**JUSTIN A. THORNTON, PH.D.**

**CURRICULUM VITAE - 2023**

Associate Professor 243 Robindale Rd

Graduate Coordinator Starkville, MS 39759

Department of Biological Sciences (662) 325-8020 (office)

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Mississippi State, MS 39762

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[www.pneumolab.com](http://www.pneumolab.com)

**EDUCATION**

**2000-2005** Doctor of Philosophy

University of Mississippi Medical Center

Department of Microbiology

**1998-2000** Bachelor of Science

 University of Southern Mississippi

 Department of Biology

 Emphasis Area: Microbiology

**POSTDOCTORAL AND RESEARCH EXPERIENCE**

**2005-2010**  ***Postdoctoral Fellow***, St. Jude Children’s Research Hospital. Research

 focus: Host-pathogen interactions of *Streptococcus pneumoniae*

 (Research advisor: Elaine Tuomanen, M.D.)

**2000-2005** ***Doctoral Research***: Dissertation topic: Host Responses to

 *Streptococcus pneumoniae* and the Virulence Protein

 Pneumolysin. (Research advisor: Larry McDaniel, Ph.D.)

**RESEARCH AREAS**

My research primarily focuses on host-pathogen interactions of gram-positive bacteria, primarily *Streptococcus pneumoniae*. Specific focus areas include bacterial toxins, metal-binding surface proteins, colonization and invasive disease, as well as regulation of innate immunity in response to bacterial pathogens.

**PEER-REVIEWED PUBLICATIONS**

Raju S., Sheridan P.E., Hauer A.K., Garrett A.E., Connell D.E., **Thornton J.A.**, Stokes S.L., and Emerson J.P. Cu-Catalyzed Chan-Evans-Lam Coupling reactions of 2-Nitroimidazole with Aryl boronic acids: An effort toward new bioactive agents against *S. pneumoniae*. *Chem Biodivers.* 2022 Aug;19(8):e202200327. doi: 10.1002/cbdv.202200327. Epub 2022 Aug 3. PMID: 35819995; PMCID: PMC10184775.

Manzer H.S., Nguyen D.T., Park J.Y., Park N., Seo K.S., **Thornton J.A.**, Nobbs A.H., Doran K.S. The Group B Streptococcal Adhesin BspC Interacts with Host Cytokeratin 19 To Promote Colonization of the Female Reproductive Tract. mBio. 2022 Sep 7:e0178122. doi: 10.1128/mbio.01781-22. Epub ahead of print. PMID: 36069447.

Kennedy II D.E., Mody P., Gout J.F.,Wei W., Seo K.S., Olivier A.K., Rosch J.W., Thornton J.A. Contribution of Puma to Inflammatory Resolution during Early Pneumococcal Pneumonia. Front Cell Infect Microbiol. 2022 May 26;12:886901. doi: 10.3389/fcimb.2022.886901. eCollection 2022.PMID: 35694536.

Hu Y., Park N., Seo K.S., Park J.Y., Somarathne R.P., Olivier A.K., Fitzkee N.C., **Thornton J.A.** Pneumococcal surface adhesion A protein (PsaA) interacts with human Annexin A2 on airway epithelial cells. Virulence. 2021 Dec;12(1):1841-1854. doi: 10.1080/21505594.2021.1947176. PMID: 34233589; PMCID: PMC8274441.

Seo K.S., Park N., Rutter J.K., Park Y., Baker C.L., **Thornton J.A.**, Park J.Y. Role of Glucose-6-Phosphate in Metabolic Adaptation of Staphylococcus aureus in Diabetes. Microbiol Spectrum. 2021 Oct 31;9(2):e0085721. doi: 10.1128/Spectrum.00857-21. Epub 2021 Sep 22. PMID: 34549996 PMCID: PMC8557822.

Burcham L.R., Hill R.A., Caulkins R.C., Emerson J.P., Nanduri B., Rosch J.W., Fitzkee N.C., **Thornton J.A.** *Streptococcus pneumoniae* metal homeostasis alters cellular metabolism. *Metallomics*. 2020 Sep 23;12(9):1416-1427. doi: 10.1039/d0mt00118j. PMID: 32676626

Ayoola MB, Shack LA, Nakamya MF, **Thornton J.A.**, Swiatlo E, Nanduri B. Polyamine Synthesis Effects Capsule Expression by Reduction of Precursors in *Streptococcus pneumoniae.* *Front Microbiol*. 2019 Aug 29;10:1996.

Deng L., Spencer B.L., Holmes J.A., Mu R., Rego S., Weston T.A., Hu Y., Sanches G.F., Yoon S., Park N., Nagao P.E., Jenkinson H.F., **Thornton J.A.**, Seo K.S., Nobbs A.H., Doran K.S. The Group B Streptococcal surface antigen I/II protein, BspC, interacts with host vimentin to promote adherence to brain endothelium and inflammation during the pathogenesis of meningitis. *PLoS Pathog*. 2019 Jun 10;15(6).

