielle Belz, WEHI). A number of topics were covered at the meeting:

ASI Travel Grants for Members
A record number of travel awards have been funded for the second half of 2010, with a total of 14 awards for students and post-docs to attend the International Congress of Immunology (more below), as well as six awards to attend other conferences. This was fairly evenly divided between student and post-doc awards, and will give a large number of younger members the opportunity to see what the rest of the immunology world is up to! In addition, our second year of the Senior Travel Awards sees Professor Vasso Apostolopoulos heading to Greece for a sabbatical.

I hope the expansion of travel awards will continue as a way of supporting members, and all applicants are advised to review the guidelines for application to make sure their application is as competitive as possible.

ASI at AAI
ASI Council decided to sponsor an ASI session at the American Association of Immunologists conference earlier in the year, where ASI supported five scientists to attend and present a session on antigen presentation. Feedback was that the attendance at this session was only moderate, and the Council has decided not to do this again for 2011. However, if members have ideas for organizing ASI sessions at other major conferences, they should submit proposals to Council for consideration.

International Congress of Immunology
This newsletter will reach most people after the International Congress of Immunology in Kobe, Japan. This is an exciting event not only for the strength of immunology on show, but also because the ASI bid for the 2016 Congress will be decided at this meeting. The outcome of this will no doubt be announced to members soon after and, if successful, will be a major boost for the profile of Australian immunology and provide many opportunities for members in 2016.

New Councillors needed!
There are a number of Council positions up for re-election in 2010, including Councillors for New Zealand, Victoria/Tasmania, and Queensland. More details of this in the Secretary's column.

Annual Meetings
By the time members receive this newsletter, registration for the ASI 2010 meeting in Perth should be well underway. I hope I will catch up with as many members as possible in Perth, to make this another successful ASI annual meeting. Meanwhile organization is well underway for Adelaide 2011, and even New Zealand 2013!

Miles Davenport

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Sustaining Membership

ASI Inc acknowledges the support of the following sustaining member:

• Jomar Bioscience

Contributions sought for the ASI online immunology quiz

As part of the recent World Day of Immunology, 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.

40th Annual Scientific Meeting

5 – 9 December 2010, Perth Convention Exhibition Centre, Perth, Western Australia

For all the latest information go to: http://www.asi2010.com/

The 40th annual scientific meeting of the ASI is rapidly approaching. This year's meeting will be held at the Perth Convention Centre from 5–9 December. The convention centre is located in the heart of Perth and is close to many of the city's hotels, restaurants, and retail districts. ASI annual meetings have consistently provided a forum for the presentation of high quality research in a relaxed atmosphere. A meeting such as this provides an ideal opportunity for junior researchers to meet with some of the leaders in the field, while offering more established scientists the chance to establish new collaborations and catch-up with friends. The ASI2010 organising committee has been working hard to ensure that this year's conference lives up to the high expectations members have for this meeting and, on their behalf, I am delighted to invite you to attend.

Scientific Program

Over 25 international and Australasian speakers have already agreed to present their work at this year's meeting. Speaker biographies of a small selection of the confirmed speakers are included below. In addition, significant parts of the scientific program will be filled by speakers chosen from submitted abstracts, providing an opportunity for anyone with some interesting data to come along and tell us about it. Alternatively, your work could be presented in a poster session. A number of awards and prizes are also available to students and early-career post-docs. Go to the website for full details and eligibility requirements.

Workshops

As with previous years, a number of workshops will be run on Sunday before the main meeting gets underway. This year you have the opportunity to attend workshops devoted to Tumour Immunology, Mucosal Immunology, Infection and Immunity, or the Postgraduate/Postdoctoral workshop. The latter is designed for students, junior post-docs, and anyone else interested in getting some advanced training from internationally recognised authorities in immunology. Full details on the respective workshops are available from the conference website.

Social Events

Welcome drinks and light snacks will be served after the opening plenary session on Sunday evening, and are free to registered delegates. In addition, your registration fee entitles you to drinks before the Burnet Oration. The optional post-graduate dinner will be held at WA Rowing Club on Tuesday, 7th December. The post-grad evening offers students the chance to mingle with invited speakers over dinner. The Kevin Lafferty debate, featuring well respected scientists as you have never seen them before, is on again. Following the debate, delegates can opt to attend the conference dinner. Booze, limericks, and scientists dancing, a combination illegal in some countries – a conference dinner ticket gets you all this and more.

The organising committee is looking forward to welcoming you to Perth for some great science and lots of fun!

Chris Andoniou
On behalf of the
ASI2010 Organising Committee

2010 Burnet Oration

Christopher Goodnow

Christopher Goodnow has pioneered the use of mouse molecular genetics to reveal key mechanisms regulating the immune system – in particular the crucial ability of the immune system to learn to differentiate our own tissues from invading foreign microbes, and the capacity of the immune system to lay down specific memory of both self and foreign so that autoimmunity is minimized while immunity to infection becomes strong. His work has changed the conceptual framework of the field by showing that tolerance to self is acquired through a series of regulatory checkpoints at many steps in the maturation of immune cells.

After a BSc(Vet) and Veterinary degree at the University of Sydney, Goodnow trained in molecular and cellular immunology at Stanford University with Mark M Davis, at the Walter and Eliza Hall Institute with Sir Gustav Nossal, and at the University of Sydney with Antony Basten. From 1990–1997, Goodnow headed a laboratory at Stanford University Medical School as an Assistant Investigator of the Howard Hughes Medical Institute. Since 1997, he has been Professor of Immunology and Genetics at The John Curtin School of Medical Research at The Australian National University, where he is currently Division Head. Goodnow was the Founding Director of the Australian Phenomics Facility – a major national research facility for mouse molecular genetics. In translating his scientific expertise, Goodnow served on the founding scientific advisory board of Illumina Inc – now a leading genetic analysis technology company – and was founder and chief scientific officer for Phenomix Corp, a private biotechnology company with treatments for diabetes and infection in clinical development.

James Allison

"The general area of our research is the molecular immunology of the T cell antigen receptor complex, co-stimulatory receptors, and other molecules involved in T cell activation. We are particularly interested in defining those signalling events that lead to differentiation of naive T cells and those that determine whether antigen receptor engagement will lead to functional activation or inactivation of T cells. The lessons learned in these basic

James Allison

studies are used to develop new strategies for the treatment of autoimmune diseases and for immunotherapy of cancer."

Rachel Caspi

Prof. Caspi received her doctoral training in Israel and her postdoctoral training at the National Institutes of Health in Bethesda, MD, USA. She serves as a Section Head and Deputy Chief of the Laboratory of Immunology, National Eye Institute, NIH. She also holds an Adjunct Professorship at the University of Pennsylvania School of Medicine.

Dr Caspi's research centres on tolerance and autoimmunity to immunologically privileged retinal antigens in animal models of autoimmune uveitis, a potentially blinding human disease. She developed the mouse model uveitis, now in use worldwide. Her studies have elucidated many basic mechanisms of pathogenesis and helped devise clinically relevant immunotherapeutic approaches. She is particularly well known for her work on effector and regulatory T cells in pathogenesis of ocular autoimmunity. She has authored and co-authored >180 publications.

Tracy Hussell

Tracy Hussell completed her PhD at University College London where she identified Helicobacter pylori as an aetiological agent in human gut lymphomas. Since then she has developed an active research program in the field of mucosal immunology and infectious disease.

After her PhD, Professor Hussell moved to Respiratory Medicine at St Mary's Hospital to study immunity and pathology to respiratory syncytial virus in mouse models. In 1998 she accepted a lectureship in the Centre for Molecular Microbiology and Infection (CMMI) at Imperial College led by Professors Gordon Dougan and Douglas Young. She was subsequently awarded a career development fellowship by the Medical Research Council and has been funded extensively by them since.

Professor Hussell was awarded a Personal Chair in inflammatory disease in 2006 and has developed a vibrant research group studying immunity, pathology and vaccination to influenza virus infection with a special interest in the secondary bacterial complications that ensue. Her group also investigates how immunological homeostasis is maintained in the respiratory tract and pathways leading to the dysbiosis of commensal microflora.

Foo Yew Liew

Professor Foo Yew Liew has held the Gardiner Chair of Immunology at the University of Glasgow since 1991. He is Head of the Division of Immunology, Infection and Inflammation.

Prof Liew's research interests lie primarily in understanding how cytokines regulate the immune response. "We have focused our research on the role of interleukin (IL)-33 and nitric oxide (NO) in the regulation of immune response, with particular interest in the modulation of regulatory T (Tregs) cells, Th1, Th2 and Th17 cells."

Dan R Littman

"Our laboratory studies the molecular mechanisms involved in the specification of distinct T lymphocyte lineages during development in the thymus and in response to microbial challenge in peripheral tissues. Elucidation of these mechanisms will help us to understand how normal protective immune responses differ from pathogenic ones that result in inflammation and autoimmune disease. We also investigate how the human immunodeficiency virus interacts with host dendritic cells to enhance infection of T helper cells while avoiding recognition and clearance by the immune system. These studies are aimed at developing new approaches for protective and therapeutic HIV vaccination."

Andrew Luster

"Research in my laboratory focuses on understanding the role of chemokines and lipid chemo-attractants and their receptors in controlling the trafficking of leukocytes in vivo. Gene-targeted and transgenic mouse strains have been developed to study the role of chemokines and chemoattractant receptors in the development and delivery of organ-specific innate and adaptive immune and inflammatory responses in mouse models of inflammatory, autoimmune, and infectious diseases. System biology approaches are being utilized to understand how multiple chemoattractant pathways are integrated in vivo for the fine control

of leukocyte trafficking. We also study the regulation of chemokine production *in vivo* since this is a critical determinant of their role in a given biological response. We have a particular interest in the role of innate immune receptors, such as toll-like receptors, in regulating chemokine production. We are also interested in structure-function relationships of chemokines and their receptors as well as the molecular mechanism of chemokine signal transduction, as these are important questions relevant to chemotaxis and immune cell trafficking in health and disease. Finally, chemokines and chemoattractant receptors are interrogated in human diseases to determine chemokine systems relevant for disease pathogenesis."

