MESSAGE FROM
THE CHAIR

The department has had a successful year in terms of teaching, research, and service. As we move towards May graduation, I congratulate in advance our Ph.D. and M.S. students who are completing their curriculum requirements this semester and will be receiving their degrees. I wish all of you success in the future and thank you for choosing our department. I also would like to congratulate our faculty for their success in teaching and research. Details of their activities are included in this newsletter. Lastly, I want to thank the faculty, students, and staff for making our seminar series a success. We have had many excellent speakers present departmental seminars and they all have told me they have had an enjoyable visit meeting with students and faculty.

PHARMACOLOGY NEWS

In the News

Dr. Howard Mielke has received media attention for his research on lead in the environment, especially soil lead, and its negative developmental and health consequences. He has been quoted by USA TODAY, 3/10/2013, has been a guest on the Melissa Harris-Perry TV show, www.nbcnews.com/id/50385886/ns/msnbc/, and featured in Mother Jones magazine http://www.motherjones.com/environment/2012/12/soil-lead-researcher-howard-mielke. Howard began studying lead content of residential environments in the 1970s and discovered that the areas where we live (and our children play) are, basically, hazardous waste sites for lead contamination. When most people think of lead poisoning they think of lead paint, however, the lead additives in gasoline were, and continue to be, the major culprit. Whether inside a house or outside in the soil, lead ingestion has huge developmental consequences for our children. A child playing outside can ingest enough lead in just one hand lick to exceed the daily tolerable intake limit. Unfortunately, federal attention has not been given to regulating the lead in the soil where our children play. In his mapping of cities, Howard and his colleagues have found that areas that show high lead in the environment (mostly soil lead) frequently have low school scores and are areas the police often highlight as high crime areas. This connection has been clearly documented in the mapping of cities. Howard continues to work to bring local, state, and national attention to this problem and its affordable solution. He has worked with cities (Baltimore, St. Paul, Minneapolis, New Orleans, Detroit, and most recently, Atlanta) on mapping projects and with local groups on soil lead intervention in child play areas. According to the USA TODAY article, the EPA has said that no action is currently being taken to revise the federal hazard standard for soil – which allows five times more lead in play areas than what health modeling by the state of California shows is needed to protect children from losing I.Q. points. Because federal requirements are slow to change, Dr. Mielke and his colleagues have focused their consciousness raising efforts on cities and private groups (religious groups and private property owners) about the risks and by providing a solution. By importing clean soil from sites outside of cities and putting a 15 cm clean soil layer on top of a geotextile covering, the risks of lead contamination in children play areas can be reduced to safe levels. This relatively inexpensive treatment can mean vastly improved developmental functioning and perhaps a reduction in crime for cities.

ESTROGEN RESEARCH NETWORK

On January 25th, 2013, Dr. Sarah Lindsey established the “Estrogen Research Network”. She organized a seminar as part of the D.W. Mitchell Lecture Series co-sponsored by the Provost’s Faculty Seminars in Interdisciplinary Research. Jill Daniel, Ph.D., (right) Associate Professor of Psychology & Neuroscience on Tulane’s uptown campus, spoke on “Effects of midlife estrogen use on the aging female brain”. This seminar was also the inaugural event for the Estrogen Research Network, whose mission is to bring together investigators who do not interact on a regular basis but with a common interest in estrogenic signaling to foster interdisciplinary scientific discussion, generate novel hypotheses, promote new collaborations, and increase funding and publications in this field. This seminar was preceded and followed by a research meeting for all principal investigators interested in estrogen. At least six Tulane departments were represented: Cell & Molecular Biology, Ecology & Evolutionary Biology, Psychology, Biochemistry, Physiology, and Pharmacology as well as researchers from other local universities and colleges. The meetings before and after the seminar went extremely well, and attendees discussed how soon they could meet again. The second seminar in this series will feature Cheryl Watson, PhD, Professor of Biochemistry & Molecular Biology of The University of Texas Medical Branch at Galveston, TX, presenting “How Xenoestrogens Disrupt Physiologic Estrogen Signaling via Nongenomic Pathways”, April 19th, 12:00 p.m., Pharmacology Seminar Room. We are extremely grateful to the Provost’s Office; without their generous support we could not have organized such an exciting event! For more information on the Estrogen Research Network, please contact Dr. Sarah Lindsey, lindsey@tulane.edu.

