

Pharmacology News

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TULANE UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PHARMACOLOGY

Message from the Chair: Dr. David Busija

The Pharmacology Department continues to prosper and to make major advances in the areas of collaborative research and funding, graduate student education, and medical student instruction. There have been several recent noteworthy achievements that I would like to highlight. **First**, we had a major presence at the recent Experimental Biology (EB) 2022 Meeting in Philadelphia (April 2-5) *with our faculty chairing and co-chairing 4 sessions and presenting 14 slide and poster presentations*. Our impact was particularly significant since this is the first "in person" EB in two years and was very well attended. **Second**, **Dr. Prasad Katakam**, an avid and sought after grant reviewer for the National Institutes of Health (NIH) and the American Heart Association (AHA), has been appointed to a full term on NIH Study Section: Acute Neural Injury and Epilepsy (ANIE). Study section membership is prestigious and limited to experts in their fields. Members serve from 4-6 years. **Third**, **Dr. Ibolya Rutkai** is a first author on a timely COVID-related paper published in a high impact journal: "Neuropathology and virus in brain of SARS-CoV-2 infected non-human primates," *Nature Communications*, volume 13, Article number: 1745 (2022). This study showed that COVID-19 induces neuroinflammation, microhemorrhages, and brain hypoxia in non-human primates and relates to similar findings in people. And **fifth**, our teaching program continues to excel. **Dr. Clarkson** has been awarded three T2 awards from the Owl Club: T2 Innovation Award, T2 Professor of the Year, and T2 Course of the Year from the Tulane medical student Owl Club! In addition, our 22 Masters in Pharmacology students gained the solid foundation needed to gain acceptance to medical school and other advanced programs. We will miss our Masters students and wish them well.

Dr. Busija Awarded the Carl J. Wiggers Award at Experimental Biology 2022 by the Cardiovascular Section of the American Physiological Society

Dr. David Busija, was awarded the prestigious **Carl J. Wiggers Award** by the Cardiovascular Section of the American Physiological Society (APS) at Experimental Biology 2022 (EB2022) in Philadelphia, PA. on April 5, after his oral presentation, "Sex and Aging in the Brain Microcirculation." He also served as Chair of the Wiggers Award Featured Topic Section. The Wiggers Award is presented each year to a scientist who is a Fellow of the Cardiovascular Section of the APS, who has made outstanding contributions to cardiovascular research throughout their career, has been an active and committed member of the Cardiovascular Section, and who will attract outstanding new members to the section from the United States and abroad. Thus, this honor is awarded to distinguished leaders who have demonstrated excellence in science and have made significant contributions to physiological sciences and related disciplines.

Dr. Busija has published over 300 papers on topics related to physiological control of the cerebral vasculature, and has recently pioneered studies of mitochondrial dynamics in the brain and brain circulation. He has had continuous independent funding from the National Institutes of Health (NIH) since 1983, has published extensively in APS and other journals, and has served as a permanent member of two NIH study sections. He also was recently elected to Fellow status of the APS, appointed as a member of the APS Finance Committee, and reappointed as a member of the Editorial Board of the *Journal of American Physiology-Heart and Circulatory Physiology*.



During his presentation, David highlighted previous and current trainee contributions to his research program. One of his proudest accomplishments has been observing his students, trainees, and numerous Ph.D. fellows flourish in their careers. He has trained over 21 post-doctoral fellows: one is Dean of a Medical School, one is Chair of a department, one is an officer at NIH, and many are professors and members of scientific departments across the USA, Europe, and Asia. The former trainees who were able to attend EB2022 and Dr. Busija enjoyed a celebratory dinner at a restaurant in Philadelphia following the Wiggers Award Featured Topic Section. Seated left to right: **Dr. Bence Erdos**, Assistant Professor, University of Vermont; **Dr. Ferenc Domoki**, Professor, University of Szeged, Hungary; **Dr. Busija**; **Dr. Ibolya Rutkai**, Assistant Professor, Tulane; **Dr. Partha Chandra**, Assistant Professor, Tulane; **Dr. Prasad Katakam**, Associate Professor, Tulane; **Dr. Bill Armstead** (pictured

with his wife Lynn) with Vindico Medical Education, NJ; and **Dr. Nishadi Rajapakse**, Program Director, Center for Translation Research and Implementation Science, NIH-NHLBI.

