

Accelerators

JDRF is committed to speeding the progress of research so that people with type 1 diabetes benefit from advances as quickly as possible. With this in mind, JDRF targets some of its resources to the development of tools called accelerators that are relevant to all of the Therapeutic Areas we fund—Immune Therapies, Beta Cell Therapies, Glucose Control, and Complications Therapies. Examples of accelerators include beta cell imaging technologies, biomarkers, research resources such as islets, and knowledge management and networking.

JDRF's Accelerators Research Goals

The overall goal of JDRF's Accelerators program is to help drive research within each Therapeutic Area toward near-term benefits for people with type 1 diabetes while also increasing the odds of major treatment breakthroughs. Our accelerators research will give us a better understanding and model of the disease and enable us to develop screening, staging, and imaging methods that will advance our entire research program. JDRF is investing in the development of a broad and diverse range of accelerators that will close the gaps inhibiting research progress. They include:

Beta cell imaging:

The ability to take high-tech "pictures" of the insulin-producing beta cells inside the pancreas, to determine how many there are and whether they are functioning properly.

The capability to image beta cells does not currently exist, but JDRF is working to foster the development of the technology to make this possible. Being able to obtain detailed, direct images of beta cells would aid in determining the success or failure of treatments across all areas of research, including regeneration, replacement, and immunology. In the development of regeneration therapies, for example, imaging would give scientists the ability to immediately track whether the number of beta cells is increasing in response to a specific treatment.

Biomarkers:

Molecular, biological, or physical characteristics that are used to make diagnoses, show the status of a disease, or predict or monitor clinical response to treatment.

Biomarkers enable scientists to measure something that accurately reflects what is occurring inside a patient. Current and exceedingly valuable biomarkers include HbA1c (an indicator of glucose control and a predictor of the risk for complications) and autoantibodies (an indicator of risk for type 1 diabetes and disease progression). However, there is a critical need for biomarkers in all areas of type 1 research. In the development of complications treatments, for

example, biomarkers would be especially valuable in shortening the time it takes to evaluate drugs to prevent or delay complications.

Resources that support type 1 researchers:

A range of tools that scientists need to advance their work, such as tissue samples and islets (clusters of beta cells).

One of JDRF's most important resources for scientists is nPOD—the Network for Pancreatic Organ Donors with Diabetes. Launched in 2007, the nPOD program provides the international type 1 diabetes research community with access to human pancreatic tissues from patients at all stages of the disease—the autoantibody-positive at-risk, those who have had the disease for a short time, and those with more established diabetes. Researchers can use tissues obtained through nPOD to answer key questions about the underlying cause, or causes, of type 1 diabetes, which to this day remain largely unknown. The nPOD network is certain to improve our understanding of type 1 diabetes and currently consists of project partners across North America, Europe, and Australia. Other resources we provide to support type 1 researchers include: access to islets for research; access to standardized, validated animal models from which to conduct "transferable" research; and access to patients with type 1 diabetes who wish to participate in clinical trials, such as through the recently launched Clinical Trials Connection.

What Will Your Support Mean?

Your support of JDRF's Accelerators research will help JDRF speed progress toward curing type 1 diabetes. These tools will advance research across each of JDRF's four Therapeutic Areas.

Recent Research Progress

JDRF researchers successfully use a modified MRI technique to noninvasively monitor beta cell function in vivo; this important proof-of-concept in mice not only verifies the potential of the technique but also fills an important void, since most imaging techniques in development assess beta cell mass, not function.