

Center For Women's Health Research Quarterly Highlights

SUMMER 2016



UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Message from the CWHR Director, Dr. Judy Regensteiner

Hello everyone! The last few months at the CWHR have been full of activity, including several exceptional accomplishments by our researchers and many well attended educational events for the community.

I am very pleased to announce that I applied for and received a grant from the Doris Duke Charitable Foundation totaling \$583,000. We were one of 10 medical schools who received this grant which is being used to establish a **"Fund to Retain Clinical Scientists."** This fund serves to support talented, funded early-career physician scientists in maintaining research productivity during periods of extra-professional career obstacles, such as child or elder care or personal illness or disability. My co-investigator, Anne Libby, PhD, and I have just awarded three of these grants in a peer reviewed committee process and expect to make two more awards in the coming months.

In June we held our popular event **"Exploring Careers in Health Care for High-School Girls."** 52 enthusiastic girls visited the CU Anschutz Medical Campus and were able to tour the Center for Surgery and Innovation, the Gates Biomanufacturing Center, the Skaggs School of Pharmacy and the University of Colorado Health Eye Center. Our goal is to teach girls about a variety of opportunities in health care, including medical research, clinical medicine, regenerative medicine, stem cell therapy, biomanufacturing, surgery and more.



LEADERS group meeting in LA

In 2015, I was honored by an invitation to join the Steering Committee of the **Leaders Empowering the Advancement of Diversity in Education Research and Science (LEADERS) in Women's Health Committee.** This group works to strategize ways to increase the number of endowed chairs in women's health, and to promote leadership in women's health. We had a productive meeting in Los Angeles and came away with inspiration and new ideas to relay back to our various organizations.

CWHR staff and senior researchers are hard at work planning our **inaugural National Conference**, to take place September 28th-30th of this year at the Broadmoor in Colorado Springs. More than 25 leading researchers in women's health and sex differences have accepted an invitation to speak. This will be an excellent opportunity for established researchers to share their cutting edge findings and for junior researchers to present posters and make important career connections. We intend for the proceedings of this conference to lead to a white paper outlining national research priorities in cardiovascular disease and diabetes through the lens of women's health and sex differences.

Many thanks for your interest in and commitment to the work of the CWHR!

Judy Regensteiner



Dr. Judy Regensteiner



14th Annual Women's Health Symposium- The Best Yet!

Each year the Center for Women's Health Research holds a Women's Health Symposium. This half-day training is designed for medical professionals to learn and implement the most recent evidence-based guidelines and treatment relevant to sex differences. 135 professionals attended this year's symposium on February 27th, which focused on teaching the demonstrated clinical and biological differences between men and women in heart disease, spine issues, vascular risk factors for dementia, sleep disorders, and exercise and bone health.

With this new knowledge, clinicians are able to improve therapeutic strategies for both the men and women they see in their practice.

Welcome to our new staff member: Kylie Harrall, MS

The CWHR is pleased to announce that Kylie Harrall, MS, a biostatistician, will be joining our team part-time to provide statistical support for the CWHR researchers.

Kylie holds a Masters of Biostatistics from the University of Colorado and was trained here on the Anschutz Medical Campus in the Colorado School of Public Health. Kylie has experience applying statistics to health science research including both clinical trials and statistical genomics. The addition of Kylie to the CWHR demonstrates thoughtful growth and helps provide the ability to have a greater impact at the Anschutz Medical Campus and in the community. **Welcome Kylie!**



Kylie Harrall, MS

WHAT EXACTLY DOES A BIostatistician DO?

Biostatisticians are integral in all steps of conducting medical research. It is essential for researchers to consult with a biostatistician while designing a study or writing a paper so they can help steer the study design and determine how many people they need to enroll in their study to produce statistically significant outcomes.

