Happy Fall, everyone!!

Hope you had a very productive, yet restful, summer! We are very excited about our upcoming conference, “The Physiology of Cardiovascular Disease: Gender Disparities”, that is being held here at the Student Union on October 12-14, 2011. We have amassed 25 invited speakers from around the world who will provide state-of-the-art lectures on sex and gender differences in cardiovascular disease. We also have over 60 abstracts submitted. Our plenary lecturer will be Mississippi native, Doris Taylor, who is Director of the Center for Cardiovascular Repair and Medtronic Bakken Professor of Integrative Biology and Physiology at the University of Minnesota. Dr. Taylor’s talk is entitled, “From Stem Cells and Cadaveric Matrix to Engineered Organs.” Come and see her fascinating videos of hearts that she has denuded of cells using detergents leaving only the connective tissue scaffolds, into which she infuses progenitor stem cells that “regrow” myocytes, eventually developing into a functional pacing heart, that she then reimplants into mice. Really exciting!! Read more about the speakers on Page 3. Remember that the registration will include all the meals for the two days, beginning with an Opening Reception at the Hilton Garden Inn (formerly the historic King Edward Hotel) Wednesday night, October 12, and ending with our “Taste of Mississippi” Closing Reception and Dinner at the Fairview Inn Friday evening. Remember: Early registration ends September 12, 2011.

Plan to come and enjoy great science and southern hospitality!! Janie

Dr. Olga McDaniel, Ph.D.
“Polymorphisms of Common Genes Associated with Breast Cancer”
Monday, October 3 4 P.M., G451-04

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.
Dr. Karen Crews, DMD., is a Professor and the Director of the Division of Oral Oncology and Bio-behavioral Medicine in the Department of Otolaryngology. She has been involved in health-care-based tobacco cessation interventions for over 25 years and has served as the Director and Principal Investigator of the ACT Center for Tobacco Treatment, Education and Research since 1999. The ACT Center is the largest tobacco treatment service, education/training, and research organization in Mississippi. As Director of the ACT center Dr. Crews has overseen over 20 million dollars in NIH, State and Industry grants and contracts and supervised expansion of the ACT Center to 17 hospital sites across the state. The ACT Center has treated over 15,000 citizens for tobacco dependence treatment and has also trained over 10,000 healthcare providers within Mississippi. In 2004 the ACT Center received the Program Delivery award from the National Association of Chronic Disease Directors. It also received the 2006 Prevention of Cancer Award from the Partnership of Comprehensive Cancer Control in Mississippi.

Dr. Crews has extensive experience in developing, implementing and testing educational programs in tobacco cessation. She served as a co-investigator and site-investigator for two large NIH funded, large-scale, randomized clinical trials that studied the effectiveness of tobacco dependence treatment approaches within private and public dental health care clinics. Currently, she is a co-investigator on a NIH funded project that is identifying susceptibility loci or genes responsible for nicotine dependence in cigarette smokers utilizing a combination of genome-wide and candidate gene-based association approaches within African American and European American populations. Dr. Crews is the recipient of numerous awards including the Association for Medical Education and Research in Substance Abuse (AMERSA) John P. McGovern Lectureship Award for Excellence in Substance Abuse Education, the Omicron Kappa Upsilon Stephen H. Leeper Award for Excellence in Teaching from the American Dental Education Association, and the Gold Excellence in Research Award from UMMC.
The Women's Health Research Center will host the 2011 conference entitled "Physiology of Cardiovascular Disease: Gender Disparities" to be held at UMMC on October 12-14, 2011. This meeting is co-sponsored by the American Physiological Society and the Society for Women's Health Research. Here are a few of the 25 internationally recognized invited speakers:

**Doris Taylor, University of Minnesota**
Dr. Taylor will deliver Thursday’s (10/13) plenary lecture, “From Stem Cells and Cadaveric Metric to Engineered Organs.” She is widely acknowledged as a pioneer in cardiac regeneration, and is a native Mississippian!

**Pamela Ouyang, Johns Hopkins University**
Dr. Ouyang will provide an update on the Multi-Ethnic Study of Atherosclerosis (MESA) (MESA) trial with her presentation, “Early Menopause and CVD-Information from MESA” in Thursday’s Symposium I: Aging and CVD. She is an expert on ischemic heart disease and the effects of hormone replacement therapy.

**Meir Steiner, McMaster University, Hamilton, Ontario, Canada**
Dr. Steiner, is a psychiatrist, who will present “Sex Differences in Depression and CVD” during Thursday’s (10/13) Symposium IV: Neuro Mechanisms and Depression in Cardiovascular Disease. Dr. Steiner is an authority in women’s mental health and CVD.

**C. Noel Bairey Merz, Cedars-Sinai Medical Center**
Dr. Bairey Merz will discuss the small vessels of the heart in her presentation, “Ischemic Heart Disease in Women: Microvascular Coronary Dysfunction” during Friday’s(10/14) Symposium V: Gender Disparities in Cardiology. She is PI of the WISE trials, and an expert in coronary disease in women and roles played by mental stress and nutrition.

