Greetings WHRC members!

Hopefully, Spring will be here soon! There is a lot going on for the WHRC this year with grant submissions and planning going on.

We will have Marjorie Jenkins, who is Mrs. J. Avery "Janie" Rush Endowed Chair of Excellence in Women’s Health and Oncology from Texas Tech University, visiting us June 25-26, 2014, to give seminar in Physiology sponsored by the WHRC and present her new website to the School of Medicine Curriculum Committee where clinical studies showing sex and gender differences are documented so that faculty can access this resource for their teaching. MJ has been a longstanding champion for making certain that sex and gender differences are covered in all areas of the medical school curriculum. Please join us for her seminar. If you would like to meet with Dr. Jenkins while she’s here, just let me know.

Although not a part of the WHRC per se, I also wanted to make you aware that UMMC has a new Group of Women in Science and Medicine (GWIMS) program here on campus. This is one of the American Association of Medical Colleges (AAMC) programs that seeks to support women faculty with career development and leadership training. Dr. Jennifer Sasser, Pharmacology, will serve as President, and Dr. Barbara Craft, Oncology, will serve as Vice President for our inaugural year. Please be on the look out their innovative and informative programs.

Hope you all have a productive spring season! If you have suggestions for the WHRC, please don’t hesitate to contact me.

Janie

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.
Spotlight on Research

James N. Martin, Jr., M.D., is our spotlight on research for his many accomplishments in his career and his dedication to improving women’s health. Each year, the Society Maternal-Fetal Medicine has the opportunity to recognize and honor a society member who has contributed significantly to the Society and its mission. This year our own Dr. James N. Martin Jr., was selected and recognized with the Lifetime Achievement Award for having dedicated his career to the clinical practice of Maternal Fetal Medicine (MFM), served as MFM Fellowship Director, and for his mentorship of many trainees.

Dr. Martin completed his MFM training in 1979 and moved to the University of Mississippi Medical Center in Jackson in 1981 where he served as Director of MFM Fellowship Program (1991 – 2002), Director of the Division of Maternal-Fetal Medicine, Obstetric Services (1991 – Present), and he currently also serves as Professor and Vice Chair for Research & Academic Development, Director, Division of Research (2013-Present).

Dr. Martin typifies the critical role that MFM subspecialists should play in the care of sick mothers and inpatient care of complex pregnancies. Dr. Martin’s research interests and studies include Interventions to reduce the burden of disease on patients who develop preeclampsia and/or HELLP syndrome as well as understanding the pathophysiology of renal injury or cerebral pathology in patients with severe preeclampsia and/or HELLP syndrome by exploring and defining the spectrum of severe forms using MRI; Quantifying the impact of maternal corticosteroids on maternal cerebral function via MRI examination; Correlating biomarkers and impedance cardiography with severity of preeclampsia; and Studying systems of improved practice for patients with postpartum preeclampsia to minimize severe maternal morbidity. Dr Martin has published over 273 peer reviewed publications: nearly 100 of these directly related to hypertension, preeclampsia and HELLP syndrome. He has published over 116 Journal reviews, editorials, Book Chapters, and Books.

In addition to his direct contributions to clinical practice, Dr Martin is the Immediate Past President, American College of Obstetricians and Gynecologists & American Congress of Obstetricians & Gynecologists (ACOG) (2012 - 2013) and was the 2009 recipient of Hope Award for Lifetime Achievement from The Preeclampsia Foundation. He has served on the Board of Directors and as President of the North American Society for the Study of Hypertension in Pregnancy (NASSHP, 1991 – 2003, 1997 - 2000), the SMFM (1994 – 1997, 2001 – 2002), and currently serves as the ACOG representative on the Executive Board of FIGO. Dr Martin recently led the ACOG taskforce that has redefined our approach to the care of women with hypertension complicating pregnancy.

The WHRC is proud to have Dr. Martin as a member, and would like to congratulate him on this well deserved award!
Go Red for Women
WHRC thanks our members for showing their support by wearing Red
Feb 7, 2014
Barbara Alexander, Ph.D., Associate Professor of Physiology, was recently elected as one of three new Councillors to the American Physiological Society (APS). Alexander, who has served in various positions within the APS and on its related editorial boards, researches how maternal hypertension gestation affects birth weight and long-term blood pressure regulation in offspring.

Alexander and the other newly elected councilors will take office at Experimental Biology 2014 meeting on Wednesday, April 30, in San Diego.

