Greetings WHRC members and affiliates!

As the holidays approach and the year is winding down, we look back at the second year since the inception of the WHRC in 2009. We have had a very successful year! We had several excellent seminars given by our own faculty members that were very well attended. We had a very successful conference, “Physiology of Cardiovascular Disease: Gender Disparities”, that was attended by 124 physicians, basic scientists, fellows and students from around the world, and was supported by the American Physiological Society, the Council for High Blood Pressure Research and the Council of Clinical Cardiology of the American Heart Association, the Department of Physiology at UMMC, and the Society of Women’s Health Research.

Looking forward to 2012, there are lots of new projects in the pipeline! We would like to submit a T32 Research Training grant to the National Institutes of Health to support postdoctoral fellows for our WHRC physicians and scientists. We would like to start an outreach program for the community that would focus on education of women and men on various health issues important to our population here in Mississippi. We will also be bringing in more outside speakers for our seminar conferences.

Finally, I want to thank everyone who has supported the WHRC over the past two years to get the Center off the ground. I want to encourage anyone who would like to participate in our seminar series by presenting their work to get in touch with me.

From all of us at the WHRC, Happy Holidays, travel safely, and we’ll see you next year! Janie

WHRC Seminar
Karen Crews, DMD
“Gender Differences in Tobacco Use and Cessation”
Monday, January 23, 2012 4 P.M., R354

Our Mission: Women have health care issues that are different from men. Recent research indicates that there are sex differences in the incidence, outcome, and physiological and pathophysiological mechanisms responsible for various diseases. Mississippi has the dubious honor of having one of the highest incidence rates of cardiovascular disease, obesity, diabetes, hypertension, end-stage renal disease, high risk pregnancy, pre-eclampsia (pregnancy induced hypertension), infant mortality and poor child health outcomes in the United States. The Women’s Health Research Center (WHRC) was established in 2009 at the University of Mississippi Medical Center (UMMC) to accomplish the major goal of fostering excellence in basic and clinical research in issues that affect women’s health across their lifespan.
On September 22, 2011, Dr. Jane F. Reckelhoff, PhD, was honored with the Lewis K. Dahl Award from the Council for High Blood Pressure Research of the American Heart Association, at their annual meeting in Orlando, FL. Dr. Reckelhoff is a Billy S. Guyton Professor and Director of the Women’s Health Research Center, and Professor of Physiology and Biophysics at UMMC. After working as a critical care nurse for several years, she received a Bachelor of Science in Chemistry at the College of William and Mary in 1982, and a Ph.D. in Biochemistry at Medical College of Virginia, Virginia Commonwealth University in 1985. She then moved to the Physiology Department at University of Texas Health Science Center (now Texas Southwestern) in Dallas for a postdoctoral fellowship with George DeMartino.

In 1987 Dr. Reckelhoff moved to West Virginia University in Morgantown where she joined Chris Baylis’ laboratory in the Department of Physiology as a postdoctoral fellow. In 1991, she became an assistant professor in Physiology at the University of Mississippi Medical Center. She rose through the ranks to her current position as Professor of Physiology in 2001. Dr. Reckelhoff’s research has been centered around sex differences in the control of blood pressure, the role of sex steroids in hypertension and renal function, and mechanisms responsible for postmenopausal hypertension. Her work has been funded by the National Institutes of Health since 1998. In addition to the Lewis K. Dahl Award, Dr. Reckelhoff has received several other prestigious awards including the Harry Goldblatt Award from the Council for High Blood Pressure Research, the Monarch Pharmaceuticals Young Scholar Award from the American Society of Hypertension, and the Platinum Award for Excellence in Research from UMMC.
The efficacy of current therapies for hypertension, cardiovascular and renal disease is markedly different between men and women. Therefore, understanding the physiological reasons behind these disparities is of paramount importance to provide more effective clinical care.