**David Harrison, Vanderbilt University**
Dr. Harrison will present “Immune Mechanisms in Cardiovascular Disease” during Friday’s (10/14) Symposia VI: Cardiovascular Disease and Inflammation. He is an expert on vascular function and oxidative stress.

**Sarah Berga, Emory University**
Dr. Berga will discuss polycystic ovary syndrome in her presentation “CVD and PCOS” during Friday’s (10/14) Symposia VIII: Cardiovascular Disease and Fertility. She is an international expert in diseases of pregnancy and reproduction.

The link for registration is: [http://www.the-aps.org/meetings/aps/gender2011/reginfo.htm](http://www.the-aps.org/meetings/aps/gender2011/reginfo.htm)
Zhengwei Cai, Ph.D., Professor of Pediatric recently received notice of funding from the NIH for his R01 project entitled, “Perinatal infection, cytokines and brain injury.” His project will explore mechanisms involved in the link between perinatal brain inflammation and the enhanced risk for triggering neurodegenerative diseases in later life.

Dr. Christine Maric-Bilkan, Ph.D., Associate Professor of Physiology is a recent recipient of an Intramural Research Support Program (IRSP) Grant entitled, “Renoprotective effects of C-peptide in chronic renal disease.” The IRSP provides 12-month awards to members of the UMMC faculty in order to strengthen the biomedical research environment at UMMC.

Dr. Ryan Darling, Ph.D., M.A., Instructor of Neurobiology and Anatomical Sciences, and Dr. Ian Paul, Ph.D., Professor of Psychiatry, are recent recipients of a Center for Psychiatric Neuroscience (CPN) Core Pilot Project entitled, “Perinatal SSRI exposure and cardiovascular response.” The CPN is a multidisciplinary research coalition at UMMC whose mission is to facilitate the transition of junior faculty researchers to independent neuroscientists with major research grant support.

Dr. Jane F. Reckelhoff, Ph.D., Billy S. Guyton Distinguished Professor, Professor of Physiology and Biophysics, and Director, Women's Health Research Center was recently elected to serve a three-year term as a Councillor for the American Physiological Society. The American Physiological Society is a non-profit organization that is devoted to fostering education, scientific research, and dissemination of information in the physiological sciences.

Dr. Sharla Gayle Patterson, M.D., an Assistant Professor in the Department of Surgery was selected to attend the Association of American Medical Colleges Early Career Women Faculty Professional Development Seminar held in July 2011. This seminar is designed for assistant professors and covers leadership topics and provides skills related to academic medicine career building and strategic thinking about career development.
The WHRC would like to congratulate the following post-doctoral fellows and graduate students for receiving extramural research funding from the Southeast Affiliate of American Heart Association. Fellowship and training grants from the AHA provide support for trainees as they initiate (pre-doctoral) or prepare for an independent (post-doctoral) career in cardiovascular and stroke related research.

**Dr. Yiling Fu, M.D., Ph.D.**, an Instructor in the Department of Physiology & Biophysics received a post-doctoral fellowship grant. The focus of Dr. Fu’s research is “Renal nitric oxide bioavailability and hypertension.” She will conduct her work in the laboratory of Dr. Ruisheng Liu in the Department of Physiology & Biophysics.

**Dr. Roberta Lima, Ph.D.**, an Instructor in the laboratory of Dr. Jane F. Reckelhoff in the Department of Physiology & Biophysics received a post-doctoral training grant. Dr. Lima will examine the “Role of the renin-angiotensin system in mediating hypertension in a polycystic ovary syndrome.”

**Dr. Mohadetheh Moulana, Ph.D.**, an Instructor in the Department of Physiology & Biophysics received a post-doctoral fellowship grant to examine the “Role of epoxyeicosatrienoic acids in a model of postmenopausal hypertension.” Dr. Mohadetheh will conduct her research in the laboratory of Dr. Jane F. Reckelhoff.

**Dr. Eric George, Ph.D.**, will examine mechanisms leading to “Hypertension during pregnancy.” An Instructor in the Department of Physiology & Biophysics, his fellowship work will be conducted in the laboratory of Dr. Joey P. Granger.

**Marilyn Burke**, a graduate assistant in the laboratory of Dr. Richard Roman in the Department of Pharmacology received a Pre-doctoral Fellowship. The goal of her project is to study the “Genetic basis and mechanisms of renal myogenic response in fawn hooded hypertensive rats.”

Front (L to R): Dr. Yiling Fu and Marilyn Burke; Back (L to R): Dr. Roberta Lima and Dr. Eric George
Dr. Suttira Intapad, Ph.D., a post-doctoral fellow in the laboratory of Dr. Barbara T. Alexander in the Department of Physiology, received an Outstanding Poster Presentation Award for a Post-doctoral Fellow at the 6th Annual Gulf Coast Physiological Society (GCPS) Meeting held in May 2011. The GCPS was founded in 1999 as a professional association to foster collaborative interactions related to research and education for physiologists in Louisiana, Mississippi and Alabama.

