City of Hope

Leading the Fight Against Diabetes

World-Class Expertise at City of Hope

The rapid pace at which cases of diabetes are rising is a threat to the health of our nation and the world. In just the past decade, new diabetes cases across the globe have doubled. More than 460 million people worldwide now live with the disease, many requiring lifelong insulin treatment. In addition to being the leading cause of blindness, kidney failure and non-traumatic limb amputations, diabetes shortens lives by an average of at least 10 years. Current estimates show that annual diabetes-related costs in the United States are more than $330 billion, while between 30% and 40% of the U.S. population is prediabetic.

The Intersection of Diabetes and Cancer

People with diabetes have an increased risk of getting cancer. And for those already fighting cancer, an unfortunate side effect can be the onset of diabetes. City of Hope is one of the premier research institutions for both cancer and diabetes, and our scientists are actively investigating the intersections of the two diseases. Our **Arthur Riggs Diabetes & Metabolism Research Institute** is one of the world's foremost scientific organizations dedicated to investigating the biology of diabetes, its many interactions with cancer and its potential treatments. The Institute's scientists are deeply knowledgeable of the many ways that diabetes can spur the development of cancer, as well as how multiple cancers and their treatments can trigger new cases of diabetes. Our diabetes specialists frequently leverage City of Hope's cancer-driven expertise in immunotherapies and other leading-edge treatments to generate new approaches to combatting diabetes.

Our Leadership in Diabetes Research

City of Hope has been at the forefront of diabetes research for more than half a century. Our scientists have revolutionized the understanding and treatment of diabetes through many historic breakthroughs:

- Renowned City of Hope researcher Arthur Riggs, PhD, helped create synthetic human insulin, now relied upon by millions of patients with diabetes around the world.
- Our researchers identified HbA1c as a marker of blood glucose control, which remains the gold standard used by physicians around the world to help diabetes patients monitor and manage their blood sugar levels.
- City of Hope's Riggs Institute led the world's first islet cell transplantation, a breakthrough in diabetes treatment that we continue to successfully build upon.

Philanthropy has helped drive some of our most exciting advances in diabetes research. Gifts in support of diabetes efforts at City of Hope can help us accelerate medical discoveries, develop new therapies and attract the brightest minds in the field. We invite you to join us in finding advanced treatments and novel cures. *Explore opportunities on page 6.*

A Dedicated Team of Diabetes Experts

"At the Arthur Riggs Diabetes & Metabolism Research Institute, our singular priority is accelerating high-value, timely research. We are uniquely positioned to succeed, thanks to our world-class scientific team and our passionate philanthropic partners who share our vision of a future free of diabetes."

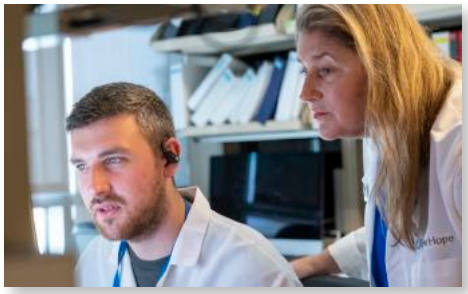
Debbie C. Thurmond, PhD, Director, Arthur Riggs Diabetes & Metabolism Research Institute; Chan Soon-Shiong Shapiro Distinguished Chair in Diabetes; Professor, Department of Molecular & Cellular Endocrinology

Riggs Institute Director: Debbie C. Thurmond, PhD

Debbie Thurmond, PhD, is a renowned research scientist who joined City of Hope's Riggs Institute as professor and founding chair of our Department of Molecular and Cellular Endocrinology.

Today, Dr. Thurmond proudly leads the Riggs Institute and oversees its many impactful diabetes initiatives and treatments. She also has numerous collaborative relationships with City of Hope's cancer researchers, on areas including the intersection of cancer and diabetes and the refinement of immunotherapies for diabetes that hold powerful insights for cancer treatments. Her research is supported by the National Institutes of Health, JDRF and the American Heart Association.

In addition to her work at City of Hope, Dr. Thurmond serves on multiple editorial boards, international grant review panels and as Associate Editor for *Diabetologia*.



Reversing Type 2 Diabetes

Dr. Thurmond is the world's foremost authority on the STX4 protein, which is often damaged in type 2 diabetes patients. In work that has garnered substantial awards, Dr. Thurmond and her researchers showed that delivering undamaged STX4 successfully reversed pre-type 2 diabetes in animal models. She is currently testing a novel drug therapy that can repair damaged STX4 in humans.

