

Byron J. Smith

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Research Focus

- I develop and use bioinformatic tools and statistical models to integrate diverse data towards understanding complex microbial communities.

Publications

- [in preparation] **B.J. Smith**, T.M. Schmidt. *Muribaculaceae* genomes assembled from metagenomes suggest genetic drivers of differential response to acarbose treatment in mice.
- [2018] **B.J. Smith**, R.A. Miller, A.A. Ericsson, R. Strong, D.E. Harrison, T.M. Schmidt. Changes in the gut microbiota and fermentation products associated with enhanced longevity in acarbose-treated mice. *bioRxiv*. doi:[10.1101/311456](https://doi.org/10.1101/311456) (Also accepted in *BMC Microbiology*, 2019)
- [2015] S.F. Stoddard, **B.J. Smith**, R. Hein, B.R.K. Roller, T.M. Schmidt. rrnDB: Improved tools for interpreting rRNA gene abundance in Bacteria and Archaea and a new foundation for future development. *Nucleic Acids Research*. doi:[10.1093/nar/gku1201](https://doi.org/10.1093/nar/gku1201)

Posters and Presentations

- [2019] “*Muribaculaceae* Genomes assembled from metagenomes suggest genetic drivers of differential response to acarbose treatment in mice” (poster), **American Society for Microbiology - Microbe**, San Francisco, California
- “Changes in the gut microbiota and fermentation products associated with enhanced longevity in acarbose-treated mice.” Presented at:
 - [2018] (invited talk) **Pollard Lab Meeting**, University of California, San Francisco, invited by Dr. Katherine Pollard
 - [2018] ([poster](#)) **Keystone Symposium on Manipulation of the Gut Microbiota for Metabolic Health**, Banff, Alberta
 - [2017] (invited talk) **Lynch Lab Meeting**, University of California, San Francisco, invited by Dr. Susan Lynch
 - [2017] (talk) **Microbiome Group Seminar Series**, University of Michigan
 - [2017] (poster) **American Society for Microbiology - Microbe**, New Orleans, Louisiana
- [2017] “Automating reproducible data analysis pipelines with Snakemake” ([invited talk](#)), **Department of Research Computing - Joint User Groups Meeting**, Boise State University
- [2016] “The longevity enhancing drug Acarbose modulates the gut microbiome and its fermentation products” (poster), **Michigan Meeting on the Microbiome**, University of Michigan
- [2014] “Slow but successful: spatial structure and the evolution of efficiency” (talk), **Pre-Candidacy Seminar**, Department of Ecology and Evolutionary Biology, University of Michigan

- [2011] “GABA signaling and reception in the developing nervous system” (talk) **Spring Honors Colloquium**, The College of William & Mary
- [2010] “The role of calcium in neural phenotype differentiation in developing *Xenopus*” (poster), **Undergraduate Research Symposium**, The College of William & Mary

Grants and Fellowships

- [2016-2018] Integrated Training in Microbial Systems (ITiMS) Fellowship
 - Co-advised by Dr. Thomas M. Schmidt and Dr. Aaron A. King
- [2015-2016] Instrumental in preparing a UM Glenn Center for Aging Research grant which was funded for \$50,000
 - Principal Investigator: Dr. Thomas M. Schmidt
- [2013-2014] UM Ecology & Evolutionary Biology Departmental Block Grant
- [2011-2012] Excellence in BioMolecular Science Fellowship from the College of Natural Science, Michigan State University
- [2008-2010] Howard Hughes Medical Institute Student Research Awards
- [2008] Howard Hughes Medical Institute Freshman Research Grant

Education

- [2013-2018] **University of Michigan**, Ann Arbor, MI
 - Ph.D. in Ecology and Evolutionary Biology
 - [Dissertation](#): “Integrated Analysis of the Gut Microbiota and Their Fermentation Products in Mice Treated with the Longevity Enhancing Drug Acarbose”
 - Embedded Masters in Ecology and Evolutionary Biology, granted in 2016
 - GPA: 4.0
 - Research Advisor: Dr. Thomas M. Schmidt
- [2011-2013] **Michigan State University**, East Lansing, MI
 - Graduate student, Microbiology and Molecular Genetics
 - GPA: 4.0
 - Affiliate, BEACON Center for The Study of Evolution in Action
 - Affiliate, Great Lakes Bioenergy Research Center
 - Research Advisor: Dr. Thomas M. Schmidt
- [2007-2011] **The College of William & Mary**, Williamsburg, VA
 - B.S. Biology
 - Graduated *Summa Cum Laude*
 - GPA: 3.80 (overall) / 4.00 (major)
 - Minor: Mathematics
 - Research Advisor: Dr. Margarete S. Saha

