



2023
IMPACT
REPORT

Fleischer
Institute for
Diabetes and
Metabolism



REDEFINING THE DEFINING DISEASE OF THE CENTURY

New Hope for a Global Health Crisis



"THROUGH CLINICAL CARE AND TRANSDISCIPLINARY RESEARCH, THE FLEISCHER INSTITUTE IS REDEFINING THE DEFINING DISEASE OF THE CENTURY."

— Jill P. Crandall, MD

We established the Fleischer Institute for Diabetes and Metabolism in 2018 to provide Montefiore physicians and Einstein scientists a place to come together and capitalize on their unique expertise; to build a central hub for bold, transdisciplinary research; and to fill the void of a comprehensive clinical center in the Bronx. Today, the Institute is more than living up to its promise and the legacy of the man for whom it was named.

This past year alone brought with it several remarkable achievements. Clinically, we recruited a top specialist in obesity medicine to lead our new Medical Weight Management Center, which is providing long-term, team-based approaches to help underrepresented communities living with type 2 diabetes (T2D) and obesity. Meanwhile, two groups of investigators are pursuing closely related strategies to prevent the immune system's attack on the pancreas in type 1 diabetes (T1D). Their complementary work has achieved promising results in the lab that may soon lead to more effective treatments—or even a cure.

Despite these and many other advances detailed in this report, the larger threat posed by diabetes remains largely unchanged from five years ago. Our local Bronx population continues to have some of the highest burdens of obesity and diabetes in the country. Globally, the disease is growing exponentially. And, as a landmark paper co-authored this year by the Institute's Shivani Agarwal, MD, MPH, warned, diabetes will be one of the defining diseases of the 21st century.

As it marches forward, however, we intend to keep pace.

Philanthropic support makes a difference by making some of our most impactful programs possible. So, on behalf of all of us here, working to ensure the health of people everywhere, we are grateful for your partnership and hope to build on it in the year to come.



Jill P. Crandall, MD

Professor, Department of Medicine (Endocrinology)
Anita and Jack Saltz Chair in Diabetes Research
Chief, Division of Endocrinology
Director, Fleischer Institute for Diabetes & Metabolism
*Albert Einstein College of Medicine
Montefiore Medical Center*

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CLINICAL CARE

In 2023, *U.S. News & World Report* once again ranked Montefiore Einstein among the top 1 percent of U.S. hospitals for endocrinology, providing superlative diabetes treatment and support to 4,000 individuals annually in both inpatient and outpatient settings. Through community-based programs, a new weight management center, and advances in remote patient monitoring, we are reaching more people in more ways than ever before.

NEW WEIGHT MANAGEMENT PROGRAM TO IMPROVE METABOLIC HEALTH

More than half of adults in New York City suffer from overweight or obesity. The prevalence of both is highest in the Bronx. To address the need for local support, we recruited Sriram Machineni, MD, an international leader in the field, to lead our new Medical Weight Management Center. Our strategy is unique among our peers: Rather than provide short-term—and often very expensive—solutions that rarely work for a disease that requires lifelong management, the Center employs an individualized and multidisciplinary approach, which includes scientifically validated and culturally relevant dietary plans, individual and group mental health support, medication modifications, and referrals for bariatric surgical procedures. The Center is also heavily engaged in educational programs for medical students, residents, and fellows, and serves as a research hub for understanding the mechanisms of body weight regulation and the pathophysiology of obesity.



"WE DON'T WANT PEOPLE TO THINK OF US AS A WEIGHT-LOSS CENTER BECAUSE THIS IS MUCH MORE THAN WEIGHT. IT'S ABOUT MANAGING OVERALL HEALTH. WEIGHT IS ONE PART OF THAT"

— Sriram Machineni, MD



RAISING AWARENESS, SUPPORTING PREVENTION, AND ENSURING BETTER MANAGEMENT

Montefiore Einstein's deep commitment to treating all populations with diabetes extends to raising awareness, supporting prevention, and ensuring better disease management. We proudly joined the American Diabetes Association in November to host a series of more than 30 events designed to educate and support people of all ages with diabetes, including nutrition workshops, screening events, and a diabetic foot ulcer expo. For those with prediabetes, we offered National Diabetes Prevention Program classes in which trained facilitators teach patients about healthy eating and cooking, exercise, stress management, sleep, social support, and more.



Staff and volunteers from a recent Project Bravo outreach. Project Bravo is a community-based, hospital-driven initiative designed to combat food insecurity for high-risk families in the Bronx.



