LIFE BLOOD
SVI researchers revealing the secrets of blood disorders.
Many people, including the Governor of the Reserve Bank, Glen Stevens, have pointed out that global pessimism has meant that Australians currently see the glass as half empty rather than half full. This is, of course, despite Australia being relatively spared from the worst of the economic downturn so far. It is also the case in medical research, where there is widespread, and understandable, concern about future levels of funding remaining flat while costs continue to climb. However, it is important to recognize and celebrate the many good pieces of news we have had recently that are covered in this issue of The Edman.

We have previously reported our extremely good success rate in NHMRC grants in 2011 and this will continue to support us over the coming 3-5 years. We also have strong philanthropic support. Recently this has included receiving half the proceeds of the Susan Alberti Medical Research Foundation Signature Ball that raised $450,000 altogether, as well as several grants from a number of Trusts and Foundations, including the new 5Point Foundation. The latter is especially pleasing because it represents a new generation of charitable giving, with the Trust’s Founders being a group of successful business people in their early 40’s.

A further recent exciting event was the publicity associated with the description of a computer simulation of rhinovirus bound to a drug currently in human clinical trials. Rhinovirus is major cause of the common cold. This work was led by our Structural Biology Unit, headed by Michael Parker. A highlight of this work was its collaborative nature – including scientists at SVI and the biotech company Biota using the Australian Synchrotron at Clayton and by scientists from IBM and the University of Melbourne using the new IBM supercomputer recently installed at the University.

Another recent highlight was the award of an honorary Doctor of Laws to our esteemed John Holt Fellow, Professor Jack Martin. This recognition for Jack from his alma mater was a reward for a lifetime of achievement and a remarkable international reputation for research into diseases of bone. Other St Vincent’s campus alumni whose contribution was celebrated included Sir Peter Morris and Sir Marc Feldmann, both of whom have spent much of their careers in the UK. We are extremely fortunate to have Jack remain whole-heartedly involved in research at SVI: his presence is the best encouragement we can give to young researchers considering a career in medical research.

It is clear that gloomy global attitudes have not affected the performance of our researchers, who continue to work to find solutions for common disease that have serious effects on our health. Despite concern around future funding, we too should strive to see the glass as half full and when we have the chance make our voices heard about the value of medical research for the future health of Australia.

Steve Harris knew something was up when, the day after a bit of horseplay with his son, he saw a hand print-shaped bruise on his arm. “He was either the strongest 9 year old in the world, or there was something really wrong with me”, he says.

Steve spent the next four months dealing with a diagnosis of, and treatment for, acute promyelocytic myeloid leukaemia (APML).

More than eight years after his diagnosis, Steve’s chances of relapsing now approach those of anyone else in the male population contracting the disease.

Steve visited SVI with a group from the Leukaemia Foundation in August to hear about SVI’s leukaemia research program, funded in part by the Foundation.

“I was lucky enough to be in the position that I didn’t need to take advantage of the financial and patient support services offered by the Leukaemia Foundation, but I am a living example of the power of research. Without the work that went into developing new treatments for the type of leukaemia that I had, I wouldn’t be here today.”
Steve was particularly interested to talk to Associate Professor Louise Purton, of SVI’s Stem Cell Regulation Unit, who has devoted a large part of her research career to investigating exactly what goes wrong in leukaemia and studying the pathways that can be exploited to treat it.

Louise explains that billions of cells are produced in our body each day, predominantly in the bone marrow. The non-blood cell types present in the marrow – collectively known as the bone marrow ‘microenvironment’ – help to control blood cell production from stem cells. Incomplete production or function of the different blood cell types, or problems arising in the function or composition of the non-blood cells that regulate blood cell production, can lead to disease.

Louise says “The drug that Steve received during his chemotherapy, called all trans-retinoic acid (ATRA), is derived from vitamin A, and forces leukaemic cells to mature into fully functioning cells. This process reduces the number of leukemic cells in the bone marrow. My research focuses on the vitamin A pathway and on the roles of the three vitamin A receptors, which have different biological effects. In the future, therapies that specifically target one of the vitamin A receptors should prove even more effective than ATRA, which activates all receptors.”

Louise’s group is pioneering studies into understanding the effects of vitamin A on bone and blood cell production. She believes that with a deeper understanding of how blood cells are regulated by vitamin A receptors – either through direct effects on the blood cells, or indirect effects via the bone marrow microenvironment, which includes cells that form bone – we may be able to identify more sophisticated ways of treating blood cell diseases, such as APML. Steve says, “Until my visit to SVI, I had no idea of what a researcher did from day to day - the work requires the patience of a saint. I am very grateful, because research saved my life, there is no question of that.”

Steve will walk alongside SVI researchers in the Leukaemia Foundation’s Light the Night, an inspiring twilight walk where family and friends shine lanterns of hope and raise funds to help cure leukaemia, lymphoma and myeloma. To find out more information, visit www.lightthenight.com.au.

If you would like to tour SVI, please contact us on (03) 9288 2480.

