

# Facts

## About JDRF

JDRF is the leading global organization focused on type 1 diabetes (T1D) research. Driven by passionate, grassroots volunteers connected to children, adolescents, and adults with this disease, JDRF is the largest charitable supporter of T1D research. The goal of JDRF is to improve the lives of every person affected by T1D by accelerating progress on the most promising opportunities for curing, better treating, and preventing the disease. JDRF collaborates with a wide spectrum of partners who share this goal.

Since its founding in 1970, JDRF has awarded more than \$1.6 billion to T1D research, including \$116 million in FY2011. More than 80 percent of JDRF's expenditures directly support research and research-related education. Past JDRF research efforts have helped to significantly improve the care of people with this disease, and have expanded the critical scientific understanding of T1D. JDRF will not rest until T1D is fully conquered.

### A Transformative Vision

As the leader of the type 1 diabetes community, JDRF unifies global efforts to cure, treat, and prevent T1D. JDRF is committed, as we always have been, to delivering a cure for type 1 diabetes and its complications through the support of research. We are also focused on developing better treatments that transform the way people with T1D treat the disease today in order to help them live healthier lives now and in the future. Finally, JDRF focuses on prevention to keep future generations from getting T1D.

Guided by our vision of cure, treat, and prevent, JDRF-funded research encompasses T1D at every life-stage: stopping or slowing its progression in people who are newly diagnosed; reversing it in those who have lived with the disease for years; avoiding or reversing complications; and preventing the disease in people at risk and in future generations.

In addition to our research funding and leadership, JDRF's advocacy efforts help support a variety of issues that are critical to JDRF achieving its research objectives. Our focus includes increased government funding for T1D research and a regulatory environment that allows people with T1D to benefit from potential new therapies and devices as quickly and safely as possible. Finally, JDRF's outreach efforts provide practical support and resources for people with type 1 diabetes and their families every step of the way as they live with T1D.

### Innovation and Collaboration

Research funded by JDRF has led to many landmark advances in type 1 diabetes science. We aggressively translate discoveries into treatments, drugs, and therapies that help people with T1D live healthier lives now, while we work toward a cure. Currently, JDRF is funding more than 53 human clinical trials, several of which are in the advanced stages of clinical testing needed before FDA approvals are required.

JDRF's influence and leadership extends beyond funding research. We strategically partner with industry, governments, foundations, academia, and clinicians to ensure that JDRF and its partners are aligned and working toward a common goal of curing, treating, and preventing T1D.

### Effective Operations

JDRF has always been dedicated to maintaining the highest levels of efficiency to ensure that our time, resources, and dollars can achieve the greatest possible impact on the lives of people with T1D. We have a solid track record of funding research efficiently and effectively. More than 80 percent of what JDRF spends goes directly to research and research-related education, which is among the highest percentages for charities nationwide.

### Inspiring Results

JDRF was created—and is still led—by people with a personal connection to type 1 diabetes. Today, volunteers at JDRF's more than 100 locations worldwide remain the driving force behind our activities. That gives us an unrelenting passion and commitment to find a cure—and, in the near term, better treatments—for people with T1D.

All of JDRF's activities are driven by the needs of people with T1D. Whether it's providing funding for a late-stage clinical trial, lobbying the government for faster approval of new devices, or partnering with a company on research that might not otherwise receive funding, every decision JDRF makes is driven by our commitment to transforming the lives of people with T1D—and delivering a cure—as soon as possible.

# Facts

## Research Funding

**JDRF's research mission is to discover, develop and deliver advances that cure, better treat and prevent type 1 diabetes (T1D). As the global leader in the fight against T1D, JDRF's research programs are comprehensive—addressing the hopes and dreams of every person with T1D for the best quality of life and a cure for this disease. JDRF research unites the best and brightest minds from around the world and supports those programs with the greatest potential of achieving our goals.**

### JDRF Research Funding Overview

- Since its founding in 1970, JDRF has funded more than \$1.6 billion in T1D research and has dramatically advanced the T1D scientific frontier and the management of this disease. In FY2011 alone, JDRF provided more than \$116 million for T1D research.
- More than 80 percent of JDRF's expenditures directly support research and research-related education. JDRF maintains one of the best records among non-profits of effectively using supporters' contributions.
- In FY2011, JDRF funded research projects in 18 countries representing the global scope of JDRF's research efforts.
- As more JDRF programs move forward, the number of human or clinical studies has grown. In FY2011, JDRF supported 53 clinical studies, including evaluations of new therapies, studies of the normal course of T1D, and others to collect specific T1D human samples.

