WE ARE MORE EFFECTIVE WHEN WE WORK TOGETHER

2022 IMPACT REPORT
We will continue to cultivate diverse teams; support and empower multiple perspectives and approaches to solutions; and work collaboratively to enable and accelerate transformative discoveries and better meet the needs of our patients, families, and the community at large.

From the Director

This issue marks the completion of our second full year of the Caswell Diabetes Institute and provides the opportunity to reflect upon the progress that we’ve made in our collective pursuit of the institute mission: to support rigorous science, and its integration into clinical care to ultimately prevent, treat and cure diabetes, its complications, and related metabolic diseases.

While the impact of our work over the past year shows progress (as well as promise), we recognize that the more than 37 million persons living with diabetes and related diseases (in the U.S. alone) continue to face a litany of physical and psychosocial burdens. The threats to our community posed by diabetes, obesity, and related metabolic diseases continue to increase, but so do our opportunities to effect change. Hence, we continue to expand our programs to identify, improve, and implement new preventive and therapeutic strategies and to ensure broad access to these advances.

Connecting the academic, research, and clinical missions represents one of the most important ways that U-M advances health in Michigan and around the world. From the outset, we have built our strategy to conquer diabetes and related diseases on the foundational notion that we are more effective when we work together. Hence, we will continue to cultivate diverse teams; support and empower multiple perspectives and approaches to solutions; and work collaboratively to enable and accelerate transformative discoveries and better meet the needs of our patients, families, and the community at large.

Transformative discoveries across the spectrum of science represent the engine that drives the CDI and our battle against diabetes and related diseases. As you will see in the following pages, we support a strong portfolio of team science that comprises basic, clinical, and translational research and policy initiatives to ultimately improve the lives of those living with diabetes, obesity, and their complications.

As we build and strengthen our community, we welcome you to join us in our mission. While the challenges are many, we believe that by working together, we can collectively make a consequential impact—and cures. Please let us know of any ideas that you have, or ways you might want to help.

Sincerely,

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

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According to 2022 data from the Centers for Disease Control, 37.3 million people have diabetes (11.3% of the US population), a number that has continuously risen from year to year.

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.
Meet our Leadership Team

The Institute has a dynamic leadership team dedicated to ensuring the sustainability and growth of robust diabetes, obesity and metabolism related research. This team ensures that U-M not only breaks new ground scientifically, shares best practices globally, and ultimately improves care and outcomes of people living with these diseases.

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
Director, The Brehm Center

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
U-M Brehm Center Investigator
Professor, U-M Department of Pediatrics and Communicable Diseases, Professor, Nutritional 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, U-M-JDRF Center of Excellence at the University of Michigan
Director, Diabetes Transition Program, Endocrine Section, VA Ann Arbor Health System

Inas Hanna Thomas, MD
Associate Director for Pediatric Clinical Research and Diabetes Programs, Caswell Diabetes Institute
Chair, Department of Pediatrics Endocrinology

Jennifer Ann Wyckoff, MD
Associate Director for Diabetes Care, Caswell Diabetes Institute
Associate Professor, Metabolism, Endocrinology, and Diabetes
In Gratitude

The work of the Elizabeth Weiser Caswell Diabetes Institute would not be possible without the beneficence of each and every one of our donors. Their passion to improve the lives of those living with diabetes, along with their belief in our ability to make these improvements, empowers us to make a difference.

We would like to extend a very special thank you to U-M Regent Ron Weiser and the Caswell family. Like so many other families, they know firsthand the impact diabetes can have not only on the individual with the condition, but also those around them. Having two sons as well as her husband diagnosed with T1 diabetes, Elizabeth Weiser Caswell (daughter of Mr. Weiser and namesake of our Diabetes Institute) continues to demonstrate her unwavering commitment to this cause. In addition to the Weiser family $30 million gift to the university in honor of diabetes research, Elizabeth continues her T1D advocacy within the community and beyond, serving as a member of the Board of Directors for the JDRF International and as vice-chair of the JDRF Research Committee. We are grateful for the Weiser-Caswell family’s vision, partnership, and continued support as we seek to fulfill our mission.

“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

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.

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 Soleimani, 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.

We are forever grateful for Dee’s vision and legacy, which will continue to inspire the diabetes community forever. Dee and Bill’s personal involvement and investment has deepened the level of collaboration at a national scale, demonstrating the value of caring relationships and individual vision in building productive teams and spurring progress. The Brehm Center will continue to work with Mr. Bill Brehm to advance a broad array of research focused on all aspects of diabetes and its complications.

Dee’s lifelong commitment to giving manifested itself in the vision and generosity that she shared with her husband, William Brehm. Together, the Brehms have a long history of commitment to U-M, providing crucial vision and support and donating more than $70 million to support a range of projects and programs.

These include:

- The William K. and Delores S. Brehm Professorship in Type I Diabetes Research and the Larry D. Soderquist Professorship in honor of Dee Brehm’s brother
- The eight-story 230,000-square foot addition (Brehm Tower) to the Kellogg Eye Center and the founding of the Brehm Center for Diabetes Research
- The Brehm Scholars program for graduates of the Roosevelt High School in Dearborn (Bill Brehm’s alma mater), which supports students with full tuition scholarships, and medical school full tuition scholarships for those that attend the U-M School of Medicine
- Generous support for space, equipment, technology and scholarships for the U-M School of Music, Theatre & Dance

Married for more than half a century and as deeply in love as when they met as college students, Bill and Dee Brehm have been blessed by interesting careers, wide interests, and the joys of parenthood and grandparenthood. Woven into that tapestry has been a desire to seek out and overcome difficult challenges. As a person who depended upon daily insulin injections to control her diabetes, Dee lived in the constant shadow of the threat of low blood sugars that could develop without warning. Thus, Dee and Bill invested time, energy, and financial resources to create a new paradigm for the enterprise that is the search for the cure and prevention of type 1 diabetes and its complications.

We are forever grateful for Dee’s vision and legacy, which will continue to inspire the diabetes community forever. Dee and Bill’s personal involvement and investment has deepened the level of collaboration at a national scale, demonstrating the value of caring relationships and individual vision in building productive teams and spurring progress. The Brehm Center will continue to work with Mr. Bill Brehm to advance a broad array of research focused on all aspects of diabetes and its complications, to foster new collaborations within the University of Michigan and elsewhere. The values of kindness, compassion, and engagement that Dee upheld continues as the foundation of Brehm Center efforts.

Remembering the brightest of lights, Dee Brehm

Delores “Dee” Soderquist Brehm, a beloved partner and friend who sparked and continues to inspire crucial advances in diabetes research and care at the University of Michigan, passed away at her home in April 2022.

The values of kindness, compassion, and engagement that Dee upheld continues as the foundation of Brehm Center efforts.
Advancing Targeted Research and Discovery

Our CDI researchers and clinicians attack diabetes and related diseases in a comprehensive way—focusing on insulin-producing islets, type 1 diabetes, type 2 diabetes, metabolism, obesity, and the complications and burdens of diabetes. Because it is not feasible to enumerate all of these approaches in this single report, this year’s report focuses on our world-leading team of researchers focused on Diabetes and the Islet.

The basic islet biology research programs at the University of Michigan continue to uncover important new aspects of islet biology, positioning Ann Arbor as a top center for islet research in the United States (and the world). Notably, many investigators at the Brehm Center (including Drs. Soleimanpour, Arvan, Satin, Qi, and Reinert) represent leaders in the study of islet organelle function in diabetes; this important expertise helps to set us apart from other islet biology centers.