The UMMC Women’s Health Research Center and the American Physiological Society (APS) recently co-sponsored a conference on the *Physiology of Cardiovascular Disease: Gender Disparities* from October 12-14, 2011. The meeting was held here on the University of Mississippi Medical Center Campus and played host to over 120 scientists from 6 countries and 29 U.S. states representing 48 different universities and organizations.

The keynote lecture was delivered by Dr. Doris Taylor from the University of Minnesota. Dr. Taylor is a world expert in cardiac repair and regeneration and her cutting edge research is centered on growing an entirely new, functional heart from adult stem cells. The program was comprised of topics including gender disparities in cardiovascular physiology, aging, renal disease, metabolic function, cardiology, vascular function, immune system and fertility. Epidemiological, clinical and pre-clinical research was presented by leading experts in their respective fields. Consistent with the goals of the WHRC and the APS, the meeting supported travel and registration for 10 non-UMC and 14 UMC pre- and postdoctoral fellows and residents. In addition, the conference also provided a *Careers in Physiology Training Session* sponsored by the American Physiological Society. The program from the conference can be found at ([http://www.the-aps.org/meetings/aps/gender2011/program.htm](http://www.the-aps.org/meetings/aps/gender2011/program.htm)).

*Drs. Taylor and Reckelhoff*
Opening Reception at the King Edward

L to R: Dr. Joey Granger, APS President; Dr. Mike Ryan Co-Chair of the Conference, Dr. Marty Frank, Executive Director of the APS, and Dr. Jane Reckelhoff, Chair of the Conference.
Scenes from the Conference
Closing Dinner: 
A Taste of Mississippi with a Special Guest
Dr. Lucio Miele, MD, Ph.D., Ergon Professor of Medicine and Pharmacology, and Director of the Cancer Institute is the newest member of the American Cancer Society's Mid-South Division Board of Directors. The American Cancer Society is the nation's largest voluntary health organization and the leading source of cancer information and service.

Dr. James N. Martin, MD, Director, Maternal-Fetal Medicine and President of the American College of Obstetricians and Gynecologists provided the keynote address at the Preeclampsia Foundation’s 2011 Gala “Saving Grace” on November 12, 2011. This New York City Gala spotlighted maternal and infant health and the proceeds from this event provided support for the mission of the Preeclampsia Foundation, a US based not-for-profit organization that is dedicated to providing patient support and education, raising public awareness, catalyzing research and improving health care practices so that preeclampsia no longer threatens the lives of mothers and babies.

Dr. Martin as the President of the American College and the American Congress of OB/GYN (ACOG) has initiated one of his presidential initiatives to review and grade the world’s recent literature on hypertensive complications of pregnancy. He has set up a specially appointed 16-member group of experts called the “Hypertension in Pregnancy (HIP) Work Group.” The HIP Group includes WHRC members Dr. Joey P. Granger (Billy S. Guyton Distinguished Professor, Professor of Physiology and Medicine, and the Dean of the School of Graduate Studies at UMMC) and Dr. Michelle Owens (Maternal Fetal Medicine, Associate Professor and Interim Chair of Obstetrics and Gynecology). This group will release for publication the results of their work as practice guidelines, order sets and checklists for best practice care of patients with the various forms of these conditions during pregnancy.
Dr. Joey P. Granger, Ph.D., a Billy S. Guyton Distinguished Professor, a Professor of Physiology and Medicine, and the Dean of the School of Graduate Studies at UMMC received the “Distinguished Achievement Award” from the American Heart Association at the recent annual meeting of the Council for High Blood Pressure Research. This award recognizes individuals who have made major contributions to the affairs of a Scientific Council over a continuing period of time and who have made substantial professional contributions to new knowledge in the field represented by the Council and contributions to teaching and/ or professional leadership.

