

Pharmacology News

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Spring 2016

TULANE UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PHARMACOLOGY

Message from the Chair Dr. David Busija

It is with pride and great satisfaction that I focus on the successes of our trainees made possible by the mentorship of our faculty. *Drs. Margaret Zimmerman* and *Ibolya Rutkai* have been awarded prestigious post-doctoral fellowships by the American Heart Association. *Drs. Merdzo, Rutkai, Zimmerman, and Venkata (Ram) Sure* gave oral and poster presentations and *Jen Duong* gave a poster presentation at *Experimental Biology 2016*. *Rebecca Voglewede* was selected for oral presentations at two meetings during the past year including one at the *4D Microscopy of Brain Circuits Workshop* in Berkeley, CA. Additionally, *Drs. Merdzo, Rutkai, Zimmerman* and *Rebecca Voglewede* received travel awards to scientific meetings. *Nick Pashos*, a graduate student from the IGERT Bioinnovation PhD Program in Dr. Bunnell's laboratory, won the \$25,000 first prize in competition sponsored by the New Orleans Bioinnovation Center for his project on breast reconstruction surgery. *Shreya Kashyap*, an undergraduate who has been working in Dr. Lindsey's lab since 2012, has been accepted to the prestigious MD/PhD program at the University of Alabama in Birmingham. *Congratulations to our trainees and faculty!*

Nipple-areolar complex (NAC) Regeneration

WWL-TV recently aired a story about an ongoing tissue engineering project in **Dr. Bunnell's** laboratory being conducted by *Nicholas Pashos*, a PhD student from the IGERT Bioinnovation program at Tulane. Currently,

there are more than 230,000 women diagnosed with breast cancer every year in the United States and approximately 180,000 female mastectomies. These patients have several options for nipple-areolar complex (NAC) reconstruction following surgery. These usually include plastic and reconstructive surgeons creating a structure that looks like a nipple from skin taken from the chest or other areas of the body such as the thigh or under the arm; or a tattoo of an image of NAC can be done after the breast reconstruction phase; or a combination of tattooing and surgical NAC reconstruction methods. For these NAC reconstructions, the outcome is contingent on many factors: surgical skill, skin thickness, blood supply to the reconstructed nipple-like structure, tattooing skill, fading of tattoo, etc. As an alternative to these current NAC reconstruction methods, Dr. Bunnell's group is developing a graft to regrow the patient's NAC. As an overall goal to this concept, an off-the-shelf acellular NAC graft would be made available to the plastic and reconstructive surgeons. The patient's body would then use this NAC graft as a building frame to regenerate their own NAC. Similar materials have been used in surgeries for more than 30 years, which has allowed Dr. Bunnell's lab to apply well-established processes and reconstruction methods to the regeneration of NACs for women who have undergone mastectomies. Please view the TV special news segment: <http://www.wwtv.com/story/life/2016/02/18/tulane-scientist-may-have-breakthrough-breast-reconstruction/80580604/>

Forty-Fourth Annual Schüeler Distinguished Lectureship

The Department of Pharmacology was honored to host **Dr. Ed Boyden** as the 44th Schüeler Distinguished Lecturer on February 19, 2016. Dr. Mostany introduced Dr. Boyden. The Schüeler Lecture was established in 1971 by Dr. James Fisher, former Chair of the Department of Pharmacology. Dr. Ed Boyden is an Associate Professor of Biological Engineering and Brain and Cognitive Sciences at MIT Media Lab and at the McGovern Institute. He is the Leader of the Synthetic Neurobiology Group. He is also Associate Member of the Broad Institute of Harvard and MIT and is the co-director of the MIT Center for Neurobiological Engineering. Dr. Boyden's lecture, "*Tools for Analyzing and Repairing Brains and Other Complex Biological Systems*," attracted a standing room only audience of more than 150 people. Departmental faculty, students, and laboratory members, as well as departmental members of the School of Medicine, School of Science and Engineering, and LSU Health Science Center enjoyed a memorable lecture that will be remembered for a long time. Dr. Boyden's lecture covered his most recent scientific advances: he gave an insightful review of the basis and applications of expansion microscopy for the mapping of intricate biological systems with molecular precision; he introduced new methods to record dynamics of biological molecules with precise temporal and broad spatial scale; and he wrapped up his lecture with the latest advances in optogenetic control of excitable cells technology. His novel discoveries have made him the recipient of numerous prestigious awards, including the 2016 Breakthrough Prize in Life Sciences, The 2015 BBVA Foundation Frontiers of Knowledge Award in Biomedicine, the 2015 Society for Neuroscience Young Investigator Award, and The Brain Prize in 2013.