Beyond this, our U-M basic islet biology program has embraced new translational efforts geared to impact human health. These include the development of implantable scaffolds for islet/stem cell transplantation (Shea), nanodisc technology for immune tolerance in autoregulatory (Moon), compounds to relieve ER stress and improve insulin folding (Arvan), multiorgan crosstalk to promote islet function (Seeley, Hussain, Gregg), pharmacologic and genetic approaches to enhance mitochondrial bioenergetics to fuel beta cell viability (Soleimanpour), the study of beta cell development and maturation to empower future personalized medicine approaches (Shea, Soleimanpour, Cras-Meneur, Parker), and multiomic integration and assessment of the underlying genetic etiology of diabetes pathogenesis (Parker, Gregg).

This program recently added new assistant professors who will continue to integrate and expand the limits of islet biology research in the decades to come (Coronel and Reinert; Dr. David Lorberbaum will join our team in 2023). As islet dysfunction is central to the pathophysiology of all forms of diabetes, the islet biology research community at Michigan continues to generate new understanding as we push towards future therapies to better meet the needs of those with diabetes.

The Brehm Center at Michigan is a world-leading team of researchers focused on Diabetes and the Islet.

Dr. Peter Arvan, MD, PhD
Chief, Division of Metabolism, Endocrinology & Diabetes
William K. and Delores S. Brehm Professor of Diabetes Research

Dr. Arvan’s lab focuses on understanding how islets process and produce insulin and discovered how defects in insulin and insulin processing can lead to a form of diabetes known as MIDY (with insulin deficiency). In addition to identifying MIDY, Dr. Arvan’s lab finds that predisposition to insulin misfolding represents a common risk factor for diabetes that results from environmental as well as genetic causes.

Dr. María Coronel, PhD
Assistant Professor, Biomedical Engineering

Dr. Coronel’s lab continues to work on the rational design of materials to yield safer immunotherapeutic strategies. They are currently focused on targeting the immune checkpoint pathway and using our programmable materials to interrogate local material-immune cell communications.

Dr. Brigid Gregg, MD
Assistant Professor, Pediatric Endocrinology, Pediatrics

Dr. Gregg’s lab focuses on characterizing early life events that predispose individuals to developing metabolic disease. The ultimate aim of this work is to discover early interventions to improve metabolic outcomes in high risk individuals. Dr. Gregg’s lab uses translational models along with a human mother-infant cohort to study how nutrient exposures very early in life can have a lifelong impact on body fat, insulin resistance, elevated blood glucose, fatty liver disease and pancreatic beta-cell and function. Through research in the Gregg lab we have discovered that the fats in the maternal diet during lactation alter the fatty acids in the breast milk. Thus the infants are eating a diet with a skewed fat composition at a time when important organ growth and maturation is occurring. This then increases the risk for offspring inflammation, insulin resistance and metabolic syndrome. We have also identified that human milk omega-6:omega-3 long chain fatty acid ratio is associated with infant markers of obesity risk. Upcoming work in the laboratory is focused on analysis of dietary fats in lactating women and human milk fatty acid ratio in lactating women and infant growth along with long term offspring outcomes in an translational model of Western diet during lactation.
Mehboob Hussain, MD
Professor of Internal Medicine

The overarching goal of Dr. Hussain’s lab is to examine the molecular mechanisms that cause beta cell death or the loss of beta-cell function in type 1 and type 2 diabetes. His team focuses on examining early events in these processes, based on the premise that the most effective therapy for diabetes must occur during its early stages. Using genetically engineered mouse models, cell culture systems, human islets, and stem cell-derived human beta cells, the Hussain lab interrogates cellular signaling pathways that become defective early during diabetes pathogenesis. These studies have defined signals that enable beta-cells to adapt to increased demands in diabetes and in obesity, revealing ways to allow beta-cells to release more insulin than normal beta-cells without ill effects. The lab aims to engineer new beta-cells that take advantage of this mechanism, so that even a very small number of cells could fully replace beta-cells in people with diabetes. The lab team has also identified signals from the liver and from adipose tissue that profoundly impact beta cell function; by targeting these, they hope to delay or prevent the onset of diabetes in those with early-stage disease.

James Moon, PhD
J. G. Searle Professor, University of Michigan, Dept. of Pharmaceutical Sciences, Dept. of Biomedical Engineering, Dept. of Chemical Engineering, Biointerfaces Institute

The Moon lab is developing a nanoparticle system that can promote antigen-specific immune tolerance against T1D by inducing regulatory T cells against autoreactive antigens in T1D. If successful, this approach may provide a new strategy for modulating immune microenvironment of pancreas, leading to a new avenue for immune tolerance against T1D. This technology represents the basis for a new company that recently received a JDRF grant to optimize this nanoparticle approach as a potential treatment against T1D.

Stephen Parker, PhD
Associate Professor of Computational Medicine and Bioinformatics, Associate Professor of Human Genetics

The Parker laboratory uses an integrative research approach in the general fields of computational biology and functional genomics. The major goal of the lab is to generate mechanistic knowledge about how disease susceptibility is encoded in the non-coding portion of the genome, with a focus on type 2 diabetes. They accomplish this through an interdisciplinary combination of molecular/cellular and computational approaches. Specifically, generating multiple high-throughput data sets on the genome, epigenome, transcriptome, and proteome across species and in disease-relevant tissues/cells and using computational approaches to integrate and analyze this data. Looking forward, it is believed that these high-throughput biological profiling and analysis approaches will be closely tied to disease diagnosis, prognosis, and treatment—and will therefore have a tremendous influence on medicine.

Ling Qi, PhD
Professor, Molecular & Integrative Physiology, Professor, Internal Medicine, Division of Metabolism, Endocrinology & Diabetes

Dr. Qi’s lab’s recent work has shown the importance of the SEL1L-HRD1 protein complex that mediates ER-associated degradation (ERAD) in islet & cells. This is important because β cells secrete thousands of insulin molecules every minute, which challenges ER homeostasis. ER homeostasis plays crucial roles in β cell function and survival, but the processes that control ER homeostasis have remained unclear. Highlights of recent findings from the Qi lab include understanding how SEL1L-HRD1 ERAD plays a key role in β cells by controlling the β cell identity. Loss of SEL1L-HRD1 function causes β cells to undergo de-differentiation via the TGF-β pathway. Importantly, ERAD deficient β cells do not undergo cell death because they are protected by the bulk degradation of ER fragments or domains. Dr. Qi and his team showed recently that this new compensatory mechanism is key to β cell survival and the pathogenesis of type 2 diabetes (as featured on the cover of the The Journal of Clinical Investigation, above).
Lonnie Shea, PhD  
Steven A. Goldstein Collegiate Professor, Biomedical Engineering  
Islet or beta cell replacement represent promising approaches for patients with type 1 diabetes whose endogenous beta cells were lost as a consequence of the autoimmune disease. Dr. Shea’s lab is working on strategies for the transplantation of beta cells, either from donor islets or derived from stem cells, to sites in the body that can support engraftment and long term function without the need for immune suppression. They collaborate with beta cell biologists towards enhancing the metabolism of the beta cells, which is critical to their survival and long-term sensing of glucose and secreting of insulin. Additionally, they collaborate with immunologists on attenuating the immune responses that would normally lead to destruction of transplanted cells. Dr. Shea’s team is designing immune therapies to either locally create an immune privileged environment or to reprogram the immune system to accept the transplanted cells, with both approaches avoiding the using of immune suppression. More recently, they have begun efforts that combine the reprogramming strategy with novel early detection strategies to identify diabetes prior to beta cell destruction, thus avoiding the need for cell transplantation.

