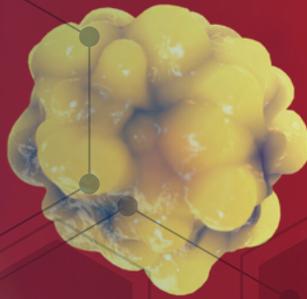




CASWELL DIABETES INSTITUTE
UNIVERSITY OF MICHIGAN



Annual Report

2021



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Welcome

While 2021 saw a great deal of turbulence in the world, thankfully it also represented the first full year of the Elizabeth Weiser Caswell Diabetes Institute (CDI), which presented a host of opportunities for those of us at the University of Michigan to increase the effectiveness of our fight against diabetes and associated disorders. We are extraordinarily grateful for the generosity and support of the friends and partners who provided these opportunities, and we look forward to many more successful years.

As all forms of diabetes (along with obesity and other metabolic disorders) increasingly impact our families and communities and strain our health systems, we face a pressing need to accelerate research to enable the prevention, treatment, and cure of these diseases and their associated conditions. To help us meet these challenges, we are fortunate to have a leadership team that is made up of world-renowned researchers and clinicians with diverse expertise from across U-M — in addition to having an extraordinarily talented and dedicated team of CDI staff members.



In the following pages, we hope to provide a high-level overview of the CDI — including the people who perform groundbreaking research and the infrastructure that supports them; multifaceted approaches to ensuring the development and success of the next generation of outstanding diabetes- and metabolism-focused researchers and clinicians; and efforts to ensure the seamless integration of research into the clinic to ensure the best care for those living with diabetes, obesity, and other metabolic conditions.

We aim to continue building on the momentum of this past year, further strengthening and supporting our community of scientists, clinicians, and others focused on the battle against diabetes. We will continue to work together to increase our impact in the areas of type 1 diabetes, type 2 diabetes, obesity and other metabolic conditions, and the physical and mental burdens of these diseases. These efforts will run the gamut from basic research to identifying new therapeutic strategies, to improving and implementing the best current lifesaving therapies and prevention strategies, and to ensuring access to these advances for everyone in our community, state, nation, and world.

While we have much to be proud of from this foundational year, we look forward to working with our many talented staff, faculty, learners, and patients and families as we make additional important progress in the years ahead. There will be much more to come.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Myers'.

Martin G. Myers, Jr., MD, PhD
Director, U-M Caswell Diabetes Institute
Director, U-M Michigan Diabetes Research Center
Marilyn H Vincent Professor of Diabetes Research
Professor of Internal Medicine and Molecular and Integrative Physiology

Diabetes affects an estimated 34.2 million people in the United States and is the seventh leading cause of death in the country.

— National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

In 2021, more than 100,000 Americans died from type 1 and type 2 diabetes, representing a new record-high level.

— Centers for Disease Control and Prevention

The University of Michigan Answers

Caswell Diabetes Institute

Michigan Medicine ranks as a top 10 hospital for Diabetes and Endocrinology care; the University of Michigan Medical School continues as the top medical school (by far) in research funding from the National Institute of Diabetes, Digestive, and Kidney Diseases (NIDDK); and the U-M campus houses more than 250 world-renowned faculty whose research focuses on diabetes, diabetic complications, obesity, and metabolic disorders.

To take all of this potential to the next level, Ron Weiser, in honor of his daughter, Elizabeth Caswell, pledged \$30 million in June 2020 to establish the Elizabeth Weiser Caswell Diabetes Institute (CDI).

Harnessing the strengths of Michigan Medicine and the University of Michigan, the CDI serves to accelerate cutting-edge research, provide and support robust training programs, and advance excellence in clinical care for patients with diabetes, obesity, and other metabolic disease conditions. As part of the top public research university in the United States, the CDI partners with 20 divisions and departments within Michigan Medicine and 14 schools and units across the U-M campus that focus on diabetes care and research, strengthening U-M's ability to lead nationally and globally in the prevention, treatment, and eventual cure for diabetes and related disorders.

The CDI recruits scientists, supports researchers, and provides training programs to continuously grow and empower our experts in areas that impact diabetes and related disorders. Importantly, the CDI also supports innovative programs and provides infrastructure to stimulate progress toward better prevention, treatments and, ultimately, cures for these diseases.

In the year ahead, the CDI will:

- Coordinate among and support diabetes- and metabolism-related research programs to ensure their efficiency and effectiveness.
- Integrate cutting-edge research with clinical care, including by engaging patients and their families.
- Identify and support new programs to empower research and enhance care for patients with diabetes and related disorders.
- Coordinate and support the training and mentoring of those focused on diabetes and metabolism research and care at U-M.

The CDI supports innovative programs and provides infrastructure to stimulate progress in research and clinical care, as we collectively seek better prevention, treatment, and ultimately cure diabetes, obesity, and other metabolic conditions.

In the year ahead, the newly established

Caswell Diabetes Institute will:

- Coordinate among and support diabetes- and metabolism-related research programs.
- Engage patients and their families, integrating cutting-edge research with clinical care.
- Coordinate among clinical programs to enhance care for patients with diabetes and related disorders.

Our Mission

By supporting rigorous science and its integration with patient-centered clinical care, the Caswell Diabetes Institute leads the way to prevent, treat, and cure diabetes, its complications, and related metabolic diseases

History of Diabetes and Metabolic Disorders Research and Care at U-M

A longtime leader in research and innovation, the talent, collaboration, and generous resources available at the University of Michigan has enabled substantial contributions to the field of diabetes, including:



2021 | Rodica Pop-Busui, MD, PhD

Dr. Rodica Pop-Busui, Larry D. Soderquist Professor in Diabetes, is named President-Elect, Science and Medicine, of the American Diabetes Association, serving a one-year term. In 2023, she becomes the second U-M faculty member to serve as President, Science and Medicine, and the 6th woman to elevate to the position.



2021 | New Diabetes Research Space

Caswell Diabetes Institute researchers move into newly renovated laboratories in the North Campus Research Complex (NCRC), creating a second focused site of diabetes research at U-M. type 1 diabetes and complications-focused researchers occupy the Brehm Center for Diabetes Research and type 2 diabetes, obesity, and metabolism-focused researchers are in the NCRC.

