Sinai Health Foundation

Breakthrough research and
life-changing treatments, powered by you

Sinai Health has long been recognized as a world leader in diabetes care and research. Not only does Sinai Health hold the number-one spot in the world in high-impact diabetes research, but thanks in large part to donor generosity, it is also the global front-runner for diabetes research and discovery.

This year marks an important milestone in diabetes research. The discovery of insulin in Toronto 100 years ago stopped a diabetes diagnosis from being a death sentence. Today, individuals living with diabetes can lead full and active lives, however the disease still presents high risk of serious complications such as such as blindness, heart attack, stroke and kidney failure. Thanks to donors like you, Sinai Health — located in the heart of Toronto — is positioned to advance and revolutionize diabetes research and clinical care for the next 100 years. As Mount Sinai Hospital nears its 100th anniversary in 2023, we're proud to play a leading role in this new era of diabetes discovery.

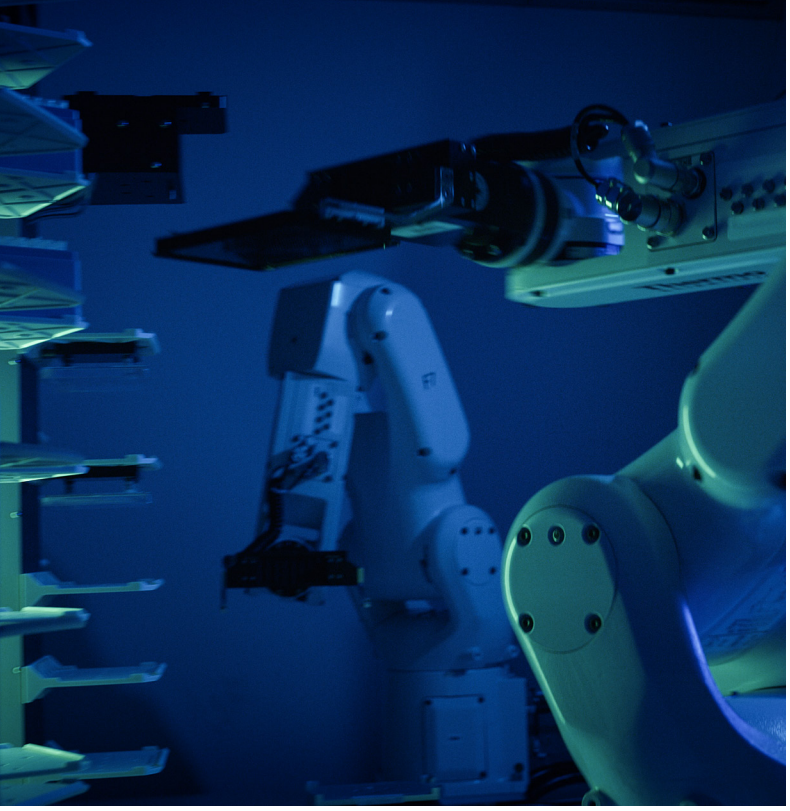
Donor support has enabled Sinai Health's fundamental and translational scientists to play a lead role in a new series of game-changing discoveries offering renewed hope for patients and their families around the world.

Spotlight: Dr. Bruce Perkins, Director, Leadership Sinai Centre for Diabetes

> “It’s important to me that patients understand that their diabetes care team and I are committed to helping them lead a life that is as adventurous, as creative, as inspiring and as wonderfully challenging as their parallel life without diabetes.”
>
> Dr. Bruce Perkins

Sinai Health patients with type 1 diabetes find an empathetic ear in clinician-scientist Dr. Bruce Perkins, who was diagnosed with the illness at age 18. Now director of the Leadership Sinai Centre for Diabetes, Dr. Perkins has dedicated his career to reducing complications and improving lives for people living with type 1 diabetes.

That dedication inspired Dr. Perkins to establish the *Canadian Study of Longevity in Type 1 Diabetes*, which is a deep dive into the physiology of people who have been living with type 1 diabetes for more than 50 years, providing insights into why some patients develop complications (kidney failure, heart disease, blindness) and some do not. This ongoing work has led to further research into possible treatments.