Eleanor Riley

Eleanor Riley is Professor of Immunology in the Department of Infectious and Tropical Diseases at the London School of Hygiene and Tropical Medicine. Her research on immunity to malaria spans studies in animal models, *in vitro* and *ex vivo* studies of human innate and adaptive immunity and field research on genetic susceptibility to malaria and immunological evaluation of malaria vaccine trials.

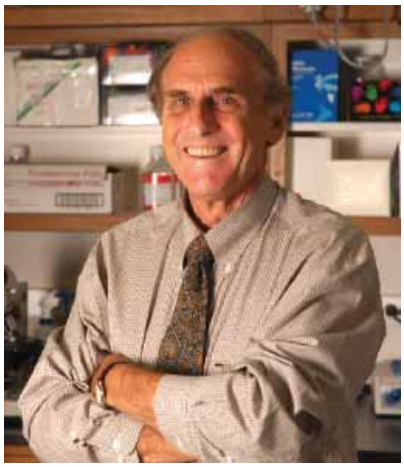
Jonathan Sprent

Jonathan Sprent received MBBS and PhD degrees in Australia and then did postgraduate work in Switzerland and England before moving to the University of Pennsylvania, Philadelphia, USA in 1976 as Professor in the Department of Pathology. He worked at The Scripps Research Institute from 1983–2005 and then moved to his present position as Professor at The Garvan Institute of Medical Research in 2006. He served as President of The American Association of Immunologists in 1998/99 and he is a Fellow of The Royal Society and The Australian Academy Of

Jonathan Sprent

Science. He works on the immunobiology of T cells. He has published over 360 papers.

Ralph Steinman



Ralph M Steinman MD is the Henry G Kunkel Professor at The Rockefeller University and heads the Laboratory of Cellular Physiology and Immunology. In addition to research in fundamental mechanisms of immunity and tolerance, Steinman studies the interface of the immune system with several disease states, including research aimed at developing vaccines and immune-based therapies for tumours, infections and autoimmune diseases.

Brigitta Stockinger

"The main interest of my lab is the functional analysis of peripheral T cell responses. Our aim is to understand complex interactions *in vivo*, leading to antigen presentation, tolerance induction, activation, autoimmunity and memory formation. Our current focus is on the development and function of new CD4 effector T cells, such as Th17 cells and modulation of effector functions by exogenous and endogenous environmental factors."

Carola Vinuesa

Carola Vinuesa was born in Spain and obtained a medical degree at the University Autonoma of Madrid. She undertook specialist clinical training in the UK and in 2000 was awarded a PhD by the University of Birmingham working with Professor Ian MacLennan on thymus-independent responses. Her work identified the existence of T-independent germinal centres. A year later she was the recipient of a Wellcome Trust International Travelling Prize Fellowship to do postdoctoral work with Professor Chris Goodnow at The John Curtin School for Medical Research in The Australian National University. Her work has led to the discovery of novel genes important for immune regulation and memory. Since 2006 she has been leading the Humoral Immunity and Autoimmunity Group at ANU, supported by the NH&MRC, JDRF and a Viertel Senior Medical Research Fellowship. In 2008 she was awarded the Science Minister's Prize for Life Scientist of the year and in 2009 the Gottshalk Medal of the Australian Academy of Sciences. Carola is investigating the development and regulation of T follicular helper (Tfh) cells, the ontogenic and functional relationships between Tfh cells and other T helper subsets, and the roles of Tfh cells in antibody responses and autoantibody-driven autoimmune diseases.

The ASI Visiting Speaker Program

November – December

Dr Gregory Bancroft
Immunology Unit, Department of Infectious & Tropical Diseases, London School of Hygiene and Tropical Medicine

Dr Bancroft is an Infectious Diseases Immunologist at the London School of Health and Tropical Medicine, UK. His research interests are related to how the host responds to pathogens within the first few days following infection. Dr Bancroft's research group studies cell mediated immunity against *Burkholderia pseudomallei*, with particular interest in the mechanisms of cell fusion and giant cell formation and the role of bystander T cell and NK cell activation in resistance infection. His team also studies molecular determinants of virulence of *Mycobacterium tuberculosis* and mechanisms of granuloma formation and tissue remodelling in tuberculosis.

Wednesday 24th November
Malaghan Institute, Wellington
Host: Dr Joanna Kirman
(jkirman@malaghan.org.nz)

Friday 26th November
Seminar at Centenary Institute, Sydney University
Host: Dr Bernadette Saunders
(B.Saunders@centenary.usyd.edu.au**)**

Monday 29th November
QIMR, Brisbane
Hosts: Drs Christian Engwerda & Ash Haque
(christian.engwerda@qimr.edu.au**;** ashraful.haque@qimr.edu.au**)**

Tuesday 28th – Friday 3rd November
JCU and World Melioidosis Congress
Hosts: Drs N Ketheesan & Heiner Koener
(n.ketheesan@jcu.edu.au**;** heinrich.korner@jcu.edu.au**)**

Sunday 4th – Thursday 8th December
ASI Congress 2010 Perth
Hosts: Drs Christopher Andoniou & Andrew Currie
(candoniou@lei.org.au**;** ajcurrie@cyllene.uwa.edu.au**)**

The visit is being co-ordinated by Dr Natkunam Ketheesan from the JCU, Townsville **(**n.ketheesan@jcu.edu.au**)**

Immunology and Cell Biology Publication of the Year Award 2009

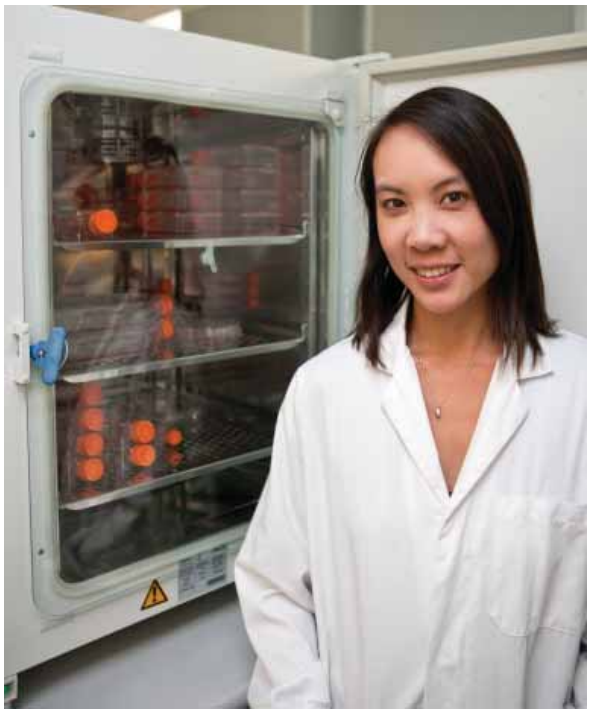
Christopher R Parish
Editor-in-Chief, *Immunology and Cell Biology*

As in previous years, it is a great pleasure to announce the *ICB* Publication of the Year Award. Recipients of the award must be a first author on one of the following *ICB* manuscript categories: Original Article, Outstanding Observation, Theoretical Article or Brief Communication. They also must be a financial member of ASI by October of the year in which the article was published. The award is a $1,000 (AUD) scholarship provided by The Nature Publishing Group.

This year a small committee, consisting of the Editor-in-Chief and Deputy Editor of *ICB* and the current ASI Vice President, selected the best article based on scientific excellence. I am pleased to announce that Dr Cindy Ma was chosen by the committee as the winner of the 2009 *ICB* Publication of the Year Award.

Dr Ma's winning paper, which is an Outstanding Observation, is entitled "Early commitment of naïve human CD4$^+$ T cells to the T follicular helper (T_{FH}) cell lineage is induced by IL-12" and was published in the November/December 2009 issue of *ICB*[1]. T_{FH} are a subset of CD4$^+$ T cells that localise in B cell follicles and play a key role in the development of antibody responses. Despite their importance in humoral immunity, little is known about the factors that favour T_{FH} development. Dr Ma's award winning paper clearly shows that in humans, IL-12, presumably produced by dendritic cells during early stages of CD4$^+$ T cell activation, plays a key role in T_{FH} induction. Earlier studies in mice have indicated that mouse T_{FH} cells do not require IL-12 for their development. Dr Ma's research thus indicates that human T_{FH} cells behave differently to their mouse counterparts, a finding with important therapeutic implications.

Dr Ma completed her PhD degree at the University of Sydney in 2005 and since then has been a Research Officer/Senior Research Officer at the Garvan Institute of Medical Research in Sydney. Her major research interest is in the field of human immunodeficiency disorders, which dates back to the commencement of her PhD studies in 2002. During her PhD she investigated immunological aspects of X-linked lymphoproliferative disease (XLP), a rare immunodeficiency that results from mutations in *SH2D1A*, which encodes the adapter protein SAP (SLAM-associated protein). Although XLP presents as a humoral immunodeficiency, paradoxically Dr Ma discovered that SAP is not expressed by B cells. She subsequently demonstrated that the immunodeficiency is due to the inability of SAP-deficient CD4$^+$ T cells to provide 'help' for antibody responses. These studies aroused her interest in human T_{FH} cells, an interest that resulted in the award winning paper and which represents a major part of her current research activities.



Dr Cindy Ma, recipient of the 2009 ICB Publication of the Year Award

Dr Ma's award winning paper is undoubtedly excellent and also highlights Outstanding Observations published by *ICB* as being of very high quality. I hope her publication will encourage ASI members to submit their outstanding research to the journal.