Meet Our Leadership Team

The Institute has assembled a dynamic leadership team composed of researchers and clinicians dedicated to ensuring that diabetes- and metabolism-related research at U-M not only breaks new ground but also has the potential to improve clinical care in Michigan and beyond. The executive team comprises:



Martin G. Myers, Jr., MD, PhD

Director, Caswell Diabetes Institute
 Director, Michigan Diabetes Research Center
 Marilyn H Vincent Professor of Diabetes Research
 Professor of Internal Medicine and Molecular and Integrative Physiology



Molly C. Dwyer-White, MPH

Managing Director, Caswell Diabetes Institute

Brigid Gregg, MD

Associate Director for Enrichment Programs, Caswell Diabetes Institute
 Assistant Professor of Pediatrics, U-M Medical School
 Assistant Professor of Nutritional Sciences, U-M School of Public Health

Joyce Lee, MD, MPH

Associate Director for Informatics and Clinical Research Innovation, Caswell Diabetes Institute
 Robert P. Kelch Professor of Pediatrics
 Professor, U-M Department of Pediatrics and Communicable Diseases
 Professor, Nutritional Sciences



Dorene Markel, MSA, MHSA

Director of Strategy & Special Projects, Caswell Diabetes Institute
 Director, Brehm Center
 Assistant Research Scientist, U-M Department of Learning Health Sciences

Rodica Pop-Busui, MD, PhD

Associate Director for Clinical Research, Mentoring, and Development, Caswell Diabetes Institute
 Larry D. Soderquist Professor in Diabetes
 Professor of Internal Medicine Metabolism, Endocrinology and Diabetes
 Vice Chair of Clinical Research, Department of Internal Medicine



Scott Soleimanpour, MD

Associate Director for type 1 Diabetes Basic Research and Islet Research Programs, Caswell Diabetes Institute
 Associate Professor of Internal Medicine, Metabolism, Endocrinology, and Diabetes
 Co-Director, Juvenile Diabetes Research Foundation Center of Excellence at the University of Michigan
 Director, Diabetes Transition Program, Endocrine Section, VA Ann Arbor Healthcare System

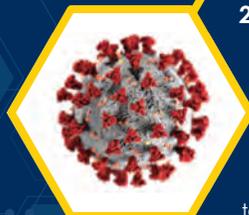
Inas Hanna Thomas, MD

Associate Director for Pediatric Clinical Research and Diabetes Programs, Caswell Diabetes Institute
 Clinical Associate Professor, Department of Pediatrics, Pediatric Endocrinology



Jennifer Ann Wyckoff, MD

Associate Director for Diabetes Care, Caswell Diabetes Institute
 Associate Professor, Metabolism, Endocrinology, and Diabetes



2020 | COVID-19 Pandemic

Caregivers and clinical researchers respond to the COVID-19 pandemic by developing and disseminating protocols to treat severe glycemic excursions in hospitalized COVID-19 patients. The diabetes clinical team implements a novel multidisciplinary post-COVID clinic to treat patients with long-term complications from COVID-19.

In Gratitude

Accelerating discoveries and innovation

The CDI leadership team, along with the now more than 250 CDI members, want to express their immense gratitude to the individuals and families who have supported our health care providers and researchers, enabling cutting-edge research discoveries related to diabetes and helping to turn these into lifesaving therapies for children and adults. The generosity and foresight of these individuals and families propels CDI's mission to improve the treatment and prevention of diabetes and related disorders, and to ultimately cure these diseases.

Ron Weiser and Elizabeth Caswell

University of Michigan Regent Ron Weiser of Ann Arbor committed \$30 million to the university for diabetes research and the development of life-changing diabetes therapies at Michigan Medicine, in

collaboration with other U-M schools and units for diabetes research. The gift, which is named for Regent Weiser's daughter, Elizabeth Caswell (who has two sons and a husband with type 1 diabetes (T1D)), launched the Caswell Diabetes Institute to advance U-M's ability to lead in diabetes-related research and care.

Elizabeth has worked tirelessly on behalf of the T1D-focused nonprofit, JDRF; she serves as a member of the Board of Directors for JDRF International and as vice-chair of the JDRF Research Committee. Her vision and advocacy continue to elevate T1D-related research and to ensure that this research improves clinical practice.

The Caswell Diabetes Institute centralizes and coordinates diabetes-focused campus resources, anchored by a group of more than 250 world-renowned, dynamic researchers in diabetes, diabetic complications, obesity, and metabolism, and

"Elizabeth has been a relentless educator and advocate for people with diabetes and for diabetes research. Our family hopes that the collaboration among physicians, researchers, innovators, and advocates across campus will allow the work she's done, and continues to do, to be rewarded with cures for diabetes."

— Regent Ron Weiser

allows U-M to bring new depth and discovery to the quest for answers to diabetes. The CDI simultaneously pushes forward on many fronts, including toward making designer insulin-producing beta cells as a therapy for diabetes; seeking to understand how to block the onset of type 1 and type 2 diabetes; focusing on how to improve clinical care and access to current lifesaving therapies; and innovating to improve quality of life to those living with or caring for those with diabetes, obesity, or other metabolic diseases.



"The CDI is one of the most important things that has happened for diabetes research, not just for U-M, but for the whole country. The institute is built on the idea that we can't only study one aspect of diabetes, but rather that we need to work together to attack every piece of this disease at the same time."

— Martin G. Myers, Jr., MD, PhD, CDI director

2020 | JDRF Center of Excellence

The JDRF establishes a \$17M 5-year JDRF Center of Excellence (COE) at the University of Michigan, one of two original Centers of Excellence funded by the JDRF nationally. The JDRF COE, led by founding director Thomas Gardner, MD, MS, extends the legacy of the former JDRF Center for the Study of Complications in Diabetes by developing new paths toward a potential cure for type 1 diabetes and alleviating associated complications.



2020 | Elizabeth Weiser Caswell Diabetes Institute

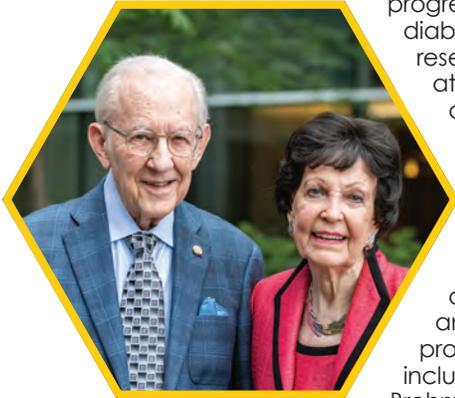
A \$30M gift from Ron Weiser creates the Elizabeth Weiser Caswell Diabetes Institute, in honor of his daughter, who is a champion and advocate for diabetes research and care. In 2018, the Weiser and Caswell families establish the Caswell Family Fellowship in pediatric diabetes. Dr. Martin G. Myers, Jr. serves as the inaugural institute director.