Scott Soleimanpour, MD  
Associate Professor of Internal Medicine and Molecular and Integrative Physiology, Co-Director, JDRF Center of Excellence at the University of Michigan, Associate Director, Caswell Diabetes Institute (T1D Basic Research and Islet Biology Programs), Director, Islet Core, Michigan Diabetes Research Center Director, Diabetes Transition Program  
The Soleimanpour lab is focused on understanding the importance of mitochondrial quality control to pancreatic beta cell health in both type 1 and type 2 diabetes. Their current focus is on (1) understanding the molecular mechanisms underlying mitochondrial dysfunction in T1D and T2D, (2) determining how the mitochondrial quality control machinery impacts beta cell health but also beta cell identity through mitochondrial-to-nuclear directed transcriptional regulation, and (3) identifying candidate pharmacological compounds to rescue mitochondrial damage or improve mitochondrial health to treat diabetes. These studies have begun to identify potential new therapeutic targets which may improve beta cell function and survival to prevent or reverse diabetes.
Our Members

Members of the Caswell Diabetes Institute are part of a diverse community united to increase the effectiveness in our fight against diabetes, obesity and associated disorders. In November, 2022, we expanded our CDI membership to include community members and faculty from some regional institutions, as well as new clinicians and researchers from our world-renowned University of Michigan faculty. This broader engagement adds additional perspectives and many hands to help CDI address challenges at the levels of learning, laboratory, clinic, community and policy.

2022 by the Numbers

**326 CDI Members**
- **248 U-M Faculty**
- **71 CDI and Center Regional Faculty**
- **7 Community**

**1,754 Publications**

**941 Active Grants**

**67 Schools, Colleges, Institutes, & Departments**

**578 Journals**

**Member highlight**

Cultivating Strong Teams: Recruitment & Retention

CDI continues to collaborate across campus to co-recruit a wide array of talented research leaders in strategic priority areas across basic and clinical research. Growing and supporting a diverse, committed force of outstanding investigators that work together to prevent, treat and cure diabetes, obesity, and related complications will continue to be crucial for the execution of the CDI mission. Recently, CDI welcomed several new faculty members, including:

**Paula Goforth, PhD**
Assistant Professor, Pharmacology
Dr. Goforth was recently appointed to Assistant Professor in the Tenure Track in the Department of Pharmacology with membership in CDI. Her research uses electrophysiological, imaging, and optogenetic techniques to examine the neuronal populations and circuits that underlie the central control of metabolism, and to understand how the dysfunction of these circuits may contribute to obesity and diabetes. Prior to joining CDI, Dr. Goforth served as an Associate Research Scientist within the Department of Pharmacology as well as the director of the Cellular Physiology Laboratory in the Michigan Diabetes Research Center.

**Brian Schmidt, DPM**
Assistant Professor of Internal Medicine
Dr. Schmidt’s NIDDK funded K23 grant uses novel metagenomic next generation sequencing techniques to evaluate the diabetic foot ulcer (DFU) microbiome as a modifiable factor to prevent DFU infection and improve outcomes. The identification of the components of the DFU microbiome that predicts infection will directly lead to targeted therapies for those with a current DFU. Dr. Schmidt became a CDI Clinical and Translational Research Scholar in 2021.
Celebrating Our Members

Katherine Gallagher, MD, and Michele Heisler, MD, MPA
Elected to National Academy of Medicine

Gallagher, the John R. Pfeifer Professor of Surgery, professor of surgery, and of microbiology and immunology in the Medical School, was elected to the NAM for her innovative translational research on epigenetic regulation of immune cells during normal and pathologic tissue repair and how it is affected in non-healing diabetic wounds, and other cardiovascular disease processes. Heisler is a professor of internal medicine at the Medical School, and of health behavior and health education at the School of Public Health; a research investigator with the VA Ann Arbor Healthcare System; and medical director of the nonprofit health and human rights organization Physicians for Human Rights. Heisler’s innovative clinical trials and implementation studies in diabetes have demonstrated the effectiveness of diverse peer support models—in which fellow patients, community members, and family members are trained to support patients—to achieve sustained improvements in health and social well-being.

Rodica Pop-Busui, MD, PhD
Appointed as President of the American Diabetes Association 2023 Executive Board of Directors

Dr. Busui will serve as the President Medicine and Science beginning in January 2023. In this role, she will work with the ADA to strategically lead and focus efforts to ensure the ADA continues to uphold the mission upon which it was founded. Dr. Busui is the Larry D. Soderquist Professor of Diabetes and a recognized national and international leader in the field of diabetes and diabetes complications. She is the vice chair of the Senate Advisory Committee on Diabetes and Obesity, and on determining the mechanisms and treatment strategies for neurological disorders such as amyotrophic lateral sclerosis and Alzheimer’s disease. Established by the board of regents in 1947, the Distinguished University Professorship recognizes senior faculty members with exceptional scholarly or creative achievements, national or international reputations for academic excellence and superior records of teaching, mentoring and service. The appointments began Sept 1 and last throughout the recipient’s period of active service at the university and may be retained after retirement.

Alison Affinati, MD, PhD and Dina Hafez-Griaudze, MD
Receive Early Career Endowment Awards

The Department of Internal Medicine awards three Early Career Endowments annually (2019–2024). These awards are competitively assigned to junior faculty at the Assistant Professor level (any track) who are within five years of their terminal residency/fellowship/post-doctoral training. These junior faculty endowments are named after a current or former faculty member and are held by the incumbent for one 5-year cycle as long as they do not hold another endowment. In 2022 Alison Affinati, MD, PhD received the Georgiana M. Sanders, MD Department of Internal Medicine Early Career Endowment Award and Dina Hafez Griaudze, MD received the Bertram Pitt, MD Department of Internal Medicine Early Career Endowment Award.

Kanakadurga Singer, MD
Appointed Assistant Dean for Tenure Track Faculty

As of Nov. 1, 2022, Dr. Singer now provides oversight of tenure track faculty appointments, promotions, and advancement while serving as an advocate for tenure track faculty in the medical school and university. In addition to this role, the Valerie Castle Ooppari, MD, Professor of Pediatrics and an associate professor of Pediatric Endocrinology and Molecular and Integrative Physiology, also serves as a faculty advisor in the Office of Faculty Development, and associate director and faculty ally of the Graduate Program in Immunology. She is active in the Office of Faculty Development and with diversity, equity and inclusion activities, and she currently serves as vice-chair of the Senate Advisory Committee on University Affairs.

Eva Feldman, MD, PhD
Named James W. Albers Distinguished University Professor of Neurology

Dr. Feldman, the Russel N. DeLong Professor of Neurology, and Professor of Neurology in the Medical School, conducts seminal research on understanding and treating complications of diabetes and obesity, and on determining the mechanisms and treatment strategies for neurological disorders such as amyotrophic lateral sclerosis and Alzheimer’s disease. Established by the board of regents in 1947, the Distinguished University Professorship recognizes senior faculty members with exceptional scholarly or creative achievements, national or international reputations for academic excellence and superior records of teaching, mentoring and service. The appointments began Sept 1 and last throughout the recipient’s period of active service at the university and may be retained after retirement.

