

OU Health Harold Hamm Diabetes Center Spring Newsletter



Jacob E. (Jed) Friedman, Ph.D.
Director, OU Health Harold Hamm Diabetes Center
University of Oklahoma Health Sciences
Chickasaw Nation Endowed Chair

Director's Corner

Welcome to the OU Health Harold Hamm Diabetes Center at University of Oklahoma Health Sciences Spring 2024 newsletter. It is a new year, and with it we look back on our accomplishments and look forward to a lot of new HHDC activities. In 2023, we elevated the Center's membership, donor giving, and federal research grant income from \$3 million in 2019, to over \$30 million for diabetes and diabetes related research.

We had a grand Connect+Cure Gala Celebration in November 2023, featuring Amy Grant and Vince Gill — the first one since COVID. Thank you to everyone who came and celebrated a year of multidisciplinary research accomplishments with us! We raised \$1.8 million in pledges and sponsorships for Diabetes Camp Blue Hawk, research and outreach.

In December, Sir Stephen O'Rahilly, M.D., FRCP, FRCIP, FRS, FMedSci, from Cambridge University in the U.K., delivered the 6th biennial 2023 Hamm Lecture in Diabetes Research, and received the Harold Hamm International Prize for Biomedical Research in Diabetes.

Our revised pilot grant program was launched in January, and we received over 30 grant applications or renewals — what a way to kick off 2024! We are grateful for all the donors who provide financial support to this important program which helps our junior faculty develop collaborations for new diabetes research.

In addition to clinic updates, media presentations, and new grants and publications, in this issue we highlight two new faculty members as key additions to the growing membership in the Center. **Julia Busik, Ph.D.** is professor and Ed Miller Endowed Chair in Molecular Biology, and the new Department Chair of Physiology and Biochemistry from Michigan State University. **Sarah Borengasser, Ph.D., M.S.**, associate professor of Pediatric Endocrinology & Diabetes, is a member of the TSET Health Promotion Research Center at Stephenson Cancer Center, and new Vice Chair for Research and Training at Harold Hamm Diabetes Center from University of Colorado. Both bring to campus outstanding new expertise in metabolism, and obesity/diabetes research and its complications.

Don't miss the upcoming **Web of Life** conference on April 25-26, co-sponsored by the Harold Hamm Diabetes Center. There will be four members of the National Academy of Science, who will be speaking on metabolism, along with other outstanding thought leaders in cancer, aging, and bioengineering. We look forward to the talks, poster pitches, networking, and much more, as well as handing out awards.

We have many exciting activities lined up for this year. If you have not already done so, check out our [website](#) to see our upcoming Metabolic Research Seminars for 2024. Also, see our 'Save the Date' calendar with all our planned activities for the year.

All the best,
Jacob E. (Jed) Friedman, Ph.D.
Director, OU Health Harold Hamm Diabetes Center

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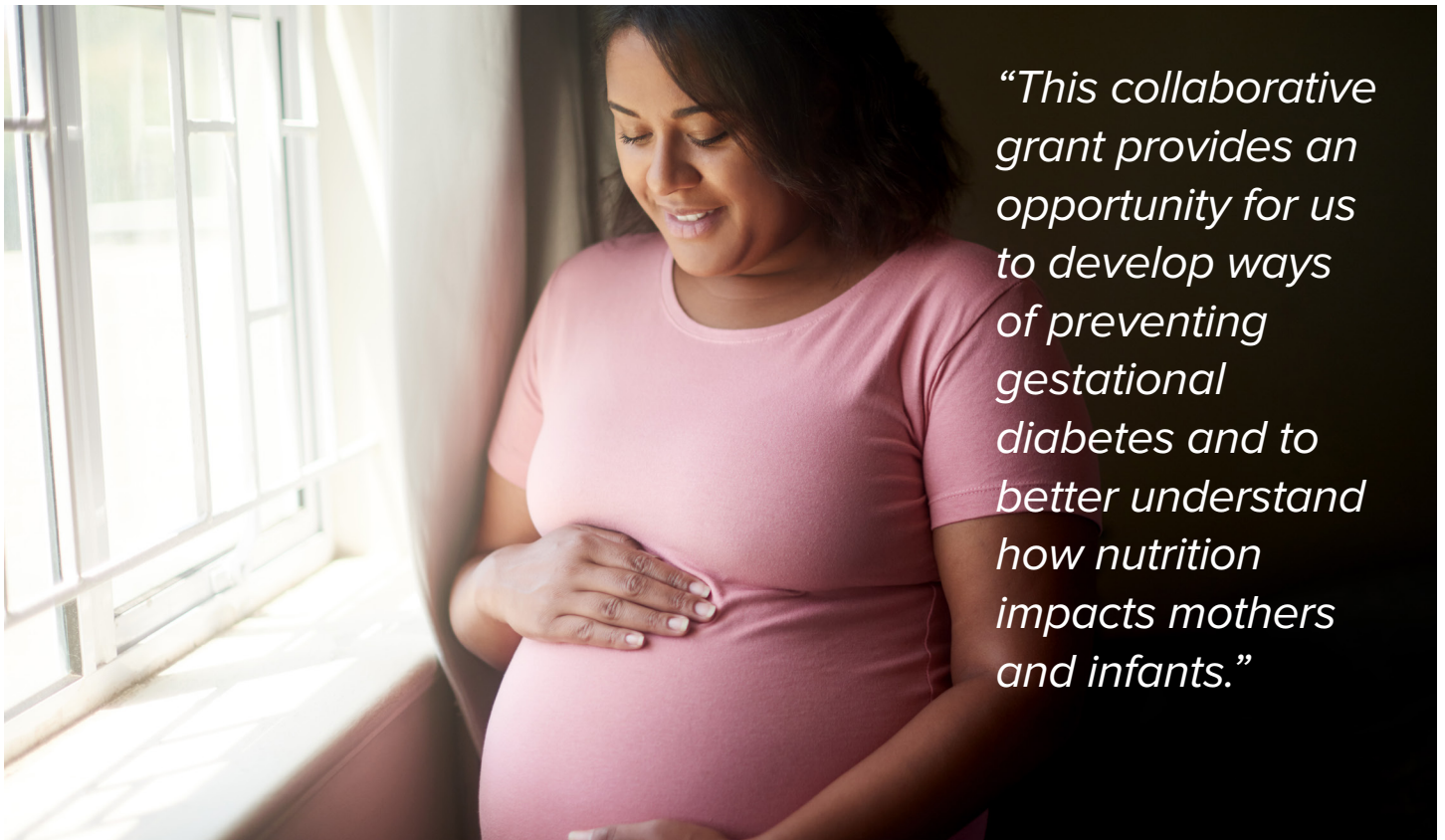
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Update



“This collaborative grant provides an opportunity for us to develop ways of preventing gestational diabetes and to better understand how nutrition impacts mothers and infants.”

