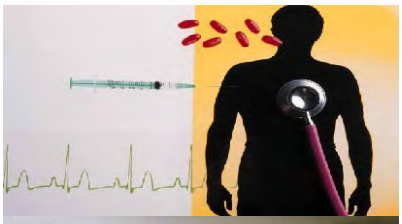

T.H.R.C.E.

TULANE HYPERTENSION AND RENAL CENTER OF EXCELLENCE

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In This Issue

MAY IS THE NATIONAL HIGH BLOOD PRESSURE EDUCATION MONTH

The World Health Organization (WHO) attributes hypertension, or high blood pressure, as the leading cause of cardiovascular mortality. National High Blood Pressure Education Month marks the "kickoff" of high blood pressure prevention and control activities for the year. The National Heart, Lung, and Blood Institute (NHLBI) launched the first "Month" campaign in May 1974. The World Hypertension League (WHL), an umbrella organization of 85 national hypertension societies and leagues, recognized that more than 50% of the hypertensive population worldwide are unaware of their condition. To address this problem, the WHL initiated a global awareness campaign on hypertension in 2005 and dedicated May 17 of each year as World Hypertension Day (WHD). This year, International Society of Hypertension (ISH) in collaboration with the WHL, facilitated the expansion of WHD into a month of global BP measurement - May Measurement Month 2017 (MMM17) with the goal to screen 25 million people during the month of May 2017.

COLLABORATIVE RESEARCH BETWEEN THRCE AND BLDE UNIVERSITY, INDIA

Dr. Navar presented with Plaque from BLDE University, India by Dr. Birader

Two honorable guests from the B. M. Medical College of BLDE University, in Bijapur city of the state of Karnataka in India, visited THRCE from February 4th till February 11th in 2017; Professor M. S. Birader, MD, Vice Chancellor & Professor of Medicine, and Professor Kusal Das, PhD, Professor of Physiology. This visit was intended to explore and promote collaborative research activities between Tulane University and BLDE University, India.

Continued...

Dr. Navar honors Dr. Birader's visit to the Department of Physiology

During this visit, Dr. Birader presented a special THRCE seminar titled, "Hypertension- Indian scenario" and Dr. Das presented, "Oxygen sensing and Lead toxicities: Molecular interactions, cell signaling and antioxidant defense," at the Department of Physiology's Noon Seminar Series. These faculties from BLDE University met, interacted and exchanged information about future studies with the faculties of THRCE and the Department of Physiology that would serve the mutual interests of both the universities. They met with Dr. Gabriel Navar, Chairman of the Department of Physiology and the Director of THRCE, and Dr. Lee Hamm, Vice President and Dean of Tulane University, School of Medicine, to discuss future course of actions to benefit both the universities in terms of basic research, clinical research and exchange programs, and data sharing. In reference to this, an agreement in the memorandum of understanding had been signed based on a foundation of trust for the mutual benefit and development between the two universities. In addition, an International two-year Collaborative Research Project titled, "Hypoxia, metal exposure and cell signaling pathways: Evaluation of vascular integrity with renal function in rats," had also been signed between laboratories of the two collaborating universities; The "Vascular Physiology & Medicine Laboratory" of BLDE Professor, Dr. Das and the "Renal & Hypertension Research laboratory" of Tulane Professor, Dr. Majid. In this reference, Dr. Dewan Majid has been appointed as "Visiting Professor of Medicine" by BLDE University for a two year term beginning July 2017.

Dr. Hamm presented with Plaque from BLDE University, India by Dr. Birader

Continued...

March 9, 2017 was World Kidney Day (WKD). To commemorate **2017 WKD**, THRCE and the Nephrology Division of the Department of Medicine conducted a health screening event in the Lobby of the Tulane Hospital. The goal was to screen participants for blood pressure and the risk for developing kidney disease. In addition, THRCE also hosted a special WKD Seminar by Dr. Suttira "Joy" Intapad, Assistant Professor of Pharmacology at Tulane University School of Medicine. WKD is an international health awareness campaign that focuses on the importance of kidneys and on reducing chronic kidney disease and its associated health problems.

News

Dr. Keith C. Ferdinand Receives 2017 Wenger Award

Dr. Ferdinand presented the award by Dr. Boisey O. Barnes

WomenHeart: The National Coalition for Women with Heart Disease presented the Wenger Award for Excellence in Medical Leadership to Tulane Professor and THRCE affiliate, Dr. Keith Ferdinand, at the 17th Annual Wenger Awards Dinner held May 1st in Washington, DC. The Wenger Awards are named for Nanette Kass Wenger, MD, pioneer in women's cardiovascular medicine and research. Awardees were selected based on their outstanding efforts to connect with women in at-risk communities

Keith C. Ferdinand, MD, was recognized for the award because of his extraordinary contributions to advancing women's heart health in underserved communities has dedicated his career to improving patient care and eliminating health disparities, regardless of race, ethnicity, socioeconomic status, or gender. Dr. Ferdinand continues to focus on the well-being of the public in his home town with the Healthy Heart Community Prevention Program, and as a professor of medicine at the Tulane University School of Medicine Heart and Vascular Institute in New Orleans. He is chairperson of ABC's Initiative to Improve Health Care Access for Minority or High-Risk Populations. The award was presented to Dr. Ferdinand by ABC Founding Member Dr. Boisey O. Barnes (pictured above).

2017 Mayerson DiLuzio Lecture

Patricia E. Molina, M.D., Ph.D

The 2017 Mayerson-DiLuzio Lectureship at Tulane was awarded to Patricia E. Molina, MD. PhD, who presented, "Alcohol interaction with HIV disease; Translational approach to understanding mechanisms & comorbidities" on March 13. Dr. Molina is the Richard Ashman, PhD Professor and Head of the Department of Physiology at LSU Health Sciences Center in New Orleans. She is also the Director of the Alcohol and Drug Abuse Center of Excellence at LSU.