The Caswell Family Fellowship in Pediatric Endocrinology

Elizabeth Caswell and her husband, Trey, partnered with Regent Weiser and contributed to the initial commitment that established the CDI, creating the Caswell Family Fellowship in Pediatric Endocrinology. This fellowship will ensure the training of a new generation of researchers to continue studies that mitigate the impact of type 1 diabetes on afflicted people.

William and Delores (Dee) Brehm

Bill and Dee Brehm have played a vital role in the evolutionary progress of diabetes research at U-M, donating more than \$70 million to support a range of projects and programs, including the Brehm Tower, an eight-story,



230,000-square-foot addition to the Kellogg Eye Center and the founding of the Brehm Center for Diabetes Research and Analysis. Dee and Bill have invested their financial resources and their time and energy to create a new paradigm for the enterprise that is the search for the cure and prevention of type 1 diabetes and its complications. Bill has demonstrated his willingness not only to bring a sizable portion of his financial resources to this challenge, but to accompany his philanthropy with the kind

of energy, forward thinking, and fervor that have been the fabric of his career. In addition to the Brehm Tower and the Brehm Center for Diabetes Research and Analysis (home to the Brehm Coalition), the Brehms established the U-M Brehm Scholars Program to support undergraduate and medical school education for promising scholars.

Michael David Toft Research Fund

The Michael David Toft Type 2 Diabetes Research Fund was established in memory of Michael, who passed away in February 2021. The goal of the fund is to advance



type 2 diabetes research through the Islet Research Program, directed by Scott Soleimanpour, MD. Michael was a proud University of Michigan Wolverine; he studied microbiology and medicine at the University of Michigan and was in the top of his class. Unfortunately, he was not able to complete his medical studies due to his struggle with type 2 diabetes. His dream was to conduct research on diabetes and this

fund has been established to honor his wish of pushing research forward toward a cure.

Fernandez Buddin Family Foundation Fellowship

The Fernandez Buddin Family Fellowship Fund was established to support type 1 diabetes research. The oldest son of Jose Fernandez and Deidre Buddin was diagnosed with type 1 diabetes a few weeks before his 13th birthday. Being a T1D family motivated them to help scientists find a cure for type 1 diabetes, which led to the University of Michigan because of its renowned multidisciplinary scientific research and commitment to diabetes research through the CDI. The Fernandez Buddin Family Foundation Fellowship Fund will support a fellow to continue advancing toward a cure for T1D.



2020 | Jiandie Lin, PhD

Dr. Jiandie Lin, Bradley M. Patten Collegiate Professor in the Life Sciences, receives the Outstanding Scientific Achievement (Lilly) Award from the American Diabetes Association for his work identifying emerging endocrine hormones and defining their roles in metabolic physiology and disease.

2018 | Diabetes Foot Consortium

U-M is selected as one of only six academic institutions to participate in the NIDDK-funded Diabetes Foot Consortium. Dr. Rodica Pop-Busui leads the team, which includes investigators from Podiatry (Drs. Crystal Holmes, Brian Schmidt, and James Wrobel), Vascular Surgery (Dr. Katharine Gallagher), and Computational Medicine and Bioinformatics (Dr. Kayvan Najarian).

Caswell Diabetes Institute Centers and Programs

The CDI provides essential support and infrastructure to the multiple diabetes and obesity research centers, helping ensure fiscal and programmatic efficiency, as well as increasing operational impact and long-term improvement.

Brehm Center for Diabetes Research

Funded by William and Delores (Dee) Brehm, the Brehm Center has catalyzed a framework for type 1 diabetes research through laboratory and clinical discovery and collaboration, and facilitating the Brehm Coalition, a group of scientists across North America in the fields of immunology and beta-cell biology. The Brehm Center also coordinates the Brehm Center Scholars Program, awarding undergraduate tuition scholarships to U-M, mentoring and management to students, and Brehm Medical scholarships for those admitted to the U-M Medical School. (Director: Dorene Markel, MS, MHSA)

Michigan Center for Diabetes Translational Research (MCDTR)

Funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)/National Institutes of Health (NIH), the goal of MCDTR is to facilitate innovative adaptations of evidence-based approaches to prevent and treat diabetes that can be disseminated and sustained in clinical practice and in settings outside the traditional academic research environment. The MCDTR provides access to specialized expertise and resources promoting and enhancing multidisciplinary collaboration among researchers directed at the prevention and control of diabetes, its complications,

and comorbidities. (Co-Directors: Michele Heisler, MD, and Gretchen Piatt, PhD)

Michigan Diabetes Research Center (MDRC)

Funded by the NIDDK/NIH, the MDRC promotes new discoveries and supports cutting-edge basic and clinical research related to the etiology and complications of diabetes. The MDRC not only supports diabetes research at Michigan, but also includes members engaged in diabetes-related research at three nearby Regional Partner Institutions, Michigan State University, Wayne State University, and the University of Toledo. The MDRC establishes, promotes, and enhances multidisciplinary and collaborative basic biomedical and clinical research among member investigators studying diabetes, its complications, and related endocrine and metabolic disorders. (Director: Martin G. Myers, MD, PhD)

and enhances multidisciplinary and collaborative basic biomedical and clinical research among member investigators studying diabetes, its complications, and related endocrine and metabolic disorders. (Director: Martin G. Myers, MD, PhD)

Michigan Mouse Metabolic Phenotyping Center

One of six members of a national consortium, the mission of the MMPC is to advance medical and biological research by providing standardized, high-quality metabolic and physiologic phenotyping services for mouse models of diabetes, diabetic complications, obesity, and related metabolic diseases and conditions. (Director: Malcolm Low, MD, PhD)

Michigan Nutrition and Obesity Center (MNORC)

The mission of the MNORC is to provide researchers with infrastructure, expertise, and training to integrate, analyze, and model data from properly designed basic, clinical, and population-based studies in obesity and metabolism-related diseases with a goal to identify better ways for prevention and treatment of obesity. Funded by NIDDK/NIH, the MNORC is one of 12 U.S. centers designed to inspire and support translational, multidisciplinary research in obesity and nutrition, across the continuum of basic science to applications in individuals (medicine) and populations (public health). (Director: Randy Seeley, PhD)