In the top ten

I am a living example of the power of research.

SVI researchers Dr Nicole Walsh and Associate Professor Helen Thomas and PhD student Suang Suang Koid, were given the opportunity to celebrate the achievements of women in science at a function held by the Parliamentary Friendship Group of Women in Science, Maths and Engineering at Parliament House in June. Thrilled by the invitation from Kelly O’Dwyer MP, Federal Member for Higgins, PhD student Suang made sure to introduce herself to a number of the luminaries in the room, including keynote speaker, Nobel Laureate Professor Elizabeth Blackburn AO FRS.

Michael Parker has been awarded the Federation of Asian and Oceanian Biochemists and Molecular Biologists Award for Research Excellence. The Award is granted annually to a distinguished biochemist or molecular biologist, based on work carried out predominantly within the region.

PhD student David Ascher was one of 115 young Australians awarded a prestigious 2012 Churchill Fellowship. The Fellowships are designed to provide an opportunity for Australians to travel overseas to conduct research in their chosen field that is not readily available in Australia. David’s Fellowship will allow him to travel to the UK and Spain to further his research into structure-guided drug design to develop new treatments for cancer.

Postdoctoral researcher Dr Emma Baker was recently awarded a $100,000 grant to further her research into the mechanisms of the bone cancer, osteosarcoma. Emma says, “This bone cancer, while relatively rare, most often strikes adolescents, and treatments have not improved significantly over the last 30 years. This grant gives us a better chance of finding new ways to treat this devastating disease.”
Melbourne Law School students recently shared their graduation day with Jack Martin, one of Australia’s most distinguished medical researchers and ex-Director of SVI, who was awarded a Doctor of Laws from the University of Melbourne. Jack received the honorary degree for his significant contribution to and association with the University of Melbourne throughout his career.

Jack’s career spans more than five decades, and has notably included his directorship of SVI from 1988 to 2001. Determined to understand why some cancer patients develop dangerously elevated levels of calcium in their blood, Jack’s research began in the pioneering time of the recombinant DNA revolution. His great contribution to science has been in the advancement of contemporary understanding of calcium-regulating hormones, extensively developing modern concepts of bone cell biology.

One of his most outstanding contributions was the cloning of parathyroid hormone-related protein, which contributed to the understanding of bone metabolism and disorders such as osteoporosis and cancer spread to bone.

Upon receiving the honorary doctorate, Jack said: “This is an honour that’s enormously appreciated, from an Institution that gave us a great education, and influenced me throughout my working life. We didn’t quite appreciate that when we were students almost 60 years ago, but it really prepared us for whatever career direction we chose.”
We live in a dangerous world. If it were not for our powerful immune systems, the bacteria, viruses, fungi, and parasites in our environment would make short work of us.

One of the most powerful elements of our defensive immune systems is the B cell. The B cell produces antibodies when the body is subjected to infection. These antibodies either kill the infection-causing organism or make it prone to attack by other cells.

During development, B cells are sorted so that the body retains only those that will be effective. If this sorting goes wrong, and cells that recognize the body’s own tissues remain, autoimmune disease can result. Conversely, if too many cells are eliminated, the body’s immune system will not be able to destroy infectious agents. Recent research from SVI’s Molecular Genetics Unit has begun to explain how this fine balance is maintained.

The Unit has for some years focused on a protein called ASCIZ, which the group discovered while looking for genes that responded to DNA damage in yeast.

Subsequent research from the group has shown that ASCIZ is a surprising multi-tasker. While ASCIZ does play an important role in the way that the body repairs damage to DNA, which may be exploited to develop new cancer therapies, it is also essential for lung development in mice.

Associate Professor Jörg Heierhorst, his PhD student Sabine Jurado and colleagues have recently published a paper in the prestigious Journal of Experimental Medicine, showing that ASCIZ also has an unexpected role in helping to manage the development of B cells in the bone marrow during development.

Sabine was able to show that ASCIZ acts via two intermediate proteins, called DYNLL1 and Bim. By removing or replacing combinations of ASCIZ, DYNLL1 and Bim from the bone marrow of mice, the researchers were able to manipulate the number of B cells that developed.

Jörg says, “In the pathway that we have identified, ASCIZ functions as sort of a supervisor of DYNLL1 and Bim in the quality control process during the development of B cells. Without ASCIZ and its middleman DYNLL1, Bim goes overboard and weeds out perfectly good B cells. On the other hand, ASCIZ also keeps the middleman DYNLL1 in check to stop it from interfering too much with Bim’s quality control function, ensuring that the bad seeds do get sorted out.”

He goes on to say that there are some rare cases of immune deficiency disorders in humans, similar to that seen in their mice. These disorders seem to affect B cells but not other immune cells, and the researchers plan to test if any of the patients with these disorders carry mutations in ASCIZ or DYNLL1.

While the group continues to focus on the potential of ASCIZ for improving cancer therapies, they will continue to examine the role of this surprising multi-tasker in immune cell as well as in lung development.
Food for thought

In June, SVI examined the science of food, by hosting ‘Food Matters: You are what you eat,’ an exclusive evening for SVI 1000 Club members.