The Mayerson-DiLuzio Lectureship was established by Dr. Navar in 1990 to honor the memory of Drs. Hyman S. Mayerson and Nicholas R. Di Luzio, who presided as Chairmen of the Tulane Physiology Department.

GRANTS, HONORS & RECOGNITION AWARDED TO THRCE AFFILIATED INVESTIGATORS

L. Gabriel Navar, PhD:

- The Department of Physiology was nominated for the Owl Club's "Overall Best Department" award.

Samir El-Dahr, MD:

- Awarded a 5 year NIH-NIDDK RO1 grant beginning July 1st, 2017 for his study, "Epigenetic Control of Nephron Progenitor Cell Lifespan."
- Appointment to the 2017-2021 LA, AAP Executive Nominating Committee.
- Presented an invited lecture, "Stem cells for Chronic Kidney Disease: are we close?" on March 30, 2017 at the Pediatric Grand Rounds held at the University of Pittsburgh Medical School & Children's Hospital.

Kathleen Hering-Smith PhD:

- Secretary for the Renal Section of the American Physiological Society.
- Presented "Core Competency" at the Career Development Club on Feb. 6, 2017.
- Nominated by the Owl Club for teaching excellence award, Best PBL Facilitator.

Sarah Lindsey, PhD:

- Awarded a 5 year NIH-NHLBI RO1 grant beginning April 1st, 2017 for her study, "Eliciting Estrogen's Protective Vascular Effects."
- Co-Chair: "Novel Imaging Technologies in Reproductive Physiology," on April 26, at the 2017 EB meeting's APS Endocrinology and Metabolism Section.
- Science Fair Judge at Ben Franklin High School on Jan 8, 2017.
- Presented an invited talk, "Eliciting Estrogenic Cardioprotection via GPER" at the 2017 Experimental Biology meeting's APS President's symposia on Sex differences in Physiology and Pathophysiology.

Norman Kreaisman, PhD:

- Received the Owl Club for teaching excellence award, Best PBL Facilitator.
- Also nominated for the Owl Club's "T-1 Professor of the Year," "W. Clifford Newman Student Advocacy Award," and "Course of the Year" Awards.

Dewan S. A. Majid, MD. PhD:

- Appointed as an Adjunct-Visiting Professor of Medicine at BLDE University in Bijapur city of the state of Karnataka in India from March 15th, 2017 to March 14th, 2019. Dr. Majid will be teaching and interacting with the MBBS, MD/MS and PhD students of Shri B.M. Patil Medical College, Hospital & Research Center.

Kenneth D. Mitchell, PhD:

- Nominated by the Owl Club for teaching excellence award, Best Integrated Module T-1 (Renal).

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Minolfa Prieto, PhD:

- An abstract was awarded the first prize at the IASH meeting. The following are the detail of the submitted abstract: Gonzalez AA, Reverte V, Mamenko M, Kuczeriska M, Rosales CB, McLellan M, Gentile O, Jensen VB, Ichihara A, Veiras LC, McDonough AA, Pochynyuk OM, Prieto MC. Specific deletion of the prorenin receptor in the collecting duct reduces renal function in physiological conditions and mitigates intrarenal responses in AngII-Induced hypertensive mice.
- Appointed as a member of the Hypertension and Microcirculation Study Section of the Center for Scientific Review of the NIH.
- Nominated by the Owl Club for teaching excellence award, Best PBL Facilitator

T. Cooper Woods, PhD:

- Nominated by the Owl Club for teaching excellence award, Best PBL Facilitator

Students & Post-doctoral fellows

Post-doctoral fellows:

- **Hong Gao, PhD** (Mentor: Dr. Andrei Derbenev) was invited to present "GABA and Glycine: fine tuning for inhibitory control of brainstem RVLM neurons" on April 22, 2017 at the 2017 EB Meeting held in Chicago, IL.
- **Renfang Song, PhD** (Mentor: Dr. Ihor Yosypiv) was awarded the 2017 SSCI Nephrology Young Investigator Scholar Award.
- **Santosh Yadav, PhD** (Mentor: Dr. KS Hering–Smith) was:
  - ◊ Participated in the 16th Annual SSCI Nephrology Young Investigator's Forum held on February 10, 2017.
  - ◊ Awarded a travel award to participate at the 12th Annual Young Investigator National Forum during the NKF 2017 Spring Clinical Meetings held in April in Orlando, Fl.
  - ◊ Awarded the 2017 SSCI Nephrology Young Investigator Scholar Award.
- **Margaret Zimmerman, PhD (**Mentor: Dr. Sarah Lindsey) was awarded the:
  - ◊ Tulane BIRCWH Award for Research in Women's Health and Sex Differences in Cardiovascular and Related Diseases
  - ◊ ASPET travel award to Experimental Biology
  - ◊ ASPET trainee showcase Award.

Gradate & Medical Students:

- **Caleb Abshire (**Mentor: Dr. Sarah Lindsey) was awarded the Tulane Biomedical Sciences Travel Award.
- **Jennifer Duong (**Mentor: Dr. Sarah Lindsey) was awarded the Tulane Biomedical Sciences Travel Award.
- **Sunnie Wong** (Mentor: Dr. Minolfa C. Prieto) was awarded the 2017 SSPR Trainee Travel Award.

Under gradate Students:

- **Dillion Hutson** (Mentor: Dr. Sarah Lindsey) was awarded the:
  - ◊ ASPET travel award to Experimental Biology.
  - ◊ ASPET undergraduate poster competition.
- **Hallie Spooner** (Mentor: Dr. Sarah Lindsey) was awarded the ASPET travel award to Experimental Biology.

