

A Million Have It !

- ◆ More than one million Australians have some form of diabetes
- ◆ The incidence of diabetes in Australia has increased by 37% in the last ten years and diabetes is now the seventh leading cause of death in Australia
- ◆ The direct annual health care cost for diabetes in Australia is estimated at \$1 billion and may reach \$2.3 billion by 2010
- ◆ Help the DTU to make a difference

Further funding for research into a functional cure for diabetes is still urgently needed.

If you would like to contribute to this vital research you can make a donation through our website.

Gift certificates are another way of donating on behalf of someone you know who supports the research. They are tax deductible and can include a personal message.

For more information about the Unit please consult the website

www.diabetes.unsw.edu.au

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Newsletter

Chicago Project meeting in Geneva

In June this year the DTU's encapsulation specialist, Dr Jayne Foster represented the DTU at a meeting held in Geneva, Switzerland as part of a collaboration the unit has with The Chicago Project. The Chicago Project is a group of scientists and their teams from around the world (US, Switzerland, France, Norway, Slovakia and Australia) who are working towards achieving a functional cure for diabetes as soon as possible. The current focus of the project is clinical transplantation of encapsulated human islets.

This collaborative approach allows free exchange of information between scientists in a non-competitive manner to accelerate finding a functional cure for diabetes. Being part of the Chicago

Project is an invaluable opportunity for the DTU as there are few groups in the world who are transplanting encapsulated human islets clinically. The results the DTU has gathered from our phase 1 clinical trial with encapsulated human islets in Sydney has provided guidance to the Chicago Project for the IND application which will use larger numbers of encapsulated islets and some immunosuppression.

The shipping of human islets long distances (from Chicago to Sydney) has been confirmed as being safe with excellent viability and function of islets that were shipped.

Islets the DTU has received have been used by the DTU's Vijay Vaithilingam in studies examining the effect of

microencapsulation on the islets. Future studies will concentrate on firstly, the effect of hypoxia on encapsulated human islets and strategies to increase oxygenation of the islets and secondly, reducing the inflammatory response which occurs when the microcapsules are introduced into large animals (and humans).



Dr Jayne Foster at the conference in Geneva

XXII Congress of the Transplantation Society

In August five members of the DTU attended and volunteered their services at The International Transplantation Meeting held in Darling Harbour, Sydney. Several of the staff and students had the opportunity to present their latest research findings, and interact with key national and international researchers to gain insights and



**Young Investigator Award winner
Gayathri Sundram**

suggestions to develop the work the DTU is undertaking.

Gayathri Sundram was honoured with the Young Investigator Award from the Transplantation Society for her presentation on work she is conducting at the DTU on human islets seeded onto three-dimensional scaffolds.

International stem cell expert to visit DTU

Associate Professor Anand Hardikar of the National Center for Cell Science (NCCS) India is visiting the DTU in November to share his expertise in the understanding of microRNA gene signatures during cell development and differentiation as well as the epigenetic mechanisms of gene regulation. The Hardikar Laboratory is collaborating with

the DTU in the effort to convert human embryonic stem cells into insulin-producing cells as a therapy for type-1 diabetes. Associate Professor Hardikar will be working with DTU scientists on understanding how microRNAs direct the differentiation of human embryonic stem cells into insulin-producing cells.



A/Prof Anand Hardikar with Professor Tuch at the NCCS

DTU recruits new researchers

Stem cell experts from who have trained in the UK, India and the USA joined DTU scientists working towards a cure for diabetes in the last year.

Dr Savita Kurup who has formerly conducted cell biology and diabetes related research at Prince Alfred Hospital, the Victor Chang Cardiac Institute and Children’s Hospital Research Foundation in Ohio, is investigating a method of addressing the limited supply of insulin-producing cells available for transplantation. Her research

project at the DTU is to create a source of indefinitely proliferating cells for transplantation from immature pancreatic cells.



DTU staff and students in 2008

Dr Marie Best joined the DTU in June 2008 after three years postdoctoral experience working with human embryonic stem cells at the University of Southampton in the UK.

Her goal in the DTU is to derive insulin-producing cells from human embryonic stem cells and specifically to investigate the possibility of maturing the cells into glucose-responsive cells.

Gayathri Sandram, who completed her Master of Science in animal genetics at Madras

Veterinary College, and became a Research Associate in informatics at GYK Biosciences, joined the DTU as a PhD candidate in 2008 to try to find the best 3D environment for the development of human islets.

Jennifer Wong, after obtaining first class honours for her research project at the DTU in 2007, has returned to continue her research on the extra-cellular matrix requirements in the differentiation of stem cells into insulin-producing cells.

Farewells and well wishes

As well as welcoming new recruits, the DTU has seen the departures of a number of members who have contributed greatly to the growth and success of the laboratory’s research projects over the years.

Most notably, we congratulate A/Prof Kuldip Sidhu on his directorship of the new Stem Cell Laboratory in the

Department of Psychiatry at the UNSW. It is laudable that the University has taken up the principle of a dedicated stem cell laboratory investigating cures for neurological diseases.

We also farewelled Dr Sophia Dean who has taken up a position at the Stem Cell Laboratory as part of A/Prof Sidhu’s team, along with PhD

We congratulate A/Prof Kuldip Sidhu on his directorship of the new Stem Cell Laboratory at UNSW

candidates Jinhua Han and Henry Chung.

Dr Kerstin Brands, whose projects at the DTU included

investigating the immune function of immature pancreatic cells as well as ways to immortalize such cells, has sadly left Australia and returned to her native Germany.

Congratulations go to Kitty Nam, Sabina Ratnapala, James Sung and Mandy Yim for successfully completing their honours theses.

International Society for Stem Cell Research Meeting in Philadelphia

Six members of the DTU attended the world’s largest stem cell research conference in Pennsylvania in June this year. Travel awards were granted to Steven Gao, May Chayosumrit, Daniel Lie and Catalina Palma.

Two of the DTU’s promising young researchers took the opportunity while in the US to visit the scientists and laboratory facilities at Novocell, a Californian company at the forefront of stem cell research

into a cure for diabetes. Valuable insights gained from this experience have already seen their way into improving research protocols at the DTU and relationships have been built for future collaborations.



DTU personnel at the ISSCR conference

Israel and Jordan cross-cultural exchange

The Director of the DTU, Professor Bernie Tuch and Professor Hala Zreiqat, Head of the Tissue Engineering and Biomaterials Research Unit at the University of Sydney participated in a cross-cultural

exchange with scientists in Israel and Jordan. Professor Zreiqat, who comes from Jordan, and her team have been collaborating with the DTU on the seeding of islets onto 3D scaffolds, to enhance the

function of the islets. ProfTuch who had previously spent a year studying in Israel, arranged for Prof Zreiqat to present her data at the Technion in Haifa, Israel. Prof Zreiqat reciprocated by arranging for Prof Tuch to talk in Amman, Jordan.



Prof Bernie Tuch with endocrinologists in Amman, capital of Jordan

Diabetes Transplant Unit in the media

The DTU featured in a Catalyst story for the ABC TV entitled “Possible Cure for Type 1 Diabetes” in April, which focused on the promise

of the Seaweed Islet trial the Unit had been undertaking. This was followed closely by a profile on the DTU in the May/June issue of Life Scientist Magazine.

The article “2010: A Sydney Project” related the DTU’s contribution to the Chicago project and it’s goal for pilot clinical trials with stem cells as

a therapy for type 1 diabetes within five years.