A PILOT PROGRAM FOR REMOTE PATIENT MONITORING

Mortality rates from diabetes have been declining over the past decade, but not for everyone. Despite advances in treatment, many of our patients still do not achieve the level of blood sugar control needed to prevent serious complications. Thanks to a \$500,000 gift, the Institute will begin piloting a community health Remote Patient Monitoring program. With this approach, patient data from a continuous glucose monitor (CGM) is automatically uploaded to a secure portal, enabling a dedicated care coordination team to make quicker and more accurate treatment decisions. If successful, this initiative could have a substantial impact on population health by reducing diabetes treatment inertia and more rapidly, successfully, and safely assisting patients in reaching their glucose treatment goal.



TRANSDISCIPLINARY RESEARCH

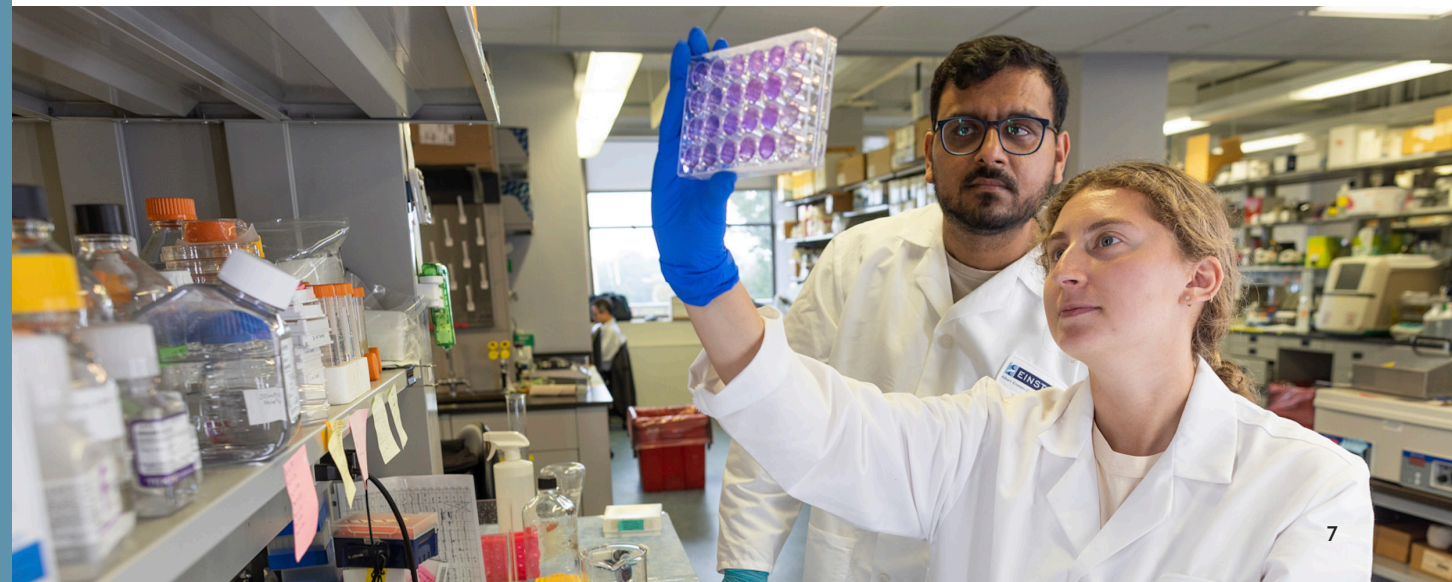
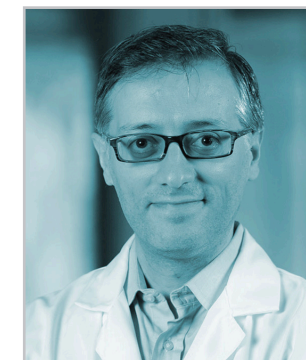
In the past year, the Institute and its investigators received tens of millions in NIH funding, foundation grants, and philanthropic support to conduct an extraordinary range of studies focused on combination drug therapy for T2D, the role of racial-ethnic disparities in prescribing CGMs, the underlying causes of diabetes in adolescents, and more. These investigations, published in high-impact, peer-reviewed journals, have once again positioned the Institute as a major center for diabetes research and as a thought leader in the field.

INVESTIGATIONS WITH IMPORTANT IMPLICATIONS FOR THE TREATMENT OF T2D

Dr. Crandall co-authored a paper published in *The New England Journal of Medicine* comparing four drugs commonly used to treat T2D. The large, NIH-funded, multicenter trial on which the paper was based—"Glycemia Reduction Approaches in Diabetes: Comparative Effectiveness (GRADE) Study"—found that all four medications, when added to metformin, another

glucose-lowering treatment, helped maintain optimal blood sugar levels. Dr. Crandall served as the site principal investigator (PI) of the study, which the Clinical Research Forum named one of 2023's Top 10 Clinical Research Achievements. The findings are expected to heavily influence the decisions physicians make to help manage the disease and improve blood glucose control.