THRCE SPONSOR
LOCAL, NATIONAL & INTERNATIONAL SPEAKERS

THRCE sponsors bi-weekly seminars by scheduling local as well as nationally and internationally recognized investigators and clinicians in the field of hypertension research, treatment and education. Speakers who present at the THRCE Seminar Series are asked to provide a brief summary of their talk that we can share with our newsletter audience. From January through April, 2017, the following speakers presented THRCE seminars:

- **Juan Carlos Velez, MD**
  Ochsner Medical Center,
  New Orleans, LA.

Dr. Juan Carlos Velez was the first speaker at our THRCE Seminar Series for the year 2017. Dr. Carlos Velez presented "Aminopeptidase A and its Implications for Intraglomerular Angiotensin Homeostasis." on January 12, 2017. Dr. Velez recently joined the Nephrology Division at the Ochsner Medical Center in New Orleans and was previously a member of the Nephrology Division at the Medical University of South Carolina.

SUMMARY:

While inhibition of angiotensin II formation has been an established target for pharmacological blockade of the renalangiotensin system, less emphasis has been placed in understanding mechanisms of angiotensin II degradation. Aminopeptidase A (APA) is an angiotensinase highly expressed in the kidney. In this seminar, we will review the dominant role of APA in the metabolism of angiotensin peptides at the level of the glomerulus. In addition, we will examine the consequences of deficiency of APA in rodent models of glomerular injury and will elaborate of potential therapeutic implications for human progressive glomerulopathies.

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Special Seminar Co-Sponsored with the Department of Physiology

- **Kusal K Das, PhD**
  Professor, Department of Physiology,
  Faculty of Medicine, Lab. of Vascular Physiology & Medicine,
  BLDE University, Shri B.M. Patil Medical College, Hospital and Research Centre, Bijapur, Karnataka, India.

Dr. Kusal Das presented at the Physiology Seminar Series which THRCE co-sponsored. He presented, "Oxygen sensing and Lead toxicities: Molecular interactions, cell signaling and antioxidant defense," on Monday, February 6, 2017.

SUMMARY:

Hypoxia is one of the most serious factors that can directly impair the function of metabolic pathways in the cell. Cellular hypoxia causes an initiation of hypoxia-response genes responsible for angiogenesis, oxygen transport, and metabolism. Hypoxia leads to alter intracellular chemical microenvironment by increasing calcium concentration ([Ca2+]i), 5-lipoxygenase, lipid peroxidation, cycloxygenase (COX), constitutive nitric oxide synthase (cNOS), leukotriene B4 (LTB4), prostaglandin E2 (PGE2), interlukins, tumor necrosis factor-α (TNF- α), caspases, complement activation heat shock protein 70 kDa (HSP-70), and hypoxia-inducible factor-1α (HIF-1α). Another key molecule within this hypoxia-induced response is the presence of nitric oxide (NO). It is synthesized by nitric oxide synthases (NOS) and its release can be stimulated as a result of inflammatory responses, sympathetic activation and drop in oxygen levels. Interestingly hypoxia and divalent heavy metal like lead (Pb) generates ROS and disturbed oxidant/antioxidant balance which is linked to the transcriptional factor hif- 1α. The results from the author's study showed both divalent cationic heavy metal (Pb) or chronic sustained hypoxia stimulates the production of hif-1α transcription factor and VEGF gene expression in metabolically active tissues in similar molecular mechanism.

Special THRCE Seminar: Co-Sponsored with The Department of Physiology

- **M. S. Biradar, MD**
  Vice Chancellor & Professor of Medicine,
  BLDE University, Shri B.M. Patil Medical College,
  Hospital and Research Centre, Bijapur, Karnataka, India.

On February 9, 2017, the Vice Chancellor at the Shri B.M. Patil Medical College in Bijapur-Karnataka in India, Dr. M. S. Birader, presented a Special THRCE seminar titled, "Hypertension- Indian scenario."

SUMMARY:

Hypertension (HTN) exerts a substantial public health burden on cardiovascular health status and healthcare systems in India. It has bbeen found that HTN is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths in India. Recent studies from India have shown the prevalence of HTN to be 25% in urban and 10% in rural people in India. Previously, a systematic review on the prevalence of HTN in India, for studies published between 1969 and July 2011, reported a range between 13.9 to 46.3% and 4.5 to 58.8% in urban and rural areas of India, respectively. Worldwide, 7·6 million premature deaths (about 13·5% of the global total) and 92 million DALYs (6·0% of the global total) were attributed to high blood pressure. About 54% of stroke and 47% of ischaemic heart disease worldwide were attributable to high blood pressure. Overall, about 80% of the attributable burden occurred in low-income and middle-income economies, and over half occurred in people aged 45–69 years. Expected Indian burden of hypertension in men and women will be almost double in 2025 from 2005. In BLDE teaching hospital Total number of hypertension patients admitted from 1st January 2016 to 31st December 2016 is 1060. 3.7% of which is ischemic heart diseases and 8.2% is with stroke. Hypertensive patients with ischemic heart diseases is highest (2.1%) at the age group of 41-60 years and in case of hypertensive patients with stroke the highest (4.1%) is once again at the same age group. Again it was found that male are more sufferers from both hypertension with IHD or stroke at BLDE University teaching hospital. Pregnancy induced hypertension in BLDE hospital is also 2.3%. The magnitude of the burden of

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hypertension needs not only an increase in awareness, treatment, and control of this condition, but also concerted efforts that target primary prevention. Changes in the lifestyles of the general population, would result in a lower prevalence of hypertension.

- **Nazih L Nakhoul, PhD**,
  Associate Professor,
  Departments of Medicine & Physiology,
  Tulane University School of Medicine, New Orleans, LA.