Faculty News

Dr. Howard Mielke has announced his intention to retire from Tulane University activities on July 31, 2022. Dr. Mielke has been a vibrant and dedicated scientist for many decades. Although he will continue his efforts to document and eliminate lead from the environment whatever his location, he will be missed very much by Tulane University, Pharmacology department faculty, staff, friends, and students. His passion has helped us all and we wish him well. See Page 5.

Dr. David Busija

- **Awards:** (1) awarded elite member status in the Fellows of the American Physiological Society (FAPS), and (2) the Carl J. Wiggers Award by the Cardiovascular Section of APS on April 5, 2022 at Experimental Biology 2022 (EB2022)
- **Invited Talk:** "Sex and Aging in the Brain Microcirculation," Wiggers Award Featured Topic EB2022
- **Moderator:** Chair: Wiggers Award Featured Topic, "Sex and Aging in the Brain Microcirculation," EB2022
- **Professional Service:** (1) appointed to the Finance Committee, APS, 6/1/22-5/31/25; and (2) member of the Editorial Board, *American Journal of Physiology-CV and Heart Physiology*.

Dr. Stephen Braun

- **Grant Award:** Co-I, "SARS-CoV2 infection and type I interferon signaling in COVID-19 and long COVID-associated endothelial cell dysfunction," AHA, PI: Xuebin Qin, PhD, Co-I: Drs. Kolls and Delafontaine, 07/01/2022 - 02/29/2025, \$1,000,000.
- **Grant Submissions:** (1) AHA; (2) NIH NIAID MPI subcontract with Vicki Traina-dorge, PhD., MPI: Eden Tanner, Jason Paris, PHD, MD (UMass); (3) PI (subcontract), MPI: Alexia Kagaiana PhD (Cyprus Institute of Neurology and Genetics); and (4) NIH R01, MPI with Dr. Partha Chandra, 5/9/22
- **Invited Speaker** (1) "Lentiviral Vectors and Inhibitors of HIV-1," AMFAR Think Tank, Washington DC, 3/25-27/2022; and (2) "Gene Therapy Strategies for AIDS," National Primate Research Centers 60th Anniversary Symposium, Precision Medicine, 5/25/2022
- **Grant Reviewer:** 2022 NIAID Study Section, HIV Immunopathogenesis and Vaccine Development Study Section, May 2022

Dr. Jorge Castorena-Gonzalez

- **Invited Speaker:** (1) "Obesity-Induced Lymphatic Valve Dysfunction," APS Cardiovascular Section, EB2022; and (2) "New Insights Into Obesity-Induced Lymphedema," Louisiana State University (LSU) School of Medicine (SOM), Department of Physiology, Spring 2022 Seminar Series, New Orleans, LA, 4/14/2022
- **Poster Presentation:** "Obesity-Induced Lymphatic Valve Dysfunction," APS Lymphatic Function Poster Session, EB2022
- **Journal Reviewer:** *Microcirculation, Scientific Reports, Biol-*

ogy Open

- **Professional Service:** (1) Awards Committee: APS Cardiovascular Section, and (2) Membership Committee: The Microcirculatory Society, Inc.

Dr. Partha Chandra

- **Grant Submission:** (1) NIH R01, PI, 5/2/22; and (2) NIH R01, MPI with Dr. Stephen E. Braun, 5/9/22
- **Poster Presentations:** (1) "Circulating exosomal proteins are linked to neuropathogenesis in SHIV infected rhesus macaque: A proteomic approach," EB2022; and (2) "Effects of Aging on Proteome Dynamics in Mice Brain Microvesicles: ROS Scavengers, mRNA/Protein Stability, Glycolytic Enzymes, Mitochondrial Complexes, and Basement Membrane Components," EB2022

