

# BENJAMIN C. JAHNES

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## OBJECTIVE

To support sustainable systems through research, knowledge-sharing, and advocacy.

## EDUCATION

2014-2020 The Ohio State University Columbus, OH

- PhD Microbiology

1999-2003 Cornell University Ithaca, NY

- BS Biological Sciences

1997-1999 Ohio University Zanesville, OH

- High School Post-Secondary Options Student

## EXPERIENCE

### Research:

#### Research Associate

Mar. 2021- Aug. 2021 Sabree Lab: Insect Microbial Symbioses, The Ohio State University Columbus, OH

- Discovered and characterized a novel endosymbiotic bacterium of the cockroach parasite *Gregarina*.
- Prepared anaerobic cockroach gut bacterial isolates for genomic sequencing.

#### Graduate Research Assistant/ PhD Research

Jan. 2018 – Aug. 2020 Sabree Lab: Insect Microbial Symbioses, The Ohio State University Columbus, OH

- Conceived, implemented, and maintained an improved system for rearing germ-free and gnotobiotic (artificially bacterially colonized) and conventionalized cockroaches for the study of host-symbiont interactions and dynamics of microbial community assembly.
- Prepared animal tissues and performed histological sectioning, staining, FISH, and fluorescence microscopy image capture, and image analysis.
- Maintained anaerobic cultures and equipment for anaerobic cultivations of cockroach gut bacterial isolates.
- Performed DNA and RNA extractions, bacterial transformations, dPCR, qPCR and qRT-PCR.
- Performed data analysis using parametric, non-parametric, multivariate, and mixed model statistics and prepared plots in R statistical programming language. Conducted bioinformatic analyses including genome assembly, transcriptome assembly, and gene and transcript annotation using common bioinformatic tools in the Unix terminal. Wrote custom macros for streamlining image analysis in FIJI.

#### Intern: Labs of Dr. Janice Thies & Johannes Lehmann

Nov. 2011- Dec. 2011 Cornell University Ithaca, NY

- Participated in experiments evaluating charcoal as an inoculant carrier for *Rhizobium* legume inoculants and *Pseudomonas* phosphorus-solubilizing inoculants and in extractions of fungal biochemical markers to evaluate mycorrhizal abundance in soils via HPLC-MS.
- Cultured microbes, prepared culture media, practiced aseptic technique, optimized assay conditions, evaluated bacterial populations by dilution plating.

### **Harvard University Entomology Field Course, Field Trip**

March 2002 Cornell-Punta Cana Biodiversity Lab Punta Cana, Dominican Republic

- Guest participant in efforts to collect and identify insects of eastern Dominican Republic, learning techniques in rapid assessment and cataloging biodiversity.

### **Student Research Assistant: Lab of Dr. Paul Weston**

Aug. 2001- Dec. 2001 Cornell University Ithaca, NY

- Collected and analyzed data from experiments using MS Excel and Adobe Photoshop software to quantify insect feeding preference on ornamental plants, based on pixels of leaf area consumed.

### **Student Research and Instructional Assistant: Cornell University Undergraduate Research Program on Biodiversity, Dr. Eloy Rodriguez**

June 2001- August 2001 Cornell Esbaran Amazon Field Laboratory Iquitos, Peru

- Participated in a field research program on medicinal biochemistry and chemical ecology.

June 2002- Aug. 2002 Cornell Punta Cana/Esbaran Amazon Field Labs Punta Cana, DR/ Iquitos, Peru

- Assisted in a field research program on medicinal biochemistry and chemical ecology.

