

## CURRICULUM VITAE

**Simran Banga**

Department of Biology,  
Western Kentucky University  
Bowling Green, KY 42101  
E-mail: [simran.banga@wku.edu](mailto:simran.banga@wku.edu)

### EDUCATION

- 2009 Ph.D. Molecular Biology & Microbiology, Purdue University, Indiana, USA  
1992 M.S. Microbiology, University of Bombay, Mumbai, India.  
1990 B.S. Microbiology & Chemistry, University of Bombay, Mumbai, India.

### EMPLOYMENT

- 2024-Current Associate Professor, Department of Biology, Western Kentucky University  
2016-2024 Assistant Professor, Department of Biology, Western Kentucky University  
2013-2016 Assistant Professor of Biology, School of Natural Science & Mathematics, Indiana University East, Richmond, IN  
2011-2013 Postdoctoral Research Scholar, Department of Microbiology, University of Iowa, Iowa City, IA  
2009-2011 Postdoctoral Research Associate, Department of Biological Sciences, Purdue University, West Lafayette, IN  
2004-2009 Graduate Research Assistant, Department of Biological Sciences, Purdue University, West Lafayette, IN  
2003-2008 Graduate Teaching Assistant, Department of Biological Sciences, Purdue University, West Lafayette, IN  
1996-2003 Lecturer, Department of Microbiology, S.I.E.S College of Arts, Science & Commerce, Bombay, India

### TEACHING EXPERIENCE

#### Current Teaching (Jan 2016-current)

- BIOL 328 Immunology Spring (S) 2016, S17, S18, S19, S20, S21, S22, S23, S24, S25
- BIOL 226 Honors Microbial Biology and Diversity Fall (F) 2017, F18, F19, F20, F21, F22, F23, F24
- BIOL 226 Microbial Biology and Diversity Fall 2016, F17, F18, F19, F20, F21, F22, S23, F23, Su24, F24
- BIOL 227 Microbial Biology and Diversity Laboratory Fall 2016, F17, F18, F19, F20, F21, F22, S23, F23
- BIOL 212 Genome Discovery Exploration Fall 2024
- BIOL 207 General Microbiology Summer (Su) 2017, Su18, Su20
- BIOL 121C Biological Concepts Laboratory: Cell, Metabolism and Genetics – Lab Coordinator: Fall 2016, Spring 2017, Fall 2017
- BIOL 369 Cooperative Education in Biology-Teaching Assistants: S21, F21, S22, S23, F23
- BIOL 369 Cooperative Education in Biology-Internships: S21, F21, F22, S23, F23, S24, F24
- BIOL 399 Research Problems in Biology: F17, S18, F18, S19, F19, S20, S21, F21, S22, F22, S23
- BIOL 516 Investigations in Biology: S18, S19
- BIOL 599 Thesis Research Writing: Su 21, F21, S22, Su22, F22, S23, Su23

- BIOL 675 Special Topics: S19 (Epigenetics) F20, S21, F21 (Methods in Bacterial Pathogenesis)

#### **Assistant Professor of Biology** (Aug 2013-Dec 2015)

School of Natural Science & Mathematics, Indiana University East, Richmond, IN

- BIOL-L 211 Molecular biology Spring 2014, Fall 2014
- BIOL-L 213 Molecular biology Laboratory Spring 2014, Fall 2014
- BIOL-L 321 Principles of Immunology Spring 2015
- MICR-J 200 Microbiology & Immunology Fall 2014, Spring 2015, Fall 2015
- BIOL-L 391 Special topics in Biology: Proteins & Enzymes Spring 2014
- BIOL-L 391 Special topics in Biology: Exercise Physiology Fall 2014
- BIOL-L 102 Introduction to Biological Sciences Fall 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015

#### **Graduate Teaching Assistant** (Aug 2003 – Dec 2008)

Department of Biological Sciences, Purdue University, West Lafayette, IN

- BIOL 301 Human Anatomy and Physiology Fall 2003, Fall 2004 & Fall 2005
- BIOL 302 Human Anatomy and Physiology Spring 2004 & Spring 2005
- BIOL 501 Protein Expression & Purification Fall 2007 & Fall 2008

#### **PUBLICATIONS**

Adeyemi K, Neupane S, **Banga S**. *Legionella pneumophila* effector MavA functions through its Ras-Guanine Exchange Factor Domain (accepted).

Neupane S, Adeyemi K, Chariker J-Rouchka EC, Banga S. Functional analysis of *Legionella pneumophila* effector protein, RavQ (*under review*).

Allamyradov Y, Yosef JB, Kylychbekov S, Majidov I, Khuzkhalukov Z, Er AY, Kitchens C, **Banga S**, Er AO. The role of efflux pump inhibitor in enhancing antimicrobial efficiency of Ag NPs and MB as an effective photodynamic therapy agent. *Photodiagnosis Photodyn Ther*. 2024 May 11:104212. doi: 10.1016/j.pdpdt.2024.104212.