During his visit **Dr. Boyden** (far right) interacted with Pharmacology post-doctoral fellows and graduate students from Pharmacology and other departments. He was also an honored guest at a dinner hosted by the Department of Pharmacology.

Faculty News

Dr. David Busija

- **National Professional:** (1) Editorial Board Member, American Journal of Physiology; (2) Treasurer, Association of Medical School Pharmacology Chairs.
- **Outreach:** External Reviewer for Department of Pharmacology Faculty, University of Iowa, Iowa City, Iowa, March 2016.

Dr. Barbara Beckman

- **Moderator and Presentation:** Association of American Medical Colleges MCAT Validity Committee meeting, "Survey on Admissions Officers' Use of Scores and Score Reports from the New MCAT Exam." Two hypotheses for admissions decisions are being tested: (1) schools will increase applicants with total scores in the middle of the score scale, and (2) committees will consider applicants' strengths/weaknesses from MCAT score reports to identify those who best fit their academic missions. Washington, D.C., March 9-10, 2016.

Dr. Stephen Braun

- **Grant Award:** Qatar Foundation: "Mouse Antibody Experiments," 9/1/15-2/15/16, \$122,838.
- **Submitted Grants:** (1) Contract-Lentigen/Mitenyi Corp, (2) NIAID 1UM1A1126840-01-Delaney Cure HIV.
- **Reviewer:** (1) NIAID Study Section, SBIR contract Proposal Review Meeting-Topic areas 33, 34, and 35 Phase I and Phase II; (2) 2016 NIAID Study Section, Immune-Based Antiviral Products for Suppression/Elimination of HIV-1; and (3) 2016 NHLBI Study Section, "Clinical Research in the Prevention, Diagnosis, and treatment of HIV-Related Heart, Lung, and Blood Diseases in Adults and Children" (R01).

Dr. Bruce Bunnell

- **Publications:** Please see Dr. Bunnell's publications on page 6.

Dr. Milton Hamblin

- **Grant Award:** Board of Regents (BOR) Support Fund Research and Development, Research Competitiveness Subprogram: "Determining the Role of Rapid Estrogen Receptor-Alpha Signaling in Abdominal Aortic Aneurysms" \$150,074, 3 years.
- **Invited Speaker:** (1) Tulane University Neuroscience Program, "New Insights into Hormone Receptor Signaling Mechanisms and Their Impact on Vascular Function

and Pathophysiology," November, 2015; (2) "Sex-Based Differences in Non-Genomic Vascular Signaling," Experimental Biology 2016 (EB2016), San Diego, CA, May 2-6, 2016

- **Grant Reviewer:** American Heart Association Peer Review Committee: Cardiac biology Regulation - Basic Sciences 1, (March 2016).
- **Journal Reviewer:** Journal of Molecular and Cellular Cardiology (Nov. 2015).

Dr. Philip Kadowitz

- **Publications and Mentorship:** Please see Publications section on page 6 for research publications.

Dr. Prasad Katakam

- **Submitted Grants:** NIH R01.
- **Grant Reviewer:** Grant Reviewer: American Heart Association: Endothelial Biology 2.
- **Poster Presentations:** (1) "Evaluation of Smooth Muscle Cell Function in Cultured Microvascular Networks" and (2) "Mitochondrial Mechanisms of Nelfinavir Toxicity in Human Brain Microvascular Endothelial Cells," EB2016.
- **Moderator:** Chair: APS Featured Topic: Cerebrovascular Dysfunction and Reactive Nitrogen Species. (Co-Chair: Jennifer Pollock), EB2016.
- **Journal Reviewer:** Circulation, Circulation Research, Diabetes, American Journal of Physiology, American Journal of Hypertension, Journal of Gerontology, Age, Journal of Physiology (London), Journal of Applied Physiology, Journal of Cardiovascular Pharmacology.
- **Abstract Reviewer:** International Stroke Conference 2016.
- **Outreach in New Orleans:** Volunteer at STEM (Science, Technology, Engineering, and Math, Growing future innovators, creators, and makers for the 21st century).

