Welcome to the first edition of the Center for Developmental Disorders Research (CDDR) newsletter! The CDDR was formed to expand and develop collaborations among clinicians and basic scientists across UMMC and the state of Mississippi whose interest and focus is on understanding, treating or preventing diseases that have their origin in early life. You can find details of our mission, organization and plans at www.umc.edu/cddr.

This newsletter is planned as a regular publication that will highlight the news, achievements, activities and publications of CDDR-affiliated faculty and trainees. Our goal is to make this newsletter a valuable resource to better integrate the activities of clinicians, basic scientists and clinician-scientists to improve developmental health in Mississippi and beyond. Please feel free to contact us with news and suggestions at cddr@umc.edu.

-Dr. Rick C.S. Lin, Executive Director

Congratulations

Dr. Wu Zhou, professor of otolaryngology and communicative sciences, received a $190,625 grant from the National Eye Institute for the project, "Horizontal Rectus Muscle Forced During Combined Eye Head Gaze Shifts."

Dr. Bolaji Famuyide, associate professor of pediatric neonatology, received a $16,531 grant from the W. K. Kellogg Foundation in conjunction with the Community Foundation of Northwest Mississippi for "Right! From the Start, NICU Breastfeeding Project."

To DONATE and support the CDDR, please visit www.umc.edu/Give2CDDR or call or email Kitty Cook Ramsey in UMMC’s Office of Development at (601) 984-1492 or kramsey@umc.edu.
Autism May Be Related to Poorly Insulated Wires.

Dr. Yi Pang, assistant professor of pediatrics and a member of the CDDR-affiliated faculty, took the beautiful photograph below which is featured, along with his most recent article, in the May edition of the Journal of Neurochemistry. We asked him about his article, “Exposure to Serotonin Adversely Affects Oligodendrocyte Development and Myelination In Vitro” for the CDDR Newsletter. He explained that, during development, the neurotransmitter serotonin plays a major role in guiding the projections of neurons to their correct targets in the brain. Converging evidence indicates that many children with autism have abnormalities in both the concentration of serotonin in their brains during development and in the ability of neurons to connect with each other. Myelin is critical to insulating the long projections (axons) of neurons, which carry electrical signals like wires from the receiving parts of the neuron to the next cell in the circuit. Myelin is made by oligodendrocytes, like the ones in the picture, and Pang’s research demonstrates that, in cell culture, exposure to high concentrations of serotonin not only damages the development of oligodendrocytes, but also their ability to wrap axons in myelin. This would result in poorly insulated “wires” and could help explain the abnormalities seen in neuron-to-neuron connections in children with autism.

“Everybody’s looking for the cause of autism. . . I ask myself, ‘Is this a cause or just an association?’”

-Dr. Yi Pang

At the State Capitol:

This spring, CDDR directors Dr. Rick Lin and Dr. Ian Paul and Internal Advisory Board members Dr. David Elkin and Dr. Susan Buttross were asked to provide Secretary of State Delbert Hosemann with information and support to pass House Bill 885 in support of Applied Behavior Analysis (ABA) treatment for autism. This treatment is one of the only evidence-based therapies for autism and is endorsed by both pediatric and psychological professional organizations. Although not perfect, it has a 50 percent success rate in improving the symptoms of autism. Last month, they were invited by Hosemann to attend Gov. Phil Bryant’s press conference to announce the new law that requires insurance providers in Mississippi to cover ABA therapy to age 8.

Discovery U:

Volunteers from the School of Graduate Studies in the Health Sciences hosted a Discovery U event at the Mississippi Children’s Museum on April 12. Discovery U is a recently developed program by the graduate school that promotes science to K-12 and undergraduate students. This Discovery U event provided hands-on events for children and their families to promote the exciting world of biomedical research. Participants were able to isolate DNA from strawberries, learn about molecules, microbes and bones, and learn all about the gut and the lungs. Dr. Barbara Alexander, director of basic science research for CDDR, was a co-organizer and many of the volunteers were graduate students who work in laboratories of CDDR faculty.
Dr. Lorena Amaral, a trainee of CDDR affiliate Dr. Babbette LaMarca, won the International Society for Study of Hypertension in Pregnancy President Award and the New Investigator Travel Award in New Orleans in October 2014. Her abstract is entitled “17-hydroxyprogesterone Caproate Attenuates Hypertension and Uterine Artery Resistance in Response to Reduced Uterine Perfusion Pressure (RUPP) in Pregnant Rats.” In addition, Amaral was selected as one of the awardees of the Caroline tum Suden/Frances Hellebrandt Professional Opportunity Award and WEH/AJP: Regulatory, Integrative and Comparative Trainee Abstract Award in Boston at the 2015 Experimental Biology Meeting. Her abstract is entitled “Early Administration of 17-hydroxyprogesterone Caproate to Reduced Uterine Perfusion Pressure (RUPP) Rat Model of Preeclampsia Improves Inflammation, Uterine Artery Vasoconstriction and Blood Pressure During Pregnancy.”