Harold Hamm Diabetes Center Researchers Awarded \$10.5 Million Center Grant to Research and Eliminate Disparities in Indigenous Maternal Mortality and Morbidity

Jed Friedman, Ph.D., is serving as executive director of CIRCLE — Center for Indigenous Resilience, Culture, and Maternal Health Equity — a maternal health research initiative at OU Health Sciences made possible by a \$10.5 million grant from the National Institutes of Health (NIH).

In Oklahoma and across the United States, Indigenous women have the highest rates of death and health complications during and after pregnancy, including gestational diabetes. However, data shows that 90% of those deaths are preventable. Central to the grant is that researchers will work in partnership with Indigenous communities and organizations to examine maternal health inequities and maternal well-being, using an approach that recognizes Indigenous culture as a health-giving factor in itself.

“This collaborative grant provides an opportunity for us to develop ways of preventing gestational diabetes and to better understand how nutrition impacts mothers and infants, which is a key goal for the Harold Hamm Diabetes Center,” said Friedman. “We know that poor nutrition contributes to diabetes, obesity and other co-morbidities that can be transmitted from mother to child through a vicious cycle.”

CIRCLE includes a “food as medicine” intervention called FLOURISH (Food for Lifecourse Equity in Maternal Security and Health) which will be delivered to high-risk mothers before and after pregnancy, in an effort to mitigate their risk of health issues, as well as problems for their babies. The project is led by **Emily Jones, Ph.D., RNC-OB, FAAN, FAHA, FPCNA**, professor in the OU College of Nursing, and **Marianna Wetherill, Ph.D., MPH**, associate professor in the OU Hudson College of Public Health.

Researchers at OU Health Sciences will collaborate with the Southern Plains Tribal Health Board, which represents 43 tribal nations in Oklahoma, Texas and Kansas. Also key to the work is an external advisory committee comprised of Indigenous mothers and patients, leaders from various tribal nations, health care providers, health system leaders and Indian Health



Service policymakers.

CIRCLE is among 10 Maternal Health Research Centers of Excellence across the nation funded by the NIH. A component of the overall effort is the Center for Implementation Science, which will help individual research centers harness the data they gather to make a difference in the lives of Indigenous women and their families.

“Research is important, but it must be transmittable to the populations we’re working with,” Friedman said. “The NIH Center for Implementation Science will also leverage large amounts of research findings and other evidence-based practices from our work and those of others to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services.”

In line with its training objectives, CIRCLE is pleased to announce its CIRCLE Seminar Series. To date, the series has featured presentations from Lancer Stephens, Ph.D., Associate Professor of Research in the OU College of Public Health at the University of Oklahoma Health Sciences, who presented on “Historical and Current Perspectives Influencing Tribal Health.” Emily Jones, addressed “Building Capacity to Advance Indigenous Maternal Health Equity in the Southern Plains,” and Paul Spicer, Ph.D., professor of anthropology at the University of Oklahoma and director of community engagement and outreach for the Center for Applied Social Research, presented on, “Genomics and American Indian and Alaska Native Communities.” The next seminar speaker will be Timothy VanWagoner, Ph.D., associate professor in the OU Department of Pediatrics and Associate Director of the Oklahoma Clinical

“Research is important, but it must be transmittable to the populations we’re working with.”

and Translational Science Institute at OU Health Sciences, who will speak in the Bird Library Auditorium on May 9, from 1 to 2 p.m.

The CIRCLE research team involves many research and health care disciplines across Oklahoma University’s campuses in Oklahoma City, Norman and Tulsa. Also leading the administration of CIRCLE is Karina Shreffler, Ph.D., associate dean for research and professor in the OU College of Nursing. Leading the training and development arm of the grant is Tim VanWagoner, Ph.D. Heading the community partnership and engagement arm is Paul Spicer, Ph.D.

Submit for a Pilot Project Grant

CIRCLE will have an education component for the training and development of early career researchers and practitioners. CIRCLE Scholars will be named, and pilot grants will be awarded for the creation of additional research projects in maternal health. CIRCLE will fund four pilot projects in 2024, for up to \$25,000 each. The deadline to submit letters of intent is May 1, 2024. For questions about grant eligibility and the grant submission process, please contact CIRCLE at circle@ouhsc.edu.



CIRCLE brings together researchers, providers, and community partners across Oklahoma and the Southern Plains region to improve maternal health and well-being.

Scan the QR code to join our growing network of CIRCLE affiliates and to learn more about our center!



Julia Busik Appointed as Chair of the Combined OU College of Medicine Department of Biochemistry and Physiology



*Julia Busik, Ph.D., FARVO
Chair for Biochemistry and
Physiology, OU College of
Medicine*

A distinguished scholar with an impressive academic background, Busik received her combined bachelor of science and master of science degrees from Novosibirsk State University in Russia, specializing in physiology and endocrinology. Afterward, she earned a scholarship from the Japan Society for the Promotion of Science and pursued her doctorate at the Graduate University for Advanced Studies at the National Institute for Physiological Sciences in Yokohama, Japan.

The University of Oklahoma College of Medicine is pleased to announce the appointment of Julia Busik, Ph.D., FARVO, as chair of the newly combined Department of Biochemistry and Physiology. Busik will also hold the prestigious Ed Miller Endowed Chair in Molecular Biology.

A distinguished scholar with an impressive academic background, Busik received her combined bachelor of

science and master of science degrees from Novosibirsk State University in Russia, specializing in physiology and endocrinology. Afterward, she earned a scholarship from the Japan Society for the Promotion of Science and pursued her doctorate at the Graduate University for Advanced Studies at the National Institute for Physiological Sciences in Yokohama, Japan.

in Vision and Ophthalmology and has held leadership roles within the American Diabetes Association and the Annual Meeting Program Committee for ARVO.

“I am honored to lead the Department of Biochemistry and Physiology at the University of Oklahoma College of Medicine,” said Busik. “I look forward to collaborating with colleagues, students and the broader scientific community to make meaningful strides in building on our strength to advance understanding of biochemistry and molecular biology underpinning of normal physiology and pathophysiological processes. Together, we aim to foster innovation and excellence in both education and research.”

Busik’s outstanding achievements have been recognized with various awards, including the Junior Faculty Mentoring Award, Research Excellence Award and Distinguished Faculty Award from Michigan State University. She has also received the Distinguished Speaker Award from Gavin Herbert Eye Institute at the University of California, Irvine and The State University of New York at Buffalo, as well as the Reviewer of the Year Award for Diabetes Journal.

As chair, Busik has the added responsibility of leading the newly combined Department of Biochemistry and Physiology at the College of Medicine. Combining the two departments into one reflects a strategic and forward-thinking approach to scientific inquiry. Its formation will amplify the strength of existing programs and present an opportunity for tremendous growth for the department as a whole and each program individually.

“Our commitment to excellence remains unwavering as we embark on this integrated journey,” said Busik. “By uniting these departments, we strive to create a powerhouse of knowledge that will transform the existing areas of strength into cutting-edge research of tomorrow. I am confident that this strategic decision will lead to new discoveries, interdisciplinary breakthroughs and further development of the areas of emerging synergistic strengths across all research directions in the department.