Dr. Sarah Lindsey

- **Grant Awards:** Tulane University Office of Research Bridge Funding: \$28,000, 1 year.
- **Invited Speaker:** (1) American Physiological Society Cardiovascular and Metabolic Diseases: Physiology and Gender, "GPER and Vascular Function," Symposia: Non-Reproductive Actions of Sex Hormones and Receptors, Annapolis, MD, Nov. 18, 2015; (2) LSUHSC, Department of Cell Biology and Anatomy, "Membrane-Initiated Estrogen Signaling in the Female Cardiovascular

Service to Tulane and SOM: **Dr. Bunnell:** Research Advisory Comm, Executive Comm; Tulane National Primate Research Center, Chair; Promotions and Honors Comm; **Dr. Busija:** Head: Basic Science Chairs; **Dr. Mondal:** Nominating Comm; **Dr. Lindsey:** Faculty Advisory Comm, BMS Admissions Comm, Nominating Comm for GMF, Mentor: Tulane Building Interdisciplinary Research Careers in Women's Health; **Dr. Katakam:** Secretary: GMF, BMS Steering Comm; **Dr. Hamblin:** University Senate; **Dr. Clarkson:** Curriculum Comm; BMF Steering Comm; **Dr. Kadowitz:** Promotions and Honors Comm; **Dr. Mostany:** Tulane Brain Institute Advisory Comm.

Faculty News continued

System," Nov. 30, 2015; (3) Keynote Speaker, LSU Department of Comparative Biomedical Sciences Graduate Student/Postdoctoral Fellow Annual Retreat, "Eliciting Estrogen's Protective Vascular Effects," Baton Rouge, LA, Jan. 12, 2016.

- **Outreach:** (1) Hosted a research laboratory visit for the Escalera STEM program sponsored by Puentes New Orleans. (2) Presented "The circulatory system" to 7th grade students, Morris Jeff Community School.

Dr. John McLachlan

- **Recently in Japan:** (1) **Keynote Speaker:** 63rd Conference of the National Institute of Basic Biology, "Environment to Bioresponse," Okazaki, Dec. 1, 2015. Also led a memorial tribute for Professor Louis Guilleto who died unexpectedly in August; (2) **Keynote Address:** Japanese Society for Endocrine Disruptor Research, Tochigi, Japan, Dec. 10, 2015; (3) **Seminars:** (a) Yokohama City University, Dec. 4; (b) National Institute of Basic Biology, Okazaki, Dec. 8; (c) Jichi Medical School, Dec. 9; and (d) Tokyo University of Science, Dec. 11; (4) **Guest Researcher and Reviewer:** Formal review and report to the Institute Director of the National Institute of Basic Biology regarding the Department of Molecular Environmental Endocrinology, Okazaki, Dec. 14. Dr. McLachlan also enjoyed much sushi, sashimi, and sake.
- **Invited Panelist at Inaugural Event:** 50th Anniversary Celebration of the founding of the National Institute of Environmental Health Sciences (NIEHS) of the National Institutes of Health (NIH). The panel consisted of a former NIEHS Director, Scientific Director, Extramural Director, Toxicology Program Director, and Executive Officer. Professor McLachlan is a former Scientific Director of the Institute. The panel reflected on the history and half century of accomplishments of NIEHS.

Dr. Howard Mielke

- **Invited Speaker:** Health Homes and Children's Lead Primary Prevention Program, Louisiana State Lead Advisory Board, Jefferson Parish East Bank Library, "Soil Lead and Blood Lead after Hurricane Katrina," March 29, 2016.
- **Poster Presentation:** Society for Toxicology, "Closing the Ineffective Lead Treatment Gap: Lessons from Hurricane Katrina in New Orleans, USA for Establishing an Effective Lead Intervention Strategy," New Orleans, LA, March 14, 2016.
- **Journal Reviewer:** Biological Trace Elements; Environmental Health; Environmental Geochemistry and Health; Environment International; Environmental Research; Environmental Toxicology; International Journal

of Environmental Research and Public Health; Progress in Community Health Partnership: Research, Education, and Action; Science of the Total Environment.