Harris J., Paul O., Park S.H., White S.J., Budachetri K., McClung D.M., Wilson J.G., Olivier A.K., **Thornton J.A.**, Broadway P.R., Ricke S.C., Donaldson J.R.. Oxygen deprivation influences the survival of Listeria monocytogenes in gerbils. Transl Anim Sci. 2019 Jan;3(1):102-112. doi: 10.1093/tas/txy110. Epub 2018 Oct 3. PMID: 30627705; PMCID: PMC6310367.

Brown L.R., Caulkins R.C., Schartzel T.E., Rosch J.W., Honsa E.S., Schultz-Cherry S., Meliopoulos V.A., Cherry S., **Thornton J.A.** Increased zinc availability enhances initial aggregation and biofilm formation of *Streptococcus pneumoniae*. *Front. Cell. Infect. Microbiol*. Jun 2017 | doi: 10.3389/fcimb.2017.00233

Posadas G.A., Broadway P.R., **Thornton J.A.**, Carroll J.A., Lawrence A., Corley J.R., Thompson A., and Donaldson J.R. Yeast Pro- and Paraprobiotics Have the Capability to Bind Pathogenic Bacteria Associated with Animal Disease. *Trans Animal Sci*. Feb 2017; 1.

Park J.Y., Moon B.Y., Park J.W., **Thornton J.A.**, Park, Y.H., Seo K.S. Genetic Engineering of a Temperature Phage-based Delivery System for Efficacious CRISPR/Cas9 Antimicrobials against *Staphylococcus aureus*. *Sci. Rep*. Mar 2017; 7:44929

Krishnavajhala A., Wilder H.K., Boyle W.K., Damania A., **Thornton J.A.**, Perez de Leon A.A., Teel P.D., Lopez J.E. Imaging *Borrelia turicatae* Producing Green Fluorescent Protein Reveals Colonization of *Ornithodorus duricata* midgut and Salivary Glands from Nymphal Acquisition through Transmission. *Appl Environ Microbiol.* 2017 Feb 15;83(5). pii: e02503-16. doi: 10.1128/AEM.02503-16. Print 2017 Mar 1.

Bryant J.R., Dabbs R.C., Oswalt K.L., Brown L.R., Rosch J.W., Seo K.S., Donaldson J.R., McDaniel L.S., **Thornton J.A.** Pyruvate Oxidase of *Streptococcus pneumoniae* Contributes to Pneumolysin Release. *BMC Microbiol*. 2016 Nov 9;16(1):271.

Rai A.N., **Thornton J.A.**, Stokes J., Sunesara I., Swiatlo E., Nanduri B. Polyamine Transporter in *Streptococcus pneumoniae* is Essential for Evading Early Innate Immune Responses in Pneumococcal Pneumonia. *Sci Rep.* 2016 Jun 1;6:26964. doi: 10.1038/srep26964.

Moon B.Y., Park J.Y., Robinson D.A., Thomas J.C., Park Y.H., **Thornton J.A.**, Seo K.S.. Mobilization of Genomic Islands of *Staphylococcus aureus* by Temperate Bacteriophage. *PLoS One*. 2016. Mar 8;11(3):e0151409.

Brown L.R., Gunnell S.M., Cassella A.N., Keller L.E., Scherkenbach L.A., Mann B., Brown M.W., Hill R., Fitzkee N.C., Rosch J.W., Tuomanen E.I., **Thornton J.A**. AdcAII of Streptococcus pneumoniae Affects Pneumococcal Invasiveness. *PLoS One*. 2016. Jan 11;11(1):e0146785.

Keller L.E, Lao X., **Thornton J.A.**, Seo K.S., Robinson D.A., and McDaniel L.S. Immunization with Pneumococcal Surface Protein K of Nonencapsulated *Streptococcus pneumoniae* Provides Protection in a Mouse Model of Colonization. *Clin Vaccine Immunol.* 2015 Nov;22(11):1146-53.

**Thornton J.A.**, Tullos N.A., Sanders M.E., Ridout G., Wang Y., Taylor S.D., McDaniel L.S., and Marquart M.E. Differential Bacterial Gene Expression During Experimental Pneumococcal Endophthalmitis. *Ophthalmic Research*. 2015. Apr;53(3):149-61. Epub Mar 12.

Mann B., **Thornton J.A.**, Heath R., Wade K.R., Tweten R.K., Gao G.,El Kasmi K., Jordan J.B., Mitrea D.M., Kriwacki, R., Maisonneuve J., Alderson M., Tuomanen E.I. Broadly Protective Protein-Based Pneumococcal Vaccine Composed of Pneumolysin Toxoid-CpbA Peptide Recombinant Fusion Protein. *J. Infect. Dis*. 2014 Apr 1;209(7):1116-25.

Lopez J.E., Wilder H.K., Boyle W., Drumheller L.B., **Thornton J.A.**, Willeford B, Morgan TW, Varela-Stokes A. Sequence Analysis and Serological Responses against *Borrelia turicatae* BipA, a Putative Species-Specific Antigen. *PLoS Negl Trop Dis*. 2013 Sep 19;7(9).