On February 23rd, 2017, Dr. Nazih L Nakhoul presented a THRCE seminar titled "Renal Ammonia Transporters."

SUMMARY:

Acid-base homeostasis is tightly regulated and the kidney is a major organ responsible for maintaining a stable pH. The kidneys achieve this function by reabsorbing filtered HCO_3^- and excreting non-volatile acids into the urine. Renal excretion of NH_4^+ accounts for at least two-thirds of net acid excretion and increases significantly during acid loads or metabolic disturbances. Total ammonia (NH_3/ NH_4^+) transport by the kidneys occurs in all segments of the nephron and particularly so in the collecting duct. Recent studies have identified new membrane proteins (Rhbg and Rhcg) that are expressed in the collecting duct and are thought to be involved in NH_3/NH_4^+ transport.

In this seminar, we present data that characterize transport of NH_3/NH_4^+ by these membrane proteins. We demonstrate that Rhbg transports NH3 and NH4 and that Rhcg is predominantly an NH_3 transporter. We performed structure-function studies that determined the mechanism of translocating NH_3 and NH_4^+ by Rhbg. We also demonstrated the response of these proteins to acidosis and hypercapnia. This information is important in understanding the physiological significance of NH_3/NH_4^+ health and disease.

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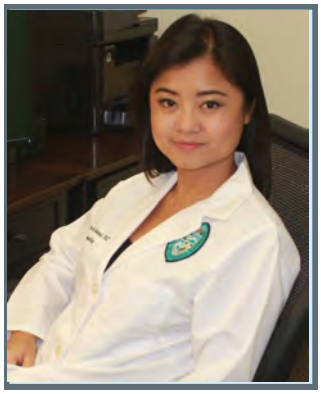
Special THRCE Seminar in honor of World Kidney Day (WKD)
Jointly Sponsored by THRCE & the Department of Physiology



- **Suttira "Joy" Intapad, PhD**
  Assistant Professor, Department of Pharmacology,
  Tulane University School of Medicine,
  New Orleans, LA.

March 9th 2017 was World Kidney Day (WKD). To commemorate WKD, THRCE and the Department of Physiology co-hosted a special seminar by Dr. Suttira "Joy" Intapad. The title of the 2017 WKD THRCE Seminar was, "Developmental Programming of Hypertension: Does Size Matter?"

SUMMARY:

Early insult during fetal stage increases risk of cardiovascular diseases later in life. Adverse fetal environment can lead to adaptive changes that result in fetal survival, but also in structural and physiological changes with long term consequences. Dr. Intapad's research focus is to determine the mechanisms involved in the fetal programming of adult diseases. Specifically, the cardiovascular-renal physiology, hypertension and obesity associated with low birth weight. Therefore, the working hypothesis of Dr. Intapad's research is that an insult during fetal development (intrauterine growth restriction/low birth weight) leads to an increased susceptibility to obesity and hypertension. Dr. Intapad uses a model of reduction in uterine perfusion pressure (RUP) leading to low birth weight, hypertension and intrauterine growth restriction (IUGR) in rat and mouse offspring. Dr. Intapad has applied in vivo, in vitro and molecular based approaches and integrative physiological methods to exam the mechanisms involved in fetal programming of obesity and cardiovascular-renal diseases. Dr. Intapad presented the two proposed mechanisms. (1) Role of Sphingosin-1-phosphate (S1P) signaling pathway on the kidney development, kidney functions, and blood pressure of IUGR mouse offspring. She showed that the sphingosine-1-phosphate receptor expressions are altered in mouse IUGR kidneys in both during- and

Continued...

post-nephrogenesis. She also found that S1P signaling pathway is involved in controlling blood pressure of IUGR mouse offspring. (2) Role of neuro-renal sympathetic activity (Leptin-MC4R-POMC-Renal nerves) on the high blood pressure of IUGR mouse offspring. She showed that the IUGR mice have an increase in serum leptin levels, and bilateral renal denervation normalizes the high blood pressure in these animals. Lastly, she also proposed using the conditional knockout approach together with IUGR condition to study the underlying mechanism of this increase in blood pressure in animals that are born with low birth weight.

- **Zubaida Saifudeen, PhD**
  Associate Professor, Department of Pediatrics,
  Section of Nephrology,
  Tulane Cancer Center Contributing Member:
  Genetics Program,
  Tulane University School of Medicine, New Orleans, LA.

Dr. Zubaida Saifudeen, a COBRE Junior Faculty Investigator, presented a seminar titled "P53, Growth Factors and a Dash of Glucose: A Recipe for Building a Kidney," on March 23, 2017.

SUMMARY:

Nephron abundance varies amongst individuals and populations, with demonstrated influence of genetics and maternal nutritional status on nephron number in humans. Nephron progenitor cell (NPC) availability during kidney development is a major determinant of nephron number at birth. Low nephron endowment results in hypertension and chronic kidney disease, both clinically significant diseases without a cure. Despite the critical importance of NPC availability for renal function across the life course, little is known about the mechanisms controlling NPC self-renewal versus differentiation. Dr. Saifudeen's seminar focused on the lab's recent findings that suggest glycolysis is a pivotal determinant of nephron progenitor cell fate, with a high glycolytic flux supporting self-renewal and inhibition stimulating differentiation. Manipulating intermediary metabolism shifts the balance between NPC cell self-renewal and differentiation.

Continued...

Her lab has published on the requirement of the tumor suppressor protein p53 for normal kidney development, specifically to maintain energy and metabolic homeostasis in the NPC. P53-null mice demonstrate nephron deficit and increased BP by 2 months of age. She now showed that Li-Fraumeni Syndrome patients who are p53 mutation carriers demonstrate increased kidney defects and differences in GFR. She proposed that manipulating metabolism may allow optimization of kidney development and nephron endowment in at-risk patients.