Inas Thomas, MD
Appointed Director of the Division Pediatric Endocrinology

Dr. Thomas now oversees and leads the clinical, research and education missions of the Division as well as the administrative functions. In addition to her new responsibilities as director, Dr. Thomas also serves as the director of the Pediatric Diabetes Program and the Pediatric Endocrine Service Chief. Her new appointment became effective August 1, 2022.

Paula Goforth, PhD
Appointed Assistant Professor in the Tenure Track within the Department of Pharmacology

Effective February 1, 2023, this exciting new appointment for Dr. Goforth provides an opportunity for her advanced training in pancreatic biology and signal transduction to strengthen both the Department and Medical School while creating a bridge between Pharmacology, CDI and several interdisciplinary research centers and programs.
Innovative Learning and Mentoring

CDI is fortunate to have world-renowned faculty, trainees, students, and staff all working together toward the common goal of creating transformative knowledge that advances science and improves the lives of patients living with diabetes, obesity, and related metabolic diseases. To support and empower our talented members, and to promote new ideas and collaborations, we provide a host of robust mentoring, information sharing, and formal networking programs.

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

In May 2022, more than 200 faculty, trainees, and staff gathered at the North Campus Research Complex for the inaugural Caswell Diabetes Institute Metabolism, Obesity, and Diabetes (CDI-MOD) Symposium. The CDI joined forces with the Frontiers in Diabetes Complications Conference, the Michigan Center for Diabetes Translational Research (MCDTR), the Michigan Nutrition Obesity Research Center (MNORC), and the Michigan Diabetes Research Center (MDRC) to hold a combined 2-day event.

Keynote presentations were given by E. Dale Abel, MD, PhD, UCLA, Marshall Chin, MD, MPH, University of Chicago, Raghu Mirmira, MD, PhD, University of Chicago, and Clifford J. Rosen, MD, Maine Health Institute for Research. Faculty from the University of Michigan’s Medical School, School of Public Health and School of Social Work shared their expertise on a variety of basic science, clinical, translational, and health equity research. Randy Seeley, PhD, University of Michigan, and Sam Klein, MD, Washington University, debated about bariatric surgery and weight loss, ten trainees participated in an exciting data blitz expertly moderated by trainee Rebecca Schill, PhD, and 90 posters were presented during the poster session.

Innovative Learning and Mentoring

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CDI-MOD Metabolism, Obesity & Diabetes Symposium
May 17, 2023

Seminar Series

The CDI 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. In March 2022, Prof. Andrew Hattersley, University of Exeter, presented virtually “Improving clinical care using insights from monogenic diabetes” and in October 2022, Prof. David Simmons presented in a hybrid format “Translating epidemiological studies and clinical trials into a standardized approach to diagnosing Gestational Diabetes Mellitus: Where are we now?”

Research Clubs

In partnership with the MCDTR, the MDRC, the MNORC and the Department of Physiology, the CDI supported eight research clubs through the 2021–22 cycle. The research club meetings continued to meet virtually bringing together an average of 180 attendees each month.

Caswell Diabetes Institute—MEND Grand Rounds

The CDI co-sponsored five Grand Rounds speakers in the U-M Internal Medicine Division of Metabolism, Endocrinology and Diabetes (MEND) seminar series. Experts from Michigan to Spain shared a wealth of knowledge with their in-person and virtual presentations, which included: Stephanie Correa, PhD, UCLA Dept of Integrative Biology and Physiology, “Estrogens in Heat: Estrogenic modulation of energy expenditure in females”, David Araujo Vilar, University of Santiago de Compostela, “How to define progeroid syndromes: from molecular mechanisms to clinical features”, Abhijit Naik, MBBS, University of Michigan, “Defining the molecular landscape of hyperfiltration-mediated glomerular injury using kidney allografts as a model system. Implications for diabetic nephropathy,” Andrea Dunaf, MD, Icahn School of Medicine, and Mount Sinai Health System, “Deconstructing a Syndrome: Genomic Insights into Polyolysis: Ovary Syndrome Causal Mechanisms and Classification”. Philipp E. Scherer, PhD, University of Texas Southwestern Medical Center Dallas, “Adipose Tissue Organ Crosstalk in Health and Disease”
CDI – Cultivating Strong Teams

Fostering a culture of rich scientific investigation and collaboration is built upon high levels of trust and engagement. As CDI cultivates our research neighborhoods, we recognize that those who work at the bench and in the clinics benefit from opportunities to connect and network. This is especially true as we come out of the enforced isolation of the early COVID-19 era and seek opportunities to rebuild social connectivity and inclusivity. Thus, this past year, in addition to providing ample opportunities to engage around advancing science, CDI began holding social events with coffee, tea, and snacks at the North Campus Research Complex (NCRC) and the Brehm Tower to create informal connections among CDI staff, trainees, and faculty—igniting communication and conviviality.

Clinical and Translational Scholars Program

To help support busy clinicians in their quest to improve the lives of persons living with diabetes or obesity, CDI launched the Clinical Translational Research Scholars Program (CTRSP), led by Dr. Rodica Pop-Busui. The overall goal of the CTRSP is to identify and support the most promising early-stage clinician-scholars in the fields of diabetes, obesity and metabolism and to support their development of new research programs in those domains. This approach helps ensure the integration of top-notch diabetes care with transformative clinical research.

“The most beneficial piece of the CTRSP program was the time out of clinic and the mentor guidance over the past 3 years,” CTRSP Scholar Lindsay Ellsworth, MD said. “My mentor has helped me make new connections across campus with new collaborators. This program has helped me meet more diabetes/metabolic focused researchers that were outside of my world.”

CTRSP provides up to 50% salary support for up to 3 years, protecting this time from clinical care duties to allow successful clinical research scholarly activities. CTRSP also provides strong mentoring regarding research and career advancement.

“The CTRSP program has benefited my career in ways unimaginable,” CTRSP Scholar, Dr. Brian Schmidt said. (Notably, since receiving the CTRSP support, Schmidt became the first-ever podiatrist in National Institutes of Health history, U.S history, and the U-M Medical School to receive a K23 award).

Yu Kuei (Alex) Lin, MD and his project, “A Personalized Mobile Health Program for Improving Hypoglycemia Management in Adults with Type 1 Diabetes,” received an NIH K23-Award. This grant will allow Dr. Lin to continue to advance diabetes technology by developing scalable, personalized behavioral interventions. Kara Mizokami-Stout, MD, whose project focused on continuous glucose monitoring (CGM) and T2 diabetes also shared that, “the pilot data generated from this CTRSP project provided the opportunity to receive a K23 Career Development Award from the NIDDK.”

Dr. David Flood was selected as the 2022 Clinical Translational Research Scholar Program awardee for his project “Strengthening Global Diabetes Care through Implementation and Health Systems Research”

Since launching the Clinical and Translational Research Scholars Program (CTRSP) in July 2019, the five scholars have had a total of 110 publications and 642 citations (at press), and increased research time from 21% to 85%. The CTRSP has supported realistic protected time to allow successful clinical research scholarly activities, and has provided scholars with opportunities for promotion and advancement. All five scholars have received external funding to support their research going forward -qualifying for external grant funds exceeding $1M.