Once the study is up and running, biostatisticians aid in data management and evaluation. Data must be organized in a specific manner and monitored to ensure quality as they are collected. For example, interim graphics and descriptive statistics can identify collection issues, such as missing data and unreliable measurements that can be addressed along the way.

When it comes to analyzing the data that has been collected, a biostatistician is invaluable. Researchers may or may not be trained in advanced data analysis techniques, and the biostatistician can perform all of the analyses required. Once the analyses are complete, a biostatistician can assist in the statistical interpretation of the results by writing the statistical portions of a manuscript and creating graphics and/or tables to best represent the outcomes. This is very important in preparing data for larger grant proposals, as this can make or break the proposal.



Varied Topics for Let's Talk: Conversations About Women's Health

Since last fall the CWHR and its partner, University of Colorado Hospital, have put on three Let's Talk programs, each attracting a large audience. The Let's Talk series serves to relay information from the research bench to community members. We aim to keep the topics fresh and new, and this year's programs included "**Palliative Care and Advance Directives**", "**Keeping Your Interior Highway in Top Condition: Preventing Heart Attack and Stroke**", and "**Taboo Topics: Mood, Libido and Urinary Incontinence**." Let's Talk is a fun and engaging lecture series. Our expert speakers have the audiences in tears one moment and laughing out loud the next.

If you missed these programs you can access handouts and see videos on our website: cwhr.org. Here are a few tidbits, based on evidence-based research, to keep in mind:

- **It's always too early until it's too late.** Regardless of your age or life circumstances, you should have Advance Directives in place, including a Medical Power of Attorney and a Living Will. These documents help you keep control over your medical choices, even when you are not able to speak for yourself, and keep your loved ones and doctors on the same page about the type of care you wish to receive. You may not think about it now, but Advance Directives can help alleviate some stress during a potentially traumatic time.
- **High cholesterol, high blood glucose and high blood pressure** are all very common conditions that often do not have warning signs – so many people do not know they have these conditions. Mild to moderate elevations in these numbers are usually not an emergency, but left untreated these conditions can lead to a heart attack, stroke or kidney failure.
- **Taboo topics in women's health shouldn't be so taboo.** Millions of women suffer from depression, low libido and urinary incontinence, and it is very likely that your mom, sister, grandmother, aunt or friend may be living with any one of these issues right now. There are effective steps you can take to address these health conditions, both on your own and with your doctor. Don't be afraid to do research and have an informed conversation with your care providers. Speak up and improve your health and overall well being.

"These lectures, which I try to attend often, make me think about things that I might have overlooked. I trust that what is addressed in these lectures is what a general audience needs to know so I often end up sharing info I learned at work and with other women within my circle of friends."

~ LET'S TALK PARTICIPANT

*Let's Talk programs are open to all members of the public
so please join us in the fall for a new line up of exciting and informative programs!*

Eureka!

A Lay Person Visits a Research Lab

While our scientists are continually in search of Eureka! moments, the staff here at the Center for Women's Health Research (CWHR) thought we would share our own Eureka! moment when we took a fieldtrip across campus to get an insider's look at a busy research laboratory. Let's take a peek inside those laboratory walls...

HOW DOES ACADEMIC MEDICAL RESEARCH WORK?

Research labs at the University of Colorado Anschutz Medical Campus are buzzing with teams of PhDs, physicians, research assistants and students, working together to conduct medical research with the long-term goal of improving health. That macro-level view encompasses a very intricate cycle outlined below. One research study may take many years from start to finish, and its results often lead to questions for a new study. Most researchers juggle multiple studies at one time, while collaborating with other investigators and closely managing hundreds of thousands of research dollars.

DETAILS, PLEASE

Let's dial down to one specific study happening at CU Anschutz, in the lab of Dr. Kerrie Moreau, a PhD scientist with academic training in exercise and integrative physiology. As a faculty member of the University of Colorado, Kerrie conducts research, publishes her findings, and teaches and mentors students and post-docs. Kerrie was a recipient of a seed grant from the CWHR, which helped her gather pilot data to apply for larger grants from the National Institutes of Health (NIH).

