



UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Center For Women's Health Research Quarterly Highlights

WINTER 2019

Message from Dr. Judy Regensteiner, CWHR Director



Dr. Judy Regensteiner

This fall was marked with several milestones, and I am deeply grateful to everyone who attended our events and thereby supported the mission of the CWHR. Following our highly engaging and well attended National Conference on Women's Health and Sex Differences Research at the end of September, we welcomed former First Lady Laura W. Bush and Dr. Marjorie Jenkins, Scientific Director of the Laura W. Bush Institute for Women's Health, at our Annual Community Luncheon. We were honored and delighted to have Mrs. Bush share personal stories about herself and her family and relate to us how she became passionate about women's health and sex differences initiatives.

"A core component of the CWHR mission is to mentor and fund the next generation of MD and PhD researchers who are interested in building careers in women's health and sex differences."

One of the most exciting parts of the Annual Community Luncheon is the announcement of the new seed grant recipients. A core component of the CWHR mission is to mentor and fund the next generation of MD and PhD researchers who are interested in building careers in women's health and sex differences. In 2006, the CWHR funded its first seed grant recipient, Dr. Kristen Nadeau, who is now one of the most well-funded and successful endocrinology researchers in the Department of Pediatrics. The CWHR has helped to develop the scientific careers of over 65 young MD and PhD researchers, and our impact on the field and on patients' lives is growing. CWHR researchers have homes in 24 areas of medicine and their research and clinical care encompass the lifespan. In addition to the scientific findings that will contribute to changing health care guidelines and improving lives, some of our researchers have opened multidisciplinary clinics on campus that are based on their scientific findings.

We are very proud to be making a difference. So far, the CWHR has provided \$1.6 million to researchers to help them get their ideas off the ground. These same researchers have used the knowledge and data obtained from their grant projects to secure over \$65 million in other funding to further the work and propel their discoveries. In short, for every \$1 we have awarded in grants, CWHR researchers have received \$40 in other funding. Without your strong and steadfast support, this would not have been possible.

Sending warm wishes and heartfelt thanks,

Judy Regensteiner, PhD
Director, Center for Women's Health Research
Judith and Joseph Wagner Chair in Women's Health Research

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Congratulations! 2018 Faculty Development Award Recipients



Seth Creasy, PhD



Ramón Lorca, PhD



Clare Paterson, PhD

SETH CREASY, PHD

Division of Endocrinology, Metabolism, and Diabetes

Effects of Menopause on Propensity for Weight Regain

Very little research has been conducted to examine differences in propensity for weight regain, energy expenditure, energy intake, and physical activity between pre and postmenopausal women following weight loss. The overall aim of Dr. Creasy's study is to begin to investigate these potential differences, which could lead to individualized prescriptions and strategies for postmenopausal women seeking long-term weight loss.

RAMÓN LORCA, PHD

Division of Reproductive Sciences

Effect of High-altitude and Intrauterine Growth Restriction on Potassium Channels in Myometrial Arteries from Pregnant Women

Dr. Lorca is investigating how living at high altitude (>8000 ft.) affects fetal and maternal complications of pregnancy. His research aims to understand the mechanisms by which low oxygen availability alters the effects of pregnancy on uterine vessels. He expects that these studies will improve our understanding of fetal growth retardation and preeclampsia and identify targets for therapeutic or preventive treatments.

CLARE PATERSON, PHD

Department of Psychiatry

Exploration of Antenatal Vascular Endothelial Growth Factor Signaling to Better Understand the Biological Origins of Depression as a Systemic Disease

Women are a particularly vulnerable subpopulation to depression, and there are high rates of co-occurrence of depression and diseases of the vascular system. Dr. Paterson's research aims to identify the early-life biological origins of depression by examining the relationship between depression-related behaviors and brain vasculature. This research has the potential to identify novel targets that may represent earlier, faster and more effective therapeutic strategies for millions of women suffering from depression worldwide.

“The CWHR seed grant will allow me to better understand the role of sex differences in the origins of depression.”