The Caswell Diabetes Institute Clinical Translational Research Scholars Program plans to support a new scholar every year. Contact us at MichiganDiabetes@umich.edu to learn more.
Steno Fellowships
The Steno North American Fellowships represents a transatlantic collaboration in clinical and health outcomes diabetes-related research, enhancing the synergies between institutions for the benefit of people suffering from diabetes. The fellowship offers researchers the opportunity to dedicate from 3 months to 1.5 years to practice clinical and health outcomes diabetes-related research at one of the other transatlantic partner institutions mentioned above. The Fellowship gives CDI members the opportunity to exchange methods and ideas, obtain training on specific topics and share knowledge in an international research environment focused on clinical and translational diabetes research. This transatlantic collaboration strengthens clinical research on caring and treating diabetes patients, by enhancing the synergies across the partnering research institutions. Our current visiting scholar, Dr. Jesper Fleischer from the Aarhus STENO Diabetes Center, is working with U-M on several machine learning projects, as well as validating easier screening tests for diabetes complications at the point of care.

Looking to take your collaboration and expertise to the next level?
The Caswell Diabetes Institute is looking to support clinical and health outcomes diabetes researchers through the Steno Fellowship. Contact us at MichiganDiabetes@umich.edu to learn more.

Brehm Center
Director: Molly Dwyer-White, MPH
In November 2022, the Brehm Center celebrated the twelve-year anniversary of the Brehm Towers and the pioneering scientific innovations enabled by this premier research facility. Located next to the Kellogg Eye Center, the Brehm Tower grew directly from the vision and generosity of Bill and Delores (Dee) Brehm with their $44 million gift to the University of Michigan for type 1 diabetes research in 2004. Four of our top scientists in diabetes research presented on insulin biosynthesis, type 1 diabetes and increased cardiovascular disease, insulin producing pancreatic beta cells, and diabetes retinal diseases. These scientific presentations were mixed with personal stories of how their lives and careers have been affected by the generosity of Mr. and Mrs. Brehm.

Celebrating the impact of the science, CDI Director Martin Myers, MD, PhD stated, “What has been most important about the Brehm Towers is the concept of how we filled it. Built on the idea that we would take diabetes researchers from across all disciplines and not worry about where their department home was, but to bring them all to one place to focus on diabetes.” The Brehm Center continues to impact discoveries and build talent, with a ripple effect based on the “Brehm effect” of investing in investigators with a collaborative spirit, and a sense of wonder. Rodica Pop-Busui, MD, PhD, shared that, “Ever since I met Dee [Brehm], she has been, and will continue to inspire and guide me in this research. Despite the upheavals in the world, we have continued to work, and are changing the lives of people living with diabetes.” Exciting progress is underway. With the enormous support from the Brehm family and the University of Michigan, hundreds of scientists are working together to advance the treatment, prevention and cures for diabetes. Thank you to the U-M Men’s Glee Club for opening our celebration with style!
JDRF Center of Excellence at the University of Michigan
Director: Thomas W. Gardner, MD
The JDRF Center of Excellence (CoE) at the University of Michigan is an interdisciplinary program that seeks to define the metabolic basis of diabetes complications (retinopathy, nephropathy, neuropathies, cognitive dysfunction) in persons with type 1 diabetes beyond glucose. There are 4 key projects:
1.) Metabotype to optimize beta cell (ß-cell) function,
2.) Employing Artificial Intelligence (AI) to reduce hypoglycemic events,
3.) Identifying the metabotypes to reduce disease burden, and
4.) Minimizing the burden of mental health in T1D.

The primary goal is to find new diagnostic modalities and therapeutic interventions to improve the quality of life of persons with type 1 diabetes. While it is not possible to elaborate on the almost 40 scientific articles published by the CoE since its inception, one important recent publication focused on the interactions between COVID and diabetes and ways to prevent and treat them:


Michigan Center for Diabetes Translational Research (MCDTR)
Co-Directors: Michele Heisler, MD, and Gretchen Piatt, PhD
The Michigan Center for Diabetes Translational Research (MCDTR) serves to establish, promote, and enhance multidisciplinary collaboration among researchers directed at the prevention and control of diabetes, its complications, and comorbidities, by providing access to specialized expertise and resources. The MCDTR invests in research investigators and partnerships, including providing formal mentorship, and training on implementing interventions and methodologies that have demonstrated efficacy into real-world populations and settings, and as well as promoting research that addresses health equity in communities disproportionately impacted by diabetes, obesity and its complications. A few highlights from the past year include:

Addressing social determinants and economic burden among people with diabetes and high A1c
Minal R. Patel, PhD, PMH, Associate Professor, Associate Chair, Department of Health Behavior & Health Education, School of Public Health, University of Michigan

Measuring health equity in health services research and quality improvement
Renuka (Renu) Tipirneni, MD, MSc, FACP, Assistant Professor, Department of Internal Medicine—Primary Care, University of Michigan

Mouse Metabolic Phenotyping Center-Live (MMPC-Live)
Director: Carol Elias, PhD
The Mouse Metabolic Phenotyping Center-Live at U-M is one of only four of these NIDDK-funded centers in the US. Established and funded at the end of 2022, the U-M MPMOD provides complex, technically difficult metabolic, physiologic and behavioral phenotyping and consulting services to study the heterogeneity, pathogenesis, and complications of diabetes and obesity in living rodent models.

Michigan Diabetes Research Center (MDRC)
Director: Martin G. Myers Jr., MD, PhD
The Michigan Diabetes Research Center supports diabetes research across the spectrum from very basic to early patient-based studies. This year, our core facilities, enrichment programs, pilot and feasibilities grants, and other resources supported important studies that focused on insulin-producing islet cells and the causes of type 2 diabetes, among other things. We also made a great deal of progress understanding risks and causes underlying the complications of diabetes. Brian Callaghan, MD, and several other MDRC members led a study that showed that early intervention in type 2 diabetes and prediabetes plays a crucial role in the prevention of neuropathy, nephropathy, and cardiovascular dysfunction in Native Americans. Similarly, Wen Ye, PhD and her collaborators showed that high blood pressure in people with diabetes strongly predicts stroke and heart attacks. These studies not only define major risk factors for the complications of diabetes, but also define treatments that can prevent these complications. Highlighted publications include:


Michigan Nutrition Obesity Research Center (MNORC)
Director: Randy Seeley, PhD
Obesity is a critical health problem that contributes to a wide range of health challenges and healthcare costs. Obesity has also defined easy treatment. The Michigan Nutrition Obesity Research Center provides researchers the opportunity to utilize advanced technologies and computational tools to understand how causes of obesity vary among individuals and across the population. Through these efforts, health professionals can translate these lessons to the design and implementation of novel dietary, exercise, and medication interventions to control obesity and obesity-related diseases in both adults and children.

In addition to the Brehm Center and JDRF Center of Excellence at the University of Michigan, U-M CDI researchers have access to four separate diabetes- and obesity-related centers funded by the National Institute of Diabetes and Digestive and Kidney Diseases/National Institutes of Health. U-M is the only institution to have all four of these centers.

Michigan Center for Diabetes Translational Research (MCDTR) Networking Social, which brought together faculty and staff with community-based organizations, government agencies, health and human service institutions and foundations in Detroit to foster interactions and promote engaging conversations. This year was no exception in adding to the projects and relationships that stemmed from this event. Many of the participants who attend are members of our Community-Academic Research Network that aims to facilitate research linkages between academic researchers and Detroit partner organizations.
Within the U-M/CDI LHS, patient care and operations, quality improvement, and research are intentionally integrated. Because of this integration and alignment, the system continuously learns, improving clinical care and outcomes.