- **Editor:** Special Issue: "Lead, Risk Assessment and Health Effects" for the International Journal of Environmental Research and Public Health.
- **Outreach:** (1) Environmental remediation for the Lafitte Greenway Garden Initiative; (2) Garden installation with Jan Mun, Artist in Residence at A Studio in the Woods. Soil analysis and materials location for installation of a lead-safe garden: Treme Community Garden.
- **Dr. Debasis Mondal**
- **Invited Speaker:** IFATS Conference, "Stem Cell Exosome," ASC Hot Topic #3: What are they leaking?, New Orleans, LA, Nov. 5-8, 2015.
- **Grant Submissions:** (1) NIH (NCI) (PAR-15-092) (Debasis Mondal, PI); (2) NIH (NCI), R21 (PAR-15-340) (Debasis Mondal, PI).
- **Poster Presentations:** The Mondal Laboratory presented two posters: (1) "Membrane pore-forming peptides act as potent anti-HIV agents by simultaneously targeting HIV-particle disruption and increased drug entry into HIV-infected cells" and (2) "Latent HIV-1 reservoirs recruit mesenchymal stem cells (MSC) to facilitate virus reactivation: role of HIV-exosomes and MSC-secreted factors," Tulane Health Sciences Research Days, New Orleans, LA, April 6-7, 2017.

Dr. Ricardo Mostany

- **Grant Awards:** (1) BOR Support Fund Research and Development, Competitiveness Subprogram: "Mechanisms of Synaptic Instability in the Aged Brain," \$156,375, 3 years; (2) The Oliver Fund Scholars Award for Outstanding Research in Brain Science, "Reinstating inhibition in the aging cortex to improve brain performance," Tulane University Office of Research, \$40,000 1 year.
- **Submitted Grants:** (1) NIH R01; (2) LA Board of Regents RCS; (3) Scholars Program in the Biomedical Science - Pew Charitable Trusts; (4) Oliver Fund Scholars Award - Tulane University Office of Research; (5) Junior PI application for COBRE in Aging and Regenerative Medicine.
- **Outreach:** (1) Organized a visit, with help of Drs. Lindsay and Katakam, to Tulane SOM for high school students from the National Council of La Raza Escalera STEM program 12/05/15; (2) Volunteered at STEM NOLA- Heart and Circulatory system Saturday activities. <https://www.youtube.com/watch?v=znhxnNEpGvs> 11/14/15
- **Please visit:** <http://mostanylab.tulane.edu/>

Trainee News

Shreya Kashyap, working with **Dr. Sarah Lindsey** since 2012, will graduate in May with a B.A. in Neuroscience. Shreya has been accepted to the prestigious MD/PhD program at the University of Alabama in Birmingham. **Congratulations and Good luck Shreya!!**

Venkata (Ram) N. Sure, working with **Dr. Prasad Katakam**, passed the qualifying exam for the doctoral program in Pharmacology on October 26, 2015. **Congratulations Ram!!** Ram (1) submitted a predoctoral AHA grant; and (2) gave a poster and oral talk: "Novel Splice Variant of nNOS in Cerebrovascular Endothelial Cells Contributes to Superoxide and Peroxynitrite Generation" at Experimental Biology 2016 (EB2016), San Diego, CA, April 2-6.

Dr. Cheng Xiang Wu, Postdoctoral Fellow working with **Dr. Steven Braun**, presented a poster, "Optimized Stimulation, Transduction, and Expansion of CMV-specific T Cells for Adoptive T Cell Immunotherapy in Non-human Primate Model," at Tulane Health Sciences Research Days (HSRD 2016) April 6-7, 2016.

Drew Davidson, working with **Dr. Ricardo Mostany**, gave an oral presentation: "Dendritic Spine Plasticity of Layer V Pyramidal Neurons in the Motor Cortex" as part of the Dept. of Cell & Molecular Biology's Student Seminar Series on 1/29/16.