- **Thomas M. Coffman, MD**
  Professor, Cardiovascular & Metabolic Disorders Programme,
  Dean, Duke-NUS Medical School, Singapore,
  James R. Clapp Professor of Medicine,
  Professor of Cell Biology & Immunology,
  Director, Cardiovascular Research Center,
  Duke University, School of Medicine, Durham, NC.

Dr. Thomas M. Coffman, a COBRE EAC member, presented a special THRCE seminar titled "Vascular actions of AT1 Angiotensin Receptors in Hypertension," on March 30, 2017.

SUMMARY:

An essential link between the kidney and blood pressure control has long been recognized. This is primarily based on the premise that impaired capacity of the kidney to excrete sodium in response to elevated blood pressure is a major contributor to hypertension, irrespective of the initiating cause. Although recent work has demonstrated substantial complexity in salt homeostasis and disposition of dietary salt loading, there is ample evidence indicating that pathways controlling key sodium transporters in kidney epithelia have a critical impact on hypertension pathogenesis, supporting a model in which impaired renal sodium excretion is a final common pathway through which vascular, neural and inflammatory responses raise blood pressure. The renin-angiotensin system (RAS) is one of the critical regulators of blood pressure and our previous studies have suggested actions of the RAS in hypertension are primarily mediated through control of renal sodium excretion. Moreover, these effects are orchestrated through coordinated activation of AT1 angiotensin receptors in kidney epithelium and vasculature.

Continued...

To define the role for actions of vascular AT1A receptors in blood pressure regulation and hypertension pathogenesis, we generated mice with cell-specific deletion of AT1A receptors in smooth muscle cells (SMKOs) using Loxp technology and Cre transgenes with robust expression in both conductance and resistance arteries1. We find that elimination of AT1A receptors from vascular smooth muscle cells (VSMCs) causes a modest (~8 mm Hg) and significant reduction in baseline blood pressure and exaggerated sodium sensitivity in mice. In addition, the severity of Ang II-dependent hypertension is dramatically attenuated in SMKOs and this protection against hypertension is associated with enhanced urinary excretion of sodium. Despite the lower blood pressures in SMKOs, acute vasoconstrictor responses to Ang II in the systemic vasculature were largely preserved (~80% of control), due to exaggerated activity of the sympathetic nervous system (SNS) rather than residual actions of AT1B receptors. By contrast, Ang II-dependent responses in the renal circulation were almost completely eliminated in SMKOs (~5-10% of control). These findings suggest that direct actions of AT1A receptors in VSMCs are essential for regulation of renal blood flow (RBF) by Ang II. These studies highlight the powerful capacity of Ang II-dependent vascular responses in the kidney to impact natriuresis and blood pressure control.

Publications

Recent Publications (includes those omitted from previous newsletters)

- **El-Dahr S, Hilliard S, Saifudeen Z**. Regulation of kidney development by the Mdm2/Mdm4-p53 axis. *J. Mol. Cell. Biol. 9(1), 26–33, 2017.* PMID: 28096292.
- **El-Dahr SS, Li Y, Liu J, Gutierrez E, Hering-Smith KS, Signoretti S, Pignon JC, Sinha S, Saifudeen Z.** p63+ ureteric bud tip cells are progenitors of intercalated cells. *JCI Insight. 2017 May 4;2(9). pii: 89996. doi: 10.1172/jci.insight.89996. [Epub ahead of print].* PMID: 28469077, PMCID: PMC5414549.
- **Franco M, Bautista-Pérez R, Cano-Martínez A, Pacheco U, Santamaría J, Del Valle-Mondragón L, Pérez-Méndez O, Navar LG**. Physiopathological implications of P2X1 and P2X7 receptors in regulation of glomerular hemodynamics in angiotensin II-induced hypertension. *Am J Physiol Renal Physiol. 2017 Apr 12:ajprenal.00663.2016. doi: 10.1152/ajprenal.00663.2016. [Epub ahead of print].* PMID: 28404593.
- **Gao J, Kerut EK, Smart F, Katsurada A, Seth D, Navar LG, Kapusta DR.** Sympathoinhibitory Effect of Radiofrequency Renal Denervation in Spontaneously Hypertensive Rats With Established Hypertension. *Am J Hypertens. 2016 Dec 1;29 (12):1394-1401. doi: 10.1093/ajh/hpw089.* PMID: 27538721.
- **Hilliard SA, El-Dahr SS.** Epigenetics of Renal Development and Disease. Yale *J Biol Med. 2016 Dec 23;89 (4):565-573. Review.* PMID: 28018145. PMCID: PMC5168832.
- **Lara LS, Bourgeois CR, El-Dahr SS, Prieto MC.** Bradykinin/B2 receptor activation regulates renin in M-1 cells via protein kinases C and nitric oxide. *Physiol Rep. 2017 Apr;5 (7). pii: e13211. doi: 10.14814/phy2.13211.* PMID: 28373410. PMCID: PMC5392507.
- **Munoz Mendoza J, Isakova T, Cai X, Bayes LY, Faul C, Scialla JJ, Lash JP, Chen J, He J, Navaneethan S, Negrea L, Rosas SE, Kretzler M, Nessel L, Xie D, Anderson AH, Raj DS, Wolf M; CRIC Study Investigators**. Inflammation and elevated levels of fibroblast growth factor 23 are independent risk factors for death in chronic kidney disease. *Kidney Int. 2017 Mar;91(3):711-719. doi: 10.1016/j.kint.2016.10.021. Epub 2016 Dec 22.* PMID: 28017325.
- **Pingili AK, Davidge KN, Thirunavukkarasu S, Khan NS, Katsurada A, Majid DSA, Gonzalez FJ, Navar LG, Malik KU**. 2-Methoxyestradiol Reduces Angiotensin II-Induced Hypertension and Renal Dysfunction in Ovariectomized Female and Intact Male Mice. *Hypertension. 2017 Jun;69(6):1104-1112. doi: 10.1161/HYPERTENSIONAHA.117.09175. Epub 2017 Apr 17.* PMID: 28416584, PMCID: PMC5426976
- **Satou R, Kobori H, Katsurada A, Miyata K, Navar LG.** Quantification of intact plasma AGT consisting of oxidized and reduced conformations using a modified ELISA. *Am J Physiol Renal Physiol. 2016 Dec 1;311(6):F1211-F1216. doi: 10.1152/ajprenal.00320.2016.* PMID: 27511456. PMCID: PMC5210198.
- **Song R, Janssen A, Li Y, El-Dahr SS, Yosypiv IV.** Prorenin receptor controls renal branching morphogenesis via Wnt/β-catenin signaling. *Am. J. Physiol. (Renal) 312: F407-F417, 2017.* PMID: 28031172.
- **Yamaleyeva LM, Lindsey SH.** Potential for miRNAs as Biomarkers and Therapeutic Targets in Preeclampsia. *Hypertension. 2017 Apr;69(4):580-581. doi: 10.1161/HYPERTENSIONAHA.117.08587. PMID*: 28193710.
- **Yosypiv IV**. Prorenin receptor in kidney development. *Pediatr Nephrol. 2017 Mar;32 (3):383-392. doi: 10.1007/s00467-016-3365-x*. PMID: 27160552.
- **Zimmerman MA, Hutson DD, Trimmer EH, Kashyap SN, Duong JL, Murphy B1, Grissom EM, Daniel JM, Lindsey SH.** Long- but not short-term estradiol treatment induces renal damage in midlife ovariectomized Long-Evans rats. *Am J Physiol Renal Physiol. 2017 Feb 1;312(2):F305-F311. doi: 10.1152/ajprenal.00411.2016. Epub 2016 Nov 9.* PMID: 28153915, PMCID: PMC5336589.

