BRYAN P. BROWN

POSTDOCTORAL FELLOW

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EDUCATION

Ph.D. Genomic and Computational Biology July 2017
Duke University, Durham, North Carolina
Advisor: Jennifer J. Wernegreen
Dissertation: *Ecological and Evolutionary Factors Shaping Animal-Bacterial Symbioses: Insights from Insects & Gut Symbionts*

B.S., Biochemistry, Biology; Minor area of study in Spanish December 2011
The University of Akron, Akron, Ohio
Advisors: Stephen C. Weeks and John M. Senko

RESEARCH INTERESTS

Broadly, my interests lie at the intersection of Genomic and Computational Biology, Microbiology, and Statistics, with an application to bacterial-viral interactions in human enteric communities. Utilizing a consortium of high-throughput sequencing approaches, statistical modeling, and functional and molecular inquiries, I aim to delineate how perturbations (disease, predatory phages, immune activation) shift the community composition and functional potential of enteric microbial consortia. To this end, I focus on tool development for the robust statistical analysis of microbial community data and its integration with other 'omics datasets and measurements of immune activation.

RESEARCH AND EDUCATIONAL POSITIONS HELD

Postdoctoral Fellow October 2017 – Present
Center for Global Infectious Disease Research, Seattle Children's Research Institute

Graduate Student June 2012 – July 2017
Duke University, Durham, North Carolina

Graduate Teaching Assistant – One Health January 2017 - May 2017
Duke University, Durham, North Carolina

Graduate Teaching Assistant – Applied Data Analysis in R August 2016 - December 2016
Duke University, Durham, North Carolina

National Science Foundation Graduate Research Fellow August 2013 – August 2016
National Science Foundation and Duke University, Durham, North Carolina

National Science Foundation Graduate Research Opportunities Worldwide Fellow January 2016 - May 2016
Duke University, Durham, North Carolina, and University of Cape Town, South Africa

Graduate Teaching Assistant – Molecular Ecology January 2014 – May 2014
Duke University, Durham, North Carolina

Graduate Teaching Assistant – Genetics and Evolution January 2013 - May 2013
Duke University, Durham, North Carolina

Graduate Teaching Assistant – Molecular Ecology August 2012 – December 2012
Duke University, Durham, North Carolina

Adjunct Science Instructor – Life Sciences August 2012 – December 2012
Lakewood Elementary School, Durham, North Carolina

Biochemistry Intern/ Pharmaceutical Technician June 2007 – March 2012
The University of Akron and Akron General Medical Center, Akron, Ohio

Undergraduate Research Assistant – Organismal and Computational Biology May 2009 – December 2011
The University of Akron, Akron, Ohio

Research Technician – Bacterial Ecology December 2010 - November 2011
The University of Akron and Babcock and Wilcox, Akron, Ohio

Research Mentor – Biological Research Techniques May 2010 – August 2011
The University of Akron, Akron, Ohio

Undergraduate Research Assistant - Cellular Physiology & Biochemistry July 2009 – May 2011
University of Akron, Akron, Ohio

Visiting Researcher - Organismal and Computational Biology August - September 2009
Australian Museum, Sydney, Australia

AWARDS AND HONORS

Duke University Summer Research Fellowship June 2017 – August 2017

Duke University Graduate Fellowship 2012 – 2017

National Science Foundation Graduate Research Opportunities Worldwide Fellowship 2016

National Science Foundation Graduate Research Fellowship 2013 - 2016

Nicholas School of the Environment Summer Research Grant 2013

The University of Akron Undergraduate Researcher of the Year 2011

The University of Akron Outstanding Undergraduate Research Award 2011

Dr. Paul Acquarone Award in Plant Sciences 2011

Placed 1st overall - The University of Akron Conference on Integrated Bioscience 2010

The University of Akron Honors Recognition Scholarship 2007 - 2008

The University of Akron Presidential Scholarship 2007 - 2008

MANUSCRIPTS AND PUBLICATIONS

Brown BP, et al. HIV exposure alters the composition of fecal microbiota and efficacy of oral polio vaccine in Nigerian infants. *In review*

