Pharmacology News

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TULANE UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PHARMACOLOGY

Message from the Chair: Dr. David Busija
Investing in people and technology

We are proud of the continuing efforts of the Department of Pharmacology faculty to advance the careers of our early stage scientists and to support the research efforts of the faculty and trainees in the department with purchase and implementation of state-of-the-art equipment. Recently, we advanced ***Dr. Bruna Visniauskas*** and ***Dr. Siva S. Sakamuri*** from post-doctoral fellowship status to the rank of Instructor with the intention of their further development into independent scientists with significant extramural grant funding. *Dr. Visniauskas* received her Ph.D. degree from the Universidad Federal de São Paulo, Brazil, and has been a fellow with **Dr. Sarah Lindsey.** *Dr. Visniauskas'* research examines how hypertensive females are more prone to disruption of circadian patterns of blood pressure. *Dr. Sakamuri* received his Ph.D. degree from the Osmania University, India, and has been a fellow with **Dr. Prasad Katakam**. *Dr. Sakamuri's* research examines how mitochondrial and cellular bioenergetics impact the responses of cardiomyocytes, vascular cells, and neurons under healthy and pathological states. Continuing our tradition of acquiring modern technology to maintain our competitiveness in publishing and securing grant funding, the department has purchased equipment to extend our studies of mitochondria, the powerhouses of the cells, to very small samples with novel technology and to characterize the physical properties of biologically active exosomes, which are small extracellular vesicles that are released by cells to influence the physiology and pathology of other cells.

See below for another success story for the Department of Pharmacology

Dr. Prasad Katakam promoted to Professor

It is my pleasure to announce the promotion of ***Prasad Katakam, M.D., Ph.D.,*** to Full Professor in the department, starting on January 1, 2023. Dr. Katakam received his M.D. from Andhra University and Ph.D. from the University of Georgia, where he became an ardent, life-long "Georgia Bulldogs" fan. His research focuses on several topics including effects of insulin resistance on the cerebral vasculature as well as nitric oxide and mitochondrial dynamics in the brain circulation. Dr. Katakam has been a faculty member at Tulane University in the Department of Pharmacology since arriving as an Assistant Professor in 2011 and was promoted to Associate Professor with tenure in 2017. ***Dr. Katakam earned his promotion to Professor based upon his excellence in research productivity, extramural funding, and teaching. Everyone that knows him characterizes him as a real "team player" and he has been tireless and selfless in support of students and faculty on all three campuses of Tulane University as well as supporting the national and international science community. He is an active participant*** in many professional societies, and in his role as a reviewer of manuscripts by prestigious journals and grant proposals submitted to the American Heart Association (AHA) and the National Institutes of Health (NIH). In addition to the teaching and mentoring of graduate and medical students, Prasad has directed our seminar series and successfully moved it from in-person to Zoom format during the COVID pandemic to meet the requirement of social distancing and restricted speaker travel. Prasad has also served a significant role in interviewing prospective medical students. ***Let's congratulate Dr. Katakam!***

Faculty News

Dr. David Busija

- ***Grant Award:*** NIH NIA 1R56AG075988-01A1, Effects on the brain microvasculature of age and circadian rhythm as risk factors for Alzheimer's disease, $589,530.00, 2022-2023
- ***Invited Speaker:*** Northeast Ohio Medical College, "Mitochondrial dynamics in the cerebral circulation during health, disease, and aging," Rootstown, OH, September 27, 2022
- ***Grant Submissions: (1)*** NIH NIA July 2022, and ***(2)*** NIH NIA November 2022
- ***Grant Reviewer: (1)*** ZRG1 MDCN-M(91) Study Section: Cellular and Molecular Aspects of the Blood-Brain Barrier and Neurovascular System and Therapeutic Strategies, July 7, 2022; and ***(2)*** Panel member and Co-Chair on Special Study Section to review grant applications in response to RFA AG 23-014
- ***Journal Reviewer:*** *American Journal of Physiology*
- ***Professional Service: (1)*** Finance Committee, American Physiological Society, ***(2)*** Treasurer Emeritus, Association of Medical School Pharmacology Chairs

