

# Smart Insulin



## Imagine...

a world where a single daily dose gives people with T1D insulin only when they need it.

Imagine Ashley, who was diagnosed with type 1 diabetes (T1D) at 3 years old. She has been using an artificial pancreas, which has been hugely effective in managing her diabetes and improving her overall health and quality of life.

But Ashley recently replaced it with a groundbreaking new therapy: smart insulin. This new insulin, given as a once-daily dose, circulates in her body, only activating when her blood glucose starts to rise. Once her glucose levels return to the normal range, the insulin delivery is suspended until it's needed again.

This just-in-time, just-as-needed source of insulin means that Ashley leaves behind many of the T1D chores she was forced to live with for years. Each morning she gives herself an injection or takes a pill that ensures she has enough insulin to cover her needs for the day...and that's it. She can leave infusion sets and external devices behind. Now, when Ashley eats, sleeps, exercises, or deals with the stress of school, the smart insulin does all the work.

*JDRF isn't just imagining this. We're making it happen.*

**"Each morning, she gives herself enough insulin to cover her needs for the day...and that's it."**

An artificial pancreas system, insulin taken just once a day, vaccines that prevent T1D, implanted beta cells free from autoimmune attack, and restoration of beta cells are all part of JDRF's plan to progressively remove T1D from people's lives until it is finally gone.

But as we work to deliver these advances, one fact is inescapable: increased funding is essential. Clinical trials and development are expensive. And for these possibilities to become life-changing realities, JDRF needs your help.

Because with your support we can create a world without T1D.

**Visit [jdrf.ca](http://jdrf.ca) to learn how you can turn Type One into Type None.**

# Smart Insulin



## Why

Eliminating virtually all of the daily burdens associated with mechanically managing the disease would profoundly enhance and simplify the lives of people with T1D. Moreover, by improving overall blood-glucose controls, the risks of life-threatening complications would sharply diminish, leading to longer, healthier lives.

## What

Smart insulin is a form of insulin that circulates in the bloodstream and turns on when it's needed to lower blood sugars and off when blood sugars are at safe levels.

## How

In 2003, an MIT chemical engineer founded a company called SmartCells, to develop smart insulin.

While others were skeptical, JDRF and its allies saw promise. First the National Institutes of Health provided initial funding, using funds appropriated by Congress in response to JDRF's advocacy efforts. Then, JDRF added its funding to take it to the next stage. And in 2010, the pharmaceutical company Merck acquired SmartCells. The evolution of SmartCells is powerful validation of JDRF's strategy to support early stage therapy development to draw the capital and commercial know-how of major drug and biotech manufacturers to the T1D field.

Progress on therapies like smart insulin require scientists from a wide array of disciplines, including many who have no previous exposure to the T1D field, such as biochemists, chemical engineers, and pharmacologists.

While still years away from becoming a treatment, smart insulin will, with continued JDRF investment, become another life-changing therapy for those with T1D. To make this a reality, an aggressive investment in funding is still required – your contribution will make a difference. Support our efforts and together we can turn **type one into type none.**

*A once-daily dose of insulin that senses when a person's blood glucose levels rise and automatically activates; turning off when normal glucose levels are reached.*