Keller L.E., Jones C.V., **Thornton J.A.**, Sanders M.E., Swiatlo E., Nahm M.H., Park I.H., and McDaniel L.S. PspK of *Streptococcus pneumoniae* Increases Adherence to Epithelial Cells and Enhances Nasopharyngeal Colonization. *Infect Immun*. 2013 Jan;81(1):173-81.

Payne A., Schmidt T.B., Nanduri B., Pendarvis K., Pittman J.R., **Thornton J.A.**, Grissett J., Donaldson J.R. Proteomic Analysis of the Response of *Listeria monocytogenes* to Bile Salts Under Anaerobic Conditions. *J. Med Microbiology*. 2013 Jan;62(Pt 1):25-35.

Garrison S.P., **Thornton J.A.\***, Häcker H., Webby R., Rehg J.E., Parganas E., Zambetti G.P., Tuomanen E.I..The p53-target Gene *Puma* Drives Neutrophil-mediated Protection against Lethal Bacterial Sepsis. *PLoS Pathog*. 2010 Dec 23;6(12) \* co-first author.

**Thornton J.A.**, Durick-Eder K., Tuomanen E. Pneumococcal pathogenesis: ‘Innate Invasion’ Yet Organ Specific Damage. *J Mol Med*. 2010 Feb; 88(2): 103-07. Review.

Orihuela C., Mahdavi J., **Thornton J.A.**\*, Mann E., Wooldridge K.G., Abouseada N., Self T.**, Dlawer A.A., Tuomanen E.I.** Laminin Receptor Initiates Contact of Bacteria with the Blood Brain Barrier. *J Clin Invest*. 2009 Jun;119(6): 1638-46. \* co-first author.

Rosch J.W., Mann B., **Thornton J.A.**, Sublett J., Tuomanen E. Convergence of regulatory networks on the pilus locus of *Streptococcus pneumoniae*. *Infect Im*mun. 2008 Jul; 76(7): 3187-96.

Quin L.R., Moore Q.C. 3rd, **Thornton J.A.**, McDaniel, L.S. Peritoneal Challenge Modulates Expression of Pneumococcal Surface Protein C During Bacteremia in Mice. *Infect Immun*. 2008 Mar;76(3):1122-7.

Marks M., Burns T., Abadi M., Seyoum B., **Thornton J.A.**, Tuomanen E., Pirofski L.A. Influence of Neutropenia on the Course of Serotype 8 Pneumococcal Pneumonia in Mice. *Infect Immun*. 2007 Apr;75(4):1586-97.

Rogers P.D., Liu T.T., Barker K.S., Hillard G.M., English B.K., **Thornton J.A.**, Swiatlo E., McDaniel L.S. Gene Expression Profiling of the Response of *Streptococcus pneumoniae* to Penicillin. *J Antimicrob Chemother*. 2007 Apr;59(4):616-26.

He X., **Thornton J.A.**, Carmicle Davis-S., McDaniel L.S. Tex, a Putative Transcriptional Accessory Factor, is Involved in Pathogen Fitness in *Streptococcus pneumoniae*. *Microb Pathog*. 2006 Dec;41(6):199-206.

**Thornton J.A.**, McDaniel L.S. Up-regulation of ICAM-1 in Response to Pneumolysin from *Streptococcus pneumoniae*. *Infect Immun*. 2005 Oct;73(10):6493-8

Hu L., Guo M., He Z., **Thornton J.A.**, McDaniel L.S., Hughson M.D. Human Papillomavirus Genotyping and p16(INK4a) Expression in Cervical Intraepithelial Neoplasia of Adolescents. *Mod Pathol*. 2005 Feb;18(2):267-73.

McDaniel L.S., **Thornton J.A.**, McDaniel D.O. Use of cDNA Microarrays to Analyze Responses to Pneumococcal Virulence Factors. *Indian J. Med. Res*.; 2004 (119) Suppl: 99-103.

Rogers P.D., **Thornton J.A.**, Barker K.S., McDaniel D.O., Sacks G.S., Swaitlo E., L.S. McDaniel. Pneumolysin-dependent and Independent Gene Expression Identified by cDNA Microarray Analysis of THP-1 Human Mononuclear Cells Stimulated by *Streptococcus pneumoniae*. *Infect. Immun*. 2003 Apr;71(4): 2087-2094.

**INVITED BOOK CHAPTERS**

**Thornton JA.** Splicing by Overlap Extension PCR to Obtain Hybrid DNA Products. Methods Mol Biol. 2016;1373:43-9. doi: 10.1007/7651\_2014\_182. PMID: 25646606.

**ABSTRACT PRESENTATIONS (most recent)**

Dey P., Hu Y., Park N., Seo K.S., Park J.Y., Thornton J.A. Identification and Expression of Human Host Cell Receptor Proteins of Streptococcus pneumoniae. Streptococcal Biology Gordon Research Conference: Evolving Genomes, Behavior and Pathogenic Mechanisms of Streptococci and Enterococci. Newry, ME. August 14-19, 2022.