Joey P. Granger, Ph.D., Professor of Physiology and Dean of Graduate Studies in the Health Sciences was recently elected as the new Chair of the Council for High Blood Pressure Research (CHBPR) of the American Heart Association. The Chair of the CHBPR is elected by the members of the scientific organization, and the term of office is 6 years: 2 as Chair-elect, 2 as Chair, and 2 as past chair. Granger recently completed his term as President of the American Physiological Society. His research is on the mechanisms responsible for hypertension in pregnancy, pre-eclampsia.

Jennifer Sasser, Ph.D., Assistant Professor of Pharmacology, will serve as President of the new Group of Women in Science and Medicine (GWIMS) that seeks to support women faculty with career development and leadership training at UMMC. Her research is on pregnancy and hypertension.
HIGHLIGHTS from the WHRC

Kudos

Graduate Students

Ashlyn C. Harmon, mentored by Babbette LaMarca in the Department of Pharmacology, and Peter Mittwede, mentored by Robert Hester in the Department of Physiology and Biophysics, were selected Predoctoral Research Recognition Award finalists for 2014 by the Water and Electrolyte Homeostasis Section of the American Physiological Society (APS). Each will present their abstract in a seminar competition at Experimental Biology 2014 in San Diego, CA, in April.

Ellen E. Gillis, mentored by Jenny Sasser in the Department of Pharmacology, was selected by the 2014 Predoctoral Novel Disease Model Awardee by the APS Physiologists in Industry Committee, and will be honored at Experimental biology 2014 in San Diego.

Jessica Faulkner, mentored by Sean Didion in the Department of Pharmacology, was selected as a recipient of the 2014 APS Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award and will also be honored at a luncheon and receive the award at the business meeting at biology 2014 in San Diego.

Congratulations to our talented students!!
HIGHLIGHTS from the WHRC

Kudos

Postdoctoral Fellows

Hanna Broome, Ph.D., Pharmacology, and Frank Spradley, Ph.D., Physiology, were chosen as two of the three 2014 Juan Carlos Romero American Physiological Society Water and Electrolyte Homeostasis Section Postdoctoral Research Recognition Award finalists. The finalists will present their work in a competition at Experimental Biology (EB2014) in San Diego CA in April 2014.

Dr. Denise Cornelius, Ph.D., Pharmacology, is the recipient of the 2014 Steven M. Horvath Professional Opportunity Award, given to the second highest rated abstract submitted for the Caroline Tum Sudem/ Frances Hellenbrandt Awards competition. and an APS Minority Travel Fellowship Awards to attend EB2014 in San Diego.

Suttira “Joy” Intapad, Ph.D., will receive the 2014 APS Physiologists in Industry Committee Postdoctoral Novel Disease Model Award for her novel fetal growth restricted, hypetensive animal model, and will be honored at EB2014 in San Diego.

Lorena Amaral, Ph.D, was selected as one of the 2014 WEH Section Postdoctoral Research Distinction Awardees and will present her work at EB2014 in San Diego in April.

Congratulations to our exceptional young investigators!!
**Rugmani Padmanabhan, Ph.D.,** postdoctoral fellow in Physiology in the laboratory of Dr. Merry Lindsey, was awarded a [Post-doctoral Fellowship Grant](#) from the [American Heart Association](#). Her project, entitled ‘Matrix metalloproteinase-12 Roles in Cardiac Remodeling Post-Myocardial Infarction’, became active January 1, 2014, and will be funded for 2 years.

**Keisa Mathis, Ph.D.** Instructor in the Department of Physiology was awarded a [Scientist Development Grant](#) from the [American Heart Association](#). Her project titled “The role of cholinergic anti-inflammatory pathway in renal function and hypertension” will receive four years of funding.

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**WHRC Seminar**

Deborah Konkle-Parker, Ph.D., Associate Professor, School of Medicine, Division of Infectious Diseases, UMMC, will present “The Women's Interagency HIV Study (WIHS), Studying the impact of HIV on Women for more than 20 years. Her seminar will be March 10, 2014 in 6A at 4pm. All students, faculty and staff are invited. Coffee and cold drinks will be served. Please come and join us!
Dr. Lisandra de Castro Bras, PhD, joined the faculty as an Assistant Professor in the Department of Physiology and Jackson Center for Heart Research. In addition, she is the recipient of a Scientist Development Grant from the American Heart Association. Her project, entitled “MMP-9 Generated Collagen C-peptide Roles in Post-myocardial Infarction Remodeling”, began January 1, 2014, and will be funded for 4 years.