Data is the linchpin of a learning health system and represents the source of metrics for the system to monitor, learn, and improve. A constant stream of data now flows into this crucial CDI program from the U-M electronic health record, which captures all aspects of patient care and outcomes, including from digital devices such as continuous glucose monitoring systems, insulin pumps, and wearables. The data is messy and complex, however. This team, with its expertise in clinical diabetes and obesity, health information technology, Electronic Health Record workflows, and data analytics, works to curate, organize, analyze, and interpret the data for all stakeholders in the system, including clinicians, individuals engaged in operations and quality improvement, and researchers.

Led by Dr. Joyce Lee, Associate Director of the CDI Informatics and Clinical Research Innovation Program, Robert P. Kelch, MD Research Professor of Pediatrics; and supported by Project Manager Emily Dhadphale, CCRP, and Data Analyst Jung Eun Lee, MS, this program seeks to create and enhance a Learning Health System (LHS) for diabetes and metabolism at U-M.

“Individuals receiving the right care, at the right time, every time” is the center’s vision.

Partnership with other U-M initiatives including the Precision Health Initiative and Research Data Office, the Office of Clinical Informatics, Health Information Technology Services, and the NIH-funded Childhood Obesity Research Core enables this CDI program to support a host of services for diabetes-focused researchers at U-M.

Creation and Maintenance of the CDI Data Repository
Developing and producing specialized curated data elements focused on obesity and diabetes. Key data elements for these tables include metrics such as diabetes complications, relevant antihyperglycemic medications, data from diabetes devices, longitudinal growth and weight trajectories, patient questionnaires on nutrition, sleep, and physical activity, and social determinants of health. The repository also contains tables with diabetes device data (Meter, CGM, Pump Data).

Custom Data Pulls
Providing a variety of datasets for researchers and clinical stakeholders, including summary-level data, limited-coded datasets, or full-PHI (identifiable) datasets of Michigan Medicine electronic health record data for secondary analysis or for clinical research or implementation studies.

Custom Visual Dashboards
Creating customized visual dashboards that provide insights about the prevalence of obesity, diabetes, and its complications as well as processes and clinical outcomes of care at Michigan Medicine. For example, real-time operational, quality improvement, and clinical outcomes.

Metrics
Since 2020, the CDI Informatics & Clinical Research Innovation Program team provided:

- 100+ consultation hours
- 75 custom data pulls
- 15 custom dashboards
- 52 faculty, 13 staff, and 6 trainees (totaling 71 members) representing 18 departments and 7 schools

Medical School
- Emergency Medicine
- Family Medicine
- Internal Medicine
- Obstetrics and Gynecology

School of Public Health
- Epidemiology
- Nutritional Sciences

School of Nursing
- Health Behavior and Biological Sciences

School of Kinesiology
- Applied Exercise Science
- Movement Science

School of Social Work
- School of Information

College of Literature, Science and the Arts
- Psychology
Consultations on Custom Health IT Tools and Data Governance
Providing one-on-one consultation to help researchers integrate research into the “real-world” healthcare delivery setting. The program helps stakeholders navigate the “black box” of the Electronic Health Record, understand which provider-facing tools can be used to capture data in the context of clinical care, which patient-facing tools can be used to capture patient-reported outcomes, andhow these can be integrated seamlessly into clinical workflows. The program also provides guidance on how to manage proper handling of the data under operational, quality improvement, and research governance.

Individual service requests supported a combination of operations, quality improvement and research efforts across the enterprise with nearly 70% of the total CDI services supporting research, 29% supporting operations and 24% supporting quality improvement (some requests serve multiple functions).

Populations of interest include: pediatric and adult patients with type 1 diabetes; type 2 diabetes; other types of diabetes including gestational diabetes and cystic fibrosis related diabetes; children seen in primary care; and adults enrolled in the weight navigation program

Individualizing Treatment and Empowering Patients to Improve Health and Well-Being: Weight Navigation Program
The CDI Informatics and Clinical Research Innovation Program provides real-time data and metrics to support operations, quality improvement, and measurement of clinical outcomes for the Weight Navigation Program (WNP). Metrics include the volume and timing of referrals, completion of WNP visits and utilization of additional weight-related services at Michigan Medicine (MM), and documentation of clinical expansion. Weight trajectories and weight change are obtained through weights captured at visits and participant-reported weights captured through a mobile platform. Individual-level dashboards are also used to identify eligible patients for the program at MM and to reach out to patients that need additional support in their weight management journey.

The CDI Informatics and Clinical Research Innovation Program now collects patient-reported psychosocial outcomes including depression screening and diabetes distress screening as part of clinical care to support “whole-person” care for diabetes. This feeds dashboards that are now used by staff from Pediatric Endocrinology, Psychology, and Social Work to identify patients who should be prioritized for attention and services by the multidisciplinary team, whether related to depressive symptoms, diabetes distress, hospitalizations, glycemic outcomes, or if they have been lost to follow-up.

The CDI Informatics and Clinical Research Innovation Program has catalyzed efforts across the Pediatric Primary Care sites at Michigan Medicine to utilize population management and health IT tools to deliver evidence-based care to children with overweight/obesity to support quality improvement. Childhood overweight/obesity remains the most prevalent chronic condition in pediatrics. The program created clinical decision support tools in the EHR to prompt providers to add elevated BMI to the patient’s problem list and recommend laboratory screening for diabetes and other co-morbidities. Population-level dashboards capture real-time information and measurement on these processes of care as well as patient-reported nutritional outcomes and weight outcomes.

To learn more about the informatics and clinical research opportunities available through CDI, please visit: diabetes.med.umich.edu/about/informatics-clinical-research-innovation

Investing in patient-focused research not only reveals new ways to help our patients, but also helps those in health care develop a deeper understanding of diabetes, recognize the impact it has on patients and our communities, and expands understanding of what can help make improvements that are meaningful and accessible. CDI has thus launched a host of programs to leverage our impressive array of exceptional U-M healthcare providers and clinical services to integrate research with patient care.
The Weight Navigation (WNP) Program has anchored its efforts around two key patient- and family-centered care themes: providing dignified and respectful care and remaining flexible to the unique needs of patients and families. Obesity affects approximately 70 million Americans. It is a very complex metabolic disease that occurs because of both genetic makeup and environmental forces. Led by Andrew Kraftson, MD, and Dina Griauzde, MD, with CDI support, the Weight Navigation Program utilizes data to define the efficacy of each constituent program for patients with specific parameters and determines gaps in weight loss programs. The program conducts continuous improvement work and identifies best practices for long-term weight management, utilizing the latest research and clinical strategies. And it does so with patients and families at the center of the program. The program also is designed to reduce the stigma associated with weight management.

The WNP consists of (1) preference-sensitive weight management treatment plans and (2) proactive outreach to support early weight loss non-responders. The WNP shares the overarching aim of this proposal to optimize patients’ achievement of ≥ 5% weight loss. During an 18-month pilot evaluation period, individuals who received the WNP’s preference-sensitive obesity treatment (n=202) achieved ≥ 5% weight loss at 2.4 times the rate of a historical control group (31% vs. 13%). Preference-sensitive treatments used by individuals achieving ≥ 5% weight loss included: 1.) a low-carbohydrate nutrition counseling program, 2.) a low-calorie lifestyle intervention, and 3.) bariatric surgery; no individuals were prescribed weight management medications (WMM), as coverage for these drugs was limited during the study period.

This barrier would not exist in VA settings. Among a subgroup of WNP early weight loss non-responders (n=30) who received proactive outreach to address barriers and adapt treatment plans, mean percent weight loss was 5.7%, and 40% achieved ≥ 5% weight loss.

