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2018-2019 Department of Surgery Scholarly Activity Report

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**EAST TENNESSEE STATE UNIVERSITY
JAMES H. QUILLEN COLLEGE OF MEDICINE
SUMMARY OF SCHOLARLY ACTIVITIES
DEPARTMENT OF SURGERY**

July 1, 2018 through June 30, 2019

I. PUBLICATIONS

A. Journal Publications

Fensterheim BA, Young JD, Luan L, Kleinbard RR, Stothers CL, Patil NK, McAtee-Pereira AG, Guo Y, Trenary I, Hernandez A, Fults JB, Williams DL, Sherwood ER, Bohannon JK. The TLR4 Agonist Monophosphoryl Lipid A Drives Broad Resistance to Infection via Dynamic Reprogramming of Macrophage Metabolism. *J Immunol* 200(11):3777-3789. June 1, 2018. PMC5964009.

Graus MS, Wester MJ, Lowman DW, Williams DL, Kruppa MD, Martinez CM, Young JM, Pappas HC, Lidke KA, Neumann AK. Mannan Molecular Substructures Control Nanoscale Glucan Exposure in *Candida*. *Cell Rep.* 24(9):2432-2442, August 28, 2018. PMC6204226.

Leonhardt J, Große S, Marx C, Siwczak F, Stengel S, Bruns T, Bauer R, Kiehntopf M, Williams DL, Wang ZQ, Mosig AS, Weis S, Bauer M, Heller R. *Candida albicans* β -Glucan Differentiates Human Monocytes Into a Specific Subset of Macrophages. *Frontiers in Immunology*, 9:2818. Doi: 10.3389/fimmu.2018.02818.

Mao Y, Kong Q, Li R, Zhang X, Gui Y, Li Y, Li C, Zhao Y, Liu L, Ding Z. Heat shock protein A12A encodes a novel prosurvival pathway during ischaemic stroke. *BBA-Molecular Basis of Disease* 1864(2018): 1862-1872, 2018.

Smith AJ, Graves B, Child R, Rice PJ, Ma Z, Lowman DW, Hensley HE, Ryter KT, Evans JT, Williams DL. Immunoregulatory Activity of the Natural Product Laminarin Varies Widely as a Result of Its Physical Properties. *J Immunol* 200(2):788-799. Jan. 15, 2018. PMC5760317.

Zhao Y, Liu C, Liu J, Kong Q, Mao Y, Cheng H, Li N, Zhang X, Li C, Li Y, Liu L, Ding Z. HSPA12B promotes functional recovery after ischaemic stroke through an eNOS-dependent mechanism. *Journal of Cellular and Molecular Medicine* 22(4):2252-2262, 2018.

Williams DL, Li C, Sherwood ER. Loss of monocyte metabolic plasticity in endotoxin tolerance: A model for understanding sepsis-induced immune paralysis? Editorial Commentary. *Journal of Leukocyte Biology* 2019; 106: 7-9.

B. Books or Chapters

C. Proceedings

II. PAPERS, ABSTRACTS, AND/OR PRESENTATIONS

A. Regional and National

Gill PS, Ozment TR, Williams DL. Training the innate immune system upregulates myeloid derived suppressor cells (MDSCS) in polymicrobial sepsis. Poster presented to 42nd Annual Conference on Shock, June 8-11, 2019, Coronado, CA.

Grey EC, Burns B. A Comparison between Pediatric and Adult Patients Transported to a Rural Trauma Center by Helicopter. Oral presentation given at Academic Surgical Congress, February 4-7, 2019, Houston, TX.

Fan M, Yang K, Wang Y, Tu F, Wang X, Xu J, Ha T, Kalbfleisch J, Williams D, Li C. Yap is Required for Endothelial Hspa12b Promoted Angiogenesis Following Myocardial Infarction. Poster presented at American Heart Association, Scientific Sessions 2018, Chicago, IL, November 10-12, 2018.

Fan M, Yang K, Wang Y, Tu F, Ha T, Liu L, Kalbfleisch J, Williams DL, Li C. Endothelial specific HSPA12B prevents upregulation of adhesion molecules in sepsis. Oral presentation given to 42nd Annual Conference on Shock, June 8-11, 2019, Coronado, CA.

T. Ozment, J. Wright, J. Adkins, M. Kruppa, S. Gill, D. Williams. Neutrophils from septic patients have higher expression of Toll-Like Receptor 2 (TLR2) and increased uptake of *Candida albicans*. Poster presented to 2018 Annual Meeting of the Society for Leukocyte Biology, Chandler, AZ, Oct. 14-16, 2018.

P.J. Rice, B. Graves, M. Kruppa, D. Lowman, Z. Ma, Y.N. Jiao, H. Ensley, T. Ozment, D. Williams. The human macrophage scavenger receptor class A (CD204) differentially recognizes fungal cell wall pathogen associated molecular patterns. Poster presented to 2018 Annual Meeting of the Society for Leukocyte Biology, Chandler, AZ, Oct. 14-16, 2018.

Kruppa M, Williams DL. The Emerging Fungal Pathogen *Candida auris* Contains Cell Wall Mannans That Exhibit Unique Structural Features Not Found in Other Fungi. Abstract accepted for poster presentation at the International Conference on Emerging Infectious Diseases, Atlanta, GA, August 24-30, 2018.