In another study that appeared in *Hypertension*, Gaetano Santulli, MD, PhD, demonstrated that the glucose-lowering diabetes drug empagliflozin (Jardiance) significantly boosts cognitive function and physical impairment in frail elderly patients with diabetes.



STOPPING DESTRUCTIVE CELLS IN THEIR TRACKS

To protect insulin-producing cells, Steven C. Almo, PhD, and Teresa DiLorenzo, PhD, are attempting to eliminate harmful CD8 cells or limit their effectiveness through a technology called Immuno-STAT, which selectively suppresses their activity. Cue Biopharma, a company co-founded by Dr. Almo, is developing the technology and testing it in clinical trials for cancer treatment. This therapy could also be used to prevent the genetic expression of misprogrammed immune system cells—the first step in the development of T1D. If successful, the approach could be paired with other breakthroughs on the horizon, such as transplantable insulin-producing cells, to treat those with advanced T1D.



Teresa DiLorenzo, PhD
and Steven C. Almo, PhD



UNCOVERING THE UNDERLYING CAUSES OF T2D IN CHILDREN AND ADOLESCENTS

T2D is surging among U.S. children, nearly doubling between 2001 and 2017. And yet—aside from childhood obesity—the reasons for this disturbing increase are unclear. Researchers at the Institute and the Children's Hospital at Montefiore (CHAM) hope a six-year, \$4.1 million grant from the NIH will help identify the underlying biological and social factors that cause children and adolescents to develop the condition. Carmen R. Isasi, MD, PhD, is the PI of the CHAM/Einstein site, which will enroll 250 children as part of a 3,000-patient cohort from across the country.

HISPANIC AND LATINO POPULATIONS THE FOCUS OF NEW STUDY

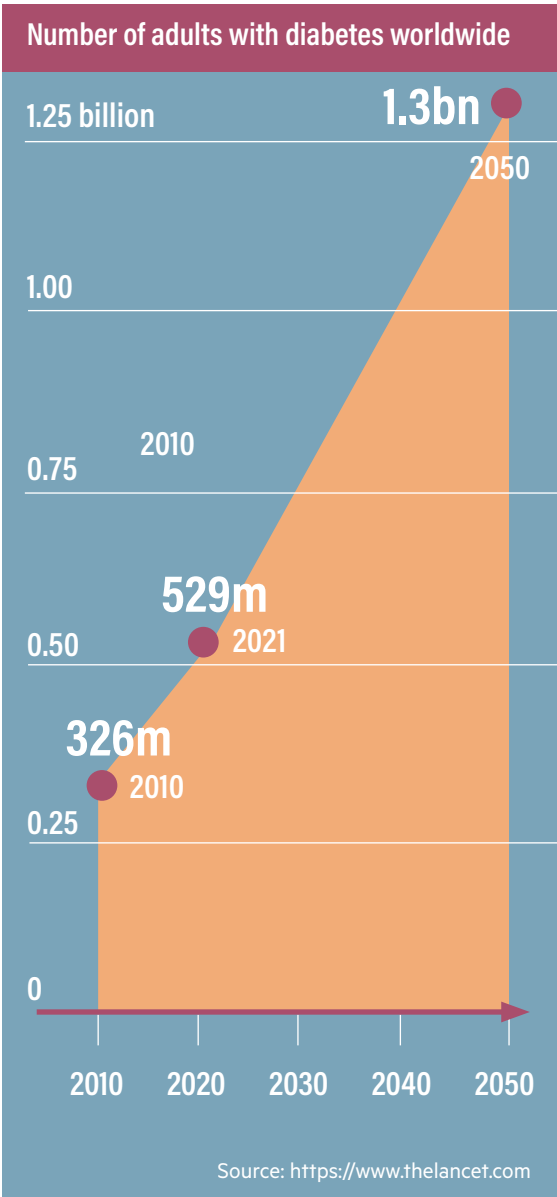
Dr. Isasi is also the Bronx co-PI of the National Heart, Lung, and Blood Institute-funded Hispanic Community Health Study (HCHS/SOL), the most comprehensive long-term study of health and disease in Hispanic and Latino people living in the United States. She is developing a program to understand early-life determinants of health with a focus on diabetes prevention and control, particularly the cultural and psychosocial risk factors for T2D and metabolic syndrome.



