

# Pharmacology News

Volume 10, Issue 1  
Fall 2020

TULANE UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PHARMACOLOGY

## Message from the Chair: Moving forward during difficult times

Despite the challenges of the COVID-19 pandemic, the department continues to move forward in research, teaching, and service. We have recruited a new faculty member, **Dr. Jorge A. Castorena-Gonzalez**, as an Assistant Professor. Dr. Castorena-Gonzalez brings new expertise to the department and Tulane University in the area of lymphatic system biology (see below). Lymphatics are critical components of the cardiovascular system but study of their importance and unique properties has only recently been recognized. In addition, **Dr. Ibolya Rutkai** has rejoined our department as an Assistant Professor. She will establish an independent research program focusing on mitochondria in the neurovascular unit using her unique mouse model in which mitochondria are labeled only in endothelial cells and imaged with two photon microscopy. We have continued to invest in new equipment and have renovated laboratory space in order to meet the emerging needs of our faculty. *The faculty continue to submit grants at a high rate. Of particular note is that our faculty have submitted a large number of collaborative grants with faculty outside our department.* Our MS in Pharmacology Program continues to thrive and this year we have 29 students. Our faculty, under the leadership of **Dr. Craig Clarkson**, have created a “hybrid” curriculum for the MS Program and for the medical students including both on-line and in-person instruction. Consistent with on-line education, **Dr. Prasad Katakam** has successfully adapted our seminar program to a Zoom format. Our faculty continue to contribute in important ways to service at many levels. **Dr. Sarah Lindsey** has agreed to be Vice Chair of the reorganized Tulane Animal Care and Use Committee and **Dr. Katakam** continues to play a major role in reviewing grant applications for the American Heart Association. In addition, we rely on our staff and technical support personnel to keep the department moving forward in a smooth manner. This year, **Ms. Debbie Sanders** and **Ms. Dana Liu** have both been recognized by the President's Excellence Award for their efforts on behalf of the department and Tulane.

## Dr. Jorge A. Castorena-Gonzalez, Assistant Professor, joins Pharmacology Faculty



**Dr. Jorge A. Castorena-Gonzalez** joined the department in July 2020 as an Assistant Professor. He received his BSc and MSc in Physics from the University of Guanajuato in Leon, Mexico. In 2014, he graduated from the University of Missouri PhD program in Bioengineering. At the same institution, and prior to coming to Tulane, he was a postdoctoral fellow under the mentorship of Dr. Michael J. Davis.

During his time in Missouri, **Dr. Castorena-Gonzalez** acquired strong training in blood and lymphatic vascular physiology and participated in research projects in renowned laboratories such as CERN, Fermilab, and NASA. His research is currently funded by the NIH, and his research attempts to understand the mechanisms by which a dysfunctional lymphatic system contributes to the onset and development of cardiovascular diseases. Dr. Castorena-Gonzalez is particularly intrigued by the mechanisms that regulate intercellular communication in the lymphatic vasculature in health and disease (i.e., obesity, aging, and/or

diabetes). In addition, he has a strong interest in applying his physics and engineering background to develop novel techniques in physiology and software tools for the automated processing and analysis of data. **Dr. Castorena-Gonzalez** feels honored to have joined Tulane University and the Department of Pharmacology, and he is excited about forming multi-disciplinary collaborations that can eventually be translated into novel advances in the biomedical sciences.

## Faculty News

All speaker presentations by the faculty and trainees were given via Zoom or other virtual means

### Dr. David Busija

- **Submitted Grants:** (1) NIH R01, 7/2020; (2) NIH Supplement, 10/2020; (3) NIH R01, 11/2020; and (4) NIH R21, 11/2020.
- **Grant Reviewer:** Chairperson: NIH Study Section: MDCN-M The Blood-brain Barrier, Neurovascular System, and CNS Therapeutics, 10/20/1010.
- **Professional Service:** (1) American Society for Pharmacology and Experimental Therapeutics (ASPET), Division of Pharmacology Education committee; and (2) Treasurer: Association of Medical School Pharmacology Chairs.