Kruppa M, Lowman D, Graves B, Rice P, Ma Z, Jiao YN, Meis JF, Netea MG, Williams DL. *Candida auris* mannans are recognized with lower affinity by ahDectin-2 and rhMR than mannans derived from other *Candida* species. Abstract presented as poster at the Gordon Research Conferences, January 13-18, 2019, Galveston, TX.

Ozment T. Neutrophils from septic patients show lower express of Dectin-1 and increased expression of TLR2. Poster presented to the 42nd Annual Conference on Shock, June 8-11, 2019, Coronado, CA.

Proctor B, Taylor M, Quinn M, Burns B. An alarming rate of substance use in motor vehicle collision patients. Oral presentation given at Academic Surgical Congress, February 5-7, 2019, Houston, TX.

Wang Y, Gill SP, Tu F, Wang X, Xu J, Fan M, Yang K, Ha T, Liu L, Kalbfleisch J, Williams D, Li C. Endothelial Cell Specific Hspa12b Alters Resident and Infiltrated Macrophages in the Myocardium Following Myocardial Infarction. Poster presented at American Heart Association, Scientific Sessions 2018, Chicago, IL, November 10-12, 2018.

Wang Y, Gill SP, Tu F, Fan M, Yang K, Ha T, Liu L, Kalbfleisch J, Williams D, Li C. Endothelial-specific HSPA12B plays an important role in regulating the phenotype and function of macrophages following hypoxic challenge. Poster presented to the 42nd Annual Conference on Shock, June 8-11, 2019, Coronado, CA.

B. International

III. INVITED PRESENTATIONS

A. Grand Rounds

B. National or International Meetings

Williams, DL. Invited Speaker at Brown University.

IV. OTHER

National and International Peer-review Committees

Li, C. NIH SAT Review Session for Cardiovascular Differentiation & Development

Journal Reviewers:

Williams DL.

Li C.

Browder IW.

V. VISITING PROFESSORS

IV. OTHER

EXTRAMURAL FUNDING

Number of PI's on Funded Grants: 4

VI EXTRAMURAL FUNDING

Peer Review (NIH, AHA, etc.)

Faculty	Agency	Project Period	Current Year Award	Total Award
Li & Wms	NIH-R01 ¹	9/1/18-5/31/19	\$225,000	\$1,332,000
Ozment	NIH-R01 ⁵	5/1/19 – 4/30/20	\$195,000	\$1,443,000
Williams/ Sherwood	NIH-R01 ³	2/1/19 – 1/31/20	\$453,237	\$534,819.
Li	NIH-R01 ⁴	3/1/19 – 2/28/20	\$359,612.00	\$2,128,904
Kleinman	BrightFocus Foundation ⁶	7/1/18 – 6/30/20	\$160,000	\$160,000
Kleinman	NIH-EY028206 ⁷	4/18 – 3/23	\$376,250.00	1,881,250
Total Funding Received				
Total for Multi-Year Commitments				

¹2R01GM083016-09 – Competing Renewal of “Innate Immunity and Cardiovascular Function in Sepsis” 9/1/18 – 5/31/22.

³R01 – Training Innate Immunity: A new approach to the treatment of sepsis, Year 4 of 4

⁴R01 – Role of Toll-Like Receptor Signaling in Cardiac Ischemia, Year 1 of 4

⁵R01 – Cellular and Molecular Mechanisms of Fungal Sepsis in the Critically Ill Patient, Year 3 of 5

⁶BrightFocus – Dysregulation of the Acetylome in Age-Related Macular Degeneration

⁷NIH-EY028206 – The Role of Histone Deacetylases in Age-related Macular Degeneration

Other Sponsored Activities – Current (Chair of Carroll Long, RDC, etc.)

Faculty	Agency	Project Period	Current Year Award	Total Award
Williams	Carroll Long Chair	7/1/18-6/30/19	100,000	100,000
Williams	Sub-Award – U of New Mexico	5/5/15 – 12/31/18	\$6997.00	\$6997.00
Williams	Subcontract with U of Montana	9/29/18 – 9/28/19	\$470,900 (DC)	\$696,932 (TC)

Total Funding Received		
Total for Multi-Year Commitments		

VII PENDING EXTRAMURAL APPLICATIONS

(Means proposed but unfunded.)

Faculty	Agency	Project Period	Request	Funded?
Li	NIH	7/1/19 – 6/30/24		Yes
Williams	NIH ² S10	2/1/19 – 1/31/20	\$499,875.00	
Li	NIH ³	1/1/20 – 12/31/24	\$2,854,962.00	
Williams	DOD Grant ⁴	1/1/20 – 12/31/22	\$3,626,364.00	
Total Funding Received				
Total for Multi-Year Commitments				

¹Competing Renewal of “Role of Toll-Like Receptor Signaling in Cardiac Ischemia”

²Upgrade of 400 MHz NMR Spectrometer with high performance digital console and cryoprobe-S10 Proposal.

³Novel Role of Lactate for Cardiovascular dysfunction in sepsis

⁴Development of a Vaccine for the Prevention and/or Treatment of the Emerging Fungal Pathogen *Candida auris*