~ CLARE PATERSON, PHD

THIS YEAR, WE FUNDED 7 NEW RESEARCH AWARDS, bringing our total researchers to over 65 PhD and MD scientists. Through our Faculty Development Awards (seed grants), scientists are funded to pursue important questions around women's health and sex differences related to their research interest. Our latest group of grantees will focus on a diverse range of topics including:

- Physical activity and menopause
- Identification of early indicators of depression
- High altitude & pregnancy complications
- Sleep and bone metabolism
- Gender disparities related to access to health care treatment and intervention
- Effects of hormone therapy on vascular health

For each scientist, the findings from these grants are invaluable. Seed grants allow researchers to afford essential materials, pay for research assistants, give stipends to study participants, and manage administrative costs. The data and insights that are produced allow scientists to foster their own body of research, supporting them in competing for larger grants in the future. As always, we would like to thank the supporters who made these 2018 seed grants possible: the List Family Foundation, the Ludeman family, and the University of Colorado School of Medicine.



Christine Swanson, MD, MCR



Sean Iwamoto, MD

Visit www.CWHR.org to learn more about our Faculty Researchers.

CHRISTINE SWANSON, MD, MCR

Division of Endocrinology, Metabolism, and Diabetes

Sleep Disruption, Bone Metabolism, and Insulin Action: Investigating Mechanistic Links and Sex Differences

Women are more commonly affected by osteoporosis than men. However, the effects of altered sleep timing and duration on bone turnover in women and how this may relate to the metabolic risks seen with sleep disruption are unknown. This research will measure markers of bone turnover in women exposed to several weeks of shortened sleep throughout the day to understand if altered sleep timing and duration negatively impact bone turnover in women, as they do in men.

SEAN IWAMOTO, MD

Division of Endocrinology, Metabolism, and Diabetes

Novel Evaluations of Aging and Gender-affirming Hormone Therapy on Vascular Endothelial Function and Metabolic Profiles in Transgender Adults

Dr. Iwamoto is studying the effects of gender-affirming estradiol treatment on vascular health and metabolic parameters in transgender women. This research will help answer questions about how estrogen impacts the cardiovascular disease risk among transgender women and eventually promote further study of ways to intervene, treat, and prevent cardiovascular disease in these people and the general population.

continued...

2018 Faculty Development Interdisciplinary Awards

The VAD Gap: Characterizing Gender Disparities in Ventricular Assist Device Use through Psychosocial Evaluations

Ventricular assist devices (VADs) are a vital treatment option for patients with heart failure, often representing the last option for patients for whom transplants are not feasible. VADs often improve survival and quality of life, but only 15-20% of patients in the U.S. with these devices are women. This research team is investigating whether this disparity could be due in part to bias implicit in the social assessment for VAD candidacy. By understanding social factors which disadvantage women, as well as bias in the evaluation itself, we will be able to develop practices which provide equal access to this lifesaving treatment.



PRATEETI KHAZANIE, MD, MPH
Division of Cardiology



CHRISTOPHER KNOEPKE, PHD, MSW
Division of Cardiology



PILAR INGLE, MSW, LSW
ACCORDS

Assessing Public Perceptions and Identifying Targets for Intervention to Reduce Disparities in the Provision of Bystander CPR for Women after Cardiac Arrest

Women who suffer out of hospital cardiac arrest receive bystander CPR less than men with the same condition. This statistic has translated into a survival benefit to men, while women continue to have reduced rates of survival after cardiac arrest. This study will assess public perception of gender differences for bystander CPR. The researchers ultimately hope to create an intervention/educational module for basic life support training to reduce this gender disparity.



SARAH PERMAN, MD, MSCE
Department of
Emergency Medicine



CHRISTOPHER KNOEPKE, PHD, MSW
Division of Cardiology



KATHRYN RAPPAPORT, MD
Division of Pediatric
Emergency Medicine



STACIE DAUGHERTY MD, MSPH
Division of Cardiology



Researcher Spotlight

Ramón Lorca, PhD

“If you want to be really successful, this is where you need to be,” Dr. Ramón Lorca stated.