Expanding Diabetes Care to More Patients

In light of a growing diabetes patient population that currently numbers more than 1,700 individuals per year, City of Hope has recently opened a new and expansive **Diabetes and Endocrinology Clinic** on its Los Angeles campus. The clinic employs a multidisciplinary team of specialists devoted to delivering leading-edge treatments for all forms of diabetes.

Taking full advantage of their new home and its state-of-the-art equipment, the program's physicians, nurses, pharmacists and clinical specialists provide patients with many different treatments and services, ranging from comprehensive diabetes education to providing patients with AI-guided insulin pumps that continuously monitor and regulate their body's blood sugar levels by automatically providing glucose.

Working closely with the Riggs Institute's exceptional research scientists, the clinic's medical team also guide patients through a variety of innovative clinical trials seeking breakthrough cures for diabetes.

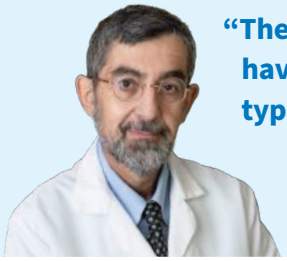
Leading the Wanek Family Project for Type 1 Diabetes: Alberto Pugliese, MD

Launched in 2017 through a transformational gift from the Wanek family, **the Wanek Family Project for Type 1 Diabetes has achieved breakthroughs that have changed the course of type 1 diabetes (T1D) research**. Led by project director **Alberto Pugliese, MD**, our scientists have rapidly developed therapeutics to address T1D at different stages of the disease, which work by controlling the immune system's response to the disease, restoring the body's capacity to produce insulin and advancing combination therapies to address both of these issues simultaneously.

Dr. Pugliese

Dr. Pugliese brings more than 35 years studying type 1 diabetes (T1D) to his leadership role in the project, having provided seminal contributions in the fields of T1D genetics, immunology and pathology. He has served as both Chair of the American Diabetes Association's Grant Review Panel and Executive Co-director of the JDRF Network for Pancreatic Organ Donors with Diabetes.

While moving multiple high-potential research projects into clinical trials, Dr. Pugliese and his Wanek scientists have published **550+ peer-reviewed articles** and significantly advanced knowledge of T1D and its associated complications, all in pursuit of one ambition: curing type 1 diabetes.



"The unmatched confluence of opportunity the Wanek Family Project and City of Hope have created is what drew me to this team and what will advance science to a cure for type 1 diabetes more rapidly and more effectively."

Alberto Pugliese, MD, Samuel Rahbar Endowed Chair in Diabetes & Drug Discovery; Chair of the Department of Diabetes Immunology; Director of The Wanek Family Project for Type 1 Diabetes

Speed to Cure: Accelerating Groundbreaking Research

City of Hope is a world leader in the research, treatment and prevention of diabetes.

Our mission is to deliver the cures of tomorrow to the people who need them today. City of Hope's translational research and personalized treatment protocols advance care throughout the world. Our Los Angeles campus has **three manufacturing facilities** that can produce both biologic and chemical compounds in accordance with the FDA's strict standards. This extraordinary capacity enables our scientists to quickly prototype, test and refine new drugs and biologic therapies right on campus, without having to navigate the delays of partnering with pharmaceutical manufacturers for early testing.

With transformative philanthropy fueling their efforts, the Riggs Institute's exceptional scientific faculty are pioneering multiple leading-edge research projects in pursuit of breakthrough therapies for diabetes, as the following examples illustrate:

Regulating the Immune System to Protect Insulin-Producing Beta Cells

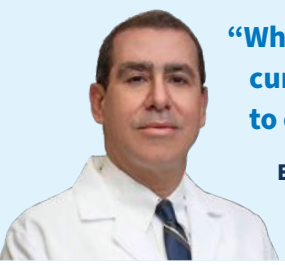
Alberto Pugliese, MD, is advancing a highly promising therapy for type 1 diabetes (T1D). Using a novel combination of low dose thymoglobulin and interleukin-2, Dr. Pugliese and his research team are crafting a therapy that will adjust T1D patients' overactive immune system to keep it from attacking the beta cells that allow the body to produce insulin.

Dr. Pugliese is moving forward with human clinical trials of this novel medical therapy, using six leading clinical sites across the country and an international team of investigators. With proper refinement, he and his collaborators believe this treatment could be a potential cure for T1D.