### JDRF's Research Goals

JDRF research is committed to improving the lives of every person with T1D and to curing this disease. JDRF's research goals are realized by the projects being supported in three basic areas:

### CURE

Restoring a person's insulin-producing capability and halting or reversing the body's misguided immune attack on the pancreas.

### TREAT

Developing new devices and therapies that optimize blood sugar control and treat or prevent the complications of T1D.

### PREVENT

Preventing T1D from occurring or stopping the disease process before it damages the pancreas.

### FY2011 JDRF Research Funding

#### Cure and Prevent (62%)\*

Immune Therapies	\$30.1 million
Beta Cell Therapies	\$27.2 million

#### Treat (38%)

Glucose Control	\$14.6 million
Complications Therapies	\$20.2 million

#### Multi-category (1%) **\$ 1.2 million**

#### **Total Regular Funding \$93.3 million**

#### **Special Program Funding\*\* \$22.8 million**

#### **Total Fiscal Year Funding \$116.1 million**

### JDRF Research Priorities

JDRF research works across 3 key T1D categories: Cure, Treat, and Prevent. Within each, JDRF has developed a strategic plan that identifies the top research priorities. These priorities are outlined here.

### CURE RESEARCH

#### Immune Therapies

This research focuses on developing therapies to stop the underlying cause of T1D; the misguided immune system attack on the body's own insulin-producing beta cells in the pancreas.

### Beta Cell Therapies

This research focuses on developing therapies that restore a person's ability to make their own insulin. Two priority approaches to achieve this include; replacement of beta cells from an external source (transplantation) and regeneration of a person's own insulin-producing beta cells from residual beta cells or from converting other cell types to beta cells.

### TREAT RESEARCH

#### Glucose Control Therapies

This research focuses on developing new therapies and devices to dramatically improve and simplify blood glucose control in people with T1D. One part of this effort is the development of an artificial pancreas; a device combining blood sugar monitors and insulin pumps that automatically regulates blood sugar levels. JDRF is also prioritizing the development of novel insulin products; these might be responsive to blood sugar levels, act faster, be easier to use or be more effective.

#### Complications Therapies

This research focuses on developing new therapies to free people from the devastating long-term complications that can accompany diabetes, including diseases of the eyes, nerves, and kidneys. JDRF is also prioritizing research to prevent T1D complications, especially eye disease.

### PREVENT RESEARCH

JDRF research to prevent T1D is focused on two basic approaches. One is developing vaccines against the primary factors that start the misguided T1D autoimmune attack on a person's pancreas. The other is developing immune therapies that can stop or reverse the autoimmune process at the initial stages to prevent damage to the pancreas and avoid a person becoming dependent on external insulin sources.

\* Much of JDRF's current work on Prevent involves immune-related research and is closely tied to JDRF's Cure programs.

\*\* In FY2011, JDRF participated in a special T1D funding opportunity with the Canadian government. The Canadian government equally matched JDRF's \$22.8 million support for a number of priority T1D projects. The majority of these funds supported studies of better treatments or devices for T1D. These amounts are not included in the regular funding percentages.

# Facts

## General Diabetes Information

### What is Diabetes?

Diabetes is the name given to disorders in which the body has trouble regulating its blood glucose, or blood sugar, levels. There are two major types of diabetes: type 1 and type 2.

Type 1 diabetes (T1D) is an autoimmune disease in which a person's pancreas stops producing insulin, a hormone that enables people to get energy from food. T1D usually strikes in childhood, adolescence, or young adulthood, and lasts a lifetime. Just to survive, people with T1D must take multiple injections of insulin daily or continually infuse insulin through a pump.