Fereday I.R., Park N., Hu Y., Tvarkunas M.J., Seo K.S., Thornton J.A. Evaluating Pneumococcal Proteins for Potential to Serve as Adhesins During Colonization. Streptococcal Biology Gordon Research Conference: Evolving Genomes, Behavior and Pathogenic Mechanisms of Streptococci and Enterococci. Newry, ME. August 14-19, 2022.

Fereday I.R., Seo K.S., Park J., and Thornton J.A. Engineering Bacteriophage Delivery of an

Antimicrobial CRISPR/Cas9 System to Streptococcus pneumoniae. ASM South Central Branch

Meeting. Oxford, MS. November 1-2, 2019.

Kennedy II D.E., Tan W., Rosch J., Gout J.F., Thornton J.A. Puma-dependent apoptosis

suppresses synthesis of inflammatory cytokines and positively modulates expression of proangiogenic factors. ASM South Central Branch Meeting. Oxford, MS. November 1-2, 2019.

Jackson J.H., Surma J.M., Holland J.H., Hu Y., Thornton J.A. Pneumococcal

Resistance to Granule-mediated Killing by Human Neutrophils. ASM South Central

Branch Meeting. Oxford, MS. November 1-2, 2019.

Travis A.B. and Thornton J.A. Characterizing the Activity of SP1466 Protein in

Streptococcus pneumoniae. ASM South Central Branch Meeting, November 1-2, 2019.

Hu Y., Park N., Seo K.S., Thornton J.A. Identification of host cellular receptor of

Streptococcus pneumoniae. ASM South Central Branch Meeting. Oxford, MS. November 1-2, 2019.

Coggins J.A., Vonkchalee N., Matthews A.J., Camilli A., Seo K.S., Rosch J.W., Thornton J.A.
TnSeq Identification of Potential Azithromycin Uptake Mechanism by *Streptococcus pneumoniae*. Mississippi Academy of Sciences. Hattiesburg, MS. February 21-22, 2019.

Burcham L.R, Hill R., Caulkins R.C., Emerson J.P., Nanduri B., Rosch J.W., Fitzkee N.C., and Thornton J.A.. SP1433-1438 Operon of Streptococcus pneumoniae Regulates Metal Homeostasis and Cellular Metabolism during Zinc Stress. Streptococcal Biology Conference. Newry, ME. August 19-24, 2018.

Jackson J.H., Drumheller L.B., Bhalla K., Carr M.A., Surma J.M., Seo K.S., Yao J., Rosch J.W., Thornton J.A. Pneumococcal Resistance to Granule-mediated Killing by Neutrophils. Streptococcal Biology Conference. Newry, ME. August 19-24, 2018.

Lott J.M., Brown L.R., Thornton J.A. Visualizing *Streptococcus pneumoniae* Autolysis by Scanning Electron Microscopy. Southeastern Regional Pneumococcal Symposium. Memphis, TN. May 10-11, 2018.

Vonkchalee N., Coggins J.A., Hu Y., Matthews A.J., Camilli A., Seo K.S., Thornton J.A. Identification of Novel Mechanisms for Antibiotic Uptake by Streptococcus pneumoniae. Southeastern Regional Pneumococcal Symposium. Memphis, TN. May 10-11, 2018.

Jackson J.H., Drumheller L.B., Bhalla K., Carr M.A., Surma J.M., Seo K.S., Thornton J.A. Pneumococcal Resistance to Granule-mediated Killing by Neutrophils. Southeastern Regional Pneumococcal Symposium. Memphis, TN. May 10-11, 2018.

Hu Y., Fowler R.E., Jackson E.K., Seo K.S., Thornton J.A. Expressing Pneumococcal Surface Proteins for Possible Inclusion in a Vaccine Targeting Colonization. Southeastern Regional Pneumococcal Symposium. Memphis, TN. May 10-11, 2018.

Carr M.A., Brown L.R., Lott J.M., Drumheller L.B., Seo K.S., Thornton J.A. Expression of *Streptococcus pneumoniae* Surface Proteins for Identification of Host Cell Ligands. Annual Biomedical Research Conference for Minority Students. Phoenix, AZ. November 1-4, 2017.

Brown L.R., Caulkins R.C., Emerson J.P., Henderson K.L., Rosch J.W., Thornton J.A. Insight into an Uncharacterized Operon Contributing to Metal Homeostasis in *Streptococcus pneumoniae*. Microbial Pathogenesis and Host Response, Gordon Research Conference. Cold Spring Harbor, NY. September 12-16, 2017.

Carr M.A., Brown L.R., Lott J.M., Drumheller L.B., Thornton J.A. Expression of Streptococcus pneumoniae Surface Proteins for Identification of Host Cell Ligands. Mississippi-INBRE Symposium. Jackson, MS. July 27, 2017.

Kennedy D.E., Heath K.E., Hill K.M., Seo K.S., Morgan T., Cooley J., Thornton J.A. Puma Regulates Apoptosis of Professional Phagocytes during Bacterial Infection. ASM Microbe 2017. New Orleans, LA. June 2017.