Dr. Lorca was born and raised in Chile but his studies brought him to the United States in 2008. After finishing his PhD program in Chile, Ramón was offered a post-doctoral position at the University of Iowa, followed by Washington University in St. Louis two years later. Eventually, Dr. Lorca was awarded an American Heart Association Post-Doctoral Fellowship, which landed him a position as an instructor at the Moore Lab at the Anschutz Medical Campus, led by Lorna Moore, PhD, a founder of the CWHR. Currently, Ramón is working to study how ion channels – certain proteins that regulate the electrical activity of the cells – affect the uterine vasculature during pregnancy, and how that relates to the pathological conditions of pregnancy observed at high altitudes.

Over the years, Dr. Lorca has sought a competitive environment where he could practice high quality science. The lack of scientific funding and resources in Chile ultimately led him to explore alternatives in the United States. “To give some perspective, a typical NIH (National Institutes of Health) grant might be 3 times the size of a grant you would receive for a similar project in Chile,” Dr. Lorca explained. It can take weeks to receive vital research supplies, which greatly lengthens the research process. “We didn’t have resources to waste. So in that sense, it gave me an idea of how to manage and maximize limited resources.” In addition, attaining a PhD is a challenging feat, and the shortage of fellowships exacerbates the issues of completing a program, and securing a job after you’ve

finished. As he planned for grad school, Ramón had the opportunity to produce two publications while working in a lab for a few years, greatly boosting his chances of acceptance. Though it was difficult, Ramon was able to find a silver lining as he was facing these conditions. He was better positioned to think strategically and take a thorough approach to planning his research.

Part of the allure of moving to the states is the fact that there is a much greater investment in research than in Chile. As a recent recipient of the Faculty Development Award granted by the Center for Women’s Health Research, Dr. Lorca is supported in producing research that he can build on throughout his career. “The push that the Center gave me, with this grant, is the first step toward independence. Without it, it’s very hard to build momentum.” The CWHR ensures that researchers have the opportunity to network and collaborate with other scientists and receive mentorship from senior researchers. “Mentorship is really important in the early years of your career and has been very helpful for me,” Dr. Lorca said. Together with his research, and the guidance he receives from his mentorship team, Dr. Lorca will soon be positioned to apply for larger grant funding opportunities that are necessary to strengthen his career.

CWHR Celebrates its 10th Annual Women's Health Research Day

Earlier this fall, the CWHR celebrated its 10th annual Women's Health Research Day, where we welcomed Dr. Marjorie Jenkins as our keynote speaker. Dr. Jenkins, who is a professor at Texas Tech University Health Sciences Center and Chief Scientific Officer at the Laura Bush Institute for Women's Health at Texas Tech, discussed the importance of integrating sex and gender-based evidence into the curriculum at medical universities and how this continues to impact healthcare outcomes for men and women. As a national advocate for increased education in women's health and sex differences, Dr. Jenkins has helped develop open access, [peer-reviewed modules](#) that professors can incorporate into their lectures.

In addition to the keynote presentation, students and faculty were invited to showcase their research on women's health and sex differences during a competitive poster session. Each poster was judged by a senior researcher and participants had opportunities to share their process and findings, as well as receive feedback on future considerations.



The winners of the poster session included:

Beatriz Bermudez, BS, Osteogenic response to exercise obesity (OREO)

Ramón A. Lorca, PhD, Impaired myometrial artery vasodilator response in high-altitude pregnancies

Natalie Hohos, PhD, Fat-1 transgene is associated with improved female reproductive outcomes

Amanda Jones, PhD, Late gestation hypoxia stimulates hepatic expression of gluconeogenic genes in fetal sheep

Aviva Olsavsky, MD, Intergenerational trauma and response to infant cry

Sarah Tarullo, MS, Matrix remodeling by semaphorin 7a promotes tumor invasion and cell survival

Kathleen Woulfe, PhD, Sex-dependent regulation of autophagy by midkine in pediatric dilated cardiomyopathy

Let's Talk: Conversations about Women's Health

Mind, Body, and Spirit – Taking Care of Yourself and Others During the Holidays and Beyond

Even though the holidays can be filled with joy and merriment, they can also trigger stress, anxiety, depression, and weight gain. Three expert speakers at the November 12th Let's Talk event shared their knowledge about how to better handle stress and anxiety and tackle unhealthy eating and drinking habits during festivities.