Diabetes Mental Health
The Diabetes and Mental Health (DMH) Initiative will help CDI ensure that we support the whole person with diabetes—physical, mental, emotional and social. The DMH Initiative is led by Dr. Briana Mezuk, Associate Professor in the Department of Epidemiology at the University of Michigan School of Public Health, and Co-Director of Center for Social Epidemiology and Population Health (CSEPH). It is run in collaboration with the Michigan Institute for Clinical Health Research Community Engagement Studio (MICHRI), the CDI Informatics and Clinical Research Innovation Program and Patient Advisory Board, and the University of Michigan’s Data Office for Clinical & Translational Research (DOCTR). The long-term vision of the DMH Initiative is for the University of Michigan to become a global hub and leader of research, training and dissemination on best-practices for addressing and promoting the emotional and mental health of persons living with diabetes across the lifespan.

To design the initiative, DMH leadership met with CDI’s patient advisory board and asked patient and family advisors what they wished their doctor paid more attention to as it pertains to their mental health and what their experience was living with diabetes. Responses were instrumental in helping us design our questionnaire. (See figure 1 for ranked responses). High level objectives include: 1.) Survey the mental health needs and psychosocial characteristics of 2,500 adults with diabetes who receive care at Michigan Medicine. 2.) Map the contextual factors that shape availability and accessibility of healthcare and community-based services that can support the mental health needs of adult patients with diabetes seen at Michigan Medicine. 3.) Investigate the system-level barriers and promoters to receiving psychosocial support using person-centered interviews and Michigan Medicine healthcare providers.

When it comes to your mental health what do you wish your doctor paid more attention to?

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<th>Eating Behaviors/Distress</th>
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<th>Diabetes Related Distress</th>
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figure 1
Addressing Diabetes Complications

Unfortunately, diabetes can result in dangerous complications. Diabetes is the most common cause of blindness, kidney failure, and non-traumatic amputation of the toes, feet, or legs. Thus, in addition to the pursuit to prevent and cure diabetes, U-M recognizes that understanding the in-depth biology and pathophysiology of diabetes complications is crucial for unveiling and implementing optimal therapeutic strategies in the clinical care for all people with diabetes to prevent and/or reverse diabetes burden and improve lives for all. Rodica Pop-Busui, MD, PhD, leads the U-M Program for Clinical Research in Diabetes Care & Complications, which comprises a dedicated and united team of physician-scientists from multiple specialties, other researchers, nurses and clinical coordinators, statisticians, and trainees whose expertise spans the entire diabetes spectrum.

First-Ever Research Network Tackles Diabetic Foot Complications

Funded by the National Institutes of Health, six U.S. research institutions launched the first-ever multicenter network to study diabetic foot ulcers, a common and burdensome complication of diabetes and the leading cause of lower limb amputations in the U.S. The Diabetic Foot Consortium (DFC) will lay the foundation for a clinical trial network to improve diabetic wound healing and prevent amputations among the 27 million American adults with diabetes. The DFC is supported by the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

Diabetic Foot Consortium includes members from Michigan Medicine, University of California, San Francisco, Stanford University, University of Miami, University of Pittsburgh, and Indiana University. The Michigan Medicine team is led by corresponding principal investigator Rodica Pop-Busui, MD, PhD; Crystal Holmes, DPM, CWSPA; and Brian Schmidt, DPM, and serves as the data coordinating center for the study. The team of clinician scientists, diabetes specialists, podiatrists, vascular surgeons, and bioinformaticians with an unparalleled track record of collaboration in daily patient care and innovative research leading to health advancements.

Among many advancements, they developed an algorithm that effectively risk-stratified and triaged all patients with diabetic foot complications, preventing an increase in hospitalization and amputations, while promoting both social and physical distancing. Implementation of the STRIDE protocol resulted in even lower severe infections and amputations than prior to pandemic. This work had direct impact in improving lives–a reduction in 60% in major amputation in Michigan Medicine alone in the last decade.

Pediatric Clinical Research and Diabeties Programs

In addition to serving the complex needs of over 1400 pediatric patients with type 1 and type 2 diabetes, the U-M Pediatric Endocrinology division serves as a key site for the T1D Exchange initiative—which uses the most robust type 1 diabetes data platform in the United States in the search for innovations in type 1 diabetes treatment, prevention, and, hopefully, a cure. Inas Thomas, MD, the Chief of U-M Pediatric Endocrinology at U-M also oversees the CDI-supported U-M TrialNet site. Part of an international network of leading academic institutions, endocrinologists, physicians, scientists and healthcare teams at the forefront of type 1 diabetes (T1D) research, Dr. Thomas and her TrialNet team offer risk screening for relatives of people with T1D and are advancing innovative clinical studies testing ways to slow down and prevent disease progression.

Mary Tyler Moore Vision Initiative

Mary Tyler Moore is remembered for her brilliant work as an actress and a relentless diabetes research advocate. Her professional persona was one of joy and optimism, yet very few people knew of the burden she carried due to her struggles with diabetes and its complications. To the outside world, she was a beautiful, happy, independent woman. Privately, diabetes and her near-blindness from diabetic retinal disease [DRD] stole her joy and autonomy. Sadly, Mary’s story is not unique. Everyone with diabetes knows the fear of possible vision loss. Diabetes is the leading cause of blindness, with more than 50 million people suffering from vision-threatening diabetes globally.

The Caswell Diabetes Institute partnered with the Mary Tyler Moore Vision Initiative (MTMVI) to host a landmark “Diabetes Retinal Disease Clinical Endpoints Workshop” in Ann Arbor, Michigan on October 25, 2022. Over 90 people attended this inaugural workshop, which included patients and representatives from JDRF, the National Institutes of Health, American Diabetes Association, US Food and Drug Administration, European Medicines Association, Research to Prevent Blindness, American Academy of Ophthalmology, DRCR Retina Network, The Glaucoma Foundation, leading pharmaceutical, biotech, and diagnostic device companies, and researchers and clinicians from the United States, Europe, Japan, Singapore, and Australia.

The workshop identified knowledge gaps in the area of Diabetic Retinal Disease and has begun to map a plan to prioritize diagnostic criteria and learn about ways to intervene earlier in this disease, ultimately delaying and preventing vision loss in those with diabetes. “We believe that utilizing measures of visual function and quality of life, underlying basic and cellular mechanisms, and attributes of retinal neurovascular pathophysiology that are not represented on color fundus photographs can contribute to better clinical outcomes and facilitate research, and are undertaking this effort to prove that hypothesis,” says MTMVI Steering Committee Chairman, S. Robert Levine, MD. U-M and the CDI will serve as the home to a new human ocular biorepository and sample sharing network, led by Patrice Fort, PhD.

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Dreffs is a diabetes researcher and research volunteer—she’s also a patient with Type 1 Diabetes, and the daughter of a T1D patient.

As a child, Dreffs stumbled upon information about diabetes while reading about healthy smoothies—she noticed that the symptoms aligned with things she was experiencing. She was admitted to C.S. Mott upon her T1D diagnosis at 11 years old; she was later diagnosed with hyperthyroidism following continued weight loss and multiple low blood sugars.

As an adolescent with T1D, she initially refused an insulin pump. As she got older, her feelings changed. “When you’re 11 or 12, you don’t want to be different at all,” she said, referring to the visibility of the pump. “Now, I love talking to people when they ask me questions. I’m happy to educate, especially when someone is considering it for themselves.”