The Leadership Sinai Centre for Diabetes

Fuelled by donor support, the centre is made up of endocrinologists, diabetes nurses and allied health professionals, dietitian educators and a psychiatrist who work closely to support and educate patients with diabetes.

Team members have expertise on the newest therapies and technologies (and often are conducting research to evaluate effectiveness and/or develop their own interventions), and take pride in being able to offer patients an individualized approach to managing diabetes.

Members of this expert team are leaders at a national and international level in:

- education programs on self-management for patients
- continuing medical education for physicians and other healthcare practitioners
- clinical research
- discovery research

In other research, Dr. Perkins has been exploring the potential of corneal scans for early diagnosis of nerve damage in those with diabetes. This work could lead to resolving current problems with screening for nerve damage and allow eye specialists to efficiently screen for eye and nerve complications at the same time.

Finally, Dr. Perkins continues to evaluate supplemental medications for the management of type 1 diabetes and artificial pancreas technologies. **At the current time, he is seeking young adults (aged 18-25) with a new diagnosis of type 1 diabetes within the past 3 months to test an immune therapy meant to protect insulin-producing cells.**

Your Impact on: Diabetes and Technology

Thanks in large part to donors like you, Sinai Health has made substantial advances in care for the management of type 1 diabetes through technology.

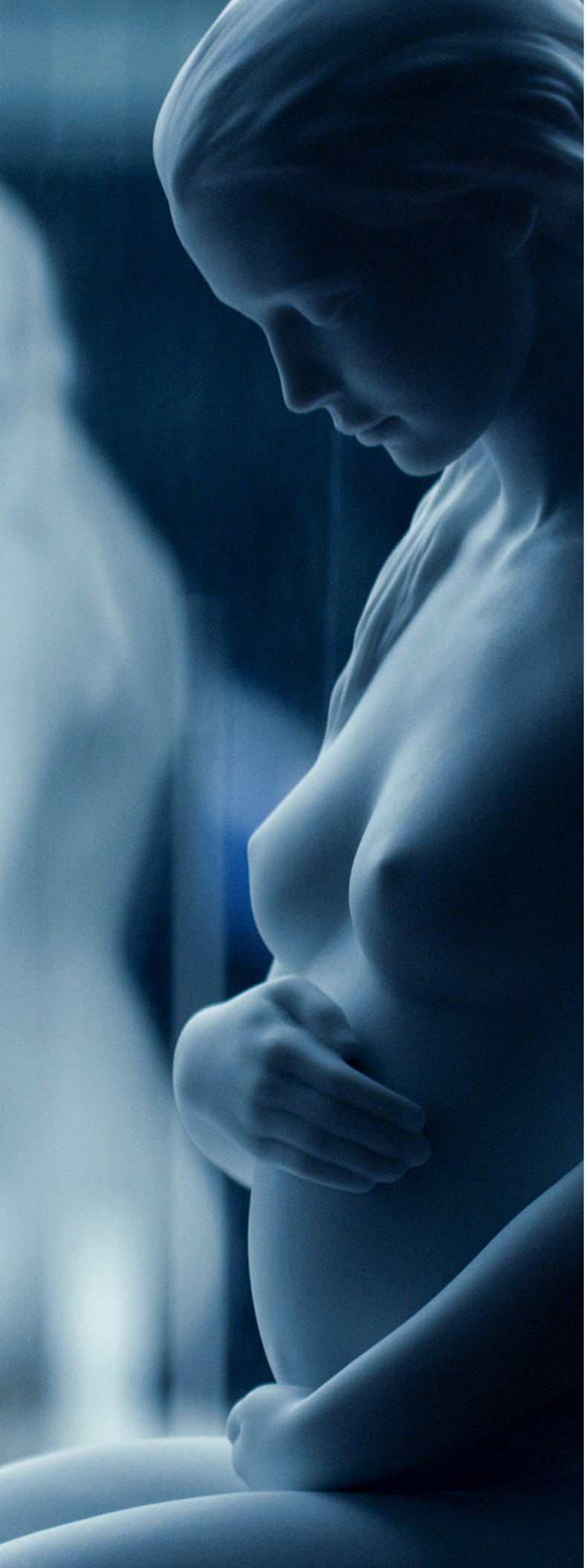
For example, one area of focus is in developing an advanced artificial pancreas. Dr. Bruce Perkins is currently collaborating with scientists at McGill University to develop a leading-edge artificial pancreas. The team has developed algorithms that use automated insulin delivery either on its own, or combined with the anti-insulin hormone glucagon or add-on drugs for blood sugar management. This system continually monitors the wearer's blood glucose levels and delivers insulin and hormones to maintain ideal levels.