"THE CHILDREN WE SERVE FACE PROFOUND SOCIAL CHALLENGES THAT MAY CONTRIBUTE TO THE HIGH RATES OF TYPE 2 DIABETES IN THE BRONX. THIS STUDY WILL HELP US TO IDENTIFY FACTORS BESIDES OBESITY, INCLUDING SOCIAL FACTORS, SUCH AS FOOD AND HOUSING INSECURITY, THAT MAY BE CONTRIBUTING TO THE HIGH T2D INCIDENCE RATES AMONG CHILDREN IN OUR COMMUNITY." — Carmen R. Isasi, MD, PhD

REVERSING THE INEQUITIES THAT DRIVE DIABETES GROWTH

Diabetes is pervasive, exponentially growing in prevalence, and outpacing most diseases globally. And, according to a seminal series called “Global Inequity in Diabetes” published in *The Lancet* and co-authored by Dr. Agarwal, structural racism and geographical inequity have accelerated rates of the disease, morbidity, and mortality. Several international media outlets, including *CNN*, *The Guardian*, and *STAT News*, reported on the researchers’ assessment that diabetes will likely be the defining disease of the 21st century. Dr. Agarwal and her colleagues estimate that the number of adults living with diabetes will more than double to 1.3 billion by 2050. How the health community deals with diabetes in the next two decades, they argue, will shape population health and life expectancy for the next 80 years.



Within high-income countries (HICs) such as the United States, the prevalence of diabetes in minoritized groups is nearly 1.5 times higher than in White groups.

As of 2019, diabetes-related mortality rates and disability-adjusted life-years were nearly double in low- and middle-income countries (LMICs) compared with HICs.

| Category | Relative Mortality Rate |
|--------------------|-------------------------|
| LMICs (orange bar) | ~1.8x |
| HICs (maroon bar) | 1.0x |

Several of our investigators published a study in *Diabetes Care* addressing racial-ethnic disparities in prescribing CGMs. The study took place over a three-year period and brought together multi-level stakeholders, including leadership, clinicians, staff, and patients, to implement practice changes aimed at improving CGM prescription equity. Over the study period, CGM prescription rates quadrupled from 15 percent to 69 percent, demonstrating the effectiveness of the stakeholder-engaged approach at addressing these disparities.

The NIH awarded a three-year, \$1 million grant to determine whether community health workers (CHWs) can increase technology use among young adults from underrepresented minorities with T1D. Since this group is at greater risk for worse glycemic outcomes than their White counterparts, the CHW model aims to provide access to diabetes technologies and serve as an extra source of support for patients outside of their typical medical providers.



Shivani Agarwal, MD, MPH

COLLABORATION SETS THE STAGE AT THE FLEISCHER SYMPOSIUM

In medicine we are more successful when we work together—and even more so when that collaboration is in person. Following a three-year hiatus, the Institute welcomed more than 200 of our fellow researchers, clinicians, and other professionals to campus for the annual, recently renamed Norman Fleischer NYC Diabetes Symposium. The symposium provided an essential forum to exchange information and set the stage for exciting new collaborations between and among institutions. It also served as a critical bridge to the future: Among the 14 presenters and 70 abstracts were many junior faculty, postdoctoral fellows, and doctoral students who had the opportunity to showcase their work and interact with senior faculty and researchers.



At the 2023 Norman Fleischer NYC Diabetes Symposium, Einstein faculty and students, including Dr. Crandall; Aaron Wax, grandson of Norman Fleischer, MD; Lynn Wax, LCSW, daughter of Norman Fleischer, MD; and Domenico Accili, MD, Director of the Columbia University Diabetes and Endocrinology Research Center in New York City, presented on topics ranging from genetics/epigenetics, lifestyle, and the environment to the benefits of the latest diabetes treatment technologies. They also paid tribute to the late Dr. Fleischer, for whom the Institute and annual meeting are named.



**“DIABETES REMAINS
ONE OF THE BIGGEST PUBLIC
HEALTH THREATS OF OUR TIME AND
IS SET TO GROW AGGRESSIVELY
OVER THE COMING THREE DECADES
IN EVERY COUNTRY, AGE GROUP,
AND SEX, POSING A SERIOUS
CHALLENGE TO HEALTHCARE
SYSTEMS WORLDWIDE.”**

— Shivani Agarwal, MD, MPH

WITH THANKS

The Fleischer Institute for Diabetes and Metabolism continues to thrive as a destination for experts who seek opportunities to conduct collaborative, cutting-edge research; for clinicians in search of dynamic, specialized training; and for patients who require expert, compassionate care. Philanthropy drives that success and serves as the margin of excellence for our program. We are grateful to all those who support it.



To learn more, please contact:

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