Presentations

From January 1st through April 30th, 2017 investigators and physicians affiliated with T.H.R.C.E. participated in the following regional, national, & international meetings.

Southern Regional Meeting, NO, LA; Feb. 11-13, 2017

- **Curnow A, Gonsalez SR, Majid DS, Morcillo LDL, Prieto MC.** Reduced Nitric oxide regulates renin synthesis and secretion in the collecting duct. Abstract 552.
- **Song S, Yosypiv IV, Castillo A**. Reduced prorenin receptor (PRR) gene dosage in nephron progenitors in mice programs hypertension later in life. Abstract 632. *Young Investigator Scholar Award Winner (SSPR).*
- **Wong CT, Ribo VR, Rosales C, Prieto MC.** Plasma levels of soluble prorenin receptor increase with age and are associated with systolic blood pressure in male mice. Abstract 638. *SSPR Trainee Travel Award Recipient.*
- **Yadav S, Huang W, Hamm LL, Hering-Smith K.** Renal response to acidosis: RNA-Seq. Abstract 635. *SSCI Nephrology Young Investigator Scholar Award Winner*.

29th Annual Health Sciences Research Days, Tulane University, NO, LA; Feb. 20-21, 2017

- **Abshire CM, Reverte-Ribo V, Rosales-Martinez C, Zimmerman MA, Miller KS, Prieto MC, Lindsey SH.** Importance of Axial Length in the Detection of Carotid Artery Stiffness Induced by a High Fat Diet.
- **Bundy JD, Chen J, He J.** Risk Factors for progression of coronary artery calcification inpatients with chronoic kidney disease.
- **Butcher SM, Miyada K, Zsombok A.** Pancreas-related neurons can be identified and targeted for patch-clamp electrophysiological; recording in the mouse brain using pseudorabies virus-152.
- **Clark GC, Abshire CA, Reverte Ribo V, Rosales CB, Zimmerman MA, Prieto MC, Lindsey SH, Miller KS.** Comparative mechanical assessment of arterial stiffness in high fat mice
- **Cypress MW, Sato R, and Navar, LG.** High glucose-induced upregulation and angiotensinogen in cultured proximal tubular cells.
- **Du Y, Zhang T, Sun D, Bazzano L, Qi L, He J, Krousel--Wood M, Whelton P, Chen W, Li S.** The association between childhood obesity and adulthood carotid intima-media thickness is modified by serum adiponectin levels.
- **Enix CL, Butcher SM, Molinas A, Miyada K, Anwar IJ, 1,Zsombok A.** TRPV1 Expressing neurons in the hypothalamus.
- **Edward JA, Pankey EA, Jupiter RC, Lasker GF, Yoo D, Reddy VG, Peak TC, Chong I, Jones MR, Feintech SV, Lindsey SH, Kadowitz PJ.** Analysis of erectile responses to bradykinin in the anesthetized rat.

Presentations

Continued...