Kylychbekov S, Allamyradov Y, Khuzkhalukov Z, Majidov I, **Banga S**, Yosef JB, Duta L and Er AO. Bioactivity and Mechanical Properties of Hydroxyapatite on Ti6Al4V and Si(100) Surfaces by Pulsed Laser Deposition. September 2023 *Coatings* 13(10):1681. DOI: 10.3390/coatings13101681

Khuzhakulov Z, Kylychbekov S, Allamyradov Y, Majidov I, Yosef JB, Er AY, Kitchens C, **Banga S**, Badarudeen S, Er AO. Formation of picosecond laser-induced periodic surface structures on steel for knee arthroplasty prosthetic, *Frontiers in Metals and Alloys*, 2023 Jan (1). doi:10.3389/ftmal.2022.1090104

Rao VB, Zhu J, Jain S, Sha J, Batra H Ananthaswamy N, Kilgore PB, Hendrix EK, Hosakote YM, Wu X, Olano JP, Adeyemi K, Galindo CL, **Banga S**, Drelich A, Hsu J, Tseng CK, Chopra AK. A Bacteriophage-Based, Highly Efficacious, Needle- and Adjuvant-Free, Mucosal COVID-19 Vaccine. *mBio*. 2022 Jul 28; e0182222. doi: 10.1128/mbio.01822-22.

Hakimov S, Kylychbekov S, Harness B, Neupane S, Hurley J, Brooks A, **Banga S**, and Er AO Evaluation of Silver Nanoparticles Attached to Methylene Blue as an antimicrobial agent and its cytotoxicity. *Photodiagnosis and Photodynamic Therapy* 2022 May 8:39:102904

Negron M, Kristensen J, Nguyen VT, Gansereit LE, Raucci FJ, Chariker JL, Heck A, Brula I, Kitchen G, Awgulewitsch CP, Zhong L, Rouchka EC, **Banga S**, Galindo CL. Sex-Based Differences in Cardiac Gene Expression and Function in BDNF Val66Met Mice. *Int J Mol Sci*. 2021 Jun 29; 22(13):7002

Dowis K, **Banga S**. The Potential Health Benefits of the Ketogenic Diet: A Narrative Review. *Nutrients*. 2021 May 13; 13(5):1654

Belekov E, Kholikov K, Cooper L, **Banga S**, and Er AO. Improved Antimicrobial Properties of Methylene Blue Attached to Silver Nanoparticles. *Photodiagnosis and Photodynamic Therapy* 2020 Sep 15:102012

- Banga S**, Coursen JD, Portugal S, Tran TM, Hancox L, Ongoiba A, Traore B, Doumbo OK, Huang CY, Harty JT and Crompton PD. Impact of acute malaria on pre-existing antibodies to viral and vaccine antigens in mice and humans. *PLOS One*, (2015) 10(4): e0125090
- Weber MM, Chen C, Rowin K, Mertens K, Galvan G, Zhi H, Dealing CM, Roman VA, **Banga S**, Tan Y, Luo ZQ and Samuel JE. Identification of *C. burnetii* type IV secretion substrates required for intracellular replication and Coxiella-containing vacuole formation. *Journal of Bacteriology* (2013) 195 (17): 3914-3924
- Zhu W, **Banga S**, Tan Y, Zheng C, Stephenson R, Gately J and Luo ZQ. Comprehensive identification of protein substrates of the Dot/Icm type IV transporter of *Legionella pneumophila*. *PLOS One*, (2011) 6(3): e17638
- Fontana MF, **Banga S**, Barry KC, Shen X, Tan Y, Luo ZQ and Vance RE. Secreted bacterial effectors that inhibit host protein synthesis are critical for induction of the innate immune response to virulent *Legionella pneumophila*. *PLoS Pathogens* (2011) 7(2):e1001289
- Chen C\*, **Banga S**\*, Mertens K\*, Weber MM, Gorbaslieva I, Tan Y, Luo ZQ and Samuel JE. Large-scale identification and translocation of Type IV secretin substrates by *Coxiella burnetii*. *PNAS* (2010) 107(50): 21755-21760
- \*Authors Contributed Equally.*
- Xu L, Shen X, Bryan A, **Banga S**, Swanson MS and Luo ZQ. Inhibition of Host Vacuolar H<sup>+</sup>-ATPase Activity by a *Legionella pneumophila* effector. *PLoS Pathogens* (2010) 6(3): e1000822
- Shen X\*, **Banga S**\*, Liu Y, Xu L, Gao P, Shamovsky I, Nudler E and Luo ZQ. Targeting eEF1A by a *Legionella pneumophila* effector leads to inhibition of protein synthesis and induction of host stress response. *Cell Microbiol.* (2009) 11: 911-926
- \*Authors Contributed Equally.*
- Liu Y, Gao P, **Banga S** and Luo ZQ. An *in vivo* gene deletion system for determining temporal requirement of bacterial virulence factors. *PNAS* (2008) 105: 9385-9390
- Banga S**, Gao P, Shen X, Fiscus V, Zong WX, Chen L and Luo ZQ. *Legionella pneumophila* inhibits macrophage apoptosis by targeting pro-death members of the Bcl2 protein family. *Proc. Natl. Acad. Sci. USA* (2007) 104: 5121-5126

## HONORS & RECOGNITION

- |         |   |
|---------|---|
| 2024-25 | Ogden College Faculty Award for Research and Creativity Nominee, 2024-23<br>Ogden College of Science and Engineering (OCSE) Award Star 2023-25<br>Ogden College of Science and Engineering (OCSE) Proposal Star 2023-25   |
| 2023    | CITL (Center for Innovative Teaching and Learning) Teaching Honor nomination Fall 23<br>CITL Teaching Honor nomination S23<br>Ogden College Faculty Award for Student Advisement Nominee, 2022-23<br>Ogden College Faculty Award for Teaching Nominee, 2022-23<br>Ogden College of Science and Engineering (OCSE) Proposal Star 2022<br>Ogden College of Science and Engineering (OCSE) Proposal Star (2019-22) |
| 2022    | Prolific Proposer award, Office of Research and Creative activity, WKU<br>Junior Faculty Award for Research and Creativity, Ogden College 2021-2022   |
| 2021    | Center for Innovative Teaching and Learning (CITL) Teaching Honor nominee S21<br>CITL Teaching Honor Nominee F21  |
| 2020    | Center for Innovative Teaching and Learning (CITL) Teaching Honor nominee S20   |
| 2017    | Early Investigator Award, Office of Sponsored Programs, Western Kentucky University   |
| 2017    | First Time Grant Awardee Award, Office of Sponsored Programs, Western Kentucky University   |
| 2011    | Best Abstract Award, Midwest Microbial Pathogenesis Conference Oct 2011, Ann Arbor, MI  |
| 2008    | H. E. Umbarger Outstanding Graduate Student in Research ( <i>Honorable Mention</i> ) 2008   |

## GRANT AWARDS

\*Denotes Student for a Student-Mentor grants

~Denotes Collaboration (as a Co-PI) grants

- 2025 FUSE (Faculty Undergraduate Student Engagement) Award\* Fall 2025  
Gatton Academy RIG\* (Research Internship Grant) Summer 2025
- 2024 NIH R16 Support for Research Excellence Award 2024-28  
NIH Instrumentation Award RL1-S10  
KY-INBRE Pilot Project Award (PPA), 2024-25
- 2023 NSF Major Research Instrument Award 2023  
KY-INBRE IDeA (Kentucky IDeA Networks of Biomedical Research Excellence) Award, 2023-24  
KY-INBRE IDeA Award~, 2023-24 (in collaboration with Dr. Er)  
FUSE (Faculty Undergraduate Student Engagement) Award\* Spring 2023
- 2022 KY-INBRE IDeA Award 2022-23  
RCAP award 2022, Office of Research & Creative Activity, Western Kentucky University  
KY-INBRE Electron Microscope Core Voucher Award, 2022-23  
QTAG 2021-22, Western Kentucky University  
OCSE Graduate Research Fellowship\* 2022-23
- 2021 KY-INBRE IDeA Award~, 2021-22  
KY INBRE Travel Award for Southeast Regional IDeA Conference, San Juan, PR  
KY INBRE Student Travel Award\* for Southeast Regional IDeA Conference, San Juan, PR  
KY INBRE Genomics Core Voucher Award, 2021-22  
Graduate Student Research Award (Two awards for two MS students) \* Fall 2021  
Lifetime Experience Grant\*, Summer 2021
- 2020 KY-INBRE IDeA Award 2020-21  
KY-INBRE IDeA Award~
- 2018 KY-INBRE IDeA Award 2018-20  
FUSE (Faculty Undergraduate Student Engagement) Award\* Fall 2018  
Gatton Academy RIG\* (Research Internship Grant)
- 2017 RCAP award 2017, Office of Research & Creative Activity, Western Kentucky University  
Gatton Research Supplies Grant
- 2016 KY NSF EPSCoR Instrument Award  
KY NSF EPSCoR Research Enhancement Grant  
KBRIN Start-up Award
- 2015 Faculty Research Fellowship, Indiana University East
- 2010 Purdue Pre-Tenure Fellowship 2010
- 2004 Purdue University Summar Research Fellowship 2004

## PRESENTATIONS

\*Denotes Student authors/presenters #Denotes Session Awardee

### Poster Presentations

- Brion B\*, Gonzalez, T\*, Holt A\*, Neupane S\* and Banga S. Effect of Photodynamic Treatment on Survival of *Legionella pneumophila*. 55<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2025
- Ofoka, E\* and Banga S. Ceg10 *Legionella pneumophila* Effector Protein Modulate Host Lipid Metabolism. Kentucky Academy of Science Conference, Kentucky State University, Frankfort, KY, Nov. 1-2, 2024.
- Gonzalez T\* and Banga S. Effect of Photodynamic Therapy on *Legionella pneumophila*. 54<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2024.
- Harness B\* and Banga S. Effect of Photodynamic Therapy on *Staphylococcus aureus* Biofilm Formation. 54<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2024.
- Harness B\* and Banga S. Effect of Photodynamic Therapy on *Staphylococcus aureus* Biofilm Formation. KY-WV LSAMP Symposium 2024 Marshall University February 9-10, 2024
- Harness B\*, Gonzalez T\*, Shreve M\*, Pasternacka J\* and Banga S. Analysis of Protein-Protein Interactions between *Legionella* effectors by Bacterial Two-Hybrid System. Annual Biomedical Research Conference for Minority Students (ABRCMS), Nov. 15-18, 2023, Phoenix, AZ
- Harness, B\*, Shreve, M\*, Pasternacka, J\*, Lohano, S\* & Banga, S. Analysis of Protein-protein Interactions Between *Legionella* Effectors by Bacterial Two-hybrid System. ARTP Center Retreat and Celebration of Student Accomplishment, WKU, Apr. 2023
- Kayode, A\*, Neupane, S\* and Banga, S. *Legionella Pneumophila* Effector MavA Functions as a Ras-guanine Exchange Factor. ASM KY-TN Conference, Midway KY, Apr. 21-22, 2023.
- Harness, B\*, Shreve, M\*, Pasternacka, J\*, Lohano, S\* & Banga, S. Analysis of Protein-protein Interactions Between *Legionella* Effectors by Bacterial Two-hybrid System. 53<sup>rd</sup> WKU Student Scholar Showcase, Western Kentucky University, 2023.
- Holt, A\*, Neupane, S. and Banga, S. Effect of Photodynamic Therapy on *Legionella pneumophila*. 53<sup>rd</sup> WKU Student Scholar Showcase, Western Kentucky University, 2023
- Harness, B\*#, Hakimov, S\*, Neupane, S\*, Er, AO, and Banga, S. Antibacterial Effectiveness of Methylene Blue and Silver Nanoparticles on Prosthetic Joint Infections. 52<sup>nd</sup> Annual Student Research Conference, Western Kentucky University, 2022.
- Neupane, S.\* and Banga, S. Functional analysis of RavQ, a *Legionella pneumophila* effector protein. Southeast regional IDeA conference 2021, San Juan, Puerto Rico Nov. 12-14, 2021
- Harness, B.\*#, Hakimov, S.\*, Neupane, S.\*, Er, A., and Banga, S. Analysis of Antibacterial Effectiveness of Methylene Blue and Silver Nanoparticles for Prosthetic Joint Infections. Annual Biomedical Research Conference for Minority Students (ABRCMS), Nov. 10-13, 2021
- Gerner, C.\*# and Banga, S. Characterization of *Legionella pneumophila* effectors that localize into the host cell nucleus during an infection. Southeast regional IDeA conference 2019, Louisville, Kentucky, Nov. 2019
- Pfirman, K., Singh, A., McElroy, D., Banga, S., Kazimuddin, M., Joyce, M., Stork, J., Chaney, D., Jones, P. and Donley, T. Periodontal Disease influencing Acute Coronary Syndrome. 5<sup>th</sup> Research Symposium, Western Kentucky Heart & Lung Research foundation & Educational Trust, Bowling Green, KY, Sept. 2019.
- Gerner, C.\*# and Banga, S. Potential Use of Essential Oils as an Alternative Treatment for Bacterial and Fungal Skin Infections. 49<sup>th</sup> Annual Student Research Conference, Western Kentucky University, 2019.
- Hodge, B.\*, Emani, C. and Banga, S. *Legionella* Proteins as a Molecular Evolution Model for Legionnaires Disease. 49<sup>th</sup> Annual Student Research Conference, Western Kentucky University, 2019.

- Vaughan, J.\* and Banga, S. Antibiotic Resistance of Bacteria Isolated from Soils. 48<sup>th</sup> Student Research Conference, Western Kentucky University, 2018
- Brown, E.\* and Banga, S. Isolation of Viruses Infecting Free Living Protozoa from Water. 48<sup>th</sup> Student Research Conference, Western Kentucky University, 2018
- Harper, S\*., Dobrokhoto, V., Banga, S. and Novikov, I. Comparison of Bacterial Count and Sensor Response Using Metal Oxide Sensors. 48<sup>th</sup> Student Research Conference, Western Kentucky University, 2018
- Loomis, D.\*, Harper, S.\*, Dobrokhoto, V. and Banga, S. Metal Oxide Semiconductors and Their Application for Spoiled Meat Detection. 48<sup>th</sup> Student Research Conference, Western Kentucky University, 2018
- Banga, S., Tan, T. and Luo, Z.Q. Host nucleus targeting of *Legionella pneumophila* Dot/Icm effectors. 18<sup>th</sup> Midwest Microbial Pathogenesis Conference, 2011 Ann Arbor, MI
- Banga, S., Tan, T. and Luo, Z.Q. Characterization of a group of Legionella effectors that target to the nucleus of host cell. ASM Conference 2010, San Diego, CA.
- Shen, X., Banga, S. and Luo, Z. Q. Inhibition of Protein biosynthesis by SidI in *Legionella pneumophila* infected macrophages. 2007 Biological Sciences Retreat, Purdue University, IN.

### Oral Presentations

- Ofoka, E\* and Banga S. Ceg10 *Legionella pneumophila* Effector Protein Modulate Host Lipid Metabolism. 55<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2025.
- Banga S. Role of epigenetic changes in intracellular survival and replication of *Legionella pneumophila*. External Advisory & Steering Committee Meeting January 30<sup>th</sup>, 2025, Louisville, KY. (invited talk)
- Ofoka, E\* and Banga S. Ceg10 *Legionella pneumophila* Effector Protein Modulate Host Lipid Metabolism. 54<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2024.
- Allamyradov Y\*, ben Yosef J\*, Kylychbekov S\*, Khuzhakulov Z\*, Majidov I\*, Banga S and Er, A. Improving the Photodeactivation Efficiency of Pathogens Using Methylene Blue with Silver Nanoparticles and Efflux Pump Inhibitors. 54<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2024.
- Khuzhakulov Z\*, Kylychbekov S\*, Allamyradov Y\*, Majidov I\*, ben Yosef J\*, Banga S and Er, AO. Bioactivity and Mechanical Properties of Hydroxyapatite on Ti6Al4V and Si(100) Surfaces by Pulsed Laser Deposition. 54<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2024.
- Allamyradov Y\*, Er, A\*, Banga S and Er AO. Formation of Picosecond Laser-induced Periodic Surface Structures on Steel for Knee Arthroplasty Prosthetics. 54<sup>th</sup> WKU Student Scholar Showcase, Western Kentucky University, 2024.
- Allamyradov Y\*, ben Yosef J\*, Kylychbekov S\*, Khuzhakulov Z\*, Majidov I\*, Banga S and Er, A. Improving the photodeactivation efficiency of pathogens using methylene blue with silver nanoparticles and efflux pump inhibitors. SPIE Photonics West, Jan 27- Feb 1, 2024, San Francisco, CA (SPIE: the Society of Photo-Optical Instrumentation Engineers)
- Shreve M\*, Holt A\*, Andersland J and Banga S. The evaluation of ionic liquid treatment as an alternative to chemical fixation and dehydration of biofilms for scanning electron microscopy. KY INBRE Electron Microscopy Workshop, Western Kentucky University, Aug. 3, 2023
- Banga, S. Role of Bacterial nucleomodulins in *Legionella pneumophila* infection. ASM KY-TN Conference, Midway KY, Apr. 21-22, 2023.

- Banga, S. Bacterial nucleomodulins mediated transcriptome analysis in macrophages during *L. pneumophila* infection. KY INBRE External Advisory Committee Meeting, Lexington, KY Sept. 2022
- Adeyemi, K\* and Banga, S. *Legionella Pneumophila* Effector MavA Functions as a Ras-guanine Exchange Factor. 53<sup>rd</sup> WKU Student Scholar Showcase, Western Kentucky University, 2023.
- Adeyemi, K\* and Banga, S. Histone Acetyltransferase Activity of *Legionella pneumophila* LneB Protein in Treated Macrophage. 52<sup>nd</sup> Annual Student Research Conference, Western Kentucky University, 2022.
- Neupane, S\* and Banga, S. Functional Analysis of RavQ, A *Legionella pneumophila* Effector Protein. 52<sup>nd</sup> Annual Student Research Conference, Western Kentucky University, 2022.
- Banga, S. Analysis of Bacterial Effector mediated Epigenetic Modifications in host cell DNA during *Legionella pneumophila* infection. KY INBRE Virtual Seminar Series, Feb. 9, 2022
- Hakimov S\*, Kylychbekov S, Hurley J, Emberton S, Neupane S\*, Harness S\*, Shreve M\*, Banga S, Er AO. Evaluation of antibacterial activity of pulsed laser synthesized silver nanoparticles combined with methylene blue for prosthetic joint infection. SPIE Photonics West, Jan. 22-27, 2022, San Francisco, CA (SPIE: the Society of Photo-Optical Instrumentation Engineers)
- Banga, S. Hijacking Cells: An Internal Terrorist Crisis. Science Café Talk, Bowling Green, KY, Feb. 25, 2019 (invited talk)
- Banga, S. Spatial Organization and Dynamics of Host and Bacterial Protein Interactions during *Legionella* Infection. 2<sup>nd</sup> Global Summit and Expo on Proteomics, Dallas, TX, Nov. 2018 (invited talk)
- Gerner, C.\* and Banga, S. Potential Use of Essential oils as Alternative Treatment for Bacterial Skin Infections. Kentucky Academy of Science Conference, Nov. 2018.
- Banga, S. Characterization of *Legionella pneumophila* effectors that localize into the host cell nucleus during an infection. KBRIN External Advisory Committee Meeting, Lexington, KY Oct. 2018 (invited talk)
- Banga, S. Host cell modulations by *Legionella pneumophila*. Department of Biology, Western Kentucky University, 2015
- Banga, S. B cell response in malaria infected mice. Department of Microbiology & immunology, University of Iowa 2013
- Banga, S. *Legionella pneumophila* induced host cellular response. Department of Microbiology & immunology, University of Iowa 2011
- Banga, S. Inhibition of Protein biosynthesis in *Legionella pneumophila* infected macrophages. Department of Biological Sciences, Purdue University 2009
- Banga, S. Manipulation of host cell functions by *Legionella pneumophila*. Biological Sciences Retreat 2006, Purdue University, IN

## PROFESSIONAL DEVELOPMENT

- 2025 KY INBRE Annual Research Conference, Louisville, KY, Jan 31-Feb 1, 2025
- NIGMS Sandbox training, Genomics Center, University of Louisville, Oct 2023-March 2024
- SuRE R16 Application Bootcamp, University of Kentucky, April 1-2, 2024
- KY INBRE Electron Microscopy Workshop, Western Kentucky University, Aug. 3, 2023
- SuRE-First Application Bootcamp, University of Kentucky, Jul. 18-19, 2023

- ASM KY-TN Branch Conference at Midway University, KY on Apr. 21-22, 2023
- Essentials of Next Generation Sequencing Workshop, University of Kentucky, Jun. 27-30, 2022
- Southeast regional IDeA conference 2021, San Juan, Puerto Rico Nov. 12-14, 2021
- ASM KY-TN Branch Conference at Tennessee Technological University, TN on Nov. 5-6, 2021
- Cancer Epigenetics Institute Virtual Symposium: From Nucleic Acids to 3D Genomes to Therapeutics, Mar. 2, 2021
- Kentucky Academy of Science, Virtual Annual Meeting, Nov. 6-7, 2020.
- 2020 NIH *Virtual* Seminar on Program Funding and Grants Administration, Oct. 27 –30, 2020
- ASM Virtual Conference for Undergraduate Educators (ASMCUE) Jul. 2020.
- Southeast regional IDeA conference 2019, Louisville, Kentucky, Nov. 6-8, 2019
- Five Year Scholarly/Creative Plan Workshop, Potter and Ogden Colleges, WKU, May 2019.
- ACUE (Association of College and University Educators) Professional Development Course on Teaching, CITL Western Kentucky University, Feb. 2019 – Dec 2019
- International conference on proteomics; 2<sup>nd</sup> Global Summit and Expo on Proteomics, Dallas, TX, Nov. 2018.
- Kentucky Academy of Science conference/meeting, Bowling Green, KY, Nov. 2018.
- Grant Administration workshop organized by Office of Sponsored Program. WKU, Aug. 2018
- Big Genomic Data Training Course for Professors, Farmington, Connecticut. May 21<sup>st</sup>-25<sup>th</sup>, 2018.
- ASM KY-TN Branch Conference at Tennessee Technological University, TN on Nov. 10-11, 2017.
- ASM Conference for Undergraduate Educators (ASMCUE), Denver, CO Jul. 2017
- NSF Grants Conference organized by EPSCoR at the University of Louisville, Louisville, KY Jun. 2017
- Professional Learning Community Series: Strengthening Classroom Teaching, Western Kentucky University, Spring 2017
- NSF Professional Learning Community workshops, Office of Research and Creative Activity, WKU, Fall 2017
- NIH R15 professional development workshops, Office of Research and Creative Activity, WKU, Spring 2017
- NIH R15 grant workshop organized by KBRIN at University of Louisville, Louisville, KY Nov. 2016
- Beginning a Research Program in the Natural Sciences Institute organized by Council on Undergraduate Research (CUR), Arlington, VA Nov.18- 20, 2016.
- Lilly International Conference, College and University Teaching and Learning, Bethesda, MD. May 2015
- Keystone symposia conference Malaria, New Orleans, LA. Jan. 2013
- 18<sup>th</sup> Annual Midwest Microbial Pathogenesis, University of Michigan, Ann Arbor, MI. Oct. 2011
- 17<sup>th</sup> Annual Midwest Microbial Pathogenesis, Washington University, St. Louis. MO. Sept. 2010
- ASM (American Society of Microbiology) Conference, San Diego, CA. May 2010
- 16<sup>th</sup> Annual Midwest Microbial Pathogenesis, Purdue University, IN. Sept. 2009
- 15<sup>th</sup> Annual Midwest Microbial Pathogenesis, University of Wisconsin, Madison, WI. Sept. 2008
- 14<sup>th</sup> Annual Midwest Microbial Pathogenesis, Northwestern University, Chicago, IL. Oct. 2007
- LEGIONELLA 2005, 6<sup>th</sup> International Conference on *Legionella*, Chicago, IL. Oct. 2005



## SCIENTIFIC/COMMUNITY SERVICE

2024-2025	Chair, Biology Curriculum Committee (Spring 2025) Member OCSE Curriculum Committee Member, Student Experience Committee Member, Microbiology Search Committee Member, OCSE Med School Evaluation Committee Session Chair at 55 <sup>th</sup> WKU Student Scholar Showcase Judge, 2025 KY INBRE Annual Research Conference, Louisville, KY, Jan 31-Feb 1, 2025
2023-2024	NSF Major Research Instrumentation Panel Reviewer, 2024 Biology Graduate Committee member Biotechnology Lab Manager Search Committee Member Pre-Health Council Member
2023	Session Judge for oral presentation at ASM KY-TN Branch Conference, April 2023 Session Chair at 53 <sup>rd</sup> WKU Student Scholar Showcase KY INBRE External Evaluation visit – Assistance Reviewer for Sigma-Xi Student Research Showcase submissions
2022-2024	QTAG (Quick Turn-Around Grants) Committee Member, Ogden College of Science & Engineering, WKU
2022-Current	Retention Committee Member, Department of Biology, WKU DEI Committee Member, Department of Biology, WKU
2022-Current	Editorial Board Member, Microbiology Interactive Labs, Pearson
2022	Speaker at New Faculty Orientation- Engaging in Service, Feb 11, 2022, WKU
2022	SKy Science Festival, Bowling Green, KY
2022	Head for the Hill Event, Oct 8, 2022
2022-2023	Out of the Darkness Walk, American Foundation of Suicide Prevention, WKU
2021-Current	Faculty Advisor, AMSA (American Medical Student Association) Club
2020-Current	Faculty Advisor, Pre-PA (Physician Assistant) Club
2020-2021	Chair, WKU Student Research Council, WKU
2020	Chair and Session Leader, Microbiology Section, KAS (Kentucky Academy of Science) Annual Meeting Reviewer for Sigma Xi GIAR (Grants in Aid of Research) applications
2020	WKU HerStory Recruiting Event
2019	Secretary, Microbiology Section, KAS (Kentucky Academy of Science) Annual Meeting
2019-2021	Student Research Workshop: "How to Write an Abstract" for Student Research Conference
2019-2020	Chair-Elect, WKU Student Research Council, WKU
2018-Current	Reviewer FUSE (Faculty Undergraduate Student Engagement) awards
2018-2022	Ogden College Preview Day-Volunteer
2018, 2019	Reviewer RCAP (Research & Creativity Activity Program) awards
2018	Judge for Microbiology Poster Presentations at Kentucky Academy of Science Conference
2018	Reviewer, Immunology Textbook, Oxford University Press
2018	Member, Search Committee- Physiology/Pathology Faculty, Department of Biology
2017-Current	Pre-Health Professions Advisor, Department of Biology Graduate Thesis Committee Member, Department of Biology Honors CET (Capstone Experience/Thesis) Committee Reader

	Medical School Advisory Committee Member/Chair
	TOP (Topper Orientation Program) Assistance -Recruiting/Registration Event
2017-Current	Journal Reviewer for PLoS One, PLoS Pathogens, Journal of Microbiology and Biology Education (JMBE), Nutrients, Molecular medicine
2017-2018	Advisor, WISE Living and Learning Community, Ogden College, Western Kentucky University
2017	Judge for ASM KY-TN Branch Conference at Tennessee Technological University
2016-2022	Member Student Research Council, Western Kentucky University
	Session Judge/Moderator WKU Annual Student Research Conference
2016-2021	Member of WISE (Women in Science and Engineering) advisory committee, WKU
2016-2021	Editorial Board member of GSR Journals of Immunology
2016-2018	Event Supervisor, Disease Detective, Science Olympiad
2016-2017	Seminar Organizer, Department of Biology, WKU
2013-2015	Curriculum development for B.S. degree program in microbiology, Indiana University East, Richmond, IN
2010-2011	Postdoctoral and Research Scientist Advisory Committee representative, Department of Biological Sciences, Purdue University, IN
2009-2011	Council Member of Purdue Post-Doctoral Association, Purdue University, IN
2009-2011	Safety Officer, Luo Lab, Purdue University; executing and monitoring safety regulation in the research laboratory
2009-2011	Judge for Undergraduate Research Symposium, Purdue University, West Lafayette KY
2008-2011	Judge for Lafayette regional science and engineering fair, West Lafayette

## STUDENT MENTORING

Graduate Research Student Mentoring: Shreya Neupane (2021-23), Kayode Adeyemi (2021-23), Emmanuella Ofoka (2023-25), Jasmine Murillo (2020), Sandesh Koirala (2025)

Undergraduate Research Student Mentoring: Kelvin Brown (2016-17), Jessica Vaughan (2017-18), Isabella Mayfield (2017), Clarissa Gearner (2018-19), Brandon Hodge (2018-19) Amber Hagan (2019) Molly Bostic (2020), Chazz Kitchens (2020), Dhay Kamaluldeen (2020), Emily Bentley (2020-21), Molly Shreve (2021-22), Jagoda Pasternacka (2021-22), Briana Harness (2021-23), Jeffrey Kristensen (2022), Aubry Holt (2022-23), Thomas Gonzales (2023), Emily Whittle (2024), Brandon Brion (2024-26), Schaefer Wagner (2025)

Gatton Academy Research Student Mentoring: Ethan Brown (2017-18), Annika Avula (2018), Diksha Satish (2020), Sarisha Lohano (2021-22), Dexter Vilt (2021), Logan Robinson (2025-26)

Honors Committees: Erica Plummer (2017), Dominique Thayer (2017), Jessica Vaughan (Chair, 2018), Clarissa Gearner (Chair, 2019), Molly Taylor (2021), Patton Allen (2022), Trey Stansfield (Chair, 2023), Briana Harness (Chair, 2024)

Graduate Thesis Committees: Amanda Staples (2019), Nick Wheeler (2020), Somon Hakimov (2022), Whitney Heard (2022), Shreya Neupane (2022), Kayode Adeyemi (2023), Christian Chelson (2023), Zim Warda Hasan (2024), Yaran Allamyradov (2024), Jenson Harner (2025)

### Pre-Health Professions Committees

*Pre-Medical:* Jessica Vaughan (2017), Alex Schneller (2019), Jason Hurt (2020), Kelvin Brown (2020), Noah Keating (2020), Jagoda Pasternacka (2022), Breanna Creekmore (2022), Joel Hornback (2023), Gabe Heckerman (2023), Benjamin Riddle (2023), Claudia Witcher (2023), Abby Mills (2023), Chazz Kitchens (2023), Jessica Lewis (2023), Briana Harness (2024)

*Other Professions:* Pamela Tackett (2017), Sydney Rosemore (2017), Lauren Sams (2017), Carson Harp (2017), Alli Higdon (2018), Lexie Faulkenberg (2019), Courtney Bailey (2020), Emily

Bentley (2020), Hayley Roche (2020), Samantha Levine (2021), Emily Fields (2021), Faylee Brown (2021), Lauren Strickland (2021), Cameron Buckman (2021), Reuben Windom (2021), Savannah Payne (2022), Amanda Kiser (2022), Stephen Laster (2022), Baleigh Noland (2022), Nickish Jackson (2022), Hannah Roth (2023), Kelsey Corso (2023), Malique Miller (2023), Keara Williams (2023), Christina Miller (2024), Katelyn Mattingly (2025), Avery Morgan (2025), Shelby Spencer (2025)

Undergraduate Teaching Assistants: Seth Hoffman (2021), Cameron Buckman (2021), Molly Shreve (2021), Jessie Mason (2021-22), Briana Harness (2023)

Undergraduate CO-OP Internships: Sydney Hurt (2021), Tatyana Fields (2021), Rebecca Doyle (2021), Trey Stansfield (2022), Chelsie Lindquist (2023), Keara Williams (2023), Aubree Garrity (2023), Ben Riddle (2023),

Graduate Teaching Assistants: Meghan Parsley (2016-2017), Aiste Dobrovolskaite (2016-2017), Samantha Thomas (2016-2017), Afolasayo Aromiwura (2017), William Craddock (2017)

Graduate (MS) Non-Thesis Students: Leeann Kornau (2017-19), Kalli Qutub (2018-19), Kathryn Dowis (2019-20), Dave Unis (2023-25)

### **PROFESSIONAL MEMBERSHIP**

- American Society for Microbiology, 2004 – current
- The American Association of Immunologists, 2011- current
- Kentucky Academy of Science, 2016 -current
- Sigma Xi, 2016 - current
- American Society for Microbiology, KY-TN branch 2017- current