The OU Health Harold Hamm Diabetes Center is excited to have Dr. Busik join the University and looks forward to collaborating with her on many future research and recruitment opportunities.

“Our commitment to excellence remains unwavering as we embark on this integrated journey”

As a researcher, Busik has authored more than 80 papers in high-profile journals, establishing herself as a leading expert on the role of dyslipidemia in diabetic complications. Her ground-breaking work is supported by prominent awards from the National Institutes of Health, National Eye Institute, Juvenile Diabetes Research Foundation, and the American Diabetes Association.

In addition to her research contributions, Busik is actively involved in the scientific community, serving as an associate editor for *Diabetologia*, a peer-review journal for the European Association for the Study of Diabetes; *Experimental Eye Research*, a journal for the International Society for Eye Research; and *Adler’s Physiology of the Eye*, 12th edition. She is a Fellow of the Association for Research

Meet Dr. Sarah Borengasser



*Sarah Borengasser, Ph.D., M.S.
Associate Professor, Pediatric
Endocrinology & Diabetes OU
College of Medicine
TSET Health Promotion Research
Center Member, Stephenson
Cancer Center,
Vice Chair for Research
& Training, Harold Hamm
Diabetes Center*

Sarah Borengasser, Ph.D., M.S., associate professor of Pediatric Endocrinology and Diabetes, joins the OU Health Harold Hamm Diabetes Center as Vice Chair for Research and Training. Borengasser has been funded by the National Institutes of Health for over 18 years, for her research on obesity, physical activity and nutrition. Her concomitant hire at the TSET Health Promotion Research Center and OU Health Stephenson Cancer Center, [announced in January](#), was supported through funding from the Oklahoma Tobacco Settlement Endowment Trust, and represents an expansion in

research resources, with the goal of developing innovative behavioral intervention strategies to combat obesity and its related risk factors in Oklahoma.

Borengasser's primary research focus involves identifying molecular biomarkers and biologically relevant pathways to assess the role of both detrimental (obesity, diabetes, smoking) and beneficial (healthy diet, exercise) environmental exposures on biological age and intervention responsiveness, in adult and pediatric populations.

Borengasser forged her interest in nutrition and physical activity interventions from personal experience as an avid runner of 30 years and as a mom of three, desiring for everyone to have the opportunity to live healthy lives, beginning even in utero with improving maternal health. In 2022, the Center for Disease Control [released data showing that Oklahoma held the third-highest adult obesity rate in the nation](#). With obesity prevalence, come the consequences of Type 2 diabetes, high blood pressure, and other detrimental health issues.

Borengasser was struck by the prevalence of obesity and diabetes, and was inspired to prevent, manage, and treat the disease and its impacts on all Oklahomans. She understands that the disease affects different people in different ways and works to use precision medicine tools to tailor lifestyle interventions to the individual or sub-groups of individuals, instead of taking a one intervention fits all approach.

Borengasser is equally passionate in her mission to mentor the next generation of scientists in Oklahoma to continue to fight obesity, diabetes, cancer, and other chronic diseases throughout the life course.

While an associate professor at the University of Colorado-Anschutz Medical Campus, Borengasser collaborated with colleagues to address the need to communicate scientific research on a more understandable level to the general populace. This led to the development of the Talk like TED curriculum, which was designed to provide strategies for developing a compelling scientific, and/or lay presentation, for a target audience that incorporates TED Talk elements. The course requires students to address topics from three key components – emotional, novel, and memorable – to effectively communicate to an audience of diverse backgrounds.

Borengasser brought the course to OU Health Sciences. Forging a partnership between the Harold Hamm Diabetes Center and the Department of Nutritional Sciences, the program was recently offered as part of a graduate

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course through the College of Allied Health. Borengasser instructed the first eight weeks of the course's inaugural offering in the Spring of 2024. The course will conclude with a professional recording, allowing for all class participants to capture their TED-style talk digitally and in front of a live audience.

Borengasser's passion for mentoring and leading does not stop in the classroom. As Vice Chair for Research and Training at Harold Hamm Diabetes Center, Borengasser led the effort to implement the Early Visiting Scholar Exchange Program, which aims to foster collaborations with other diabetes centers around the nation.

Through this initiative, the Harold Hamm Diabetes Center has partnered with counterparts at Indiana University and The University of Kansas, to foster research collaborations for junior faculty investigators engaging in diabetes-related research. Kok Lim Kua, M.D., from Indiana University, visited Harold Hamm Diabetes Center and the University of Oklahoma Health Sciences campus, on November 30, 2023, and presented his research on Sex-differences in Offspring β -cell Function in Response to Maternal Obesity. Future visits include OU's Kathryn Burge, Ph.D., assistant professor of Pediatrics, Neonatal-Perinatal Medicine, who will travel to Indiana University in early November 2024,

and Daniel R. Tilden, M.D., endocrinologist at the University of Kansas Medical Center. Dr. Tilden will visit the Harold Hamm Diabetes Center and the University of Oklahoma Health Sciences campus in February 2025.

As Oklahomans look to the future of healthcare, researchers like Borengasser are leading the way to help change lives for the better through research collaborations, education, and innovative molecular tools to improve long-term success in adopting and maintaining a healthy lifestyle to combat obesity and diabetes for everyone at any age.



Web of Life Conference

April 25-26, 2024
OU Health Sciences Campus, Oklahoma City, OK

This two-day conference will be hosted for the first time by the University of Oklahoma Health Sciences in April 2024.

To realize the full potential of team science, experts from cancer, diabetes, aging, neurodegenerative disease and bioengineering will be brought together to facilitate transdisciplinary dialogues under one common theme — “Web of Life: Connecting the Dots.”

This conference is expected to significantly impact and improve the way we engage communities, foster collaboration, treat patients and facilitate groundbreaking discoveries.



HEALTH SCIENCES CENTER
The UNIVERSITY of OKLAHOMA



Harold Hamm Diabetes Center's Connect+Cure Gala Raises Pledged \$1.8 Million for Diabetes Research

More than 800 people gathered for the 2023 Connect+Cure Gala on November 29, to support the OU Health Harold Hamm Diabetes Center and celebrate the progress being made toward finding a cure for diabetes. Now in its sixth year, the Connect+Cure Gala raised more than \$1.8 million, pledged in support of diabetes research and care, with more than \$250,000 raised to specifically sponsor participants in Camp Blue Hawk, a residential camp program for children and teens, ages 9 to 17, with Type 1 diabetes.