Islet Program

Designed to work hand-in-glove with the MDRC Islet Core, the CDI Islet Program serves to develop new techniques that support islet-focused research at Michigan. Currently, the Islet Program is optimizing techniques with which to genetically alter human donor islets and focusing on the differentiation of islet-like cells from human induced pluripotent stem cells (iPSCs). (Director: Scott Soleimanpour, MD)

JDRF Center of Excellence at the University of Michigan

JDRF Centers of Excellence (CoE) were created to propel T1 diabetes research advances forward — investing in research programs that are distinctive, dynamic, and designed to accelerate. The U-M's CDI was selected as one of five international COE sites. The JDRF Center of Excellence at the University of Michigan looks beyond HbA1c as the sole predictor of risk of reduced quality of life. Cohorts of patients with T1D who exhibit extremes of phenotypes, such as resistance or sensitivity to long-term complications, are analyzed for metabolic features that may explain their health. This information is used to develop induced pluripotent organoids, models of organs that are affected by diabetes, to test for drugs that may optimize their function, ultimately leading to the development of new drug treatments to improve outcomes. (Co-Directors: Tom Gardner, MD, MS, and Matthias Kretzler, MD). To support this highly dynamic, nimble work that will drive discoveries, go to giving.umich.edu/give/335326

2016 | Diabetes Editorship

Dr. Martin Myers, Jr., becomes the editor-in-chief of the scientific journal, *Diabetes*, and brings the leadership of the journal to the University of Michigan for a 5-year term. Faculty (including Drs. Frank Brosius, Charles Burant, Thomas Gardner, William Herman, Jeffrey Horowitz, Jiandie Lin, Carey Lumeng, Ormond MacDougald, Rodica Pop-Busui, Leslie Satin, and Randy Seeley) comprise most of the senior editorial team.



2016 | Roger Cone, PhD

Dr. Roger Cone, Asa Gray Collegiate Professor of the Life Sciences and Mary Sue Coleman Director of the Life Sciences Institute, is elected to the National Academy of Medicine for his work demonstrating the role for the hypothalamic melanocortin system in the regulation of body weight and metabolism.

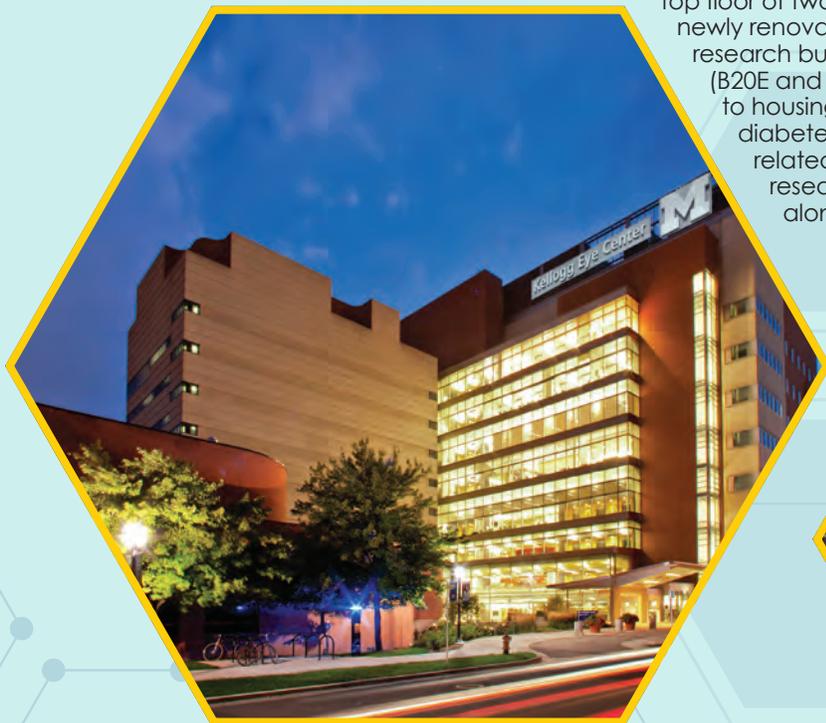
New research space for diabetes research at U-M

The generous 2007 gift of \$44 million to the University of Michigan by Bill and Delores (Dee) Brehm provided the Brehm Tower, an innovative \$132M, 222,000-square-foot facility that houses the Brehm Center for Diabetes Research, the first inter-departmental site for diabetes-focused research. The building, completed in 2010, also houses clinics and laboratories of the Department of

Ophthalmology, including a team of diabetic retinopathy researchers recruited to further expand diabetes research expertise and collaborations.

The establishment of the CDI in 2020 catalyzed the creation of a second focused site for diabetes-focused research at U-M, located at the North Campus Research Complex (NCRC). In 2021, U-M dedicated the top floor of two newly renovated research buildings (B20E and B25) to housing diabetes-related research, along with

administrative offices for the CDI, MDRC, MCDTR, and MNORC. While the Brehm Tower (which primarily houses type 1 diabetes-, islet-, and complications-focused researchers) and the NCRC site (which primarily houses researchers focused on type 2 diabetes cannot contain all CDI members, the combination of these two sites houses over 30 MDRC faculty, who make up several highly productive and interactive groups of investigators. Both the Brehm Tower and the NCRC diabetes research sites also contain space to house newly recruited faculty members focused on diabetes research; recruitment is ongoing.



2012 | Robin Nwankwo, MPH, RDN, CDE

Ms. Robin Nwankwo, Diabetes Educator in the Department of Learning Health Sciences, receives the American Diabetes Association Outstanding Educator in Diabetes Award.



2010 | Mutant Insulin-induced Diabetes of Youth

Peter Arvan, MD, PhD, William K. and Dolores S. Brehm Professor of type 1 Diabetes Research, implicates protein folding errors in a severe form of early-onset diabetes. In 2012, Dr. Arvan helps launch the U-M Protein Folding Disease Initiative, showing that Mutant Insulin-induced Diabetes of Youth (MIDY) results from the misfolding of a mutant insulin. He later shows that insulin misfolding also contributes to the pathogenesis of type 2 diabetes.