1. Ma CS, Suryani S, Avery DT, Chan A, Nanan R, Santner-Nanan B, Deenick EK, Tangye SG. Early commitment of naïve human CD4$^+$ T cells to the T follicular helper (TFH) cell lineage is induced by IL-12. *Immunol Cell Biol* 2009; **87**: 590-600.

Based on an Editorial to be published in the October, 2010, issue of ICB

ICB Online Manuscript Submission

Online manuscript submission for Immunology and Cell Biology now available via:
http://mc.manuscriptcentral.com/icb

All manuscript submissions to ICB should in future be made online via this web site to speed up the reviewing and acceptance of manuscripts.

Chris Parish, Editor-in-Chief
Immunology and Cell Biology

Honorary Secretary's News

It is one of the more pleasant duties of the Hon. Secretary to announce the winners of the international postgraduate and postdoc travel awards. This year sees the International Congress of Immunology (ICI) being held in Kobe, Japan. This meeting is held every three years and is probably the largest gathering of immunologists worldwide. It is a great chance for young scientists to present to an exceptional audience and to meet the experts in their field. To give as many of our young members the chance to attend this meeting, we gave out a number of ICI2010 awards in addition to the normal Postdoctoral and Postgraduate International Travel Awards (ITA).

We are often asked what makes a successful application for the ITA. Our past president Alan Baxter had written a very informative summary on this topic which was published in the ASI newsletter a couple of years ago. An updated version of this will be attached to the call for applications later in the year. In short, as stated in the guidelines, the applications are judged by the quality of the abstract, the conference attended, the CV and the career benefit of the proposed travel. The number and the purpose of additional visits to research labs organised prior to travel and application are strongly considered in the career benefit section.

The next round for **ITA** will be called in October for travel in the first half of 2011.

The recipients of the awards for this round are listed in the table.

Gordon Ada and Jacques Miller Senior Travel Award

This is the second year ASI has given out Senior Travel Awards. These awards were introduced in 2009 to recognise the excellence of our members. The awards support travel for various reasons such as sabbaticals, conference attendances, lab visits, etc., and are called for once a year in April for travel in the following financial year. Successful applicants receive up to $10,000 and will receive the award during the ASI meeting in the year the award is granted.

This year's award goes to Professor Vasso Apostolopoulos, Head Immunology and Vaccine Laboratory at the Centre for Immunology, Burnet Institute in Melbourne. Vasso will undertake a 3-6 month sabbatical at the Department of Chemistry, University of Patras, Greece. We are looking forward to hearing about her travels around this time next year.

Last year's awards went to Mark Smyth (Peter Mac) and Steve Nutt (WEHI). Unfortunately both awardees were struck by misfortune during their travels. Mark had to cut his travels short due to the Icelandic volcano with the unpronounceable name and the subsequent air travel chaos (report in last newsletter), while Steve fell seriously ill during his sabbatical in Austria and can probably report in more detail on Austrian hospitals than their hospitality. I'm pleased to report though that he has made a full recovery, has completed his travels as planned and is back at WEHI and is busy writing a report about his experience.

The next round for applications for the **Gordon Ada and Jacques Miller Senior Travel Awards** will be called for in April 2011 for travel from 1 July 2011 to 30 June 2012.

Elections to Council

This year a number of (voting) positions on Council will be open for election.

Positions for regional representatives for New Zealand and Victoria/Tasmania are coming to the end of their regular 3-year term, while the Queensland councillor needs to be called for one year ahead of the regular term.

Nominations are open for members in the respective states/territories. A call for nominations, summary of responsibilities and instructions to vote will be sent out to membership by email during September. Please read through our 'The Faces of ASI' column in this and the previous newsletters to learn a bit more about the responsibilities of being on ASI Council and feel free to contact

POSTDOC

$3000 ASI International Travel Award

Nicole	Mifsud	Monash Uni	XXIII International Congress of The Transplantation Society
Yuekang	Xu	WEHI	11th Int.Symposium on Dendritic Cells in Fundamental & Clinical Immunology
Joanna	Groom	Harvard Medical School	ASI 2010 Perth

$1000 Award for attendence of ICI 2010 in Kobe

Dominique	Gatto	Garvan
Elissa	Deeninck	Garvan
Ivan	Poon	Latrobe Uni
Kate	Graham	St Vincents Institute
Angela	Chan	University of Melbourne
Simon	Apte	QIMR
Joshua	Ooi	Monash Uni

POSTGRAD

$3000 ASI International Travel Award

Kate	Markey	QIMR	The Transplantation Society
Sarah	Oracki	WEHI	ICI 2010

$1000 Award for attendence of ICI 2010 in Kobe

Gerard	Kaiko	University of Newcastle
Sophie	Valkenburg	University of Melbourne
Rachael	Terry	University of Sydney
Zheng	Ling	University of Sydney
Julie	Brazzatti	University of Adelaide
Yuka	Harata-Lee	University of Adelaide

the present Councillor for information on the positions.

Nomination for Non-voting Council Positions

A number of non-voting positions on the ASI Council have in the past often been filled on an *ad-hoc* basis. Often the person originally putting up their hand for these positions when they were newly created, continued to fill them for many years. To give them a chance to hand the positions over and to encourage other people to take up positions on Council, ASI Council has decided to call nominations for some of these positions every 3 to 5 years. To make the transition as smooth as possible, we called for nomination for a selection of no-voting positions last year and will continue this process this year. Nominations will be called for by email during September.

ASI Council consists of people like you. The productive operation of Council is based on the work each individual Council member contributes. Please take a minute or two to think about whether you'd like to contribute to the further success of ASI by putting your hand up for a position on ASI Council.

Bid for ICI2016

By the time you read this, we will know whether our bid to the IUIS Council to hold the ICI 2016 congress in Melbourne was successful. IUIS Council meets during the ICI 2010 congress in Kobe and will decide there and then who will get the congress. An IUIS delegation, including the General Secretary of IUIS, Prof Moh Daha (Leiden, NL) and Paola Ricciardi-Castagnoli (Singapore) came to Melbourne for a site visit in July. From what I hear, they were nothing but impressed despite some nasty weather that Melbourne put on display. Attached are some photos of Moh Daha enjoying the Melbourne hospitality.

ASI 2010 Perth

The abstract submission and registration for the Annual Scientific Meeting is Perth is open. I hope to see you there!

Please remember that the ASI Council is here to support its members. Please do not hesitate to contact me with queries or suggestions that you might have.

Susanne Heinzel
Hon. Secretary
heinzel@wehi.edu.au

ICI 2016 site visit dinner

Jose Villadangos and Peter Doherty listening to Prof Moh Daha (General Secretary of IUIS) at ICI 2016 site visit dinner

Prof Moh Daha with Leigh Harry, Chief Executive Officer of the MCEC

Prof Moh Daha enjoying the wine and the company of Miles Davenport and Anne Kelso

Jennifer Rowland and Andrew Lew

ASI Student Page

The month of July 2010 will be forever remembered in my science career as the month I convinced the upper echelons of ASI to get on Facebook. That's right, we're on Facebook people! Please search for the Student Members of the Australasian Society of Immunology group. Contrary to the title, all members are welcome. I expect lots of people to join up – after all isn't, like, everyone on Facebook?

Besides a thinly veiled tool for further procrastination on my part, there were legitimate reasons for starting this. ASI will be using the group as a means of notifying members of upcoming events, these could include social events, invited speakers coming to a seminar room near you, deadlines for scholarship applications and very importantly, the annual meeting (held in Perth!). I believe it will also serve as an avenue for discussion amongst members, in particular student members. The impression I got when I first attended ASI events was that our supervisors seem to know half the people in the room, but as students we barely know anyone, apart from other lab members. How can we, when, as hard working PhD students, we are chained to our laptops or benches and never venture out of the lab (that's what I tell my supervisor, shhh) to meet *people*? Presumably that's why social networking is the 'it' thing – it's a great way to interact with people without having to worry about pesky details like physical presence.

I strongly encourage you to utilise the discussion boards. Sometimes there are questions you just have to ask, but you don't want to risk your supervisor thinking you're an idiot (or providing them with further evidence to reinforce that ill-conceived notion). Admittedly, it's not anonymous, but I promise you, this is a safe space. And of course, remember the oft-used reassuring phrase that 'no question is stupid'. To prove that, I will share with you a stupid question I recently came up with, and asked. I had ordered antibodies to deplete CD4+ and CD8+ T cells. The day before I started the mouse experiment, I emailed the antibody source to ask if there would be any problems mixing the two antibodies together for the injections. All basic immunology knowledge went out the window, and I was imaging some crazy complex forming (one that would probably break all known chemistry laws). Also, to compound my embarrassment, I did not get a reply, as if I needed further confirmation that it was a stupid question. So yes, there you go, as a gesture of empathy, I expect to see lots of equally stupid questions on Facebook.

I understand that some of you may not yet be convinced, and here's where I refer you to *Science* magazine. I've heard a rumour that they carry some weight in this community? From their careers website www.sciencecareers.org/booklets you can download a copy of *Career Trends – The Informed Job Search – Advice for Scientists*. In this booklet, social networking is highlighted as an increasingly important avenue in the jobs market. To add another cliché – it's all about who you know, and surely, the more people you know, the higher your chances are of meeting someone who will offer you a job! And we all want a job, right? right?
Join up!