Founder, Harold Hamm

“This year’s Connect+Cure Gala was a celebration of how far we have come in raising awareness, and the breakthrough research that has taken place in our mission to find a cure for diabetes,” said Harold Hamm, lifetime HHDC Board member. “Of course, none of what has been accomplished would be possible without the generosity of the individuals and companies that helped make this year’s gala the best yet. Congratulations to Governor Bill Anoatubby for receiving the first Distinguished Partner Award, and to Sir Stephen O’Rahilly, the 2023 Harold Hamm International Prize for Biomedical Research recipient. We will continue to work together in pushing the envelope in research and innovation and finding a cure for diabetes.”

The evening was emceed by our own HHDC Pediatric Diabetes Camp coordinator, Elvie Ellis. Ellis is a professional actor and Oklahoma native who currently stars in the national tour of the musical Jesus Christ Superstar. Grammy award-winning singers Vince Gill and Amy Grant provided the evening’s entertainment with a private concert, kicking off their Christmas tour.

Also recognized at the Gala was the 2023 Harold Hamm International Prize for Biomedical Research in Diabetes. The biennial award, the largest of its kind in the world, is



Governor, Bill Anoatubby, Chickasaw Nation (left) accepts inaugural Distinguished Partner Award from Harold Hamm

personally funded by Hamm and recognizes innovation in the field of diabetes research with an emphasis on progress toward finding a cure for diabetes.

Sir Stephen O’Rahilly, M.D., FRCP, FRCPI, FRS, FMedSci, professor and head of the Department of Clinical Biochemistry and Medicine at the University of Cambridge, was named the 2023 Hamm Prize Laureate and received a \$250,000 award.

O’Rahilly was selected as the 2023 Hamm Prize Laureate for his research that linked a specific mechanism to the development of obesity. Obesity is considered the biggest risk factor for Type 2 diabetes and O’Rahilly’s rigorous clinical research defined very specific molecular mechanisms and genes that are responsible for the condition of obesity.

“It was a pleasure to take part in this year’s Connect+Cure fundraising gala,” said Jed Friedman, Ph.D., director of Harold Hamm Diabetes Center, and Associate Vice Provost for Diabetes Programs. “I want to express my gratitude to the collective efforts of the audience and our donors who recognize their meaningful contribution to the ongoing battle against diabetes. This event strengthens our collective effort to improve the quality of life for individuals living with diabetes. Your contributions also play a vital role in advancing research, treatment, and awareness initiatives, which bring us one step closer to making a lasting impact on the lives of those affected by this condition.”

Additional highlights of the evening included remarks by Governor Bill Anoatubby, Chickasaw Nation, who was awarded the inaugural Distinguished Partner Award for his ongoing support of diabetes research and care. Other distinguished guests in attendance included Governor Kevin Stitt and First Lady Sarah Stitt, several members of the Oklahoma legislature, and TV’s Mike Rowe.



Harold Hamm Diabetes Center Director, Dr. Jed Friedman

The OU Health Harold Hamm Diabetes Center Connect+Cure Gala is held biennially to support the biennial Hamm Prize. Due to the COVID-19 pandemic, the 2023 event marked the first time the Connect+Cure event has been held since 2019. Please look for information about the 2025 gala to be released at a later date.



Grammy award-winners Amy Grant and Vince Gill provide the evening's entertainment



Pediatric Diabetes Camp Coordinator, Elvie Ellis, emcees the evening's events



Founder, Harold Hamm congratulates 2023 Hamm Prize Laureate, Sir O'Rahilly

Hamm Lecture Given by 2023 Hamm Prize Laureate

A standing-room only audience gathered at the Bird Library on December 5, to hear a lecture from renowned researcher and Hamm Prize Laureate, Professor Sir Stephen O'Rahilly, from the University of Cambridge, and Director of the Medical Research Council Metabolic Diseases Unit. Sir O'Rahilly, no stranger to illustrious commendations, including being knighted in 2013 for services to medical research, is the recipient of the 2023 OU Health Harold Hamm International Prize for Biomedical Research in Diabetes.

The highly coveted biennial prize recognizes and encourages lasting advances in the field of diabetes research. Established in 2012 by an endowment from Harold Hamm Diabetes Center Founder Harold Hamm, this award has reshaped the field of diabetes research. The honor carries a \$250,000 award—the largest of its kind in the world, and was designed to recognize an individual or institution who has demonstrated either lifelong contributions to the field or realized a singular medical advance, especially one with curative potential. The award leverages philanthropic contributions to catalyze medical advances and research, where, as with diabetes, there is an acute need against a backdrop of marked decline in federal funding for medical research.

There to present the award, and with the assembled audience to hear the scholarship and research of Sir O'Rahilly that occasioned the honor, were Harold Hamm, and **Jed Friedman**, OU Health Harold Hamm Diabetes Center Director and Chickasaw Nation Endowed Chair. Sir O'Rahilly was selected by an international jury of diabetes scientists convening in Oklahoma at the Harold Hamm Diabetes Center, for his research that linked a specific mechanism to the development of obesity, considered the biggest risk factor for Type 2 diabetes. Sir O'Rahilly's clinical research defined specific molecular mechanisms and genes responsible for the condition of obesity.

Sir O'Rahilly discussed his research and findings in his presentation on "Adventures in Metabolism, Endocrinology and Behavior." To learn more about the efforts in Oklahoma at the Harold Hamm Diabetes Center to find a cure for diabetes, visit [our website](#) for a video about the 2023 Hamm Prize Laureate, Sir O'Rahilly.

Harold Hamm Diabetes Center Participates in Diabetes Advocacy Day



Itivrita Goyal, M.D., Assistant Professor of Internal Medicine, Endocrinology, Diabetes and Metabolism, OU College of Medicine



Minu George, M.D., Associate Professor of Pediatric Diabetes and Endocrinology, OU College of Medicine

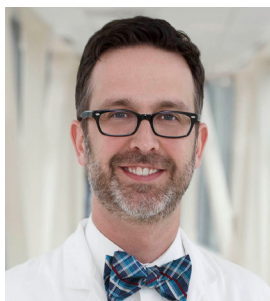
On Monday, April 8, Sen. Carri Hicks, co-chair of the Oklahoma Legislative Diabetes Caucus, invited Oklahomans living with diabetes, their families, and all who are concerned about this disease to come to the state Capitol for Diabetes Advocacy Day. The event aimed at raising awareness about diabetes in Oklahoma and its impact on individuals and communities throughout the state.

Activities were held from 11 a.m. to 3 p.m. with over 25 vendors providing important information and resources about diabetes management and support, with remarks from experts in the House Chamber from 11 a.m. until noon. Those participating in the discussion from Diabetes Center

were **Minu George, M.D.**, from the Oklahoma Children's Hospital — Pediatric Diabetes & Endocrinology Clinic, and **Itivrita Goyal, M.D.**, from OU Health Harold Hamm Diabetes Center — Adult Diabetes & Endocrinology.

Also attending were PreventT2 Coordinator, Beth Goetz, and Development Officer, Kerry Morris. Diabetes Advocacy Day provided an opportunity for those impacted by this disease to hear from experts, learn about services and products to help people better manage their health, and advocate to lawmakers. The Legislative Diabetes Caucus hopes to make this an annual event.