Spotlight: Dr. Denice Feig, Head of Sinai Health's Diabetes in Pregnancy Program

> "I think the best part is that I feel like we've had an impact in our practice and in the care of women."
>
> Dr. Denice Feig

As a global leader in the advancement of women's and infants' health, Sinai Health is home to the only specialized pregnancy and diabetes program in Ontario. A leading voice in improving outcomes for women with diabetes during pregnancy is Dr. Denice Feig. With a practice that includes pregnant women with gestational diabetes, plus those living with type 1 or 2 diabetes during pregnancy, Dr. Feig's work has led to changes in the standards of clinical practice for diabetes during pregnancy.

Donor support for diabetes research has enabled Dr. Feig to further her research in different areas, including looking at time spent in the glucose range among women with type 2 diabetes in pregnancy, and assessing outcomes for both mom and baby.



Another area of focus includes evaluating insulin resistance and deficiency in women with type 2 diabetes during pregnancy by categorizing them by phenotype (a person's observable traits, such as height, eye colour and blood type). By researching outcomes for mother and baby based on phenotypes, Dr. Feig's work could provide a foundation for offering personalized medicine.

Your Impact on: Diabetes and Pregnancy

Sinai Health is a leader not only in managing gestational diabetes but also in the care and research of type 1 and type 2 diabetes during pregnancy.

Dr. Denice Feig is a global leader in trials investigating strategies to manage diabetes during pregnancy, including seminal work on the use of Metformin (a first-line medication for the treatment of type 2 diabetes) in pregnant women. According to Dr. Feig, women with type 2 diabetes are often on Metformin prior to pregnancy, but once pregnant there is little information to advise them on continued use of the drug. Her research aims to help further guide their decision.

Dr. Feig's team found adding Metformin to insulin was associated with the following benefits:

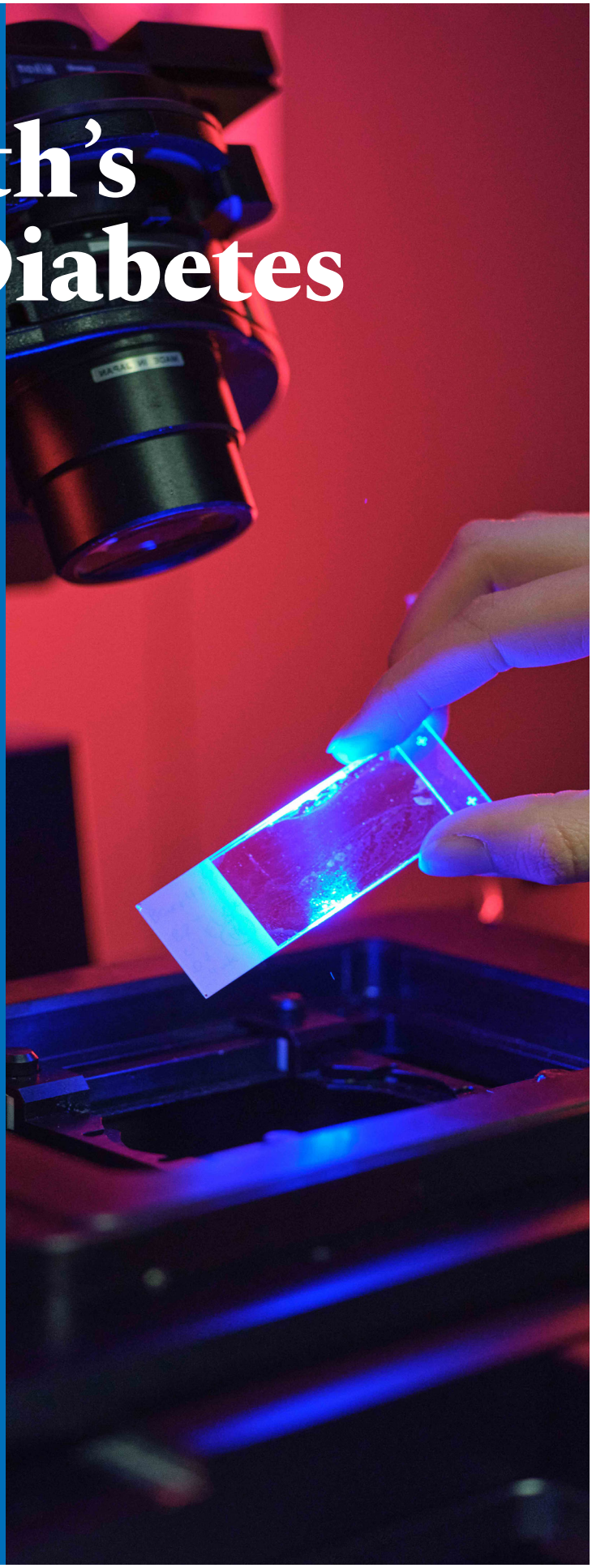
- Women on Metformin gained less weight.
- They required on average 45 units less insulin per day.
- They had better glycemic control and fewer babies were large for gestational age.

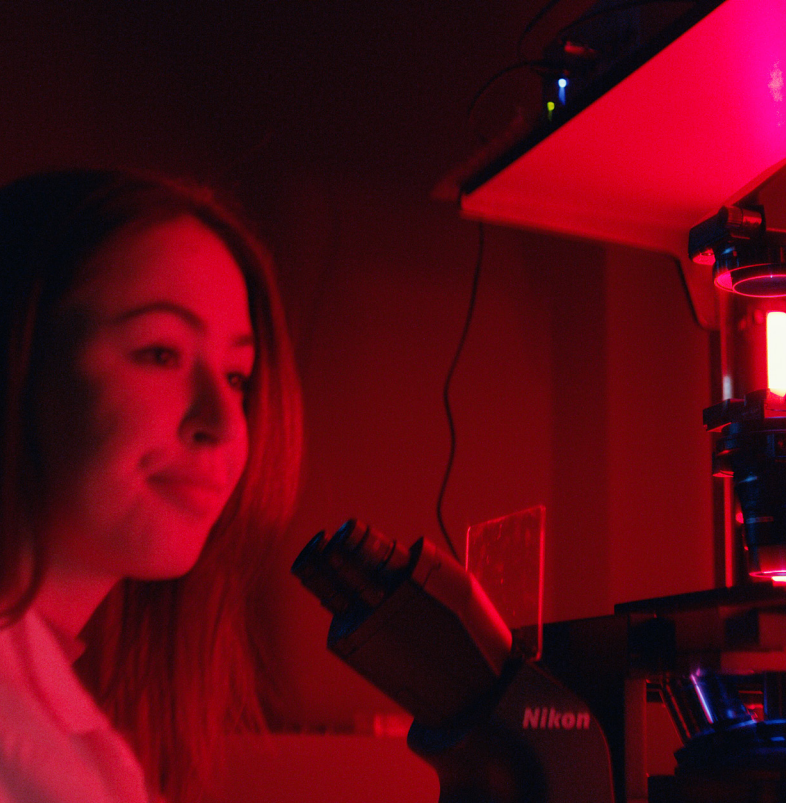
In another trial, Dr. Feig's team looked at whether continuous glucose monitors (CGMs) worn during pregnancy improve outcomes for women with type 1 diabetes. The study results have led many countries to cover the cost of CGMs during pregnancy. The team found the use of CGM was associated with improved neonatal outcomes, including:

