The Center for Women’s Health Research (CWRH) fuels vital research that leads to new discoveries and translates into positive clinical outcomes for people of all ages. To date, the CWRH has funded and mentored 45 MD and PhD researchers. Our outstanding researchers are making great strides in women’s health and sex difference initiatives, and are using their findings to accelerate improvements in women’s health and well-being. These promising research projects, and many more like them, have been made possible through generous support from the community and the University of Colorado Anschutz Medical Campus.

JUDY REGENSTEINER, PHD & JANE REUSCH, MD
People who have diabetes are at higher risk of serious health complications including blindness, kidney failure, heart disease, stroke, and the loss of toes, feet or legs. Dr. Regensteiner’s and Dr. Reusch’s research has found that people with type 2 diabetes have differences in how their hearts and muscles work, which negatively affect their ability to exercise. Their work has proven that exercise can indeed contribute to significant improvements in patients’ cardiovascular health. Since even low levels of exercise have a positive impact, physicians now stress how critical exercise is to patients with type 2 diabetes.

AMY HUEBSCHMANN, MD (MENTORED BY JUDY REGENSTEINER, PHD)
Drs. Huebschmann and Regensteiner have identified a novel barrier to physical activity for women with type 2 diabetes: exercise feels more difficult for them than it does for similarly overweight women without diabetes. Specific markers of effort in blood during exercise have provided evidence to show that patients with type 2 diabetes truly do have physiological differences that make exercise more difficult. An additional outcome of their research is that when exercise feels too difficult, patients will typically avoid it. Dr. Huebschmann’s research has propelled her to educate patients who have diabetes, diverse groups in our community who have higher rates of diabetes, and clinicians around the country about breaking the barriers to exercise by creating impactful exercise programs that lead to life-enhancing health benefits.

WENDY KOHRT, PHD
Dr. Kohrt’s research is also focused on the metabolic actions of estrogens and how the loss of estrogen at menopause disrupts energy balance and increases the likelihood of weight gain. Her research has shown that the loss of estrogen causes a decrease in metabolic rate and may also cause women to become less motivated to be physically active. The resulting decrease in energy expenditure would be expected to contribute to weight gain. Further, whereas premenopausal women tend to store fat in the hip and thigh regions, this shifts to the abdominal region after menopause, which contributes to an increased risk of cardiovascular disease and type 2 diabetes. Her research suggests that estrogen therapy may reduce the risk for osteoporosis, cardiovascular disease and type 2 diabetes when the course of therapy is timed appropriately during menopause.
Hypoxia: diminished availability of oxygen to body tissues due to a deficiency of oxygen in the atmosphere

8,250 ft = HIGH ALTITUDE

LORNA MOORE, PHD
Dr. Lorna Moore’s research centers on how humans adapt to reduced oxygen at high altitudes, and in particular, how the effects of high altitude can contribute to the pregnancy complications of fetal growth restriction and maternal high blood pressure, or preeclampsia. Because the low oxygen environment at altitude reduces blood flow and oxygen delivery to the infant, pregnant women living in high altitude are more likely to experience complications. Dr. Moore’s genetic studies, however, have demonstrated that multigenerational Andean and Tibetan high-altitude residents are relatively protected from altitude-associated high blood pressure and fetal growth restriction, largely due to specific genes that she and her colleagues have identified in these populations. Her current work is focused on the activation of an energy-sensing enzyme called adenosine monophosphate kinase, or AMPK, which is a potential new therapy for treating or ultimately preventing pregnancy disorders characterized by insufficient blood flow to the uterus and placenta.

TERI HERNANDEZ, RN, PHD
Dr. Teri Hernandez’s research is focused on how a mother’s diet affects gestational diabetes. Specifically, her research has shown how a balanced diet rich in high-quality complex carbohydrates, such as whole grains, beans and vegetables, can greatly benefit mothers who have been diagnosed with gestational diabetes. These benefits ultimately help to reduce the baby’s risk for developing diabetes later in life. Dr. Hernandez is using these initial findings to talk to patients about their diets, and she is seeing positive changes in patient behavior and dietary choices.