Laura Martin, MD, Medical Director of the Center for Dependence, Addiction, and Rehabilitation (CeDAR) addressed keeping holiday spirits in check; Scott Cypers, MD, presented information about coping with stress and how to best practice self-care; and Lisa Wingrove, RD, spoke about the role that food plays in holiday traditions and offered how to make healthy food choices at potlucks and parties.



Annual Community Luncheon

With a sold out crowd of 800 attendees, the CWHR Annual Community Luncheon on October 31st proved to be the largest and most highly anticipated to date. The program featured exciting updates on research initiatives at the CWHR, and we announced seven new faculty development awards.

CWHR researcher Josiane Broussard, PhD, shared highlights of her research, which is supported by the CWHR and is focused on sleep and cardiometabolic health in men and women. Echoing the sentiment of all attendees, CWHR board member Kate Brown said, "My friends were delighted and inspired. Already three of them have made a commitment to solving their sleep problems in order to have better health."

The Annual Luncheon video, produced by CWHR board member John Levisay's team at Blueprint, captured the compelling story of local community advocate Sherry Delaney whose improved health knowledge gained from attending a 2018 Let's Talk event on cardiovascular disease motivated her to find answers to concerns

she had about her health. The CWHR was honored to have former First Lady Laura W. Bush talk about the importance of supporting women's health and sex differences research. Dr. Marjorie Jenkins, Chief Scientific Officer for the Laura W. Bush Institute for Women's Health, moderated the discussion, which was focused on the importance of sex differences research, and on the fundamental role that organizations like the CWHR play in educating the public to make those decisions.

"Having Mrs. Bush share her passion for women's health with us was a true inspiration," said CWHR Director Dr. Judy Regensteiner. "Her enduring commitment to women's health and prominence on the world stage are helping us to close the gap in knowledge and provide optimal treatments to both men and women."

Visit www.CWHR.org to watch the video and learn more about our impact.



DID YOU KNOW?

- » Women are more likely to self-medicate using drugs and alcohol than men.
- » High calorie foods trigger greater activity in brain regions that decide behavior control in women compared to men.
- » Try to break stressors down into 3 categories: Fixable, Unfixable, and Overreacting. For fixable stressors, create an action plan and get it off the list. For unfixable stressors, get support and try to release the stress. If you or others find that you are overreacting to a stressor, challenge it.



National Conference on Women's Health and Sex Differences Research

The Center for Women's Health Research hosted the 2nd biennial Conference on Women's Health and Sex Differences Research with a focus on metabolism from September 26 to September 28, 2018. Following the success of the first National Conference in 2016, this year far exceeded expectations – drawing the attention of close to 200 participants and featuring 49 presentations over the course of two days. Scientists from 51 institutions, 20 states, and 3 countries gathered to share cutting-edge research and findings on topics ranging from fetal origins of adult disease, bone health, heart disease and diabetes, to the impact of exercise and sleep on cardiometabolic health. Scientists shared their findings, answered questions, and welcomed productive discussion.

CWHR Co-Founder and Director, Dr. Judy Regensteiner, gave opening remarks followed by a presentation by Dr. T. Rajendra Kumar on the findings that emerged from the National Conference in 2016. Throughout the next two days, sessions included a diverse list of exciting topics such as Exercise & Bone Metabolism; Circadian Rhythms; Molecular Clocks and Muscle Homeostasis; Sleep During Pregnancy; Community-Based Diabetes Care and Cardiometabolic Adaptation to Exercise: Effect of Sex Differences. At the end of each of the 6 scientific sessions, junior faculty scientists had the opportunity to showcase their work during quick 'data blitz' sessions. They were then able to present a more in-depth look at

their findings during a poster session.

In addition, a session was curated for a diverse group of community leaders to learn about the real world implications of issues affecting women's health. Participants learned about the prevalence of cardiovascular disease in women, physiological changes during menopause, the connection between the brain and the heart, and the health benefits of strong relationships and friendships. The CWHR is dedicated to supporting research on women's health and to ensuring that knowledge is shared with the community so that health care decisions are better informed. "Each of us has an important responsibility to continue to push forward the research agenda in the area of sex differences and metabolism, which will ultimately lead to improvements in clinical care and improved health of women and men," Dr. Jane Reusch, Associate Director of the CWHR, said as she reflected on the goals of the conference. The CWHR is proud to have hosted such a prestigious conference and plans to hold the next conference on women's health and sex differences research in 2020.