## **Teaching/Instruction:**

### **Graduate Teaching Associate, Department of Evolution, Ecology and Organismal Biology**

AU 2017, SP 2017, SP 2016, SU/AU 2015 The Ohio State University Columbus, OH

- Guided students in the study of various subjects, with responsibilities for short lectures, grading, and supervising lab activities. Courses included: Histology, Human Anatomy, Introductory Biology

### **Graduate Teaching Associate, Department of Microbiology**

SU/SP2020, SP/SU/AU 2019, AU 2016, SP 2015, AU 2014 The Ohio State University Columbus, OH

- Guided students in the development of basic skills in microbiology, with responsibilities for short lectures, grading, and supervising lab activities. Course: Micro 4000

## **Management, Agriculture, and Design:**

### **Appropriate Technology Design & Dissemination**

June 2006 - 2013 Hidden Springs Farm Community & Susana Homes Hopewell, OH Abia, Nigeria

- Redesigned low-cost, open source potentiostat electronics for faster and cheaper fabrication.
- Fabricated, programmed, and optimized cutting-edge open source 3D-printing hardware.
- Introduced improved gasifying-stove technology, manufacturing skills, and biochar utilization to improve health, agricultural, nutritional and resource conservation outcomes in Abia, Nigeria.
- Integrated thermoelectric generation, forced-draft, and charging capability into a custom-fabricated open-hardware gasifying cook-stove, with improvements in heat transfer for electrical generation.
- Developed a horse-drawn mower conversion to allow draft-powered mowing of vineyard alleys, fruit-crop rows and paths. Featured in Small Farmer's Journal and at Northeast Animal-Power Field Days 2011.
- Integrated waste streams for value-added production and support of agricultural operations, implementing *Hermetia illucens* based bioconversion of food and manure wastes for poultry feed, converting palm-oil processing byproducts to biochar for soil fertility management, and studying the suitability and feasibility of diverting palm oil wastes for mushroom production and bioremediation.

### **Farm, Vineyard, and Winery Manager**

June 2006 - 2013 Flint Ridge Vineyard Hopewell, OH

June 2003- December 2003

- Oversaw all aspects of grape cultivation, harvest, processing, wine production, bottling, and sales.
- Moved the vineyard operations towards sustainability, incorporating ecological and reduced-risk pest control methods, soil fertility management, wildlife management, and ripeness & yield prediction.
- Incorporated grazing animals to control weeds and instituted management intensive rotational grazing.

- Produced several wines receiving awards at the Finger Lakes International Wine Competition.
- Performed chemical & sensory analyses of wine including titration, acid & SO<sub>2</sub> quantification, distillations, thin layer chromatography, sugar testing, and detection & treatment of H<sub>2</sub>S & mercaptans, in the management of large-scale yeast and bacterial fermentations.

### **Agriculture Extension Volunteer**

Jan. 2004 – April 2006                      US Peace Corps.                      Niger, West Africa

- Served in rural communities, working across language and cultural barriers in challenging environments.
- Collaborated with communities, local, regional, national, and international development organizations, government offices and research institutions to assess local needs and implement projects addressing constraints to development. Projects included improved crop variety trials, soil conservation techniques, fruit tree grafting, and organization of a farmer’s cooperative.
- Supported fellow volunteers through positions as a training team member and regional technical adviser.

## **FOREIGN LANGUAGES**

### **Hausa**

Jan. 2004 - April 2006                      Niger, West Africa

- Language proficiency of “Advanced High” as tested by ACTFL

### **French**

Jan. 2004 - April 2006                      Niger, West Africa

- Language proficiency of “Intermediate Mid” as tested by ACTFL

### **Spanish**

June - Aug. 2002                      Undergrad Coursework and Language Immersion, Punta Cana, Dominican Republic & Iquitos, Peru

- Conversational proficiency.

## **PUBLICATIONS:**

Vera-Ponce de León, A., **Jahnes, B. C.**, Otero-Bravo, A., & Sabree, Z. L. (2021). Microbiota Perturbation or Elimination Can Inhibit Normal Development and Elicit a Starvation-Like Response in an Omnivorous Model Invertebrate. *Msystems*, 6(4), e00802-21.

**Jahnes B.C.**, Poudel, K., Staats A.M., Sabree Z.L. (2021) Microbial Colonization Promotes Model Cockroach Gut Tissue Growth and Development. *J Insect Physiol*; 104274.