### Dr. Stephen Braun

- **Submitted Grants:** NIH NIAID R21, 10/15/2020, MPI: Dr. Abdel-motal.
- **Reviewer:** *AIDS, Infection and Drug Resistance*, and *Stem Cells-Translational Medicine*.

### Dr. Jorge Castorena-Gonzalez

- **Grant Award:** "Endothelial dependent mechanisms of lymphatic dysfunction in metabolic syndrome and type-2 diabetes associated with obesity," NIH, R00-HL141143, \$746,287, 3 years, July 2020–June 2023.
- **Invited Speaker:** (1) The Microcirculatory Society, Inc., Summer Series: Microvascular Exchange, "Intercellular Communication in the Lymphatic Wall: Role of Connexins in Lymphatic Contractile and Valve Function," June 2020; (2) Tulane School of Medicine, Department of Pharmacology Seminar Series, "Lymphatic Function and Dysfunction: Intercellular Communication in the Lymphatic Wall," New Orleans, LA, September 2020.
- **Journal Reviewer:** *Journal of Physiology*, *Translational Research-The Journal of Laboratory and Clinical Medicine*.

### Dr. Partha Chandra

- **Journal Reviewer:** *Cancers (Basel)*

### Dr. Suttira Intapad

- **Invited Speaker:** The Biochemistry and Molecular Biology Society of Zimbabwe Symposium, "Fetal programming of adult diseases," December 16, 2020.
- **Grant Submission:** (1) NIH R01, 10/05/2020; and (2) Bridge Grant, Tulane SOM, 12/8/2020.
- **Journal Reviewer:** *Cardiovascular Research*, and *Hypertension*.
- **Editorial Board Member:** *Kidney 360*.
- **Topic editor:** *Frontiers Physiology*: "Hypertension and Chronic Kidney Injury or Failure,"

### Dr. Prasad Katakam

- **Grant Submissions:** (1) NIH R01, Multi-PI, November 2020, and (2) three other grants as Co-I and one as consultant.
- **Invited Speaker:** (1) Department of Pharmacological and Pharmaceutical Sciences, University of Houston College of Pharmacy, "Aging Related Alteration in Cerebral Microvascular Bioenergetics," September 3, 2020; (2) Clinical Pharmacology Grand Rounds, Division of Clinical Pharmacology, Vanderbilt University Medical Center, "Cerebral Microvascular Bioenergetics: Impact of Sex, Aging, and Alzheimer's Disease," November 3, 2020; (3) Microcirculatory Society-Fall Seminar Series: Microvascular Exchange-Advances in Cerebrovascular Physiology, "Impact of Aging on Bioenergetics of Brain Microvessels" November 20, 2020; and (4) North East Ohio Medical University (NEOMED), "Cerebral Microvascular Bioenergetics: Impact of Sex, Aging, and Alzheimer's Disease," November 24, 2020.
- **Reviewer:** *Grants:* NIH Acute Neural Injury and Epilepsy, Ad hoc member, 10/2020; *Journals:* *Nature Reviews*, *Stroke*, and *Hypertension*.
- **Editorial Board:** *Stroke* and *Frontiers Vascular Physiology*.

## Faculty News continued

- **Outreach:** American Heart Association (AHA) HBCU Scholar Mentor, Mentee: Da'Sha Richard, Sophomore, Xavier University of New Orleans, 2020-2021.