Caulkins R.C., Brown L.R., Emerson J.P., Henderson K.L., Rosch J.W., Thornton J.A. Novel Operon of Streptococcus pneumoniae is Involved in Metal Homeostasis. ASM Microbe 2017. New Orleans, LA. June 2017.

Caulkins R.C., Brown L.R., Emerson J.P., Henderson K.L., Rosch J.W., and Thornton J.A. Identification of a Metal-dependent Operon in *Streptococcus pneumoniae*. ASM South Central Branch Meeting. Lafayette, LA. October 27-29, 2016.

Dixon K.D., Mody P.Z., Rosch J.W., Thornton J.A. Effect of Pneumococcal H2O2 on Epithelial Cell Gene Expression. Emerging Researchers National Conference in STEM. Washington, D.C.. February 25-27, 2016.

Bryant J.C., Dabbs R.C., Oswalt K.L., Brown L.R., Rosch J.W., Seo K.S., Donaldson, J.R., McDaniel L.S., Thornton J.A. Pyruvate Oxidase of *Streptococcus pneumoniae* links Metabolism to Virulence by Regulating Pneumolysin Release. Biology of Acute Respiratory Infections Gordon Research Conference. Galveston, TX. February 21-26, 2016.

Brown L.R., Caulkins R.C., Rosch J.W., and Thornton J.A. Zinc Availability Enhances *Streptococcus pneumoniae* Biofilms. Biology of Acute Respiratory Infections Gordon Research Conference. Galveston, TX. February 21-26, 2016.

Rai A.N., Stokes J., Thornton J.A., Swiatlo E., Sunesara I. and Nanduri B. Polyamine transport is essential for evading early host innate immune responses in a mouse model of pneumococcal pneumonia. 12TH European meeting on the molecular biology of the Pneumococcus (EUROPNEUMO 2015). Oxford, UK, Jul 7-10 2015.

Dixon K.D., Mody P.Z., Rosch J.W., Thornton J.A. Effect of Pneumococcal H2O2 on Epithelial Cell Gene Expression. Annual Biomedical Research Conference for Minority Students. Seattle, WA. November 11-14, 2015.

Kennedy II, D.E., Heath K.E., Hill K.M., Seo K.S., Morgan T., Cooley J., Thornton J.A. Puma – A Critical Component of Innate Immunity Against Extracellular Pathogens. Southeastern Regional IDeA Meeting. Biloxi, MS. November 12-14, 2015.

Dabbs R.C., Bryant J.C., Rosch J.W., McDaniel L.S. and Thornton J.A. The Contribution of Pyruvate Oxidase to Pneumolysin Release in *Streptococcus pneumoniae*. Southeastern Regional IDeA Meeting. Biloxi, MS. November 12-14, 2015.

Rai A.N., Thornton J.A., Stokes J, Sunesara I., Swiatlo E. and Nanduri B. Polyamine transport is essential for evading early host innate immune responses in a mouse model of pneumococcal pneumonia. Southeast Regional IDeA Conference. Biloxi, MS, Nov 11-13, 2015.

Dabbs R.C., Bryant J.C., Rosch J.W., McDaniel L.S., Thornton J.A. The Contribution of Pyruvate Oxidase to Pneumolysin Release in *Streptococcus pneumoniae*. ASM South Central Branch Meeting, Hattiesburg, MS. September 18, 2015.

Dixon K.D., Mody P.Z., Rosch J.W., Thornton J.A. Effect of Pneumococcal H2O2 on Epithelial Cell Gene Expression. ASM South Central Branch Meeting. Hattiesburg, MS. September 18, 2015.

Harris J., Thornton J.A., Park S.H., White S.J., McClung D., Wilson J.G., Oliver A.K., Ricke S.C., Donaldson J.R.. Analyzing the Influence Oxygen Deprivation has on the Capability of *Listeria monocytogenes* to Induce Listeriosis in Gerbils. Oral presentation at ASM South Central Branch Meeting, Hattiesburg, MS. September 2015.

Brown L.R. and Thornton J.A. Investigating the Role of Transition Metals in *Streptococcus pneumoniae* Colonization. Oral presentation at ASM South Central Branch Meeting, September 2015.

Brown L.R., Gunnell S.M., Keller L.E., Thornton J.A. Characterization of Zinc-Binding Lipoproteins AdcA and AdcAII of *Streptococcus pneumoniae*. ASM General Meeting. Boston, MA. May 2014.

**ORAL PRESENTATIONS**

Identification of novel host receptors for pneumococcal colonization factors. 2019 Mississippi IDeA Conference. Jackson, MS. August 2, 2019. **(invited)**

Expression of Pneumococcal Surface Proteins in a Staphylococcal Expression System for Host Cell Receptor Identification by Far-western Blot. Europneumo 2019. Greisfwald, Germany. June 11-14, 2019.

Pneumococcal Resistance to Neutrophil-Mediated Killing: A Trait for Invasiveness? American Society for Microbiology South Central Branch Meeting. October 20, 2017. **(invited)**

Factors Affecting the Release and Activity of Pneumolysin Toxin. International Conference on Gram-Positive Pathogens. Omaha, NE. October 9-12, 2016.