- **Gao H, Derbenev AV.** GABA and Glycine: Fine tuning for inhibitory control of brainstem RVLM neurons.
- **He J, Melnik L, Komin A, Starr CG, Fuselier T, Wiedman G, Morris CF, Hristova K, Gallaher W, Garry R, Wimley WC.** The Delta peptide of ebola virus has potent vivoporin activity.
- **Hodges NA, Barr RW, Murfee WL.** The effect of media type on nerve presence in cultured microvascular networks with blood vessels and lymphatics.
- **Hymel SJ, Cosgrove KM, Woods TC, Bazan HA, Khismatullin DB.** A Novel Computational Model of the Carotid Artery to Determine Fluid Dynamic Effects on Atherosclerotic Plaque Instability
- **Li Y, Baddoo MC, Liu J, Saifudeen ZR, Adli M, El-Dahr SS.** Epigenomic Profiles Identify Age Associated Chromatin State Transitions in Nephron Progenitors.
- **Molinas AJR, Gao H, Qiao X, Miyata K, Zsombok AZ.** Cellular properties of liver-related PVN neurons in DB/DB mouse.
- **Motherwell J, Azimi M, Spicer K, Alves N, Breslin J, Katakam P, Murfee WL**. Evaluation of Smooth Muscle Cell Function in the Rat Mesentery Culture Model.
- **Pollock BD, Stuchlik P, Guralnik J, Bertisch SM, Redline S, Chen W, Harville EW, Bazzano LA.** Relationship between daytime sleepiness and poor physical; performance in middle-aged adults of the Bogalusa Heart Study.
- **Nguyen CN, Kumar P, Pandya K, and Pandey KN.** The role of angiotensin II and vitamin D on Natriuretic peptide receptor-A Gene expression.
- **Sato R, Dugas CM, Jiao L, El-Dahr S, Saifudeen Z.** Characterization of the renin-angiotensin system in induced pluripotent stem cell-derived human kidney organoids.
- **Sheats, JL, Rose D, Bazzano L, Bordnick P, Krousel-Wood MT.** The development of a participant-informed Mhealth intervention to promote healthy eating among overweight African American men and women.
- **Stuchlik P, Pollock B, Chen W, Harville E, Bertisch S, Redline S, Bazzano L.** Sleepiness and subclinical measures of atherosclerosis in a bi-racial cohort: The Bogalusa Heart Study
- **Suarez-Martinez AD, Kaplan D, Huang K, Meadows S, Bierschenk S, Sperandio M, Murfee WL**. Development of the ex Vivo Mouse Mesometrium Model to Investigate Multicellular Dynamics During Angiogenesis.
- **Williams, L, Peacock E, Bazzano L, Sarpong D, Krousel-Wood M.** Factors associated with complimentary and alternative medicine use among adherent versus non-adherent older women and men.

Presentations

Continued...

- **Yadav S, Huang W, Hamm LL, Hering-Smith KS.** Renal response to acidosis: RNA-SEQ
- **Zimmerman MA, Lindsey SH.** Bazedoxifene Induces Greater Vascular Responses than Estradiol Independent of Sex and GPER.

Experimental Biology 2017, Chicago, IL, April 2 2– 26, 2017

- **Abshire CM, Reverte-Ribo V, Rosales-Martinez C, Zimmerman MA, Miller KS, Prieto MC, Lindsey SH.** Importance of Axial Length in the Detection of Carotid Artery Stiffness Induced by a High Fat Diet. W84 1068.1. Abstract #4200.
- **Arise KK, Kumar P, Pandya K, Pandey KN.** Angiotensin II-Mediated Repression of Guanylyl Cyclase/Natriuretic Peptide Receptor-A Gene Expression Involving CREB, HSF4a, and HDAC1/2 in Mesangial Cells. B37 908.9.
- **Das S, Krazit ST, Pandey KN**. Endothelial Cell Dysfunction Is Associated with the Development of Hypertension and Cardiac Hypertrophy in Npr1 Gene-Disrupted Mice. E285 1011.26.
- **Duong JL, Lindsey SH.** IGF-1 and Ang II Regulate Expression of the G Protein-Coupled Estrogen Receptor in Vascular Smooth Muscle Cells. D183 826.3. Abstract #5687.
- **Gao H, Derbenev AV.** GABA and Glycine: Fine Tuning for Inhibitory Control of Brainstem RVLM Neurons. E588 718.9.
- **Gao H, Miyada K, Qiao X, Molinas AJ, Zsombok A.** Plasticity of TRPV1-Dependent Neurotransmission in the Paraventricular Nucleus db/db Mice. W323 1089.4.
- **Hutson DD, Duong JL, Sato R, Lindsey SH.** Droplet Digital PCR Reveals Substantial Tissue-Specific Differences in Estrogen Receptor Expression Profiles. D198 827.11. Abstract #4165.
- **Kulthinee S, Navar LG, Roysommuti S**. Taurine Supplementation Improves Cardiac Ischemia/Reperfusion Injury by Inhibiting Intra-Cardiac Renin-Angiotensin System Overactivity in Adult Female Rats Perinatally Depleted of Taurine. E388 846.6.
- **Kumar P, Gogulamudi VR, Nguyen C, Pandey KN.** Class I-Specific HDAC Inhibitor Stimulates the Expression of Npr1 in Haplotype Mice by Enhanced Histone Acetylation at Different Lysine Residues. B61 FASEB J April 2017 31:755.8.
- **Majid DSA, Prieto MC, Castillo AA.** Chronic Treatment with an Inhibitor of Nitric Oxide Synthase Reduces Protein Expression of Tumor Necrosis Factor-Alpha Receptor Type 1 in Renal Cortical Tissues in Mice. F4 FASEB J, 31:A1030.4

Presentations

Continued...