Dr. Stephen Braun

- ***Grant Award:*** SBIR NIH NIAIA AI152709-01, PI (subcontract), "Advanced Generation Infection-proof Anti-HIV CAR T with YY1 RNAi to Block T cell Exhaustion," PI: Richard P. Junghans, PhD, MD (IT Bio, LLC)
- ***Invited Speaker:*** HIV Vaccine Group Task Force Meeting, Paris, France, December 10-12, 2022
- ***Poster Presentation:*** "AAV9 Biodistribution and expression in the PNS of Non-human Primates," European Society of Gene & Cell Therapy, Edinburgh, Scotland, October 11-14, 2022
- ***Grant Reviewer: (1)*** 2022 Emory Primate Research Center, Pilot Grant Reviewer; ***(2)*** NIAID Study Section, Special Emphasis Panel RFA-Ai-20-076, New Technologies for the in vivo delivery of gene therapeutics for an HIV Cure.
- ***Journal Reviewer:*** *Frontiers in Immunology, Frontiers in Microbiology, International J of Molecular Sciences, Viruses*

Dr. Jorge Castorena-Gonzalez

- ***Invited Speaker:*** ***(1)*** GRC Lymphatics 2022, Session: Lymphatic Drainage: Mechanisms, Mechanics, Imaging and Emerging Therapeutic Approaches. "Obesity-Induced Lymphatic Valve Dysfunction," Lucca (Barga), LU, Italy. November 1st, 2022. ***(2)*** Department of Physiology Seminar Series, "New Insights Into Obesity-Induced Lymphedema," Tulane School of Medicine New Orleans, LA December 12th, 2022.
- ***Grant Submission:*** R01 NIH NHLBI, June 2022
- ***Editorial Boards:*** *Microcirculation*: Lymphatic System Research Special Topics Issue (Guest Editor)
- ***Grant Reviewer:*** 22-23 AHA Fellowship Cell Transport (Basic Science 6)
- ***Journal Reviewer:*** *Frontiers Endocrinology, Microcirculation*
- ***Professional Service: (1)*** Awards Committee - APS Cardiovascular Section; ***(2)*** Membership Committee - The Microcirculatory Society, Inc.

Dr. Partha Chandra

- ***Invited Speaker:*** Department of Pharmacology, Tulane School of Medicine, "Circulating Plasma Extracellular Vesicle Proteins Indicates A Link to Neuropathogenesis," New Orleans, LA, September 16, 2022. ***Grant Submissions: (1)*** NIH NIA R01, MPI with Dr. David W. Busija, 7/6/22; ***(2)*** Allen Distinguished Investigator Program 2023, PI, 11/2/22.
- ***Journal Reviewer:*** *Cellular and Molecular Life Sciences, American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*

Dr. Suttira Intapad

- ***Grant Submission: (1)*** DoD Investigator-Initiated Research Award, 5/2022; and ***(2)*** DoD PRMRP Discovery Award in 2022.
- ***Invited Speaker:*** International Society of Hypertension, "Intrauterine growth restriction causes an alteration in kidney gene expression," presented in Generation and Life Course Factors in Hypertension session, Kyoto, Japan, October 16, 2022.
- ***Editorial Board Member:*** *The Kidney 360 Journal, Frontiers in Physiology, Frontiers in Pharmacology*
- ***Journal Reviewer:*** *Hypertension, Kidney 360 Journal*