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Noteworthy News

**DR. RICARDO MOSTANY BUILDS A TWO-PHOTON IN VIVO MICROSCOPE**

The Pharmacology Department is pleased to note that soon they will have a two-photon excitation microscope. Dr. Mostany is building the microscope for his research to study plasticity in the cortical circuits during aging, ischemia, or effects of environmental agents on brain architecture. He has provided us with a description of his two-photon microscope system.

Two-photon excitation (2PE) microscopy is based on the excitation of a conventional fluorophore simultaneously by two photons of near infrared wavelengths. These intrinsic properties of two-photon microscopy provide this technique with several advantages with respect to conventional fluorescence or confocal microscopy: it allows the precise observation of fluorescent structures deep into a sample because the long wavelengths used for 2PE travel better through tissue; phototoxicity of the sample is minimized because lower energy photons are used and because the excitation of the fluorophore is confined to the focus of the laser, not affecting the tissue above or below the focal plane. Because of these properties 2PE is ideal for in vivo imaging, allowing the researcher to examine the same cellular structure or activity multiple times. The basic components of a two photon excitation imaging system (middle) include a two-photon light source (Ti:Sapphire Ultrafast Laser), scanning mirrors, a series of optical components to focus the laser beam onto the sample and to collect and separate different wavelengths of emitted light, and the photomultiplier tubes that receive the emitted photons from the sample and convert them into electrical currents that subsequently the computer is able to compile into an image. Some of the actual components can be observed in the picture on the (right).

**Brittni Scruggs** a PSP student in Dr. Bruce Bunnell’s lab, successfully defended her dissertation on December 11, 2012.

**Shijia Zhang** a BMS student, also in Dr. Bunnell’s lab, successfully defended his dissertation on March 14, 2013.

**Dr. Ilholya Rutkai**, postdoctoral fellow, working with Dr. David Busija, has been selected to receive the 2013 CV Section of the American Physiological Society Clinical Science Young Investigator Award.

**Oral Presentation**: "Novel mitochondrial mechanisms mediate enhanced vascularization of rat middle cerebral arteries to mitochondrial depolarization following ischemia-reperfusion injury" at the Topic Session: "Novel Signaling Molecules in Vascular Injury and Inflammation" on Monday April 22, 2013. She will also present a Post at EB and at Tulane Research Day.

**Dr. David Busija**, Invited Speaker: University of Mississippi Medical Center, March 18, 2013, Department of Pharmacology and Therapeutics: Topic: "Mitochondrial mechanisms in cerebral vascular control in health and disease."

**Invited Speaker**: East Carolina Medical School, March 6, 2013, Department of Anatomy and Cell Biology: Topic: "Cerebral vascular control mechanisms in health and disease."

**Keynote Speaker**: 7th Gulf Coast Physiological Society Meeting, Mobile, AL, May 31-June 2, 2013: Topic: "Regulation of the Cerebral Circulation.


**Dr. John McLachlan** To save travel time and money, McLachlan delivered a virtual invited presentation via Skype to a Symposium in Amsterdam, Netherlands sponsored by DES Centrum and Netherlands Cancer Institute on DES Effects – What More to Expect? His talk, Prenatal Exposure to DES: An Historical Perspective on the Future. The presentation and question/answer session was conducted in real time while separated by the Atlantic Ocean and seven hour difference in time zones. Judging from feedback from the meeting organizers, it was a success and all done from New Orleans.

**Invited Presentation**: "Environment and women’s health: Emerging trends and future directions" Symposium on Women’s Reproductive Environmental Health at the National Institutes of Environmental Health Sciences, NIH on January 30, 2013 in the Research Triangle, Park, NC.


*Invited speaker*: "Two-photon excitation microscopy: applications in neuroscience". Tulane University School of Medicine Neuro Club, September 2012.

**Dr. Prasad Katakam**, Oral Presentation: "Abnormal ER and mitochondrial communication underlies ER stress in..."
**Noteworthy News, continued**


- Dr. Samantha Gerlach, postdoctoral fellow working with Dr. Debasis Mondal received a Travel Award to attend the 9th Australian Peptide Conference, Queensland, Australia to present, "Efficacy of naturally occurring pore-forming peptides as potent anti-HIV agents" 2013.


- Somrita Dutta, Neuroscience Graduate student working with Dr. Busija, received a second place Jean Vocum Harlan Award for Outstanding Graduate Student Presentation at the Tulane University Neuroscience Program Retreat, March 2, 2012 for her presentation: "MTOR Pathway Mediates Dihydroxy Preconditioning in Cultured Neurons." She will present a poster at Tulane Research Day, April 3-4 and at Experimental Biology, April 21-22, 2013 in Boston, MA.