- **Motherwell J, Azimi M, Spicer K, Alves N, Breslin J, Katakam P, Murfee WL**. Evaluation of Smooth Muscle Cell Function in the Rat Mesentery Culture Model. E171 831.13.
- **Mukerjee S, Zhu Y, Zhao J, Zsombok A, Lazartigues E.** Prenatal Exposure to Mild High Fat Diet Paradoxically Leads to Improvement in Cardio-Metabolic Function in the Offspring. F233 1057.2.
- **Suarez-Martinez AD, Kaplan D, Huang K, Meadows S, Bierschenk S, Sperandio M, Murfee WL**. Development of the ex Vivo Mouse Mesometrium Model to Investigate Multicellular Dynamics During Angiogenesis. E175 678.8.
- **Suarez-Martinez AD, Lane JH, Murfee WL**. Aged Microvascular Networks Display Increased Pericyte Coverage Along Capillaries. E157 830.1.
- **Spooner HM, Lindsey SH**. Impact of Sex and GPER on the Cardiovascular Effects of the Environmental Estrogen Bisphenol A. D202 827.15. Abstract #4544.
- **Woods TC, Sato R, Miyata K, Katsurada A, Lightell D, Navar LG**. Beneficial Effects of Sodium Glucose Cotransporter 2 Inhibition by Canagliflozin Independent of Its Glucose Lowering Effects in Type 2 Diabetes Mellitus. E328 1014.14.
- **Xu J, Molinas A, Zsombok A, Lazartigues E.** Receptor on Glutamatergic Neurons Regulate Cardiac Function Through Modulation of Excitability and Sympathetic OutflowW127 1071.2 At1.
- **Yadav S, Huang W, Coleman-Barnett J, Hamm L, Hering-Smith KS.** Renal Response to Acidosis: RNA-Seq and Role of NaDC1. E419 702.1.
- **Zimmerman MA, Lindsey SH.** Bazedoxifene Induces Greater Vascular Responses than Estradiol Independent of Sex and GPER. D191 999.5. Abstract #856.
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Calendar of Events

THRCE Seminars

May 18

Ihor V. Yosypiv, MD
Associate Professor, Department of Pediatrics,
Chief, Division of Pediatric Nephrology,
Tulane University School of Medicine, New Orleans, LA.
"Foxd1 is an upstream regulator of the renin-angiotensin system during metanephric kidney development."

June 15

Vecihi Batuman, MD, FACP, FASN
Professor, Department of Medicine,
Section of Nephrology & Hypertension,
Director, Medicine Service Line, SLVHCS,
Tulane University School of Medicine, New Orleans, LA.
Talk: TBA

June 29

Federico J. Teran, MD
Nephrologist, Department of Nephrology,
Section of Nephrology and Hypertension,
Tulane University School of Medicine, New Orleans, LA.
Talk: TBA

July 13

Ryosuke Sato, PhD
Assistant Professor, Department of Physiology,
Director, Molecular Core Facility,
Tulane University School of Medicine, New Orleans, LA.
Talk: TBA

July 27

Dewan S.A. Majid, MD, PhD
Professor, Department of Physiology,
Director, Mouse Phenotype Core Facility,
Tulane University School of Medicine, New Orleans, LA.
Talk: TBA

August 10

Hongbing Liu, PhD
Assistant Professor, Department of Pediatrics,
Tulane University School of Medicine, New Orleans, LA.
Talk: TBA

August 24

Kathleen Hering-Smith, PhD
Associate Professor, Department of Medicine,
Director, Tulane Freezer Farm,
Tulane University School of Medicine, New Orleans, LA
Talk: TBA

September 7

Efrain Reisin MD, FACP, FASN, FASH
Victor Chaltiel Professor of Medicine,
Chief, Section of Nephrology and Hypertension,
Louisiana State University Health Science Center, New Orleans, LA.
Talk: TBA

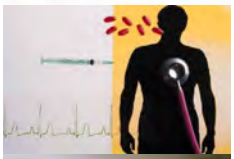
Conferences are held alternative Thursdays at 4:00pm in the Tulane Medical School, Pharmacology Library, Room 4700
***** Denotes the seminar date is not our normally scheduled day.***

CORE FACILITIES & SERVICES

Tulane Hypertension and Renal Center of Excellence (THRCE) houses 4 research core facilities that were developed during COBRE phases I and II and are now maintained and supported by a COBRE Phase III grant awarded by the NIH/NIGMS. These core facilities are essential for the support of basic, clinical, and translational research in hypertension and renal biology and provide unique research opportunities for emerging leaders by establishing an enriched environment in which to develop investigators in both the clinical and basic hypertension research. The resources and services provided by the Center's COBRE Core facilities can be utilized by both COBRE and other investigators within Tulane and other institutions for hypertension, cardiovascular and renal research. The 4 research Core facilities are:

- **The Molecular, Imaging, and Analytical Core**: Serves as the resource for instruments and equipment needed to perform advanced molecular biology, semi-quantitative immuno-histochemistry and bio-analytical experiments.
- **Animal and Gene-Targeted Core:** Maintains and generates new breeding pairs, performs genotyping, and maintains colonies of genetically manipulated mice and rats.
- **Mouse Phenotyping Research Core (MPRC):** Contains resources to support high-tech data collection capabilities that are unique in the State of Louisiana and essential to research requiring the utilization of an array of methodologies to perform measurements of cardiovascular, blood pressure and renal function in mice.
- **Clinical and Translational Core:** Promotes and facilitates clinical and translational studies in hypertension, kidney disorders, and related cardiovascular diseases.

Other activities of the Center include the sponsorship of local and regional meetings on hypertension and public education programs to increase awareness of the dangers of hypertension. For further information regarding the Core Facilities, please access **http://tulane.edu/som/thrce/core.cfm/**



T.H.R.C.E.

Tulane Hypertension & Renal Center of Excellence (THRCE) will appreciate any support for the continual development of the center and its CORE Facilities, the publication of the THRCE newsletters, and the support of the THRCE bi-weekly seminars series. All donations to the center and its activities are considered tax-deductible.

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http://tulane.edu/som/thrce/

The directors invite faculty members interested in participating in the activities of the T.H.R.C.E. to submit your name, phone number, fax number, and e-mail address to the Senior Administrative Program Coordinator, Nina R. Majid, by e-mail at htnctr@tulane.edu or regular mail to the address provided. Also, please forward all information (awards, publications, presentations and other news items) to this email address for inclusion in the next newsletter.