Baca Chan
ASI Student Representative 2010

Upcoming Lectures & Conferences

The 50th Midwinter Conference of Immunologists at Asilomar
January 22–25, 2011
Pacific Grove, California, USA
kim.gurney@byu.net
www.midwconfimmunol.org

T lymphocyte dynamics in acute and chronic viral infection
January 24–25, 2011
London, UK
mhead@idrn.org or m.head@ucl.ac.uk
http://idrn.org/events/upcoming/lymphocytedynamics.php

IV World Asthma & COPD Forum
April 30–May 3, 2011
Paris, France
Early registration deadline: October 30, 2010
Abstract deadline: January 30, 2011
info@wipocis.org
www.wipocis.org

10th World Congress on Inflammation
June 25–29, 2011
Paris, France
www.inflammation2011.com

British Society for Immunology 2011 Summer School
5–8 July 2011
Llantwit Major (Wales), UK
http://bsi.immunology.org/summer-school-2011

5th Asian Congress on Autoimmunity (ACA 2011)
17 –19 November 2011
Singapore
www.kenes.com/autoimmunity

ASI Councillors' News

Victorian News

The Immunology Group of Victoria
A branch of the Australasian Society for Immunology

International Day of Immunology (report by Sarah Londrigan, Uni of Melb)

This year, the Victorian theme for the International Day of Immunology was *"Immunology: Our achievements for global human health and vision for the future"*. The day incorporated a public display with information banners and interactive activities in the forecourt of the State Library of Victoria, and a public seminar held in the evening. Prof Phil Hodgkin (Walter and Eliza Hall Institute) commenced the evening with a wonderful tribute to Macfarlane Burnet: *"An incredible idea: How Burnet, in Melbourne, explained the immune system"*, followed by Prof Len Harrison (Walter and Eliza Hall Institute) discussing *"Vaccination in the 21st century for non-infectious inflammatory diseases: diabetes as a model"*. Prof Anthony d'Apice (Dept Medicine, St Vincent's Hospital Melbourne) provided an update on *"Progress toward pig to human transplantation"*, which was followed by an entertaining presentation by Prof Peter Doherty (Dept Microbiology and Immunology, The University of Melbourne & Department of Immunology, St Jude Children's Research Hospital, North Lauderdale, USA), *"Immunity to viruses and other nasties"*. We thank Prof Fabienne Mackay (Chair of the Department of Immunology, Monash AMREP) for her wonderful role as chairperson throughout the evening. Plans are already underway for the Melbourne event in 2011, with the theme next year being *"The Body at War"*.

A big thank you and congratulations to the committee consisting of Mireille Lahoud (Chair), Claerwen Jones (Vice-Chair), Roselind Lam (Secretary), Angela Chan (Treasurer), Trina Stewart, Edwin Hawkins, Priyanka Sathe, Sarah Londrigan, Sumone Chakravarti, Meredith O'Keefe, Anne Cornish, Sanda Stankovic, Mike Deveer and Edwin Leeansyah.

2010 DOI Committee Members (L to R): *Trina Stewart, Roselind Lam (Secretary), Edwin Hawkins, Mireille Lahoud (Chair), Priyanka Sathe, Sarah Londrigan, Sumone Chakravarti, Meredith O'Keefe, Claerwen Jones (Vice-Chair), Angela Chan (Treasurer). Absent: Anne Cornish, Sanda Stankovic, Mike Deveer and Edwin Leeansyah.*

The Winter seminar series was held at the end of July with Professor Chris Parish speaking. The event was well attended and Chris gave a wonderful seminar highlighting novel approaches for preservation of pancreatic islets as a therapeutic treatment of type I diabetes. The seminar generated a lot of discussion. We'd like to thank Professor Parish for taking the time to come to Melbourne to give such a terrific and thought provoking seminar. For IgV members, we are always looking for suggestions for speakers for this prestigious seminar series.

IgV Annual Retreat, 16– 17 September

Finally, the annual IgV retreat is organized for Thursday 16th and Friday 17th September and will be held again at the Yarra Valley Conference Centre.

Confirmed speakers include the Keynote Speaker, Dr Kate Stacey, an ARC Future Fellow at the School of Chemistry and Molecular Biosciences, University of Queensland. Dr Stacey's work is focused on innate immune receptor recognition of pathogen DNA. This includes a recent publication in *Science* describing the role of a HIN-200 family protein, AIM2 in recognition of foreign DNA and activation of the inflammasome. Other speakers include Dr Margaret Hibbs, Dr Daniel Gray, Raffi Gugasyan and ASI Young Investigator of the Year, Ms Bridie Day. This year's meeting will also include a "teaching session" on the Thursday morning that will examine recent advances in new technologies and their applications. Confirmed speakers include Stephen Nutt and Jose Villandangos who will introduce topics such as Next-generation (deep-sequencing), Advances in Stem Cell Biology and Mass Spectrometry with an emphasis on their application to immunological research.

Be sure to check the website for more information, including the registration information and an updated list of confirmed speakers.

A reminder to both lab heads and students, IgV will be offering a number of prizes/ bursaries for students/junior postdocs to attend the annual ASI meeting in Perth this year.

2010 Seminar Speakers (L to R): *Prof Anthony d'Apice, Prof Peter Doherty, Prof Fabienne Mackay, Prof Phil Hodgkin and Prof Len Harrison.*

Finally, this is my last year as the ASI Victorian Councillor. Nominations for the position will open soon so please consider putting your name up for election. It is a tremendously rewarding position where you get to meet a lot of interesting and enthusiastic people and can contribute to maintaining a vibrant and effective society for Victorian Immunologists. If you have any questions about the position, feel free to contact me.

Steve Turner
Councillor

N.Z. News

NZ ASI/Immunet Meeting 2010

On 1–2 July 2010 the annual New Zealand Branch meeting was held in Wellington, hosted by the Malaghan Institute and Victoria University of Wellington. The meeting featured keynote lectures from distinguished immunologists Ed Pearce and Erika Pearce from the Trudeau Institute, New York, USA; Carola Garcia de Vinuesa, from the John Curtin School of Medical Research, ACT, Australia; and Alan Baxter from the James Cook University, Queensland, Australia.

Attracting over 120 scientists from across the country, this was the largest meeting yet. There were presentations on diverse topics such as infection and immunity, immune regulation and cancer immunology.

In addition to the core conference presentations, as part of the ASI Women's Initiative there were also two round table discussion groups targeted at up-and-coming young scientists on 'Early Career – Moving from Postdoc to Faculty' and 'Grant Writing'. These mentoring sessions were very well received and helped raise awareness of particular issues that women face as they progress through their careers.

Students who demonstrate outstanding achievements in research performance and oral presentation are also recognised at the conference. The first prize is the coveted Immunet "Buck" travel award, which gives the recipient the opportunity to attend an Australasian meeting or visit an Australian laboratory to further their research career.

This year the student prizes went to:
1st prize – **Daniel Verdon**, School of Biological Sciences, University of Auckland, for his talk "T cell cloning in peptide/MHC multimer-dependent and independent systems"
2nd prize – **Sarah Saunderson**, Department of Microbiology and Immunology, University of Otago, for her presentation "CD169 mediates sialic acid dependent binding of exosomes to marginal metallophilic macrophages and subcapsular sinus macrophages"
=3rd prize – **Sabine Kuhn**, Malaghan Institute, for her talk "Using natural adjuvants to stimulate the anti-tumour immune response"
=3rd prize – **Deepa Patel**, University of Auckland, for "The art of war: strategies for immune evasion by staphylococcal protein SSL10"

The conference organisers would like to thank Immunet (University of Otago) and The University of Auckland for supporting the meeting, as well as the following major sponsors for helping make this conference possible – BD, Immunet, Abacus ALS, Norrie Biotech, Jomar Bioscience Pty Ltd, Pharmaco and Applied Biosystems/Invitrogen.

ASI Visiting speakers

Wellington is planning to host Prof Gregory Bancroft on Wednesday 24th November with a seminar at the Malaghan Institute. Any students or postdocs requiring travel funding to attend the seminar from other centres can express their interest by emailing: immunet@malaghan.org.nz .

Joanna Kirman
NZ Councillor

Plenary address on CD8 T cell memory by Erika Pearce

Wellington students enjoying the meeting dinner at Karori Wildlife Sanctuary

Plenary address on genetic control of NKT cells by Alan Baxter

NZ ASI/Immunet Meeting 2010

Margaret Baird, Troels Petersen and Ian Hermans during a break

Members of the Dunbar lab from Auckland at the meeting dinner

Franca Ronchese, Carola Vinuesa & Thomas Bäckström at the Karori Wildlife Sanctuary exhibition

Plenary address on Tfh cells by Carola Vinuesa

The meeting dinner

John Fraser

Queensland News

BIG 2010 – The 11th Annual Retreat of the Brisbane Immunology Group (again with strong support from Townsville) was held at the Novotel Twin Waters Resort at the Sunshine Coast (Thursday and Friday, 19-20 August 2010). The meeting was opened by Matt Sweet in absence of the ASI State Councillor, who unfortunately had to call in sick. The Postgraduate Plenary Lecture was given by Prof. Vojo Deretic (University of New Mexico) on "Autophagy in immunity and inflammation". Further speakers invited from interstate included Prof Lynn Corcoran (WEHI, Melbourne), Dr Cecile King (Garvan Institute, Sydney) and Dr Michelle Grimbaldston (IMVS, Adelaide). As every year, the undisputed highlight of the first day of the meeting was the Jonathon Sprent Oration which in 2010 was given by Prof David Vaux before the meeting dinner on the beach in the sand. David **walked** from the airport to the Resort along the beach and managed to look relaxed even amongst relaxed Queenslanders, giving the Oration in tropical attire without shoes. A presentation truly fitting the tropical surroundings. Furthermore, there were postgraduate, oral and poster presentations of high standard. The prize for the best student poster and the Peter Doherty medal for the best presentation by a postgraduate went to Dr Ash Haque (QIMR, Brisbane) and Dr Steve Broomfield (IMB, Brisbane), respectively.

Dr Cecile King and Prof Alan Baxter during a break at BIG2010

Nilesh Bokil, Xinsheng Ju and Dr Steve Broomfield (Winner of the Peter Doherty medal)

The meeting had, as always, a great, friendly and supportive atmosphere, and presented the excellent immunological research in Queensland and Australia. As every year, it was a fantastic opportunity to catch up with colleagues and enjoy great science.