On any given day, Kerrie may be found in her office writing a grant, in her lab looking at cells under a microscope, or in the clinic or fitness center, observing and testing patients enrolled in one of her studies. It may surprise you to know that over a third of a scientist's time is spent writing grant proposals that bring in funding for ongoing research.



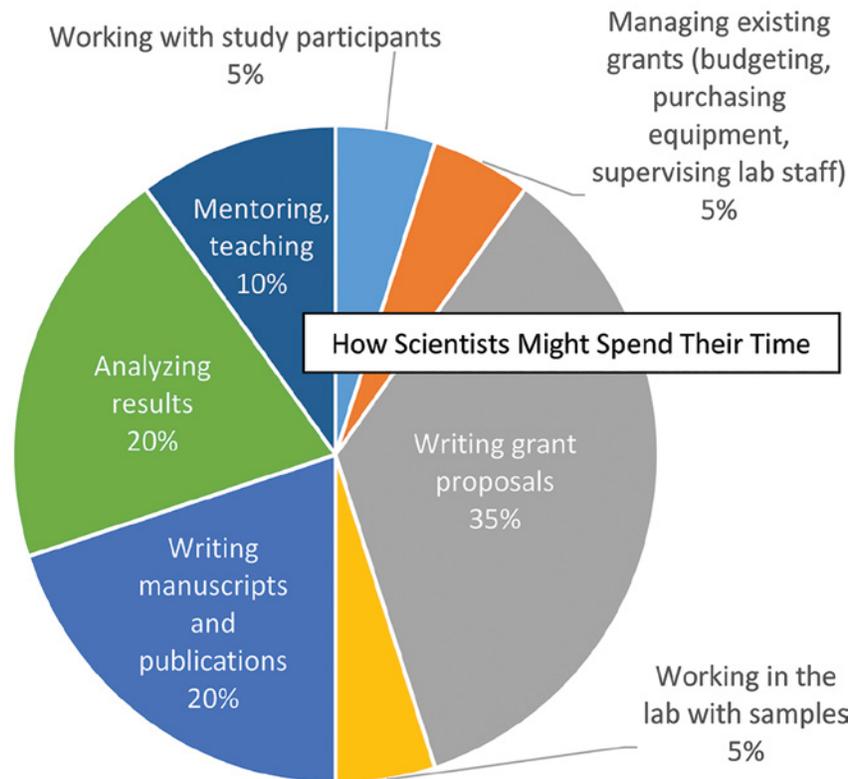
continued...

Kerrie's research aims to find ways to prevent cardiovascular disease, the #1 killer of men and women. In recent years, she has investigated the deterioration of cardiovascular health in women as they age, which could be caused by the natural loss of estrogen as women go through menopause.

STUDYING THE DIFFERENCES BETWEEN MALE AND FEMALE HORMONES

Kerrie's prior research on estrogen has in part led her to investigate the impact of declining testosterone (T) on the cardiovascular health of men. She has a 5-year grant from the NIH to study whether chronic and short-term low T levels are associated with cardiovascular dysfunction independent of aging. Men interested in this study go through a series of eligibility screens, and once enrolled, they complete a number of other tests and questionnaires to look at medical history, depression, sleep patterns, physical activity and cognitive function to see if other variables might contribute to the study results. There are

two aspects to Kerrie's study. The first is a cross-sectional study, where comparisons are made across three groups of men: young men, older men with normal T levels, and older men with low T levels. The second is an intervention study. The men are randomly divided into three groups; all will receive a drug meant to lower T levels, but two of the groups will receive a gel that contains T and one will receive a placebo gel. One of the groups that is receiving T gel will also receive a tablet that lowers estrogen levels, while the other two groups receive a placebo tablet. Data is gathered from the participants via blood samples and ultrasound imaging of their arteries and heart.



