SVI researchers are collaborating with Australian biotechnology company Biota to help develop Biota’s drug against the human rhinovirus (HRV), which causes the majority of cases of the common cold.

Rendering of the three-dimensional structure of the cold virus (Image courtesy of Mike Kuiper, VLSCI)
As the Chair of the SVI Foundation, I have had the privilege of seeing into the future of type 1 diabetes research, through pathways to treat, prevent and cure the chronic disease.

Type 1 diabetes affects more than 120,000 Australians, with at least six more diagnosed every day. I have experienced the devastation it can cause first hand, having lost my only child Danielle to the disease at just 32 years of age. Since then I have devoted my life and considerable resources to the search for a cure, which may be unfolding before our eyes thanks to work involving SVI.

In late 2007, a Melbourne woman, Elaine Robinson, became one of the first Australians to be successfully transplanted with insulin-producing islet cells, through the Australian Islet Transplantation Program (ITP).

This type of transplant surgery has been successful thanks to a consortium involving groups at SVI, St. Vincent’s Hospital and Austin Health in Melbourne, Westmead Hospital in Sydney and the Queen Elizabeth Hospital in Adelaide. The ITP Consortium has carried out a total of 38 transplants into 18 patients. Eight of those recipients are now completely insulin independent.

Islet transplantation is a therapy for type 1 diabetes that is currently used when insulin treatment fails. In type 1 diabetes, the pancreas ceases to produce insulin, which must be administered several times a day, lifelong, to reduce blood sugar to healthy levels. In some people, this insulin treatment can suddenly drop blood sugar to dangerous levels, leading at times to a life-threatening loss of consciousness through severe hypoglycaemia.

While the ITP program is currently aimed at people with severe hypoglycaemia, further research may lead to a more generally available clinical procedure.

Much of the funding for the program so far has been provided by the Federal Government, with the former Minister for Health and now Leader of the Opposition Tony Abbott making the initial $30m commitment. State Governments also have contributed.

These arrangements are transitioning to a new funding model and there has been considerable concern as to how a shortfall might impact on a program which has already been so successful. Through a major contribution from me and other generous donors around Australia, as well as fundraising events like the annual Ball I host each year, we are endeavouring to cover the shortfall to ensure the program continues ane to deliver hope to people with type 1 diabetes.

Having had a close association with Elaine Robinson and other ITP recipients I know what a difference it has made to their day to day lives.

All proceeds from this year’s Susan Alberti Medical Research Foundation Signature Ball will benefit the Islet Transplant Program. The event will be held on Saturday August 4 at Melbourne’s Crown Towers.

More information is enclosed in this edition of The Edman.

Nothing to Sniff At

At the start of the last century, in a somewhat unpleasant experiment, researchers concentrated the nasal secretions of a sniffly cold sufferer and placed them into the eyes of an uninfected person, causing the unfortunate volunteer to develop a cold.

In 1956, researchers in England identified the virus that is responsible for this transmission: the human rhinovirus (HRV).

While today a cold is a mild inconvenience for most, for people with underlying illnesses such as asthma and chronic obstructive pulmonary disease, HRV infection can pose a serious health risk.

In a bid to help people with these conditions, researchers at SVI have teamed up with the Australian biotechnology company, Biota, to help develop Biota’s antiviral drug vapendavir.

Using leading edge technology that allows the determination of the three-dimensional structure of proteins at the atomic level, the researchers have developed the first 3D structure of the virus bound to vapendavir. This approach provides a visual representation of how and where the drug physically binds to the virus, and provides direct evidence explaining how the drug inactivates the virus. Showing how vapendavir works is an important part of the drug development and approval process.

Lead researcher, Biota scientist Dr Craig Morton, explains the importance of the work, “Vapendavir, which was discovered and developed by Biota, is very promising: it is the most advanced drug candidate in clinical trials for the treatment of HRV infection. Our results now explain the mechanism of action of this particular drug and will contribute to the body of data required to gain marketing approval.”