Pyruvate Oxidase Links Metabolism to Pneumolysin Release. Southeastern Pneumococcal Symposium. Mississippi State University. May 20, 2016.

Innate Immunity to Bacterial Infection and Mechanisms for Circumventing It. Department of Biological Sciences. University of Southern Mississippi. April 22, 2016. **(invited)**

Puma: A Critical Component of Innate Immunity Against Extracellular Pathogens. American Society for Microbiology South Central Branch Meeting. September 18, 2015. **(invited)**

The Ins and Outs of Pneumococcal Pathogenesis. MSU Center for Veterinary Medicine, Dept. of Pathobiology Seminar Series. February 2015. **(invited)**

Pneumococcal H2O2: A New Look at an Old Virulence Factor. UAB Pneumococcal Symposium. Birmingham, AL April 28, 2014. **(invited)**

Pathogenesis of Invasive Pneumococcal Disease. XIII Congress of the Latin America Pediatric Infectious Disease Society (SLIPE). Guayaquil, Ecuador. 2009.

37/67 KD Laminin Receptor is a Common Portal for Meningeal Pathogens at the Blood Brain Barrier. Sixth Annual St. Jude/PIDS Pediatric Infectious Diseases Research Conference. Memphis, TN. 2007.

Pneumolysin-dependent Inflammatory Responses Following Antibiotic Treatment of *Streptococcus pneumoniae*. Annual Meeting of the Mississippi Academy of Sciences. Biloxi, MS. 2004. (Award: 1st Place Oral Presentation)

Pneumolysin-Dependent Gene Expression in Human THP-1 Cells Exposed to *Streptococcus pneumoniae*. Regional ASM Meeting. Jackson, MS. 2002.

**RESEARCH FUNDING**

GRANTS FUNDED(**Totaling $1,194,922 to J. Thornton**)

National Institutes of Health (NIH R15) Title: Biomimetic models of manganese- and iron-histidine coordination sites in metalloproteins for chelation, antibiotic activity, and oxidative reactivity. Role: co-Inv. ($418,017 total; $36,272 to J. Thornton). Funding period: 8/1/2021 – 7/31/2024.

National Institutes of Health (NIH R15) – Title: Rational design of an adhesin-based pneumococcal vaccine targeting colonization. Role: PI. ($417,206 total; $198,565 to J. Thornton, $300,000 total direct between J. Thornton and K. Seo from CVM). Funding period: 9/17/2020 – 8/31/2023.

National Institutes of Health. Center for Biomedical Research Excellence in Pathogen-Host Interactions. Puma and Innate Immunity. $11,126,099

* First year pilot project ($56,322 to Justin Thornton).
* Large pilot project in Year 3 ($158,950 to Justin Thornton)
* Junior Investigator ($588,313 to Justin Thornton for June 1, 2016 through May 31, 2018)

MSU ORED Cross College Interdisciplinary Research Group Program. Biophysical and Biochemical Characterization of Molecular Host-Pathogen Interactions. (Co-PI). Funding Period: November 2013 – November 2014. $2000.

National Institutes of Health (NIH R03) – Title: Zinc-binding proteins of *S. pneumoniae* regulate invasiveness. (PI) Dates: January 1st, 2013 to December 31st, 2014. (Total funds: $144,500. Impact score: 16).

Henry Family Research Fund (MSU ORED) – Title: The role of Bacteria in Inducing Apoptosis in Neutrophils. (Justin A. Thornton, PI) Dates: May 17, 2011 to May 16 2012. (Total funds: $10,000).

**PROFESSIONAL MEMBERSHIPS**

2015-current Sigma Xi Honor Society

2014-current American Association for the Advancement of Science

2013-current Pediatric Infectious Diseases Society

2011-current Southeastern Microscopy Society

2002-current American Society for Microbiology

2002-current American Society for Microbiology, South Central Branch (**president-elect** as of 2017)

***Ad hoc* REVIEWER ACTIVITY and EDITORSHIPS**

* mBio (Editor)
* Frontiers in Cellular and Infection Microbiology
* Scientific Reports
* Molecular Medicine
* Microbes and Infection
* Journal of Bacteriology
* Journal of Investigative Dermatology
* Journal of Inorganic Chemistry
* BMC Microbiology
* Infection and Immunity
* Clinical and Vaccine Immunology
* Journal of Global Antimicrobial Resistance
* mSphere
* Pathogens
* PLoS One
* PLoS Pathogens
* Southeastern Naturalist
* Virulence

**SERVICE**

Public Service

* Served as grant reviewer for national and international agencies:
	+ NIAID Division of Microbiology and Infectious Diseases’ solicitation RFA-AI-21-070 titled “Advancing Group A Streptococcus Vaccine Discovery (R01 Clinical Trial Not Allowed) – Scheduled for July 2022.
	+ NIH study section ZRG1 AIDC-S (80) on 7/19/2021.
	+ NIH Topics in Bacterial Pathogenesis IDM-B (81) study section panel March 18, 2020.
	+ Discovery Award Antimicrobial Resistance 1 (DIS-AMR-1) panel of the FY19 Peer Reviewed Medical Research Program (PRMRP) for the DoD (CDMRP). June 2019.
	+ Defense Medical Research and Development Program (DMRDP) MID-B-2 peer review panel for the DoD. March 2018.
	+ Anti-Microbial Resistance (AMR) PRMRP for the DoD Congressionally Directed Medical Research Programs (CDMRP). December 2017.