### Dr. Sarah Lindsey

- **Appointment:** Vice-Chair of the Tulane New Orleans Campuses IACUC, December 2020.
- **Grant Submissions:** (1) NIH P01, Project 3 and Core B Leader, PI: Jill Daniel, May 2020; (2) NIH R01, June 2020; (3) Administrative Supplement, October 2020; and (4) NIH R01, October 2020, PI: Minolfa Prieto.
- **Invited Speaker:** (1) AHA Hypertension Council, "Estrogen Receptor Signaling in Vascular Remodeling and Stiffness," September 18, 2020; and (2) Robert M. Berne Cardiovascular Research Center, University of Virginia, "Targeting Estrogen Receptors in Cardiovascular Disease," November 12, 2020.
- **Reviewer:** NIH-NHLBI Mentored Transition to Independence Review Committee, May 2020.

### Dr. Howard Mielke

- **Award:** Private grant award from the Ling and Ronald Cheng Fund, \$36,000 for six months.
- **Member: Governing Board and Invited Speaker:** Member of governing board of Partnership Effort for the Advancement of Children's Health (PEACH), a collaboration between at North Carolina Central University and Northeast Central Durham (NECD) Community Reinvestment Board, Inc., Durham, NC. Presented the Mielke Lead Lab

research on the correspondence between soil Pb and blood Pb in New Orleans, October 20, 2020.

- **Symposium Moderator:** NYC 2020 5th Urban Soils Institute, RUDN University, and Tree People, held every Friday and Saturday in October, "Soils: The Living Fabric of Health," Friday, October 9. Session Day 2: Right of Soils: "Soils for all, all for soils."
- **Invited Speaker:** "Playground soils in New Orleans vs. Oslo, Norway. What happened? Why it is necessary to revitalize urban soils," NYC 2020 5th Urban Soils Institute, 10/31/2020.
- **Reviewer:** *Environmental Research, Environmental Geochemistry and Health*, and *Proceeding of the National Academy of Sciences*.
- **Outreach and Service to Community:** Soil metal testing assistance for the Sprout Community Garden Project in New Orleans.

### Dr. Ricardo Mostany

- **Grant Submissions:** (1) National Institute on Aging Program Project Grant, Mostany: Project PI, Daniel Lead: PI, June 2020; and (2) R01: NIH NIA, July 2020.
- **Reviewer: Grants:** NIH Center for Scientific Review (CSR), Member Conflict: Mechanisms of Memory and Sound Processing (ZRG1-IFCN-E-02), Ad hoc reviewer, June 2020; *Journals: eNeuro* and *eLife*.
- **Editorial Board:** Editorial Board of *Frontiers in Systems Neuroscience* (Review Editor)

### Dr. Ibolya Rutkai

- **Grant Submission:** NIH NIA, K01, October 2020.

**GMF and other SOM Committees:** **Dr. Braun:** Tulane Primate Research Center (TNPRC) Space Committee; **Dr. Busija:** Basic Science Chairs; **Dr. Clarkson:** Curriculum; BMF Steering; and Phase 2 Curriculum Advisory; **Dr. Lindsey:** SOM Rep. to University-wide Equal Opportunity Grievance; BMS Curriculum; Women in Medicine and Science Programming; Vice-Chair: Institutional Animal Care and Use, BMS Student Association Faculty Advisor; **Dr. Intapad:** Faculty Advisory, BMS Social Media-Recruiting; **Dr. Katakam:** Faculty Advisory, Personnel and Honors, Admissions; Chair: BMS Curriculum, BMS PhD Admissions, BMS Steering (Standby) **Dr. Mostany:** Nominating; Student Professionalism and Promotion; Tulane Brain Institute Executive Committee; Chair: Tulane Brain Institute Seminar Series; President, Greater New Orleans Society for Neuroscience Chapter.

## Master's in Pharmacology Graduate Spotlight: Chad Becnel, MD, MBA, PTY-1 Resident Tulane University Department of Surgery

*The year I spent earning a degree from The Tulane Master's in Pharmacology program was the most influential one on my road to becoming a physician.* After undergraduate school, I was in search of something interesting, unique, and inspiring. I felt that my educational experiences had become boxes to check rather than formative learning and advancement. I found the Department of Pharmacology serendipitously, and I immediately wanted to pursue this master's degree because of its wide possibilities for use after graduation.