Professor Michael Parker, head of the Structural Biology Unit at SVI continues, “This is an example of the great power of collaboration: an Australian biotechnology company with a leading medical research institute, and with the use of the world class facilities available at the Australian Synchrotron.”

The structure of the virus-drug complex also supports Biota’s experimental evidence that the drug may be effective against other viruses with similar structure, including polio.

This research involves scientists from St Vincent’s Institute and Biota’s Victorian laboratories and was supported in part by an AusIndustry Start grant.
GREAT EXPECTATIONS

Carl Walkley has been awarded by the American Association for Cancer Research (AACR) for his work into the bone cancer osteosarcoma. The AACR-Aflac Inc. Career Development Award for Pediatric Cancer Research was presented to Carl at the Annual AACR meeting in Chicago on the 1st of April.

The prestigious Award, one of only two given in 2012, will help support Carl’s research into new treatments for osteosarcoma, which is the most common cancer of bone, occurring mainly in teenagers.

Carl explains the significance of his research, “Treatments for osteosarcoma are largely the same today as they were 30 years ago – chemotherapy and amputation – and the prognosis for those diagnosed with metastasis of the cancer is particularly poor. One of the possible reasons therapies haven’t progressed is that there have been no good experimental animal models in which to carry out research and test treatments. We have developed a number of different types of mice whose disease faithfully mimic the human condition, and we will be using these to investigate new treatment options.”

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KEEPING UP WITH THE KINASES

On the occasion of his ninth article in the prestigious journal Science, Bruce Kemp reflects on the highlights of his career thus far.

How did you become interested in science?

There was a very strong emphasis on education in my family. Fortuitously, my grandmother played bridge with the mother of the plant physiologist Peter Brownell from Adelaide Uni, and she got him to show me around his lab. After that, I spent my summer vacations working in biochemistry labs. That was really the catalyst.

What was your next step?

I went on to do a PhD at Flinders University in Adelaide. My PhD project focused on a type of protein called a kinase. Kinases direct the activity, localisation and overall function of many proteins. My project was based around a published study, which showed that one type of kinase was involved in immune cell function in the blood. However, after 18 months, I found that the paper was wrong and essentially I had to start from the beginning. It was a very instructive way to start a career in science!

What happened next?

Well, I went on to look at the different types of kinases that were found in white blood cells. I found three that had not previously been reported and my PhD ended up being pretty productive, with six papers published, including one in the journal Nature. I then spent two years with Edwin Krebs [who won a Nobel prize in 1992 for his work on kinases] at U.C. Davis in California.

What was it like entering a lab like that, arriving from a small University in Australia?

It was fantastic, Krebs had a wonderful laboratory. They did things on an industrial scale. Most importantly, the emphasis in the laboratory was on trying to answer questions comprehensively, really nailing it! This pushed me to learn and apply the best possible techniques as my career unfolded, first at the Howard Florey Institute and then The Repatriation Hospital, before I moved to SVI in 1988.

What has been the highlight of your career?

While I have solved a number of difficult problems, I guess you could say that I have native curiosity. I just love the details and how they work in a rational way. What I like about research most is the revelation – the moment you get a new piece of data your brain is rewired in a way. Sometimes you might be on the right track about how something works, but when you actually see the proof of it in detail it is majestic.

You seem to have been highly focussed on how things work – almost an engineering perspective?

I consider my first breakthrough – the first time I solved a real problem. The paper, published in 1975, showed how protein kinases recognised their target proteins. This gave me the confidence to look at further questions and was the catalyst for the work that has formed the basis of much of my career.

When have you been wrong?

Daily, I would say – you get a hypothesis that lasts a day until you actually see the proof of it in detail. Sometimes you might be on the right track about how something works, but when you actually see the proof of it in detail it is majestic.

But you have obviously been more right than wrong...