Members enjoyed discussions with Editor of The Age’s Good Food Guide, Janne Appelgren, St Vincent’s Hospital’s Dr Marno Ryan and SVI PhD student Hayley O’Neill. The three answered questions from guests about current food trends, the Mediterranean diet and the effects of food on our health.

Tours of SVI ran before the event, giving guests an insight into the work that is being done into obesity and type 2 diabetes at the Institute.

All funds raised by the 1000 Club go towards the SVI Student Scholarship Fund.

This year marks the tenth anniversary of the founding of the SVI 1000 Club, which currently has 400 members. Support from 1000 Club members has helped increase the number of SVI Student Scholarships that can be offered at the Institute. The Scholarships help support students undertaking PhD and Honours studies. SVI’s young students are committed to a career of painstaking investigation into the intricacies of disease and illness. Support to help them achieve their goals is much appreciated.

If you would like to join the 1000 Club, please contact us on (03) 9288 2480.
Generous contributions from SVI supporters allow the Institute to offer student scholarships to the best and brightest Honours and PhD students. In 2012, the Program is supporting one Honours and nine PhD students.

The essential research funding awarded annually by the National Health and Medical Research Council does not pay for cutting edge equipment that is often necessary to carry out the research. Support from our generous donors and from Trusts and Foundations makes these purchases possible. Since June, we have received $241,649 worth of funding for equipment purchases from six successful applications to Trusts and Foundations, including Perpetual Trustees, the LEW Carty Charitable Fund and the Angior Family Foundation. These funds will help to purchase vital equipment for research into osteoporosis, arthritis and breast cancer.

SVI supporters at the recent ‘From the Lab to London’ breakfast raised $15,000 to help support vital research at the Institute into diseases that affect all Australians.

Over 600 guests danced the night away to world-class performances by David Campbell, Chong Lim and his Big Band and The Aussie Boys.

Hosts Craig Willis and Deborah Hutton entertained the audience with their sharp humour and also found time for some serious discussion about medical research. They interviewed SVI’s Islet Transplant Program Manager, Dr Tom Loudovaris about his vital work as an introduction to the ‘Fund a Cure’ section of the evening. Tom spoke with passion of his 20 years of work researching type 1 diabetes and his shock at discovering three years ago that his 11 year old son Christopher had been diagnosed with the disease. This reinforced to guests the importance of supporting the vital research that SVI and JDRF are working on every day.

As the winner of the raffle, one lucky guest walked away with the keys to a 2012 Nissan Micro, while another successfully bid $9000 in the auction to secure the unique experience of a bike ride with Federal Opposition Leader, the Hon Tony Abbott MHR and the Hon Kevin Andrews MP.

SVI sincerely thanks Susan Alberti and her team for an unforgettable evening, an amazing fundraising effort and their ongoing commitment and support towards the Institute’s type 1 diabetes research.
On the eve of the Olympics, over 170 guests braved a chilly Melbourne morning to gather in the Olympic Room at the MCG and celebrate elite performance at SVI’s ‘From the Lab to London’ breakfast.

A group of six Olympians spoke with emotion about the highs and lows of being an elite performer, drawing parallels between the motivation and talent needed to perform at sport’s highest level as an athlete with that of elite medical researchers. Taking part were Olympians John Landy AC, CVO, MBE (Running, 1952, 1956), Simon Baker (Walking, 1984, 1988, 1992, 1996), Brett Maher (Basketball, 1996, 2000, 2004), Mark Turnbull OAM (Sailing, 2000), Matt Welsh (Swimming, 2000, 2004) and John Aloisi (Football, 2004), who entertained guests by sharing their Olympic experiences with MC Leon Wiegard OAM (Water Polo, 1964, 1972).

SVI thanks its Major Event Partner, the Commonwealth Bank, Official Health Partner, Bupa and Community Partner, the City of Melbourne for their valuable contribution to this gold medal breakfast.
Why support SVI?

When you choose to leave a gift in your Will to SVI, the whole community benefits. Your generosity will provide a source of funds that will allow SVI to continue our important research aimed at improving the health of all Australians. Your gift has the potential to make a real difference to the health of your children, your grandchildren, your family and friends. SVI is where hope begins. Talk to your solicitor about the type of gift that may best suit you and your estate.

Please let us know

If you have included, or are considering including, SVI in your Will, please let us know. We would like the opportunity to recognise and thank you for your gift.

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By supporting SVI’s medical research, you can make a difference.

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An investment in the $10,000 fund is an investment in the future needs of the Institute. For more information contact Madeleine Whiting on (03) 9288 2480

4. **Leave a bequest to SVI**

If you would like to talk to someone about making a bequest to SVI please contact Clare Lacey on (03) 9288 2480

**See our website, [www.svi.edu.au](http://www.svi.edu.au) if you would like to make periodic payments from your bank account or credit card**

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