Dr. Prasad Katakam

- ***Invited Speaker: (1)*** 2nd International Vascular Biology Meeting, Session: Impact of Microvascular Aging in Development and Progression of Cardiovascular Pathology. Title: "Energetics of mouse brain microvessels: Impact of age and sex," October 13-17, Oakland, CA; ***(2)*** Department of Pharmacology Seminar Series, Tulane University School of Medicine, Title: "Ischemia Reperfusion Injury of Brain and Uncoupling of Nitric Oxide Synthases," September 9, 2022; and ***(3)*** Department of Physiology,

Faculty News continued

Louisiana State University School of Medicine, Title: "Effects of Nitric Oxide Synthase Inhibitors on Mitochondrial Respiration," September 1, 2022

- ***Grant Submissions:*** Co-Investigator, NIH, Co-Sponsor, AHA Postdoctoral fellowships (two applications)
- ***Poster Presentation:*** "Amyloid-beta (1-42) peptide Impairs Mitochondrial Respiration in Brain Microvascular Endothelial Cells under Diverse Glycemic Conditions," with Sakamuri SS, Sure VN, and Mostany R, Brain & Brain PET 2022, Glasgow, Scotland; May 29 - June 1, 2022
- ***Reviewer:*** *Grants:* ***(1)*** Chairman: Special Emphasis Panel, 2023/01 ZRG1 ANIE-E (90) S Meeting 12/7/2022; ***(2)*** NIH Study Section: Integrative Vascular Physiology and Pathology (IVPP), 6/21/2022; ***(3)*** NIH Study Section: Acute Neural Injury and Epilepsy Study Section (ANIE), 10/20/2022; ***(4)*** 21-22 Transformational Project Award Vascular 1 Peer Review Panel, 5/6/2022; ***(5)*** Chairman: Louisiana State University Health Sciences Center Shreveport Pilot Grant Reviewer, 11/22; and ***(6)*** University of Utah-Washington University Diabetes Research Center Collaborative Grant Reviewer, 9/22
- ***Outreach and Mentor:*** Mentor, AHA HBCU Scholar Program (Mentees: Mallory Johnson, Sophomore, Xavier University College of Pharmacy and Kyla Mayo, Biology Pre-Med, Dillard University), Faculty Mentor for: BIRCWH amd COBRE Aging Center Investigators.

Dr. Sarah Lindsey

- ***Invited Speaker: (1)*** International Society for Applied Cardiovascular Biology (ISACB), "Sex Differences in Vascular Aging," Virtual presentation from meeting in Memphis, TN, 9/29/2022; and ***(2)*** 2022 Angiotensin Gordon Research Conference, "Sex Differences in the Vascular Response to Ang11;" Ventura, CA, 11/16/2022
- ***Professional Service:*** Elected to University Senate
- ***Grant Reviewer: (1)*** NIH Study Section, (Clinical Integrative Cardiovascular and Hematological Sciences (CCHS), June 2022; and ***(2)*** NHLBI, P01 Review
- ***Journal Reviewer:*** *AJP Heart, Biology of Sex Differences*

Dr. Ricardo Mostany

- ***Invited Speaker:*** Department of Physiology, Tulane University SOM,"Alterations in synaptic plasticity in healthy and pathological brain aging," New Orleans, LA, May 23, 2022
- ***Grant Submissions: (1)*** R01, National Institute of Mental Health. May 2022, Co-PIs: Drs. Braun, Chandra, Mostany; ***(2)*** R01, National Institute of Mental Health. May 2022, PI: Engler-Chiurazzi, Co-I: Mostany
- ***Moderator of a Symposium:*** 2022 Angiotensin Gordon Research Conference. Discussion Leader: Cellular and Tissue Plasticity, Organ Remodeling and Imaging. Ventura, CA, November 13-18, 2022
- ***Poster Preseantations: (1)*** "The role of infectious agent driven mitochondrial dysfunction in Alzheimer's Disease," IDWeek 2022, Washington, D.C. October 19 – 23, 2022; ***(2)*** "Intermittent infection via cytomegalovirus induces cognitive deficits and alters neurobiological energy metabolism in adult mice," Brain & Brain Pet 2022, Glasgow, May 29 – June 1, 2022
- ***Grant Reviewer:*** NIH Center for Scientific Review, Sensory-Motor Neuroscience Study Section, Ad hoc reviewer, May 2022
- ***Journal Reviewer:*** *Frontiers in Aging Neuroscience*

