TYPE 1 DIABETES

Understanding type 1 diabetes
People with type 1 diabetes lack insulin, the hormone that regulates the body’s use of glucose. Insulin is produced by beta cells in the pancreas, which are contained within small clumps of cells called islets. In type 1 diabetes, beta cells are mistakenly attacked and destroyed by the immune system.

The story of insulin therapy
On January the 11th 1922, 14-year old Leonard Thompson lay dying at Toronto General Hospital. Diagnosed with type 1 diabetes and weighing only 29 kilograms, Leonard was in a ward with 50 other diabetic children.

With no treatment available, many of these children already lay in a coma with grieving relatives by their sides, as they awaited inevitable death. Just hours from slipping into coma himself, Leonard was selected for an experimental treatment, the injection of a protein called insulin, purified from the pancreas of cattle.

Following a remarkable recovery, Thompson’s treatment became the new standard of care for people with diabetes worldwide. Leonard Thompson lived a further 13 years thanks to the development of insulin, but died at the age of 27 due to diabetic complications.

More than 90 years later, Professor Tom Kay, Director of SVI and head of SVI’s Immunology and Diabetes Unit, explains where cutting edge diabetes research stands today. “The discovery of insulin was an amazing step forward for people with type 1 diabetes. However, in the 21st century diabetes remains a complex disease, which is difficult to control and can lead to devastating complications.”

Type 1 diabetes research at SVI
Researchers at SVI are dedicated to finding effective prevention and treatment strategies for type 1 diabetes. Our research incorporates basic and clinical studies, using both mouse and human cells to study the causes and mechanisms of the disease, as well as exploring new treatment options.

SVI is intimately involved in the Australian Islet Transplant Program, in which people with uncontrollable diabetes are transplanted with human islets. The Victorian arm of the program, led by SVI, has resulted in ten people with type 1 diabetes receiving transplants to date.

In addition to this work, SVI researchers are furthering their research into the mechanisms of type 1 diabetes, looking at:
• the immune mechanisms that cause type 1 diabetes
• how beta cells die
• the contribution of genes and environment to disease development
• how and why human T cells kill beta cells.

Type 1 diabetes in Australia
(statistics from JDRF)
• Type 1 diabetes affects over 122,300 people in Australia.
• In Australia, around 95% of the diabetes found in children is type 1 diabetes.
• Type 1 diabetes is one of the most common chronic diseases in children; it occurs more frequently than cancer, cystic fibrosis, multiple sclerosis and muscular dystrophy.
• Approximately 1,825 Australians are diagnosed with type 1 diabetes every year.
• Incidence is increasing at 3.2% a year.