2011 | Michigan Center for Diabetes Translational Research Michigan Diabetes Research Center

The NIH splits Diabetes Research and Training Centers into two new entities, and U-M is awarded both. The Michigan Center for Diabetes Translational Research (MCDTR), directed by Dr. William Herman, focuses on innovations in the prevention and treatment of diabetes that can be disseminated and sustained in clinical practice. The Michigan Diabetes Research Center (MDRC), directed by Dr. Martin Myers, Jr., promotes new discoveries and enhances scientific progress through the support of cutting-edge basic and clinical research related to the etiology and complications of diabetes.

CDI Membership

The Caswell Diabetes Institute connects its members to hundreds of other diabetes-focused researchers and clinicians across campus and provides resources and opportunities for enhanced interactions and learning that focus on diabetes, obesity, metabolism, and the complications of diabetes. The CDI has established a host of new basic and clinical research-focused programs to enhance diabetes-related research, and has rich member engagement activities. The CDI also connects its members to exclusive programs like the Steno North American Fellowships, a transatlantic collaboration in clinical and health outcomes diabetes-related research, enhancing the synergies between the institutions for the benefit of people suffering from diabetes.



247 CDI members



1861 publications



894 active grants



235 publishing faculty



823 journals



23 schools, colleges, and institutes represented



2010 | **Martin Myers, Jr., MD, PhD**

Dr. Martin Myers, Jr., Marilyn H. Vincent Professor of Diabetes Research, receives the Outstanding Scientific Achievement (Lilly) Award from the American Diabetes Association for his work revealing molecular and neural mechanisms by which the adipocyte-derived hormone, leptin, controls body weight, and metabolism.



2009 | **Randy Seeley, PhD**

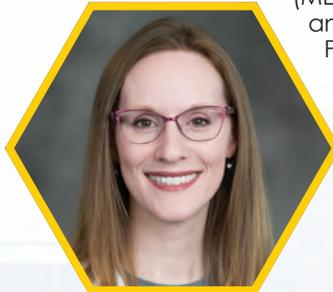
Dr. Randy Seeley, Henry King Ransom Professor of Surgery, receives the Outstanding Scientific Achievement (Lilly) Award from the American Diabetes Association for his work revealing mechanisms by which the hypothalamus controls feeding and body weight. Dr. Seeley takes over the leadership of the Michigan Nutrition and Obesity Research Center (MNORC) in 2018.

Welcome Our New Caswell Diabetes Institute Recruits

CDI aims to increase the number of creative researchers at U-M who focus on diabetes, obesity, metabolism, and diabetes complications. To do this, the CDI actively works with departments, schools, and colleges across U-M to recruit outstanding new diabetes-focused faculty. Thus far, CDI has co-recruited several new faculty members, including:



Maria Coronel, PhD, whose research focuses on the encapsulation and transplantation of pancreatic islets, will arrive from Georgia Tech in summer 2022. She will establish her research program at the CDI NCRC site as an Assistant Professor of Biomedical Engineering.



Rachel Reinert, MD, PhD, who performed her postdoctoral training with MIP faculty member Ling Qi, PhD, joined the department of Internal Medicine (MEND) as an Assistant Professor in 2021. She received an NIH K08

award in 2021 to support her islet cell biology research program, which resides in Brehm Tower.

Alison Affinati, MD, PhD, will become Assistant Professor of Internal Medicine (MEND) in 2022 and will establish her laboratory at the CDI NCRC location. She trained with MIP faculty member Martin Myers, MD, PhD and focuses on the control of metabolism by the ventromedial hypothalamic nucleus. She will begin a new NIH K08 and a Warren Alpert New Investigator Award in 2022.



CDI Trainee Spotlight

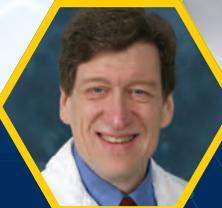
Nadedja Bozadjieva Kramer, PhD

Dr. Kramer's research focuses on the endocrine regulation of metabolism in various pathological conditions, including pregnancy-related complications (preeclampsia and gestational diabetes), type 2 diabetes and obesity. Her primary research interests lie in understanding the roles nutrients and intestinal nutrient signaling play in states of metabolic dysfunction as well as how these signals contribute to the potent metabolic benefits of bariatric surgery.



2006 | Atypical Diabetes Program

Elif Oral, MD, a world leader in the understanding and treatment of lipodystrophies and other genetic causes of diabetes and metabolic disorders, establishes the Obesity and Metabolic Disorders Program, which becomes the Atypical Diabetes Program to aid the understanding and treatment of lipodystrophy and other monogenic forms of diabetes and metabolic disease.



2008 | Diabetic Kidney Discovery

Teams led by Matthias Kretzler, MD, Warner-Lambert/Parke-Davis Professor, and Frank Brosius, III, MD, discover that increased activation of the JAK/STAT signaling pathway in diabetes is a primary cause of kidney scarring and dysfunction, leading to successful clinical trials of a JAK2 inhibitor. They also show that low levels of epidermal growth factor in urine can identify patients at risk for end-stage kidney disease.



2009 | Epidemiology of Diabetes Interventions and Complications Study

As part of the Epidemiology of Diabetes Interventions and Complications (EDIC) study, Rodica Pop-Busui, MD, PhD, and the EDIC team show that tight glycemic control in type 1 diabetes protects against cardiovascular autonomic neuropathy.

Learning, Mentoring, and Training

Integrating multifaceted approaches to teaching and mentoring researchers and clinicians

The **Caswell Diabetes Institute Clinical Translational Research Scholars Program (CTRSP)** identifies and supports the most promising early-stage scholars focused on clinical research relevant to diabetes, providing up to 50% salary support for up to 3 years, protecting this time from clinical care duties to facilitate successful scholarly clinical research activities while providing strong mentoring in research and career advancement. Current scholars include:



Lindsay Ellsworth, MD - Dr. Ellsworth was selected as one of the first CTRSP scholars for her project *"Impact of Mother's Own Milk Compared to Donor Human Milk on Preterm Infant Metabolomics, Growth, and Metabolism."*



Yu Kuei Lin, MD - Dr. Lin was selected as the 2021 CTRSP awardee for his project *"A Personalized Mobile Health Program for Improving Hypoglycemia Management in Adults with type 1 Diabetes."*



Kara Mizokami-Stout, MD - Dr. Mizokami-Stout was selected as the 2020 CTRSP awardee for her project *"Continuous glucose monitoring and type 2 diabetes: utilization, outcomes, triumphs, and challenges."*



Brian Schmidt, DPM - Dr. Schmidt was selected as one of the first CTRSP scholars for his project *"Probiotic Diabetic Foot Ulcer (Pro-DFU) Healing."*

Yu Kuei Lin, MD received a NIH K-Award in 2021. Through this award, Dr. Lin aims to comprehensively evaluate beliefs around hypoglycemia in advanced diabetes technology users, and develop scalable, personalized behavioral interventions delivered via widely accessible mobile health technologies to address the barrier of hypoglycemia for optimal glycemetic control.