Clinic Updates | Pediatric Diabetes & Endocrinology Clinic



David Sparling, M.D., Ph.D., Assistant Professor Associate Section Chief of Pediatric Endocrinology CHF Paul and Ann Milburn Chair in Pediatric Diabetes

The pediatric clinic has been continuing its steady business. The winter months are our busiest when it comes to new onset Type 1 diabetes mellitus. Interestingly, that's a worldwide and recognized problem — autoimmune diseases like T1D peak in winter months and appear to be more prevalent the further north (or south of the equator) you live. Over the past decade, the data on our new patients definitely reflects that trend. We

similarly saw a spike in Type 2 diabetes in youth during the COVID pandemic. We are part of a national research program looking into the causes of that.

Care is definitely evolving, and it takes an amazing team like ours to be able to help all our kids with diabetes. Our dedicated team keeps up with all the newest therapies and treatments approved for diabetes, training patients old and new on new treatment opportunities. We're excited that we can now train families on the newest insulin pump that doesn't require strict carbohydrate counting, just more "meal announcements."

On the medication front, we continue to expand options available for our kids with Type 2 diabetes. We have officially begun using Teplizumab, the newest medication to delay the onset of Type 1 diabetes in high-risk individuals. We can identify high-risk kids through antibody screening, whether through primary care or through studies like TrialNet that we've been a part of for many years. It's amazing to think that we are using the first new class of medication for Type 1 diabetes mellitus, pretty much since insulin.



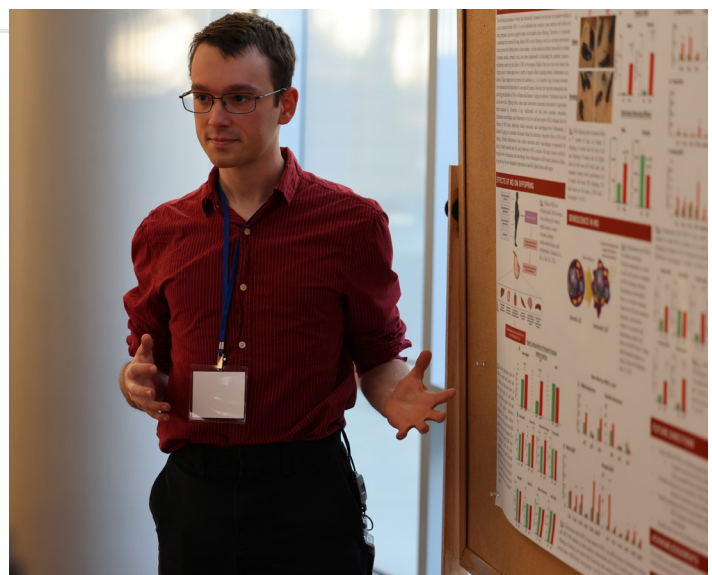
2023 Research Symposium Draws Largest Crowd to Date for Anniversary Event

2023 marked the 20th anniversary of the annual OU Health Harold Hamm Diabetes Center Research Symposium. Held at the Samis Education Center on November 10, 2023, the Symposium featured presentations from eight guest speakers, with a keynote presentation from Mark Herman, M.D., E.L. Wagner, M.D., chair of Internal Medicine II, Chief, Section of Endocrinology, Diabetes and Metabolism, Baylor College of Medicine, who presented his research on *Molecular Aspects of Fructose Metabolism and Metabolic Disease*. Posters, on display throughout

the day, were showcased during the evening reception. In addition, 36 eligible abstracts were selected for judged short talk presentations, based on the themes of: 1) Fetal/Maternal Interactions, 2) Liver Disease, 3) Muscle and Heart Metabolism, 4) Diabetes Treatments and Disease Progression, and 5) Diabetes Risk and Complications. First and second prize winners were selected for each category. Winners received a cash prize and certificate and were recognized during the Awards Presentation that concluded the day's events,



Ann Louise Olson, PhD, Research Symposium Chair, presents plaque to keynote speaker, Mark Herman, MD, Baylor College of Medicine



Eric Moore, graduate student, fielding questions during the posters session

Congratulations to our 2023 Research Symposium Winners



Fetal Maternal Interactions winners, Erin Schone and Gertrude Kyere-Davies

Section 3A: Fetal/Maternal Interactions

First Place

The Steven Chernausek Award:
Gertrude Kyere-Davies

Maternal exercise during lactation increases medium chain fatty acids (MCFA) synthesis to enhance offspring adipose metabolism

Second Place

Erin Schone

Postnatal PFAS exposure via breast milk and associations with infant growth and body composition in first 6 months



Diabetes Treatments and Disease Progression winner, Ramasamy Selvarani; Rachel Fisher (not pictured)

Section 3D: Diabetes Treatments and Disease Progression

First Place

Ramasamy Selvarani

The role of necroptosis-associated chronic inflammation in novel knock-in mouse models fed a western diet

Second Place

Rachel Fisher

Access to CGM technology reduces diabetes-related events among high-risk youth with type 1 diabetes



Liver Disease winners, Michelle Nguyen and Sabira Mohammed Jazir, Ph.D.

Section 3B: Liver Disease

First Place

The Jay Ma Award
Sabira Mohammed Jazir, Ph.D.

The role of NAFLD in cognitive dysfunction: insights into liver-brain crosstalk from hepatocyte-specific MLKL overexpression

Second Place

Hoang Van Nguyen

Metabolome of rats with different mitochondrial DNA differ by age, sex and mitochondrial genotype



Diabetes Risk and Complications winner, Rahul Rajala; Agnieszka Borowik, Ph.D., (not pictured)

Section 3E: Diabetes Risk and Complications

First Place

Rahul Rajala

Identifying how endothelial protease-activated receptors control insulin signaling: implications for diabetes

Second Place

Agnieszka Borowik, Ph.D.

Murine skeletal muscle nuclei replicate DNA



Muscle and Heart Metabolism winner, Kylene Harold; Matthew Bubak (not pictured)

Section 3C: Muscle and Heart Metabolism

First Place

Matthew Bubak

The acute removal of metformin induces mitochondrial remodeling and increases mitochondrial respiration

Second Place

Kylene Harold

Impacts of PFK-2-mediated glycolytic regulation on cardiac function and electrophysiology

Breakthrough Type 1 Diabetes Drug Now Offered at OU Health

A new treatment targeting the root cause of Type 1 diabetes is now available at OU Health, and for pediatric patients at high risk, this new medication can potentially delay the onset of the disease while also reducing the symptoms. The first of its kind since insulin, Tzield, or Teplizumab, is an injectable prescription medication that contains two drugs used to delay the onset of Stage 3 Type 1 diabetes, the latest and most severe stage of the disease when a clinical diagnosis typically takes place.

The *Oklahoma Children's Hospital OU Health* team recently completed the first infusion of the drug in a pediatric patient in Oklahoma.

