A Dream. A Goal. A Promise.

To Defeat Type 1 Diabetes.

UC San Diego
Health Sciences

Pediatric Diabetes
Research Center

The University of California, San Diego's new Pediatric Diabetes Research Center (PDRC) brings together many of the world's most renowned and dedicated research scientists and clinicians, with the goal of developing new therapies to treat, prevent and ultimately cure type 1 diabetes.

UCSD Health Sciences is home to collaborative, cutting-edge research in regenerative medicine, genetics, cellular and molecular medicine, immunology and bioengineering. Physicians from UCSD and Rady Children's Hospital - San Diego currently treat more than 1,000 children with type 1 diabetes every year. By bringing scientists and physicians together in one location, the PDRC can provide the expanded collaboration that is vital to discovery.

Our Mission: The Pediatric Diabetes Research Center at UC San Diego will improve the quality of life for those with childhood diabetes through groundbreaking research in the prevention, treatment and cure of the disease.

Goals of the PDRC

- Conduct basic research aimed at stopping or reversing the autoimmune response that causes diabetes, and produce cell-based therapies to successfully treat the disease
- Develop advanced technologies and therapies that enhance glucose control in patients with diabetes
- Initiate clinical research trials to translate the most innovative therapeutic discoveries from the research bench to patient care

Steps to Enable Success

- Build a state-of-the-art pediatric diabetes facility to house diabetes research scientists and clinicians under one roof
- Recruit highly talented and innovative researchers at junior and senior career levels, as well as dedicated technical and administrative support staff
- Obtain cutting-edge laboratory equipment to accelerate diabetes research
- Secure funding and research grants from the National Institutes of Health, the Juvenile Diabetes Research Foundation, the American Diabetes Association, the California Institute for Regenerative Medicine, other private and/or public foundations and corporations, as well as private individuals

"The creativity and synergy that result from integrating clinical care and research from several disciplines under one roof cannot be overstated. This collaborative approach offers the most promising way to successfully fight this devastating disease."

Gabriel Haddad, MD, Chair of the UCSD Department of Pediatrics and Interim PDRC Director

"A diagnosis of type 1 diabetes is overwhelming for a family. Suddenly, each day revolves around finger sticks, insulin administration and strict dietary restrictions. School, sports, field trips, sleepovers, birthday parties – all are impacted by the need for intensive glucose monitoring and control.

"I know. I've had type 1 diabetes for 50 years.

"Until this disease is cured, everyone affected by it will continue to suffer. That's why I am an active partner in the UC San Diego Pediatric Diabetes Research Center – and why I urge you to join us."

— David Winkler

Diabetes Care at UCSD

Diabetes care spans all age groups and affects all family members. Therefore, a comprehensive and integrated program that revolves around not only the child, but the entire family, is required to effectively treat the disease.

The standard of care provided by the UCSD Pediatric Endocrinology Division involves not only physicians, but nurse specialists, dietitians, certified diabetes educators and social workers. Presently, more than 1,000 children with diabetes from a tri-county area are cared for through UCSD's pediatric diabetes service at Rady Children's Hospital. Of these, 85 percent have type 1 diabetes – a number that continues to increase substantially each year.

Uniting the clinical care team with researchers will strengthen ties between patients, physicians and scientists. Clinical trials will be facilitated – enabling us to bring discoveries to patients more quickly. A new PDRC facility will also offer an important psychological and emotional lift for patients and their families. They will not only receive the most advanced care for diabetes at the center, but here they will also see researchers who are working to cure their disease.

"The first question often asked by newly diagnosed patients and families is 'When will there be a cure?' Please partner with us to bring that day closer."

— Michael Gottschalk, MD, PhD
Chief, Division of Endocrinology,
UCSD Department of Pediatrics

Type 1 diabetes accounts for five to 10 percent of diagnosed cases of diabetes, but the risk of developing type 1 diabetes is higher than virtually all other severe, chronic diseases of childhood.

Research at the PDRC

Diabetes is a disease in which the body's failure to regulate glucose, or blood sugar, leads to serious and even fatal complications. While the defining feature of diabetes is elevated blood glucose, the underlying cause for abnormal glucose levels seems to vary from person to person. By understanding how signals from the immune system, the brain or the digestive tract might affect glucose regulation, researchers hope to one day develop personalized therapies – providing optimal, individualized care for each person.

New research is vastly changing scientists' understanding of the cause of type 1 diabetes and how to treat it. One therapeutic approach for type 1 diabetes is to disrupt the destruction of insulin-producing beta cells in the pancreas by the body's immune system. Insulin is the hormone that allows glucose to enter the cells of the body to provide energy. When glucose cannot enter cells, it remains in the blood, building to higher levels – while the body's cells are starved for energy.

UCSD scientists are studying how insulin secretion is controlled at the molecular level, and the cellular events that cause the initial damage to islets resulting in diabetes. For instance, one researcher has identified some of the earliest signals that initiate beta cell death. Understanding these mechanisms may be critical to preventing the disease.

Promising treatment for diabetes includes pancreatic islet transplantation, where cells taken from a donor pancreas are transplanted into the patient so that new islets begin to make and release insulin. One PDRC researcher is assessing the potential clinical use of stem-cell derived "super nurse" cells, which have been shown to promote the survival and function of beta cells and to give immune protection to transplanted islets.

However, the ultimate goal is to develop a cell-based therapy for type 1 diabetes. One exciting avenue of diabetes research focuses on the formation or re-generation of beta cells from stem cells, an approach that may one day provide a new cell therapy to treat or cure the disease.

The lab of PDRC co-director Alberto Hayek, MD, was the first to reproduce human islet cells *in vitro*, and he is currently studying how human embryonic stem cells give rise to insulin-producing cells.

Scientists at the PDRC are also working to identify stem cells in adult tissues that could potentially replace the beta cells that are lost in diabetes. All of these studies aim to identify strategies by which to generate new insulin-producing cells for treatment of diabetes.

These are just some of the promising new directions in type 1 diabetes research. Your support is needed now to enable these investigations to lead to better treatments and a cure for the disease.

"Our goal is to become the top clinical and research center for pediatric diabetes in the United States. I am confident that we can achieve this."

— Alberto Hayek, MD,
Professor of Pediatrics and
PDRC Co-director

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Invest in a Cure

The annual cost of managing diabetes and its complications is estimated at more than $130 billion in the U.S. alone. Your donation will be an investment in a future in which these costs – and the human toll that diabetes takes on patients and their families each and every day – are a thing of the past.

"We are grateful for the generous gifts to the PDRC and hope to welcome you into this network of caring people who are truly making a difference."

— Gabriel Haddad, MD,
Chair of the UCSD
Department of Pediatrics and
Interim PDRC Director

Through expanded basic and clinical research, and education of both patients and future researchers, the fight to defeat type 1 diabetes can be won. By providing nutritional counseling, health screenings, improved glucose monitoring and better insulin management, the PDRC will greatly enhance the lives of those with type 1 diabetes until our goals are achieved.

There are many ways to contribute and many research projects to support. Please join our extraordinary effort.

For information on making a gift, please call (619) 543-3473.

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