Dr. Ibolya Rutkai

- ***Grant Award:*** "Role of mitochondrial fission in the aging cerebral vasculature," Tulane Aging COBRE (P30GM145498), 07/01/2022-05/31/2023, $50,000
- ***Award:*** Tulane Center of Excellence in Sex-Based Biology & Medicine for preliminary data collection, $10,000
- ***Invited Speaker:*** "Role of Vascular Mitochondria in Brain Aging," Tulane Aging Interest Group Meeting, Zoom, 08/08/2022
- ***Grant Submission:*** NIA R01 10/05/2022

University and SOM Committees: ***Dr. Braun:*** Tulane Primate Research Center (TNPRC) Space Committee; ***Dr. Busija:*** Tulane Professionalism Program Advisory Board; ***Dr. Clarkson:*** SOM Pass/Fail Task Force, BMS Steering, Student Professionalism & Promotion, Phase 2 Curriculum Advisory, Innovation Council; ***Dr. Lindsey:*** Tulane University Senate, BMS Student Association Faculty Advisor, Women in Medicine and Science Programming, ***Dr. Intapad:*** Faculty Advisory, BMS Social Media-Recruiting; ***Dr. Katakam:*** Chairman: BMS Curriculum, BMS PhD Admissions, BMS Steering (Standby), GMF Faculty Advisory and Admissions, Vice-Chair: GMF Personnel & Honors, SOM Admissions Committee, Neuroscience PhD Program Committee; ***Dr. Mostany:*** Tulane Brain Institute Executive Committee, Chair: Tulane Brain Institute Seminar Series, Director, Neuroscience PhD Program, Tulane Brain Institute, Graduate Programs committee, School of Science and Engineering, SOM Student Professionalism and Promotion

Laboratory News: **Pharmacology (Pharm), Brain Institute (BI), Biomedical Sciences (BMS), Neuroscience Undergraduate (NU), Neuroscience Program (NP), School of Science and Engineering (SSE), Biomedical Engineering (BE), Tulane National Primate Research Center (TNPRC)**

Laboratory of Dr. David Busija

Christopher (Chris) Gonzales, joined the Busija lab in September 2022 as a Medical Research Technician, 2022.

Laboratory of Dr. Steven Braun

Gabriel Sanchez, Micro/Immuno MS program passed his Master's Thesis Defense. ***Congratulations Gabriel!!***

Zenere G, Midkiff C, Johnson NM, Wu C, Wimley WC, and Kaur A, of the Braun lab have submitted a paper, "Extracellular domain, hinge, and transmembrane determinants affecting surface expression of a novel CD4 anti-HIV chimeric antigen receptor (CAR) construct."

Laboratory of Dr. Suttira (Joy) Intapad

Benjamin Bhunu, Graduate Student, (BMS), passed his prospectus exam on 11/19/2022. His title was, "Age and Sex Specific Evaluation of Renal Function and Sphingosine 1 Phosphate Signaling in Offspring of a Novel Mouse Model of Placental Insufficiency." ***Congratulations Ben!!***

Laboratory of Dr. Sarah Lindsey, Our webpage

Dr. Bruna Visniauskas (Pharm)***(1)*** presented a poster, "Sex differences in disruption of blood pressure and circadian gene expression during Ang II-induced hypertension," at the Angiotensin Gordon Research Conference, Ventura, CA, November 13-18, 2022; and ***(2)*** has been promoted to Instructor in the Department of Pharmacology. ***Congratulations Dr. Visniauskas!!*** Dr. Visniauskas has a first authored paper. Please see Page 6.

