

JDRF's Immune Therapies research focuses on finding out how to stop the immune system attack that kills the insulin-producing beta cells and causes type 1 diabetes. Scientists do not yet know what triggers this attack, but they think it could be a combination of genetic susceptibility and environmental factors (such as a virus or something in the diet).

JDRF's Immune Therapies Research Goals

JDRF is committed to delivering immune therapies to people at all stages of type 1 diabetes. For a person at risk for the disease, the goal is to keep the immune system from damaging beta cells in order to prevent type 1 diabetes or delay the need to take insulin. For a person who has been living with type 1 diabetes for some time, the goal is to halt the immune attack and prevent any further destruction of beta cells. Once this is accomplished, a beta cell therapy could be used to replace or regenerate beta cells, enabling the person to resume producing their own insulin.

Priority Program

Within Immune Therapies, JDRF is prioritizing antigen-specific therapies – which target particular immune cells rather than the entire immune system – because of their potential to produce the safest, most effective treatments. Antigen-specific therapies seek to either eliminate the immune cells (such as effector T cells) that destroy beta cells or to expand the number of immune cells (such as regulatory T cells) that control and regulate the immune system and keep diabetes from developing.

A second research track seeks to develop preventive immune therapies and combination immune therapies. In this area, our scientists are exploring the use of anti-inflammatory drugs to control inflammation in at-risk individuals and working to develop biomarkers that can provide biological clues to gauge whether or not a treatment is working.

Specific Research Goals

JDRF has developed a specific set of goals for Immune Therapies and the rest of our therapeutic areas. These goals are guiding every decision we make about where to direct our funds and energies to bring results as quickly as possible. In Immune Therapies, they include:

- Applying new knowledge about how and why type 1 diabetes develops to creating new approaches to prevent and reverse it.
- Increasing investment in resources like nPOD (the Network for Pancreatic Organ Donors with Diabetes), a biobank that may hold further clues to the causes of type 1 diabetes.

- Designing and conducting small clinical trials with immune measures as the primary outcome.
- Completing clinical trials on drugs already FDA-approved to treat other diseases that may be effective against type 1 diabetes.
- Developing therapies aimed at the specific immune cells that attack beta cells.
- Launching studies to test therapies that use various cells to treat type 1 diabetes.
- Evaluating treatments that use insulin to repair the immune malfunction in diabetes.
- Identifying biomarkers to speed research progress.

Immune Therapies Research Facts

JDRFI Funding:	\$33 million (U.S.); 33 per cent of all FY09 funding
Human Clinical Trials:	16
Types of Research Involved:	Immunology, Genetics

What Will Your Support Mean?

Your support of JDRF's Immune Therapies research will help JDRF accelerate progress toward developing drugs and other therapies to stop and ultimately prevent the immune attack that causes type 1 diabetes.

Recent Research Progress

- JDRFI joins forces with two new partners—Fast Forward and Axxam SpA—to accelerate the development of new treatments.
- By targeting immune B cells rather than T cells, researchers prevent diabetes in mice.
- Researchers progress toward an oral vaccine to control the autoimmune response that causes type 1 diabetes.
- Industry collaborations move anti-CD3 antibodies, a treatment for the newly diagnosed, to Phase III trials. ■