Type 2 diabetes is a metabolic disorder in which a person's body still produces insulin but is unable to use it effectively. Type 2 is usually diagnosed in adulthood and does not always require insulin injections. However, increased obesity has led to a recent rise in cases of type 2 diabetes in children and young adults.

Taking insulin does not cure any type of diabetes, nor does it prevent the possibility of the disease's devastating effects: kidney failure, blindness, nerve damage, amputation, heart attack, stroke, and pregnancy complications.

### The Scope of Diabetes

- Nearly 26 million Americans have diabetes (8.3 percent of the population):<sup>1</sup>
- Diagnosed: 18.8 million
- Undiagnosed: 7 million
- As many as three million Americans may have type 1 diabetes.<sup>2</sup>
- Diabetes currently affects 366 million people worldwide and is expected to affect 552 million by 2030.<sup>3</sup>
- In the U.S., a new case of diabetes is diagnosed every 30 seconds; more than 1.9 million people are diagnosed each year.<sup>4</sup>

### The Cost of Diabetes

- Diabetes is one of the costliest chronic diseases.
- Type 1 diabetes accounts for \$14.9 billion in health care costs in the U.S. each year<sup>5</sup>, while all types of diabetes combine to account for \$174 billion in annual costs<sup>6</sup>
- The annual cost for healthcare was \$11,700 for each person with diabetes in the U.S. in 2009, compared to \$4,400 for each person without diabetes.<sup>7</sup>
- Americans with diabetes incur medical expenses that are approximately 2.3 times higher than those incurred by Americans without diabetes.<sup>8</sup>
- The average annual medical costs of children and teens with diabetes in the U.S. is \$9,000, compared to about \$1,500 for those who don't have diabetes.<sup>9</sup>

### The Harm Caused by Diabetes

- Diabetes is the leading cause of kidney failure, non-traumatic lower limb amputations, and new cases of blindness among adults in the United States.<sup>1</sup>
- Diabetes is a major cause of heart disease and stroke.<sup>1</sup>
- Poorly controlled diabetes before conception and during the first trimester of pregnancy among women with type 1 diabetes can cause major birth defects in 5% to 10% of pregnancies and spontaneous abortions in 15% to 20% of pregnancies. On the other hand, for a woman with pre-existing diabetes, optimizing blood glucose levels before and during early pregnancy can reduce the risk of birth defects in their infants.<sup>1</sup>
- Diabetes is the seventh leading cause of death in the United States. The risk of death for people with diabetes is about double that of people of similar age without diabetes.<sup>1</sup>

<sup>1</sup> CDC: <http://www.cdc.gov/diabetes/pubs/factsheet11.htm>

<sup>2</sup> Type 1 Diabetes, 2010; Prime Group for JDRF, Mar. 2011

<sup>3</sup> IDF: [http://www.idf.org/sites/default/files/Global\\_Diabetes\\_Plan\\_Final.pdf](http://www.idf.org/sites/default/files/Global_Diabetes_Plan_Final.pdf)

<sup>4</sup> NIDDK: <http://diabetes.niddk.nih.gov/DM/PUBS/statistics/#fast>

<sup>5</sup> The Economics of Diabetes in the United States, 2009; Lewin Group for Novo Nordisk: <http://diabetesbarometer-us.com/downloadable-resources/economic/Economic-Research-Articles.pdf>

<sup>6</sup> NIDDK: <http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.htm#costs>

<sup>7</sup> The United States of Diabetes: Challenges and Opportunities in the Decade Ahead, 2010; United Health Group: [http://www.unitedhealthgroup.com/hrm/UNH\\_WorkingPaper5.pdf](http://www.unitedhealthgroup.com/hrm/UNH_WorkingPaper5.pdf)

<sup>8</sup> NIDDK: <http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.htm#costs>

<sup>9</sup> Diabetes Care: <http://care.diabetesjournals.org/content/34/5/1097.abstract>

# Facts

## Type 1 Diabetes

### About T1D

Type 1 diabetes (T1D) is an autoimmune disease in which a person's pancreas stops producing insulin, a hormone that enables people to get energy from food. It occurs when the body's immune system attacks and destroys the insulin-producing cells in the pancreas, called beta cells. While its causes are not yet entirely understood, scientists believe that both genetic factors and environmental triggers are involved. Its onset has nothing to do with diet or lifestyle. There is nothing you can do to prevent T1D, and—at present—nothing you can do to get rid of it.