Dr. Dong Lin, Postdoctoral Fellow working with **Dr. Steven Braun**, presented a poster: "CCR5 Knockout in Mesenchymal Stem Cells using CRISPR/Cas9 System," HSRD 2016.

Dr. Ibolya Rutkai, Postdoctoral Fellow working with **Dr. David Busija**, for EB2016: (1) received a Travel Award from Tulane University Office of Graduate and Postdoctoral Studies (OGPS) to present a poster and give an oral presentation, "Mitochondria - eNOS - estrogen axis provides pathway to protection against stroke;" and (2) received the American Physiological Society (APS) Caroline tum Suden Award. She was selected by the American Society for Pharmacology and Experimental Therapeutics: (3) for the Mentoring Network: Coaching for Career Development; (4) as a Reviewer for the Summer Undergraduate Research Fellowship Individual Award; and (5) as a poster judge for the Dolores C. Shockley Award. Dr. Rutkai also (6) submitted an American Heart Association GSA Scientist Development Grant in January of 2016; and (7) has co-authored two papers; please see the Publications Section, Page 6.

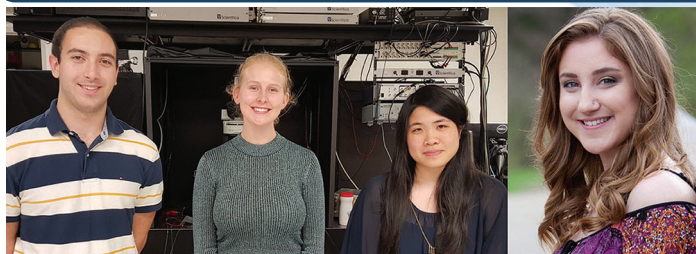
Dr. Ivan Merdzo, Postdoctoral Fellow working with **Dr. David Busija**, (1) received a Travel Award from the Tulane OGPS to attend EB2016 to (2) present a poster and give an oral presentation, "Mitochondrial Function of the Cerebral Vasculature in Insulin Resistant Zucker Obese Rats;" and (3) published a first-authored paper; please see the Publications Section on Page 6.

Jen Duong, working with **Dr. Sarah Lindsey**, presented a poster, "GPER-1 Agonist Reduces Angiotensin-II Induced Oxidative Stress in Rat Aortic Smooth Muscle Cells," at EB2016.

Dr. Margaret Zimmerman, Postdoctoral Fellow working with **Dr. Sarah Lindsey**, has been awarded an American Heart Association Postdoctoral Fellowship. Grant Title: "Renoprotective Effects of the G-Protein Coupled Estrogen Receptor," \$93,704, for 2 years. Dr. Zimmerman also (1) received a Travel Award for APS Conference: Cardiovascular, Renal, and Metabolic diseases: Physiology and Gender, to give a poster, "Long-term Estrogen Treatment Increases Renal Tubular Casts and TGR β in Aged Ovariectomized Long Evan Rats, Nov. 17-20, 2015, Annapolis, MD; (2) was a Poster Judge for the Greater New Orleans Science and Engineering Fair, Feb. 24, 2016; and (3) gave an invited talk: "Double-edged Sword: Sex Hormones in Renal Health," at EB2016.

Rebecca Voglewede, working with **Dr. Ricardo Mostany**, received four awards and gave two oral talks. **Awards:** (1) Outstanding Young Scientist Travel Award, Association for Women in Science-Southern Louisiana, 12/08/15; (2) Cold Spring Harbor Laboratory Neuronal Circuits Travel Award, 2016, 01/22/16; (3) Jean Yocum Harlan Award for Outstanding Graduate Student Presentation, 3rd Place, Tulane Annual Neuroscience Program Retreat, 02/27/16; and (4) full travel and accommodations to attend NIH-Brain Initiative Computational Neuroscience 2016 Summer Course: Models and Neurobiology, University of Missouri-Columbia, 03/08/16. **Oral Presentations:** (4) "Optogenetics via Spatial Light Modulation & Ca²⁺ Imaging for Exploration of Plasticity in the Mouse Primary Somatosensory Cortex," 4D Microscopy of Brain Circuits Workshop, UC Berkeley, CA, 1/15/16; and (5) "Age-dependent Difference in Dendritic Spine Dynamics Within the Primary Somatosensory Cortical Barrel Field following Sensory Manipulation," Tulane Annual Neuroscience Program Retreat, New Orleans, LA 2/27/16.