Dr. Ana T. Palei, Ph.D., a postdoctoral fellow in the laboratory of Dr. Joey P. Granger in the Department of Physiology, received a New Investigator Award from the Inter-American Society of Hypertension to attend the XIXTH IASH Scientific Sessions to be held in September 2011. The main objective of the IASH is to encourage research and exchange of ideas in hypertension and vascular diseases among physicians and scientists of the Americas.

Dr. Chinwendu Onwubiko, M.D., a general surgery resident in the Department of Surgery, received the William Albert Maddox, MD Resident Paper Award in June 2011 at the Alabama Chapter of the American College of Surgeons.

Dr. Eric George, Ph.D., an Instructor in the Department of Physiology, is a recipient for a High Blood Pressure Research Trainee Advocacy New Investigator Travel Award for travel to the American Heart Association’s Council for HBPR 2011 Scientific Sessions to be held in September 2011.

Loai Alzghoul, a graduate assistant in laboratory of Dr. Rick Lin in the Department of Neurobiology and Anatomical Sciences received a travel award to attend the Sixth Annual NIH National Graduate Student Research Conference at the NIH. This annual two-day event is held on the main campus at NIH and introduces advanced graduate students to NIH scientists and the NIH Intramural Research Program.
**Josh Speed**, a graduate assistant in the laboratory of Dr. Joey P. Granger in the Department of Physiology, published findings from his doctoral studies in the August issue of the *Am J Physiol Regul Integr Comp Physiol.* (2011; 301:R519-R523) entitled “Renal medullary endothelin-1 is decreased in Dahl salt-sensitive rats.” Josh developed a strong interest in science while working as a research technician in Dr. Granger’s laboratory. He recently graduated from UMMC and he is continuing his training as a post-doctoral fellow at the Georgia Health Sciences University. The focus of his graduate research involved the role of endothelin in the regulation of blood pressure.

**Fouad Zouein**, a second year Ph.D. student working with Dr. George Booz in the Department of Pharmacology has published his first paper in *Growth Factors* (2011; in press) entitled, “JAKs go nuclear: Emerging role of nuclear JAK1 and JAK2 in gene expression and cell growth.” Fouad began his interest in science and how medical research has a positive impact on peoples’ lives while working in a hospital. The focus of his doctoral research is to study the impact of inflammation on cardiac remodeling. This paper exposes the novel role of JAK kinases in regulating gene expression and cell growth mediated via epigenetic actions that alter phosphorylation of histones.

Nonfamilial Parkinson’s disease (PD) is associated with advanced age, but it is still unclear whether dopaminergic neuronal death results from events initiated during development or adulthood. Perinatal exposure to the endotoxin, lipopolysaccharide (LPS), increases the risk of dopaminergic disorders in animal models of PD. This study, utilizing a rat model of neonatal exposure to LPS, determined that central inflammation, an event commonly and frequently occurring in human infants, enhanced susceptibility of the dopaminergic system to an ordinarily non- or sub-toxic dose of environmental toxins to develop PD-like neurological deficits in late life.


Tumor resistance to standard chemotherapy drugs such as taxanes, is reduced either initially or as a cummulative effect and remains an obstacle for successful treatment of cancer patients. Because commonly used antimitotic drugs target β-tubulin in microtubules of mitotic spindles, changes in β-tubulin isotype amounts may contribute to drug resistance. This study noted that micro-RNA 100 is reduced in MCF7 breast cancer cells treated with the antimitotic drug, paclitaxel. Transfection of MCF7 with miR-100 significantly reduced β-tubulin I, IIA, IIB and V. Thus, this is the first study to report regulation of β-tubulin mRNA by a micro-RNA suggesting that miR-100 may have potential for therapy in combination with paclitaxel.

Agonistic autoantibodies to the angiotensin II type I receptor (AT1-AA) are suggested to serve as a link between placental ischemia and hypertension. This study determined that AT1-AA contributes to placental oxidative stress *in vivo* and that oxidative stress may be one mechanism by which AT1-AA mediates hypertension in pregnancy.


Genome-wide association studies (GWAS) identify SNPs associated with breast cancer; however, they offer limited insights into the mechanisms that confer risk. This study confirmed that receptors and genes involved in the Notch signaling pathway interact with SNPs associated with risk for breast cancer. This study also identified P53, apoptosis and MAP kinase as other SNP-associated pathways.


Male streptozotocin (STZ)-induced diabetic rat exhibit decreased circulating testosterone and increased estradiol levels. While supplementation with dihydrotosterone is partially renoprotective, this study determined that inhibition of estradiol synthesis, by blocking aromatization of testosterone to estradiol prevented diabetes-associated renal injury.