

# Facts



## About the Juvenile Diabetes Research Foundation

### **Dedicated to Finding a Cure**

The Juvenile Diabetes Research Foundation International (JDRF) is the worldwide leader in funding research to cure type 1 diabetes, an autoimmune disease that strikes children and adults suddenly and lasts a lifetime. JDRF sets the global agenda for diabetes research and is the largest charitable funder of and advocate for diabetes science worldwide.

JDRF's mission has been constant since it was founded four decades ago: to find a cure for type 1 diabetes and its complications through the support of research. Until a cure is found, JDRF is also committed to working tirelessly to develop new and better treatments to improve the lives of people who have type 1 diabetes and keep them as healthy as possible.

Today, people with type 1 diabetes rely on insulin to manage the disease. But insulin is not a cure, nor does it prevent the possibility of the disease's devastating effects, which can include kidney failure, blindness, heart disease, stroke, amputation, and pregnancy complications. JDRF is dedicated to finding a cure for type 1 diabetes and removing the burdens and threats that the disease carries.

### **A Global Leader in Type 1 Diabetes Research**

JDRF funding and leadership is associated with most major scientific breakthroughs in type 1 diabetes research to date. The Foundation remains a global leader in driving type 1 diabetes science forward by funding more type 1 research than any other charity. JDRF directed nearly \$101 million to such research in FY2009, bringing its total research funding to more than \$1.4 billion since its founding in 1970. To ensure that it supports science with the greatest potential to produce results as soon as possible, JDRF has established a research review process that involves leading scientists from around the world, as well as lay reviewers who either have type 1 diabetes themselves or have family members with the disease.

### **Moving Discoveries from Bench to Bedside**

JDRF is a leading catalyst for translating research advances into new treatments that can improve the lives of people with diabetes in the near term – and ultimately lead to a cure. In recent years, JDRF has driven a major increase in the number of new drugs and devices being evaluated in human clinical trials, funding more than 40 such trials in FY2009. JDRF has also helped spark new interest in type 1 diabetes science from biotechnology and major pharmaceutical companies; they will be crucial partners in bringing new therapies and cures to market.

JDRF research encompasses multiple areas, with the goal of discovering and developing new drugs and devices to cure, treat, and prevent type 1 diabetes. Areas of focus include developing immune therapies, replacing and regenerating beta cells, achieving tight glucose control, and preventing complications.

### **Efficiently Organized for Successful Results**

JDRF is structured on a business-world model that efficiently and effectively directs resources to research aimed at finding a cure and developing new treatments as soon as possible. More than 80 percent of JDRF's expenditures directly support research and research-related education. Because of its unwavering focus on its mission to find a cure, JDRF annually receives top rankings from independent sources that rate charitable giving. JDRF leverages its impact by partnering with academic institutions, governments, biotechnology and pharmaceutical companies, other disease organizations and foundations, and people with type 1 diabetes.

### **A Backbone of Dedicated and Active Volunteers**

JDRF was founded in 1970 by parents of children with type 1 diabetes. Today, volunteers at JDRF's more than 100 locations worldwide remain the driving force behind the Foundation's success in advancing research toward a cure. Because of their personal connection to type 1 diabetes, JDRF's volunteers have a passionate and unrelenting commitment to the JDRF mission.

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## Research Funding Facts

**JDRF's mission is to find a cure for diabetes and its complications through the support of research. JDRF is also committed to developing new and better treatments that improve the lives of people with type 1 diabetes in the near term and keep them healthy while we advance toward a cure.**

- Since its founding in 1970 by parents of children with type 1 diabetes, JDRF has funded more than \$1.4 billion in research. In FY2009 alone, JDRF funded nearly \$101 million, more than \$42 million of which represented new scientific projects.
- More than 80 percent of JDRF's expenditures directly support research and research-related education.
- In FY2009, JDRF funded research projects in 22 countries, including more than 40 human clinical trials.

### JDRF's Research Goals

JDRF is committed to aggressively following the most promising paths to cure, better treat, and prevent type 1 diabetes. We are targeting our resources on science that seeks to:

- 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

### FY2009 JDRF Research Funding

Immune Therapies	\$33 million
Beta Cell Therapies	\$39.8 million
Glucose Control	\$5.9 million
Complications Therapies	\$22.1 million
Total	\$100.8 million

## Therapeutic Areas

*JDRF targets its research funding in four "Therapeutic Areas:"*

### Immune Therapies

This area focuses on ways to stop the immune system attack on the body's insulin-producing beta cells that causes type 1 diabetes. Within this area, JDRF is prioritizing antigen-specific therapies that would reverse the immune attack in type 1 diabetes without suppressing the entire immune system.

### Beta Cell Therapies

This area aims to find ways to restore the body's ability to make insulin through the:

- 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

JDRF is prioritizing regeneration because of its potential to restore beta cell function in the largest number of people living with type 1 diabetes.

### Glucose Control

This area seeks to identify ways to dramatically improve blood glucose control while avoiding dangerous highs and lows in people at all stages of type 1 diabetes. JDRF is prioritizing the development of a closed loop artificial pancreas, a device combining glucose monitors and insulin pumps, to enable people to achieve tight blood sugar control and reduce their risk of complications. JDRF is also prioritizing the development of novel insulins that are glucose-responsive, faster-acting, easier to use, and more effective.