“Our team for years has been striving to bring every new treatment for kids with diabetes into the clinic as quickly as possible”

“There have been incredible advances in insulins in the past 102 or so years for sure, but it’s exciting to be a part of a next evolution in care,” said pediatric endocrinologist **David Sparling, M.D., Ph.D.**, Section Chief of Pediatric Diabetes and Endocrinology and CMRI Paul and Ann Milburn Chair in Pediatric Diabetes in the Department of Pediatrics at The University of Oklahoma College of Medicine.

Tzield is the first new medication to help treat Type 1 diabetes since the discovery of insulin. While insulin injections help replace the lost beta cell and pancreatic function in persons with diabetes, Tzield aims to slow the autoimmune destruction of the beta cells that occurs in Type 1 diabetes. This lets the body continue to produce its own insulin, decreasing the need for insulin injections. Tzield is only approved in early forms of diabetes when more beta cells are still present and ongoing normal insulin is still produced.

“Our team for years has been striving to bring every new treatment for kids with diabetes into the clinic as quickly as possible — new insulins, new pumps, continuous glucose monitors, nasal and pre-mixed glucagon formulations, and partial-closed loop artificial pancreas systems,” said Sparling. “On top of that, we’ve been maintaining an active research arm looking for causes and the best treatments of both Type 1 and Type 2 diabetes in kids.”



That research, which takes place at OU Health Harold Hamm Diabetes Center at the University of Oklahoma Health Sciences, brings OU Health patients access to the latest treatments and research breakthroughs and to clinical trials networks like TrialNet. TrialNet is an international network of academic institutions, endocrinologists, physicians, scientists and healthcare teams leading Type 1 diabetes research and offering risk screening and clinical studies. TrialNet has many arms, several of which OU Health are a part of.

Teplizumab was first characterized and studied within TrialNet. Once it was found to be beneficial, the treatment was expanded into a full clinical trial. Once the Stage 3 trials demonstrated a benefit to persons with Type 1 diabetes, it was approved by the FDA, enabling treatments to begin.

Type 1 diabetes occurs when the immune system destroys the cells that make insulin, so people with the disease require insulin shots or an insulin pump to survive. Usually diagnosed in children and young adults, Type 1 diabetes can appear at any age, and most patients have no family history of the disease. Identification and treatment of high-risk children can prevent serious complications like diabetic ketoacidosis from occurring, as well as slow the need for treatment.

Tzield is prescribed for adults and children 8 years and older who are considered high-risk for a Type 1 diabetes diagnosis. Risks include testing positive for two or more Type 1 diabetes-related autoantibodies, having abnormal blood sugar levels and no diagnosis of Type 2 diabetes. The drug blocks a step in the immune system that’s known to lead to diabetes progression and has shown to significantly delay the onset of clinical diagnosis of Type 1 diabetes by two to five years.

Sparling said being part of an academic ecosystem where research informs new treatments means patients have access to breakthrough medications like Tzield as well as the latest and most advanced understanding of complex disease processes like diabetes.

Upcoming Metabolic Research Conference Presentations



MRC Speaker, Teri Hernandez, Ph.D. R.N., FAAN, professor and associate dean of research and scholarship, from the College of Nursing at the University of Colorado Anschutz Medical Campus

The Metabolic Research Conference is a series of lectures in the style of Grand Rounds. Presenters include distinguished visiting and internal, clinical, and basic speakers, who will share their work on various topics relating to diabetes research.

Monday, May 6, 2024

“Mitochondrial dynamics and mtDNA-mediated innate immune response in alcohol-associated liver disease and tumorigenesis”

Wen-Xing Ding, Ph.D., University of Kansas

Monday, May 20, 2024

“A Tale of Two Maternal Obesities – Chapter 1: Epigenetics”

Sarah Borengasser, Ph.D., M.S., University of Oklahoma Health Sciences

Visit our [event webpage](#) to find more information and upcoming dates.

Save The Dates

ADA Reception

Sunday, June 23, 2024

The OU Health Harold Hamm Diabetes Center will hold a reception in conjunction with the American Diabetes Association 84th Scientific Sessions, in Orlando, FL.

The reception will be held on Sunday, June 23, 2024 from 6 to 8 p.m., in Orlando, FL.

Stay tuned for more details.

Diabetes Care Summit

Friday, September 6, 2024

Oklahoma’s premier annual continuing medical education (CME) conference for diabetes, offered in collaboration with the Association of Diabetes Care & Education Specialists (ADCES). Expert presentations include updated clinical approaches for diabetes patient management and interprofessional strategies for diabetes care and education.

Please visit our [event webpage](#) in the coming months for more information about the 2024 conference.



Research Symposium

Friday, November 15, 2024

The 21st Annual Harold Hamm Diabetes Center Research Symposium will be held at the Samis Education Center, on Friday, November 15, 2024.

The symposium will consist of keynote and selected oral presentations, judged abstract presentations, and poster presentations.

Please visit our [event webpage](#) in the coming months for more information about the abstract submission deadline and 2024 symposium.

New Grants to Diabetes Center Members:

NIH/NICHD R21 GRANT (08/2023 – 07/2030)

PI: Karina Shreffler, PhD

OU Fran and Earl Ziegler College of Nursing

Co-I: Jed Friedman, PhD

Departments of Physiology, Pediatrics – Division of Endocrinology and Metabolism, Biochemistry & Molecular Biology

Co-I: Paul Spicer, PhD

OU Dodge Family College of Arts and Sciences Center for Applied Social Research

Co-I: Timothy M. VanWagoner, PhD

Department of Pediatrics and Oklahoma Clinical and Translational Science Institute

Funding Organization: National Institutes of Health (NIH)/ Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

Grant Type: U54

Title of Grant: *Center for Indigenous Resilience, Culture, and Maternal Health Equity*

Dates: 08/17/23 – 07/31/30

Anticipated Cumulative Amount Awarded: \$10,448,621*

*Research made possible through this grant is supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, a component of the National Institutes of Health, under the award number 1U54HD113173.

NIH/NIDDK R01 GRANT (03/2024 – 02/2028)*

MPI: Karen Jonscher, PhD

MPI: Dean Myers, PhD

Consultant: Jed Friedman, PhD

Departments of Biochemistry & Molecular Biology, and Physiology

Funding Organization: National Institutes of Health (NIH)

Grant Type: R01

Title of Grant: *Evaluating PQQ for preventing maternal obesity-induced fetal programming of juvenile NAFLD in *Papio anubis**

Dates: 03/15/24 – 02/28/28

Anticipated Cumulative Amount Awarded: \$2,394,546**

**Research made possible through this grant is supported by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), a component of the National Institutes of Health (NIH), under the award number 1R01DK139443.