Dr. Suttira Intapad

- **Grant Reviewer:** AHA Career Development Award, Vascular Sciences Peer Review, 2/22/2022
- **Journal Reviewer:** *Hypertension, Kidney 360 Journal*
- **Editorial Board Member:** *The Kidney 360 Journal, Frontiers in Physiology*

Dr. Prasad Katakam

- **Grant Submissions:** Consultant or Co-I on six R01 grants
- **Symposia Moderator:** Chair: CV Section Featured Topic: Novel Mitochondrial Mechanisms Underlying Vascular Dysfunction, EB2022, 4/4/2022
- **Invited Speaker:** (1) "Brain Microvascular Bioenergetics," International Stroke Conference 2022, Preconference Symposium Session, New Orleans, LA 2/8/2022; and (2) "Novel Effects of Nitric Oxide Synthase Inhibition on Mitochondrial Respiration," University of Oregon, Department of Human Physiology, Eugene, OR, 1/14/2022
- **Grant Reviewer:** (1) NIH Study Section: Acute Neural Injury and Epilepsy (ANIE) full term member, 4-6 years; (2) NIH ZHL1 CSR-M (M1) NHLBI K Member Conflict Mentored Career Development Awards, 4/22/22; (3) Chairman: NIH Special Emphasis Panel ZRG1 MDCN-M (81) PAR 22-026, 3/22/22; (4) NIH Special Emphasis Panel 'The Blood-Brain Barrier, Neurovascular System and CNS Therapeutics,' 3/22/22; (5) AHA Career Development Award, Vascular Basic Sciences 2 Panel, Co-Chairman 2/22/22; (6) LSUHSC Shreveport Pilot Grant Reviewer 3/22/22; and (6) LA CaTS Roadmap Scholar peer-review panel, 2/22-3/22/2022
- **Outreach:** Mentor: AHA HBCU Scholar Program (Mentee: Kennedy Singleton, Xavier University College of Phar-

Faculty News continued

macy), see page 5.

- **Professional Service:** (1) Chairman: Nominations Committee: APS Cardiovascular Section; (2) Chairman: Awards Committee: Microcirculatory Society; and (3) Chairman: Awards Committee: Association of Scientists of Indian Origin in American, Inc.

Dr. Sarah Lindsey

- **Grant Award:** NIA PPG Grant, "Estrogens, Cardiometabolic Health, and Female Cognitive Aging," (1) PI, Project 3: "Impact of estradiol on vascular health and subsequent implications for cognitive aging," 5 years, \$2,151,650 in total costs; and (2) Co-Director: Cardiometabolic Core, 5 years, \$1,976,995 in total costs.
- **Grant Reviewer:** NIH Study Section, Integrative Vascular Physiology & Pathology
- **Outreach:** Mentor: AHA HBCU Scholar Program (Mentee: Anthony Brooks-Ervin), See page 5.

Dr. Howard Mielke

- **Invited Speaker:** "Lead in Air, Soil, and Blood," an environmental signaling perspective on methods to improve lead exposure prevention, Centers for Disease Control and Prevention (CDC) Lead Exposure Prevention Advisory Committee (LEPAC), 5/12/2022
- **Reviewer:** *Environmental Research, Science of the Total Environment*
- **Outreach and Service to Community:** The Lafitte Greenway School Monitoring Day was held on 2/22/2022. The Pharmacology Master's Program Environmental Signaling class conducted a community service project by collecting soil samples in playgrounds of the Lafitte Greenway adjacent to the I-10 freeway above Claiborne Ave. Collection results were shared with the city and also with the CDC LEPAC. ABC "Nightline" is planning a story on the impact of the historical placement of highways in minority neighborhoods. Dr. Mielke sends gratitude and thanks to the Master's students who participated in this effort.