- less neonatal hypoglycemia
- fewer large babies
- fewer NICU admissions

Sinai Health's Giants of Diabetes Research

Sinai Health's distinction as a global destination for innovative clinical and discovery research in diabetes rests largely on the shoulders of two internationally renowned researchers: Dr. Daniel Drucker and Dr. Bernard Zinman. Throughout their distinguished careers, Drs. Drucker and Zinman have attracted highly talented junior and mid-career clinician-scientists to Sinai Health, allowing us to continue building on the foundation set by these two pioneers.





You have helped us make a difference

In the area of **type 1 diabetes**, donor support has helped enable Sinai Health's physician-scientists to become leaders in:

- studies on the artificial pancreas.
- the use of non-insulin medications to help with blood glucose control.
- the prediction and prevention of long-term complications of diabetes.
- health services research that evaluates outcomes in type 1 diabetes patients, with a goal of using this information to develop novel interventions.

In the area of **type 2 diabetes**, donor support has helped enable Sinai Health researchers to transform care for people living with diabetes by:

- discovering new drug classes.
- identifying glucose-lowering medications that protect the heart and prolong life.
- identifying novel strategies that aim to put type 2 diabetes into remission.

Dr. Daniel Drucker, senior investigator, Lunenfeld-Tanenbaum Research Institute

- Fundamental research on gut hormones almost single-handedly led to the development of two new classes of drugs for diabetes, improving patient care worldwide.
- 2021 recipient of the Canada Gairdner International Award, one of the most prestigious international prizes in the biosciences
- 2021 inductee to the Canadian Medical Hall of Fame

Dr. Bernard Zinman, endocrinologist, Lunenfeld-Tanenbaum Research Institute

- Co-led the Diabetes Control and Complications Trial (DCCT), the largest and most comprehensive type 1 diabetes complications study ever conducted, proving tightly controlling blood sugars through intensive insulin therapy could prevent life-threatening complications, forever changing the standard of care worldwide.
- Led trial on medication Empagliflozin, which showed a remarkable 38 per cent reduction in the risk of death from cardiovascular causes among type 2 diabetes patients. Empagliflozin is the first and only diabetes drug on the market today that reduces the risk of death from diabetes-associated heart failure.

Dr. Ravi Retnakaran, endocrinologist, Lunenfeld-Tanenbaum Research Institute

- Co-led a study demonstrating that women with gestational diabetes have a two-fold higher risk of major cardiovascular events than their peers.
- Findings of this work demonstrated a screening test already being performed in clinic is capable of identifying future risk of cardiovascular complications in women at an early point in the disease's development.

Dr. Caroline Kramer, endocrinologist, Lunenfeld-Tanenbaum Research Institute

- Has worked on clinical studies aimed at understanding the interaction of obesity with metabolic disease and the role of novel medications in the treatment of type 2 diabetes.
- Part of a new trial on intermittent fasting in individuals living with type 2 diabetes.

The Next 100 Years

Sinai Health has developed a vision for a Centre of Excellence in Diabetes to advance and revolutionize diabetes research and clinical care for future generations.

Our vision rests on two main pillars:

1. To advance the prevention and treatment of diabetes by growing our discovery research program, expanding clinical trials and cohort studies, and translating findings into better patient care. Major areas of focus will include pregnancy and diabetes, and advancing care through technology, such as the "artificial pancreas".
2. To establish a pre-eminent Education Institute for Diabetes, serving as the world's leading educational destination for health professionals and people with diabetes.

With the expansion of our clinical, education and research teams, Sinai Health aims to begin this next 100 years armed with even greater knowledge to transform the lives of people with diabetes.

We rely on donors like you to bring our vision to life. Together we'll shape a new future of care.

Sinai Health Foundation

For more information, please contact:

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