Heinrich Korner
Queensland Councillor

An obviously excited German student, Rene Gollan, who is visiting the Korner lab in Townsville, on his way to the conference dinner at the beach

S.A./N.T. News

We have one major event coming up soon which is the highlight of the Immunology program in SA. Preparations for the 6th Adelaide Immunology Retreat (AIR) are in the final stages. This year the retreat will be held on September 3rd and 4th at the Vine Inn, Nurioopta, in the Barossa Valley. We are delighted that Prof Dale Godfrey, University of Melbourne, and Dr Claudine Bonder, Centre for Cancer Biology, Adelaide, will be joining us to present some of their recent research and share their perspectives on their own career journeys in Immunology. In addition to the stimulating scientific presentations by our invited speakers, students and research assistants, an afternoon of wine tasting and a visit to Venom Supplies has been placed on the program.

We thank supervisors who have supported this event by encouraging their students and staff to attend as it is a great opportunity for them to give an oral presentation to their peers in a relaxed environment. Another incentive is that there are three prizes conferred for the Best Presentations given by a PhD Student, Honours Student and Research Assistant (one in each category).

Also, I would like to make special mention of the team of PhD students and early career researchers who have helped to organize this event: Cara Frazer, Iain Comerford, Erin Lousberg, Lachlan Moldenhauer, Anastasia Yu and Kate Parham. Thank you for all your efforts!

Michele Grimbaldeston
SA/NT State Councillor

The People Who Are ASI

Nick King – President of FIMSA (Federation of Immunological Societies of Asia-Oceania)

The King lab is based at the University of Sydney in the Discipline of Pathology. It is part of the School of Medical Sciences at Sydney Medical School and a member of the Bosch Institute. It is an international lab where Honours, Masters, PhD students and Postdocs collaborate and exchange ideas within a wide variety of exciting projects, all relating to how the immune system causes damage in infection, particularly by flaviviruses. Flaviviruses are single-stranded plus-sense RNA viruses of relatively low cytopathogenicity, transmitted mostly by mosquitoes, which become infected via a blood meal from an intermediate amplifying host. Such hosts are usually birds, but may include domesticated mammals, like pigs. Indeed, humans are often regarded as incidental or 'dead-end' hosts in this cycle, since they seldom seem to generate the level of viraemia necessary for transmission to the mosquito vector. Well-known members of this family include yellow fever (the prototype responsible for the family name – flavus is Latin for yellow, after the jaundice it causes) and dengue viruses. In our immediate region, in addition to dengue, the neurotropic Japanese encephalitis and Murray Valley encephalitis viruses cause significant neurological disease. Further afield, three lineages of West Nile encephalitis virus (WNV) are found in Africa, Europe and the subcontinent, while tick-borne encephalitis in Europe and Saint Louis encephalitis viruses in the USA are responsible for seasonal outbreaks. In New York in 1999 a novel outbreak of West Nile virus (WNV) encephalitis, not previously seen in the Western hemisphere, began an epidemic that, within 10 years WNV had spread throughout Northern America and much of South America. Flaviviruses are the most widely spread of all mosquito-borne viruses and are responsible for considerable morbidity and mortality worldwide. Global warming and deforestation continue to extend the habitat of mosquito vectors and their amplifying hosts, while travel enables virus spread into new vector species. Significant difficulties in flavivirus vaccine development have meant that to date an effective live vaccine is widely approved for yellow fever only. This makes it imperative to understand the pathogenesis of diseases for which there is currently only supportive treatment.

Our lab thus investigates the early and late pathogenesis of diseases caused by these viruses in various *in vivo* and *in vitro* models we have set up over the last 20 years. In particular, we use WNV Sarafend, a lab-adapted Lineage II virus causing encephalitis in adult mice that is clinically and pathologically very similar to that found in humans. We have shown that infection with flaviviruses paradoxically calls attention to the immune response by directing increased MHC and pro-inflammatory cytokine expression in infected cells, as well as increasing the speed of dendritic cell (DC) migration to the draining lymph node, in what we have proposed is a series of immunopathological decoy events orchestrated by the virus. In humans, the immune system appears to ignore flavivirus infection for almost two weeks after transmission, with evidence beginning to emerge here also that immunological decoy events may be part of infection. Infection becomes evident, usually with mild symptoms from which most individuals fully recover. However, some develop severe encephalitis with a marked leukocytic infiltration in the brain and may die, or are left with permanent neurological deficits. Since WNV is transmitted via the skin, we hypothesize that the earliest local responses influence the transmission of immune signals to the adaptive immune system and are critical to the outcome of disease, however is still unclear which responses counter or contribute to which outcomes.

Understanding the pathogenesis of CNS immunopathology, and what specific defences the brain has to deal with infection, is one of the main foci in this lab. Migration of particular myeloid subsets into the brain in response to CCL2 produced by infected neurones during WNV encephalitis is undoubtedly a major contributor to morbidity and death. As in humans, significant CNS infiltrates are found *post mortem*. If we inhibit immigration of pathogenic macrophage subsets into the brain within a particular time frame in our model, mice survive with lasting neutralising immunity. However, if we stop all macrophages from getting in to the brain, they do not, indicating the crucial antiviral importance of macrophages here, but also suggesting that that inhibiting immigration of certain macrophage subsets, while enhancing others, will further enhance survival. In this area, we also have an active collaboration with Iain Campbell at USYD, in which we are investigating several innate antiviral elements in the CNS we have uncovered in this model.

Recently, in collaboration with colleagues Joachim Kühn, Wali Hafezi and Michael Schäfers in Germany, we have also been investigating using non-invasive modalities of positron emission tomography, magnetic resonance imaging and CT scanning, to determine the changes that occur in the pathogenesis of viral encephalitis, with a view to defining the predictive diagnostic parameters that indicate pathogenic leukocyte infiltration that could be inhibited by our interventions.

To investigate the trafficking of macrophage subsets, we have used various biological markers. However, a major problem with antibodies, polystyrenebeadsandothernanoparticles used to specify and track cell subsets in research, is their interaction with the biological system under investigation, as well as their potential cytotoxicity. Because of their unique chemical inertness and biocompatibility, we are using nanodiamonds for cell subset tracking in early systemic responses to infection. In collaboration with Jim Rabeau (MacQU) and David Reilly (USYD), we are biofunctionalizing nanodiamonds to enable their potential use in disease intervention. Importantly, nanodiamonds can also be picked up by magnetic resonance imaging.

A related project, in collaboration with Georges Grau in our department, focuses on a population of extracellular vesicles called microparticles (MP), shed by macrophages and endothelium during WNV infection. MP, by definition, are plasma membrane-derived phospholipid vesicles ranging

from 0.1 to 1µm in diameter, in the same size range as nanodiamonds. MP contain both surface and cytoplasmic components of the mother cell, including WNV-derived proteins, raising the question of whether MP interactions with other cells may promote a pro- or anti-viral milieu, and thus influence disease outcomes in the early stages. MP released from virus-infected cells, if taken up by antigen-presenting cells could also influence the initiation of anti-viral immune responses. Thus MP trafficking could represent an additional means of intercellular communication during infection.

Most neurotropic viruses must somehow breach well-defined and effective barriers between the systemic vascular compartment and the CNS. It is unclear how WNV gets across the blood-brain barrier. A similar barrier, the outer blood-retinal barrier, an epithelial barrier isolating the retina is formed and maintained by the retinal pigment epithelium. These cells also maintain the retinal neurones and their pigment absorbs stray light energy. Retinal pigment epithelium is critically and progressively destroyed in degenerative retinal diseases, such as age-related macular degeneration (AMD), the commonest cause of blindness in the developed world. Since WNV infection is frequently accompanied by persistent retinitis, in collaboration with Jan Provis (ANU) and Michelle Madigan (Save Sight Institute), we are investigating the hypothesis that viral infection may trigger the early pro-inflammatory changes that lead to the pathogenesis and progression of AMD. We are therefore determining the functions of differentially regulated genes in these crucial barrier cells in various cell culture and mouse models. We have found that WNV infection of human retinal pigment epithelium does not kill the cells, but increases several extracellular matrix proteins with known roles in angiogenesis and inflammation. Furthermore, WNV directly alters their barrier function, enhancing adhesion and altering leukocyte diapedesis.

Two other models in the lab complete our approach to trying to understand the pathogenesis of disease in flavivirus infection. The first looks at early responses to WNV infection in the ear skin of the mouse. Here, we inoculate WNV-infected syngeneic fibroblasts and compare ipsilateral local and draining lymph node responses with those of the contralateral side inoculated with mock-infected syngeneic fibroblasts. However, since some flaviviruses such as Japanese encephalitis may also be transmitted by sexual contact between amplifying hosts our second model looks at mucosal epithelial responses to infection for comparison. In the mouse, under the influence of oestrogen and progesterone, the vaginal epithelium cycles between squamous keratinising, like the skin, and mucosal epithelium, respectively. Like the skin, this is a similarly anatomically contained system. Strikingly, however, we found that infection of the highly susceptible mucosal epithelium, does not result in lethality, even with high doses of WNV, unlike the other routes of infection. Instead, it results in a mild, self-limiting disease with protective immunity. In contrast, the more commonly used neurotropic HSV-2 model destroys almost all the mucosal epithelium and is often lethal. This has allowed us to uncover some effective early immune mechanisms in mucosal epithelium, not evident in the skin. In the skin, infection produces immigration and local accumulation of bone marrow-derived inflammatory macrophages that quickly become DC. In mucosal infection, different myeloid populations are recruited in a specific temporal order to cluster beneath infected foci. In collaboration with Shane Thomas (UNSW), we have shown that the epithelium has significant defences of it own, including the ability to express very high levels of indoleamine 2, 3 dioxygenase (IDO). IDO catalyses the breakdown of the essential amino acid, L-tryptophan, which is necessary for cellular replication, as well as replication of many parasites, bacteria and several viruses, including HSV and WNV in our model. IDO is thus antiviral, but paradoxically, also immunosuppressive. WNV infection of human macrophages quickly induces massive levels of IDO. While these cells control WNV growth over 72 hours, they also produce large numbers of MP within 24 hours. This raises the intriguing question of whether WNV may decoy IDO to modulate antiviral immune responses to enhance its survival and enable transmission to the next host.

