

EAST TENNESSEE STATE UNIVERSITY
QUILLEN COLLEGE OF MEDICINE
SUMMARY OF SCHOLARLY ACTIVITIES

Biomedical Science Graduate Program
Graduate Student Scholarly Activities

July 1, 2018 – June 30, 2019

I. PUBLICATIONS

Graduate students in bold

S100A9 maintains myeloid-derived suppressor cells in chronic sepsis by inducing miR-21 and miR-181b. **Alkhateeb T**, Kumbhare A, Bah I, Youssef D, Yao ZQ, McCall CE, El Gazzar M. Mol Immunol. 2019 Aug;112:72-81. doi: 10.1016/j.molimm.2019.04.019. Epub 2019 May 9.

Binding of Elementary Bodies by the Opportunistic Fungal Pathogen *Candida albicans* or Soluble β -Glucan, Laminarin, Inhibits *Chlamydia trachomatis* Infectivity. Kruppa MD, Jacobs J, King-Hook K, Galloway K, **Berry A**, Kintner J, Whittimore JD, Fritz R, Schoborg RV, Hall JV. Front Microbiol. 2019 Jan 14;9:3270. doi: 10.3389/fmicb.2018.03270. eCollection 2018.

The complexity of interactions between female sex hormones and *Chlamydia trachomatis* infections. **Berry, A.** and Hall, J.V. Current Clinical Microbiology Reports (2019) 6:2 p67-75.

Nerodia sipedon (Northern watersnake) Terrestrial foraging. **Chapman TL**, Wicks TD 2019. Tennessee Journal of Herpetology. In press.

Lithobates sylvaticus (Wood frog) Davian behavior. Wicks TD, **Chapman TL** 2019. Tennessee Journal of Herpetology. In press.

Distinct Migratory Properties of M1, M2, and Resident Macrophages Are Regulated by $\alpha_D\beta_2$ and $\alpha_M\beta_2$ Integrin-Mediated Adhesion. **Cui K**, Ardell CL, Podolnikova NP, Yakubenko VP. Front Immunol. 2018 Nov 15;9:2650. doi: 10.3389/fimmu.2018.02650.

Nicotine, Neural Plasticity and Nicotines Therapeutic Potential. Neuroscience of Nicotine: Mechanisms and Treatment. Brown, RW and **Gill WD**, Ed. V. Preedy. Elsevier Press 2019.

Ciliary neurotrophic factor is a key sex-specific regulator of depressive-like behavior in mice. Jia C, Brown RW, **Malone HM**, Burgess KC, **Gill WD**, Keasey MP, Hagg T. Psychoneuroendocrinology. 2019 Feb;100:96-105. doi: 10.1016/j.psyneuen.2018.09.038. Epub 2018 Sep 29.

The effects of an adenosine A2A agonist on the rewarding associative properties of nicotine and neural plasticity in a rodent model of schizophrenia. **Gill WD**, Shelton HW, Burgess KC, and Brown RW Journal of Psychopharmacology (Accepted, pending publication 2019).

Vitronectin from brain pericytes promotes adult forebrain neurogenesis by stimulating CNTF Jia C, Keasey MP, **Malone HM**, Lovins C, Sante RR, Razskazovskiy V, Hagg T. Exp Neurol. 2019 Feb;312:20-32. doi: 10.1016/j.expneurol.2018.11.002. Epub 2018 Nov 6.

HCV-associated exosomes promote myeloid-derived suppressor cell expansion via inhibiting miR-124 to regulate T follicular cell differentiation and function. Wang L, Cao D, Wang L, **Zhao J, Nguyen LN, Dang X**, Ji Y, Wu XY, Morrison ZD, Xie Q, El Gazzar M, Ning S, Moorman JP, Yao ZQ. *Cell Discov.* 2018 Sep 11;4:51. doi: 10.1038/s41421-018-0052-z. eCollection 2018.

Inhibition of TRF2 accelerates telomere attrition and DNA damage in naïve CD4 T cells during HCV infection. **Nguyen LN, Zhao J**, Cao D, **Dang X**, Wang L, Lian J, Zhang Y, Jia Z, Wu XY, Morrison Z, Xie Q, Ji Y, Zhang Z, El Gazzar M, Ning S, Moorman JP, Yao ZQ. *Cell Death Dis.* 2018 Sep 5;9(9):900. doi: 10.1038/s41419-018-0897-y.

