Investigators included in the MIDRC P30 Application

UMN investigators are shown in red. UI investigators are shown in purple

Clinical investigation in diabetes and obesity

Anne Bantle MD is interested in the treatment of type 2 diabetes. Her recently funded NIH K23 Award is designed to determine the impact of a Weight Neutral, High Protein, Moderate Carbohydrate Diet for the Treatment of Type 2 Diabetes Mellitus.

John Bantle MD has been the Site Principal Investigators on the NIH funded DCCT/EDIC study since its inception.

Lisa Chow MD, MS focuses on lifestyle interventions in the prevention and treatment of obesity and diabetes. Her current project (R01DK098203) involves training insulin resistant, overweight/obese participants using a 16-week supervised yoga or aerobic exercise program. She also has an institutional grant to examine the role of time restricted eating on weight, body composition, and metabolic outcomes.

Donald Dengel PhD will be an associate member of the MIDRC. Since 1990, his research has focused on body composition and its effects on insulin sensitivity and peripheral vascular function. He runs the Human Performance Laboratory that will provide some of the services available in the Clinical Support Core.

Katie Larson Ode MD is a clinical investigator who studies CF-associated diabetes. Her projects are supported by 2 grants from the Cystic Fibrosis Foundation. She is a co-investigator on Dr. Engelhardt’s R24 DK96518 and with University of MN DRC member Dr. Antoinette Moran.

Antoinette Moran MD is an international expert in cystic fibrosis related diabetes and the UMN site PI for the NIH-funded Trial Net. Her current RO1 supports a trial to determine whether insulin therapy improves protein catabolism in youth with CF and abnormal glucose tolerance.

Amir Moheet MBBS has research program that includes projects in cystic fibrosis diabetes, the effects of metabolic diseases on brain structure and function, and hypoglycemia in diabetes. He participates in multi-center trial funded by the CF Foundation to investigate the relationship between the frequently sampled OGTT model and other measures of glucose tolerance in cystic fibrosis related diabetes. He also has a second funded project that examines the effect of cystic fibrosis and cystic fibrosis related diabetes on brain structure and function. His current R21 is designed to examine how changes in insulin resistance and systemic inflammation after bariatric surgery alter brain neurochemistry, neuroinflammation and cognitive function. He is also Co-PI on a JDRF funded study that seeks to learn if naloxone administration during exercise preserves the counterregulatory response after exercise.

Gulin Oz PhD is an internationally known scientist with expertise in magnetic resonance spectroscopy. She is Co-Principal investigator with Dr. Seaquist on R01NS035192. She is also a coinvestigator on R21NS101140 (PI Moheet) that examines the impact of bariatric surgery on the brain.

Elizabeth Seaquist MD is an internationally known investigator who has been continually funded by the NIH since 1997 to investigate how recurrent hypoglycemia alters glucose metabolism in patients with diabetes. She also has received 2 awards from the JDRF (one with Dr. Moheet as
Co-PI) and 1 from the ADA to study approaches to prevent and treat this problem in patients with type 1 diabetes. She has is currently participating in the NIH GRADE.

**William Sivitz MD** conducts basic research into the relationship between mitochondrial bioenergetics and skeletal muscle and cardiovascular dysfunction the context of diabetes. He is also an accomplished clinical investigator. He has been the site PI for landmark NIDDK-funded clinical studies such as the DCCT/EDIC, ACCORD and GRADE studies. Dr. Sivitz’ studies are supported by subcontracts to the DCCT-EDIC and GRADE studies, as the site PI at the University of Iowa U01DK30659, U01DK098246. His basic science studies have also been supported by a VA merit funding..

**Diabetes Complications**

**E. Dale Abel MD PhD** focuses on studies of insulin signaling, substrate utilization and mitochondrial metabolism in the pathophysiology of cardiovascular complications of diabetes and insulin resistance. His projects are supported by multiple NIH grants including R61/R33HL141783, R01 HL127764, HL112413 and an American Heart Association Strategically Focused Network Award in Heart.

**Ethan Anderson PhD** is interested in the role of oxidative protein modifications and carbonyl stress in the pathophysiology of diabetic cardiomyopathy.

**Maria Luiza Caramori MD PhD** is interested in diabetic nephropathy, with a particular emphasis on the identification of risk factors for the development of this complication. She is the site PI of the NIH funded PERL study.