*Former HHDC pilot award

NIH/NIDDK R01 GRANT (05/2024 – 04/2028)*

PI: Aditya Dr. Joshi, PhD

Department of Pharmaceutical Sciences

Co-I: Jed Friedman, PhD

Departments of Physiology, Pediatrics – Division of Endocrinology and Metabolism, Biochemistry & Molecular Biology

Funding Organization: National Institutes of Health (NIH)/ National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

Grant Type: R01

Title of Grant: *Aryl hydrocarbon receptor-mediated differential gene regulation – Mechanism of stanniocalcin 2 mediated protection against NAFLD*

Dates: 05/01/24 – 04/30/28

Anticipated Cumulative Amount Awarded: \$1,261,500**

**Research made possible through this grant is supported by the National Institute of Diabetes and Digestive and Kidney Diseases, a component of the National Institutes of Health, under the award number 2R01DK122028-07.

*Former HHDC pilot award

NIH/NICHD R21 GRANT (09/2023 – 08/2025)

PI: Kathryn Burge, Ph.D.

Department of Pediatrics

Funding Organization: National Institutes of Health (NIH)/ Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

Grant Type: R21

Title of Grant: *Role of Creatine Metabolism in Necrotizing Enterocolitis*

Dates: 09/05/23 – 08/31/25

Amount Awarded: \$398,750 in 2023*

*Research made possible through this grant is supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, a component of the National Institutes of Health, under the award number 1R21HD112659-01.

New Grants to HHDC Members

NIH/NIGMS COBRE PILOT PROJECT AWARD (10/2023 – 09/2025)

PI: Kathryn Burge, PhD

Department of Pediatrics

Funding Organization: National Institutes of Health (NIH)/
National Institute of General Medical Sciences (NIGMS)

Grant Type: Centers of Biomedical Research Excellence
(COBRE) Pilot Project Award

Title of Grant: *The Macrophage/Tuft Cell SUCNR1 Axis in
Neonatal Intestinal Inflammation*

Dates: 10/23 – 09/25

Anticipated Amount Awarded: \$50,000/year*

*Research made possible through this grant is supported by the National Institute of General Medical Sciences (NIGMS), a component of the National Institutes of Health, under the Project Number: P20GM34973, Pilot Project Award #20191176.

NIH/NHLBI GRANT (07/2023 – 06/2028)

Consultant: Zachary C. Pope, PhD, ACSM-EP

Department of Health Promotion Sciences

Funding Organization: National Institutes of Health (NIH)/
National Heart, Lung and Blood Institute (NHLBI)

Grant Type: R01

Title of Grant: *Effects of Walking in Greenspace and
the Built Environment in Adults with Prediabetes: A
Randomized crossover Trial*

Dates: 07/01/23 – 06/30/28

Amount Awarded: \$702,727 in FY 2023*

**Research made possible through this grant is supported by the National Heart, Lung and Blood Institute (NHLBI), a component of the National Institutes of Health (NIH), under the award number 1R01HL170504-01.

NIH K25 GRANT (08/2023 – 07/2028)

PI: Marmar Moussa, PhD

University of Oklahoma Gallogly College of Engineering

Co-Mentor: Jed Friedman, PhD

Department of Physiology

Funding Organization: National Institutes of Health (NIH)

Grant Type: K25

Title of Grant: *Computational approaches to the
mechanistic elucidation of the serrated pathway of human
colon carcinogenesis*

Dates: 08/01/23 – 07/30/28

Anticipated Cumulative Amount Awarded: \$993,605*

*Research made possible through this grant is supported by

the National Institute of Diabetes and Digestive and Kidney Diseases, a component of the National Institutes of Health, under the award number 1K25CA270079-01A1.

OSCTR GRANT (04/2024 – 03/2025)

PI: Marisol Castillo-Castrejon, MSc, PhD

Department of Pathology

Funding Organization: Oklahoma Shared Clinical and
Translational Resources (OSCTR) U54GM104938

Title of Grant: *The Role of Sex Hormones in Adaptive
Immunity: Implications for Menopausal Weight Gain*

Dates: 04/01/24 – 03/31/25

Amount Awarded: \$50,000

HEVOLUTION FOUNDATION GRANT (02/2024 – 01/2028)

PI: Benjamin F. Miller, PhD

Oklahoma Medical Research Foundation

Funding Organization: Hevolution Foundation

Grant Type: Hevolution Foundation Geroscience Research
Opportunities (HF-GRO)

Title of Grant: *Is endoreplication of myonuclei a target for
muscle growth?*

Dates: 02/01/24 – 01/31/28

Anticipated Cumulative Amount Awarded: \$1,598,000

ADA GRANT (11/2023 – 11/2026)

PI: Cassie M. Mitchell, PhD, RD

Department of Pediatrics

Funding Organization: American Diabetes Association (ADA)

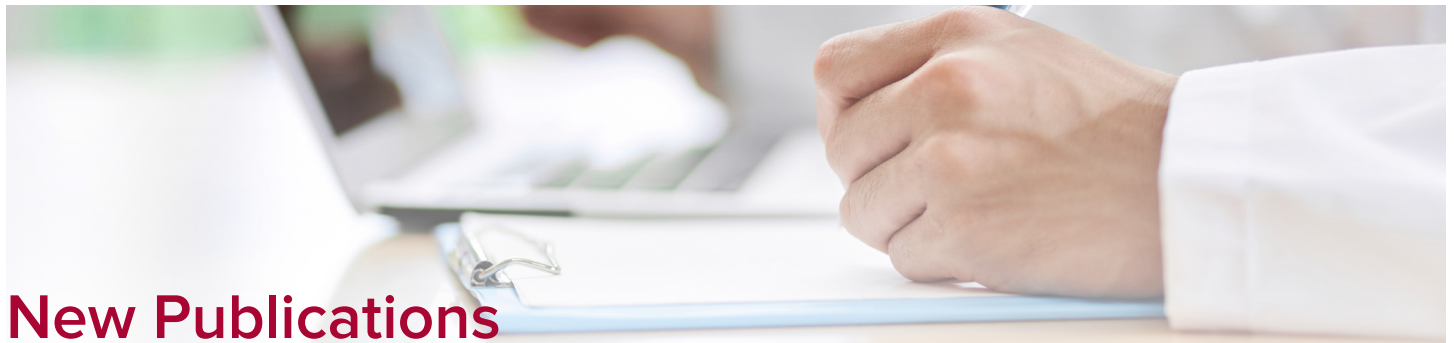
Grant Type: Post-doctoral Fellowship

Title of Grant: *Discerning the influence of maternal
phenotype on liver health: Impact on mother and baby*

Dates: 11/15/23 – 11/14/26

Anticipated Cumulative Amount Awarded: \$228,684





New Publications

Argento, NB, Bolderman, KM. Putting your Patients on the Pump, Technology Options, Patient Education, Candidate Selection, Guidelines and Case Studies, Therapy Management., 3rd ed. American Diabetes Association, 2024. ***Drs. Allen R** and **Beck J** were acknowledged for their pediatric diabetes case contributions in this recent publication.