2006 | **William Herman, MD, MPH**

Dr. William Herman, Stefan S. Fajans/ GlaxoSmithKline Professor of Diabetes, receives the American Diabetes Association Kelly West Award for Outstanding Contributions to Diabetes Epidemiology for his work in screening for those at risk of diabetes and defining cost-effective paradigms by which health systems can prevent and treat diabetes.



2005 | **Inpatient Intensive Hyperglycemia Program**

Under the leadership of Roma Gianchandani, MD, the Inpatient Intensive Hyperglycemia Program is established, ensuring optimal management of diabetes and hyperglycemia in the hospital, thereby reducing infections and the length of hospital stays.

CDI Enrichment

Seminar Series

The Caswell Diabetes Institute Seminar Series features plenary seminar events addressing the broad interests in diabetes-, obesity-, metabolism-, and complications-related research and care across the University of Michigan campus and worldwide. The first seminar took place in November 2020, with a presentation by William T. Cefalu, MD, director of Diabetes, Endocrinology and Metabolic Diseases, NIDDK/NIH. The second seminar featured a presentation from Christopher J. Lynch, PhD, and Holly Nicastro, PhD,

MPH, NIH Office of Nutrition Research in March 2021. The seminars gathered over 100 attendees.

Research Clubs

Partnering with the Caswell Diabetes Institute (CDI) centers and programs, the CDI supports the following eight research clubs:

- The Cellular Aspects of Diabetes, Obesity & Metabolism Research Club
- The Integrative Aspects of Diabetes, Obesity, & Metabolism Research Club
- The Neuroendocrine Control of Metabolism Research Club

- The Islet Research Club
- The Mitochondrial Biology Interest Group
- The Single-Cell Genomics in Obesity and Diabetes Club
- The Diabetes, Obesity, Nutrition, and Metabolism Translational Research Club
- Trainee Social/Networking Club

All meetings took place virtually through the 2020–21 cycle due to COVID-19, with 186 faculty, students, staff, and fellows attending each month.

Speaker Series

The CDI also supported the Rare Disease Day Educational Conference that took place in February 2021, and included sessions devoted to "Rare Lessons in Metabolism," with house officers, medical students, nurses, and other allied health care professionals, physicians, social workers, patients, and caregivers attending.



Save the Date

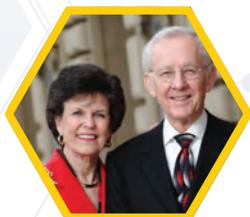
Caswell Diabetes Institute Metabolism, Obesity and Diabetes Symposium (CDI-MOD)

In conjunction with the Frontiers in Diabetes Complications Conference, the Caswell Diabetes Institute (CDI) is pleased to announce the first annual CDI Metabolism, Obesity and Diabetes Symposium (CDI-MOD).

May 11-12, 2022
North Campus Research Complex, Ann Arbor

*A data blitz and poster session will take place on Wednesday, May 11, 2022

<p>Featuring</p> <p><i>Evan Dale Abel, MD, PhD</i> <i>Samuel Klein, MD</i> <i>Marshall Chin, MD, MPH</i> <i>William Herman, MD, MPH</i> <i>Daphne Watkins, PhD</i> <i>Raghu Mirmira, MD, PhD</i> <i>Kanakadurga Singer, MD</i> <i>Hunter Wessells, MD</i> <i>Stanley Kuo, PhD</i></p>	<p><i>Cliff Rosen, MD</i> <i>Randy Seeley, PhD</i> <i>Jaclyn Goodrich, PhD</i> <i>Julie Lumeng, MD</i> <i>Sung Kyum Park, ScD, MPH</i> <i>Zhengping Yi, PhD</i> <i>Laura Scott, PhD</i> <i>Jennifer Sun, MD</i> <i>Ian De Boer, MD, MS</i> <i>Jaclynn Hawkins, PhD</i> <i>Kara Mizokami-Stout, MD</i></p>	<p>Sponsored by:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Michigan Diabetes Research Center</p> </div> <div style="text-align: center;">  <p>University of Michigan JDRF Center of Excellence</p> </div> <div style="text-align: center;">  <p>Michigan Center for Diabetes Translational Research</p> </div> </div>
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2005 | Michigan Metabolomics and Obesity Center

Led by Charles Burant, MD, PhD, Dr. Robert C. and Veronica Atkins Professor of Metabolism, the Michigan Metabolomics and Obesity Center (MMOC), is created. The MMOC leads to the founding of the NIH-funded Michigan Nutrition and Obesity Research Center (MNORC) in 2010.



2004 | Brehm Family Donation

William and Delores Brehm donate \$44M to support research into the pathogenesis of diabetes, and shortly thereafter launch the Brehm Coalition to energize an inter-institution effort, centered at U-M, to search for a cure for type 1 diabetes. The Brehms also establish the Brehm and Soderquist professorships in diabetes research.



2000 | Adult Diabetes Education Program

The Adult Diabetes Education Program is established by Robert W. Lash, MD. In 2010, Jennifer Wyckoff, MD, becomes the director. It is one of a select number of programs certified by the American Diabetes Association, offering more programs and services for adults with type 1, type 2, and gestational diabetes than anywhere else in Michigan and the surrounding region.

Responding to the COVID Pandemic

Labs Close and Reopen

While research labs had to briefly pause at the height of the pandemic, clinicians and clinical researchers stepped up to solve the most pressing problems with the most complex patients — as it became clear early on that diabetes, obesity, and metabolic conditions were a significant factor in the severity of the COVID-19 disease and its symptoms. Diabetes, obesity, and metabolic researchers across campus joined forces to better understand and quickly respond to the needs of the most at-risk patients and populations. Meanwhile, research labs had to redesign work to create safe environments and reignite their research — with help from the CDI to mobilize so quickly to an unprecedented situation.