**Silvia Mangia PhD** is internationally known for her expertise in NMR spectroscopy and imaging. She is the PI on a NIH study that will define the brain substrates involved in the development of hypoglycemia unawareness in type 1 diabetes (1R01DK099137).

**Eric Newman PhD** studies the effects of diabetes on the regulation of blood flow and neurovascular coupling in the retina and the brain. His work is funded by R01-EY026882 and R01-EY026514.

**Gary Pierce PhD** seeks to understand the mechanisms that contribute to macro- and microvascular dysfunction with aging, obesity, hypertension and prediabetes in humans. His research program is supported by an innovative award from the American Heart Association and is a co-investigator on two RO1 grants (HL134822, AG055500).

**Phillip Polgreen MD** is interested in understanding the increased prevalence of foot infections in diabetes. His work is supported by 3 grants from the Center for Disease Control and the University of Iowa’s CTSI.

**Long-Sheng Song MD** is interested in the biology of cardiac electrical-contraction coupling has led to a focus on the molecular regulation of T-tubules. Dr. Song collaborates with Drs. Abel, Grumbach, Irani and Boudreau. His research program is supported by grants from the NIH R01HL130346, the Department of Veteran’s affairs VA 101BX002334 and American Heart Association 18TPA34170564, 19IPLOI34760417.
**Stefan Strack PhD** studies the role of mitochondrial dynamics in the pathophysiology of diabetic peripheral neuropathy. His work is supported by NIH grants R01DK116624, R21 MH113352, R21 MH115673 and the ARSACS Research Foundation.

**Eva Tsalikian MD** is an established clinical investigator, who has played an important leadership role in the TRIALNET Type 1 Diabetes network. In addition, she has participated in clinical studies that have examined impact of hypoglycemia on brain function and structure. Dr. Tsalikian’s work is supported by multiple subcontracts from the Type1 diabetes TRIALNET.

**Mark Yorek PhD** focuses on the diabetic neuropathy. He has developed novel methodology such as corneal microscopic tomography that leads to early detection of diabetic neuropathy in mice. Dr. Yorek’s laboratory is supported by VA Merit Review RX 000889 and the NIH grants R01 DK107339 and DK115256.

**Inflammation**

**Ryan Demmer PhD** is the PI of an NIH funded cohort study that aims to study the interplay between the subgingival microbiome and early risk for the development of type 2 diabetes (R01 DK102932).

**Thomas Rutkowski PhD** studies the ER stress pathway. Dr. Rutkowski collaborates with Dr. Eric Taylor and Kamal Rahmouni. Dr. Rutkowski’s work is supported by R01GM115424.

**Ling Yang PhD** studies the link between aberrant activation of the endoplasmic-reticulum (ER) stress pathway in the liver and hepatic inflammation in leading to hepatic insulin resistance in obesity and type 2 diabetes. His work is supported by grants from the NIH, R01 DK108835, the American Heart Association 15SDG25510016 and the American Diabetes Association 1-18-IBS-149.

**Islet cell biology and immunity**

**Emilyn Alejandro PhD** currently has 3 funded projects: 1. Understanding the role of O-GlcNAc Transferase in regulating β-cell plasticity in response to insulin demand and nutrient stress (R01DK115720); 2. determining changes in proteome to identify OGT targets in islets (R21DK112144), and 3. testing the hypothesis that changes in placental mTOR activity are sufficient to alter developmental programming of β-cell dysfunction in the offspring (R03DK114465).

**Melena Bellin MD** is an international leader in the management of diabetes in patients who undergo a total pancreatectomy with auto-islet transplantation for chronic pancreatitis. She has 2 NIH RO1s to study this condition (R01DK109914, R01DK109124) and is participating in several clinical trials related to islet transplantation in type 1 diabetes.

**Jan Czyzyk PhD** is focused understanding how the normal function of pancreatic islets and their inflammation is regulated by islet sensing signals that are generated in the surrounding exocrine tissue. His work is currently funded by a grant from the ADA.

**Brian Fife PhD** is focused on identifying the antigen specific T and B cells responsible for T1D and the role that the inhibitory molecules PD-1 and PD-L1 have to limit pathogenesis. His work is funded by NIH R01 AI106791 and U24-AI118635-01.
John Engelhardt PhD leads a research program that focuses on the molecular pathophysiology of cystic fibrosis (CF) and the development of gene-replacement and vector-based approaches to restore gene function. Dr. Engelhardt's projects have been supported by multiple NIDDK grants, R01 DK047967, P30 DK054759, P01 HL051670, R24 DK96518, R24 HL123482.