Brown BP and Wernegreen JJ. Social interactions foster reliable bacterial transmission in Camponotine ants. *In prep.*

Brown BP and Wernegreen JJ. Ironing out a symbiosis: Host transferrin modulates interactions with beneficial microbes. *In prep.*

Brown BP and Wernegreen JJ. Genomic erosion and rampant horizontal gene transfer in gut-associated Acetobacteraceae. *In review.*

Ho N, Li F, Lee-Sarwar, KA, Tun, HM, **Brown BP,** et al. 2018. Meta-analysis of effects of exclusive breastfeeding on infant gut microbiota across populations. *Nature Communications. In Press.*

Wood LF***, Brown BP***, et al. 2018. Feeding mode regulates gut microbial composition, peripheral T cell activation and mucosal gene expression in African infants. *Clinical Infectious Diseases,* 10.1093/cid/ciy265

*Contributed equally

Nyangahu D, Lennard, K**, Brown BP**, et al. 2018. Disruption of maternal gut microbiota during gestation alters offspring microbiota and immunity*. Microbiome,* 2018 6:124

Brown BP and Wernegreen JJ. 2016. Deep divergence and rapid evolutionary rates in gut-associated Acetobacteraceae of ants. *BMC Microbiology,* **DOI:** 10.1186/s12866-016-0721-8

Brown BP, Astrop TI, Weeks SC. 2014 Post-larval developmental dynamics of the Spinicaudatan (Branchiopoda: Diplostraca) carapace. *Journal of Crustacean Biology*

Brown BP, Brown SR and Senko JM. 2012. Microbial communities associated with wet flue gas desulfurization systems. *Frontiers in Microbiology*. 3:412. **DOI**: 10.3389/fmicb.2012.00412

Astrop, TI, Park, LE, **Brown, BP**, and Weeks, SC 2012. Sexual discrimination at work: Spinicaudatan 'Clam Shrimp' (Crustacea: Branchiopoda) as a model organism for the study of sexual system evolution. *Palaeontologia Electronica* Vol. 15, Issue 2;20A,15p

CONFERENCE PRESENTATIONS

Bryan P Brown, Arvind Varsani, Heather Jaspan. 2018 Altered composition and elevated diversity in the enteric virome of HIV exposed uninfected South African infants. **HIVR4P**. Madrid, Spain

Bryan P Brown, Heather Jaspan. 2018 A penalized compositional transform reveals shifts in the fecal microbiota of HIV exposed Nigerian infants. **Fred Hutch Microbiome Research Initiative Biennial Symposium.** Seattle, WA

Bryan P Brown, Heather Jaspan. 2018 HIV exposure alters the fecal microbiome and efficacy of oral Polio vaccine in Nigerian infants. **HIV Dynamics and Evolution**. Leavenworth, WA.

Bryan Brown. 2016. Genomic destabilization and rapid evolutionary rates of gut associated microbes**. Immunology and Microbiology Seminar Series.** University of Cape Town, Cape Town, South Africa.

John Senko, Bryan Brown. 2012. Microbial Communities Associated With Flue Gas Desulfurization Systems. **American Society for Microbiology: 112th General Meeting**. San Francisco, CA.

Bryan Brown and Stephen Weeks. 2011. Morphometrics and Ontogenetics: Evolutionary Dynamics of the Spinicaudatan 'Clam Shrimp'. **Evolution 2011**. The University of Oklahoma, Norman, OK.

Bryan Brown and Stephen Weeks. 2011. Modeling and Quantitation of a Crustacean Carapace Throughout Ontogeny. **Conference on Undergraduate and Graduate Student Research**. The University of Akron, Akron, OH.

SOFTWARE

R PACKAGES

pico: enables robust statistical analysis and modeling of compositional microbiome datasets by coupling an L1 penalized matrix decomposition to the isometric log ratio transformation.

microfiltR is an R package that aims to identify and correct for multiple sources of contamination (exogenous and cross) in compositional marker gene surveys.