WHAT'S BEHIND CARDIOVASCULAR DISEASE?

Kerrie's research looks at the detailed cellular mechanisms causing cardiovascular disease. Inside our cells are millions of mitochondria that generate the energy our cells need to do their various jobs. If the mitochondria in the cells within our blood vessels become damaged and weak, the blood vessels do a poor job of pumping blood through the body. Moreover, the cells that line the blood vessels are no longer able to protect the blood vessel and plaque builds up, causing the arteries to be blocked.

continued...

Many studies have shown that this damage is caused by “oxidative stress”. You may not know it, but oxygen is both a blessing and a curse. We need oxygen in order to live, but the simple act of breathing in oxygen results in the formation of highly reactive molecules called free radicals. In the right conditions, our body filters out these free radicals using its own antioxidants. T has antioxidant properties, but recall that T (and estrogen) naturally decline as we age. Without the full function of T, the mitochondria in the cells are more susceptible to damage.

The findings from Kerrie’s research will help unravel the underlying mechanisms in mitochondrial damage, and will aid in the development of therapeutic strategies to preserve cardiovascular health in both men and women.

THE LIFE OF A BLOOD SAMPLE

Studying T levels and other cellular functions all starts with a blood sample. Each sample contains a wealth of information in its millions of cells, proteins, electrolytes, antibodies, antigens and hormones, like testosterone and estrogen. The components must be separated by knowledgeable lab technicians using sophisticated equipment.

One particular kind of cell, Peripheral blood mononuclear cells (PBMCs), are key to Kerrie’s investigation. PBMCs contain many of the white blood cells involved in the body’s natural defenses and are good places to measure the extent of oxidative stress and damage to the cells’ mitochondria. PBMCs are separated from the other blood components by spinning the sample very fast in a centrifuge. Once separated, Kerrie and her team analyze the PBMCs and the proteins inside them using a lab technique called “gel electrophoresis”. This takes advantage of a protein’s positive or negative electrical charge to move the protein through a gel, similar to how magnets can move electrically charged objects across a table. Hormones like T, as well as mitochondria are associated with specific proteins. To measure the amount of hormones and mitochondria, scientists analyze their associated proteins in the gel.

In addition to PBMC analysis, Kerrie examines ultrasound images of arteries and cells under a specialized microscope with a high-tech camera and computer software that shows cell function and the extent of oxidative stress.

PBMCS ARE ANALYZED, WHAT’S NEXT?

Ultimately, Kerrie wants to analyze the data from the PBMCs and ultrasound images to compare the three groups of men in her study that are each receiving a slightly different treatment. Kerrie’s lab staff enters data points into



Kerrie uses this high-tech microscope and computer software to analyze cell function

continued...

a software program designed specifically for research studies. Her team passes these data along to biostatisticians who use statistical models to compare the groups. Kerrie translates the statistical models into words that mean something to the average person, and tells a story about how the three treatment groups differ. When Kerrie completes the study, she hopes to draw a conclusion such as: "Chronically low T levels in older men may contribute to cardiovascular disease", and she will understand why that's happening and how it can be prevented. If she is able to verify her hypothesis and formulate a treatment, this information can be disseminated to doctors who care for patients with low T levels. That's the "bench to bedside" expression in practice. Kerrie's current research in men is an expansion of her research in women. It is an important step in furthering sex-difference research, ultimately leading to knowledge about how men and women differ, and how treatment can be tailored for the prevention of cardiovascular disease in both sexes.



Kerrie with CWHR collaborator, Kathleen Gavin

CWHR FOSTERING COLLABORATION

During our lab tour with Kerrie, we happened across a few other CWHR researchers who share not only Kerrie's lab space, but also her lab samples. For example, Dr. Kathleen Gavin takes fat biopsies to use for her own research, eliminating the need for another costly study to gather the samples she needs. Kerrie also collaborates with other CWHR researchers who have expertise in areas outside her own. In her T level study she enlists the help of Dr. Brian Stauffer to collect arterial samples, and she uses the techniques developed by Dr. Jane Reusch in her mitochondrial analysis.