### Complications Therapies

This area focuses on ways to free people from the devastating long-term complications that can accompany diabetes, including diseases of the eyes, nerves, and kidneys. JDRF is prioritizing research in complications protection, or new approaches to assess risk and block complications from developing and progressing.

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## General Diabetes Facts

### What is Diabetes?

Diabetes is a chronic, debilitating disease affecting every organ system. There are two major types of diabetes: type 1 and type 2. Type 1 diabetes is an autoimmune disease in which a person's pancreas stops producing insulin, a hormone that enables people to get energy from food. Type 1 diabetes usually strikes in childhood, adolescence, or young adulthood, and lasts a lifetime. Just to survive, people with type 1 diabetes 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 24 million Americans have diabetes (7.8 percent of the population):
  - Diagnosed: 17.9 million
  - Undiagnosed: 5.7 million
- As many as three million Americans may have type 1 diabetes.†
- Diabetes currently affects 285 million people worldwide and is expected to affect 435 million by 2030.
- In the U.S., a new case of diabetes is diagnosed every 30 seconds; more than 1.6 million people are diagnosed each year.

### The Cost of Diabetes

- Diabetes is one of the costliest chronic diseases.
- In 2007, diabetes accounted for \$174 billion in health care costs in the U.S.
- Diabetes accounts for 32 percent of all Medicare expenditures.
- The nation spent \$11,744 annually on each person with diabetes in 2007 compared to \$2,935 on each person without diabetes.
- Americans with diabetes incur medical expenses that are approximately 2.3 times higher than those incurred by Americans without diabetes.
- U.S. hospital stays related to diabetes totaled \$58.3 billion in 2007.
- An estimated 22 percent of hospital inpatient days in the U.S. were incurred by people with diabetes in 2007.

### The Harm Caused by Diabetes

*Damage to Many Organ Systems:* Diabetes is the leading cause of kidney failure, adult blindness, and non-traumatic amputations. It is also a leading cause of nerve damage.

*Increased Heart Disease Risk:* People with diabetes are two-to-four times more likely to have a heart attack or stroke than people without the disease.

*Shortened Life:* Diabetes kills one American every three minutes and is the seventh leading cause of death in the U.S. Life expectancy for people with diabetes has historically been shortened by an average of seven to 10 years, and the risk of death for people with diabetes is about double that of people of similar age without diabetes.

† *Type 1 Diabetes, 2004; KRC Research for JDRF, Jan. 2005*

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## Type 1 Diabetes Facts

Type 1 diabetes is an autoimmune disease in which the body's immune system attacks and destroys the insulin-producing cells of the pancreas. While its causes are not yet entirely understood, scientists believe that both genetic factors and environmental triggers are involved.

### Affects Children and Adults

Type 1 diabetes usually strikes children, adolescents, and young adults, but it can be diagnosed in adults as well. It comes on suddenly, causes dependence on injected or pumped insulin for life, and carries the constant threat of devastating complications.

### Needs Constant Attention

To stay alive, people with type 1 diabetes must take multiple insulin injections daily or continually infuse insulin through a pump. They must also test their blood sugar by pricking their fingers for blood six or more times a day. While trying to balance insulin doses with their food intake and daily activities, people with this form of diabetes still must always be prepared for serious hypoglycemic (low blood sugar) and hyperglycemic (high blood sugar) reactions, both of which can be life-limiting and life threatening.

### Not Cured By Insulin

While insulin injections or infusions allow a person with type 1 to stay alive, they do not cure diabetes, nor do they necessarily prevent the possibility of the disease's devastating effects, which may include: kidney failure, blindness, nerve damage, amputations, heart attack, stroke, and pregnancy complications.

### Difficult to Manage

Despite paying rigorous attention to maintaining a meal plan and exercise regimen and always injecting the proper amount of insulin, people with type 1 diabetes face many other factors that can adversely affect efforts to tightly control blood sugar levels. These factors include stress, hormonal changes, periods of growth, physical activity, medications, illness/infection, and fatigue.

### Statistics

- As many as three million Americans may have type 1 diabetes.†
- Each year, more than 15,000 children – 40 per day – are diagnosed with type 1 diabetes in the U.S.

### Warning Signs

Warning signs of type 1 diabetes 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 Type 1 Diabetes?

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.

*"Both children and adults like me who live with type 1 diabetes 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

*"This disease controls our lives with all the pricking of the fingers, shots, high and low blood sugars; it's like being on a seesaw. Without a cure, we will be stuck on this seesaw 'til the day we die."*

— Tre Kawkins, 12, Michigan

*"I never realized how much of my day would be spent dealing with this disease and all of its challenges."*

— Patrick Lacher, 13, Connecticut

*"A cure would give us freedom to carry on a normal life without taking a break to check our blood or have a snack."*

— Asa Kelly, 16, North Carolina

† Type 1 Diabetes, 2004; KRC Research for JDRF, Jan. 2005