The field we work in is extremely competitive, there are people doing similar work all the time, so to be successful you have to be first – there is a great benefit to being right!
MAKING A GIFT TO MEDICAL RESEARCH

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

1. Donate now to SVI
I want to make a single donation of:
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3. Join the SVI $10,000 Discovery Fund
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 if you would like to make periodic payments from your bank account or credit card

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A MOTHER’S DAY WITH A DIFFERENCE

Despite wintry conditions on Mother’s Day, SVI’s Professor Rik Thompson joined thousands of others for the Mother’s Day Classic at the Alexandra Gardens.

Rik was asked to speak at the event, which raises funds for the National Breast Cancer Foundation (NBCF). Mary Delahunty interviewed him at the starting line where he discussed the NBCF-funded National Collaborative Research Grant Program, the EMPathy Breast Cancer Network, which aims to understand why some breast cancer cells progress to a more aggressive state and spread around the body.

“In about 25 per cent of breast cancer patients, cancer cells spread and form new cancer deposits, most commonly in the bones, liver and lungs. Despite our terrific progress over the last 20 years, about 2,700 Australian women still die each year from breast cancer. All of them have metastatic disease – breast cancer that has spread to other parts of the body – so we are focused on that,” Rik said.

Rik knows all too well how important this research is: in 1997 he was shocked when his mother Anne-Gabrielle was diagnosed with the disease. Following surgery and treatment, Anne-Gabrielle has now recovered and is living a healthy life.

“I am so proud of my son, and the work that he has done and continues to do in the area of breast cancer. Without the important work of medical researchers I would not be here today,” she said.

Rik is equally proud of his mother’s resolve to beat her breast cancer.
AUSTRALIA'S GREATEST RENEWABLE RESOURCE

Since its inception in 2005, the SVI Scholarship Fund has supported the top 21 Honours and 22 PhD students at SVI. The Scholarships help us to attract the best and brightest students to the Institute.

Developing the next generation of medical researchers is one of SVI's most important roles, and is an enduring legacy of our 54 years of achievement. Our students’ incisive questions, need to understand, and hunger to succeed often lead to important findings.

Final year PhD student Hayley O’Neill was awarded an SVI Foundation Top-Up Scholarship for both her Honours year and PhD studies.

She says: ‘I have always played a lot of sport and have been interested in metabolism and exercise, so I jumped at the opportunity to do a PhD in the Protein Metabolism and Chemistry Unit, looking at the effects of an enzyme called AMP-activated protein kinase (AMPK) on insulin sensitivity in mice.

During my PhD I showed that the beneficial effects of exercise may be mediated by signaling via AMPK. This work may give us some new therapeutic avenues to follow in our efforts to curb the negative effects of obesity and type 2 diabetes.

Without support from the SVI Scholarship Fund I would not have been able to take up all the opportunities that I was offered during my studies. I am very grateful to SVI’s supporters who have given me the chance to make the most of my time at SVI.’

Your donation to SVI helps to support the SVI Scholarship Fund and students like Hayley. PhD students commit to a very modest annual salary of $23,000 for 3 years. Your support enables us to boost their stipends by $5,000 per year. This relieves some of the financial pressure on our best young minds and helps to nurture this valuable Australian resource.

If you have recently donated we thank you for your support.

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2012 Diary

**June 19**
SVI 1000 Club Reception: Food Matters

**July 26**
SVI corporate breakfast in The Olympic Room at the MCG

**August 4**
Susan Alberti Medical Research Foundation Signature Ball

**August 20**
SVI Tour and Dinner

**October 18**
SVI Support Group Black Tie Dinner at the Athenaeum Club

**October 29**
SVI Tour and Dinner

**November 11**
City2Sea Fun Run

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**A GOLD MEDAL EVENT**

With the Olympic Games fast approaching, Olympic fever will soon take hold and SVI are joining the celebrations. On the eve of the Olympics, Thursday 26 July, SVI is holding a corporate breakfast at the home of the 1956 Olympics: the Olympic room at the MCG.