New Faces in Pharmacology



Dr. Mostany's Lab has expanded with the addition of (from Left to Right) **Mike Jacobowitz**, a Masters of Pharmacology student, and Undergraduate students: **Kaeli Vandemark**, **Kathy Le**, and **Marissa Heffler**



Jan Mun, with wheelbarrow, is working with **Dr. Howard Mielke**. She is from Brooklyn, NY and has been visiting Tulane as an "Artist in Residence" at the Studio in the Woods. She and Dr. Mielke are working to establish an urban garden network organization between NYC, NOLA, and Seattle. She is helping with census tract collections in New Orleans as

part of environmental signaling intervention needed to reduce exposures within severely Pb contaminated communities in New Orleans.

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

This is an endowed pool of resources to support students in the Department of Pharmacology. To read the biography of Dr. Krishna please go to: <http://tulane.edu/som/departments/pharmacology/agrawalfund.cfm>

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

Masters Program Graduate Spotlight: Chelsea Grimes (M.D. May, 2016)



The opportunities available to students who graduate from Tulane's Pharmacology Masters program are extensive and since graduating in 2010, my career path has been rewarding. I began my graduate studies with the department of pharmacology after a strong recommendation from an alumnus of the program. This program offers a uniquely structured curriculum, various areas of research, and key mentorship opportunities.

The program is headquartered at the medical school, which benefits the trainees hoping to pursue a career in medicine. The curriculum expands upon the pharmacology course taught to the second year (MS2) medical students, and classes are frequently held with MS2s. The rigorous course of study thoroughly prepared me for my future medical studies. I enjoyed being taught by school of medicine faculty and working alongside medical students, which allowed me to become well versed in medical pharmacology terminology and become familiar with the USMLE-type question style on medical examinations. I responded well to the supplemental team- and problem-based learning sessions employed in the course, which teaches trainees to collaborate with peers on a team approach to the treatment of a case study patient—a learning environment that enriches traditional education. My experience instilled in me not only a love of learning but also a deep appreciation for teamwork and teaching.

I became most excited by the research being performed within the department. I had very little experience but was interested in research, and I was eager to turn that interest into a skill. Various areas of research are available to trainees—from immunology to infectious disease to arteriosclerosis—it was difficult for me to decide on only one! I joined the neuropharmacology lab, and over the course of the year my mentor taught me the proper technique and approach to research. I developed a passion for research during my time in the lab, which resulted in 3 publications and 4 poster presentations at conferences around the country. Mentorship is key throughout the Pharmacology Masters program. I feel lucky to have worked with such incredible faculty in the classroom as well as the lab. These strong mentorships foster a cultivating environment, one that is academic but not stuffy, in which I was able to grow personally and professionally. The faculty are invested in their trainees and they helped me to navigate a career path in medicine and research.

The city of New Orleans serves as an additional benefit to Tulane's Pharmacology Masters program. My class of trainees participated in multiple community service opportunities throughout the year. Together with my classmates, working with Habitat for Humanity, I was able to build a home for a family in need. I also had the opportunity to serve patients as a note scribe in various Tulane-associated community clinics. I feel fortunate to have experienced an education that is intertwined with an engaging community. In addition, there are countless opportunities to explore this vibrant and soulful city through food, live music, Saints football games, and the arts. I appreciate the deep melting pot of cultures that contributed to my understanding of people unlike myself, which ultimately became a part of my identity.

For these reasons, I am thankful for my year at Tulane's Pharmacology Masters program. The experience transformed me into a self-sufficient, pro-active, and more compassionate person in addition to propelling me forward in my career. I will graduate from Tulane medical school in May 2016 and will train as a resident in dermatology at Henry Ford Hospital.