Isabella Kilanowski-Doroh, Graduate Student (BMS) had a baby girl on September 16, 2022. *Congratulations Isabella!!*

Chase Richard (NP) has joined joined the Lindsey Lab.

Riva Menon (NP) was a summer student for TURN.

Sophia Blessinger (CMB) is an undergraduate working in the Lindsey Lab.

Zaidmara Diaz, Lab Technician, has returned to the lab after a year teaching in France.

Dr. Ana Paula Leite, (Pharm) joined the Lindsey Lab as a post-doctoral fellow in September and was an invited speaker at the Angiotensin Gordon Research Converence, "Important Roles of Sirt3 on Kidney Functions of Wildtype and Sirt Knockout Mice During Angiotensin II-Induced Hypertension, November 13-18, 2022.

Laboratory of Dr. Prasad Katakam

Dr. Siva S. Sakamuri, (Pharm), has been promoted to Instructor in the Department of Pharmacology. ***Congratulations Dr. Sakamuri!!*** Dr Sakamuri has two first author papers. Please see Page 6.

Dr. Wesley R. Evans (NP), defended his doctoral thesis, on August 23, 2022. "Recurrent hypoglycemia exacerbates cerebral infarct volume and is associated with disrupted cerebral vascular properties in vivo," ***Congratulations Dr. Evans!!***

Laboratory of Dr. Ricardo Mostany Our website

Cemo Semmedi (BI), presented a poster, "Health aging upregulates the initiation of the classical complement cascade by corticalneurons independent of amyloid-ß pathology. 4th Americas School of Neuroimmunology (ASNI). The Ohio State University, Columbus, OH. July 11-14, 2022.

Master's in Pharmacology Graduate Spotlight: Peiton K. Jarmon, Tulane SOM Class of 2025

My experiences as a Black woman and a first-generation college student taught me the importance of following your dreams in the face of adversity. That understanding fostered a strong sense of empathy, compassion, self-awareness, and the responsibility to help those not prioritized by society. As a black pre-med student, I often navigated the road to medicine alone, and during my undergraduate career I also faced challenges that negatively impacted my academic progress. ***It is very difficult to become something you have not seen.*** It's even more difficult when your path is not straight forward.

After searching through several graduate programs geared toward preparing students for medical school, I applied to Tulane Master of Science in Pharmacology Program. It was the best decision I could have made for my academic career.

During our first day of classes, Dr. Katakam set the tone for my time at Tulane. He said to my cohort, "Your dreams are now our dreams." At that moment, I knew I had made the right choice. Every day when I showed up at class, I knew that my professors were as committed to my success as I was. Drs. Katakam and Lindsey served as mentors throughout the program and after graduation.

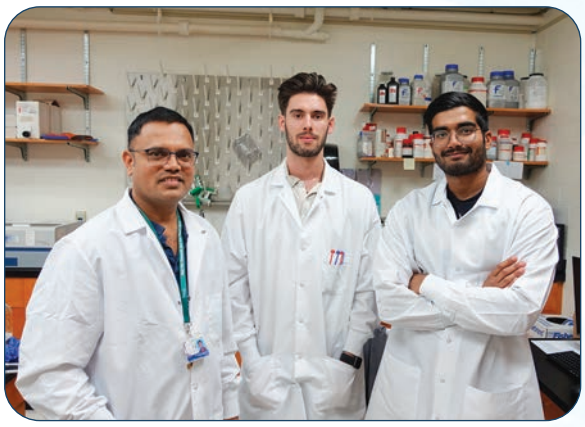
Dr. Katakam served as a constant source of encouragement and reassurance while I studied for the MCAT. Dr. Lindsey's continued support also allowed me to advance my research skills. ***With her help, I was accepted into the MD Anderson's First-Year Medical Student Program, a 10-week summer research program, where I investigated TP53's ability to augment the sensitivity of CA125 in the early detection of ovarian cancer.***