Bearer C, Abman SH, Agostoni C, Ballard P, Bliss J, De Boode WP, Canpolat FE, Chalak L, Cilio MR, Dammann O, Davis J, El-Metwally D, Ferriero D, Ford S, Fuentes-Afflick E, Gano D, Giussani D, Gonzalez F, Gunn A, Hogeveen M, Huang AY, Kaplan J, Klebanoff M, Lachman P, Mak R, Malhotra A, Miller S, Mitchell WB, Molloy E, Mulkey SB, Roland D, Sampath V, Sant'Anna G, Schaff P, Singer LT, Stroustrup A, Tingay D, Tiribelli C, Toldi G, **Tryggestad J**, Valente EM, Wilson-Costello D, Zupancic J. Asperger's syndrome - about time to rename it? *Pediatr Res*. 2024 Feb;95(3):582-584. [PMID: 37957241](#).

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Díaz-García CM. Glycogen from spinal astrocytes dials up the pain. *Nature Metabolism*; 6(3):384-386. [PMID: 38443592](#).

Esparham A, Ahmadyar S, Zandbaf T, Dalili A, Rezapanah A, Rutledge R, **Khorgami Z**. Does One-Anastomosis Gastric Bypass Expose Patients to Gastroesophageal Reflux: a Systematic Review and Meta-analysis. *Obes Surg*. 2023 Dec;33(12):4080-4102. [PMID: 37880462](#).

Esparham A, Mehri A, Hadian H, Taheri M, Anari Moghadam H, Kalantari A, Fogli MJ, **Khorgami Z**. The Effect of Bariatric Surgery on Patients with Heart Failure: a Systematic Review and Meta-analysis. *Obes Surg*. 2023 Dec;33(12):4125-4136. [PMID: 37897639](#).

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New Presentations

Castillo-Castrejon M. “B cells are regulators of menopause-associated weight gain, glucose metabolism and adipose tissue dysfunction mainly through E2/ERα signaling.” Talk presented at 71st Annual Scientific Meeting for the Society for Reproductive Investigation; March 16, 2024; Vancouver, BC, CA.

Clegg JR. “Macrophage immunotherapy for autoimmune or inflammatory brain damage.” Presented at Gordon Research Conference: Immunoengineering; February 13, 2024; Tuscany, IT.

Emerson SR, Keirns BH, Sciarrillo CM, Medlin A, Hart S, Poindexter K, Jenkins NDM, Lucas EA, **Short KR**. “Obesity, body composition and postprandial triglycerides: A secondary analysis of studies utilizing an abbreviated fat tolerance test.” Abstract presented at the annual meeting of The Obesity Society; Oct. 16, 2023; Dallas, TX.

Jonscher K. “Maternal obesity impacts Enterobacteriaceae strains in human newborns that increase TMAO and provoke hepatic fibrosis in mice.” Talk presented at 71st Annual Scientific Meeting for the Society for Reproductive Investigation; March 2024; Vancouver, BC, CA.

Jonscher K. “Unraveling the Early-Life Origins of Nonalcoholic Fatty Liver Disease (NAFLD) Using Multi-Omics Approaches.” Keynote presentation at the 12th International Conference on Computational Advances in Bio and Medical Sciences (ICCABS); Dec. 11, 2023; Oklahoma City, OK.

Le M, Zelnicek T, Nadig AP, Neely S, Miller J, Bard D, Beasley W, Kanagwa B, Thumann A, **O’Neal KS**. “Assessing provider’s perceptions of metformin place in therapy with growing utilization of GLP-1 receptor agonists and SGLT-2 inhibitors and prescribing patterns.” Poster presented at the Vizient Pharmacy Network Conference; Dec. 2023; Anaheim, CA.

O’Neal KS. “Living with diabetes simulation.” Poster presented at the Association of Diabetes Care and Education Specialists Annual Meeting; July 2023; Houston, TX.

Stout H, Tadros M, Planas LG, Sewell HE, Nadig AP, **O’Neal KS**. “Impact of social determinants of health barriers on the initiation and utilization of continuous glucose monitors for adults with type 2 diabetes mellitus.” Poster presented at the American Society of Health System Pharmacists Midyear Clinical Meeting; Dec. 2023; Anaheim, CA.

Tadros M, **O’Neal KS**. “Limitations and barriers of continuous glucose monitors in the elderly population.” Poster presented at the American Society of Health System Pharmacists Midyear Clinical Meeting; Dec. 2023; Anaheim, CA.

Tryggestad JB. “Cardiometabolic Disease in Youth: What is the role of maternal diabetes?” Grand Rounds presentation at the University of Texas Health Sciences Center; Nov. 17, 2023; San Antonio, TX.

Tryggestad JB. “Youth Onset Type 2 Diabetes: Treatments, Complications, and the Path to Improved Outcomes.” Grand Rounds presentation at the University of Pennsylvania; Nov. 15, 2023; Philadelphia, PA.

Wild, RA. “Highly Atherogenic Lipids Circulate Throughout Pregnancy with Preeclampsia.” Poster presented at 71st Annual Scientific Meeting for the Society for Reproductive Investigation; March 15, 2024; Vancouver, BC, CA.



Media and Distinctions

Marisol Castillo-Castrejon, Ph.D. was recognized with an SRI President's Presenter's Award – Early Career Researcher, for her presentation *B cells are regulators of menopause-associated weight gain, glucose metabolism and adipose tissue dysfunction mainly through E2/ERα signaling*. 71st Annual Scientific Meeting for the Society for Reproductive Investigation; March 16, 2024; Vancouver, BC, CA.

Jed Friedman, Ph.D. appeared on OETA Channel 13, Oklahoma Educational TV, on April 12, 2024, to discuss “*The Ozempic Craze: Hype or Help.*” View his video appearance [here](#); In depth discussion feature starts at 35:24.

Jed Friedman, Ph.D. appeared on KOTV Channel 6 (CBS), Tulsa News, on March 7, 2024, to raise awareness for prediabetes screenings and speak to the genetic and lifestyle components of the disease's etiology. View his video appearance [here](#).

Jed Friedman, Ph.D. appeared on KTUL Channel 8 (ABC), Tulsa News, on World Diabetes Day, November 14, 2023, to raise awareness of diabetes prevention and encourage action, with the launch of the “*Do I have prediabetes*” campaign. View his video appearance [here](#).

Harold Hamm Diabetes Center Updates



Congratulations to Dr. Mitchell for her faculty appointment!

Cassie M. Mitchell, Ph.D., RD
Assistant Professor
Pediatric Diabetes and Endocrinology
Director of HHDC Nutrition Research

New Lab Staff

Jessica Lam, Bioinformatics Analyst
Lei Xiong, Ph.D., Postdoctoral Research Fellow, Li Lab

New Harold Hamm Diabetes Center Members

Carlos Manlio Díaz-García, Ph.D.
Robert Wild, M.D., MPH, Ph.D.
Adam Alexander, Ph.D.

Amy Cohn, Ph.D.
Guangpu Li, Ph.D.
Kaili Liu, Ph.D.