Organ donation leads Melbourne scientists to type 1 diabetes breakthrough

Researchers from St Vincent’s Institute of Medical Research (SVI) have for the first time been able to catch immune cells at the ‘scene of the crime’ in type 1 diabetes, by isolating them from the pancreas of an organ donor who had the disease. The researchers were also able to show that the cells were recognising a particular part of the insulin molecule itself.

Type 1 diabetes occurs when the body’s immune cells mistakenly destroy the insulin-producing cells of the pancreas. Until now, it was not known exactly what components of the insulin-producing cells the immune cells targeted in humans.

Dr Stuart Mannering and his team at SVI studied a pancreas that had been donated by the family of a 19 year-old man who died due to complications of type 1 diabetes. Their findings will have an immediate impact on the design of clinical trials aimed at preventing the disease.

In research published online in the journal Diabetes today, Dr Mannering isolated immune cells from the insulin-producing regions of the donated pancreas. “We caught the immune cells at the ‘scene of the crime’ in the pancreas and then we were able to characterise them: no one has been able to do this in humans before,” he said. In fact, the existence of cells with exactly these properties has long been predicted but this is the first time they have been found.

Professor Tom Kay, Director of SVI and co-author on the study, says that the work is a technical triumph. “Researchers do not normally have access to a pancreas from someone with type 1 diabetes and studies have mainly relied on the blood, where such cells are much rarer than in the pancreas.”

By identifying the exact portion of insulin that the immune cells target in human diabetes, the study gives a new angle of attack for clinical trials looking to prevent type 1 diabetes. “Manipulating the immune system provides a promising approach to finding a cure for type 1 diabetes which is the ultimate goal of our research program at SVI,” says Dr Mannering.

Professor Kay says that the work highlights the powerful impact that organ donation can have on research. “This is just one of the many benefits of the remarkable process of organ donation and transplantation. We gratefully acknowledge the donor’s family, who could see past their personal tragedy to the potential benefits of organ donation.”

Mike Wilson, CEO of JDRF says the research is exactly the kind of exciting progress that those living with type 1 diabetes are hoping for. “This breakthrough represents another step towards preventing and potentially curing type 1 diabetes. It is welcome news and a cause for renewed hope for all people living with type 1 diabetes and their families. JDRF is delighted to have helped fund Dr Mannering’s research.”

Dr Mannering was recently recognised with the 2014 Australian Diabetes Research Innovation Award, a Macquarie Group Foundation and JDRF award that is designed to foster global collaboration and innovation in type 1 diabetes research. The award will enable Dr Mannering to visit three international laboratories noted for innovative type 1 diabetes and immune-based research to share his research results and build important international collaborations which will further his research into this important area.
JDRF, the National Health and Medical Research Council (NHMRC), Diabetes Australia Research Trust and the Victorian Government’s Operational Infrastructure Support Program supported the research.

Available for interview:
- SVI researchers: Professor Tom Kay (Director SVI), Dr Stuart Mannering
- The Erickson family: Jade (mother), Michael (father with type 1 diabetes) and Justin (five-year-old son with type 1 diabetes)

For further information or to organise interviews, please contact Lisa Kuspira on 0423 011 493 or Anne Johnston on 0434 214 644.

About St Vincent’s Institute
St Vincent’s Institute is a medical research institute that conducts laboratory research into the cause, prevention and treatment of high-impact diseases such as cancer, heart disease, diabetes, obesity, bone diseases and Alzheimer’s. St Vincent’s Institute is affiliated with St. Vincent’s Hospital and the University of Melbourne. www.svi.edu.au.

About JDRF
JDRF is the leading global organisation funding type 1 diabetes (T1D) research. JDRF’s goal is to progressively remove the impact of T1D from people’s lives until we achieve a world without T1D. JDRF collaborates with a wide spectrum of partners and is the only organisation with the scientific resources, regulatory influence, and a working plan to better treat, prevent, and eventually cure T1D. As the largest charitable supporter of T1D research, JDRF is currently sponsoring USD$568 million in scientific research in 17 countries, with over USD$27 million currently devoted to research programs in Australia.

JDRF was recognised as the 2014 Charity of the Year in The Australian Charity Awards. The award recognises JDRF’s campaign to secure $35 million of funding for the Type 1 Diabetes Clinical Research Network (T1DCRN) over five years. For more information, please visit www.jdrf.org.au.

For further information about JDRF or interviews please call Catherine Strong 02 9020 6114.