Dreffs was used to constantly watching what she was consuming and monitoring how exercise impacted her insulin levels. But the knowledge that came from the pump was extremely informative to accommodating her lifestyle—it removed much of the worry and allowed her to adopt habits that worked best for her. Dreffs said this technology was nothing short of life changing. Having a pump that would adjust her insulin level based on her activity gave her freedom she hadn’t known before. She was also thankful for the Diabetes Education provided to patients—she found it useful and timely information made specific for each individual.

For the last ten years, Dreffs has been fulfilling her desire to help advance diabetes research through her work in the lab with David Antonetti, Ph.D. In this lab, Dreffs and Antonetti work on mechanisms of vascular permeability in diabetic retinopathy, the role of the blood-retinal barrier in normal physiology, and the molecular mechanisms that underlie angiogenesis and neovascularization. These efforts have allowed Dreffs and her colleagues to develop new experimental treatments that show promising pre-clinical results. Dreffs saw firsthand through her father’s diabetes complications how distressing vision loss is, not only on the person with diabetes, but to their family as well. The work performed by Dreffs explores mechanisms of vision loss and while new therapies may take years of development to reach patients, she is encouraged by the discoveries and potential for clinical improvements.

“Alyssa is highly motivated and participates in a wide range of projects we have from exploring mechanisms of vision loss in diabetes to helping to develop potential new therapies,” said Antonetti. “I feel very lucky to have her as part of our team.”

Dreffs has also participated in research studies as a study volunteer and encourages others who can to do the same. “I felt obligated to be involved in research from a young age. I think it’s important to let people know that changes and technology can’t be moved forward if people aren’t participating,” she said.

Dreffs knows that current treatments do not work for all—and though she, like everyone with diabetes, is eager for a cure, she knows it is pertinent to focus on making diabetes manageable for each person so they can thrive. Dreffs stressed that everyone is different—each person with diabetes has things that work for them. Different foods or activities will impact each person’s health differently.

The work done by Dreffs and Antonetti is work that the Caswell Diabetes Institute fosters— accelerating targeted research and discovery to lead to integration with patient centered clinical care. CDI focuses on advancing groundbreaking research that spans basic, clinical and translational science, and sustaining partnerships that allow for strengthened innovative team science that leads to in-depth understanding of the biology and pathophysiology of diabetes. This comprehensive approach to attacking diabetes is unveling and implementing optimal therapeutic strategies in clinical care for all people with diabetes. This will ultimately lead to the prevention and reversal of diabetes to improve lives.

“CDI 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.”
—Dr. Martin Myers, CDI Director

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“CDI 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,” said CDI Director Dr. Martin Myers.
Our focus on team science, research excellence, and patient and family centered care requires strong partnerships and input from our communities. Highlighting two key organizations, we share a look back at events that helped us in our shared missions to identify cures, improved treatments, and the prevention of diabetes.

American Diabetes Association (ADA)

82nd Annual ADA Scientific Sessions
The American Diabetes Association (ADA) Scientific Sessions is a 4-day event highlighting the latest, cutting-edge advances in diabetes research, prevention, and care. The 2022 in-person event gave attendees an opportunity to network with colleagues, hear the latest scientific advances and groundbreaking research presentations. The University of Michigan participated in over 50 presentations at this year’s event. 27 CDI members participated in a variety of sessions from presenting in general poster sessions to chairing symposia.

ADA Step Out Michigan Walk and Tour de Cure
For over 30 years, Step Out Walk to Stop Diabetes and the Tour de Cure have supported advancements in diabetes research, provided education programming and ensured that the ADA can advocate for the over 34 million Americans living with diabetes. The University of Michigan participated in over 50 presentations this year’s event. 27 CDI members participated in a variety of sessions from presenting in general poster sessions to chairing symposia.

ADA Camp Midicha
ADA’s Step Out Walk and Tour de Cure fundraisers support Camp Midicha. The camp, located in Fenton, Michigan, helps children with diabetes develop the critical skills needed to thrive while managing their diabetes. Camp Midicha gives kids the opportunity to meet other kids just like them while fostering independence, building self-confidence, and gaining awareness of healthy lifestyle choices. CDI’s Associate Director for Pediatric Clinical Research and Diabetes Program, Dr. Inas Thomas, is the Medical Director of Camp Midicha.

JDRF

JDRF Promise Ball
On May 6, 2022, the Michigan & Northern Ohio Chapter of JDRF held the “What If” Promise Ball in Detroit, Michigan. This evening fundraiser provided an opportunity to gather together and celebrate the progress made to date on finding cures for T1D. Members of the Caswell Diabetes Institute attended the ball to show our continued support of JDRF, its fundraising goals, and its mission.

JDRF One Walk
The JDRF One Walk raises money to power research, enable advocacy and fund support for the 1.6 million Americans living with type 1 diabetes. CDI coordinated with Michigan Medicine (MM) and CS Mott Children’s Hospital to provide corporate sponsorship to the 2022 walk held on October 2 in Dexter, Michigan. Together with corporate sponsorship, the MM Caswell Diabetes Institute walk team, along with our partner Michigan Medicine teams (Pharmacy, MEND, Dentistry, COO and Pediatrics), raised more than $14,000. Join us at the 2023 JDRF One Walk on October 8th, 2023.

Contact us to learn more at MichiganDiabetes@umich.edu.

JDRF Journey for T1D
The Caswell Diabetes Institute also coordinated with Michigan Medicine (MM) and CS Mott Children’s Hospital to provide corporate sponsorship to the JDRF Journey for T1D, held on October 20 in Ann Arbor, Michigan. This event, put on by the JDRF Michigan & Northern Ohio Chapter included a cocktail hour, strolling dinner, and silent auctions to raise funds to support the next milestone in diabetes research, as JDRF is dedicated to finding a cure for type 1 diabetes and its complications. Several members of the CDI community attended the event to show support for the important work of the JDRF.
The CDI Patient and Family Advisory Council includes people living with diabetes, or family members that care for someone with diabetes. These individuals with different backgrounds, expertise and experiences provide valuable feedback to help ensure that CDI’s goals and strategies are closely aligned with the goals of people living with, and affected by, diabetes, obesity, and other metabolic conditions. Launched in May 2022, the CDI PFAC has offered expertise and experience on topics that are shaping the development of programs, services, and policies, including:

- work with the American Diabetes Association’s CGM Equity Initiative, sharing insights to not only underscore the how CGM provides significant, life-changing benefits for diabetes management, but also the variation in access to these critical devices. This input has helped inform advocacy efforts for Medicaid coverage of CGMs for those who need it as well as the overly restrictive barriers to the technology, with a revised policy proposal due out of the Michigan Department of Health and Human Services (MDHHS) in March 2023.

- providing essential early input to the new CDI Diabetes Mental Health program, regarding the mental health and social needs of people with diabetes. This critical input has not only informed the next steps of this program but is informing larger projects that examine the overlooked area of life stressors that specifically impact people living with diabetes.

- exploring the design of Diabetes/Obesity Peer Mentoring programs, the transition of care from pediatric to adult services, improving adult inpatient diabetes education and working with CDI to develop patient/community facing content and updates.

We are grateful for the commitment of our patients and families and look forward to continued growth and partnership as we expand our reach within the population of those we serve and the broader community.

Thank you to our advisors

**Scientific Advisory Board**

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Connecting the academic, research, and clinical missions represents one of the most important ways that U-M advances health in Michigan and around the world. From the outset, we have built our strategy to conquer diabetes and related diseases on the foundational notion that we are more effective when we work together.