Bernhard Hering MD focuses on islet cell transplantation in type 1 diabetes. Funded by the NIH U01-AI120130, he is currently exploring opportunities for induction of immune tolerance to islet xenografts in nonhuman primates.

Yumi Imai MD directs a program that focuses on the role of lipotoxicity and inflammation in the pathophysiology of beta cell dysfunction in diabetes. Dr. Imai’s projects are supported by Grants from the NIDDK(DK090490) and the American Diabetes Association (1-17-IBS-132).

Andrew Norris MD PhD is interested in the pathophysiology of CF-related diabetes. Dr. Norris is funded by NIH grants R01 DK115791 and R24 DK96518.

Xavier Revelo PhD investigates how immune cells trigger inflammation during NAFLD with the support of R01DK122056.

Hai-Bin Ruan PhD is supported by R01AI139420 and R21AI140109 and ADA 1-18-IBS-167. The research in his laboratory is directed towards understanding how environmental cues and intrinsic signals are integrated to regulate metabolic processes in health and disease

Aliye Uc MD is focused on the mechanisms responsible for pediatric pancreatitis and the associated exocrine and endocrine dysfunction. She is the PI of the NIH grants that have funded the INSPPIRE Consortium, starting with R21 DK096327, followed by U01 DK108334.

Metabolism
Christopher Adams MD PhD studies the molecular mechanisms leading to skeletal muscle atrophy. His projects are supported by R01AG060637, R01AR071762, R44AG047684 and VA grant IBX000976.

Edgar Arriaga PhD is focused on the development of novel methodologies for cellular and subcellular analysis. He is funded efforts by R01 AG020866, R01AG013925, and R01 GM127562.]

Alessandro Bartolomucci PhD is interested in the autonomic and neuroendocrine regulation of metabolic functions. He has 3 projects: 1) identifying the functional role of Vgf-derived peptides in obesity and metabolism and their development as innovative drug targets for obesity-related disease (DK102496 and DK117504); 2) determining the mechanism(s) of stress-induced cardio-metabolic metabolic disease (Summer’s Wish fund and MJRF foundation); 3) learning the impact of chronic stress on aging and lifespan (R01AG043972). His preclinical project requires state of the art physiological, metabolomic and behavioral phenotyping.

David A. Bernlohr PhD has emphasized the role of diabetes and obesity in metabolic disease with a focus on the role of fatty acid binding proteins. He is the PI on DK053189 that addresses the role(s) of fatty acid binding proteins in macrophage and adipocyte biology. He is a Co-I on Dr. Bowser’s project to develop high speed assays for measuring the effect of sweeteners on adipocyte signaling (R01 DK113091).
Sue Bodine PhD focuses on the mechanisms linking aging and exercise with skeletal muscle dysfunction. Her projects are supported by AR070031 and U01 AG055133.

Ryan Boudreau PhD has used bioinformatics approaches to identify microRNAs and non-coding RNAs leading to the identification of novel micro-peptides.

Michael Bowser PhD is developing new assays to determine the effect artificial sweeteners have on adipocytes and their ability to appropriately regulate energy balance throughout the body.

Songhai Chen MD PhD has focused on G-protein coupled receptor signaling. His projects are currently supported by an RO1 R01 CA207889 and a grant from the Department of Defense.

Xaoli Chen PhD focuses on adipose biology, glucose and lipid metabolism, insulin resistance and type 2 diabetes. Her work is currently funded by ADA 1-18-IBS-287.

Peter Crawford MD PhD leverages recent advances in stable isotope tracer-based NMR and mass spectrometry-based untargeted metabolomics technologies to study metabolism on a systems level. His work is currently funded by R01 DK091538.

Brandon Davies PhD The Davies lab investigates the regulation of triglyceride-rich lipoprotein metabolism and fatty acid partitioning, and how changes in lipoprotein metabolism and lipid partitioning contribute to metabolic diseases, including metabolic syndrome and type 2 diabetes. He is funded by R01 HL130146 and RO1HL134787.