Dr. Ricardo Mostany

- **Grant Award:** NIA PPG Grant, "Estrogens, Cardiometabolic Health, and Female Cognitive Aging"; Project

2: "Impact of HTN and high-fat diet on mechanisms by which estradiol affects cortical synaptic plasticity." PI: Mostany, Co-I: Katakam, 5 years, \$2,151,650 in total costs

- **Grant Submissions:** (1) NIAID, February 2022; and (2) NIAID, March 2022
- **Invited Speaker:** (1) "Alterations in synaptic plasticity in healthy and pathological aging," Department of Pharmacology Seminar Series, Zoom Presentation, Tulane University, New Orleans, LA, 12/10/2021; (2) Department of Physiology, LSU, "Alterations in synaptic plasticity in healthy and pathological brain aging," New Orleans, LA. Zoom presentation. 2/24/2022; 2022; (3) American Physician Scientists Association, "Alterations in synaptic plasticity in healthy and pathological brain aging," Zoom Presentation, Tulane University SOM, New Orleans, LA. 4/4/2022; (4) Symposium on Aging and Regenerative Medicine, COBRE: Mentoring Research Excellence in Aging and Regenerative Medicine (P20GM103629) External Advisory Committee Meeting, "Alterations in synaptic plasticity in healthy and pathological brain aging." Tulane University School of Medicine, New Orleans, LA. 4/14/2022
- **Grant Reviewer:** NIH Center for Scientific Review (CSR) Sensory-Motor Neuroscience Study Section (SMN), Ad Hoc reviewer, 02/2022
- **Professional Service:** Selection Committee: Society for Neuroscience's Trainee Professional Development Awards
- **Outreach:** Poster Judge: Latino Medical Student Association Southwest Region Research Conference 2022, 3/2022

Dr. Ibolya Rutkai

- **Submitted Grants:** NIA R01
- **Invited Speaker:** (1) "Mitochondria in the Aging Vasculature," Tulane Brain Institute, Tulane University, New Orleans, LA, 2/16/2022; and (2) "Vascular Mitochondria in Brain Aging," EB2022, Philadelphia, PA, 4/2/2022
- **Symposia Moderator:** Co-chair: APS Wiggers Award Session: Sex and Aging in the Microcirculation, EB2022
- **Grant Reviewer:** Neural Oxidative Metabolism and Death Study Section, 3/10-3/11/2022

University and SOM Committees: **Dr. Braun:** Tulane Primate Research Center (TNPRC) Space Committee; **Dr. Busija:** Tulane Professionalism Program Advisory Board; **Dr. Clarkson:** BMS Curriculum Task Force, Curriculum, BMS Steering, Student Professionalism & Promotion, Phase 2 Curriculum Advisory, Innovation Council; **Dr. Lindsey:** BMS Student Association Faculty Advisor, Campus Climate Task Force - Sexual Harassment by Faculty Subcommittee, Women in Medicine and Science Programming, Vice Chair: Institutional Animal Care and Use; **Dr. Intapad:** Faculty Advisory, BMS Social Media-Recruiting; **Dr. Katakam:** Dean's Diversity, Equity, and Inclusion Coalition, DEI Coalition Research Subcommittee, Chairman: BMS Curriculum, BMS PhD Admissions, BMS Steering (Standby), GMF Faculty Advisory and Admissions, SOM Personnel & Honors, SOM Admissions Committee; **Dr. Mostany:** Tulane Brain Institute Executive Committee, Chair: Tulane Brain Institute Seminar Series, Search Committee member for the Tulane Brain Institute Director position (Presidential Chair), Search Committee member for Physiology Department Chair; 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. Stephen E. Braun

Chris Grice, Graduate Student (BMS), Pharmacology, has joined the Braun Lab.

Gabriel Sanchez, Graduate Student (Microbiology and Immunology) has joined the Braun lab.

Laboratory of Dr. Suttira (Joy) Intapad

Benjamin Bhunu, Graduate Student (BMS) (1) gave an invited talk, "Functional and Molecular Studies of Renal Sphingosine 1 Phosphate Signaling Pathway in IUGR"; and (2) received a Research Recognition Award from APS at EB2022.

Isabel Riccio, (NU) gave an invited talk, "Sphingolipids Imbalance in Brain Microvessels of Predisposed Reduced Uterine Perfusion Mice," at EB2022.