### Affects Children and Adults

Type 1 diabetes strikes both children and adults at any age. It comes on suddenly, causes dependence on injected or pumped insulin for life, and carries the constant threat of devastating complications.

### Needs Constant Attention

Living with T1D is a constant challenge. People with the disease must carefully balance insulin doses (either by injections multiple times a day or continuous infusion through a pump) with eating and daily activities throughout the day and night. They must also test their blood sugar by pricking their fingers for blood six or more times a day. Despite this constant attention, people with T1D still run the risk of dangerous high or low blood sugar levels, both of which can be life-threatening. People with T1D overcome these challenges on a daily basis.

### Not Cured By Insulin

While insulin injections or infusion allow a person with T1D to stay alive, they do not cure the disease, nor do they necessarily prevent the possibility of the disease's serious effects, which may include: kidney failure, blindness, nerve damage, amputations, heart attack, stroke, and pregnancy complications.

### Perseverance and Hope

Although type 1 diabetes is a serious and difficult disease, treatment options are improving all the time, and people with T1D can lead full and active lives. JDRF is driving research to improve the technology people with T1D use to monitor blood sugar levels and deliver the proper doses of insulin, as well as research that will ultimately deliver a cure.

### Statistics

- As many as three million Americans may have type 1 diabetes.<sup>1</sup>
- Each year, more than 15,000 children and 15,000 adults—approximately 80 people per day—are diagnosed with type 1 diabetes in the U.S.<sup>2</sup>
- 85 percent of people living with type 1 diabetes are adults.<sup>3</sup>
- The rate of type 1 diabetes incidence among children under the age of 14 is estimated to increase by 3% annually worldwide.<sup>4</sup>

1 Type 1 Diabetes, 2010; Prime Group for JDRF, Mar. 2011

2 NIDDK: [http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.html#i\\_youngpeople](http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.html#i_youngpeople)

3 Type 1 Diabetes, 2010; Prime Group for JDRF, Mar. 2011

4 IDF: <http://www.idf.org/diabetesatlas/diabetes-young-global-perspective>

### Warning Signs

Warning signs of T1D may occur suddenly and include:

- Extreme thirst
- Frequent urination
- Drowsiness or lethargy
- Increased appetite
- Sudden weight loss
- Sudden vision changes
- Sugar in the urine
- Fruity odor on the breath
- Heavy or labored breathing
- Stupor or unconsciousness

### What is it Like to Have T1D?

Ask people who have type 1 diabetes, and they will tell you: It's difficult. It's upsetting. It's life-threatening. It never goes away. But, at the same time, people with T1D serve as an inspiration by facing the disease's challenges with courage and perseverance and don't let it stand in the way of achieving their goals.

*"Both children and adults like me who live with type 1 diabetes (T1D) need to be mathematicians, physicians, personal trainers, and dieticians all rolled into one. We need to be constantly factoring and adjusting, making frequent finger sticks to check blood sugars, and giving ourselves multiple daily insulin injections just to stay alive."*

— JDRF International Chairman  
Mary Tyler Moore

*"It is a 24/7/365 job. We never get to relax and forget about food, whether we've exercised too much or too little, insulin injections, blood sugar testing, or the impact of stress, a cold, a sunburn, and on and on. So many things make each day a risky venture when you live with T1D."*

— Mary Vonnegut, adult,  
Rhode Island

*"Unlike other kids, I have to check my blood sugar 8 to 10 times a day; everything I eat is measured and every carbohydrate counted. My kit goes with me everywhere I go.... Too much exercise or not eating all my food can be dangerous. I think I'm too young to have to worry about all this stuff."*

— Jonathan Platt, 8, California

*"It controls your life in ways that someone without it doesn't even see. For me, the worst part of living with T1D is the fear that my three children or their children might develop the disease."*

— Nicky Hider, adult, New York