Dr. Rodrigo Maranon, PhD., was promoted to Instructor in the Department of Physiology, and is the recipient of a Post-doctoral Fellowship from American Heart Association. His project, entitled “Mechanisms responsible for elevated BP in polycystic ovary syndrome”, became active in January 1, 2014, and will be funded for 2 years.

Kristine Y. DeLeon-Pennell, Ph.D. was recently promoted to Instructor in the Department of Physiology, and is the recipient of a Post-doctoral Fellowship from American Heart Association. Her project, entitled “P. Gingivalis Primes the Post-Myocardial Infarction Remodeling Response”, became active in January 1, 2014, and will be funded for 2 years.

Medical Center nurses received six awards at the 2014 Nightingale Awards, held March 3. Dr. Deborah Konkle-Parker, WHRC seminar speaker received Nurse Researcher of the Year (second row, right)

The study identifies a novel regulatory network linking the NAD-dependent protein deacetylase Sirt2 with insulin signaling. The results show that optimal activation of AKT by insulin requires Sirt2 function and demonstrates direct interaction between Sirt2 and AKT. This interaction involves phosphorylation of Sirt2 by AMP-activated kinase, the main target of the anti-diabetic drug metformin. As Sirt2 overexpression sensitized cells to insulin, the study highlights the potential use of Sirt2 activators as anti-diabetic agents in conditions of insulin resistance, such as obesity and chronic inflammation. On the other hand, inhibitors of Sirt2 could be useful for the treatment of cancers with constitutive activation of AKT, such as breast and prostate cancers.


Systemic lupus erythematosus (SLE) is a chronic inflammatory autoimmune disorder with a high prevalence of hypertension and cardiovascular disease that predominantly affects women, therefore, estrogen is commonly implicated as a contributor to SLE disease progression. Using an established mouse model of SLE (female NZBWF1), these authors tested whether estrogen has a causal role in the development of hypertension in 30-week-old SLE and control mice (NZW/LacJ) undergoing either a sham or ovariectomy (OVX) procedure. 17β-Estradiol (E2; 5 μg/mouse, twice/week, subcutaneously) was administered to a subset of OVX mice and blood pressure was compared. Renal cortical tumor necrosis factor α was increased in SLE mice compared with controls and was further increased in OVX SLE which was prevented by repletion of E2. Treatment of OVX SLE mice with the tumor necrosis factor α inhibitor, etanercept, blunted the OVX-induced increases in blood pressure and albuminuria, indicating that 17β-estradiol protects against the progression of hypertension during adulthood in SLE, in part, by reducing tumor necrosis factor α.

In postmenopausal women the mechanisms responsible for hypertension have not been completely elucidated, and there are no gender-specific guidelines for women despite studies showing that blood pressure is not as well controlled to goal in women as in men. In the present study we tested the hypotheses that the sympathetic nervous system and the renal sympathetic nerves contribute to hypertension in aging female rats, that sympathetic activation may be mediated by the melanocortin 3/4 receptor (MC3/4R), and that MC3/4R activation may be due to increases in leptin. α1, β1,2-Adrenergic blockade reduced blood pressure in both young and old (female spontaneously hypertensive rats (SHR). Renal denervation attenuated the hypertension more in old than young females. MC3/4R antagonism had no effect on blood pressure in either young or old females but significantly reduced blood pressure in old males. Plasma leptin levels were similar among the groups. These data suggest that the hypertension in old female SHR is in part due to activation of the sympathetic nervous system, that the renal nerves contribute to the hypertension and is independent of the MC3/4R in old females.


Preeclampsia is a disease of pregnancy associated with dangerously high blood pressures, renal dysfunction, chronic inflammation such as autoantibodies to the angiotensin II type I receptor (AT1-AA), decreased vasodilatory agents such as nitric oxide and progesterone and fetal growth restriction. To date there is no treatment other than early delivery of the baby. In order to determine efficacy of progesterone supplementation in the treatment of preeclampsia, 17 OHP, a progesterone mimetic, was administered o IL-6 infused hypertensive pregnant rats and blood pressures and inflammatory mediators were evaluated. Importantly, 17 OHP significantly lowered blood pressure and AT1-AA, which was associated with increased nitric oxide bioavailability. This study demonstrated a potential beneficial effect of 17 OHP has on hypertension during pregnancy that is associated with chronic inflammation in diseases such as preeclampsia.

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.