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Quillen College of Medicine Scholarly Activity Report

6-30-2020

2019-2020 Department of Biomedical Sciences Scholarly Activity Report

Quillen College of Medicine, East Tennessee State University

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EAST TENNESSEE STATE UNIVERSITY
QUILLEN COLLEGE OF MEDICINE

SUMMARY OF SCHOLARLY ACTIVITIES
DEPARTMENT OF BIOMEDICAL SCIENCES

JULY 1, 2019 – JUNE 30, 2020

I PUBLICATIONS

Note: *Graduate student, **Undergraduate student, ***Medical student

1-A. Journal Publications

Bidani AK, **Polichnowski AJ**, Licea-Vargas H, Long J, Kliethermes S, Williamson GA, Griffin KA (2020) BP fluctuations and the real-time dynamics of renal blood flow responses in conscious rats. *J Am Soc Nephrol*. Feb;31(2):324-336. PMID: 31792155.

Canfield C-A, **Bradshaw PC** (2019) Amino acids in the regulation of aging and aging-related diseases. *Translational Medicine of Aging*. Volume 3, Sept pp 70-89. <https://doi.org/10.1016/j.tma.2019.09.001>. <https://www.sciencedirect.com>.

Champney WS (2020) Antibiotics targeting bacterial ribosomal subunit biogenesis. *J Antimicrob Chemother*, Apr 1;75(4):787-806. PMID: 31942624.

Cui K*, Podolnikova NP, Bailey W, Szmuc E, Podrez EA, Byzova TV, **Yakubenko VP** (2019) Inhibition of integrin $\alpha\text{D}\beta\text{2}$ -mediated macrophage adhesion to end product of docosahexaenoic. *J Biol Chem*. Sep 27;294(39):14370-14382. PMID: 31395659.

Dalal S, Daniels CR*, Li Y*, **Wright GL, Singh M, Singh K** (2020) Exogenous ubiquitin attenuates hypoxia/reoxygenation-induced cardiac myocyte apoptosis via the involvement of CXCR4 and modulation of mitochondrial homeostasis. *Biochem Cell Biol*. Jan 22;1-10. PMID: 31967865.

Defoe DM, Rao H, Harris DJ 3rd, Moore PD, Brocher J, **Harrison TA** (2020) A non-canonical role for p27Kip1 in restricting proliferation of corneal endothelial cells during development. *PLoS One*. Jan 13;15(1):e0226725. PMID: 31929545.

Fan Y, Zeng F, **Brown RW**, Price JB, Jones TC, **Zhu M-Y** (2020) Transcription factors Phox2a/2b upregulate expression of noradrenergic and dopaminergic phenotypes in aged rat brains. *Neurotox Res*. Jul;2. Springer Link. Online ahead of Print. PMID: 32617854.

Gill WD*, Shelton HW*, Burgess KC, **Brown RW** (2020) Effects of an adenosine A(2A) agonist on the rewarding associative properties of nicotine and neural plasticity in a rodent model of schizophrenia. *J Psychopharmacol*. Jan;34(1):137-144. PMID: 31694445.

Griffin JWD*, **Bradshaw PC** (2019) Effects of a high protein diet and liver disease in an in silico model of human ammonia metabolism. *Theor Biol Med Model* Jul;31;16(1):11 PMID: 31366360.

Hoover DB, Poston MD, Brown S, Lawson SE#, Bond CE, Downs AM, Williams DL, Ozment TR (2020) Cholinergic leukocytes in sepsis and at the neuroimmune junction in the spleen. *Int Immunopharmacol*. Apr;81:106359. #Pharmacy student. PMID: 32143148.

Hoover DB, Hanna P, Darcey MJ, Hadaya JE, Swid MA, Peirce SG, Potter JC, Smith E, Poston M, Ardell JL, Shivkumar (2020) Autonomic innervation of porcine ventricular myocardium and purkinje fibers. *FASEB J.* 17 Apr, Vol. 34, Issue S1. ISSN: 0892-6638, 1530-6860; DOI: 10.1096/fasebj.2020.34.s1.03376.

Jewett BE^{***}, Miller MN, Ligon LA, Carter Z, Mohammad I, **Ordway GA** (2020) Rapid and temporary improvement of depression and anxiety observed following niraparib administration: a case report. *BMC Psychiatry.* Apr 15;20(1):171. PMID: 32295563.

Jia C, Malone HM*, **Keasey MP**, Lovins C, Elam J, **Hagg T** (2020) Blood vitronectin induces detrimental brain IL-6 and correlates with outcomes after stroke only in female mice. *Stroke.* May;51(5):1587-95. PMID 32312218.

Jia C, **Keasey MP**, Malone HM*, Lovins C, **Hagg T** (2020) Vitronectin mitigates stroke-increased neurogenesis only in female mice and through FAK-regulated IL-6. *Exp Neurol.* Jan;323:113088. PMID: 31678139.

Kaestner CL, Smith EH, Peirce SG, **Hoover DB** (2019) Immunohistochemical analysis of the mouse celiac ganglion: An integrative relay station of the peripheral nervous system. *J Comp Neurol.* Nov;1:527(16):2742-2760. PMID: 31021409.

Kostrzewa JP, **Kostrzewa RM** (2020) p-Chloroamphetamine-enhanced neostriatal dopamine exocytosis in rats neonatally co-lesioned with 6-OHDA and 5,7-DHT: Relevance to Parkinson's Disease. *Neurotoxicity Res.* Mar;37(3):543-552. PMID: 31939043.

Leonard CA, **Schoborg RV**, Low N, Unemo M, Borel N (2019) Pathogenic interplay between Chlamydia trachomatis and Neisseria gonorrhoeae that influences management and control efforts – More questions than answers? *Curr Clin Micro Rpt.*6, 182-191. Jul. 12, DOI 10.1007/s40588-019-00125-4, Springer Link.

Makinwa Y*, **Musich PR**, **Zou Y** (2020) Phosphorylation-dependent Pin1 isomerization of ATR: Its role in regulating ATR'S anti-apoptotic function at mitochondria, and the implications in cancer. *Front Cell Dev Biol. Review.* Apr 30;8:281. PMID: 32426354.

Pavlov VA, Cui K *, Addorisio M, Williams DL, **Yakubenko VP** (2020) The $\alpha 7$ nicotinic acetylcholine receptor is an important determinant of monocyte-derived macrophage migration. *J Immunol.* May 1, Vol. 204 (1 Supplement) 220.25.

Polichnowski AJ, Griffin KA, Licea-Vargas H, Lan R, Picken MM, Long J, Williamson GA, Rosenberger C, Mathia S, Venkatachalam MA, Bidani AK (2020) Pathophysiology of unilateral ischemia-reperfusion injury: Importance of renal counterbalance and implications for the AKI-CKD transition. *Am J Physiol Renal Physiol.* May 1;318(5):F1086-F1099. PMID: 32174143.

Qin Y, Musket A*, Kou J*, Preiszner J, Tschida BR, Qin A*, Land CA, Staal B, Kang L, Tanner K, Jiang Y, Schweitzer JB, Largaespada, DL, **Xie Q** (2020) Overexpression of HGF/MET axis along with p53 inhibition induces De Novo glioma formation in mice. *Neurooncol Adv.* Jun 4;2(1),1-12. PMID: 32642717.

Salavatian S, Ardell SM, Hammer M, **Gibbons D**, Armour JA, **Ardell JL** (2019) Thoracic spinal cord neuromodulation obtunds dorsal root ganglion afferent neuronal transduction of the ischemic ventricle. *Am J Physiol Heart Circ Physiol.* Nov 1;317(5):H1134-H1141. PMID: 31538809.

Sciara AN, Beasley B, Crawford JD, Anderson EP, Carrasco T, Zheng S, **Ordway GA**, Chandley MJ (2020) Neuroinflammatory gene expression alterations in anterior cingulate

cortical white and gray matter of males with autism spectrum disorder. *Autism Res.* Jun;13(6):870-884. PMID: 32129578.

Singh SK, Agrawal A (2019) Functionality of C-Reactive protein for atheroprotection. *Front Immunol.* Jul 16;10:1655. PMID: 31379851.

Smith J, Dykes R, Chi DS (2020) Exercise reduces plasma lipid levels by downregulating tumor necrosis factor- α production by peripheral blood mononuclear cells. *World Journal of Advanced Research and Review.* 06(03), 180-188. e-ISSN: 2581-9615, Cross Ref DOI: 10.30574/wjarr. <http://www.wjarr.com>.

Smith J (2020) Microgravity, bone homeostasis, and insulin-like growth factor-1. *Appl Sci. Review* 10(13), 4433; Jun 27; www.mdpi.com. <https://doi.org/10.3390/app10134433>.

Veech RL, King MT, Pawlosky R, **Bradshaw PC**, Curtis W (2019) Relationship between inorganic ion distribution, resting membrane potential and the $\Delta G'$ of ATP hydrolysis: A new paradigm. *FASEB J.* Dec;33(12):13126-13130. PMID: 31690124.

Visavadiya NP, **Keasey MP**, Razskazovskiy V, Banerjee K, **Jia C**, Lovins C, **Wright GL, Hagg T** (2020) Correction to: Integrin-FAK signaling rapidly and potently promotes mitochondrial function through STAT3. *Cell Commun Signal.* Apr 20;18(1):64. PMID: 32312272.

Wang Y, Xu E, **Musich PR**, Lin F (2019) Mitochondrial dysfunction in neurodegenerative diseases and the potential countermeasure. *CNS Neurosci Ther. Review.* Jul;25(7):816-824. PMID: 30889315.

Zahner MR, **Beaumont E** (2020) Intermittent fasting after spinal cord injury does not improve the recovery of baroreflex regulation in the rat. *Front Physiol.* Jul 22;11:865. PMID: 32792982.

Zhan Y, Raza MU*, Yuan L, **Zhu M-Y** (2019) Critical role of oxidatively damaged DNA in selective noradrenergic vulnerability. *Neuroscience.* Dec 1;422:184-201. PMID: 31698021.

Zhu MY, Raza MU*, Zhan Y, Fan Y (2019) Norepinephrine upregulates the expression of tyrosine hydroxylase and protects dopaminergic neurons against 6-hydrodopamine toxicity. *Neurochem Int.* Dec;131:104549. PMID: 31539561.

1-B. Books or Book Chapters

Books

Kostrzewa, Richard, co-Editor, Drs. Paul A. Cox co-Editor (Brain Chemistry Labs, Institute for Ethnomedicine, Jackson Hole WY) and Gilles Guillemin (Macquarie Univ, Sydney, Australia) of a special issue of the journal *Neurotoxicity Research*, (2020) on the theme of the neurotoxin BMAA (beta-N-methylamino-L-aspartic acid).

Book Chapter

Levin Barry S, Kerrigan Sarah (Eds.) Specimen Preparation/Extraction in Principles of Forensic Toxicology. Principles of Forensic Toxicology, 5th Edition, Springer Publishing Company, New York, NY (In press)

II. PAPERS, ABSTRACTS AND/OR PRESENTATIONS

Note: Due to the COVID-19 Pandemic several scientific meetings were cancelled during 2019-20 FY.

II-A. Regional:

Abigail Holt*** Title: Host cell integrin signaling activation in microsporidia encephalitozoon intestinalis adherence and infection. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019, Johnson City, TN. Mentor: Dr. Russell Hayman

Britton Huskey*** Title: Inhibiting bacterial exit from host cells affects chlamydial infectious progeny production. 18th Annual Student Medical Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Jennifer Hall

Mayuri Jadadish*** Title: Elevated Poly(ADP-ribose) Polymerase-1 (PARP1) immunoreactivity in major depressive disorder. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Gregory Ordway

Paul Kirby*** Title: Nuclear localization of NF- κ B proteins in human postmortem brain samples from psychiatrically characterized donors. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Gregory Ordway.

Caleb Knisley*** Title: Examining the impact of two NAD kinases on oxidative stress in *C.elegans*. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Patrick Bradshaw

Allee Maxwell*** Title: Inhibition of Poly(ADP-ribose) polymerase-1 alleviates anhedonia and behavioral despair in a treatment resistant model of depression. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Russell Brown.

Connor Ryan*** Title: Renal immune cell profile in Dahl salt-sensitive and consomic salt-resistant rats. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Aaron Polichnowski.

Haley Scarbrough*** Title: The evaluation of extracellular matrix proteins as potential substrate for macrophage migration to the site of inflammation. 18th Annual Medical Student Health Sciences Research Symposium, ETSU/QCOM, Sep 26, 2019. Mentor: Dr. Valentin Yakubenko.

II-B National:

Ardell CL, Ozment TR, Cui K*, Bailey WP, Williams DL, **Yakubenko VP**. The anti-sepsis mechanism of macrophage integrin α D β 2 is mediated via regulation of macrophage migration and bacterial phagocytosis. Poster presentation, The Shock Society, Jun 2019, San Diego, CA.

Brown RW, Rauhuff HE**, Gill WD*, Shelton HW*, Kerns CW**, Gabbita P. The effects of a novel anti-inflammatory on behavioral tests of cognitive and anxiety in a mouse of model Alzheimer's Disease. Society for Neuroscience (SFN), Oct 19-23, Chicago, IL.

Cooper CM**, Andresen MC, Campbell RP, **Beaumont E**. Vagus nerve stimulation activates supramedullary pathways to potentiate activity of Nucleus of Solitary Tract (NTS) neurons. Society for Neuroscience (SFN), Oct 19-23, 2019, Chicago, IL.

Gill WD*, Shelton HW*, Burgess KC, **Brown RW**. The effects of an adenosine A(2A) agonist on the rewarding associative properties of nicotine and neural plasticity in a rodent model of schizophrenia. Society for Neuroscience (SFN), Oct 19-23, 2019, Chicago, IL.

Fawley JA, Hegarty DM, Aicher SA, Doyle MW, **Beaumont E**, Andresen MC. PVN-projecting NTS neurons receive both direct and indirect inputs from solitary tract afferents. Experimental Biology Meeting, Apr. 4-7, 2020, San Diego, CA.

Hanna P, Swid MA, Dacey M, Rajendran PS, Hiyari S, Tompkins J, Zhu C, Smith EH, Peirce S, Chen J, Vadigepalli R, Schwaber J, Cheng J, **Hoover D**, Ardell JL, Shivkumar K. Intrinsic cardiac neural control of the sinoatrial node. Paper presentation. 11th Congress of the International Society for Autonomic Neuroscience, Jul 25-27, 2019, Los Angeles, CA.

Hoover DB, Polichnowski AJ, Blair TE. Paper presentation, Donepezil, a centrally-acting cholinesterase inhibitor, activates vagal and sympathetic efferent pathways 11th Congress of the International Society for Autonomic Neuroscience, Jul 25-27, 2019, Los Angeles, CA.

Hoover DB, Hanna P, Darcey MJ, Hadaya JE, Swid MA, Peirce SG, Potter JC, Smith E, Poston M, Ardell JL, Shivkumar (2020) Autonomic innervation of porcine ventricular myocardium and purkinje fibers. FASEB J. 17 Apr, Vol. 34, Issue S1. ISSN: 0892-6638, 1530-6860; DOI: 10.1096/fasebj.2020.34.s1.03376.

Kenard B, Cobble A, Gravitte A*, Galloway K*, Kintner J, **Hall JV**, Brown S. Quantification of progesterone and 17- β estradiol in mouse serum by liquid chromatography-tandem mass spectrometry. American College of Clinical Pharmacy Virtual Poster Symposium. May 2020.

Moore CA, Lightner JW, **Duffourc M**, Krishnan K. Metformin, not γ -tocotrienol, increases gene methylation and decreases expression of genes responsible for cell signal transduction in prostate cancer cells [abstract]. In: Proceedings of the 111th Annual Meeting of the American Association for Cancer Research (AACR); Virtual Meeting, June 22-24, 2020, Philadelphia, PA.

Ordway G. Potential role of brain poly (ADP-ribose) Polymerase 1 (PARP1) in the pathology of major depressive disorder and suicide. Presented at the International Summit on Suicide Research, Oct. 27-30, 2019, Miami, FL.

Zhan Y, Raza MU*, Yuan L, **Zhu M-Y**. Critical role of oxidatively damaged DNA in selective noradrenergic vulnerability. Neuroscience Society meeting (SFN). Oct. 19-23, 2019, Chicago, IL.

II-C. International:

Gill PS*, **Hall JV**, Ozment TR, Williams DL. Training the innate immune system reverses age related changes to the fecal microbiome. International Trained Immunity Consortium, 3rd Innate Immune Memory Wellcome Trust Conference. Nijmegen, Netherlands, Oct 2019.

Kuratl J*, Leonard C, Marti H*; Blenn C, **Schoborg RV**, Borel N. Effects of cytokine inhibitors on Chlamydia trachomatis development. *Oral presentation*, 18th German Chlamydia Workshop, Feb 5, 2020, Lubeck, Germany.

Leonard, C, **Hall J**, Kintner J, Borel N, **Schoborg RV**. Amoxicillin delivery vehicle affects vaginal shedding in a mouse model of chlamydial persistence. *Poster and oral presentations*, 18th German Chlamydia Workshop, Feb 5, 2020, Lubeck, Germany,

Singh SK, Ngwa DN*, **Agrawal A**. Complement activation by C-reactive protein is essential for protection against pneumococcal infection. *J Immunol*. Vol. 204 (Issue 1 supplement): 227.15, 2020. AAI Annual Meeting, May 2020, Honolulu, HI.

III. INVITED PRESENTATIONS

Due to the COVID-19 Pandemic some presentations were cancelled during 2019-20 FY.

II-A. Regional:

Tuqa Alkhateeb*, Graduate Student, Sepsis-induced immune suppression and dysregulation of myeloid cell development. Biomedical Sciences Internal Seminar, Aug 2, 2019.

Russell Brown, PhD, Professor, The role of adenosine A(2A) receptors in the behavioral and plasticity response to nicotine in the neonatal quinpirole model. Biomedical Sciences Internal Seminar, Aug 16, 2019.

Siva Digavalli, B.Pharm, PhD, Associate Professor. College of Pharmacy. Timing is of the essence: Neural oscillatory deficits in schizophrenia and an opportunity for rational drug development. Biomedical Sciences Internal Seminar, Aug 30, 2019.

Fei Tu* Graduate Student. Enhanced glycolysis contributes to cardiac dysfunction in polymicrobial sepsis. Biomedical Sciences Internal Seminar, Sept 13, 2019.

Amy Berry*, Graduate Student. Chlamydial interactions with the female sex hormones estrogen and progesterone and their receptors. Biomedical Sciences Internal Seminar, Sept 27, 2019.

Ashana Puri, PhD, Assistant Professor. Department of Pharmaceutical Sciences. Surmounting the skin barrier for drug delivery: Challenges and opportunities. Biomedical Sciences Internal Seminar, Oct 11, 2019.

Dr. Erik Petersen, Assistant Professor. Department of Health Sciences. Second messenger regulation of intracellular salmonella survival. Biomedical Sciences Internal Seminar, Oct 25, 2019.

Dr. Kenneth Ferslew, Presented "Forensic Toxicology" for Dr. Sarah Melton's elective on Addiction in Appalachia in the Gatton College of Pharmacy, Feb 4, 2020.

Dr. Kenneth Ferslew. Presented "Forensic Toxicology: Just What Are They Doing in the William L. Jenkins Forensic Center?" to the Alliance for Continued Learning/ ETSU, Johnson City, TN, Sept 18, 2019.

Dr. Cuihong Jia, Assistant Professor. CNTF, Olfactory neuroplasticity and smell function. Biomedical Sciences Internal Seminar, Nov 8, 2019.

Dr. Gregory Ordway, Associate Dean for Research and Graduate Education. PARP1 as a

novel target for the treatment and/or prevention of stress-related disorders. Biomedical Sciences Internal Seminar, Nov 22, 2019.

Dr. Theo Hagg, Professor & Chair. Targeting vascular mechanisms for neuroprotection after stroke. Biomedical Sciences Internal Seminar, Jan 28, 2020.

Dr. Qian Xie, Assistant Professor. Overexpression of HGF/MET axis induces de novo glioma formation in mice. Biomedical Sciences Internal Seminar, Feb 11, 2020.

Dr. Gerald A. Deehan, Assistant Professor, Department of Psychology. Cue the addiction: The long-lasting effects of conditioned cues on the behavioral and neurobiological manifestation of alcohol-seeking. Biomedical Sciences Internal Seminar, Feb 28, 2020.

Dr. Theo Hagg, Professor and Chair. Targeting vascular mechanisms for neuroprotection after stroke. Biomedical Sciences Internal Seminar, Jan 28, 2020.

Dr. Qian Xie, Assistant Professor. Overexpression of HGF/MET axis induces, de novo glioma formation in mice. Biomedical Sciences Internal Seminar, Feb 11, 2020.

Min Fan*, MD, MS, PhD Candidate. Endothelial HSPA12B and Yes-associated protein, cooperatively regulate angiogenesis following myocardial infarction. Biomedical Sciences Internal Seminar, Mar 3, 2020.

II-B National:

Dr. Michelle Duffourc, Thiazides for the treatment of hypertension. Pharmacology teaching seminar. Kentucky College of Osteopathic Medicine, University of Pikeville, Pikeville, KY.

Dr. Kenneth Ferslew, Trial Tactics With Expert Witnesses, Forensic Toxicology – The Science of Narcotic Pain Drugs and Psychotropic Drugs and Proof of Intoxication and Effects on Cognitive and Psychomotor Skills of a Driver and Pedestrian” to Tennessee Jury Trial Attorneys and Judges for Tennessee Attorneys, Aug 8-9, 2019, 1.5 hour, Cherokee, NC.

Dr. Donald Hoover, Cholinergic leukocytes in sepsis and at the neuroimmune junction in the spleen. 5th International Symposium on Non-Neuronal Acetylcholine, Long Beach, CA, Sep 27-29, 2019.

Dr. Aaron Polichnowski, Hemodynamic Mechanisms of Progression from AK1 to CKD. American Society of Nephrology Annual meeting. Session: Basic/Clinical Science Session, AKI Repair, Nonrecovery, and Transition to CKD. Hemodynamic Mechanisms of Progression from AK1 to CKD. Nov 7, 2019, Washington, DC.

Dr. Diego Rodriguez-Gil. Regeneration and neuronal differentiation in the olfactory system, Johns Hopkins University, Department of Physiology, Mar 4, 2020, Baltimore, MD.

II-C. International:

Leonard, C, Hall J, Kintner J, Borel N, **Schoborg RV**. Amoxicillin delivery vehicle affects vaginal shedding in a mouse model of chlamydial persistence. Poster and oral presentations, 18th German Chlamydia Workshop, Feb. 5-7, 2020, Lubeck, Germany.

Kuratli J*, Leonard C, Marti H*; Blenn C, **Schoborg RV**, Borel N. Effects of cytokine inhibitors

on Chlamydia trachomatis development. Oral presentation, 18th German Chlamydia Workshop, Feb. 5-7, 2020, Lubeck, Germany.

Gill PS*, Hall JV, Ozment TR, Williams DL. Training the innate immune system reverses age related changes to the fecal microbiome. International Trained Immunity Consortium, 3rd Innate Immune Memory Wellcome Trust Conference. Oct 2019, Nijmegen, Netherlands,

V. VISITING PROFESSORS

Due to the COVID-19 Pandemic some invited visiting professors were cancelled during 2019-20 FY.

Name: Lin Zhang, PhD
Title: Professor
UPMC Hillman Cancer Center, Department of Pharmacology & Chemical Biology
Institution: University of Pittsburgh School of Medicine, Pittsburgh, PA
Date: October 7, 2019
Event: External Seminar Series
Topic: Cell death regulation in the precision treatment of colorectal cancer

Name: Aleksey V. Zima, PhD
Title: Associate Professor
Department of Cell & Molecular Biology
Institution: Loyola University Chicago, Stritch School of Medicine, Maywood, IL
Date: October 21, 2019
Event: External Seminar Series
Topic: Calcium release channel dysfunction during oxidative stress: Implications in heart diseases

Name: Zixi Cheng, PhD
Title: Associate Professor
Division of Neuroscience & Division of Metabolic and Cardiovascular Sciences,
Burnett School of Biomedical Sciences,
Institution: University of Central Florida College of Medicine, Orlando, FL
Date: November 4, 2019
Event: External Seminar Series
Topic: Structural and functional mapping of brain-heart connection and remodeling

Name: Liwu Li, PhD
Title: Professor
Department of Biological Sciences,
Institution: Virginia Polytechnic Institute & State University, Blacksburg, VA
Date: November 19, 2019
Event: External Seminar Series
Topic: Innate immune memory dynamics in health and disease

Name: John R. Barnes, PhD
Title: Research Microbiologist
Institution: CDC Influenza Genomics, Team Lead, Atlanta, GA
Date: February 21, 2020

Event: External Seminar Series
Topic: Portable influenza diagnostics and surveillance—Assessing pandemic risk in the field.

Name: Michael Andresen, PhD
Title: Professor - Physiology/Pharmacology
Institution: Oregon Health & Science University, Portland, OR
Date: March 9, 2020
Event: External Seminar Series
Topic: Synaptic processing of cranial visceral afferents at the nucleus of the solitary tract

VI. EXTRAMURAL FUNDING

Extramural Funding Awards:

Total New Extramural Funding Awarded to Biomedical Sciences PI: \$2,731,103

Total Amount of New Funding FY2020 Distribution: \$810,858

“Complement- mediated anti-pneumococcal functions of C-reactive protein.” NIH; Alok Agrawal, PI; project funding period 2/5/20 to 1/31/25

Total Direct: \$1,250,000; Total Indirect: \$600,000; Total Award: \$1,850,000

Year Direct: \$250,000; Year Indirect: \$120,000; Year Total: \$370,000

“Calcitriol for the treatment of brain calcification through upregulation of SLC20A2.” NIH; Matthew Keasey, PI; project funding period 2/15/20 to 1/31/22

Total Direct: \$100,000; Total Indirect: \$48,000; Total Award: \$148,000

Year Direct: \$50,000; Year Indirect: \$24,000; Year Total: \$74,000

“Met-Targeting Chimeric Antigen Receptor (MetCAR) T cell therapy in Hepatocellular Carcinoma.” DOD; Qian Xie, PI; Project funding period 9/15/19 to 9/14/21

Total Direct: \$400,000; Total Indirect: \$179,103; Total Award: \$579,103

Year Direct: \$200,000; Year Indirect: \$89,858; Year Total: \$289,858

“Targeting the product of DHA oxidation as potential substrate for macrophage retention during atherosclerosis.” AHA; Valentin Yakubenko, PI; Project funding period 1/1/20 to 12/31/21

Total Direct: \$140,000; Total Indirect: \$14,000; Total Award: \$154,000

Year Direct: \$70,000; Year Indirect: \$7,000; Year Total: \$77,000

Continued Extramural Funded Grant Awards:

Total Amount of Continued Funding FY2020 Distribution: \$2,813,287, plus \$1,847,718 carry-over from FY2019

“Parameters optimization of noradrenergic burst stimulation.” Liva Nova; Eric Beaumont, PI; Project Funding Period 5/15/19 to 5/14/20

Year Direct: \$20,000; Year Indirect: \$9,600; Year Total: \$29,600

“The role of adenosine A(2A) receptor activation on the behavioral and plasticity response to nicotine in a rodent model of schizophrenia.” NIH; Russell Brown, PI; project funding period 4/1/19 to 3/31/22

Year Direct: \$100,000; Year Indirect: \$45,003; Year Total: \$145,003; plus \$112,268 carry-over (direct+indirect)

“Hippocampal Poly (ADP-ribose) Polymerase-1 (PARP1) in Depression and suicide.” AFSP; Greg Ordway, PI; project funding period 10/1/18 to 9/30/20
Year Direct: \$62,500; Year Indirect: \$0, Year Award: \$62,500; plus \$42,094 carry-over (direct)

“Afferent Mechanisms of Vagal Neuromodulation Therapy.” NIH; Eric Beaumont, PI; project funding period 8/1/18 to 6/30/22
Year Direct: \$467,111; Year Indirect: \$136,423; Year Total \$603,534; plus \$172,658 carry-over (direct+indirect)

“Vagal Nerve stimulation mitigates alteration of the intestinal environment to limit the progression of heart failure.” AHA; Eric Beaumont, PI; project funding period 7/1/18 to 6/30/20
Year Direct: \$70,000; Year Indirect: \$ 7,000; Year Total: \$77,000; plus \$13,425 carry-over (direct+indirect)

“Application of novel anti-inflammatory drugs towards Alzheimer’s Disease.” P2D (Via NIH); Russell Brown, PI; project funding period 8/1/18 to 11/30/20
Year Direct: \$48,519; Year Indirect: \$3,881; Year Total: \$52,400; plus \$13,063 carry-over (direct+indirect)

“Targeting blood-derived integrin signaling after stroke.” NIH; Theo Hagg, PI; project funding period 7/15/18 to 4/30/2023
Year Direct: \$218,750; Year Indirect: \$105,000, Year Total: \$323,750; plus \$349,159 carry-over (direct+indirect)

“Cardioprotective Role of Extracellular ubiquitin in Myocardial Ischemia/Reperfusion Injury and Myocyte Apoptosis.” NIH; Krishna Singh, PI; project funding period 8/1/18 to 7/31/21
Year Direct: \$100,000; Year Indirect: \$41,816; Year Total: \$141,816; plus \$100,637 carry-over (direct+indirect)

“Restoration of noradrenergic and dopaminergic functions in the brain of aged rats.” NIH; Meng-Yang Zhu, PI; project funding period 7/1/18 to 6/30/21
Year Direct: \$100,000; Year Indirect: \$48,000; Year Total: \$148,000; plus \$36,108 carry-over (direct+indirect)

“Met-Targeting CAR T-cell therapy in Hepatocellular Carcinoma.” Gilead Sciences, Inc.; Qian Xie, PI; Project funding period 7/27/18 to 7/26/20
Year Direct: \$59,100; Year Indirect: \$5,900; Year Award: \$65,000; plus \$15,805 carry-over (direct+indirect)

“Testing the NADPH redox theory of aging in C. elegans.” NIH; Patrick Bradshaw, PI; project funding period 9/15/18 to 8/31/21
Year Direct: \$100,000; Year Indirect: \$40,950; Year Award: \$140,950; plus \$58,273 carryover (direct+indirect)

“Investigation of therapeutic potential of exogenous ubiquitin following myocardial ischemia/reperfusion injury,” Dept. of Veterans Affairs; Krishna Singh, Ph.D., PI; Project funding period 04/01/2019 to 3/31/2023;
Year Direct: \$263,194; Year Indirect: \$0; Year total: 263,194.

“Determining the importance of in vivo estrogen receptors and invitro hormone modulation of Wnt/ β -catenin on Chlamydial inf.” NIH; Jennifer Hall, PI; project funding period 8/22/17 to 7/31/19

Year Direct: \$0; Year Indirect: \$0; Year Total \$0; plus \$4,772 carryover (direct+indirect)

“Comprehensive structural and Functional Mapping of the Mammalian Cardiac Nervous System” UCLA (Via NIH); Donald Hoover, PI; project funding period 9/20/17 to 6/30/19

Year Direct: \$287,714; Year Indirect: \$122,117; Year Award \$409,831

“Oxidative damage and base excision repair in white matter oligodendrocytes in major depressive disorder” NIH; Greg Ordway, PI; project funding period 4/1/2018 to 3/31/2020; Year Direct: \$149,283; Total Indirect: \$65,770; Year Total \$215,053; plus \$46,749 carry-over (direct+indirect)

“Microsporidia Spore Adherence to Integrin Ligands” NIH; James Hayman, PI; project funding period 6/8/18 to 5/31/21;

Year Direct: \$95,698; Year Indirect: \$39,958; Year Total \$135,656; plus \$44,560 carry-over (direct+indirect)

“Characterization of hormonal influences on Chlamydia development” NIH; Jennifer Hall, PI; project funding period 8/20/16 to 7/31/19;

Year Direct: \$0; Year Indirect: \$0; Year Total: \$0; plus \$114,012 carry-over (direct+indirect)

“C-reactive protein in rheumatoid arthritis” NIH; Alok Agrawal, PI; project funding period 7/13/15 to 5/31/20;

Year Direct: \$0; Year Indirect: \$0; Year Total: \$0 plus \$713,707 carry-over (direct+indirect)

“Unrestricted funds transfer for research” Van Andel Research Institute; Qian Xie, PI; project funding period 2/1/16 to 6/30/19;

Year Direct: \$0; Year Indirect \$0; Year Total: \$0; plus \$10,428 carry-over (direct)

Continued Extramural Funded Grant Extensions:

“Targeting CNTF to increase adult forebrain neurogenesis” NIH R01, Theo Hagg, PI; project funding period 4/15/14 to 3/31/20

“Deleterious effects of TNF- α on the AKI-CKD Nexus” ASN Foundation; Aaron Polichnowski, PI; project funding period 7/1/17 to 6/30/20;

“The Renal Cholinergic System and the AKI-CKD Nexus” AHA-SE; Aaron Polichnowski, PI; project funding period 7/1/17 to 6/30/20;

“Role of ATM in myocardial remodeling following myocardial infraction” NIH; Krishna Singh, PI; Project funding period 8/1/15 to 7/31/19

“Role of B2 integrins in macrophage retention and egress during inflammation” NIH; Valentin Yakubenko, PI; project funding period 1/15/16 to 4/30/20

Intramural Grant Awards:

Total Internal Grants Awarded to Biomedical Sciences PI: \$60,000

“Determining the effect of Dravet Syndrome on cardiac potassium channels.” ETSU RDC, Chad Frasier, PI; project funding period 7/1/19 to 6/30/20; Total Award: \$10,000

“Impact of *Candida albicans* quorum sensing molecules and β -glucan on *Chlamydia trachomatis* infections in vitro.” ETSU RDC, Jennifer Hall, PI; project funding period 7/1/19 to 6/30/20; Total Award: \$10,000

“Disable 2, a novel player in chemotherapy resistance and tumor recurrence.” ETSU RDC, Yong Jiang, PI; project funding period 7/1/19 to 6/30/20; Total Award: \$10,000

“The role of epigenetic and transcriptional regulation during quorum sensing in the opportunistic pathogen *C. albicans*.” ETSU RDC, Michael Kruppa, PI; project funding period 7/1/19 to 6/30/20; Total Award: \$10,000

“Design and Synthesis of Novel PARP1 Inhibitors with Properties that Permit Brain Penetration and Retention.” ETSU RDC, Gregory Ordway, PI; project funding period 7/1/19 to 6/30/20; Total Award: \$10,000

“Role of urokinase pathway and mitochondrial dysfunction in the etiology of kidney disease and hypertension in the Dahl rat.” ETSU RDC, Aaron Polichnowski, PI; project funding period 7/1/19 to 6/30/20; Total Award: \$10,000