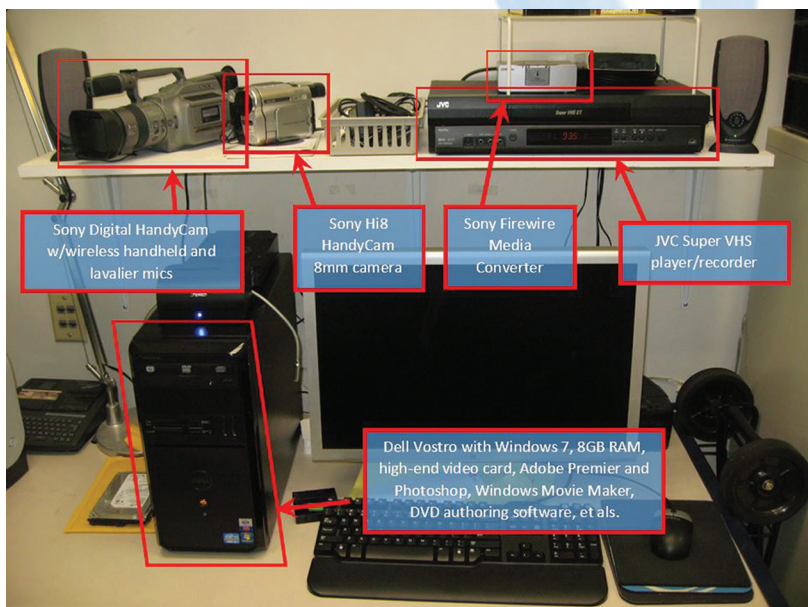
Chelsea Grimes

DIGITOLOGY, by Dave Maag, Information Systems Specialist

Videography Services Now Available!

I am happy to announce that the Computer Operations Core now has the capability to provide some simple video-related services which include: conversion of video tape formats to digital format, basic digital video editing, video recording, DVD creation. I can also help with the paper inserts and extraction of video from DVD (only legal uses, please).

Computer Operations continues to provide the following services: hardware and software support for PC/Windows, Macintosh/OSX, iOS, Android, and Linux, printing and scanning, networking/Wifi, internet/web/email/video conferencing, product research and recommendation, document management, image editing/creation using Adobe Photoshop, and PDF and PDF form creation using Adobe Acrobat, and A/V setup.



Publications

- Edward J, Pankey E, Jupiter R, Lasker G, Yoo D, Reddy V, Chong I, Jones M, Feintech S, **Lindsey SH, Kadowitz PJ.** (2015) Analysis of Erectile Responses to Bradykinin in the Anesthetized Rat. *Am J Physiol Heart Circ Physiol.* 309(3):H499-511.
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- Lin D,** Chai Y, Izadpanah R, **Braun SE,** Alt E. NPR3 protects cardiomyocytes from apoptosis through inhibition of cytosolic BRCA1 and TNF- α . *Cell Cycle*, (In Press)
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- Sen A, Kumar P, Garg R, **Lindsey SH, Katakam PVG,** Bloodworth M, Pandey KN. Transforming Growth Factor- β 1 Antagonizes the Transcription, Expression, and Vascular Signaling of Guanylyl Cyclase/Natriuretic Peptide Receptor A: Role of α EF1. *FEBS J.* 2016 Mar 2 doi: 10.1111/febs.13701.
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- David W. Busija, Ibolya Rutkai,** Somhrita Dutta, and **Prasad V. Katakam.** Role of mitochondria in cerebral vascular function: Energy production, cellular protection, and regulation of vascular tone. In: *Comprehensive Physiology*, American Physiological Society, 2016. (In Press)
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- Mielke HW.** Nature and extent of metal-contaminated soils in urban environments (Keynote talk). *Environ Geochem Health*, 2016 Jan 11, 1-13.
- Laidlaw MA, Rowe DB, Ball AS, **Mielke HW.** A Temporal Association between Accumulated Petrol (Gasoline) Lead Emissions and Motor Neuron Disease in Australia. *Int J Environ Res Public Health.* 2015 Dec 19;12(12):16124-35.
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Newsletter Oversight: Dr. Barbara Beckman, 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.