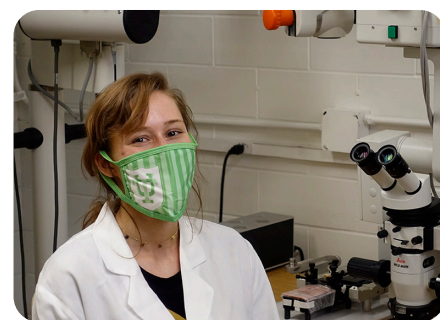
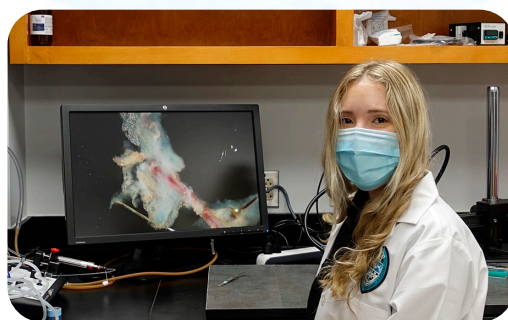
*The program reminded me why I became interested in becoming a physician.* Taking higher-level courses in the curriculum prepared me for the rigors of medical school as well as pushing me to think critically in clinical situations. My commitment to Tulane was also made stronger. I graduated from the Tulane School of Medicine this past May in the Class of 2020, and I am currently a resident in the Tulane University Department of Surgery. I am forever grateful to the Department of Pharmacology for providing the opportunities for resources, mentorship, and lifelong friends.

## New Faces in Pharmacology



Pictured above left, left to right, are new members of the **Mostany Lab**: **Cemaliye "Cemo" Semmedi**, a Neuroscience graduate student, is studying the expression of membrane channels and calcium binding proteins in Alzheimer's Disease, and **Irene Fernandez-Ugidos**, a Postdoctoral Fellow, conducts in vivo imaging of neurovascular coupling.

Pictured above, center, is the new member of the **Castorena-Gonzalez Lab**: **Kelli Jablon**, a Neuroscience Undergraduate student.



Pictured above, right, is **Emma Khismatullina**. Emma has a B.S. from Tulane and is working in the **Rutkai Lab** as a Laboratory Technician.



Pictured bottom center are new members of the **Lindsey Lab**: **Alec Horton** (left) is a Neuroscience undergraduate student, and on the right is **Dr. Bruna Visniauskas**, a Postdoctoral Fellow studying sex differences in circadian blood pressure and neurovascular coupling.

*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, contact Mark McKeown, Senior Director of Development for Tulane University School of Medicine, 504-314-7380, or [mmckeown@tulane.edu](mailto:mmckeown@tulane.edu)  
Tulane University School of Medicine Office of Development #8745, 1430 Tulane Avenue, New Orleans, Louisiana 70112

*Laboratory News: Pharmacology (Pharm), Brain Institute (BI), Biomedical Sciences (BSM), Neuroscience Undergraduate (NU), Stem Cell and Regenerative Medicine (SCRM), Neuroscience Program (NP), Cell & Molecular Biology Program (CMB), School of Science and Engineering (SSE), Biomedical Engineering (BE), School of Public Health and Tropical Medicine (SPHTM), Tulane National Primate Research Center (TNPRC)*

### **Laboratory of Dr. David Busija**

*Dr. Siniša Čikić*, Postdoctoral Fellow (Pharm), co-authored a poster at the International Pharmaceutical Federation annual meeting, "Six sigma as a modern method of managing health-care systems," September 4-25, 2020.