Track star of the 1956 Olympics, John Landy, will be joined on a panel by other past Olympians to discuss overcoming adversity in sport and their Olympic experiences. Guests will be encouraged to join in the discussion and ask the panel any questions they may have.

The breakfast promises to be an exciting start to the Olympics as well as an opportunity for SVI to raise funds and awareness. Through Olympic themed activities, one guest will be awarded a gold medal on the morning, which will give them the privilege of deciding a disease area to which proceeds of the event will be directed.

Make sure you don’t miss out on this gold medal event.

**Event:** SVI Olympic Breakfast  
**Date:** 26th July  
**Time:** 7-9am  
**Cost:** $80 per ticket or $750 for a table of 10.

**For more information visit** www.svi.edu.au/join_us/events/ or call Katie Maynes on 9288 2391.
A TRIP DOWN MEMORY LANE

Professor Jack Martin was thrilled to welcome year 11 students from FCJ College, Benalla to the Institute in May, and not just because they were a class of budding biologists. In his welcoming address, the students heard that Jack’s older sister Joan attended their school from 1929 to 1932, when his family lived in Benalla (he was anxious to point out that this was some years before he was born!).

Following Jack’s welcome, the 29 students were divided into groups to tour the Institute, where they heard about cutting-edge research into type 1 diabetes, arthritis and drug discovery.

Deputy Principal and Biology teacher Joseph Mount found the tour extremely beneficial, as it covered many of the topics the class will explore in their studies.

“The visit to SVI brought the central dogma of biology, that DNA makes protein, to life. The young researchers were inspired, as they clearly showed our students how an understanding of proteins can lead to medical discoveries that may alleviate human suffering and cure disease. The students spoke enthusiastically about the experience and many aspirations of a career in research were affirmed,” Joseph said.

SVI regularly conducts tours, not only for schools but also for organisations and individuals. These tours provide a foray into the world of medical research and leave guests with a lasting impression of the importance of research. If you would like to take a tour of SVI please contact Madeleine Whiting on (03) 9288 2480.

2 Minutes with Urmia

Urmia Dhagat, postdoctoral researcher in the Structural Biology Unit joined SVI after completing her PhD at Monash in 2011.

My childhood ambition was to...be a teacher because I loved correcting notebooks with a red pen, and teaching of course.

My first job was...working as a waitress at a restaurant, I lasted 2 weeks.

My worst job was...my first job!

My happiest moment was...is when my son is asleep.

I got into research because...I love science and because it has always felt like I am at the right place, at the right time with the right project.

The hardest thing I have ever done was...live away from my family when I moved to Melbourne at the age of 18.

My scientific role model is...Professor Jenny Martin because she is such a great example of a woman who has excelled in my chosen field of Drug Discovery and Structural Biology.

If I could live anywhere I would choose...to live on the top floor of a high rise in Melbourne CBD.

WHY LEAVE A GIFT IN YOUR WILL?

It’s a common misconception that only wealthy people leave money to charity when they die. The reality is that most bequests are made by ordinary, hardworking people who want to make a positive difference to their community after they’ve gone.

Fortunately Australians as a whole are very generous, with 70% of us supporting charities. And when asked, 29% of people say they’d be willing to leave a gift in their Will once family and friends have been provided for.

However, only 7.5% of Australians actually end up doing that.

You don’t have to be rich or famous to make a difference.

You just have to make a simple decision. Whoever you are, whatever your situation, you can help by deciding to include SVI in your will.

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 life your children, your grandchildren, your family and friends.

Talk to your solicitor about the type of gift that may best suit you and your estate.

Please let us know...

If you would like to make an enduring contribution to world class medical research through a bequest to SVI, we are happy to provide you with more information. If you’ve already arranged to make a gift to SVI, we would love to have the opportunity to thank you personally.

Please contact Clare Lacey on (03) 9288 2480.