Our lab is proud to have people with backgrounds from South Africa, El Salvador, China, Malaysia, Iran, Canada and, of course, Australia. Our team of nine likes to go for Thai in Newtown at lunchtime or for a good coffee at Campos in the morning. We organise fun social activities to strengthen bonds between members of the lab: wine tasting in the Hunter Valley, Tapas nights, Mexican nights, drinks at a local pub, Opera nights … we're not picky! We recently went on a group retreat with the Campbell and Thomas labs – near a beach, sadly, it was winter! Our members are passionate, lateral-thinking, eager to

Group Retreat 2010 – Food after a long day's thinking!
LtoR: Astley, Amanda, Caryn, (Aline and Wen – Campbell Lab), Luis, Rachael, Nick, Celine
Obscured: (left) Iain Campbell's hand; (right) Shane Thomas' head

discover and solve problems, and always ready to discuss ideas. We present at national and international conferences and collaborate widely within Australia and around the world. Our lab has excellent facilities for working with mice, viruses and cell culture. We have access to cutting-edge instruments for flow cytometry, microscopy and molecular biology through the NSW Advanced Cytometry Facility and the Bosch Institute within the University of Sydney. Needless to say, we're always looking for new members and collaborators.

Here are some thoughts from students and postdoc in the lab:

Luis (Masters): "I would like to progress to a Postdoc and eventually run my own lab, investigating diseases."

Mahmoud (PhD): "I have had a dream about doing something to help people all around the world and by studying in the field of immunopathology, I found myself closer to that dream."

Celine (Postdoc): "I wake up every day thinking that my research might eventually save someone's life"

Everyone: What do you intend to do after your PhD? "Sleep!" When you wake up? "I want to stay in research and … win a Nobel Prize!"

And our favorite quotes (unattributed):
"Even when Nick swears he sounds polite!"
"Is that another box of wine for Nick?!"
"What??? French-Canadian!!! That's the worst possible combination!"

Group Retreat 2010:
Front LtoR: Mahmoud, Caryn, Amanda, Luis, Nick
Behind LtoR: Astley, Celine, Rachael, Zheng

ASI Council Mid Year Meeting, Sydney, May 2010

Your Council at work.
LtoR: Alec Redwood, Alejandro Lopez, Pablo Silveira, Judi Anderson (Secretariat), Jo Kirman

Michele Grimbaldeston and Jo Kirman getting excited over a bottle of tomato sauce during lunch break

Travel Award Conference Reports

2nd Congress of Immunology, Berlin

Dr Lina Tze, John Curtin School of Medical Research, ANU, Canberra

My journey started with visits to two research institutions in Belgium and England. My first stop was in Belgium, visiting the laboratory of my long-time colleague and collaborator, Professor Adrian Liston, at the University of Leuven. Leuven is a beautiful small university town situated about 20 minutes from Brussels by train. When I presented my work in Leuven, I was also fortunate enough to have in the audience an unexpected visitor, Professor Eli Gilboa. Professor Gilboa is the Director for the Dodson Interdisciplinary Immunotherapy Institute at the University of Miami, Miller School of Medicine, USA, and we share a common research interest in studying new ways to augment the immune responses to cancers and chronic microbial infections. I had the opportunity to meet with Professor Gilboa after my seminar and discussed with him our research interests. Professor Liston was the perfect host and I left with many great ideas for my project gained from several of my brainstorming sessions with him.

Following my visit to Leuven, I took the opportunity to visit the laboratory of Professor Anne O'Garra at the National Institute for Medical Research in Mill Hill, England. It was a great opportunity for me to meet with Professor O'Garra, as one of the scientists leading the field in the study of the IL-10 anti-inflammatory effects on antigen presenting cells, an area of my current research interest. The visit to Mill Hill started at six in the morning at the Eurostar station in Brussels and the journey took about two hours as we wound through France and finally arrived at London St Pancras station. Then it was another 45 minute ride on the local train to get to Mill Hill. During my visit, I had the chance to meet and talk to several of the immunology staff in the institute, who were all very engaging and encouraging of my work and career development as an early career scientist. I also left with great suggestions from Professor O'Garra on the various experiments that I could do to advance my work.

Then finally it was on to Berlin, Germany for the 2nd Congress of Immunology meeting. I was really looking forward to interacting with immunologists from around the world and to have the chance to meet the research groups from Germany, currently leading the area of research that I have a specific interest in. My first impression of the meeting was that it was an overwhelming mix of a wide range of basic immunology and translational research. I also found the simultaneous sessions being offered quite overwhelming and that made it difficult for me to choose between sessions with equally interesting topics.

Nevertheless, I have learnt many things from this meeting and some of the highlights for me included a wide variety of topics from leukocyte migration and translational research for tumour therapy, to B cell receptor signalling, autoimmunity and immunodeficiency. One talk given at the "Intervention" symposia by Professor Sirpa Jalkanen from the University of Turku in Finland was particularly interesting. Professor Jalkanen described the potential application of targeting the vascular adhesion protein-1 (VAP1) to prevent tumour growth. VAP1 is expressed on most endothelial cells and its expression is induced in response to inflammation. VAP1 is an amine oxidase and its enzymatic activity is required for leukocyte binding to the endothelium. Anti-VAP1 blocking antibody treatment or VAP1 enzyme inhibitors have been shown to reduce leukocyte infiltration into tissues and decrease the severity of several inflammatory conditions including peritonitis, insulitis, and arthritis. Professor Jalkanen presented data to show that VAP1-deficient mice were also more resistant to in vivo melanoma cell growth. His group showed that the decrease in tumour cell growth was attributed to the reduction in the recruitment of harmful suppressor cells into the tumour sites such as myeloid-derived suppressor cells (MDSC). This conclusion was further supported by the results showing that the depletion of $Gr1^+$ MDSC in wildtype mice also resulted in the retardation of melanoma cell growth, similar to that observed with the VAP1-deficient mice. VAP1 expression on MDSC is required for binding to its ligand, Siglec-10 on blood vessels and to allow the MDSC extravasation into tissues. The use of anti-VAP1 antibody is currently entering Phase II clinical trial. This work described an interesting application of anti-inflammatory agent that could also be used to specifically prevent tumour cell growth.

Another talk that I found interesting was presented by Professor Luigi Notarangelo from the Children's Hospital in Boston, USA. He presented work that provided supporting evidence to explain the paradoxical observations made in mouse models and in human patients that partial T cell immunodeficiencies are often accompanied by increased propensity to develop autoimmunity. Professor Notarangelo's group observed that hypomorphic mutations affecting the VDJ recombination pathways, that are associated with the leaky forms of severe combined immunodeficiency disorder and Omenn syndrome presented with a profound disruption of the thymic architecture, and particularly with a severe reduction in the number of AIRE-expressing medullary thymic epithelial cells (and $FoxP3^+$ regulatory T cells). This observation provided striking results to show how hypomorphic mutations that affected T cell development intrinsically could have a more far-reaching deleterious effect on compromising the integrity of thymic central tolerance process. It was proposed that the presence of (a sufficient number of) T cells in the thymus are required to nurture the development of AIRE-expressing thymic epithelial cells critical for mediating central tolerance, possibly via the provision of signals including that through the RANKL and CD40L.

Another interesting talk given by Professor Klaus Rajewsky from the Harvard Medical School in Boston USA, revealed the key signalling molecules downstream of the B cell receptor (BCR) pathway, that represent the critical "tonic" BCR signals for maintaining B cell survival. It was first described by Professor Rajewsky's group in 1997 that B cells require the constant expression of the BCRs to survive in vivo as the inducible deletion of BCR on mature B cells in vivo resulted in the subsequent lost of these cells. To follow-up on this earlier observation, they have pursued the identification of the critical BCR downstream signalling pathway that is necessary to mediate the BCR-dependent survival signal. They have used sophisticated genetic manipulations that enabled the inducible deletion of the BCR together with the expression of a selection of signalling

molecules within the same B cells in vivo. They found that the key molecule that is required to rescue the survival of BCR-less B cells is the constitutively active form of the P110alpha, the catalytic subunit of the PI3 kinase. Importantly, the P110alpha-rescued BCR-less B cells exhibited phenotypes that were consistent with that of naïve resting mature B cells, ruling out any abnormal transformation that could contribute to an enhanced survival. They then went on to strengthen their conclusion that the PI3 kinase pathway is indeed transmitting the critical survival signal downstream of the BCR, by assessing the effects of PI3K downstream negative regulators, such as Pten and FOXO1 in the rescue of the BCR-less B cells. They deleted BCR together with either Pten or FOXO1 and were able to show that in both cases, BCR-less B cells were similarly rescued as when the P110alpha was expressed, thus establishing the PI3K as the pathway for BCR-dependent cell survival signal.

Another talk that I found highly interesting was given by Professor Andreas Strasser from WEHI, who presented work from his group on delineating the contributions of the membrane-bound and soluble form of the Fas ligand (FasL) in mediating Fas-mediated apoptosis. His group has generated knock-in mice that either express only the membrane-bound FasL or the soluble FasL, and characterised the development of disease in these animals. They have observed that mice that lack only the soluble form of FasL developed normally and did not exhibit any of the abnormalities associated with the loss of function mutation in the FasL, as observed in the *FasL*$^{gld/gld}$ mice, such as lymphadenopathy, splenomegaly, presence of anti-nuclear auto-antibodies and accumulation of B220^{+}CD3^{+} T cells. In addition, cells from mice lacking only the soluble form of FasL undergo normal Fas-mediated apoptosis in vitro. On the other hand, mice that lack only the membrane form of FasL exhibited the pathology and signs of disease similar to that seen with the *FasL*$^{gld/gld}$ mice. These results suggest that the membrane-bound form and not the soluble form of FasL plays the critical role in Fas-mediated apoptosis.