### **Laboratory of Dr. Jorge Casterena-Gonzalez**

*Kelli Jablon*, (NU) was awarded an Academic Year–CELT Award for Faculty Mentored Undergraduate Research for "Assessment of lymphatic endothelial dysfunction in aging: Implications on abnormal drainage of interstitial fluid from vital organs in inflammatory diseases." *Congratulations Kelli!!*

### **Laboratory of Dr. Suttira (Joy) Intapad**

*Benjamin Bhunu*, Ph.D. student (BMS), (1) passed his PhD preliminary exams on November 6th, 2020; and (2) submitted an AHA pre-doctoral fellowship grant on December 1, 2020. *Congratulations Benjamin!!*

### **Laboratory of Dr. Prasad Katakam**

*Dr. Siva Sakamuri*, Postdoctoral Fellow (Pharm), presented a seminar at the Department of Neurology, University of Miami Miller School of Medicine, "Aging-induced changes

in brain microvascular energetics," September 28, 2020.

### **Laboratory of Dr. Sarah Lindsey**, [Our webpage](#)

*Isabella Kilanowski-Dorah*, (BMS), (1) passed her preliminary exam in Aug 2020 and (2) submitted an AHA Pre-doctoral Fellowship grant, December 1, 2020. *Congratulations Isabella!!*

*Dr. Bruna Visniauskas*, Postdoctoral Fellow (Pharm), submitted an AHA Postdoctoral Fellowship grant, "Sex differences in circadian blood pressure and contribution to neurovascular coupling," December 3, 2020.

*Dr. Benard Ogola*, Postdoctoral Fellow (Pharm), submitted a NIH K99 Grant, "Interplay of Sex Chromosomes and Hormones," February, 2020.

### **Laboratory of Dr. Ricardo Mostany**, [Our webpage](#)

*Alexis Ducote* (BI): (1) Presented a seminar to the Downtown and Uptown Neuroscience Krewe (DUNK), "Fluorescence-Assisted Sorting of Genetically Defined Neuronal Populations for scRNA-seq and Mitochondrial Respiration Assay," April 17, 2020; and (2) was awarded a Teaching Assistantship at Neuromatch Academy, 2020. *Congratulations Alexis!!*

## **Publications**

**Castorena-Gonzalez JA**, Li M, Davis MJ. Effects of Elevated Downstream Pressure and the Role of Smooth Muscle Cell Coupling through Connexin45 on Lymphatic Pacemaking. *Biomolecules*. 2020 Oct 8; 10(10), 1424.

**Castorena-Gonzalez JA**, Srinivasan RS, King PD, Simon AM, Davis MJ. Simplified method to quantify valve back-leak uncovers severe mesenteric lymphatic valve dysfunction in mice deficient in connexins 43 and 37. *J Physiol*. 2020 Jun;598(12):2297-2310.

Davis MJ, Kim HJ, Zawieja SD, **Castorena-Gonzalez JA**, Gui P, Li M, Saunders BT, Zinselmeyer BH, Randolph GJ, Remedios MS, Nichols CG. Kir6.1-dependent KATP channels in lym-

phatic smooth muscle and vessel dysfunction in mice with Kir6.1 gain-of-function. *J Physiol*. 2020 May 5.

Reverte V, Gogulamudia VR, Rosalesa CB, Musiala DC, Gonzalez SR, Parra-Vitelaa AJ, Galeas-Pena TM, Sure VN, **Visniauskas B**, **Lindsey SH**, **Katakam PV**, Prieto MC. (2020) Urinary angiotensinogen increases in the absence of overt renal injury in high fat diet-induced type 2 diabetic mice. *Journal of Diabetes and Its Complications*. 34(2):107448.

Gohar EY, Daugherty EM, Aceves JO, Sedaka R, Obi IE, Allan JM, Soliman RH, Jin C, De Miguel C, **Lindsey SH**, Pollock JS, Pollock DM. (2020) Evidence

## Publications continued

for G Protein-coupled Estrogen Receptor as a Pro-natriuretic Factor. *J Am Heart Assoc*, 2020;9.