A WORD FROM KERRIE

Kerrie tells us that her favorite part of the research process is interacting with the study participants. "It's enriching", she says, and some of the participants return and enroll in other studies. "It is always nice to see how they are doing – it's like I am catching up with an old friend!" She also enjoys writing grants and manuscripts. "Each grant and paper is adding a new chapter to a story." Overall, she takes great satisfaction from the feeling that her work is solving a piece of a puzzle.

Donor Spotlight: Betsy Mangone

Betsy Mangone is a long-time supporter of the Center for Women's Health Research (CWHR) and also currently serves on the Advisory Board.



Betsy Mangone

Q: How did you first learn about the CWHR and what led you to join the Advisory Board?

A: I initially heard about the CWHR while working at The Denver Foundation. One of the Donor Advised Fund holders requested a grant from her fund be made to the CWHR. I had never heard of this organization, but the more I learned, the more impressed I became. Not long thereafter, members of the CWHR's Advisory Board contacted me to see if I would be willing to spend 'a short time' assisting with some long-range planning that the board was orchestrating. That was 10 years ago, and I'm still going strong!

Q: Please share a little about your background, family, education, work and interests.

A: I graduated from American University in Washington, DC, with a degree in Public Affairs. I eventually married and had two children who today are thriving with their families and careers. My husband and I both continue to work. I currently choose to serve on governing boards whose missions I believe in and whose financial structure and administrative abilities are exemplary. These organizations include: American University; University of Colorado and the University of Colorado Foundation; Craig Hospital Foundation; The Denver Foundation; and of course, the CWHR.

Q: What motivates you philanthropically?

A: Years ago I became interested in a particular form of philanthropy called 'charitable gift planning'. It appealed to me because it offered options for the philanthropically inclined to make major gifts, while continuing to benefit their personal financial and estate planning goals. I was early in the field (and initially one of the rare women in the field) and consequently had the opportunity to work with the IRS in establishing many of the current rules that continue to govern this form of philanthropy.

Q: Why have you chosen to give your time to CWHR? Why have you chosen to financially support CWHR?

A: I have chosen to continue working with and supporting the CWHR for so many years because it exemplifies what attracts me to support an organization with my time and money—an important mission, a successful track record, excellent leadership, strong strategic and financial goals, an emphasis on honoring those who choose to support it, and finally, the friendships between the CWHR's faculty, staff and my fellow colleagues on the Advisory Board.

Researcher Spotlight: Melanie Cree Green, MD, PhD



Melanie Cree Green, MD, PhD

Dr. Cree Green has been affiliated with the CWHR since she received her first seed grant award in 2013. Let's check in to see what she's been up to recently.

Tell us about your recent accomplishments:

"Last June I became the first female physician from the CU Anschutz Medical Campus to receive one of six Boettcher-Webb-Waring Foundation Investigator Awards. Also last year, I was honored to receive a National Institute of Diabetes and Digestive and Kidney Diseases K-23 grant in September, which will partially fund my research for the next 3-5 years. I also received an American Diabetes Association career development grant in December. This year I was given an award from the Doris Duke Fund to Retain Clinical Scientists, and I just gave my first invited symposia at the Endocrine Society national meeting in Boston, entitled "Insulin Resistance in Obesity and Adolescence."

You've been busy! What does your year ahead look like?