IL-10 induces an immune repressor pathway in sepsis by promoting S100A9 nuclear localization and MDSC development. Isatou Bah, Ajinkya Kumbhare, **Lam Nguyen**, Charles E. McCall, Mohamed El Gazzar. *Cellular immunology* 322, 32-38, 2018.

Structure-Function Relationships of C-Reactive Protein in Bacterial Infection. **Ngwa DN**, Agrawal A. *Front Immunol.* 2019 Feb 26;10:166. doi: 10.3389/fimmu.2019.00166. eCollection 2019. Review.

Neurogenesis within the hippocampus after chronic methylphenidate exposure. **Oakes HV**, DeVee CE, Farmer B, Allen SA, Hall AN, Ensley T, Medlock K, Hanley A, Pond BB. *J Neural Transm (Vienna).* 2019 Feb;126(2):201-209. doi: 10.1007/s00702-018-1949-2. Epub 2018 Oct 28.

Chronic methylphenidate induces increased quinone production and subsequent depletion of the antioxidant glutathione. **Oakes H.V.**, Ketchem S., Hall A., Ensley T., Medlock K., Pond B.B. 2019. *Pharmacological Reports*.

Dopaminergic Effects of Major Bath Salt Constituents 3,4-Methylenedioxypyrovalerone (MDPV), Mephedrone, and Methylone Are Enhanced Following Co-exposure. Allen SA, Tran LH, **Oakes HV**, Brown RW, Pond BB. *Neurotox Res.* 2019 Jul;36(1):132-143. doi: 10.1007/s12640-019-00020-2. Epub 2019 Mar 16.

Evolution of C-Reactive Protein. **Pathak A**, Agrawal A. *Front Immunol.* 2019 Apr 30;10:943. doi: 10.3389/fimmu.2019.00943. eCollection 2019. Review.

Altered Expression of Phox2 Transcription Factors in the Locus Coeruleus in Major Depressive Disorder Mimicked by Chronic Stress and Corticosterone Treatment In Vivo and In Vitro. Fan Y, Chen P, **Raza MU**, Szebeni A, Szebeni K, Ordway GA, Stockmeier CA, Zhu MY. *Neuroscience.* 2018 Nov 21;393:123-137. doi: 10.1016/j.neuroscience.2018.09.038. Epub 2018 Oct 11.

Disruption of Telomere Integrity and DNA Repair Machinery by KML001 Induces T Cell Senescence, Apoptosis, and Cellular Dysfunctions. Cao D, Zhao J, **Nguyen LN**, Nguyen LNT, **Khanal S, Dang X, Schank M**, Chand Thakuri BK, Wu XY, Morrison ZD, El Gazzar M, Zou Y, Ning S, Wang L, Moorman JP, Yao ZQ. *Front Immunol.* 2019 May 22;10:1152. doi: 10.3389/fimmu.2019.01152. eCollection 2019.

Topological DNA damage, telomere attrition and T cell senescence during chronic viral infections. Ji Y, **Dang X**, Nguyen LNT, **Nguyen LN, Zhao J**, Cao D, **Khanal S, Schank M**, Wu XY, Morrison ZD, Zou Y, El Gazzar M, Ning S, Wang L, Moorman JP, Yao ZQ. *Immun Ageing.* 2019 Jun 24;16:12. doi: 10.1186/s12979-019-0153-z. eCollection 2019.

Cardiomyocyte-specific deficiency of HSPB1 worsens cardiac dysfunction by activating NFκB-mediated leucocyte recruitment after myocardial infarction. Wang Y, Liu J, Kong Q, Cheng H, **Tu F**, Yu P, Liu Y, Zhang X, Li C, Li Y, Min X, Du S, Ding Z, Liu L. Cardiovasc Res. 2019 Jan 1;115(1):154-167. doi: 10.1093/cvr/cvy163.

II. PRESENTATIONS

Graduate Student in bold

Tuqa Alkhateeb – S100A9 Sustains Myeloid-Derived Suppressor Expansion and Immunosuppression During Chronic Murine Sepsis, Oral and Poster Presentation at Appalachian Student Research Forum, East Tennessee State University – April 2019

Cindy Barrett - "Gray's Lily and the Lily Leaf Spot Disease" Washington and Jefferson National Forest, Mount Rogers Office in Marion, VA

Cindy Barrett - "Gray's Lily and the Lily Leaf Spot Disease" Southern Appalachian Highlands Conservancy in Alexander, NC

Cindy Barrett - "Gray's Lily and the Lily Leaf Spot Disease" Southern Appalachian Highlands Conservancy, the Asheville Headquarters.