The Tulane Master of Science in Pharmacology Program not only helped strengthen my academic record to be more competitive for medical school admission, but it also prepared me to succeed once accepted. ***The Masters in Pharmacology Program provided a solid foundation for my preclinical coursework and put me one step closer to my goal of becoming a gynecologic oncologist.*** I am forever grateful for the pharmacology faculty. ***They believed in me and provided me with an opportunity that has changed my life.***

New Faces in Pharmacology

Pictured left to right, above, are new members of the **Lindsey Lab**: ***Sophia Blessinger*** is a Cell and Molecular Biology undergraduate working on GPER and coagulation. ***Dr. Ana Paula de Oliveira Leite*** is a Postdoctoral Fellow. She earned her PhD from the Department of Physiology at the Universidade Federal de Sao Paulo, Brazil. She is studying the impact of cardiovascular disease on the vascular response to hormone therapy. ***Zaidmara Diaz*** received her BS from Tulane and worked previously in the lab. She has returned as the Cardiovascular Lab Technician. ***Riva Menon*** is a Neuroscience undergraduate student looking at sex differences and arterial stiffness using pressure myography. ***Chase Richard*** is a Neuroscience PhD student in Neuroscience assessing the impact of hypertension vs. arterial stiffness on female cognition, dendritic plasticity, and neurovascular coupling.

Pictured left to right and center, above, are new members of the **Mostany Lab**: ***Heather Sendall***, undergraduate in Biological Chemistry and Psychology, is quantifiying dendritic spines. ***Zach Plumley***, B.S. in Psychology from Arizona State University, is a Neuroscience PhD student examining hypertension and high-fat diet effects on estrogen replacement therapy's ability to be neuroprotective in postmenopausal mice. ***Maxwell Moore,*** BS in Neuroscience from Tulane, is a Neuroscience MS student student investigating homeostatic plasticity mechanisms in a mouse model of Alzheimer's disease. ***Courtney Hospes***, Neuroscience undergraduate is assisting on a study determining a baseline for age-related differences in inhibitory synapses to study pathology alterations. Seated in the center is ***Melissa Breiner,*** Neuroscience undergraduate, is studying mouse whisker-dependent texture discrimination



Pictured left to right, above are new members of the **Katakam Lab.** ***Dr. Lokanatha Oruganti***, PhD, Sri Venkateswara University, India completed a Postdoctoral Fellowship in Critical Care and Environmental Medicine at Tulane. As a Postdoctoral Fellow in Pharmacology, he is working on mechanisms underlying cerebrovascular dysfunction. ***William Wisen,*** BS in Economics from Tulane, is a Research Technician studying intra-arterial drug delivery for cerebral ischemia-reperfusion injury. ***Rishith Vaddavalli,*** Neuroscience undergraduate, is working on stroke research.

Pictured above is the newest member of the **Busija Lab.** ***Christopher Gonzales*** earned an MS from SUNY, Buffalo, NY and worked previously in the Department of Pharmacology with Dr. Howard Mielke. Chris is a Medical Research Technician working on image processing and analysis of endothelial cell mitochondria in mouse brain acquired by in-vivo two-photo excitation microscopy and trasmission electron microscopy.

Thank you to those who have donated to The Dr. Krishna C. Agrawal Education Fund to support our students

This endowed fund supports students in the Department of Pharmacology.

To read the biography of Dr. Krishna please go to: Agrawal Fund

To support Pharmacology students through The Dr. Krishna C. Agrawal Education Fund or to make a gift to the Department of Pharmacology, please contact

Jean Paul Perrilliat, Senior Development Officer for Tulane University School of Medicine, 504-314-7633, or jperril@tulane.edu

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Publications

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Departmental Mission Statement:

We will educate and train medical and graduate students in the principles of pharmacology using modern techniques and will conduct state-of-the-art research in pharmacology-related fields in order to expand the frontiers of science and medicine.