COVID-19 Long Haul Clinics

Multidisciplinary teams banded together to create a coordinated approach to studying the disease's long-term outcomes in vulnerable adult and pediatric populations. Realizing that patients hospitalized for COVID-19 are experiencing a broad spectrum of long-term multi-organ issues, Michigan Medicine established clinics to provide post-discharge care to both adults and pediatric patients experiencing these long-term post COVID-19 symptoms and complications. The clinic is initially focused on patients with diabetes or obesity given their high-risk status and the significant disturbances in blood glucose attributed to COVID-19, but will expand over time. "There is an urgent need to better understand the long-term complications of COVID-19 and provide specialized care for high-risk groups of patients," says Rodica Pop-Busui, MD, PhD, director of the adult clinic.

CDI COVID-19 and Metabolic Disease Grant Program Award

The ongoing COVID-19 pandemic poses an enormous number of challenges, many of them disproportionately affecting those with diabetes, obesity, and related conditions. To understand and begin to alleviate the impact of COVID-19 on those with diabetes, obesity, and related disorders, the CDI established this program to address the impact of COVID-19 on and improve the care of those with diabetes and related disorders. The following projects are now funded and underway:

Terrance Neal Wong, MD
Assistant Professor, Internal Medicine Oncology, Michigan Medicine

"Impact of Clonal Hematopoiesis on COVID-19 Morbidity and Mortality." Dr. Wong's research focuses on understanding how alterations in the immune system defined by clonal hematopoiesis contribute to the cytokine storm and poor prognosis of people with diabetes and metabolic syndrome during COVID-19.



Carey Lumeng, MD, PhD
Fred Huetwell Professor of Pediatrics, Department of Pediatrics, Michigan Medicine

"HCoV-NL63 to Model COVID-19 Pathogenesis with Obesity and Diabetes." Dr. Lumeng's research focuses on understanding the negative health effects of obesity that include asthma, diabetes, and metabolic syndrome.



Rodica Pop-Busui, MD, PhD
Professor, Division of Metabolism, Endocrinology & Diabetes, Department of Internal Medicine

"Incidence and Predictors of Acute and Chronic Diabetes Complications in Patients with Severe COVID-19." Dr. Pop-Busui's research focuses on the elucidation of the mechanisms underlying the development of diabetes and prediabetes complications, with particular emphasis on diabetic cardiovascular autonomic and peripheral neuropathy.



2000, 1999 | American Diabetes Association Outstanding Educator in Diabetes Award

Martha M. Funnell, MS, RN, CDE, FAAN and Robert M. Anderson, EdD, faculty members of the Department of Medical Education, receive the American Diabetes Association Outstanding Educator in Diabetes Award in 1999 and 2000, respectively. Ms. Funnell is named the President, Health Care and Education, of the American Diabetes Association from 2002-2003. In 2016, Dr. Anderson and Ms. Funnell receive Lifetime Achievement Awards from the American Association of Diabetes Educators.

1999 | JDRF Center for the Study of Complications in Diabetes

U-M receives a landmark \$6.6M grant from The Juvenile Diabetes Research Foundation (now JDRF) to launch the JDRF Center for the Study of Complications in Diabetes, led by Eva L. Feldman, MD, PhD, Russell N. DeJong Professor of Neurology. This leads to a series of additional large consortium awards studying the pathophysiology and prevention of diabetic complications. These include DP3 and R24 awards from the National Institutes of Health that involve Drs. Steven Abcouwer, Frank Brosius, Charles Burant, Eva Feldman, Thomas Gardner, Matthias Kretzler, Subramaniam Pennathur, and Rodica Pop-Busui.

Integrating Research into Clinical Care and the Community

Weight Navigation Program

Michigan Medicine offers a wide range of weight management treatments and programs. Yet, despite these resources, only 14% of patients with overweight and obesity who have established primary care within the health system achieve and maintain $\geq 5\%$ body weight loss. To mitigate these issues and to enhance the delivery of personalized, effective obesity treatment in primary care settings, the Weight Navigation Program (WNP) team developed and is now pilot testing and refining an innovative care model, which integrates physicians certified in obesity medicine through the American Board of Obesity Medicine into primary care teams. Utilizing weight management experts to consult with primary care providers, this new effort aims to help individuals find a path toward effective, personalized weight control, leveraging evidence-based weight control resources, and optimizing weight management expertise in primary care settings. Research Mission: To evaluate the feasibility, effectiveness, and experiences of the Weight Navigation Program.

250
patients
referred to
navigation
clinic

127
patients seen in
navigation clinic

72
patients
referred to
other clinics

Glooko

Glooko is a diabetes care management application that syncs patient data from meters, insulin pumps or pens, CGM, food apps, and activity trackers and blood pressure devices so that patients can see all their data in one place. Launched in 2021, Glooko is now connected to Michigan

Medicine — currently active at 13 sites, so providers and care teams can access the data to create customized diabetes treatment plans during clinic visits and virtual appointments, increase access to person-centered diabetes care, and empower patients by bringing insights together in one place. In January 2022, automated reports for Glooko in-clinic went live, making it easy for clinicians to integrate this information into the visit.

Clinical Research Technology and EHR integration

Led by Joyce Lee, MD, MPH, professor, U-M Department of Pediatrics and Communicable Diseases, and professor, Nutritional Sciences, this program embeds CDI personnel into Precision Health/Michigan Medicine Data Office to improve access to a repository of longitudinal Michigan Medicine EHR data for patients with diabetes and metabolic disorders, including treatments, outcomes and personal diabetes device data. This effort supports the integration of data from diabetes technology (e.g., continuous glucose monitors, insulin pumps, glucometers) into the EHR/RDW and provides consultative services leveraging IT tools to support integration of research into the “real-world” healthcare delivery setting.

Genetics of Diabetes and Obesity Program

The Atypical Diabetes Clinic, run by Elif Oral, MD, professor, Division of Metabolism, Endocrinology and Diabetes (MEND), in the Department of Internal Medicine, represents a collaboration between MEND and Genetic Medicine that seeks to provide molecular diagnosis and appropriate care for those with genetic

causes of metabolic disease. Patients are screened for known pathogenic genetic lesions; those that cannot be diagnosed in this manner undergo whole exome and/or whole genome sequencing. Although this process identifies new genetic lesions that likely underlie obesity and/or diabetes, there has not, until now, been a process to prove the causality of such lesions or to understand underlying mechanisms.