**Jahnes, B.C.**, Sabree, Z.L. (2020) Nutritional symbiosis and ecology of host-microbe systems in the Blattodea. *Current Opinion in Insect Science*

Vera-Ponce de León A., **Jahnes B.C.**, Duan J., Camuy-Vélez L.A, Sabree Z.L. (2020) Cultivable, host-specific Bacteroidetes symbionts exhibit diverse polysaccharolytic strategies. *Applied Environmental Microbiology*

**Jahnes, B.C.**, Herrmann, M., Sabree, Z.L. (2019) Conspecific coprophagy stimulates normal development in a germ-free model invertebrate. *PeerJ*, 7:e6914

Garrick, R. C., Sabree, Z. L., **Jahnes, B. C.** and Oliver, J. C. (2017), Strong spatial-genetic congruence between a wood-feeding cockroach and its bacterial endosymbiont, across a topographically complex landscape. *J. Biogeogr.*, 44: 1500–1511.

Thirunavukkarasu, N., **Jahnes, B.**, Broadstock, A., Rajulu, M. G., Murali, T. S., Gopalan, V., & Suryanarayanan, T. S. (2015). Screening marine-derived endophytic fungi for xylan-degrading enzymes. *Current Science*, 109(1), 112-120.

**Jahnes, B.** (2011) Center Cut Mower. *Small Farmer's Journal*. Volume 35 Issue 1, p. 55-57

### **PRESENTATIONS:**

Benjamin Jahnes, Arturo Vera-Ponce de Leon, Lennel Camuy-Valez, Jon Foltz, Zakee L. Sabree (2018) Four Novel Polysaccharide-Degrading *Bacteroides* from the Gut of the Cockroach *Periplaneta americana*. Beneficial Microbes Conference, Madison, WI.

Jahnes, B.C., Osman, S., Asao, M., Sabree, Z.L. (2016). Host Adapted Microbes Drive Normal Gut Development in the Cockroach *Periplaneta americana* Model Invertebrate System. Evolution Conference, Austin, TX.

### **PROFESSIONAL SERVICE:**

- Undergraduate Student Mentor – Mentored and trained one undergraduate student Salvia Zafar. SU 2021
- Undergraduate Student Mentor – Mentored and trained one undergraduate student Keshap Poudel. SP/SU/AU 2019, SP 2020
- Undergraduate Student Mentor – Mentored and trained four undergraduate students Sophia Nicholas, Mady Herrmann, Jon Foltz, John Thundathil in experimental design, lab skills, data collection, and data analysis. SP 2017, SU 2017, AU 2017, SP 2018, SU 2018, AU 2018
- Rotation Student Mentor – Mentored and trained two graduate rotation students Yunxiao Liu and Amelia Staats in experimental design, lab skills, data collection, and data analysis. SP 2017, AU 2018
- Peer Review, Reviewed article detailing antibiotic resistance of bacteria in Iranian Cockroaches, January 2017.
- Lab Mentor – mentored and trained 3 undergraduate students, Mady Herrmann, Jon Foltz, John Thundathil and lab technician Jocelyn Hach in experimental design, lab skills, data collection, and data analysis SP 2016, SU 2016, & AU 2016.
- Lab Mentor – mentored and trained an undergraduate student and lab technician Sema Osman in experimental design, lab skills, data collection, and data analysis SP2015 & SU2015.

### **OUTREACH AND PUBLIC SERVICE:**

- US Peace Corps Volunteer Niger, West Africa 2004-2006
- Elementary and Middle School Volunteer work in science and agricultural education in Nigeria and domestically.

### **AWARDS:**

- Microbiology Department Graduate Teaching Award AU2019

### **MEMBERSHIPS:**

- Ohio Nut Growers Association

### **HOBBIES:**

- Hiking, Mushroom Hunting, Gardening, Propagating fruit and nut trees