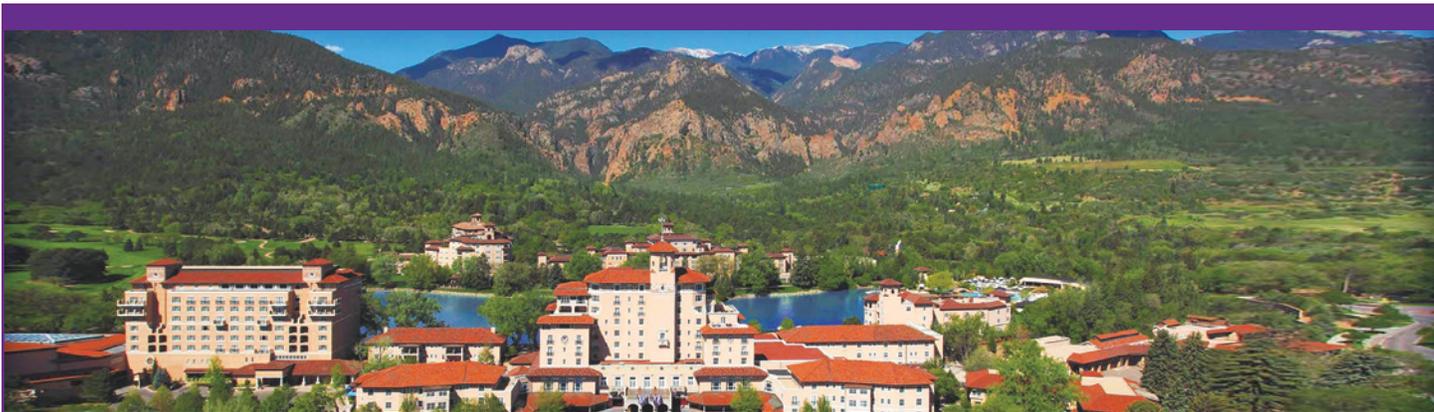
"I am currently two-thirds of the way done enrolling for my current study in girls with polycystic ovarian syndrome (PCOS), and will continue to work on this project over the next year. We are also working on several multi-center studies looking at insulin resistance in different populations, and will continue to enroll for these studies. We are also completing analysis and publishing results from our last study. I have two abstracts that will be presented at the National American Diabetes Association meeting this summer."

What challenges do you anticipate in your upcoming research?

"The biggest challenge in human research is the cost, which keeps increasing as the federal funding for core infrastructure continues to be cut. For example, we used to have fully funded research centers as part of the university support for research, but in the last six months have had to start paying for all of our nursing costs. This is a significant fee, and this combined with the increased competition for grant funding continues to make research difficult."

What do you want the public to know about your current research?

"We are finding that girls who are overweight and also have PCOS have many signs of a metabolic syndrome, including pre-diabetes and diabetes, and that most of them have also increased fat in their liver. Our current research is focused on trying to understand what is involved in making this extra liver fat, and I hope to then be able to start a medication trial in the next few years to prevent this."



UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

SEPT 28-30, 2016

**THE BROADMOOR
COLORADO SPRINGS, CO**



School of Medicine

UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Presented by the Center for
Women's Health Research at the
Anschutz Medical Campus

NATIONAL CONFERENCE ON WOMEN'S HEALTH RESEARCH



SEX DIFFERENCES ACROSS THE LIFESPAN: A Focus on Metabolism

CONFERENCE + POSTER PRESENTATION



Setting the stage to answer the next key questions in women's health research.

Sessions include:

- Sex differences in type 2 diabetes
- Effects of life transitions on risk for obesity
- Exercise, cardiovascular disease and diabetes
- Pregnancy-related determinants of chronic disease later in life
- Sex differences in heart disease



Conference Sponsored By:



UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Society for Women's
Health Research 