Dr. Denise Cornelius, a trainee of CDDR affiliate Dr. Babbette LaMarca, won the Annual High Blood Pressure Research Conference Top Trainee Abstract Award; the Annual High Blood Pressure Research Conference New Investigator Award; the Ruth L. Kirschstein National Research Service Award (NSRA) Postdoctoral Fellowship (F32), Title: Hypertension, the Kidney, and Inflammation; the Best of American Heart Association (AHA) Specialty Conferences Poster Award; and the American Physiological Society Physiologists in Industry Novel Disease Model Postdoctoral Award. Her research focuses on identifying immune mechanisms that mediate the pathophysiology of preeclampsia and pinpointing novel immunotherapeutic targets for the treatment/management of preeclampsia to improve maternal and fetal outcomes of the disease.

Dr. Mark Cunningham, a trainee of CDDR affiliate Dr. Babbette LaMarca, is a T32 Hypertension and Cardiorenal Disease Postdoctoral Fellow and was a finalist for the 2015 Juan Carlos Romero and Water and Electrolyte Homeostasis Section Postdoctoral Research Recognition Award at the Experimental Biology Conference, where he presented research titled “Agonistic Autoantibodies to the Angiotensin II Type 1 Receptor Enhance ANGII Binding on Vascular Endothelial Cells.”

John Henry Dasinger, a trainee of CDDR Basic Science Director Dr. Barbara T. Alexander, was a finalist for the Water and Electrolyte Homeostasis Section Predoctoral Research Recognition Award for his research investigating the role of testosterone in postmenopausal hypertension in female growth restricted offspring.

Jessica Faulkner, a trainee of CDDR affiliate Dr. Babbette LaMarca, won the Society for Experimental Biology and Medicine Young Investigator Award for “Treatment with Vitamin D Attenuates Blood Pressure and Immune Activation in a Preeclamptic Rat Model.” She also won the American Physiological Society Water and Electrolyte Homeostasis Section Research Recognition Award for “Blockade of 20-HETE Synthesis Improves Blood Pressure in the RUPP Rat Model of Preeclampsia.”

Dr. Ashlyn Harmon, a trainee of CDDR affiliate Dr. Babbette Lamarca, received her Ph.D. in medical pharmacology. Her dissertation was focused on the immune imbalance that occurs during preeclampsia in response to placental ischemia. She is currently a postdoctoral researcher at Louisiana State University in comparative biomedical sciences where she is researching the immune mechanisms and oxidative stress that is associated with pulmonary hypertension and how combustion-generated environmentally persistent free radicals affect lung function.
**Tarek Ibrahim**, a trainee of CDDR affiliate Dr. Babbette LaMarca, won the second place Mississippi INBRE Excellence in Science Award and the Travel Award from the American Society of Nephrology Kidney STARS Program to attend the American Society of Nephrology Annual Meeting at Kidney Week. His poster presentation was titled “Proliferation of Endogenous T-reg Cells Improves the Pathophysiology Associated with Placental Ischemia of Pregnancy.”

**Dr. Suttira Intapad**, a trainee of CDDR Director Dr. Barbara T. Alexander, received a Pilot Grants Program—Center of Biomedical Research Excellence (COBRE) grant, for the project “Obesity, Cardiorenal and Metabolic Disease Center” from the National Institutes of Health and was a Graduate Research Day Poster Presentation Winner.

**Dr. Ana Palei**, a trainee of CDDR affiliate Dr. Joey P. Granger, won the Inter-American Society of Hypertension New Investigator Travel Award to attend the 20th Scientific Sessions of the Inter-American Society of Hypertension (IASH) in Salvador, Brazil. Her study aimed to determine the effects of chronic elevations in circulating leptin on blood pressure and placental anti-angiogenic and inflammatory factors in pregnant rats.

**Dr. Frank Spradley**, a CDDR affiliate and trainee of CDDR affiliate Dr. Joey P. Granger, won the Inter-American Society of Hypertension New Investigator Travel Award to attend the 20th Scientific Sessions of the Inter-American Society of Hypertension in Salvador, Brazil, and the 2014 Poster Presentation Award at the 20th Scientific Sessions of the Inter-American Society of Hypertension. He also won the Fleur L. Strand Professional Opportunity Award and was selected to present at the inaugural 2015 Trainee Advisory Committee Cross-Sectional Symposium: Recent Advances in Obesity Research. Finally, he was a Graduate Research Day poster presentation winner.

**Dr. Xuexiang Wang**, a trainee of CDDR affiliate Dr. Michael Garrett, received his Ph.D. in medical pharmacology. He also won the American Heart Association High Blood Pressure Research 2014 Trainee Onsite Poster Competition Award. Additionally, he was a Graduate Research Day poster presentation winner and the 2015 Regions Research Distinction for Graduate Research Award and cash prize winner. His research is studying a new genetic model of rats born with a single kidney, which includes two parts. The first part is to understand the long-term and environmental factor (e.g. hypertension) impact on cardio-renal function of living with a single kidney. The second part is to identify the genetic defects result in being born with a single kidney and reduced nephron formation.

**Dr. Paula Warrington**, a CDDR affiliate and a trainee of CDDR affiliate Dr. Joey P. Granger, was awarded a COBRE Pilot Grant for the project “Degenerins and Pregnancy Mediated Cerebrovascular Abnormalities.” She received the American Physiological Society Central Nervous System Section Research Recognition Award, Experimental Biology 2015, and served as co-chair of the Experimental Biology 2015 Featured Topic: “Cerebrovascular Abnormalities in Hypertensive Diseases.”
New Research Publications from CDDR Faculty and Trainees