Jyoti Behera - Oral: " Comparative in silico analysis of Wrinkled1 paralogs in angiosperms" ; The southern section of the American Society of Plant Biologists (SS ASPB) meeting, Mar16 - Mar 18, Clemson University, Clemson, SC

Jyoti Behera - Oral: " Comparative in silico analysis of Wrinkled 1 paralogs in angiosperms" ; Appalachian Students Research Forum, Apr 19, East Tennessee State University, Johnson City, TN

Amy Berry - Chlamydia Basic Research Society Meeting in Seattle, WA, March 2019: poster presentation (Estrogen receptors affect Chlamydia muridarum infection in mice)

Amy Berry - Chlamydia Basic Research Society Meeting in Seattle, WA, March 2019: poster presentation (The Human Immunodeficiency Virus (HIV) drugs dolutegravir, elvitegravir, and bictegravir inhibit Chlamydia trachomatis and C. muridarum development in culture)

Amy Berry - Appalachian Student Research Forum, April 2019: oral presentation (Estrogen receptors affect Chlamydia muridarum infection in mice)

Aaron Birchfield - Crystallization of Grapefruit Flavonol-Specific 3-O Glucosyltransferase and Site-Directed Mutants. Poster Presentation at Appalachian Student Research Forum, East Tennessee State University – April 2019

Colin Yarid, **Rudy T. Chapman**, Diego J. Rodriguez-Gil. Maturation and synapse formation of olfactory sensory neurons after injury. Poster presented by supervised undergraduate at Appalachian Student Research Forum, Johnson City, TN- April 2019

Rudy T. Chapman and Diego J. Rodriguez-Gil. Engulfment of Axonal Debris After Methimazole-Induced Injury. Oral presentation presented at Appalachian Student Research Forum, Johnson City, TN- April 2019

Rudy T. Chapman, Katherine C. Burgess, Russ W. Brown, and Diego J. Rodriguez-Gil. Methimazole-Induced Injury Alters Levels of Expression of Engulfment Proteins. Poster presented at Association for Chemoreception Sciences Meeting, Bonita Springs, FL- April 2019

Kui Cui, Christopher Ardell, Nataly Podolnikova, Tatiana Ugarova, Eugene Podrez, Tatiana Byzova, Valentin Yakubenko. Blockade of macrophage adhesion to end-product of DHA oxidation prevents macrophage accumulation during chronic inflammation. *Atherosclerosis, Gordon Research Conference*, Newry, ME, USA, 6/16-21, 2019

Valentin P. Yakubenko, **Kui Cui**, Meghan Addorisio, David L. Williams, Valentin A. Pavlov. A new role for α_7 nicotinic acetylcholine receptor in macrophage migration to liver, lung and spleen during murine endotoxemia. *42nd Annual Conference on Shock*, Coronado, CA, USA, 6/8-11, 2019

Christopher L. Ardell, **Kui Cui**, Tammy R. Ozment, William P. Bailey, David L. Williams, Valentin P. Yakubenko. The anti-septic mechanism of macrophage integrin $\alpha_D\beta_2$ is mediated via regulation of macrophage migration. *42nd Annual Conference on Shock*, Coronado, CA, USA, 6/8-11, 2019

Kui Cui, Christopher Ardell, Nataly Podolnikova, Valentin Yakubenko. The prevention of $\alpha_D\beta_2$ -mediated macrophage adhesion to inflamed extracellular matrix thwarts macrophage retention during chronic inflammation. *Appalachian Student Research Forum*, Johnson City, TN, USA, 4/12, 2019

M Fan, K Yang, Y Wang, **F Tu**, X Wang, J Xu, T Ha, L Liu, J Kalbfleisch, D Williams and C Li. YAP is required for endothelial HSPA12B promoted angiogenesis following myocardial infarction. Poster Presentation at the AHA Scientific Sessions, November 10-12, 2018, Chicago, IL.