Judi and Joe Wagner

Mary and George Sissel



Independent Medical
Education Grant



SCOR
Specialized Center of Research
on Sex Differences
NIH Grant: P50 HD073063

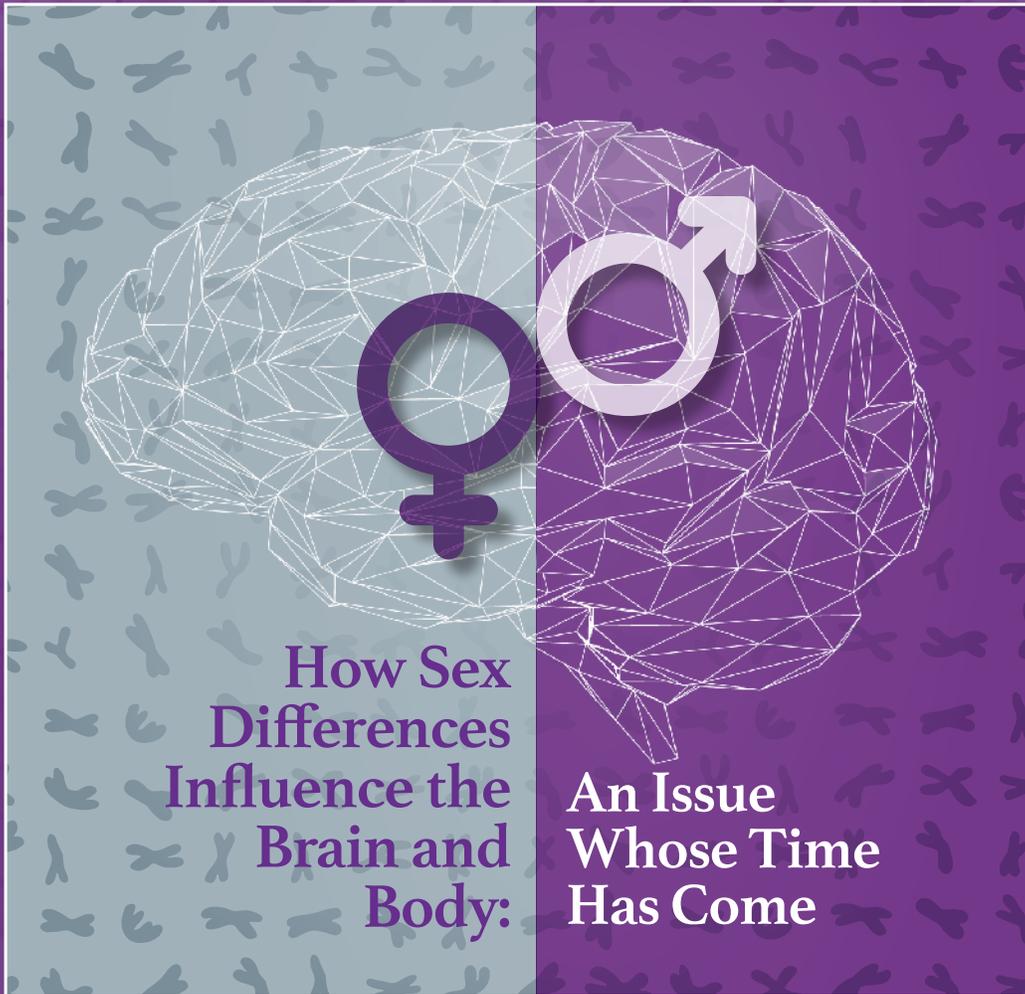


For more info and to register, click here.

The spirit of discovery. The focus of science. The health of women.

The Center for Women's Health Research at the Anschutz Medical Campus works to prevent, treat and cure cardiovascular and metabolic diseases in women. Through research that takes into account sex differences, we are making breakthroughs that improve the health of both women and men.

303.724.0305 | www.cwhr.org | cwhr@ucdenver.edu



Join us at the
2016 Annual Community Luncheon
featuring **Dr. Larry Cahill**

Tuesday, November 1, 2016
11:30am-1:30pm
Denver Center for the Performing Arts
Seawell Ballroom

You will not want to miss the 2016 Center for Women's Health Research Annual Community Luncheon!