Zimmerman MA, **Ogola BO**, Wilkinson MM, **Visniauskas B**, De Miguel C, Daniel JM, **Lindsey SH**. Medroxyprogesterone opposes estradiol-induced renal damage in midlife ovariectomized Long Evans rats. (2020) *Menopause*. In press.

**Rutkai I**, **Evans WR**, Bess N, Salter-Cid T, **Čikić S**, **Chandra PK**, **Katakam PVG**, **Mostany R**, **Busija DW**. Chronic Imaging of Mitochondria in the Murine Cerebral Vasculature Using in Vivo Two-Photon Microscopy. *Am J Physiol Heart Circ Physiol*. 2020 Jun 1;318(6):H1379-H1386.

Liyuan Peng, Xiaoping Li, Xuemeng Sun, Tao Yang, Yuchao Zhang, Yu Gao, Xu Zhang, Yanan Zhao, Ana He, Ming Zhou, Yuhan Cao, **Howard W.Mielke**. Comprehensive Urumqi screening for potentially toxic metals in soil-dust-plant total environment and evaluation of children's (0–6 years) risk-based blood lead levels prediction, *Chemosphere*, Volume 258, November 2020, 127342.

H Ullah, X Li, L Peng, Y Cai, **HW Mielke**, In vivo phytotoxicity, uptake, and translocation of PbS nanoparticles in maize (*Zea mays* L.) plants, *Science of The Total Environment*, Elsevier, Volume 737, 1 October 2020, 139558.

Y Gao, X Li, J Dong, Y Cao, T Li, **HW Mielke**, Snack foods and lead ingestion risks for school aged children: A comparative evaluation of potentially toxic metals and children's exposure response of blood lead, copper and zinc

levels, *Chemosphere*, Elsevier, December 2020, 127457.

**Howard W. Mielke**, Christopher R. Gonzales, Eric T. Powell, Aila Shah, Kenneth J. Berry, Daniel D. Richter. Spatial-temporal association of soil Pb and children's blood Pb in the Detroit Tri-County Area of Michigan (USA). *Environmental Research*, 2020 Dec;191:110112.

Jiang Y, Liu N, Han J, Li Y, Spencer P, Vodovoz SJ, Ning MM, Bix G, **Katakam PVG**, Dumont AS, Wang X. Diabetes Mellitus/Poststroke Hyperglycemia: a Detrimental Factor for tPA Thrombolytic Stroke Therapy. *Transl Stroke Res*. 2020 Nov 2.

Liu F, Dai S, Feng D, Qin Z, Peng X, **Sakamuri SSVP**, Ren M, Huang L, Cheng M, Mohammad KE, Qu P, Chen Y, Zhao C, Zhu F, Liang S, Aktas BH, Yang X, Wang H, **Katakam PVG**, **Busija DW**, Fischer T, Datta PK, Rappaport J, Gao B, Qin X. Distinct fate, dynamics and niches of renal macrophages of bone marrow or embryonic origins. *Nat Commun*. 2020 May 8;11(1):2280.

**Albuck AL**, **Sakamuri SSVP**, Sperling JA, **Evans WR**, **Kolli L**, Sure VNLR, **Katakam PVG**. Peroxynitrite Decomposition Catalyst Enhances Respiratory Function in Isolated Brain Mitochondria. *Am J Physiol Heart Circ Physiol*. 2020 Nov 8.

**Popescu IR**, Le KQ, **Ducote AL**, **Li JE**, Leland AE, **Mostany R**. Increased intrinsic excitability and decreased synaptic inhibition in aged somatosensory cortex pyramidal neurons. *Neurobiology of Aging*. In press.

### Pharmacology News is a publication of the Department of Pharmacology, Tulane University

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[Please visit our website](#)

**Chair: Dr. David W. Busija**

Department Administrator: Debbie Sanders

Senior Editor/Newsletter Preparation: Nancy Busija

Newsletter Oversight: Dr. Sarah Lindsey

#### **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.*