M Fan, K Yang, Y Wang, **F Tu**, T Ha, L Liu, J Kalbfleisch, D Williams and C Li. Endothelial specific HSPA12B prevents upregulation of adhesion molecules in sepsis. Oral presentation at 42nd Shock Society Annual Conference, June 8-12, 2019, San Diego, CA.

Y Wang, **S P. Gill**, **F Tu**, X Wang, J Xu, **M Fan**, K Yang, T Ha, L Liu, J Kalbfleisch, D Williams and C Li. Endothelial cell specific HSPA12B regulates heart resident and infiltrated macrophages following myocardial infarction. Poster presentation at AHA Scientific Sessions, November 10-12, 2018, Chicago, IL.

Y Wang, **S P. Gill**, **F Tu**, **M Fan**, K Yang, T Ha, L Liu, J Kalbfleisch, D Williams and C Li. Endothelial-specific HSPA12B plays an important role in regulating the phenotype and function of macrophages following hypoxic challenge. Poster presentation at 42nd Shock Society Annual Conference, June 8-12, 2019, San Diego, CA.

Gill W.D., Chandley M.J., Hernandez L.J., Whicker W.S., Kaestner C.L., Burgess K.C., and Brown R.W. Epigenetic Transmission of Enhanced Response to Nicotine in the Neonatal Quinpirole Model of Schizophrenia. (Poster Presentation) Society for Neuroscience Annual Meeting. San Diego, CA (2018).

Gill W.D., Shelton H.W., Burgess K.C., and Brown R.W. The Effects of an Adenosine A(2A) Agonist on the Rewarding Associative Properties of Nicotine and Neural Plasticity in a Rodent Model of Schizophrenia. (Oral Presentation) Appalachian Student Research Forum. Johnson City, TN (2019).

Spencer Gill - "Training the innate immune system upregulates myeloid derived suppressor cells (MDSCs) in polymicrobial sepsis"- Presented at Shock Society 2019 meeting in Coronado, CA.

Peters, J.D. **Gong, H.** and Bradshaw, P.C. Effects of Vitamin B3 and a Ketone Body on *C. elegans* Lifespan. Appalachian Student Research Forum, Johnson City, TN April 2019.

Goodlaxson, J., **Gong, H.**, Kumar, A., Bradshaw, P.C. The two mitochondrial NAD⁺ kinase genes in *C. elegans* regulate aging and reactive oxygen species production. Appalachian Student Research Forum, Johnson City, TN April 2019.

Imdadul Haq - Gordon Research Conference, 2019, Oral Presentation with a title "The role of fatty acid amide hydrolase in anandamide mediated signaling pathway in an early land plant, *Physcomitrella patens*".

Imdadul Haq - American Society of Plant Biologist, Southern Section, 2019, Oral Presentation with a title " Fatty acid amide hydrolase in an early land pants, *Physcomitrella patens*".

Imdadul Haq - Appalachian Student Research Forum, 2019, Oral Presentation with a title "Fatty acid amide hydrolase mediated endocannabinoid signaling in an early land palnt, *Physcomitrella patens*".

Hannah Malone – Therapeutic potential of FAK inhibitor in neuroprotection and neurogenesis in preclinical study in rodent stroke model. Biomedical Sciences Internal Seminar, November 2018

Hannah Malone - Appalachian Student Research Forum, 2019, Oral Presentation. Therapeutic potential of FAK inhibitor after stroke in neuroprotection and neurogenesis.

Madeleine K. Miller, Thomas C. Jones, Darrell Moore. Lights, Clock, Action! Circadian Rhythms of Locomotor Activity in *Larinioides cornutus* Indicate Extreme Flexibility in Photo-entrainment. Appalachian Student Research Forum – poster presentation, April 12th 2019

Madeleine K. Miller, Thomas C. Jones, Darrell Moore. Lights, Clock, Action! Circadian Rhythms of Locomotor Activity in *Larinioides cornutus* Indicate Extreme Flexibility in Photo-entrainment. Rhythms in the Southeast Region (RISER) Biennial Conference - poster presentation, May 31st 2019

Madeleine K. Miller, Thomas C. Jones, Darrell Moore. Lights, Clock, Action! Circadian Rhythms of Locomotor Activity in *Larinioides cornutus* Indicate Extreme Flexibility in Photo-entrainment. American Arachnological Society (AAS) Annual Meeting - oral presentation, June 17th 2019

Anna Musket - Southeast Regional Brain Tumor Meeting (May 2019, Birmingham, NC) - poster presentation and joint oral presentation with Dr. Xie. Title: HGF-autocrine Activation of MET Receptor Tyrosine Kinase Induces de novo Glioma Formation in Mice.