The WHRC would like to congratulate the following faculty for receiving recognition at the annual UMMC Research in Excellence Program. The Research in Excellence Program was designed to recognize investigators who have been successful in attracting extramural funding for their research program. The level of award is based on the total amount of extramural funding received by the investigator for his/her research. The “Bronze Medallion” recognizes total extramural funding of $250,000, the “Silver Medallion” recognizes total extramural funding of $500,000 total, and the “Gold Medallion” recognizes total extramural funding of $1,000,000. Members of the WHRC who were recipients of the 2011 Excellence in Research Awards include:

Dr. Ishvan Arany, PhD, Professor Pediatric Nephrology who was the recipient of the Bronze Level of Excellence in Research.

Dr. Lucio Miele, MD, Ph.D., Ergon Professor of Medicine and Pharmacology, and Director of the Cancer Institute who was the recipient of the Silver Level of Excellence in Research.

Dr. Michael Garrett, PhD, Associate Professor of Pharmacology and Toxicology who was the recipient of the Silver Level of Excellence in Research.

Dr. Leandro Mena, MD, MPH, Associate Professor of Medicine who was the recipient of the Gold Level of Excellence in Research.

Dr. Guri Tzivion, PhD, Associate Professor of Biochemistry and the Cancer Institute is the Guest Editor along with Dr. N Hay for the November 2011 special journal issue of Biochimica et Biophysica Acta (BBA) - Molecular Cell Research on “PI3K-AKT-FoxO axis in cancer and aging.”
Fouad A. Zouein, graduate assistant in the laboratory of Dr. George Booz in the Department of Pharmacology and Toxicology was recently inducted into Phi Kappa Phi Honor Society.

Carlos Zgheib, graduate assistant in the laboratory of Dr. George Booz in the Department of Pharmacology and Toxicology was a “Poster Session Winner” for Research Day 2011 for the School of Graduate Studies in the Health Sciences at UMMC.

Dr. Keisa Mathis, PhD, an Instructor in Physiology in the laboratory of Dr. Michael J. Ryan, recently received the “New Investigator Poster Symposium Award” from the Inter-American Society of Hypertension (IASH). This award was presented at the joint meeting of the American Heart Association’s Council for High Blood Pressure Research and IASH held in Orlando, FL.

Dr. Mathis is also a new member of the Porter Physiology Committee of the American Physiological Society. The Porter Physiology Committee stimulates and supports the development of minority students engaged in graduate study in physiology and provides assistance in the improvement of physiology departments in minority serving institutions.

Dr. Kedra Wallace, PhD., an Instructor in the Department of Obestetrics and Gynecology in the laboratory of Dr. Babbette LaMarca, received the “New Investigator Poster Symposium Award” from the Inter-American Society of Hypertension (IASH).

Dr. Wallace is also a recipient of a “New Investigator Travel Award” presented by the Trainee Advocacy Committee of the American Heart Association’s Council for High Blood Pressure Research. These awards were presented at the joint meeting of the American Heart Association’s Council for High Blood Pressure Research and the IASH held in Orlando, FL in September, 2011.
Carlos Zgheib, a graduate assistant in the laboratory of Dr. George Booz in the Department of Pharmacology and Toxicology, recently received notice of acceptance for his first publication from his doctoral studies in the August issue of the Journal of Interferon and Cytokine Research entitled "Calyculin A Reveals Serine/Threonine Phosphatase Protein Phosphatase 1 as a Regulatory Nodal Point in Canonical Signal Transducer and Activator of Transcription 3 Signaling of Human Microvascular Endothelial Cells." Carlos developed a strong interest in science while pursuing his BS in Biochemistry in Lebanon. Although his original plans were to enter medical school, he became interested in cardiovascular research after he received a scholarship for a summer research experience in the laboratory of Dr. Booz. Now a 3rd year graduate student, his work focuses on understanding the molecular mechanisms of heart failure; in particular, the cardioprotective effects of the JAK/STAT3 signaling pathway.