Select Coursework and Workshops

- [2015] **Train the Trainers: Teaching Adults Researchers to Program**, Michigan State University
- [2014] **Guarda Workshop in Evolutionary Biology**, University of Basel and ETH Zürich, Switzerland
- [2012] **Software Carpentry Bootcamp**, Michigan State University
- [2012] **Enhancing Linkages Between Mathematics and Ecology**, Kellogg Biological Station, Hickory Corners, MI
- [2011] **Microbial Metagenomics Workshop**, Michigan State University

Honors and Awards

- [2011] Nominated for Michigan State University Distinguished Fellowship or University Enrichment Fellowship
- [2007, 2008, 2009, 2011] The College of William & Mary Dean's List for Academic Excellence
- [2008] Inducted into Alpha Lambda Delta and Phi Eta Sigma Academic Honor Societies

Research Training

- Advisor: Dr. Katherine S. Pollard
 - [2019-Present] University of California, San Francisco
- Advisor: Dr. Thomas M. Schmidt
 - [2012-2018] Michigan State University and University of Michigan
- Advisor: Dr. Margaret S. Saha
 - [2008-2011] The College of William & Mary
- Advisor: Dr. Mary A. Voytek
 - [2006-2007] The United States Geological Survey

Public Datasets

- [PRJNA448009](#): 16S rRNA gene libraries of fecal samples from acarbose treated and control mice
 - Associated metabolite profiles and longevity data also available

Teaching

- [2015-present] Instructor, **Software Carpentry Bootcamps**,
 - Two day workshops in collaboration with other instructors on computing skills for researchers: programming, the command-line version control, data management, etc.
 - Students are early career scientists (primarily postdocs and graduate students)
 - Workshops at Stanford University, Harvard Medical School, University of Pennsylvania, University of California, San Francisco, University of New Hampshire, University of Michigan, Wayne State University, Lawrence Berkeley National Laboratory
- [2015, 2018] Graduate Student Instructor, **Introductory Biology Lab: The Human Microbiome**, University of Michigan
 - Assisted during three semesters in designing and running laboratory activities and lectures for a novel, research based, introductory biology lab
 - Course Instructors: Dr. Thomas M. Schmidt, Dr. Kristi MacCready, and Dr. Arvind Venkateraman
- [2017] Teaching Assistant, **Data Intensive Biology Summer Research Institute** hosted by the University of California, Davis
 - Assisted with week-long workshops on “Environmental Metagenomics” and “Non-Model Organism RNA-Seq”
 - Organizer: Dr. C. Titus Brown
- [2016] Instructor, **Bodega Marine Laboratory Bioinformatics Workshop**, hosted by the University of California, Davis
 - Invited to teach a half-day lesson titled *GNU Make for Reproducible Analysis Pipelines*
 - Workshop Organizer: Dr. C. Titus Brown
- [2014] Teaching Assistant, **Software Carpentry Bootcamp**, University of Michigan
 - Assisted instructors teaching basic computing skills to early career scientists
- [2013] Graduate Student Instructor, **General Ecology**, University of Michigan
 - Course Instructor: Dr. Aaron A. King
- [2012] Teaching Assistant, **Microbial Genomics Lab**, Michigan State University
 - Course Instructor: Dr. Robert A. Britton

Service and Outreach

- [2019-present] **Gladstone Postdoc Advisory Committee** member
- [2018-present] **Software Carpentry Curriculum Advisory Committee** member
- [2016-2018] **University of Michigan Software Carpentry** group member
 - Actively involved in developing a community of Software and Data Carpentry instructors, learners, and advocates

- [2017] **Models: at the intersection of data and discovery.**
 - Collaborated in proposing a meeting for the directors and students of the Burroughs Wellcome Fund’s Institutional Program Unifying Population and Laboratory Based Sciences
 - Held at the University of Michigan
 - \$150,000 budget
- [2016-2017] **Ecology and Evolutionary Biology Statistics Office Hours** organizer
 - Co-founded and organized monthly statistics help sessions for graduate students
- [2016] Graduate Student Representative to the Department of Ecology and Evolutionary Biology **Executive Committee** during the fall term
- [2014-2015] Graduate Student Representative to the Department of Ecology and Evolutionary Biology **Seminar Committee**
- [2015] National Ocean Sciences Bowl, “**Great Lakes Bowl**” volunteer
- [2013-2014] Michigan **Xplore Engineering** “Microbiology and Environmental Engineering” workshop team

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