

# Research Strategy

*“I strongly believe that our research strategy will enable JDRF to advance more rapidly toward better treatments to benefit people with type 1 diabetes now—and ultimately toward a cure.”*

—Alan J. Lewis, Ph.D.  
President and Chief Executive Officer

## What is JDRF’s research vision?

JDRF’s research vision is clear: to relieve people of the burdens of type 1 diabetes.

We are working tirelessly to develop life-enhancing treatments – and ultimately a cure – for all people who have type 1 diabetes (or are at risk for it) and its complications, no matter how long they have had the disease, how far it has progressed, or how serious its effects. The JDRF family is committed to doing all we can to make life better for our loved ones with type 1 diabetes.

## What is JDRF’s research strategy in support of this vision?

We are committed to aggressively following the most promising paths to **cure**, better **treat**, and **prevent** type 1 diabetes while catalyzing and coordinating the efforts of all our partners – the academic community, biotechnology and pharmaceutical companies, governments, other disease organizations and foundations, and people with type 1 diabetes.

We will:

- Continue to put the interests of **people** with type 1 diabetes first – and at the center of all we do
- Use our unique understanding of type 1 diabetes – gained from 40 years of research leadership – to help us **prioritize** research to achieve the greatest impact
- Accelerate the creation of a robust **pipeline** of potential new treatments and cures
- Create the **partnerships** needed to achieve our vision

Our strategy reaffirms JDRF’s unwavering commitment to finding a cure as its top priority. But we recognize that because the cure may not be immediately at hand, JDRF has an urgent obligation to lead the nearer-term development of new and better treatments, such as the artificial pancreas, that can ease people’s daily lives and reduce their risk for complications. We must keep people with type 1 diabetes healthy enough to fully benefit from the cure when it is found. Further, we must develop ways to prevent the disease in future generations.

## How was JDRF’s strategy developed?

JDRF’s strategy builds on our history of driving scientific progress over four decades.

Throughout its 40-year history, JDRF has continually reviewed and refined its research strategy to stay aligned with the needs of people with type 1 diabetes, with scientific progress, and with new opportunities. In late 2009, we announced a strategy update based on an extensive review of our research program led by our CEO, Dr. Alan Lewis. The review included listening to the priorities of JDRF families and identifying opportunities to leverage recent scientific advances to accelerate progress.

The updated strategy reflects the extraordinary strides made since our last review in 2007, including driving a major increase in the number of new drugs and devices being evaluated in clinical trials. We have also helped spark new interest in type 1 diabetes from biotechnology and major pharmaceutical companies (like GlaxoSmithKline, Genentech/Roche, and Lilly), who will be crucial partners in bringing new therapies and cures to market.

## What is our focus?

The JDRF family wants to make our loved ones better. We want them to have normal lives free of the burdens of type 1 diabetes and its devastating complications. We want to see them cured, and we want to keep future generations from having to suffer with the disease. This focus informs every aspect of our

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research strategy, which seeks to benefit people at all stages of the disease, including those: with established type 1 diabetes – with or without complications; who have been recently diagnosed or are in the honeymoon period; with “pre-type 1 diabetes;” and who are at risk for type 1 diabetes.

### Four Areas of Therapeutics Development

To cure, treat, and prevent type 1 diabetes, we must achieve several things:

- Arrest the immune attack on the insulin-producing beta cells
- Restore or replace beta cell function
- Better control blood sugar levels
- Protect people from – or reverse – complications

Accomplishing all of this requires that our research encompass multiple areas. Within each area, we seek to discover and develop new drugs and devices that can be combined in therapeutic regimens, based on an individual’s stage of disease. JDRF’s four areas of emphasis for therapeutics development are:

#### 1. Immune Therapies

- Stop the immune system attack on the insulin-producing beta cells
- Prevent an immune attack on regenerated beta cells or other insulin-producing cells used to replace beta cells

*Priority science: **Antigen-specific therapies*** that can directly target the immune cells responsible for destroying beta cells (and/or those that regulate the immune system). Such therapies would reverse the immune attack in type 1 diabetes without suppressing the entire immune system, a potentially dangerous side effect of current therapies.

#### 2. Beta Cell Therapies

- Restore the body’s ability to make insulin through:
  - Regeneration of insulin-producing beta cells (i.e. triggering the body to re-grow beta cells) and
  - Replacement of the beta cells lost to diabetes

*Priority science: **Regeneration***, which has the potential to restore beta cell function in the largest number of people living with type 1 diabetes.

#### 3. Glucose Control

- Dramatically improve blood glucose control while avoiding dangerous highs and lows in people at all stages of type 1 diabetes

*Priority science:*

- The **closed-loop artificial pancreas** – a device combining glucose monitors and insulin pumps and using artificial intelligence to automatically dose insulin
- **Novel insulins** that are glucose-responsive, faster-acting, easier to use, and more effective

#### 4. Complications Therapies

- Free people from the devastating long-term complications of type 1 diabetes, including diseases of the eyes, nerves, kidneys, and heart

*Priority science: **Complications protection***, or new approaches to assess risk and block complications from developing/progressing; this research has the potential to generate breakthroughs that will help all people with type 1 diabetes lead healthier, longer lives.

### Accelerators

JDRF continues to lead research on accelerators – such as beta cell imaging and biomarkers – to drive progress across all the scientific areas we fund and to assist the efforts of others engaged in research that can cure, treat, and prevent type 1 diabetes.

Accelerators are “mission-critical” tools and resources that will give us a better understanding of type 1 diabetes and its complications. They will deliver new ways to assess a person’s risk for developing diabetes and its complications, to stage the disease in people who have already developed it, and to evaluate the effectiveness of new treatments and cures.

We are engaging people with type 1 diabetes through such programs as JDRF’s Clinical Trials Connection, which provides information to people with type 1 diabetes on clinical trials in which they may be eligible to participate.

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### The Task Ahead

JDRF's updated research strategy seeks to capture the full value of what we have learned in the past 40 years for the benefit of people with type 1 diabetes. Our strategy recognizes that to do this, we must conduct a robust, aggressive, and focused research program. But we must do more. We must:

- Motivate and partner with other stakeholders – academia, industry, government, and other foundations – to prioritize joining the fight to cure type 1 diabetes
- Invest in the development of new research tools
- Recruit top talent from other fields
- Capitalize on emerging knowledge from all sources
- Bridge academia and industry so that discoveries are translated into new drugs and devices
- Keep all parties focused on what's most important to people with type 1 diabetes and their loved ones: longer, healthier, happier lives; relief from the burdens of type 1 diabetes; and ultimately, a cure

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