Laboratory of Dr. Prasad Katakam

Dr. Siva S. Sakamuri, Postdoctoral Fellow (Pharm) (1) was first author on a poster, "Sex-dependent Regulation of Mitochondrial Respiratory Function in Mouse Brain Microvessels by Peroxynitrite Decomposition Catalyst," at EB2022; and (2) on an abstract, "Abstract WP245: Sex-dependent Regulation Of Mitochondrial Respiratory Function In Mouse Brain Microvessels By Peroxynitrite Decomposition Catalyst," at International Stroke Conference 2022 Poster Abstracts, 2/3/2022; and (3) has two first author publications. Please see Page 6.

William Wisen (Pharm) (1) was first author on a poster, "Nitric oxide synthase inhibitor is an effective therapy for ischemia-reperfusion injury in mice," at EB2022; and (2) on Abstract TP248: "Nos Inhibitor Is An Effective Adjuvant To Reperfusion Therapy In Ischemic Stroke In Mice," at International Stroke Conference Poster Abstracts, 2/3/2022.

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

Dr. Benard Ogola, Postdoctoral Fellow (Pharm) gave (1 and 2) a poster and oral presentation at EB2022, "Aging and G Protein-Coupled Estrogen Receptor Exacerbates Carotid Artery Structural Remodeling"; and (3) was a Finalist for the APS CV Section Outstanding Postdoctoral Trainee Award. **Dr. Ogola has secured a tenure-track faculty position at Augusta University Vascular Biology Center with a start date of June 1, 2022. Congratulations Ben!! We will miss you!**

Alec Horton, (NU) (1) received a travel award from the American Society for Pharmacological and Experimental Therapeutics to attend EB2022 (2) where he presented a poster "DHT Induces Arterial Stiffening in Female Wild Type Mice." **Alec will graduate from Tulane in May with a BS in Neuroscience and will work at Ochsner Hospital before applying to medical school. Congratulations Alec!!**

Isabella Kilanowski-Dorah, PhD student (BMS) gave a poster at EB2022, "Ovariectomy-Induced Arterial Stiffening is Associated with Downregulation of Tissue Resident Macrophage Markers."

Laboratory of Dr. Ricardo Mostany [Our website](#)

Cemo Semmedi Ph.D. student (BI) presented (1) a poster, "Homeostatic plasticity markers are dysregulated in cortical neurons of healthy aged and Alzheimer's disease model mice," at the Symposium on Aging and Regenerative Medicine, COBRE: Mentoring Research Excellence in Aging and Regenerative Medicine (P20GM103629) External Advisory Committee Meeting, Tulane University SOM, New Orleans, LA, 4/14/2022; and (2) presented another poster "Homeostatic plasticity markers are dysregulated in cortical neurons of healthy aged and Alzheimer's disease model mice," at Tulane Health Science Research Days, 4/20-21/2022 (THSRD2022)

Alex Ducote (BI) presented a poster, "Age-Related Differences in Volumetric Properties and Plasticity of Dendritic Spines of Layer 5 Somatosensory Pyramidal Neurons" at THSRD2022.

Cemo Semmedi (BI) presented a poster, "Effects of Recurrent Hypoglycemia on Cerebral Microvascular Capillary and Penetrating Arteriole Diameter" at THSRD2022.

Laboratory of Dr. Ibolya Rutkai

Abigail Seman, (SSE) (1) presented a poster, "Therapeutic potential of mitochondria in the aging cerebral vasculature," at THSRD2022, and (2) presented an oral report of her research topic, "Cerebral Blood Flow in the Aging Brain," as part of the requirements for her Summer 2021 award for Faculty Mentored Undergraduate Research Award at the CELT's Student Research Spring Poster Session, Qatar Ballroom of the Lavin-Bernick Center, Tulane, LA. 4/25/2022.