For those interested in learning more, you can view the photo gallery by visiting our [Facebook page](#).



WITH

Jane Reusch, MD

Jane E.B. Reusch, MD is a Professor of Medicine and Biochemistry at the University of Colorado School of Medicine. She is the Associate Director of the CWHR and has just completed her term as President of Medicine and Science of the American Diabetes Association.

You have spent the past year in the impactful role as President of the American Diabetes Association. Of all of the projects that you have worked on, what are you most proud of?

I am most proud of the partnership that I helped to strengthen between the American Diabetes Association and the American Heart Association. The collaboration was focused on education and awareness for family and primary care providers about the increased risk for cardiovascular disease for those who have diabetes. Also, we are currently working closely for the first time with the American College of Cardiology.

I was also proud that I was able to give the Presidential Address at the ADA conference to 10,000 attendees when I was sick and had no voice the day before.

You have had the opportunity to travel all over the world in your role with the ADA. What was your most memorable trip?

The most fulfilling trip was working with the incredible medical staff at the Christian Medical College of Vellore, India. They have a huge diabetes center with very sick patients, but are doing unbelievable work with insulin clamps and cardiovascular imaging. The westernization of the diet in India has led to a huge increase of diabetes in India (about 7% of adults in India have diabetes).



Traveling this year has allowed me to connect with leaders in diabetes research from all over the world. Thanks to new medications that improve blood sugar control, cardiovascular outcomes for those with diabetes have improved. I have had the opportunity to be at the table advising the FDA and health delivery systems about how to work with new agents to make meaningful changes. Smaller meetings also give us the opportunity to fully expose our work which focuses on the interface between diabetes and cardiovascular disease, since this area has traditionally not had a scientific home.

What have you put into place that will continue once you step down at the end of the year?

The Women's Interprofessional Network (WIN-ADA). Many diabetes educators, scientists, and clinicians are women, and this group allows them to have a better understanding of the gaps in research. It is modeled after the Center for Women's Health Research. We focus on advocacy and how research impacts practice.

ACCOLADES to our CWHR Faculty Researchers



Petter Bjornstad, MD



Karen Jonscher, PhD



Kristen E. Boyle, PhD



Clare Paterson, PhD



Seth Creasy, PhD

Petter Bjornstad, MD

Was awarded an NIH/NIDDK Diabetic Complications Consortium (DiaComp) Pilot and Feasibility Award, and was also included in the DiaComp investigator highlights.

Karen Jonscher, PhD

Received the NASA Young Investigator Award for her proposal which seeks to determine whether exposure to simulated spaceflight primes the bone marrow toward an inflammatory phenotype, increasing risk for liver damage, that can be ameliorated by treatment with the dietary antioxidant pyrroloquinoline quinone.

Kristen E. Boyle, PhD

Recently received a new R01 grant from NIH (NIDDK), that will run from 2018-2023.

The study is titled "Epigenetic programming of infant mesenchymal stem cells: mechanisms for obesity and diabetes risk in humans," and will use stem cells from umbilical cords of newborn infants to discover how epigenetics may contribute to increased obesity and diabetes risk in children born to mothers with obesity.

Clare Paterson, PhD

Was awarded the 2018 Culshaw Family Heart-Lung Junior Faculty Award, offered by Children's Hospital Colorado Foundation. The grant will provide project support to investigate the early life biological mechanisms shared between heart, lung and brain development with a focus on endothelial dysfunction.



Josiane L. Broussard, PhD

Kerrie Moreau, PhD

Kerry Hildreth, MD

Viral Shah, MD

Seth Creasy, PhD

Was invited to present at the 2018 Obesity Society National Conference held in Nashville, TN, where he spoke in the session titled "Challenging the Traditional 'Exercise' Paradigm for Obesity Prevention and Treatment."



Josiane L. Broussard, PhD

Received an R03 grant from NIH (NIDDK) to support her project, "Impact of insufficient sleep on peripheral metabolic tissues." The goal of this project is to examine the impact of insufficient sleep on muscle and adipose tissue biopsied from healthy human volunteers.