Isabella Grumbach MD PhD has focused on the regulation of mitochondrial dynamics, and cell cycle by the enzyme calmodulin kinase (CAMK). Dr. Grumbach collaborates with Drs. Abel, Song, Taylor and Boudreau. Dr. Grumbach’s studies are supported by grants from the NIH, the Dept. of Veterans Affairs and the American Heart Association: R01 HL108932, I01BX000163, AHA Grants GRNT33660032 and IPA34170003.

Curtis Hughey PhD aims to identify pathways within integrated metabolic systems that can be targeted to prevent or treat metabolic diseases such as NAFLD

Peter Igarashi MD is a NIH Merit Award (R37DK042921) funded investigator interested in the molecular basis of tissue development. Using a combination of genomic and metabolomic approaches, he has identified metabolic pathways.

Do-Hyung Kim PhD studies the cellular processes that regulate the balance of protein synthesis and degradation (R35GM130353). He also has a grant from the ADA (1-19-IBS-071) focused on defining the role of hepatic immunoproteasome in NAFLD and insulin resistance.

Douglas Mashek PhD studies lipid droplet biology. One of his projects investigates the role of ATGL (AG055452). A second study (R01 DK108790) examines the synergistic effects of diet, lipolytic signaling and SIRT1 on energy metabolism. A third project (DK114401) studies the mechanisms through which lipid droplets are degraded via lipophagy.

Laura Niedernhofer MD PhD investigates the health impact of DNA damage at the structural, cellular, and organismal level. Work funded by R56 AG059676 and R01 AG063543 seeks to
define the role of aged immune cells in driving aging through cell non-autonomous mechanisms. She is project PI in U19 AG056278 where she works to identify existing strains of mice in which longevity assurance pathways are perturbed and in P01 AG043376 where she investigates how nuclear genotoxic stress triggers mitochondrial dysfunction and metabolic changes. She is also PI of R56 AG058543 where she seeks to identify drug targets to slow aging and was recently awarded R33 AG062018 to establish a translational geroscience network that will initiate three new clinical trials per year of the grant.

**Brian O'Neill MD PhD** focuses on the regulation of skeletal muscle growth and atrophy by insulin/IGF-1 and FOXO signal transduction. His work is funded by R03 DK112003.

**John Osborn PhD** studies the role of the nervous system in long-term control of arterial pressure and the pathogenesis of hypertension. He has been continuously funded by NIH since 1988 (R01 HL116476, U01 DK116320).

**Matthew Potthoff PhD** studies the biology of fibroblast growth factor 21. He is supported by R01 DK106104.

**Julien Sebag PhD** studies the mechanisms underlying G-protein coupled receptor signaling, with a particular focus on the role of adaptor proteins. He is funded by RO1DK115567.

**Guisheng Song PhD** studies the roles of microRNAs in type 2 diabetes, hyperlipidemia, and NAFLD. He is funded by R01 DK102601.

**Eric Taylor PhD** is focused on identifying and characterizing novel mitochondrial transport proteins. His work is supported by DK104998, HD084645, HD082109, and DK113073.

**Obesity and the central regulation of feeding and energy**

**Huxing Cui PhD** focuses on the molecular mechanisms in the hypothalamus that regulate feeding behavior and energy expenditure. He is supported by R01 HL127673-01 and P01 HL084207.

**Jayne Fulkerson PhD** is the PI of HL123699 which aims to reduce childhood obesity in a rural community by actively engaging the whole family in promoting healthy behaviors in the home. She is also the site PI on an NIH-funded trial to reduce childhood obesity with a school nurse-directed intervention program (R01 NR013473).

**Aaron Kelly PhD** focuses on the development and evaluation of novel treatment interventions that target the underlying biology of obesity in youth. Currently funded by R01-DK105953, he is performing a clinical trial to evaluate the effect of GLP-1RA treatment. He is also the PI of a second project that examines the impact of financial incentives on weight loss in this patient group (R01-DK113631).

**Catherine Kotz PhD** focuses on understanding the brain network that determines spontaneous physical activity (SPA) levels, the resulting calories (NEAT, non-exercise activity thermogenesis) and strategies for exploiting NEAT as an obesity therapy.

**Kamal Rahmouni PhD** is focused on the central mechanisms that regulate feeding behavior and sympathetic output (Dept. of Veteran’s affairs BX004249 and the NIH P30 HL084207).