- Invited presentation, "Community lead (Pb) domains and exposure disparities: case study of pre and post Katrina New Orleans", Society of Toxicology, March 2013. Other Presentations and Workshops in April: (1) "Lessons from New Orleans on the role of chemistry of the environment in children’s health disparities, Chemistry Day, Tennessee State University." (2) LA Department of Environmental Quality’s Annual Lead and Asbestos Workshop Healthy Housing Conference. (3) Healthy Housing Conference "Creating a Balanced and Community-Wide Approach for a Primary Lead Prevention Program."

- Dr. Sarah Lindsey, Seminar, "GPR30 mediates estrogen sensitivity in a model of angiotensin II-dependent hypertension", Tulane University Department of Cell and Molecular Biology, March 3, 2012.

- Larae Lee, graduate student working with Dr. Stephen Braun, received the Young Soo Choi Scholarship Award, Korean Toxicologists Association in America Special Interest Group, Society of Toxicology Endowment Fund. Abstract title: "The potential therapeutic role and toxicity of Secreted Antiviral Entry Inhibitory (SAVE) peptides in transduced MSCs for AIDS."

- Dr. Milton Hamblin will be Chairing the session, "Novel Signaling Molecules in Vascular Injury and Inflammation" at Experimental Biology, April 22, 2013, Boston, MA.

**Faculty Publications**


Faculty Publications


Seminar Series - All seminars take place between 12:00 noon and 1:00 p.m. on Fridays.

April 5 — Dr. Raghu Vemuganti, Ph.D., Associate Professor, Department of Neurological Surgery, University of Wisconsin—Madison
“Role of microRNAs in ischemic brain damage.”

April 12 — Dr. Frank Faraci, Ph.D., Professor of Internal Medicine and Pharmacology, University of Iowa Carver College of Medicine, Iowa City, IA,
“Vascular disease during hypertension: The balance between angiotensin II and PPAR gamma”

April 19 — Dr. Cheryl S. Watson, Ph.D., Professor of Biochemistry and Molecular Biology, Center of Interdisciplinary Research on Women’s Health & Medicine, University of Texas Medical Branch School of Medicine, Galveston, TX
“How Xenoestrogens Disrupt Physiologic Estrogen Signaling via Nongenomic Pathways”
Master’s Program Highlights, Class of 2013

The Department of Pharmacology wishes to congratulate Tulane School of Medicine class of 2013 on a successful match. It would also like to recognize those graduates who are also prior Master of Science in Pharmacology Degree Program graduates.

- Neal Bost: Radiology-Diagnostic, Los Angeles, CA
- David Cai: Otolaryngology, New Orleans, LA
- Samita Das: Anesthesiology, New Orleans, LA
- Matthew Gastaut: Internal Medicine, New Orleans, LA
- Radiation Oncology, Temple, TX
- Albert Hor: Internal Medicine, Dallas, TX
- David Newton: Family Medicine, Anderson, SC
- Shelby Padway: Emergency Medicine, San Francisco, CA
- Forest Swann: Surgery, Dallas, TX
- Ophthalmology, New Orleans, LA
- Meghan Waters: Transitional, Seattle, WA
- Radiation Oncology, Seattle, WA
- Martin White: Internal Medicine, New Orleans, LA

Again, congratulations and unbound success to the entire Tulane Medical School class of 2013.

Graduate Spotlight: Neal Bost

My degree in Pharmacology provided me with a foundation of knowledge that has been an enormous help to me throughout my medical education, and will continue to help me throughout my career. The program not only prepared me for the world of clinical medicine, but also provided me with invaluable research experience and skills that I still employ today. In order to effectively teach the essential principles of medical pharmacology, students in the program are first taught basic physiology, anatomy, biochemistry, and pathology. Once I began medical school, I realized that early exposure to these concepts gave me a clear advantage over my fellow classmates. The faculty are brilliant, experienced researchers with a passion for teaching that is obvious the moment you meet them. I still keep in touch with the majority of my former classmates, many of whom have gone on to enjoy great success in medicine and biomedical research. I recently matched into Diagnostic Radiology, and my classmates who continued on to medical school recently matched into highly sought after fields such as Otolaryngology, Radiation Oncology, and Emergency Medicine.

Neal Bost & wife Erin