Kerrie Moreau, PhD and Kerry Hildreth, MD

Received an NIA/NIH, R01 administrative supplement (Alzheimer's Disease and its related Dementias (AD/ADRD)-focused Administrative Supplement) to study the effects of low testosterone on cognitive function. Dr. Moreau will serve as Principal Investigator on the study titled, "cardiovascular consequences of hypogonadism in men."



Viral Shah, MD

Was appointed as communication director for the "Diabetes Technology Interest Group" for the American Diabetes Association.

Welcome to Our New Advisory Board Member

Cindy Caruso

Co-Founder, The Caruso Foundation



Cindy Caruso is the Co-Founder of The Caruso Foundation, an organization focused on promoting the growth of business startups, creating entrepreneurs, and supporting provocative and innovative endeavors, both in terms of breakthrough ideas and human progress as well as building the associated infrastructure for sustained growth. Prior to starting The Caruso Foundation, Cindy was most recently Chief of Operations for Practice iQ, an Aetna, Inc. / Healthagen business focused on helping physician organizations enhance their reimbursement and care models through development of advanced healthcare information technology and sophisticated clinical and business services.

Cindy was also Vice President of Operations with McKesson Specialty Health Technology Division, and from 2006-2011, Cindy oversaw the development and implementation of iKnowMed, an oncology specific EHR software application. Additionally, Cindy led the McKesson Lynx technology operations teams and their oncology specific software solutions.

Cindy's experience also embraces practice operations leadership over the span of eighteen years. This includes the role of Practice Director at Rocky Mountain Cancer Centers. Here, Cindy managed operations for cancer centers throughout the Denver metro area. Cindy also provided administrative leadership to The Steadman Hawkins Clinic and Allergy, Asthma and Immunology Clinic of CO, P.C.

Cindy and her husband Dan enjoy many things together outside of their foundation work. This includes travel, cycling, golfing, skiing and working in their greenhouse.



CWHR Advisory Board members and staff at the 2018 National Conference

Donor Spotlight

Cathy Hollis

Community leadership plays a critical role in the success of CWHR

Twelve years ago, Cathy Hollis' first introduction to the Center for Women's Health Research was at the Annual Luncheon in the green carpeted basement of the Tattered Cover. During the program, she was particularly struck to learn about how understudied women were, especially in the area of cardiovascular disease, the number one killer of women. Cathy's interest in the work of the CWHR was piqued because her mother had been misdiagnosed during a cardiovascular event in which she did not exhibit the typical "male" signs of crushing chest pain and shortness of breath. After suddenly becoming disoriented and nauseous, Cathy took her mother to the ER of a Southeast Denver hospital, and the staff questioned why Cathy was so concerned.

A Denver native, Cathy attended CU-Boulder and served as an accountant for several companies and organizations. As an astute investor who closely follows biotech and medical innovation companies, Cathy has been a long time member of an investment club with past advisory board chair Catherine Petros. When Cathy attended a second CWHR event with Catherine, she was taken aback at the growth of the CWHR and was impressed by the great strides that had been made in supporting and mentoring young scientists. Catherine immediately noticed a connection stating, "Cathy is so smart and makes a study out of investing in biotech companies. I saw the CWHR as a natural fit for her next leadership role in the community." Cathy subsequently joined the CWHR Advisory Board, and over the past three years, the Center for Women's Health Research has greatly benefited from Cathy's active engagement, leadership, and fundraising skills.



Cathy and Graham Hollis

During her tenure on the CWHR board, one of the most rewarding experiences for Cathy has been getting to know a CWHR funded scientist, Emily Su, MD, of the Department of Obstetrics and Gynecology. "The sacrifices that Emily has made to pursue research are just amazing. She is truly passionate about her research on the placenta, and it is so refreshing to see and learn about her commitment to her work." From her lens as an investor, Cathy emphasizes how ripe the investment opportunities are in women's health and how traditionally underappreciated women's health has been in the world of venture capital. In addition to her work in the community, Cathy enjoys biking and skiing with her husband Graham, gardening, and marveling at her two small grandchildren.

Cathy's leadership and impactful philanthropy have played a critical role in the success of the Center for Women's Health Research.

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