

Heather R. Jordan (Née Williamson)

Department of Biological Sciences
Mississippi State University
Mississippi State, MS 39762

Office: (662)325-8252
Fax: (662)325-7939
Email: jordan@biology.msstate.edu

EDUCATION

- Post-Doc, Microbial Pathogenesis and Ecology, University of Tennessee, Knoxville, Tennessee, 2008-2010
- Doctor of Philosophy, Concentration in Microbiology, 2008
University of Tennessee, Knoxville, Tennessee
- Bachelor of Science, Biology, Concentration in Microbiology, 2002
University of Tennessee, Knoxville, Tennessee

APPOINTMENTS

- **Graduate Faculty**-Department of Entomology, Texas A&M University, 2015-present
 - **Assistant Professor**-Department of Biology, Mississippi State University, Starkville, Mississippi, 2014-present
 - **Research Assistant Professor**-Department of Microbiology, Univ. of Tennessee, Knoxville, Tennessee, 2010-2014
-

MANUSCRIPTS

- Lashley, M.A., **H.R. Jordan**, J.K. Tomberlin, and Brandon T. Barton. (2017). Indirect Effects of larvae dispersal following mass mortality events. *Ecology* (Accepted manuscript online 15Sept2017).
- Jeffery K Tomberlin, Brandon T Barton, Marcus A Lashley, and **Heather R Jordan**. (2017) Mass mortality events and the role of necrophagous invertebrates. *Current Opinion in Insect Science* **23**, 7-12. Online publication date: 1-Oct-2017.
- **HR Jordan** and JK Tomberlin. 2017. Abiotic and Biotic Factors Regulating Inter-kingdom Engagement: Impact on Time of Colonization of Vertebrate Remains by Insects. *Insects* May 24;8(2). Pii:E54.
- Pechal, JL, CJ Schmidt, **HR Jordan**, and ME Benbow. 2017. Frozen: Thawing and Its Effect on the Postmortem Microbiome in Two Pediatric Cases. *Journal of Forensic Sciences*. [PMID: 28120409](https://pubmed.ncbi.nlm.nih.gov/28120409/) [DOI: 10.1111/1556-4029.13419](https://doi.org/10.1111/1556-4029.13419)M.L.
- Pileggi, SM, **H. Jordan**, JA Clennon, E Whitney, ME Benbow, R Merritt, M McIntosh, R Kimbirauskas, P Small, C Quaye, J Qi, L Campbell, J Gronseth, E Ampadu, W Opare, and LA Waller. 2017. Landscape and environmental influences on *Mycobacterium ulcerans* distribution among aquatic sites in Ghana. *PLoS One*. Apr 24;12(4):e0176375.

- M. Sanders, **H.R. Jordan**, CC. Serewis-Pond, L. Zheng, M.E. Benbow, P.L. Small, and J.K. Tomberlin. 2017. *Mycobacterium ulcerans* toxin, Mycolactone Affects Seeking and Oviposition Behavior by *Aedes aegypti* (L.) (Diptera: Culicidae). *Environmental Microbiology*. May;19(5):1750-1760.
- A. Morris, JK Guegan, ME Benbow, **H Williamson**, PL Small, C Quaye, D Boakye, RM Merritt, and RE Gozlan. Functional Diversity as a New Framework for Understanding the Ecology of an Emerging Generalist Pathogen. 2016. *Ecohealth*. June29.
- Z.M. Burcham, J.A. Hood, J.L. Pechal, K.L. Krausz, J.L. Bose, C.J. Schmidt, M.E. Benbow, and **H.R. Jordan**. Fluorescently Labeled Bacteria Provide Insight on Post-mortem Microbial Transmigration. *Forensic Sci Int*. 2016;264:63-69.
- A. VanHuis, M.E. Benbow, **H.R. Jordan**, and J.K. Tomberlin. Protecting the Environment Through Insect Farming as a Means to Produce Protein for Use as Livestock, Poultry, and Aquaculture Feed. *J. Insects as Food and Feed*. 2015; 1(4): 307-309.
- L.P. Campbell, A.O. Finley, M.E. Benbow, J. vanRavensway, P. Small, C. Johnson, G. Soppoh, R.M. Merritt, **H.R. Williamson**, and J. Qi. Spatial Analysis of Anthropogenic Landscape Disturbance and Buruli Ulcer Disease in Benin. 2015. *PLoS NTD*. Oct; 9(10): e004123.
- B.M. Fredrik Pettersson, Sarbashis Das, Phani Rama Krishna Behra, **Heather R. Jordan**, Malavika Ramesh, Amrita Mallick, Kate M. Root, Martin N. Cheramie, Irma de la Cruz Melara, Pamela L. C. Small, Santanu Dasgupta, Don G. Ennis, and Leif A. Kirsebom. Comparative sigma factor-mRNA levels in *Mycobacterium marinum* under stress conditions and during host infection. 2015. *PLoS One*. 10(10): e0139823.
- **Williamson, HR**, L Mosi, R Donnell, M Aqqad, R Merritt, P Small. 2014 *Mycobacterium ulcerans* fails to infect through skin abrasions in a guinea pig infection model: Implications for transmission. *PLoS NTD*. 2014 Apr 10;8(4):e2440.
- **Heather Williamson**, Richard Phillips, Fred Sarfo, and Pamela Small. 2014. Genetic diversity among PCR-positive, culture-negative and culture-positive *Mycobacterium ulcerans* isolated from Buruli ulcer patients in Ghana. *PLoS One*. 2014 Feb10;9(2):e88007.
- Mollie D. McIntosh, **Heather Williamson**, M. Eric Benbow, Ryan Kimbirauskas, Charles Quaye, Daniel Boakye; Pamela L.C. Small and Richard W. Merritt. 2014. Associations between *Mycobacterium ulcerans* and aquatic plant communities and of West Africa: implications for Buruli ulcer disease. *EcoHealth*. 2014 Jan18 [Epub ahead of print].
- Roche, B, ME Benbow, R Merritt, R Kimbirauskas, M McIntosh, PL Small, **H Williamson**, J Guegan. Identifying the Achilles heel of multi-host pathogens: The concept of keystone “host” species illustrated by *Mycobacterium ulcerans* transmission. *Environ Res Lett*. 2013;8(4):045009.
- M. Eric Benbow, Ryan K. Kimbirauskas, Mollie D. McIntosh, **Heather Williamson**, Charles Quaye, et al. Aquatic Macroinvertebrate Assemblages of Ghana, West Africa: Understanding the Ecology of a Neglected Tropical Disease. (2013) *EcoHealth*. Dec 4. [Epub ahead of print]

- Sarah J. Willson, Michael Kaufman, Richard W. Merritt, **Heather R. Williamson**, and M. Eric Benbow. (2013) Fish and Amphibians as Potential Reservoirs of *Mycobacterium ulcerans*, the Causative Agent of Buruli Ulcer Disease. *Infect Ecol Epidemiol.* 2013;3. doi:10.3402/iee.v3i0.19946. Epub 2013 Feb 22
 - **Heather R. Williamson**; Mark E. Benbow; Lindsay P. Campbell; Christian R. Johnson; Ghislain Sopoh et al. Detection of *Mycobacterium ulcerans* in the environment predicts prevalence of Buruli ulcer in Benin. (2012) *PLoS Negl Trop Dis.* Jan;6(1):e1506. Epub 2012 Jan 31.
 - Jacqueline J. Fremont-Rahl; Courtney Ek, **Heather R. Williamson**; Pamela L. C. Small; James G. Fox and Sureshkumar Muthupalani. *Mycobacterium liflandii* outbreak in a research colony of *Xenopus tropicalis* frogs. (2011) *Vet Pathol.* July;48(4):856-67.
 - Han-Je Kim, Katrina L. Jackson, Yoshito Kishi, **Heather R. Williamson**, Lydia Mosi, and Pamela L. C. Small. Heterogeneity in the stereochemistry of mycolactones isolated from *M. marinum*: toxins produced by fresh vs. saltwater fish pathogens. (2009) *Chem. Commun* 7402-7404. Epub Oct 26 2009.
 - **Heather R Williamson**, Mark E Benbow, Khoa D Nguyen, Dia C Beachboard, Ryan K Kimbirauskas, *et al* Distribution of *Mycobacterium ulcerans* in Buruli ulcer Endemic and Non-endemic aquatic sites in Ghana. (2008) *Plos Neg Trop Dis.* Mar 26;2(3):e205.
 - M. Benbow, **H. Williamson**, R. Kimbirauskus, M. McIntosh, R. Kohlar, et al. Aquatic invertebrates as unlikely vectors of Buruli ulcer disease. (2008) *Emerg Infect Dis.* Aug;14(8):1247-1254.
 - Mosi, L, **Williamson H**, Wallace JR, Merritt RW, and Small PLC. Persistent association of *Mycobacterium ulcerans* with African predaceous insects of the family belostomatidae (2008) *Appl Environ Microbiol.* Nov;74(22):7036-42. Epub 2008 Oct3.
 - D. Godfrey, **H. Williamson**, P. Small, and J. Silverman. Newly Identified *Mycobacterium* Species in *Xenopus laevis* Colony (2007) *Comp Med.* Feb; 57(1): 97-104
-

BOOK CHAPTERS

- Jeffery K. Tomberlin, M. Eric Benbow, Kate M. Barnes and **Heather R. Jordan**. 2016. Arthropod–microbe interactions on vertebrate remains: Potential applications in the forensic sciences. *In: Forensic Microbiology.* John Wiley & Sons, Ltd., New Jersey, Chapter 11, pp. 324-365.
- ME Benbow, R Simmonds, RW Merritt, and **HR Jordan**. 2016. Buruli ulcer: Case Study of a Neglected Tropical Disease. *In: Advances In Environmental Microbiology,* Springer Publishing, New York, NY, pp. XX-XXX (*in press*).
- Zachary Burcham and **Heather Jordan**. 2016. History, current and future use of microorganisms as physical evidence. *In: Forensic Microbiology.* John Wiley & Sons, Ltd., New Jersey, Chapter 2, pp.58-91.
- **Jordan HR**, Benbow ME, Mosi, LN, Simmonds R, Hall BS, and Roberts S. 2015. *Mycobacterium ulcerans* and Buruli ulcer. *In: Emerging and Re-Emerging Human Pathogens.* John Wiley & Sons, Ltd., New Jersey, Chapter 44

- **Jordan, HR, JK Tomberlin, TK Wood, ME Benbow.** 2015. Inter-kingdom interactions of carrion decomposition. ME Benbow, JK Tomberlin and AM Tarone (Eds.). CRC Press, Boca Raton, FL, Chapter 20 pp. 433-460.
-

PROFESSIONAL EXPERIENCE

- **Invited Seminar Speaker –**
 - University of Tennessee (Knoxville, TN, 2016)
 - University of Mississippi (Oxford, MS, 2016)
 - Texas A&M University (College Station, Tx, 2016)
 - American Academy of Forensic Sciences (New Orleans, LA, 2015; Las Vegas, NV, 2016)
 - American Society of Microbiology Branch Meeting (Hattiesburg, MS, 2015; University of Louisiana, Lafayette, 2016)
 - American Society of Tropical Medicine and Hygiene (2013)
 - University of Surrey (United Kingdom, 2012)
 - World Health Organization Buruli Ulcer Initiative (Geneva, Switzerland, 2006, 2007, 2008, 2009, 2010, 2011, 2013, 2015, 2017)
 - Ecology of Infectious Disease (2007)
 - Tennessee Academy of Science Eastern Collegiate Division (2000)
- **Poster Presentation-** American Academy of Forensic Sciences (Burcham Poster, 2016); European Academy of forensic Sciences (Burcham Poster, 2015); American Society of Microbiology General Meeting (2005, 2006, 2009, 2010, 2015), Southeastern Mycobacteria Meeting (2005, 2008, 2010), Ecology of Infectious Disease Meeting (2006)
- **Moderator-**American Academy of Forensic Sciences, 2016; 2017
- **Invited Attendant-**World Health Organization Buruli Ulcer Initiative (2005)
- **Poster Author (non-presenter)-**Ecology of Infectious Disease meeting (2006, 2007)
- **Workshop Leader and Subject Expert-**
 - Viewing Research Through Different Lenses: How to Achieve Success in Court. 68th Annual Meeting of the American Academy of Forensic Science. New Orleans, LA, 13-18 February.2017 (Co-chair)
 - Molecular Biology: VNTR PCR of Environmental samples to test for Mycobacteria, Ivory Coast (2012)
 - Molecular Biology: Isolation of mycobacterial DNA from environmental samples, Cotonou, Benin (2012)
 - Collection of Environmental Sampling using Standardized Methods, Allada, Benin (2013)
- **Invited scholar/seminar speaker-**
 - Jordan, HR. Unraveling the mysteries of Pathogenesis, transmission, and ecology of *Mycobacterium ulcerans*,** University of Tennessee, Department of Microbiology, January, 2017.
 - Jordan, HR. Mysteries of Pathogenesis, transmission, and ecology of *Mycobacterium ulcerans*,** University of Mississippi Department of Biology, November, 2016.

- Jordan, HR.** Forensic Microbiology. Invited seminar for Department of Anthropology and Middle Eastern Cultures, Mississippi State University. September, 2016).
- **Jordan, HR.** Microbial Studies for Forensics and Health. Invited Seminar. CSI: Mississippi Teachers' Workshop, Mississippi State University, June 2015, and June, 2016.
- Jordan, HR.** Utility of Microbes in Forensic Science: Post-Mortem Interval and Other Medico-Legal Circumstances. Webinar for Forensic Technology Center of Excellence, June 15, 2016
- Jordan, HR.** Forensic Microbiology. Texas A&M University (March, 2016)
- Jordan, HR.** Bugs in Bugs...The Pathogenesis, Ecology and Transmission of *Mycobacterium ulcerans*. Texas A&M University (March, 2016)
- Jordan, HR. Diversity of microbe-insect interaction and their applications toward pest management and sustainable protein. College of Agricultural and Biotechnology, Zhejiang University, Hangzhou City, China (2014)
- Jordan, HR. Insect-Microbe interactions and their applications toward pest management and sustainable protein. State key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Huazhong, China (2014)
- Jordan, HR.** Food for Thought: Microbial Contribution to Nutrition and Biodegradation. 2th Symposium on organic waste bioconversion mechanism and resource utilization by insects and microbes, Hangzhou City, China (2014)
- Jordan, HR.** Microbial symbiotic relationships with insects and their applications toward pest management and sustainable protein. Northwest Agricultural and Forestry University, Yangling, China (2014)
- Williamson, HR.** Mysteries of *Mysteries of Mycobacterium ulcerans*: Pathogenesis, Ecology, and Transmission University of Surrey, United Kingdom (2012)

TEACHING EXPERIENCE

- **Graduate Student Academic Committee Member-**
 - Graduate Advisor:** Z. Burcham, Mississippi State University (PhD, 2014-active); J. Belanich, Mississippi State University (PhD, 2015-active); L. Dhungel, Mississippi State University (PhD, 2015-active); L. Harrison, Mississippi State University (PhD, 2016-Active); Emilia Kooienga, Mississippi State University (MS, 2017-active)
 - Committee Member:** A. Boupai, Miss St. Univ Dept of Plant and Soil Science (MS, 2016-active); J. Harris, Mississippi State University (MS, 2015); J. Belanich, Mississippi State University (MS, 2015-active); M. Hosseinalizadehnozarinezhad. Mississippi State University (PhD, 2015-active); A. Mashlawi, Texas A&M University (MS, 2015-active); F. Yang, Texas A&M University (MS, 2014-active); M. Sanders, Texas A&M University (MS, 2013-2015); L. Brown, Mississippi State University (Ph.D. 2014-active); M. Wright, Mississippi State University (MS, 2014-2015); J. Bryant, Mississippi State University (MS, 2014-2015); J. Lang, University of Dayton (PhD, 2012-2015);

- University of Ghana (External Evaluator for MS, 2013-present); B.K. Azumah (2013-2015)
- **Undergraduate Mentoring-** >45 students
 - **Lecturer** – Pathogenic Microbiology (Mississippi State University Fall, 2015 and 2016); General Microbiology, Spring and Fall, 2015)
 - **Graduate Teaching Assistant-** University of Tennessee, Knoxville (2004-2007)
 - **Field Work Advisor-**E. Agodonou (masters student, Benin); K. Perkins (undergraduate, Xavier University); Z. Burcham (during post-bac, Univ. of Tenn)
-

AWARDS AND ACCOMPLISHMENTS

- **College of Arts & Sciences Academic Excellence (Acadex) Award-**Mississippi State University (2017)
 - **South Eastern Conference Faculty Travel Award-**Mississippi State University (2016)
 - **Graduate Student Travel Award-** University of Tennessee, Knoxville (2006, 2007, 2008)
 - **Science Alliance Award-**University of Tennessee, Knoxville (2008)
 - **Institute for a Secure and Sustainable Environment Award-**University of Tennessee, Knoxville (2007)
 - **Wellcome Borroughs Travel Award-**Ecology of Infectious Disease Meeting, NIH (2007)
 - **Honors Seminar Scholarship-** University of Tennessee, Martin (1994-1995)
-

MEMBERSHIPS

- American Society of Microbiology- (2005-present)
 - American Academy of Forensic Sciences (Pathology/Biology)-2016-Present
 - American Association for the Advancement of Science- (2008-present)
 - American Society of Tropical Medicine and Hygiene- (2013-present)
 - American Academy of Forensic Sciences (2016-present)
-

OTHER SYNERGISTIC ACTIVITIES

- **World Health Organization, Buruli ulcer Initiative-** Ecology of *M. ulcerans*, Ghana and Benin, West Africa: Invited attendant and research seminar presenter annually (2005-present)
- **Ad Hoc Reviewer-**
Federal Grant Panels: NIH NCRS Panel, June, 2017; NIH NIAID Special Emphasis Panel, October 2016, Bethesda MD; USDA SBIR Phase 1 and 2 Grants, 2015 and 2016
Journals: Annals of Forensic Research and Analysis; Environmental Science and Pollution Research; The Journal of Infection in Developing Countries; PLoS Neglected Tropical Diseases; Journal of Zoo and Wildlife Medicine; PLoS ONE;

- Environmental Science and Technology; British Journal of Medicine and Medical Research; Aquatic Insects; Journal of Hydrology: Regional Studies
- **Editor**-*Clinical Journal of Microbiology and Pathology* (2014-present)
 - **Consultant/Reference Microbiologist**- Molecular analysis of *M. liflandii* infection in diseased frogs from US laboratory outbreaks (2004-present)
 - **Scientific Capacity Building in Developing Countries**- Training and developing standard operating procedures for molecular analysis of *M. ulcerans* and other mycolactone producing mycobacteria in environmental samples (2007-present)
 - **Contributor**-Pearson Publishing: *Instructor Resource DVD for Microbiology with Diseases by Taxonomy, Fourth Edition*. (author, 2012-present); *Microbiology with Diseases by Body System TestBank* (accuracy reviewer/editor, 2013-present); IR DVD for *Microbiology with Diseases by Body System, Fourth Edition* (author, 2013-present)
 - **Contributor**-GEX Publishing: MCAT Prep Questions for Madigan: *Brock Biology of Microorganisms, 14e* (accuracy reviewer/editor, 2013-present)
-

ACADEMIC SERVICE

- Microbiologist Faculty Search Committee
 - Plant Physiologist Faculty Search Committee
 - Epigeneticist Faculty Search Committee
 - Peer Evaluation of Teaching Chair
 - Faculty Senate Department Representative
 - Biology Undergraduate Research Program Judge (2016)
 - Graduate Studies Committee
 - Community Ecology Faculty Search Committee
 - Zernickow Award Selection Committee
 - Biosafety Specialist Search Committee-Chair (Univ. of Tennessee)
-

RESEARCH AND OTHER SUPPORT

Active Research Support

- Defense Advanced Research Projects Agency 01/01/17-12/31/17
Title: Hulking Out Black Soldier Fly Production with Probiotics
The goal of this work is to evaluate black soldier fly nutrition, life stage, and waste conversion efficiency following industrial scale probiotic amendment.
- Department of Justice 01/01/15-12/31/17
Title: Postmortem changes and translocation of bacterial community structure and function for use in criminal investigations
The goal of this work is to identify specific microbial taxa or metabolic signatures for potential use in quantifiable, precise measurements of PMI used in forensic science.
Role: PI
- Center For Wildlife Health See Grant
01/01/14-12/31/14

Title: Identifying Signature Volatile Chemicals from Pathogenic Mycobacteria of importance to Wildlife Health and Zoonotic Diseases

The goal of this work is to identify volatile chemical released by individual mycobacterial species that are of importance to wild life and human health.

Role: Co-PI

Other Grant Awards

- Optimus Foundation, UBS (Pamela Small, PI) 08/01/11-08/31/14
Title: Transmission of *Mycobacterium ulcerans*
The goal of this study is to determine the distribution of *Mycobacterium ulcerans* in a Buruli ulcer endemic village in an effort to link chains of transmission.
Role: Research Assistant Professor
- Microbiology Across Campuses Educational and Research Venture (MCERV) Williamson (PI) 09/01/11-08/31/12
Title: Association between pathology and toxin gene expression in the transmission of *Mycobacterium ulcerans*
The goal of this work is to discern efficient routes of transmission of *Mycobacterium ulcerans* through the investigation of the regulation of mycolactone gene expression, toxin production and pathology of potential transmission models
Role: PI
- University of Tennessee Ready for the World Grant, Williamson (awardee) 2010
Title: West African Experiences with Buruli ulcer
Funds from this grant were acquired and used to host a former Buruli ulcer patient from West Africa who shared his experience dealing with a neglected tropical disease, and exposed students to rural African culture.
Role: Awardee, host

REFERENCES

- Pamela LC Small, PhD. Professor Emeritus (PHD Advisor)
University of Tennessee
Department of Microbiology
M409 Walters Life Sciences
Knoxville, TN 37996
Phone: 865-974-4042
Email: psmall@utk.edu
- Lance Waller, PhD. Department Chair and Professor (Collaborator)
Emory University, Rollins School of Public Health
Department of Biostatistics and Bioinformatics
1518-002-3AA (SPH: Biostatistics)
Grace C Rollins Bldg 320
Atlanta, Georgia, 30322
Phone: 404-727-1057
Email: lwaller@emory.edu

- Mark Eric Benbow, PhD. Associate Professor (Collaborator)
Michigan State University
Department of Entomology
Natural Science Building
288 Farm Lane Room 243
East Lansing MI 48824
Phone: 517-355-4663
Email: eric.benbow@gmail.com