Modifying T Cells to Make a Game-Changing Difference for Type 1 Diabetes Patients

The immune system's T cells help shield us from disease, attacking viruses and other infections. T1D, however, damages the immune system and causes its T cells to disrupt the body's attempts to make insulin. **Enrique Montero, MD, PhD**, is leading research efforts to alter T cells with proteins called chimeric antigen receptors (CARs) in order to restore balance to the immune systems of T1D patients, so that these patients can once again make their own insulin.

City of Hope is a leader in using CAR T cell therapy to treat cancer, and this new CAR T technique could potentially be just as meaningful in liberating patients from T1D. Dr. Montero and his team are poised to begin human clinical trials testing their new CAR T cell therapy against T1D as well as graft-versus-host disease — a complication of transplants with which T1D patients often struggle. The success of this treatment would produce immense benefits for T1D patients and, potentially, those suffering from other diseases as well.



"What makes City of Hope unique is not only the innovative work we are doing to advance a cure for diabetes, it is also the speed at which we can go from discovery to drug development to clinical trials, swiftly making a real difference in patients' lives."

Enrique Montero, MD, PhD, Research Professor, Arthur Riggs Diabetes & Metabolism Research Institute Wanek Family Project for Type 1 Diabetes

Dr. Garcia Ocaña

Spurring Beta Cell Growth through a Harmine-Based Drug Therapy

Adolfo Garcia Ocaña, PhD, is leading colleagues at the Wanek Family Project for Type 1 Diabetes in creating a drug therapy derived from harmine, a natural product found in plants. They have successfully proven their new drug's ability to spur the growth of insulin-producing human beta cells in mice. Dr. Garcia-Ocaña recently published a paper on this groundbreaking development in the peer-reviewed journal *Science Translational Medicine*.

This novel therapy has the potential to be a breakthrough treatment for T1D, enabling diabetic patients to self-generate the insulin-producing cells that the disease destroys. The medication is currently the most advanced therapeutic of its kind in development, and Dr. Garcia-Ocaña and his team look forward to testing it in human clinical trials soon.

About City of Hope

City of Hope was founded in 1913 by a community of volunteers and donors committed to providing care and dignity to those in need. Over time, a national philanthropic movement helped City of Hope grow into one of the leading research centers for diabetes and one of the largest cancer research and treatment organizations in the U.S. With a National Cancer Institute-designated comprehensive cancer center at its core, City of Hope brings a uniquely integrated model to patients, spanning cancer care, research and development, academics and training, and innovation initiatives.

Bringing Leading-Edge Treatments to Patients Across the Nation

With a goal of extending access to the latest discoveries and research breakthroughs to more patients, families and communities, City of Hope has grown into a national system. In addition to our flagship campus in Duarte, our network comprises clinical care locations across Southern California, a new health center in Orange County, California, and treatment facilities in Atlanta, Chicago and Phoenix.

The organization's 11,000 employees serve approximately 150,000 patients each year across the nation, while conducting more than 800 clinical trials to create novel medical treatments. Compassion remains at the heart of our approach, and **we are committed to helping our patients enjoy full and rewarding lives during and after their treatment journey**.

Fighting Diabetes: Ways You Can Help

Your support can accelerate our breakthrough research, speeding innovative therapies from the laboratory to patients' bedsides, and empower scientists to find the next life-saving treatment.

There are many ways you can support diabetes research and care:

- **Accelerator Funds**
  These flexible funds provide immediate support for high-potential diabetes research. Your gift can help ensure our faculty leaders can obtain the personnel and resources needed to conduct early-stage research to build proofs of concept, advance potentially lifesaving new treatments through development and testing, and accelerate clinical trials that can transform care.

- **Faculty Chairs and Professorships**
  These endowed positions honor and support our world-class physicians, scientists and executive leaders. Establishing an endowment will help City of Hope attract and retain bold and accomplished experts, while providing them with critical resources to advance innovative research and elevate the standard of care in diabetes.

- **Clinical, Postdoctoral and Nursing Fellowships**
  Endowed fellowships enable us to shape the next generation of diabetes researchers and care providers. Your gift will help City of Hope mentor exceptional trainees, allowing our experts to pass on knowledge and techniques — ultimately, building a healthier future for all.

"Philanthropy is a cornerstone of City of Hope and a critical tool in our ability to care for our patients and their families through innovations in access, research and care. An investment today will lead to innumerable lives saved long into the future."

Kristin Bertell, Chief Philanthropy Officer at City of Hope

City of Hope®