Oakes H.V., Ketchem S., Lily T., Oakley L., Smeyne R., Pond B.B. Effect of Long-term Methylphenidate Treatment in a Female Experimental Model of Parkinsonism. Annual Experimental Biology Meeting, April 2019.

Mary Wingard – Ataxia-Telangiectasia Mutated Kinase Deficiency Alters the Autophagic Response During Chronic Myocardial Infarction. Poster Presentation at Appalachian Student Research Forum, East Tennessee State University – April 2019

III. GRANTS/TRAVEL AWARDS

Amy Berry - Received the Graduate Student Research Grant in Spring 2019 (\$800, Determining the effects of the inhibition of *Chlamydia muridarum* host cell exit mechanisms)

Amy Berry - Chlamydia Basic Research Society Travel Award

Rudy Chapman - Recipient of School of Graduate Studies Research Grant- The Role of Axonal Debris Removal and Inflammation Suppression in the Regenerating Olfactory System- 2019

Trevor Chapman - Recipient of School of Graduate Studies Research Grant- Stressed Out Salamanders: Investigating the Biotic and Abiotic Factors Which Define the Elevation Range Limit in *Plethodon Montanus* and *P. Glutinosus* -2019

Min Fan – Daniel Traber Presidential Travel Award at 42nd Shock Society Annual Conference.

Imdadul Haq - Award: Sigma XI research Grant. Title "Elucidating the endocannabinoid signaling pathway in an early land plant, *Physcomitrella patens*."

Hannah Oakes - Recipient of School of Graduate Studies Research Grant- Effect of Chronic Methylphenidate Treatment on the Nigrostriatal Pathway -2019

Hannah Oakes - Daigneault Pharmacology Travel Award, East Tennessee State University, Experimental Biology, April 2019

Hannah Oakes - ASPET Travel Award for Experimental Biology 2019
American Society for Pharmacology and Experimental Therapeutics, April 2019

Fei Tu - Travel Award from The Shock Society, 2018

IV. OTHER AWARDS

Tuqa Alkhateeb – First Place-Doctoral (Medicine and Diseases) Oral Presentation. Appalachian Student Research Forum, East Tennessee State University – April 2019

Rudy Chapman - First Place- 3 Minute Thesis. ETSU- November 2018

Hannah Malone - Second Place-Doctoral (Medicine and Diseases) Oral Presentation. Appalachian Student Research Forum, East Tennessee State University – April 2019

Madeline Miller - First Place-Doctoral (Biological Sciences) Oral Presentation. Appalachian Student Research Forum, East Tennessee State University – April 2019

Mary Wingard - First Place-Doctoral Biological Sciences Poster Presentation. Appalachian Student Research Forum, East Tennessee State University – April 2019

V. STUDENT TEACHING EXPERIENCES

Amy Berry

Summer 2019: Mentored a medical student during his 6 week time in our lab.

Aaron Birchfield

Biochemistry of Metabolism (lab) spring 19. 4 hour lab per week. Supervised setup and breakdown of all experiments. Opened lab with 45min lecture on avg. Monitored and informed lab progress while students carried out experiments

Trevor Chapman

Biometry (Biology MS course), Spring 2019, 4 hours/week. Design course syllabus, prepare lecture material, conduct lectures; prepare, administer, and grade homework, exams, and projects.

Spencer Gill

Mentored a medical student, Greyton Garaluk, this summer as he did his AHA summer research rotation in Dr. Williams laboratory. His project was successful and he recently won second place in the medical student research forum.

Henry Gong

Ronald E. McNair Scholarship program course facilitator - 10 hours a week for two summer months. I taught a course on research methodology to undergraduates interested in attending graduate school.

Imdadul Haq

Biochemistry of Macromolecules Lab, Fall 2018, 20 hours per week. Taught the lab section and also helped some of the lab section and supervised. Prepared lab for class; graded exams and lab report.

Hannah Malone

Technician/student lab training, 5 to 10 hours per week, teaching of basic procedures for immunohistochemistry and *in vivo* tissue analysis.