Dr. Howard Mielke



Dr. Howard Mielke is retiring from the department as of July 31, 2022 to join his daughter and grandchildren in Washington state. **Dr. Mielke** received his Ph.D. degree in 1972 from the University of Michigan and went on to hold faculty positions at the University of Maryland, Macalester College in St. Paul, Minnesota, Xavier University School of Pharmacy in New Orleans, and Tulane University Department of Chemistry and currently a Professor in the Pharmacology department since 2012. Howard has focused his attention over the last 40 years on evaluating the status of the urban environment and its chemical impact on human health and disease. Specifically, Dr. Mielke's seminal studies provided important information concerning the sources of lead in the environment, how lead toxicity affects learning and behavior, and how to reduce lead exposure to people. His testimony at the Senate hearings in Washington D.C. in led by Senator David Durenberger, was instrumental to the passage of the Airborne Lead Reduction Act of 1984. In his mapping of cities, Howard and colleagues clearly showed the correspondence between areas of high soil lead, blood lead levels in children, reduced test scores of children, and areas of high crime. All of these factors can be traced to the high lead content of soil beside highways, usually areas of low income housing. Dr. Mielke

has demonstrated many times that we have to be vigilant about lead because it has been used in so many different ways and there is a never ending series of events that can change the amount of lead in the environment, including new sources and routes of contamination (demonstrated by the Flint, Michigan water crises from 2014 through 2019). He has published almost 200 papers, testified before Congress and other regulatory boards, and his work has been extensively covered by public media (including The New York Times, "The Toxic Legacy of Lead Paint," written by Thomas Beller, and "Hidden Poison" broadcast by "ABC Primetime," USA Today's "Ghost Factories," WBRZ's "Lead in Playgrounds," WVUE's "Toxic Beads," MSNBC's Melissa Harris Perry's "How lead could be tied to crime," Detroit Free Press' "Hazards lurking in soil as children play," Mother Jones' "America's Real Criminal Element: Lead," and The Atlantic's "The Poisoned Generation." The articles mentioned are only a few of many generated by his work. **Dr. Howard Mielke** is the creator of the **Lead Lab project**, a not for profit initiative dedicated to helping communities eliminate lead contamination in children's play areas.

Pharmacology works with American Heart Association HBCU Program

The American Heart Association (AHA) Historically Black Colleges and Universities Program (HBCU) was established for the New Orleans region in 2019 and since its inception, Tulane Pharmacology faculty have served as mentors. The goal of the program is to expose more HBCU students to careers in medicine and science to cultivate the next generation of African American doctors, nurses, and researchers. Numerous studies have shown that a same race healthcare provider reduces health disparities and improves overall community health. **Dr. Sarah Lindsey** is hosting her second scholar this year. **Anthony Brooks-Ervin** is a junior at Dillard University majoring in Biology. Anthony has been learning how to analyze mouse echocardiograms from postdoctoral fellow **Dr. Ben Ogola**. Through this program, Anthony recently traveled to AHA's Scientific Session in Nashville to present a poster on his work, "Arterial

Stiffness and Echocardiography Analysis in the Four Core Genotype Mouse." Anthony plans to apply for PhD programs in Environmental Toxicology next year. Dr. Lindsey comments, "It's exciting to bring scholars like Anthony into my lab and inspire them to pursue careers in science." Similarly, **Dr. Prasad Katakam** is hosting his third HBCU scholar, **Kennedy Singleton**, a sophomore from Xavier University of Louisiana College of Pharmacy. Kennedy also presented her poster at the AHA Scientific Session in Nashville, titled "Effect of Alzheimer's peptide, A β 1-42 on Human Brain Mitochondrial Endothelial Cell Mitochondrial Respiration in Hyperglycemia." Kennedy learned the fundamental concepts of hypothesis-driven research while working on her project studying mitochondrial biology in the Katakam lab. She plans to use the skills she acquired as she pursues a career in clinical pharmacy.

*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 Jean Paul Perrilliat, Senior Development Officer for Tulane University School of Medicine,
504-314-7380, or jperril@tulane.edu

Tulane University School of Medicine Office of Development #8745, 1430 Tulane Avenue, New Orleans, Louisiana 70112

Publications

Castorena-Gonzalez JA. Lymphatic Valve Dysfunction in Western Diet-Fed Mice: New Insights Into Obesity-Induced Lymphedema. *Front Pharmacol.* 2022 Mar 4;13:823266. doi: 10.3389/fphar.2022.823266.

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Department Administrator: Debbie Sanders

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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.