Andrea Soljancic, MD, a post-doctoral fellow in the laboratory of Dr. Luis Juncos in the Division of Nephrology has received the “Fellow in Training Travel Award for Excellence in Basic Research” from the American Society of Nephrology (ASN). This award is selected within the entire fellows in training in the field of nephrology who have submitted a basic or clinic abstract to ASN Renal Week 2011 in Philadelphia. The title of her project is “Acute Testosterone supplementation improves renal ischemia-reperfusion-induced Acute Kidney Injury”. Her interests focus on the mechanisms by which acute testosterone supplementation induces cytoprotective factors that attenuate AKI. Her project was based on her recent findings that a critical condition such as AKI reduces plasma testosterone levels.

Serotonin (5-HT) plays a key role in early brain development, and manipulation of 5-HT levels during this period can have lasting neurobiological and behavioral consequences. It is unclear how perinatal exposure to drugs, such as selective serotonin reuptake inhibitors (SSRIs), impacts cortical neural network function and what mechanism(s) may elicit the disruption of normal neuronal connections/interactions. Findings from this study indicate that 5-HT homeostasis is required for proper brain maturation and that pre- and postnatal exposure to the SSRI citalopram alters characteristic chemoarchitectural and electrophysiological brain features and in addition, is associated with disrupted juvenile play behavior and neophobia. Thus, these findings suggest that fetal/infant exposure to SSRIs should be examined in humans, particularly those with developmental dysfunction, such as autism.

Ojeda NB. Low birth weight increases susceptibility to renal injury in a rat model of mild ischemia-reperfusion. Am J Physiol Renal Physiol. 2011;301(2):F420-F426..

Renal injury due to ischemia-reperfusion (I/R) is the major cause of acute kidney injury. Epidemiological studies indicate that low birth weight (LBW) individuals may be more susceptible to renal injury than normal birth weight (NBW) individuals. This study examined whether mild (15 min) renal I/R alters renal hemodynamic parameters in LBW relative to NBW rats. Mild renal I/R had no effect on renal parameters in NBW rats; however, renal hemodynamic parameters declined, superoxide production increased, and histological indicators of tubular injury were present following mild renal I/R in LBW rats. Acute treatment with tempol prevented these alterations in LBW rats subjected to mild renal I/R suggesting that LBW individuals may be an "at risk" population for renal disease.

Women’s health issues are underfunded and understudied.

Help support women’s health research by making a tax-deductible contribution.

Contact the Development Office at UMMC at 601-815-7473 for more information.

Your help is greatly appreciated!

Preeclampsia (PE) is a leading cause of fetal and maternal morbidity, but lacks an effective treatment. The etiology is not clear; however, in response to placental ischemia, the antiangiogenic protein fms-like tyrosine kinase-1 (sFlt-1), a VEGF antagonist, and reactive oxygen species are secreted, leading to the maternal syndrome. The purpose of this study was to determine whether induction of the heme oxygenase-1 (HO-1) protein would have beneficial effects independently of sFlt-1 suppression. Pregnant rats were continuously infused with recombinant sFlt-1 from gestational days 14-19. Circulating sFlt-1 increased approximately twofold, similar to rats with experimentally induced placental ischemia. In addition, mean arterial pressure was increased. However, this increase was completely normalized by HO-1 induction. Unbound circulating VEGF was decreased in response to sFlt-1 infusion, but was increased in response to HO-1 induction. Finally, endothelial function was improved as measured by reductions in vascular expression of preproendothelin mRNA. In conclusion, manipulation of HO-1 presents an intriguing therapeutic approach to the treatment of PE.


Differentiating between pre-eclampsia/HELLP syndrome and pregnancy-associated thrombotic thrombocytopenic purpura (TTP) is difficult. Findings from this retrospective case control study indicate that clinicians assess the LDH to AST ratio in patients with severe thrombocytopenia (<50,000/uL) that could be either HELLP syndrome or TTP. If the ratio exceeds 25:1, especially in association with severe hematuria and a failure of the platelet count and LDH to respond to intravenous dexamethasone with normalizing platelets, LDH and AST values, a presumptive diagnosis of TTP can be considered.