We are delighted to have **Dr. Larry Cahill**, an influential leader on the topic of sex influences on emotional memory and brain function, as our keynote speaker. As more attention is being given to the critical role that sex differences play in the course of disease as well as in the diagnosis and treatment of disease, we know that you will receive important and helpful information about your health and about the health of your loved ones.

For more information or to register, please visit cwhr.org.

CENTER FOR WOMEN'S HEALTH RESEARCH, SUMMER 2016 NEWSLETTER

www.cwhr.org • 303-724-0305

2015-16 Donor Honor Roll

The following gifts to the CWHR were received between October 26, 2015 and April 25, 2016. We are very grateful for this generous support! Questions or corrections? Please call Anne Kerksmar at 303-724-0305.

Mark and Enid Ablowitz
Barbara G. Barrow
Harry and Kathy Boling
Libby Bortz and Michael Altenberg
Tessa Lorraine Carlson
Toni Cohig
Connie Burwell White and William W.
White Foundation
John C. Daily
Carolyn Whitehead Doyle
Nan and Spike Eklund
Eugene C. & Florence A. Armstrong
Family Foundation
Diane M.G. Fitzgerald
The Frederic C. Hamilton Family
Foundation
The Galena Foundation
Linda Goldstein
Lynda M. Goldstein
Sara and Larry Grace
Jack and Ginger Graham
Elizabeth L. Grant
Celeste and Jack Grynberg

Cynthia and Ted Halaby
Edward and Stephanie Harvey
Arlene Hirschfeld
Cathy and Graham Hollis
Marguerite and Dave Hunter
Jeanne Land Foundation
Hilary and Lucia Johnson
Andrew and Sherry Kenney
Anne Kerksmar and Casey Rubin
Karen and Steven Leaffer
Stephen and Susan Lehman
Gretchen and Charles Lobitz
Lyda Ludeman
Andrea and Kenneth Lund
Katie MacWilliams
Susan B. Mammel
Betsy and Peter Mangone
Janelle McCallum
Jan and John Meck
Nancy and Stewart Miller
Helen Jean Mitchell and
Joseph Eugene Rogers
Lorna Grindlay Moore

Christine Morrison
Nest Denver
Mary Noonan and Ray Garver
Danielle and Thomas Okin
Christine and Stephen Owen
Joyce and Gary Pashel
Roxane Perruso and Thomas Korver
Catherine and Ray Petros
Anne and Adam Poe
Judy Regensteiner and Ken Schneider
David Samson and Anne Harris
Kathy and Darrel Schmidt
Mary and George Sissel
Kathleen Strausburg
Mary and Charles Stuart
Enos and Linda Tafoya
University of Colorado Hospital
Charles and Emma Warren
Nancy and Hugh Williamson, III
Mary Nell Jacobsen Wolff and
Barry Petersen

In Honor Of ...

Nancy Anschutz by:
Anonymous

Philip and Nancy Anschutz by:
Cydney and Thomas Marsico

Sherrye S. Berger by:
Jean M. Watt

Lin Adams Carlson by:
Debbie and Ron Pierce
Mary Ann Ross

Courtney Williams Giphart by:
Suzanne and Ed Williams

Betsy Mangone by:
Carolyn and David Wollard

Jan Meck by:
Kip Hughes

Catherine Hoover Petros by:
Nancy Connick and David Jankowski
Lee Roper

Judi Wagner by :
Nicole and Tyler Bauer
Ellie N. Caulkins

Judi and Joe Wagner by:
Marshall and Betty Freedman
Lauren Wagner Ingram
Patti Marks

In Memory Of ...

Richard L. Gooding by:
The Gooding Family Foundation

Patty Keegan by:
Suzanne Brannon

Susan Kirk by:
Mary Jane and Gilbert Anderson
Kip Hughes
Ruth and Ken Wright

Donate Now!

Thank you for considering the Center for
Women's Health Research.

To donate, please visit cwhr.org.



UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS



School of Medicine
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS