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2016-2017 Department of Biomedical Sciences Scholarly Activity Report

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EAST TENNESSEE STATE UNIVERSITY
QUILLEN COLLEGE OF MEDICINE

SUMMARY OF SCHOLARLY ACTIVITIES

DEPARTMENT OF BIOMEDICAL SCIENCES
JULY 1, 2016 – JUNE 30, 2017

I. PUBLICATIONS

Note: *graduate student; **undergraduate student; ***medical student

I-A. Journal Publications (Students Underlined)

Archer T, **Kostrzewska RM** (Aug 2016) Exercise and nutritional benefits in PD: Rodent models and clinical settings. In: Neurotoxin Modeling of Brain Disorders – Life-long Outcomes in Behavioral Teratology (Kostrzewska RM and Archer T, Editors), Springer Intl Publ Switzerland. doi: 10.1007/7854_2015_409. *Curr Top Behav Neurosci* Aug;29:333-351. PMID: 26728168.

Archer T, **Kostrzewska RM** (Aug 2016) Neuroteratology and animal modeling of brain disorders. In: Neurotoxin Modeling of Brain Disorders – Life-long Outcomes in Behavioral Teratology (Kostrzewska RM, Archer T, Eds.), Springer Intl Publ Switzerland. doi: 10.1007/7854_2015_434. *Curr Top Behav Neurosci*. Aug; 29:1-40. PMID: 26857462.

Aziz MH, Cui K*, Das M, Brown KE, Ardell CL, Febbraio M, Pluskota E, Han J, Ballantyne CM, Smith JD, Cathcart MK, **Yakubenko VP** (2017) The upregulation of integrin $\alpha_6\beta_2$ (CD11d/CD18) on inflammatory macrophages promotes macrophage retention in vascular lesions and development of atherosclerosis. *J Immunol*. Jun;198(12):4855-4867. (Moamir Aziz and Kui Cui* contributed equally to this work.) PMID:28500072.

Banerjee K, **Keasey MP**, Razskazovskiy V, Visavadiya NP, **Jia C, Hagg T** (2017) Reduced FAK-STAT3 signaling contributes to ER stress-induced mitochondrial dysfunction and death in endothelial cells. *Cell Signal*. [Epub ahead of print]. PMID: 28495589.

Beaumont E, Campbell RP, Andresen MC, Scofield S*, **Singh K**, Libbus I, KenKnight BH, Snyder L, Cantrell N*** (2017) Clinically-styled vagus nerve stimulation augments spontaneous discharge in second and higher order sensory neurons in rat nucleus of the solitary tract. *Am J Physiol Heart Circ Physiol*. May 5;ajpheart. [Epub ahead of print] PMID: 28476920.

Beaumont E, Campbell RP, Andersen MC, Scofield SLC*, **Singh, K**, Libbus I, KenKnight BH, Snyder L, Cantrell N***. Vagus nerve stimulation modulates baroreceptive neurons in the rat nucleus of the solitary tract (2017) *AJP Heart and Circulatory Physiology*. In Press.

Brown RW, Kirby SL*, Denton AR*, Dose JM, Cummins ED, Gill WD*, Burgess KC (2017) An analysis of the rewarding and aversive associative properties of nicotine in the neonatal quinpirole model: Effects on glial cell line-derived neurotrophic factor (GDNF). *Schizophr Res*. Mar 14. PMID: 28314679. (This paper was invited by the editor for a special issue on Schizophrenia and Addiction).

Cox PA, **Kostrzewa RM**, Guillemin GJ (2017) BMAA and neurodegenerative illness. *Neurotox Res.* May 24;1-6.10.1007/s12640-017-9753-6. [Epub ahead of print] PMID: 28540663.

Cummins ED, Leedy KK, Dose JM, Peterson DJ, Kirby SL*, Hernandez LJ**, **Brown RW** (2017) The effects of adolescent methylphenidate exposure on the behavioral and brain-derived neurotrophic factor response to nicotine. *J Psychopharmacol.* Jan;31(1):75-85. PMID: 27940499.

Dalal S, Zha Q, **Singh M, Singh K** (2016) Osteopontin-stimulated apoptosis in Cardiac myocytes involves oxidative stress and mitochondrial death pathway: Role of a proapoptotic protein BIK. *Mol Cell Biochem.* Jul;418(1-2):1-11. PMID:27262843.

Daniel LL, Scotfield SL*, Thrasher P*, Dalal S, Daniels CR, Foster CR, **Singh M, Singh K** (2016) Ataxia telangiectasia-mutated kinase deficiency exacerbates left ventricular dysfunction and remodeling late after myocardial infarction. *Am J Physiol Heart Circ Physiol.* Aug 1;311(2):H445-52. PMID:27288435.

Delic V, Griffin JWD*, Zivkovic S, Zhang Y, Phan TA, Gong H*, Chaput D, Reynes C, Dinh VB, Cruz J, Cvitkovic E, Placides D, Frederic E, Mirzaei H, Stevens SM Jr, Jinwal U, Lee DC, **Bradshaw PC** (2017) Individual amino acid supplementation can improve energy metabolism and decrease ROS production in neuronal cells overexpressing alpha-synuclein. *Neuromolecular Med.* Jun 15;DOI 10.1007/s12017-017-8448-8 [Epub ahead of print]. PMID: 28620826.

Deng M, Tufan T, Raza MU, Jones TC, **Zhu MY** (2016) MicroRNAs 29b and 181a down-regulate the expression of the norepinephrine transporter and glucocorticoid receptors in PC12 cells. *J Neurochem.* Oct;139(2):197-207. PMID:27501468.

Ecay TW, Stewart JR, Wiessner G, Heulin B (2017) *Ex utero* culture of viviparous embryos of the lizard, *Zootoca Vivipara*, provides insights into calcium homeostasis during development. *Comp Biochem Physiol A Mol Integr Physiol.* Apr;206:63-6. PMID:28109839.

Ferslew KE (2016) Dipivefrine. Reference Module in Biomedical Sciences. *Elsevier.* 04-Apr-2016 doi: 10.1016/B978-0-12-801238-3.99421-2.

Ferslew KE (2017) Isoflurophate. Reference Module in Biomedical Sciences. *Elsevier.* 17-Mar-2017 doi: 10.1016/B978-0-12-801238-3.96544-9.

Griffin JWD*, **Bradshaw PC** (2017) Amino acid catabolism in Alzheimer's disease brain: Friend or Foe? *Oxid Med Cell Longev.* Feb 5; 5472792, 15 pages. PMID: 28261376.

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He Z, Forest F, Gain P, Rageade D, Bernard A, Acquart S, Peoc'h M, **Defoe DM**, Thuret G (2016) 3D map of the human corneal endothelial cell. *Sci Rep.* Jul 6;6:29047. PMID:27381832.

Hilton BA*, Gopal S, Xu L, Mazumder S, **Musich PR**, Cho BP, **Zou Y** (2016) Dissociation dynamics of XPC-HR23B from damaged DNA is a determining factor of NER efficiency. *PLoS ONE*. 11(6): e0157784. doi:10.1371. PMID: 27327897.

Hilton BA*, Liu J, Cartwright BM*, Liu Y, Breitman M, Wang Y*, Jones R, Tang H, **Rusinol A**, **Musich PR**, **Zou Y** (2017) Progerin sequestration of PCNA promotes replication fork collapse and mislocalization of XPA in laminopathy-related progeroid syndromes. *FASEB J*. PMID: 28515154. *In press*.

Hoover DB (2017) Cholinergic modulation of the immune system presents new approaches for treating inflammation. *Pharmacol Ther*. May 18. pii: S0163-7258(17)30121-3. doi: 10.1016/j.pharmthera.2017.05.002. [Epub ahead of print] Review. PMID: 28529069.

Kostrzewa RM (2017) Neurotoxins. In: Neuroscience and Biobehavioral Psychology [Formerly, Encyclopedia of Neuroscience (Squire L, T Albright, F Bloom, F Gage and N Spitzer, Editors). Elsevier: Netherlands; Galley corrected on Feb. 2, 2017.

Kostrzewa RM (Aug 2016) Perinatal lesioning and life-long effects of the noradrenergic neurotoxin 6-Hydroxydopa. In: Neurotoxin Modeling of Brain Disorders – Life-long Outcomes in Behavioral Teratology (Kostrzewa RM and Archer T, Editors). Springer Intl Publ Switzerland. doi: 10.1007/7854_2015_414. Aug. *Curr Top Behav Neurosci*. 29: 43-50. PMID: 26660536.

Kostrzewa JP, Kostrzewa RA, **Kostrzewa RM**, Brus R, Nowak P (Aug 2016) Perinatal 6-hydroxydopamine modeling of ADHD. In: Neurotoxin Modeling of Brain Disorders – Life-long Outcomes in Behavioral Teratology (Kostrzewa RM and Archer T, Editors). Springer Intl Publ Switzerland. doi: 10.1007/7854_2015_397. *Curr Top Behav Neurosci*. 29: 279-294. PMID: 26475157.

Kostrzewa JP, Kostrzewa RA, **Kostrzewa RM**, Brus R, Nowak P (Aug 2016) Perinatal 6-hydroxydopamine to produce a life-long model of severe parkinson's disease, In: Neurotoxin Modeling of Brain Disorders – Life-long Outcomes in Behavioral Teratology (Kostrzewa RM and Archer T, Editors). Springer Intl Publ Switzerland. doi: 10.1007/7854_2015_396. *Curr Top Behav Neurosci*. 29: 313-332. PMID: 26475156.

Kostrzewa RM, Brus R (Aug 2016) Life-long rodent model of tardive dyskinesia – persistence after antipsychotic drug withdrawal. In: Neurotoxin Modeling of Brain Disorders – Life-long Outcomes. In: Behavioral Teratology (Kostrzewa RM and Archer T, Editors). Springer Intl Publ Switzerland. doi: 10.1007/7854_2015_395. *Curr Top Behav Neurosci*. 29: 353-362. PMID: 26472552.

Kulkarni R, Caskey J, **Singh SK**, Paudel S, Baral P, Schexnayder M, Kim J, Kim N, Kosmider B, Ratner AJ, Jeyaseelan S (2016) CSE-exposed MRSA regulates leukocyte function for pulmonary persistence. *Am J Respir Cell Mol Biol*. Oct;55(4):586-601, 2016. PMID: 2725308.

Leonard CA, **Schoborg RV**, Borel N (2017) Chlamydia pecorum induces nuclear factor Kappa B activation and interleukin-6 secretion *In Vitro*, Effects not abolished by penicillin exposure. *Front Cell Infect Microbiol*. *Accepted*.

Leonard CA, **Schoborg RV**, Borel N (2017) Productive and penicillin-stressed chlamydia pecorum infection induces nuclear factor Kappa B activation and Interleukin-6 secretion *In Vitro. Front Cell Infect Microbiol.* May 11;7:180. PMID: 28553623.

Li S, Johnson J, Peck A, **Xie Q** (2017) Near infrared fluorescent imaging of brain tumor with IR780 dye incorporated phospholipid nanoparticles. *J Transl Med.* Jan 23;15(1):18. PMID: 28114956.

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Ordway GA, Szebeni A, Hernandez LJ**, Crawford JD Szebeni K, Chandley MJ, Burgess KC, Miller C, Bakkalbasi E, **Brown RW** (2017) Antidepressant-like actions of inhibitors of poly(ADP-ribose) polymerase in rodent models. *Int J Neuropsychopharmacol.* *In press.*

Paiva DP, **Keasey M**, Oliveira JRM (2017) MiR-9-5p down-regulates PiT2, but not PiT1R in human embryonic kidney 293 cells. *J Mol Neurosci.* May;62(1):28-33. PMID: 28303467.

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Phillips-Campbell RB, **Duffourc MM**, **Schoborg RV**, Xu Y, Liu X, KenKnight B, **Beaumont E** (2016) Aberrant fecal flora observed in guinea pigs with pressure overload is mitigated in animals receiving vagus nerve stimulation therapy. *Am J Gastrointest Liver Physiol.* Oct 1; 311:G754-G762. PMID 27562060.

Picken M, Long J, Williamson GA, **Polichnowski AJ** (2016) Progression of chronic kidney disease after acute kidney injury: Role of self-perpetuating versus hemodynamic-induced fibrosis. *Hypertension.* Oct;68(4):921-8. PMID:27550923.

Raza MU, Tufan T, Wang Y, Hill C, **Zhu M-Y** (2016) DNA damage in major psychiatric diseases. *Neurotox Res.* Aug;30(2):251-67. PMID: 27126805.

Salavatian S, **Beaumont E**, Longpré J-P, Armour J, Vinet A, Jacquemet V, Shivkumar K, Ardell J (2016) Vagal stimulation targets select populations of intrinsic cardiac neurons to

control neurally-induced atrial fibrillation. *Am J Physiol Heart Circulatory Physiol*. Nov 1;311(5):H1311-H1320. PMID:27591222.

Sawmiller D, Li S, Mori T, Habib A, Rongo D, Delic V, **Bradshaw PC**, Shytle RD, Sanberg C, Bickford P, Tan J (2017) Beneficial effects of a pyrroloquinolinequinone containing dietary formulation on motor deficiency, cognitive decline and mitochondrial dysfunction in a mouse model of Alzheimer's disease. *Heliyon*. Apr 4;3(4), Article e00279. PMID:28413833.

Schambra UB, Nunley K, **Harrison TA**, Lewis CN (2016) Consequences of low or moderate prenatal ethanol exposures during gastrulation or neurulation for open field activity and emotionality in mice. *Neurotoxicol Teratol*. Sep-Oct;57:39-53. PMID:27297969.

Schambra UB, Lewis CN, **Harrison TA** (2017) Deficits in spatial learning and memory in adult mice following acute, low or moderate levels of prenatal ethanol exposure during gastrulation or neurulation. *Neurotoxicol Teratol*. Jul 62:42-54. PMID: 28476615.

Scofield SL*, **Singh K** (2016) Confirmation of myocardial ischemia and reperfusion injury in mice using surface pad electrocardiography. *J Vis Exp*. Nov 24;(117). PMID:27911394.

Singh SK, Thirumalai A, Pathak A*, Ngwa DN*, **Agrawal A** (2017) Functional transformation of C-reactive protein by hydrogen peroxide. *J Biol Chem*. Feb 24;292(8):3129-3136. PMID: 28096464.

Slade JA*, **Hall JV**, Kintner J, Phillips-Campbell R, **Schoborg RV** (2016) Host Nectin-1 promotes chlamydial infection in the female mouse genital tract, but is not required for infection in a novel male murine rectal infection model. *PLoS One*. Aug 3;11(8):0160511. PMID: 27486990.

Smith JK, Dykes R, Chi DS (2016) The effect of long-term exercise on the production of osteoclastogenic and antiosteoclastogenic cytokines by peripheral blood mononuclear cells and on serum markers of bone metabolism. *J Osteoporos*. Aug 24;5925380. PMID:27642534.

Szebeni A, **Szebeni K**, DiPeri TP***, Johnson LA*, Stockmeier CA, Crawford JD, Chandley MJ, Hernandez LJ**, Burgess KC, **Brown RW**, **Ordway GA** (2017) Elevated DNA oxidation and DNA repair enzyme expression in brain white matter in major depressive disorder. *Int J Neuropsychopharmacol*. May 1;20(5):363-373. PMID:28034960.

Thirumalai A, Singh SK, Hammond DJ Jr, Gang TB, Ngwa DN*, Pathak A*, **Agrawal A** (2017) Purification of recombinant C-reactive protein mutants. (These authors contributed equally to this work: Thirumalai A, Singh SK). *J Immunol*. Methods Apr;443:26-32. PMID: 28167277.

Thrasher, PR*, **Singh, M**, **Singh, K**. Ataxia-Telangiectasia Mutated Kinase: Role in Myocardial Remodeling (2017) *J. Rare Diseases Res & Treatment*. (Invited Review). *In Press*.

Truflandier K, **Beaumont E**, Maghni K, Charbonney E, Spahija J (2016) Spinal cord injury modulates the lung inflammatory response in mechanically ventilated rats: a comparative animal study. *Physiol Rep*. Dec 4(24). PMID: 28039398.

Veech RL, **Bradshaw PC**, Clarke K, Curtis W, Pawlosky R, King MT (2017) Ketone bodies mimic the life span extending properties of caloric restriction. *IUBMB Life*. May;69(5):305-314. PMID: 28371201.

Visavadiya NP, **Keasey MP**, Razskazovskiy V**, Banerjee K, **Jia C**, Lovins C, **Wright GL**, **Hagg T** (2016) Integrin-FAK signaling rapidly and potently promotes mitochondrial function through STAT3. *Cell Commun Signal*. Dec 15;14(1):32. PMID: 27978828.

Visavadiya NP, **Keasey MP**, Razskazovskiy V**, Banerjee K, **Jia C**, Lovins C, **Wright GL**, **Hagg T** (2017) Erratum to: Integrin-FAK signaling rapidly and potently promotes mitochondrial function through STAT3. *Cell Commun Signal*. Mar 27;15(1):11. PMID: 28347299.

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Yakubenko VP, Byzova TV (2017) Biological and pathophysiological roles of end-products of DHA oxidation. *Biochim Biophys Acta*. Apr;1862(4):407-415. PMID: 27713004.

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Yamada T, **Wondergem R**, Morrison R, Yin VP, Strange K (2016) Leucine-rich repeat containing protein LRRC8A is essential for swelling-activated Cl⁻ currents and embryonic development in zebrafish. *Physiol Rep Oct*. 4(19). PMID: 27688432.

Zhang J, Fan Y, Raza MU, Zhan Y, Du XD, Patel PD, **Zhu M-Y** (2017) The regulation of corticosteroid receptors in response to chronic social defeat. *Neurochemi Int*. PMID: 28577990 (*In press*).

1-B. Books or Book Chapters:

Books:

Garcia D, T Archer, **RM Kostrzewa** (Co-Editor) Personality and Brain Disorders: Associations and Interventions, for Kostrzewa RM & T Archer Neurotoxicity book series, Springer New York, 2018 (target completion date) [15 chapters, all with obligated authors].

Kostrzewa RM (Ed.) and T Archer (Co-Editor, Gotheborg Univ., Sweden) *Current Topics in Neurotoxicity*, Springer Science, NY (Jan. 2010 – Current).

Book Chapters:

Griffin KA, **Polichnowski AJ**, Bidani AK (2016) Pathophysiology of Hypertension in Chronic Kidney Disease and Dialysis. *In: Core Concepts in Hypertension and Kidney Disease* (Rajiv Agarwal & Ajay K. Singh, Eds.) pp. 35-61, Springer, New York, NY.

Musich PR, Li Z and **Zou Y** (2017) Xeroderma Pigmentosa Group A (XPA), Nucleotide Excision Repair and Regulation by ATR in Response to Ultraviolet Irradiation. *In: Ultraviolet light in Human Health, Diseases and Environment*; Springer International Publishing AG. *In Press*.

Shinomiya, N, **Xie Q**, and VandeWoude GF (2017) Met Oncogenic Activation and Carcinogenesis, Chapter 9. *In: Regulation of Signal Transduction in Human Cell Research*; Nature Springer. *In preparation*.

Thewke DP, Kou J*, Fulmer ML*, and **Xie Q** (2017) The HGF/MET Signaling and Therapeutics in Cancer, Chapter 10. *In: Regulation of Signal Transduction in Human Cell Research*. Springer publishing. *Submitted*.

II. PAPERS, ABSTRACTS, AND/OR PRESENTATIONS (Students underlined)

II-A. Regional

Alkhateeb T*, Ozment TR, Youngberg GA, Howell MEA, Stuart CA, Price JB, Jones TC, Williams DL, Blair T, **Hoover DB**. Effects of acute sepsis on renal structure and sympathetic innervation in mice. Poster presented at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. **Won 1st Place, Biomedical & Health Sciences Division, Group A.** *Tuqa Alkhateeb, MS, Biology Dept. Currently PhD Student, Biomedical Sciences.

Beasley B**, Sciara A*, Crawford J, Claiborne T, **Ordway G**, Chandley M. Pathology of insulin like growth factor in the anterior cingulate cortex in autism. Poster presented at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. **Won 2nd Place, Biomedical & Health Sciences Division, Group A.** ** Brooke Beasley, BS, Health Sciences.

Boden K***, Wilhoit K, Becker R, Jackson S, **Kwasigroch T**, Johnston B. Evaluating the effectiveness of thiel embalmed cadavers for the identification of a positive lachman test among first year allopathic medical students. Poster presented at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. ***Kyle Boden (P4 Medical Student).

Coulthard J**, Chandley MJ, Wang-Heaton H, **Ordway GA**. GENE expression of DNA repair enzymes in pyramidal neurons from Ca1 hippocampus in major depressive disorder. Poster presentation at the ETSU, Appalachian Student Research Forum; April 2017, Johnson City, TN. **Jacob Coulthard, BS, PSYC Department.

Coulthard J**, **Ordway GA**. Gene expression of DNA repair enzymes in pyramidal neurons from CA₁ hippocampus in major depressive disorder. Poster presented at the ETSU Boland Undergraduate Research Forum; March 2017; Johnson City, TN. **Jacob Coulthard, BS, PSYC.

Cui K*, Aziz M, Ardell C, **Yakubenko V**. Regulation of pro-Inflammatory (M1) and anti-inflammatory (M2) macrophage migration by $\beta 2$ integrins during inflammation. Oral presentation at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. *Kui Cui, PhD, Biomedical Sciences.

Dalal S, Connelly B, **Singh M, Singh K**. Nf2 signaling pathway plays a pro-apoptotic role in B -adrenergic receptor –Stimulated cardiac myocytes apoptosis. Oral presentation at ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. Dr. Suman Dalal, Research Associate.

DePreter CC**, Hernandez LJ, Burgess KC, Gill WD*, Kirby SL, **Brown RW**. Poly ADP-Ribose protein (PARP) inhibition alleviated behavioral endophenotypes due to stress in a rodent double-hit model of major depressive disorder. Poster presented at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. **Won 2nd Place, Natural Sciences, Group B.** *Caitlynn DePreter, BS, Psychology.

DePreter CC**, **Brown RW**. Validation of a novel rodent model of major depressive disorder. Poster presented at the ETSU Boland Undergraduate Research Forum; March 2017; Johnson City, TN. *Caitlynn DePreter, BS, Psychology.

Eccles B**, **Thewke D**. Effect of cannabinoids on osteogenic differentiation of cultured vascular smooth muscle cells. Poster presentation: ETSU Boland Undergraduate Research Forum; March 2017; Johnson City TN. **Bree Eccles, BS, Chemistry Dept. Honors College Student.

Fulmer M*, **Thewke D**. The Type-2 cannabinoid receptor modulates osteoblastic transdifferentiation of vascular smooth muscle cells involved in atherosclerotic and vascular calcification. Oral presentation at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. *Makenzie Fulmer, PhD Biomedical Sciences.

Gill WD*, Burgess KC, Gabbita P, **Brown RW**. Inhibition of tumor necrosis factor alpha results in alleviation of prepulse inhibition deficits in a rodent model of schizophrenia. Poster presented at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. **Won 2nd Place, Doctoral Candidates, Biomedical Sciences.** *W. Drew Gill, PhD, Biomedical Sciences.

Gupta S**, **Patrick Bradshaw**. Determination of a mitochondrial role for the C.Elegans ATR Omolog ATL-1. Poster presentation at the ETSU Boland Undergraduate Research Forum; March 2017; Johnson City TN. **Sweta Gupta, BS, Health Sciences, College of Public Health 2017.

Gupta S**, Gong HM*, Griffin JW*, **Bradshaw PC**. Determination of a mitochondrial role for the caenorhabditis elegans ATR homolog ATL-1. Poster presentation at ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. **Sweta Gupta, BS, Health Sciences, College of Public Health 2017.

Herrig A*, Coggins B, Joplin, KH Ranjan Chakraborty N, **Duffourc M**, Jones TC. Metagenomics Reveals microbiome associations with personality in a socially polymorphic spider, Anelosimus Studiosus (Araneae: Theridiidae). Poster presented at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. **1st Place, Master's Candidates, Natural Sciences Group B.** *Ashley Herrig, MS, Biological Sciences.

Jacobs J***, Kruppa M, Hall JV. Fungal-bacterial interactions: How does candida influence the disease-causing potential of two sexually transmitted bacteria? Poster presented at the ETSU Appalachian Student Research Forum; April 2017; PJohnson City, TN ***Jeremy Jacobs, Medical Student.

Jacobs J***, Kruppa M, Hall JV. Fungal-bacterial interactions: How does candida influence STI causing bacteria? Poster presented at the 15th Annual Medical Student Health Sciences Research Symposium, QCOM; October 2016; Johnson City, TN. .. **Won 1st Place, Medical Students Division, Group A.** ***Jeremy Jacobs, Medical Student.

Lim K**, Scofield SLC*, Dalal S, Singh M, Singh K. Extracellular ubiquitin modulates immune response decreasing the adverse effects of myocardial ischemia/reperfusion injury in mice. Poster presentation at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. **Won 1st Place, Biomedical & Health Sciences Division, Group B.** **Kristina Lim, BS, Biology Department.

Lockhart J*, Slade J*, Sartain H**, Kintner J, Grimm M**, Schoborg R. The role of acetylcholine in urogenital chlamydial infection. Oral presentation at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. *Jessica Lockhart, MS, Biology Department.

Ontengco W**, Burgess KC, Hernandez L, Brown R, Chandley M, Wang-Heaton H, Ordway GA. DNA repair enzyme gene expression in white matter oligodendrocytes from rats exposed to social defeat and unpredictable stress: Modeling the biology of major depressive disorder. Poster presentation at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, **Won 2nd Place, Biomedical & Health Sciences Division, Group C.** ***Westley Ontengco, BS, Health Sciences Department.

Ontengco W**, Brown RW. Dual stress as a model for major depressive disorder. Poster presentation: ETSU Boland Undergraduate Research Forum; March 2017; Johnson City TN. ***Westley Ontengco, BS, Health Sciences Department.

Ojo V*, McIntosh C, Ecay T, Defoe D. Postnatal cell shape development of the corneal endothelium in mice. Poster presented at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. *Victor Ojo, MS, Biology Department.

Proctor R***, Easterday J, Becker R, Kelley L, Abercrombie C, Lasky T. Comparison of radial artery puncture simulation modalities: Low fidelity simulation model vs novel Thiel-Embalmed cadaveric model. Oral presentation at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. ***Rebecca Proctor, Medical Student.

Sante RR*, Jia C, Matthew P. Keasey MP, Hagg T. Alpha-V Beta-5 integrin mediates vitronectin-induced pro-inflammatory cytokines in the brain after stroke. **Won 2nd Place, Doctoral Candidates, Biomedical & Health Sciences.** Oral presentation at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. *Richard Sante, PhD, Biomedical Sciences.

Scotfield SLC*, Lim KA**, Dalal S, **Singh M, Singh K**. Cardioprotective effects of exogenous ubiquitin involve decreased inflammatory and fibrotic response in the heart following myocardial ischemia/reperfusion injury. Oral presentation at the ETSU, Appalachian Student Research Forum; April 2017; Johnson City, TN. *Stephanie Scotfield, PhD, Biomedical Sciences.

Thrasher PR*, Scotfield SLC*, Dalal S, **Singh M, Singh K**. Ataxia-telangiectasia mutated kinase deficiency impairs cardiac autophagic response following myocardial infarction via the involvement of Akt/GSK-3 β pathway. Poster presented at the ETSU Appalachian Student Research Forum; April 2017; Johnson City, TN. *Patsy Thrasher, PhD, Biomedical Sciences.

II-B. National

Aziz MH, Brown K, Cui K*, Smith J, Cathcart MK, **Yakubenko VP**. Integrin $\alpha_D\beta_2$ (CD11d/CD18) promotes atherogenesis by supporting macrophage retention in atherosclerotic lesions. American Heart Association Scientific Sessions Meeting 2016; Nov. 11-16; New Orleans, LA. **[This project received the Award for the Outstanding Research by an Early Career Investigator. This award is to acknowledge the highest scoring abstract submitted to the Arteriosclerosis Thrombosis and Vascular Biology council of AHA.]**

Beaumont E, Campbell RP, Andresen MC. Vagus nerve stimulation directly activates limited myelinated afferents but indirectly increases unsynchronized activity in unmyelinated second and higher order sensory neurons in rat nucleus of the solitary tract. Society for Neuroscience (SfN 2017) Proceedings; November 12-16, 2016; San Diego, CA.

Biswas S, Xin L, Panigrachi S, Zimman A, **Yakubenko V**, Byzova T, Salomon R, Podrez E. Prothrombotic Role of Platelet Tlr2 in Hyperlipidemia. American Heart Association Scientific Sessions Meeting; Nov. 12-16, 2016; New Orleans, LA.

Blair T, Ozment T, **Hall JV**, Hopkins N, Miller MK, Williams D, **Hoover DB**. Donepezil increases survival in CLP sepsis but persistent splenic pathology and bacterial infection remain in 28-day survivors. 40th Annual Conference on Shock; June 2017, Fort Lauderdale, FL.

Butler M**, Kintner J, **Hall JV**. Impact of hormone modulation of Wnt/ β -catenin signaling on chlamydia trachomatis development. 8th Biennial Chlamydia Basic Research Society Meeting; April 2017, Charlotte, NC.

DePreter CC**, Hernandez LJ**, Kirby SL*, Campbell RB, **Beaumont E**, Bradley CA*, Palmatier MI, **Brown RW**. Adolescent methylphenidate exposure alters nicotine self-administration and the accumbal firing in response to nicotine. Poster presentation at the Society for Neuroscience (SfN 2017) proceedings; November 12-16, 2016; San Diego, CA.

Dalal S, Connelly B, **Singh M, Singh K**. Involvement of NF- κ B signaling pathway in β -Adrenergic receptor-stimulated cardiac apoptosis. Dr. Suman Dalal presented poster at the Experimental Biology (APS) Meeting; April 22-26, 2017; Chicago, IL.

Denton AR**, Kirby SL*, Kaestner C**, Dose JM, Burgess KC, **Brown RW**. Behavioral and plasticity mechanisms of the associative effects of nicotine in the neonatal quinpirole model of schizophrenia. Poster presentation at the Society for Neuroscience Meeting; November 12-16, 2016; San Diego, CA. (Adam Denton is a former undergraduate student and currently PhD student at Univ. of South Carolina Neuroscience program).

Ecay TW, Stewart JR. (2017) Calcium transport by the chorionallantois of *trachemys scripta* is independent of Calbindin-D28K expression. Society for Integrative and Comparative Biology (SICB) Annual Meeting; (Abstract P2-274); January 4-8, 2017; New Orleans, LA.

Ferslew KE. Drug Trends: The Opioid Epidemic. Talk presented at the Tennessee District Attorneys General Conference, Annual Fall Conference; October 13, 2016; Pigeon Forge, TN.

Ferslew KE. Current challenges of synthetic cannabimimetics and the legalization of marijuana. Talk presented at the 19th Fall Psychiatric Symposium: Psychopharmacology Update and Addiction Institute; September 29, 2016; Knoxville, TN.

Ferslew KE. "Chemical Testing, Alcohol & Signs of Impairment," as part of the "Protecting Lives, Saving Futures." Program presented for the Tennessee District Attorneys General Conference. Presented at the Madison County EMA Building; March 1, 2017; Jackson, TN

Gill WD*, Wherry JD**, Burgess KC, **Brown RW**. Prepulse inhibition deficits in the neonatal quinpirole model of schizophrenia: Epigenetic evidence and sex differences. Poster presentation at the Society for Neuroscience (SfN 2017) Proceedings; November 12-16, 2016; San Diego, CA. Drew Gill is a 2nd year PhD Biomedical Sciences student.

Hall JV, Ozment T, Gill S*, Williams D. Alteration of fecal microbial diversity following polymicrobial sepsis in β -glucan-exposed C57 Bl/6 mice. 40th Annual Conference on Shock; June 2017, Fort Lauderdale, FL

Hernandez LJ**, Burgess KC, Wherry JD**, **Szebeni A**, **Ordway GA**, **Brown RW**. A double hit stress rodent model of major depressive disorder. Poster presentation at the Society for Neuroscience (SfN 2017) proceedings; November 12-16, 2016; San Diego, CA.

Hoover DB, Brown TC, Schweitzer JB, Williams DL. Loss of sympathetic nerves in spleens from patients with end stage sepsis. Poster presented at the 40th Annual Conference on Shock; June 3-6, 2017; Ft. Lauderdale, FL.

Kirby SL*, Burgess KC, Beuttel LA**, Sara Dean**, Bradley CA*, Palmatier MI, **Zhu M-Y**, **Brown RW**. Nucleus accumbens BDNF overexpression alters the behavioral response to nicotine. Poster presentation at the Society for Neuroscience (SfN 2017) proceedings; November 12-16, 2016; San Diego, CA.

Kruppa M, Rice P, Graves B, Kwofie F, Greene R, Ma Z, Lowman D, Rosler, van de Veerdonk F, Netea MG, Williams D. High-affinity recognition of *Candida albicans* Bs hyphal mannan by human mannose receptor (CD206) and human Dectin-2. Gordon Research Conference on Fungal Immunology; January 2017; Galveston, TX.

Kruppa M, Jacobs J*, Schoborg RV, Hall JV.** Chlamydial elementary bodies bind to surface structures on the opportunistic fungal pathogen *Candida albicans*. Poster presentation at the 8th Biennial Meeting of the Chlamydia Basic Research Society; April 2017; Charlotte, NC.

Leonard C, **Schoborg RV**, Borel N. Chlamydia pecorum Induces nuclear factor Kappa B activation and interleukin-6 secretion *In Vitro*, Effects not abolished by penicillin exposure. Poster presentation at the 8th Biennial Meeting of the Chlamydia Basic Science Research Society; April 2017; Charlotte, NC.

Li Y*, Lin P, Peterson JM, **Wright GL**. Remodeling of glucose metabolism by HIF-1 α in hypoxic heart. Ying Li presented poster at the Experimental Biology (APS) Meeting; April 22-26, 2017; Chicago, IL.

Li Y*, **Wright GL**, Peterson JM. The effects of CTRP3 on lipid oxidation in adult mouse primary hepatocytes. Ying Li presented poster at the Experimental Biology (APS) Meeting; April 22-26, 2017; Chicago, IL.

Lim, KA**, Scofield, SLC*, Dalal, S, **Singh M, Singh K**. Protective anti-inflammatory role of extracellular ubiquitin in myocardial ischemia/reperfusion injury in mice. Kristina Lim presented poster at the SoCon Undergraduate Research Forum; October 28-29, 2016; Spartanburg, SC.

Ozment TR, Blair TE, Hall JL, Hopkins NS, Miller MK, Williams DL, **Hoover DB**. Donepezil increases survival in CLP sepsis but persistent splenic pathology and bacterial infection remain in 28-day survivors. Talk presented at the 40th Annual Conference on Shock; June 3-6, 2017; Ft. Lauderdale, FL

Palmatier MI, **Zhu M-Y, Brown RW, Kruppa M, Schoborg RV, Hall JV**. Chlamydial elementary bodies bind to surface structures on the opportunistic fungal pathogen *Candida albicans*. 8th Biennial Meeting of the Chlamydia Basic Science Research Society; April 2017; Charlotte, NC.

Podolnikova NP, **Yakubenko VP**, Ugarova TP. Platelet Factor 4 induces leukocyte responses through integrin Mac-1 (CD11b/CD18). American Society of Hematology Meeting; December 2016; San Diego, CA.

Polichnowski AJ, Griffin KA, Sethupathi P, Patel V, Patel M, Picken M, Williamson GA, Bidani AK. Susceptibility to pressure-induced renal injury in DOCA-Salt vs. Angiotensin II hypertensive rats. Abstract selected for oral (10 min. presentation and 5 min Q&A) and poster presentation at the Annual Experimental Biology Meeting. The FASEB Journal, vol. 31, no. 1, Supplement, 701.2, April 22-26, 2017; Chicago, IL.

Scofield S*, Lim KA**, Dalal S, Singh M, **Singh K**. Exogenous ubiquitin improves cardiac function and reduces inflammatory response following myocardial ischemia/reperfusion injury. Stephanie Scofield oral presentation at the Experimental Biology Meeting (APS) meeting; April 22-26, 2017; Chicago, IL.

Slade J*, Kintner J, **Schoborg RV**. The type I interferon receptor is not required for *C. muridarum*-mediated protection against a lethal herpes simplex virus challenge in a murine coinfection model. Poster presentation at the 8th Biennial Meeting of the Chlamydia Basic Science Research Society; April 2017; Charlotte, NC.

Stewart JR, **Ecay TW**, Khambaty M (2017) Functional complexity in the chorioallantoic membrane of corn snakes, *Pantherophis guttatus*: Specializations for calcium uptake from the eggshell. Oral presentation at the Society for Integrative and Comparative Biology (SICB) Annual Meeting; (Abstract 88-1), January 4-8, 2017; New Orleans, LA.

Stuffle DA*, Howard RA, **Kruppa M**. Virulence characteristics of candida albicans mutants identified as filamentous in the presence of bacteria. ASM Microbe Meeting; June 1-5 2017; New Orleans, LA.

Thrasher, PR*, Scofield, SLC*, Dalal, S, **Singh M, Singh K**. Deficiency of ataxia-telangiectasia mutated kinase induces autophagic impairment following myocardial infarction. Patsy Thrasher presented poster at the Experimental Biology (APS) meeting; April 22-26, 2017; Chicago, IL. (Recipient of EB 2017 minority travel fellowship).

Xie Q. Near infrared fluorescent imaging of brain tumor with IR780 dye incorporated phospholipid nanoparticles. Poster presentation at the American Association for Cancer Research (AACR) Annual Meeting; April 1-5, 2017; Washington, DC.

Yakoob H**, Grimm M**, Slade J*, Kintner J, **Schoborg RV**. The anti-human immunodeficiency virus (HIV) drug elvitegravir inhibits chlamydial development in culture. Poster presentation at the 8th Biannual Meeting of the Chlamydia Basic Science Research Society; April; 2017; Charlotte, NC.

Yakubenko VP, Cui K*, Ardell CL, Podrez EA, Byzova TV. End-product of DHA oxidation promotes $\beta 2$ integrin-mediated macrophage migration during inflammation. NIH-Unraveling Vascular Inflammation: From Immunology to Imaging Meeting, October 24-25, 2016; Bethesda, MD.

II-C. International

Kostrzewa R. "L-DOPA effects on striatal microdialysate levels of hydroxyl radical in parkinsonian rats." Invited guest speaker at the 2nd Central European Biomedical Congress (CEBC). Chairman, Symposium on Processes and Mechanisms Associated with Parkinson's Disease; June 15-18, 2016; Krakow, Poland.

Polichnowski A. Chaired the Basic/Clinical Science Session entitled: "Getting on Your Nerves: Role of Sympathetic and Parasympathetic Outflow in Hypertension and Kidney Disease." American Society of Nephrology Meeting; November 18, 2016; Chicago, IL.

Xie Q. "MET Inhibitors, Are We There Yet?" Oral presentation at the 14th Annual Congress of International Drug Discovery Science & Technology, Therapy and EXPO-2016; November 2016, Nanjing, China.

Zhu M-Y. "The research progress of post-stroke depression." 7th Wubei Luo-Jia Cerebrovascular Disease Forum, organized by the Department of Neurology and the Journal of Stroke and Neuronal Diseases; March 31 and April 1, 2017; Wuhan, China.

Zhu M-Y. “Norepinephrine upregulates the expression of tyrosine hydroxylase and protects against 6-OH-DA toxicity in dopamine neurons.” Joint meeting of Neurotoxicity Society and International Neurotoxicology Association; May 20-23, 2017, Florianopolis, Brazil.

III. INVITED PRESENTATIONS (Students Underlined)

III-A. Regional

Agrawal A. “Protection against pneumococcal infection by using engineered C-reactive protein.” Presented at the Biomedical Sciences Seminar Program; September 2, 2016; Johnson City, TN.

Agrawal A. “Structure-function relationships of C-reactive protein.” Presented at the Department of Biological Sciences; November 2016, Johnson City, TN.

Allen S*. “Dopamine toxicity following chronic co-exposure to major “bath salt” constituents MDPV, mephedrone, and methyolone”. Presented at the Biomedical Sciences Seminar Program; February 24, 2017; Johnson City, TN. *Serena Allen, PhD Student, Pharmaceutical Sciences.

Banerjee K. “FAK-STAT3 signaling reduces ER stress-induced mitochondrial dysfunction in endothelial cells.” Presented at Biomedical Sciences Seminar Program; October 28, 2016, Johnson City, TN.

Beaumont E. “Neurophysiology of MS.” Presented at the COM Grand Rounds on Multiple Sclerosis Forum; September 8, 2016; Johnson City, TN.

Brown R. “Epigenetic evidence in the neonatal quinpirole model.” Presented at the Biomedical Sciences Seminar Program; September 30, 2016; Johnson City, TN.

Cartwright M*. “Ataxia telangiectasia and Rad3-related (ATR): Gaining insight into structure and function”. Presented at the Biomedical Sciences Seminar Program; May 5, 2017; Johnson City, TN. *Michael Cartwright, PhD Student, Biomedical Sciences.

Duffourc M. Nevertheless, she persisted: Balancing Stubbornness and sensitivity in the Scientific Workplace.” Invited to be the Women in STREAM Keynote Speaker; The University of Virginia; March 20, 2017, Wise, VA.

Hagg T. “Integrin signaling as a therapeutic target for neurological disorders.” Presented at the Biomedical Sciences Seminar Program; August 19, 2016; Johnson City, TN.

Keasey M. “Vitamin D receptor agonist calcitriol suppresses calcification through upregulation of PiT2 but not PiT1 phosphate transporter.” Presented at the Biomedical Sciences Seminar Program; March 10, 2017; Johnson City, TN.

Schambra U. “Behavioral consequences of low or moderate prenatal ethanol exposure during gastrulation or neurulation in mice. Is having even one drink during the first month of pregnancy worth the risk.” Presented at the Biomedical Sciences Seminar Program; November 10, 2016; Johnson City, TN.

Schoborg RV. “Exploring the Role of Nectin-1 and Focal Adhesion Kinase in Chlamydial Development.” Presented at the Biomedical Sciences Seminar Program; March 24, 2017; Johnson City, TN.

Schoborg RV. “Zika Virus Structure and Replication.” Presented at the Grand Rounds, Dept. of Pediatrics, QCOM: Sept. 28, 2016.

Scofield S*. “Ubiquitin’s Therapeutic Potential in Myocardial Ischemia/Reperfusion Injury.” Presented at the Biomedical Sciences Seminar Program; April 7, 2017; Johnson City, TN.

Visavadiya N. “Crosstalk between integrins and mitochondria via STAT3 protein.” Presented at the Biomedical Sciences Seminar Program; December 2, 2016; Johnson City, TN.

Yakubenko V. “Integrin $\alpha_D\beta_2$ regulates the fate of macrophages during chronic inflammation.” Presented at the Biomedical Sciences Seminar Program; April 21, 2017; Johnson City, TN.

Xie Q. “Molecular determinants of MET-targeted therapy in cancer.” Presented at the Biomedical Sciences Seminar Program; September 16, 2016; Johnson City, TN.

III-B. National

Polichnowski AJ. “Pathogenesis of Impaired Recovery and Progression of Kidney Disease Following AKI in Pre-Existing CKD States.” Invited to present research at the Annual Experimental Biology Meeting in Chicago, IL. Format was a 30-minute presentation in a session sponsored by the Water and Electrolyte Homeostasis Section of the American Physiological Society; April 2017; Chicago, IL.

Polichnowski AJ, Griffin KA, Sethupathi P, Patel V, Patel M, Picken M, Williamson GA, Bidani AK. “Susceptibility to pressure-induced renal injury in DOCA-Salt vs. Angiotensin II hypertensive rats.” Invitation from the Renal Section of the American Physiological Society Abstract selected for oral (10 min. presentation and 5 min. Q&A) and poster presented at the Annual Experimental Biology Meeting, The FASEB Journal, vol. 31, no. 1, Supplement, 701.2; April 22-26, 2017; Chicago, IL.

Rodriguez-Gil D. “Studying axon guidance in the olfactory system.” Invited Seminar Speaker at Western New England University, College of Arts and Science; November 3, 2016; Springfield, MA.

Schoborg RV. “Using Co-infections to Explore the Biology of Sexually Transmitted Pathogens.” Invited research presentation, Department of Biology, Texas Women’s University; February 28, 2017; Denton, TX.

Schoborg RV. “Human Parvoviruses.” Invited Seminar Speaker at the Department of Biomedical Sciences, West Virginia College of Osteopathic Medicine; July 19, 2016, Lewisburg, WV.

III-C. International

Xie Q. “Predictive Biomarkers for MET—Targeted Therapy: Are We There Yet?” Invited oral presentation at the BIT’s 14th Annual Congress of International Drug Discovery Science & Technology (IDDST), Nanjing International Youth Conference Hotel, Nanjing, China. Forum 3: Biomarkers and Personalized Medicine; November 16-19, 2016; Nanjing, China.

Zhu M-Y. Nominated as a Visiting Professor in Guang-Ji Mental Hospital, Soochow University, China (2016-2021).

V. VISITING PROFESSORS

Name: Junjie Chen, PhD
Title: Professor and Chair
Institution: The University of Texas, MD Anderson Cancer Center, Houston, TX
Date: September 18, 2016
Event: External Seminar Series
Topic: “Protein-Protein Interaction Network In DNA Damage Response And Tumorigenesis”

Name: Jun Yoshioka, MD, PhD
Title: Assistant Professor
Institution: Harvard Medical School, Cambridge, MA
Date: October 13, 2016
Event: External Seminar Series
Topic: “The Emerging Role Of Tnxip In Cardiac Physiology And Pathology”

Name: Laurel Grisanti, PhD
Title: Postdoctoral Fellow
Institution: Temple University, Center for Transitional Medicine, Philadelphia, PA
Date: October 17, 2016
Event: External Seminar Series
Topic: “Myocardial Infarction”

Name: Helen E. Scharfman, PhD
Title: Professor, Psychiatry, Physiology, Neuroscience
Institution: New York University Lagone Medical Center
Nathan Kline Institute, Orangeburg, NY
Date: November 7, 2016
Event: External Seminar Series
Topic: “Gonadal Hormones and Their Role in Hippocampal Function and Malfunction”

Name: Kristine Y. DeLeon-Pennell, PhD
Title: Instructor, Department of Physiology and Biophysics
Institution: University of Mississippi Medical Center, Jackson, MS
Date: March 20, 2017
Event: External Seminar Series
Topic: “Chronic Inflammation: Getting to the Heart of the Matter”

Name: Anil K. Bidani, M.D.
Title: Professor and Division Director-Nephrology & Hypertension
Institution: Dept. of Medicine, Loyola University-Chicago, Maywood, IL
Staff Physician, Renal Division, Edward Hines VA Hospital, Hines, IL
Date: March 21, 2017
Event: External Seminar Series
Topic: "Hypertension, Kidney Disease and CKD Progression"

Name: Audrey N. Chang, Ph.D.
Title: Assistant Professor
Institution: University of Texas Southwestern Medical Center, Dallas, TX
Date: March 27, 2017
Event: External Seminar Series
Topic: "Cell Signaling Mechanisms to Cardiac Myosin Phosphorylation"

Name: Jeffrey L. Platt, M.D.
Title: Professor Surgery, Professor of Microbiology & Immunology
Institution: University of Michigan, Ann Arbor, MI
Date: May 16, 2017
Event: External Seminar Series
Topic: "Translating Immunity into Action"

Name: Upender Manne, M.S., Ph.D.
Title: Professor of Pathology & Surgery' Senior Scientist, Comprehensive Cancer Center; Senior Scientist, Minority Health & Health Disparities Research Center
Institution: University of Alabama, Birmingham, AL
Date: May 22, 2017
Event: External Seminar Series
Topic: "Cancer Biomarker Development: Future Perspectives"

VI. EXTRAMURAL FUNDING

Extramural Funding Awards:

Total New Extramural Funding Awarded to Biomedical Sciences PI: \$497,598

Total Amount of New Funding FY2017 Distribution: \$497,598

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

Total Direct: \$300,000; Total Indirect: \$144,000; Total Award \$444,000

Year Direct: \$300,000; Total Indirect: \$144,000; Year Total \$444,000

"University of California Purchase Order" University of California; Donald Hoover, PI; project funding period 8/8/16 to 5/31/17;

Total Direct: \$36,214; Total Indirect: \$17,384; Total Award \$53,598

Year Direct: \$36,214; Year Indirect: \$17,384; Year Total \$53,598

Continued Extramural Funded Grant Awards:

Total Amount of Continued Funding FY2016 Distribution: \$1,673,597

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

Year Direct: \$350,363; Year Indirect: \$120,809; Year Total \$471,172

“Effect of compound A on recovery from cerebral ischemia” Neurodetective Int’l Inc., Russell Brown, PI; project funding period 5/1/13 to 4/30/18;

Year Direct: \$731; Year Indirect: \$336; Year Total \$1,068

“Role of ATM in myocardial remodeling following myocardial infraction” NIH; Krishna Singh, PI; Project funding period 8/1/15 to 7/31/18;

Year Direct: \$61,736; Year Indirect: \$24,948; Year Total \$86,684

“Role of B2 integrins in macrophage retention and egress during inflammation” NIH; Valentin Yakubenko, PI; project funding period 1/15/16 to 4/30/18;

Year Direct: \$202,134; Year Indirect: \$97,010; Year Total \$299,114

“The contribution of integrin alphaDbeta2 to the macrophage migration and lipid deposition during atherogenesis” AHA; Valentin Yakubenko, PI; project funding period 9/1/15 to 6/30/16;

Year Direct: \$29,427; Year Indirect: \$2,942; Year Total \$32,369

“Identifying molecular determinants and biomarkers for MET targeted therapy in glioblastoma” Stephen M. Coffman Foundation; Qian Xie, PI; project funding period 2/1/16 to 1/31/17;

Year Direct: \$70,630; Year Indirect: \$0; Year Total \$70,630

“Unrestricted funds transfer for research” Van Andel Research Institute; Qian Xie, PI; project funding period 2/1/16 to 6/30/18;

Year Direct: \$0; Year Indirect \$0; Year Total \$0

“Anti-apoptotic Role of Ataxia Telangiectasia and Rad3-Related” NIH, Yue Zou, PI; project funding period 9/1/14 to 8/31/17;

Year Direct: \$102,620; Year Indirect: \$43,132; Year Total \$145,752

“Cholinergic anti-inflammatory mechanisms in sepsis and septic shock” NIH; Donald Hoover, PI; project funding period 9/1/14 to 8/31/17;

Year Direct: \$75,139; Year Indirect: \$34,564; Year Total \$109,702

“Targeting CNTF to increase adult forebrain neurogenesis” NIH R01, Theo Hagg, PI; project funding period 4/15/14 to 3/31/19

Year Direct: \$207,002; Year Indirect: \$95,221; Year Total \$302,223

“Genetics of trans-kingdom interactions between candida and bacteria” NIH R15; Mike Kruppa, PI; project funding period 6/14/14 to 5/31/17;

Year Direct: \$94,234, Year Indirect: \$43,348; Year Total \$137,582

“Vascular responses as therapeutic targets after SCI” NIH (University of Louisville Subaward); Theo Hagg, PI; project funding period 1/1/14 to 7/31/16

Year Direct: \$12,254, Year Indirect: \$5,047; Year Total \$17,301

Continued Extramural Funded Grant Extensions:

“Complement-mediated anti-pneumococcal functions of C-reactive protein” NIH; Alok Agrawal, PI; project funding period 9/1/15 to 8/31/17.

“Nicotine and the roles of nicotine receptors in rodent model of schizophrenia: NIH; Russell Brown, PI; project funding period 7/1/13 to 6/30/17

“Health Sciences Fellowship in Neurocardiology” American Heart Association. Donald Hoover, PI; project funding period 1/1/09 to 1/31/18

Intramural Grant Awards:

Total Internal Grants Awarded to Biomedical Sciences PI: \$63,350

“Characterization of gene regulation during olfactory sensory neuron maturation” ETSU RDC Diego Rodriguez-Gil, PI; project funding period 7/1/16 to 6/30/17; Total Award \$10,000

“Effect of extracellular ubiquitin on atherosclerosis” ETSU RDC Douglas Thewke, PI; project funding period 7/1/16 to 6/30/17; Total Award \$10,000

“The gut microbiome: A novel mechanism underlying the beneficial effects of vagus nerve stimulation” ETSU RDC Eric Beaumont, PI; project funding period 7/1/16 to 6/30/17; Total Award \$23,350

“Antimicrobial function of C-reactive protein (CRP) in the fight against common bacterial infections” ETSU RDC Sanjay Singh, PI; project funding period 7/1/16 to 6/30/17; Total Award \$10,000

“Focal adhesion kinase regulates regeneration of adult olfactory neurons” ETSU RDC Cuihong Jia, PI; project funding 7/1/16 to 6/30/17; Total Award \$10,000