PILOT DATA FOR THE STUDY HAS SHOWN
• controlled maternal glucose
• reduced fasting glucose
• improved insulin action in fat tissue
• trend toward less overweight infants
MEGAN KELSEY, MD, MS

Dr. Megan Kelsey’s research focuses on weight gain early in puberty. She is looking at what puts some children at greater risk for developing type 2 diabetes during puberty – a time of physical, behavioral and hormonal changes. Her research also helps target early interventions for children at greatest risk of developing type 2 diabetes. From the outcomes of her research, Dr. Kelsey routinely prescribes behavioral modifications that aim to promote weight loss for overweight children entering puberty or that intend to prevent too much weight gain for normal weight children hitting adolescence.

MELANIE CREE GREEN, MD, PHD

Dr. Melanie Cree Green’s research focuses on insulin resistance, cardiovascular disease, and nonalcoholic fatty liver disease in adolescent girls with PCOS. She is also studying whether an intervention of exercise, diet and medication at an early age will mitigate the risk of developing heart disease and diabetes in girls with PCOS. Due to her research and expertise, she started a multidisciplinary PCOS clinic for patients at Children’s Hospital Colorado. Based on her research findings, Dr. Cree Green has adapted her approach to clinical care by treating more girls for insulin resistance, screening all girls for obstructive sleep apnea, and offering more highly personalized therapies for girls.

PCOS PRODUCES

1. high levels of androgens, or male hormones

2. missed or irregular periods

3. many small cysts in the ovaries

4-12% WOMEN

Polycystic Ovarian Syndrome (PCOS): one of the most common endocrine disorders of reproductive-age women
DAVID KAO, MD

Cardiovascular disease is the leading cause of death in the U.S. Dr. Kao uses a novel big data approach to investigate the differences in men and women who experience common types of heart failure. Dr. Kao uses data contained within electronic medical records to identify risk factors and personalize predictions about prognosis and response to different therapies. His model of risk prediction is used within the University of Colorado Health system.

KERRY HILDRETH, MD

Dr. Kerry Hildreth’s research is investigating how the loss of estrogen that occurs with menopause affects the brain and blood vessels and whether these changes are related to each other. Estrogen and testosterone support healthy brain and cardiovascular function, and declines in these hormones could be linked to Alzheimer’s disease. She is also looking at whether exercise can mitigate the effects of the loss of sex hormones on the brain and blood vessels. The goal of Dr. Hildreth’s research is to develop effective sex-specific interventions that will prevent the onset or delay the progression of Alzheimer’s disease.
JACINDA NICKLAS, MD, MPH, MS
Dr. Nicklas has developed a mobile health program called Fit After Baby. This innovative program is designed for postpartum women at elevated risk for diabetes and heart disease. In conjunction with the Fit After Baby app, the program uses activity trackers and wireless scales to help women lose weight after pregnancy and decrease their risk for chronic disease. By using this app, at-risk, postpartum women will have a hands-on tool to help decrease their risk for obesity, diabetes and heart disease.

FIT AFTER BABY: for postpartum women who are at elevated risk for diabetes and heart disease

8-12 MILLION
people are affected by peripheral artery disease in the U.S.

RYAN MAYS, PHD
Peripheral artery disease (PAD) is the result of the development of plaque in the arteries of the legs. The overall health of patients with PAD is significantly affected and their quality of life decreases. PAD patients may experience intermittent claudication (IC), which is characterized by pain in the muscles of the legs during walking. Even though PAD patients are often sedentary, one of the best ways to treat IC is through exercise therapy. Dr. Mays’ research trial seeks to improve PAD community-based exercise programs by using training, monitoring and coaching components instead of the common “go home and walk” advice. Dr. Mays’ research on effective exercise therapy is changing the way many health care providers treat PAD.