In summary, I would like to thank ASI for giving me this great opportunity to visit Europe for the first time and to present my work there. The trip was an overall success in terms of allowing me the chance to interact with immunologists from around the world and to obtain valuable feedback for my work.

97th American Association of Immunology Annual Meeting and American Thoracic Society International Conference

Alison Thorburn, The University of Newcastle, NSW

In May 2010 I had the opportunity to travel to the USA and attend two of the largest international conferences related to my research.

My trip began with a long flight to New York and a couple of days sightseeing, which was a lot of fun and allowed the jetlag to settle. Then I went to Boston and presented my research on "A novel therapy for asthma" to Prof. Dale Umetsu's group. The group gave me a lot of positive feedback on my research. I also had a tour of the laboratories, talked to post docs about their current research and discussed potential post doc projects.

After spending a few days with a friend in Lebanon, New Hampshire, living on organic produce and enjoying the fresh air, I went to Baltimore. There I attended the American Association of Immunology Conference. I was overwhelmed by the huge size of the conference, which had approximately 7,000 attendees. There were so many interesting sessions on at the same time that I found it hard to decide what to go to. I presented both a poster and made an oral presentation, which created a lot of interest in my research and allowed me to meet many researchers in the field. I also attended the Night at Camden Yards, Young Investigators Party and Biolegend dinner. These nights provided time to meet people and discuss ideas in a more relaxed environment. Some of the most interesting and memorable presentations were those by Dr Dan Litterman on microbiota and T cell differentiation, Dr Alan Sher on immunoregulation, Taylor Schreiber on TNFRSF25 antibody expansion of Tregs, Thomas Lowder on exercise-induced Tregs, Dr Lauren Collison on IL-35 and ITr35s and Dr Mitchell Kronenberg on NKT cells.

At the completion of the conference, I went to Johns Hopkins University and presented my research to Prof. Landon King's group. They were interested in my preliminary data regarding a therapeutic approach for acute lung injury. We established a collaboration to pursue further research in this field. I also had the opportunity to learn some experimental techniques from Dr Franco D'Allesio, which will be invaluable for carrying out experiments in the future.

After Baltimore, I spent a couple of days sightseeing in Washington DC before flying to New Orleans to attend the American Thoracic Society Conference. I had thought the previous conference was big, but this conference was even bigger with approximately 15,000 attendees! The strength of this conference was that it facilitated discussion between the best scientists and clinicians in the field. I had the chance to go to a "diversity forum" and "women's forum" which were both inspirational. I also attended the opening ceremony and AII dinner where I heard memorable speeches by doctors who experienced the devastation of Hurricane Katrina first hand. I presented my two posters and a lot of people were interested. I talked to many different researchers including students, doctors, professors and clinicians for about three hours non-stop.

On my way home I stopped over in LA and went to Disneyland, which was a lot of fun and made the trip home more bearable.

These conferences allowed me to learn what is happening in research now but is only known by those speaking about it. By presenting my data to different audiences, I had detailed discussion of my research with pioneers in both immunology and asthma research. This trip has been very useful for aiding the completion of my PhD thesis. I also discussed a number of potential post doc projects and was both flattered and overwhelmed by the opportunities available.

Overall, I made some invaluable contacts and collaborations, I received recognition for my work and formed ideas for future projects, and I feel as though the trip has challenged and inspired me. I am extremely thankful for the opportunity and grateful for the support from the ASI travel award.

2010 World Immune Regulation Meeting (WIRM IV)

Kylie Webster, Garvan Institute of Medical Research, NSW

The World Immune Regulation Meeting (WIRM) is held annually in the town of Davos, located approximately two hours from Zurich in the Swiss Alps. Davos sells itself as both a congress and winter sports city hosting, among others, the annual World Economic Forum, and boasting some pretty sweet alpine and cross country slopes.

The conference is organised by The Swiss Institute of Allergy and Asthma Research (SIAF), who this year selected the theme of 'Innate and Adaptive Immunoregulatory Mechanisms'. The style of the conference resembles that of the Keystone meetings, with each day composed of morning talks, followed by a lunchtime winter sports break, then afternoon talks, and concluding with evening poster sessions.

With approximately 600 delegates, the meeting was of medium size, yet remained intimate enough to ensure lively sessions. The 12 unopposed plenary symposia consisted of 52 pre-eminent invited speakers, while the 10 workshops provided a forum for shorter talks from PIs, postdocs and students. Poster sessions were animated, and not simply because of the accompanying beverages. In an interesting (and successful) move, two senior scientists were assigned to chair groups of 10 posters, and facilitate 'Poster Walks', in which each presenter would talk through and discuss their poster with the roving audience.

The theme of Day 1 was "Immune regulation from innate to adaptive immune responses". Innate cell signalling, dendritic cell function, natural killer cells and mast cells shared the spotlight, with speakers impressively knitting their stories into the broader picture of immune regulation. Highlights included Luke O'Neill, who spoke about TLR signalling and showed some impressive data on miRNA target specific blockade. Michel Nussenzweig discussed DC origin and development, with some interesting insights into new findings linking Treg and DC homeostasis. Eric Vivier spoke about emerging concepts in the NK world, from their secretion of IL-10 to their role in immune surveillance using cell surface receptors. Of note was his discussion about NKp46+RORg+IL-22+ cells in the gut, and their differences from regular NK cells. His concluding notes on potential clinical applicability of targeting NK activating ligands in autoimmunity rounded off a beautiful talk. Quote of the day went to Stephen Galli of Stanford: "We don't have mast cells so we can eat a peanut and die", who discussed the mast cell's ability to not only cause, but importantly, to limit tissue injury.

Day 2, with the theme of "Immune responses and immune pathology", was off to a cracking start with back-to-back talks on the inflammasome by Jurg Tschopp and Eicke Latz. Jurg, who gave an inspiring talk at last year's ASI meeting on IL-1b and the inflammasome, was equally impressive in Davos. Here he enlightened us further on the activation of the inflammasome by nanoparticles, particularly those in sunscreen formulations. FYI, old-fashioned ZnO is OK, while the jury is still out on TiO_2. Eicke Latz then challenged our perceptions of atherosclerosis. He presented exciting data wherein they used laser reflection microscopy to detect cholesterol crystals in affected arteries. Their work suggests that atherosclerosis is a cholesterol crystal storage disease that activates the inflammasome, leading to chronic inflammation.

The afternoon of Day 2 was dominated by imaging the immune response. Michael Dustin showed images of PKCq sequestration in Tregs, data that explains why detecting high levels of a molecule by FACS doesn't always tell the correct story. Matthias Gunzer showed the recently published images of neutrophil 'NETS' capturing Aspergillus, while David Sansom's images of Tregs using CTLA-4 to "rip" CD86 out of DC inspired a scary kind of respect for these cells.

By Day 3, "Essentials of immune regulation",

T cells and cytokines took centre stage. Daniel Mucida of Hilde Cheroutre's lab challenged us to question the plasticity of the CD4 T cell lineage, by characterising the development of CD4+CD8aa+ T cells in the gut. Federica Sallusto detailed an ambitious project to dissect the heterogeneity of human memory T cells, quantifying the frequency of antigen-specific clones and their CD4 T helper cytokine profile. Manfred Kopf described findings on the necessity of IL-21 for the control of chronic, but not acute, viral infection, then Abul Abbas and Eddy Liew wrapped up the day with a cytokine double-header.

The final day, "From Bench to Bedside", mainly focussed on the role of cytokines in disease. Fiona Powrie discussed the role of IL-23 in T-dependent and independent models of colitis, with the later focusing on the hot topic of IL-23 responsive, LTi-like cells. Other highlights of Day 4 were William Paul, whose work suggests some interesting links between particular IL-1 family members and each of the T helper subtypes, while Carsten Schmidt-Weber closed the meeting with an insightful talk on

Th22 cells and their role in not only the skin, but also in allergic airway disease.

As with most things in Switzerland – such as the chocolate, the cheese … and the trains – the WIRM meeting was definitely top shelf. Being at the conference also gave me the opportunity to meet up with our European collaborators, and was the catalyst for new project ideas. Many, many, thanks to ASI for making this trip possible. And to be fair to the four official languages of Switzerland – merci, danke, grazie, engraziel!

Comments on ASI from Members

On the Membership Information Update form which accompanies the membership renewal each year, members are asked to comment on whether ASI meets the member's expectations for a scientific society. This year, a total of 41 comments were received from the 752 who had renewed (not including new members joining this year) at the time of preparing this newsletter. Of these, 21 simply said either *Yes* or *Meets my expectations*, or variations on that theme. The more substantive comments are shown below:

As a student, I wish ASI could organise more activities for students, such as workshops.

ASI 2009 was a fantastic conference.

ASI is fine though less visibly professional than is desirable, more aggressive lobbying for research funds, recognisable spokesperson for immunology.

ASI is great! Very happy with the way the Society operates.

ASI should think about providing travel awards to researchers in their mid-career (3–7 years post PhD). There should be an incentive to be a member at every stage of one's career.

Excellent. Great newsletter. Excellent conferences when I have attended them but tend to go to TSANZ & ATS.

Expectations met – with thanks.

Great society!

I am a peripheral spectator but I find the ASI (newsletters, journal, website & admin) the most interesting/informative/efficient/worth-belonging-to scientific group I know. Sometimes (after reading conference reports, articles etc) I wish I were more than a vicarious immunologist!

I think ASI does an excellent job.

I think it is a great organisation and love the IgV events and the new Infection & Immunity SIG.

I will be happy to find more veterinary related focus, especially on dogs and cats.