University

* Serve as internal mentor for YooYoun Park, a CVM faculty member and Junior

Investigator on our COBRE grant in Host-Pathogen Interactions (Fall 2017-current)

* Served on Director of Animal Resources Search Committee (2020)
* Served as a mentor for A&S Faculty Mentoring Program (Fall 2019)
* Serve on the Institutional Biosafety Committee (2016-July 2019)
* Served on the Institutional Biosafety Officer search committee (July 2017)
* Served on Associate Dean for Research Search Committee (2015)
* Served on College of Arts and Sciences Faculty Senate (2013-2015)
* Served on College of Arts and Sciences Dean Search Committee (2013)
* Served as reviewer of Henry Family Research Fund Proposals (2013)
* Member of the MSU Animal Physiology Graduate Faculty
* Serve on the IACUC Committee (2017-current)

Department

* Serve as Biological Sciences Graduate Coordinator (August 2019-current)
* Serve as a mentor for A&S Faculty Mentoring Program (Fall 2019)
* Serve on BFF Committee (Chair) (2015-current)
* Serve on Biological Sciences Space Committee (2012-current)
* Served on Biological Sciences Advisory Committee (2013-2014)
* Serve on the Biological Sciences Undergraduate Committee 2016
* Serve as Sponsor for MSU Student Chapter of American Society for Microbiology (ASM) (2011-current)
* Since 2016, I have served on 22 graduate student committees (currently 10), excluding my own students.
* Served on numerous faculty search committees
	+ Microbiologist (2)
	+ Microbial Ecologist
	+ Epigeneticist
	+ Instructor (2)

**TEACHING AND MENTORING EXPERIENCE**

* (2007-2010) Mentor in the Pediatric Oncology Education (POE) program at St. Jude Children’s Research Hospital.
* **Courses taught (MSU)**

General Microbiology (BIO 3304) Fall 2016

Host-Microbe Interactions (BIO 8990) Fall 2015

Pathogenic Microbiology (BIO 4443/6403) Fall 2012, 2013, 2014, 2017

Bacterial Genetics (BIO 4405/6405) Fall 2011, Spring 2012, 2013, 2014, 2016, 2017, 2018

Biological Sciences Seminar (BIO 8011/ Fall 2013

8021)

Modern Microbiology (BIO 8023) Fall 2015

* **Guest lectures**
* General Microbiology (BIO3304) MSU – Microbial Ecosystems, Microbiology of Food and Water. (March 2015)
* Pathogenic Microbiology (BIO4405/6405) MSU – Pneumococcal Infection (November, 2011)
* Immunology (BIO4413) MSU – Innate Immunity I (February, 2012 and 2014)
* Immunology (BIO4413) MSU – Innate Immunity II (February, 2012 and 2014)
* **Students mentored:**

Graduate Students:

Prattay Dey (Ph.D.) Fall 2021 - current

Milisen Tvarkunas (M.S.) Fall 2022 - current

Yuri Laguna-Terai (M.S.) Fall 2022 - current

Abbey Cassibry (M.S.) Fall 2022 - current

Isidora Fereday (M.S.) Fall 2020 - Spring 2023

Jay Jackson (M.S.) Fall 2017 - Spring 2020

Yoonsung Hu (Ph.D.) Fall 2017 - 2021

Michael Dodd Fall 2016 (withdrew)

Daniel Kennedy (Ph.D.) Fall 2015 - Summer 2021

Lindsey Brown (Ph.D.) Fall 2013 - Spring 2018

Joseph Bryant (M.S.) Fall 2013 - Spring 2015

Katie Heath (M.S.) Fall 2013 - Spring 2015

Katie Oswalt (Ph.D.) Fall 2012 (switched to education program)

Andrea Rodgers (M.S.) Fall 2011 - Spring 2013

Undergraduate Students:

Dylan Malone Spring 2022

Abbey Cassibry Fall 2021 – Spring 2022

Millie Tvarkunas Summer 2021 – Spring 2022

Corbin Jones (MS-INBRE student) Summer 2021

Aaliyah Hill (MS-INBRE student) Summer 2021

Parneet Kang (MS-INBRE student) Summer 2019

Amber Travis Spring 2019

Isidora Fereday Summer 2018 – Spring 2019

Kamille Rasche Fall 2017 – Spring 2019

Natalene Vonkchalee Fall 2017 – Spring 2020

Jordan Coggins Fall 2017 – Spring 2019

Jessica Surma Spring 2017 – Fall 2019

Mary Carr (MS-INBRE student) Summer 2017 - Spring 2019

Josi Lott Spring 2017 - Summer 2018

Rachel Fowler Fall 2017 - Spring 2018

Katelyn Jackson Spring 2017 – Fall 2019

Haley Jenkins Fall 2016 – Spring 2017

Ryan Kimble (DIS) Spring 2015 – Spring 2017

Rachel Caulkins (DIS) Fall 2015 – Spring 2018

Ridge Dabbs (DIS) Summer 2015 – Spring 2016

Karien Dixon (DIS from Tougaloo College) Summer 2015

Sarah Albarado (DIS) Spring 2015

Adam Coombs (DIS) Spring 2015

Sabrina Moore (DIS) Spring 2015 – Spring 2017

Savannah Dahl Fall 2014

Torey Krause Summer 2014

Catherine Corley (DIS) Spring 2014

Rachel Clay – EMCC student Spring 2014

Liza Hudspeth (DIS) Fall 2013

Katie Hill (DIS) Fall 2013 – Spring 2016

Steven Gunnell (DIS) Spring 2013

Lindsey Brown (DIS) Spring 2013

Kelly Callahan (DIS) Summer and Fall 2012

Ryan Peek (DIS) Fall 2012

Adam Casella (DIS) Spring 2012

Nicholas Bergeron Fall 2011

Perceus Mody (DIS) Fall 2011- Spring 2014

(DIS) – indicates directed individual study where students work on a project for course credit.

High school students:

Ashley Henderson (MSMS) Spring 2012

Katelyn Jackson (MSMS) Fall 2015

Alex Leise (MSMS) Fall 2016

Hays Miller (Starkville Academy) Spring 2017

Kamaliyot Bhalla (MSMS) Fall 2017

Danielle McConnell Spring 2022

Graduate committees:

Shachinthaka Dissanyaka Mudiyanselage (Ph.D.)-current

Soum Kundu (Ph.D.) – current

Charlotte Sarver (M.S.) – current

Rabina Kumpakha (Ph.D.) – current

Alexander Cutright (Ph.D.) – current

Carol Baker (Ph.D.) – current

Moshood Fagbolade (M.S.) – current

Sydney Boatman (M.S.) – current

Victoria Jefferson (Ph.D.) – current

Jillian Masters (M.S.)

Mary Francis Nakamya (Ph.D)

Moses Ayoola (Ph.D.)

Cati Cowick (M.S.)

Emilia Kooienga (M.S.)

Lindsay Harrison (Ph.D.)

Amber Kay (Ph.D.)

Becca Hill (Ph.D.)

Jonathan Belanich (Ph.D.)

Laxmi Dhungel (Ph.D.)

Jamie Rutter (Ph.D.)

Zach Burcham (Ph.D.)

Ali Akgul (Ph.D.)

Peng Deng (Ph.D.)

Jillian Harris (M.S.)

Gabe Posadas (M.S.)

Reid Hargrove (M.S.)

Elizabeth Huddleston (M.S.)

Bill Boyle (M.S.)

Neeta Kumari (Ph.D.)

Jessica Grissett (M.S.)

Jia Zhao (Ph.D.)

Angela Payne (M.S.)

Jayani Wewalwela (Ph.D.)

Sara Shields-Menard (Ph.D.)

Alon Blakeney (M.S.)

Prakash Niraula (Ph.D.)

Morgan Wright (M.S.)

* **Student Awards**: (**Totaling $7,692**)

Graduate Awards

Andrea Rodgers – American Society for Microbiology Charles S. McCleskey Award (2012)

Lindsey Brown:

BFF Travel Fund (MSU Department of Biological Sciences) Fall 2013 (**$365**)

* MSU College of Arts & Sciences Graduate Student Travel Support Fall 2015 (**$400**)
* BFF Travel Fund (MSU Department of Biological Sciences) Fall 2015 (**$500**)
* BFF Research Fund (MSU Department of Biological Sciences) Fall 2015 **($500**)
* De la Cruz Travel Award Spring 2016 (**$250**)
* Travel Assistance Grants for Graduate Students (MSU Office of the Graduate School) Fall 2016 (**$600**)
* BFF Travel Fund (MSU Department of Biological Sciences) Spring 2017 **($500)**

Undergraduate Awards

Katie Hill – 2nd Place Poster – Biology Undergraduate Research Symposium (2016)

Sabrina Moore - 2nd Place Poster – Biology Undergraduate Research Symposium (2015)

Sarah Albarado - 3rd Place Poster – Biology Undergraduate Research Symposium (2015)

Kelly Callahan - 1st Place – Shackouls Honors College Undergraduate Research Symposium (2013)

 2nd Place Poster – Biology Undergraduate Research Symposium (2013)

 Perceus Mody – BFF Travel Fund (Fall 2013) **$437**

Perceus Mody - 1st Place Poster – American Society for Microbiology South Central Branch Meeting (2012)

Adam Cassella - 1st Place Poster – Biology Undergraduate Research Symposium 2012

Kelly Callahan – Shackouls Honors College – Honors Undergraduate Research Grant (2012) **$570**

Perceus Mody – Shackouls Honors College – Honors Undergraduate Research Grant (2012) **$570**

Perceus Mody – MS-INBRE Research Scholar Award (2011) **$3000**