TrialNet

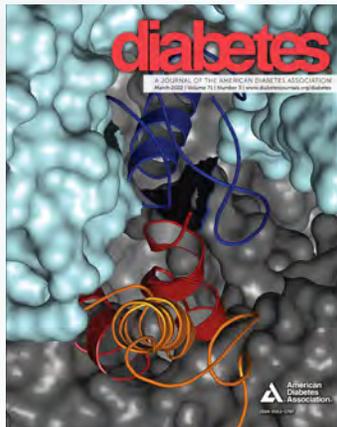
Led by Inas Thomas, MD, clinical associate professor, Department of Pediatric Endocrinology, and Andrea Rusnak, MS, CCRP, TrialNet is a research group dedicated to the study, prevention, and early treatment of type 1 diabetes. This study aims to define the natural history of type 1 diabetes, prevent or delay the onset of disease in individuals who are at risk, and preserve insulin production in those who have new-onset type 1 diabetes.

Partnering with Communities for Greater Long-Term Care

In partnership with IHPI, Michele Heisler, MD, MPH, professor, Department of Internal Medicine, links researchers with policy makers to support joint work, consultation, and provide funds and technical assistance to generate research that will directly inform a policy or evaluate a new or ongoing policy or program. This first year enabled consultation with policymaker partners at city, county, and state levels. Working with local nonprofit Food Gatherers, this project utilizes Social Determinants of Health Screening to connect patients with food scarcity to healthy, free food options available within the local community.

National Leadership

Diabetes Journal



Thank you to the editorial team of *Diabetes*, a monthly peer reviewed medical journal published by the American Diabetes Association, who have closed out their five-year commitment to providing outstanding scholarly oversight of rigorous science, and publishing the most important diabetes-related research studies that not only break important new ground but also are rigorously conducted and ultimately reproducible.

Team members include:

- Editor in Chief, Martin G. Myers Jr., MD, PhD.
- Senior Associate Editor, Randy J. Seeley, PhD.
- Associate Editors, Charles F. Burant, MD, PhD, William H. Herman, MD, MPH, Jeffrey F. Horowitz, PhD, Jiandie D. Lin, PhD, Carey Nien-Kai Lumeng, MD, PhD, Ormond A. MacDougald, PhD, Rodica Pop-Busui, MD, PhD, Leslie Satin, PhD.

2021 Fellows of the American Association for the Advancement of Science (AAAS)

AAAS is the world's largest general scientific society and publisher of the Science family of journals. Selection as an AAAS fellow is among the most distinct honors within the scientific community.

Charles Burant, Dr. Robert C. and Veronica Atkins Professor of Metabolism Professor of Internal Medicine Professor of Molecular and Integrative Physiology Director of the A. Alfred Taubman Medical Research Institute, Medical School Professor of Nutritional Sciences, School of Public Health "Distinctive molecular and metabolomic research on insulin resistance, therapy for diabetes and management of obesity combined with stimulation of physical activity."



Ling Qi, Professor of Molecular and Integrative Physiology Professor of Internal Medicine, Medical School "Distinguished contributions to the field of medicine by producing new insights into the importance of ER-associated protein degradation in disease pathogenesis."



Congratulations

Congratulations to Rodica Pop-Busui, MD, PhD, Larry D. Soderquist Professor of Diabetes, for her nomination as president-elect to the American Diabetes Association. Dr. Pop-Busui is a recognized national and international leader in the field of diabetes and diabetes complications, Vice Chair for Clinical & Health Outcomes Research in the Department of Internal Medicine, and Associate Director of Clinical Research, Mentoring and Development at CDI. Her research interests involve chronic complications of diabetes, particularly diabetic neuropathy, diabetic foot complications, diabetic kidney disease and cardiovascular disease, and novel technologies for treating type 1 diabetes. We are excited to see the strength in her leadership at this national level.

1993 | Christin Carter-Su, PhD

Dr. Christin Carter-Su, Anita H. Payne Distinguished University Professor of Physiology and Henry Sewall Collegiate Professor of Physiology, demonstrates that Jak2 mediates signaling by cytokine receptors. Future work shows that Jak2 mediates leptin signaling, and that cytokine receptor/Jak2 signaling underlies kidney complications in diabetes. Dr. Carter-Su receives the Roy O. Greep award from the Endocrine Society in 2000 for her discovery.



1989 | George M. O'Brien Kidney Center

Roger Wiggins, MD, and colleagues are awarded one of the first George M. O'Brien Kidney Centers, an NIH program established by Congress to promote state-of-the-art kidney research to improve the lives of patients with kidney diseases, with a major focus on diabetic kidney disease.



Looking Ahead

This past foundational year has allowed the CDI to make important strides in enhancing all aspects of diabetes-related research and care at U-M, but we still have more to do. We cannot overstate the impact that the COVID-19 pandemic has had on our own community of scientists, clinicians, and learners, as well as the communities we seek to serve. Yet, the challenges faced illuminated the need and the calling to double down on our mission to support rigorous science and its integration with patient-centered clinical care. We are uniquely positioned to not only contribute, but to lead the way in discovering and implementing methods to prevent, treat, and cure diabetes, obesity, and related metabolic diseases and complications.

To do this, we will lean into our strengths of unprecedented collaboration and engagement, bolstering our community of scientists, clinicians, and learners. And we will elevate the voice of our patients and their families, so that we can ensure that our strategies are closely aligned with the goals of those living with, and affected by, these diseases in their daily lives. This heightened engagement will help ensure the principles of health equity are central to our goals, practices, and research and care agendas.

Relatedly, we know that it isn't enough to identify pathways and mechanisms underlying diabetes and related illnesses, or to test potential new ways of treating people afflicted by these illnesses. We must also ensure that the knowledge generated by CDI research is translated and extended to affected people in the community, the state, the country, and the world as a whole. We welcome partnerships as we seek to build additional pathways to affect diabetes-related health policy and research that can measurably improve the lives of all who suffer from diabetes, obesity, and related diseases.

Save the Date

Inaugural Caswell Diabetes Institute Metabolism, Obesity, and Diabetes Symposium

Join us on May 11–12, 2022

- Day 1 will feature plenary speakers, a debate, and a joint poster session
- Day 2 will include three additional keynote addresses that will take place at the beginning and end of the day. It will also showcase CDI centers by dividing into individual tracks, including three talks that will be given concurrently.

Support CDI

Today, we all know and love someone impacted by diabetes, obesity, or other metabolic diseases. A gift to the Caswell Diabetes Institute supports high-stakes research that will accelerate discovery into practice and into the lives of our loved ones and communities.

Join us today to help make a difference.

giving.umich.edu/

[give/335259](https://giving.umich.edu/give/335259)

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