I've recently joined ASI so I'm not having a lot of requests yet. I've been to the ASI meeting in December and it was a very well organised and interesting conference and I'm looking forward to the next one.

It would be great to have more ASI training/seminars in the area of Education – University level immunology; – share ideas, etc.

It's great.

More international speakers on human immunology strengthen human immunology focus.

No. Very little maths and immunoinformatics; these fields need to be given more attention.

Providing a permanent asi.com.au for members will sustain networking within members as we all change addresses so often.

Tends to have a rather narrow focus.

Yes, completely satisfied.

Yes. Good job done by many willing and friendly volunteers.

Submission of photos with articles

When submitting articles, reports, etc. to the newsletter, please do not embed the photos in the Word article, but always send as separate jpeg files – preferably around 300–400kb. Embedded photos/graphics cannot be imported into the desktop publishing program nor edited if required and delays occur in requesting photographs to be re-sent.
Thank you for your co-operation.

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!**

Immunology and Cell Biology's Impact Factor Rises for the Fourth Consecutive Year *

I am delighted to announce to ASI members that the 2009 impact factor for *Immunology and Cell Biology (ICB)*, recently released by Thomson Reuters, is 4.200. This constitutes a 9% increase over the 2008 impact factor of 3.859 and represents the fourth year in a row that *ICB* has recorded a substantial increase in its impact factor. In fact, since 2005 the impact factor of *ICB* has increased by a remarkable 226% (see Figure 1)!

When viewing *ICB's* performance over the last five years, an equally spectacular change has been the increase in the ranking of *ICB* within the cohort of 'Immunology' journals. In 2005 *ICB* was ranked 76th of 115 'Immunology' journals whereas in 2009 the *ICB* ranking has jumped to 28th of 128 recognised 'Immunology' publications. It should be noted that this ranking is even more impressive than it appears as 10 of the 27 journals in 2009 with an impact factor higher than *ICB* do not publish research articles, being review only journals. To relate the *ICB* ranking to other immunology journals, *Clinical and Experimental Allergy* (4.084), *Infection and Immunity* (4.205), *Genes and Immunity* (4.222) and *Journal of Leukocyte Biology* (4.403) have similar impact factors.

ICB is, of course, the official journal of the Australasian Society for Immunology and, again, the *ICB* performance is impressive when compared with other immunology society based journals. Thus, *ICB* has a much higher ranking than the *Scandinavian Journal of Immunology* (90th, Scandinavian Society for Immunology), *Immunology* (47th, British Society for Immunology) and *International Immunology* (45th, Japanese Society for Immunology) and is approaching the ranking of the *European Journal of Immunology* (24th, European Federation of Immunological Societies) and the *Journal of Immunology* (22nd, American Association of Immunologists).

The overall performance of *ICB* is also excellent based on a number of other criteria not presented in the Thomson Reuters statistics. Article page views and downloads from the *ICB* website are running at an all time high. Even more impressive is the number of electronic Table of Content (eToc) subscriptions which has almost doubled in the last 12 months. However, perhaps the most important statistic is the number of research articles submitted to the journal. This number has approximately doubled since 2007.

The steady rise in *ICB's* performance relative to other immunology journals is, I believe, due to two major factors. First, the move of the journal to the Nature Publishing Group (NPG) has greatly increased the visibility of the journal via the *nature.com* website. Second, there have been a number of Editorial changes that have increased the impact of *ICB*, particularly the introduction of new manuscript categories. *'News and Commentaries'* were introduced in January 2007 and are based on the *Nature* 'News and Views' format. They have proven to be extremely popular, with over 70 being published since early 2007. Even more important is the introduction of *'Outstanding Observation'* articles which are aimed at attracting manuscripts that describe striking observations in immunology that have extremely important conceptual implications but do not delineate molecular mechanisms. I have been very impressed by the high scientific standard of the articles that the journal has received in this category and encourage ASI members and their scientific colleagues to view these articles, which are freely available on the *ICB* website. In addition, I encourage all ASI members to consider contributing high-class research articles in this category to *Immunology and Cell Biology*. It is this article category that, I believe, will eventually elevate *ICB* to being an immunology journal of even greater impact.

Chris Parish
Editor-in-Chief
Immunology and Cell Biology

** Article based on an Editorial published in the August/September, 2010, issue of ICB.*

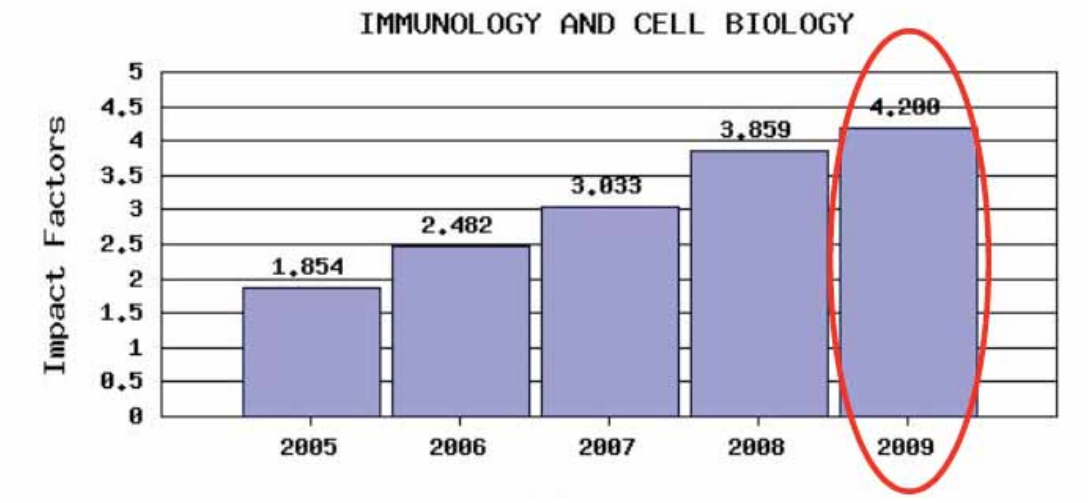
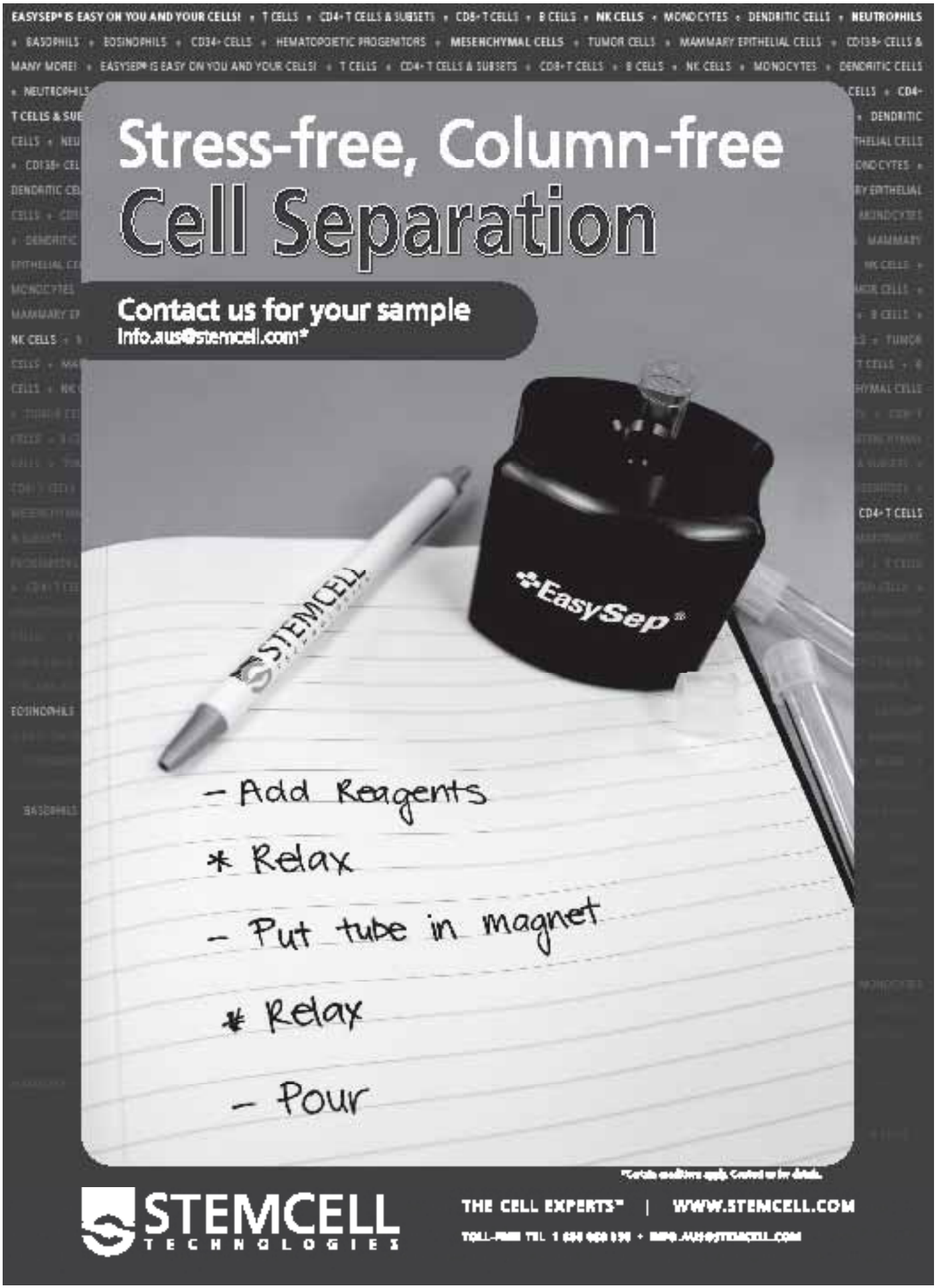


Figure 1 – The steady rise in the Impact Factor of *ICB* since 2005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