

Potential preventative therapy for Type 1 diabetes

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Scientists believe they may have found a preventative therapy for Type 1 diabetes, by making the body's killer immune cells tolerate the insulin-producing cells they would normally attack and destroy, prior to disease onset.

Type 1 [diabetes](#) is an autoimmune condition, where the body attacks its own insulin producing cells. It is very serious, with a sudden and dramatic onset, usually in youth. People with Type 1 diabetes must maintain an insulin-monitoring and insulin-injecting regimen for the rest of their lives.

PhD student Eliana Mariño and Dr Shane Grey, from the Garvan Institute of Medical Research in Sydney, have demonstrated how a particular molecule may be used in future as a preventative therapy. Their findings are published online in the international journal *Diabetes*.

The body's [immune cells](#), or [white blood cells](#), include [B cells](#) and T cells. B cells make antibodies and present 'antigens' to T cells, allowing them to recognise, and kill, invaders.

In previously published studies about Type 1 diabetes, Mariño and Grey showed that groups of B cells migrate to the pancreas and pancreatic lymph nodes, presenting specific insulin antigen to T cells. In other words, B cells go to the disease site and tell T cells to kill the cells that produce insulin.

"Taking that work further, our current study looks at different ways of subduing B cells, and how that affects development of the disease," said Grey.

Working with mice that spontaneously develop Type 1 diabetes, Eliana Mariño found that if she blocked BAFF (a hormone that controls survival of B cells) prior to onset, none of the mice developed diabetes.

"This is a remarkable finding, as other B cell depletion methods tested elsewhere have just delayed or reduced disease incidence," said Eliana.

When B cells were depleted, the regulators of the immune system (a subclass of T cells known as T [regulatory cells](#)) rose in numbers.

By removing B cells from the picture for a while, it appears you allow T regulatory cells to function as they should, subduing killer T cells and somehow making them tolerant of the insulin producing cells.

The Juvenile Diabetes Research Foundation supported this research. Garvan's Diabetes Vaccine Development Centre (DVDC), the mandate of which is to develop a vaccine for [Type 1 Diabetes](#), is funding further research with the compound.

The molecule used by Grey and colleagues to inhibit BAFF is known as BCMA, and is already being used in clinical trials for other autoimmune diseases, such as Sjogren's Syndrome and Lupus.

Type 1 diabetes

Type 1 (or juvenile) diabetes affects 140,000 Australians and incidence is increasing every year. Typically striking young people, it results in the destruction of insulin-producing [cells](#) in the pancreas, leaving the sufferer on a daily regime of painful injections and finger-prick tests.

Unlike type 2 diabetes, Type 1 cannot be prevented and is not associated in any way with obesity or lifestyle. While insulin keeps people alive, it is not a cure and does not prevent the onset of the serious disease complications that dramatically shorten life expectancy. Research programs such as the ITP offer the best hope for curing this debilitating condition and minimize the estimated ongoing health burden to the community.

Source: Research Australia ([news](#) : [web](#))

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