

Benjamin E. Wolfe

Tufts University
Department of Biology
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EDUCATION and POSITIONS:

- 2014-present **Assistant Professor**, Department of Biology, **Tufts University**
2011-2014 **Postdoctoral researcher**, FAS Center for Systems Biology, **Harvard University**
2005-2010 **Ph.D.**, Organismic and Evolutionary Biology, **Harvard University**
2003-2005 **M.Sc.**, Department of Botany, **University of Guelph**
1999-2003 **B.S.**, Natural Resources/Plant Science, *magna cum laude*, **Cornell University**

RESEARCH and TEACHING INTERESTS:

- Ecology and evolution of microbial communities (microbiomes)
- Microbiology of food systems
- Plant-microbe interactions
- Public perceptions and knowledge of microbes (microbial literacy)

PUBLICATIONS:

- Kastman, EK, N Kamelamela, J Norville, C Cosetta, RJ Dutton, and BE Wolfe. 2016 Biotic interactions shape the ecological distributions of *Staphylococcus* species. *mBio* in press
- Bokulich, N, JR Rideout, W Mercurio, A Shiffer, BE Wolfe, C Maurice, R Dutton, P Turnbaugh, R Knight, JG Caporaso. 2016. Mockrobiota: a public resource for microbiome bioinformatics benchmarking. *mSystems* in press
- Wolfe, BE, and RJ Dutton. 2015. Fermented foods as experimentally tractable microbial ecosystems. *Cell* 161: 49-55.
- Karl, JP, X Fu, X Wang, Y Zhao, J Shen, C Zhang, BE Wolfe, E Saltzman, L Zhao, and SL Booth. 2015. Fecal menaquinone profiles of overweight adults are associated with gut microbiota composition during a gut microbiota-targeted dietary intervention. *The American Journal of Clinical Nutrition*: ajcn109496.
- Wolfe, BE, JE Button, M Santarelli, RJ Dutton. 2014. Cheese rind communities provide tractable systems for *in situ* and *in vitro* studies of microbial diversity. *Cell* 158: 422-433.
- Hess, J, I Skrede, BE Wolfe, K LaButti, RA Ohm, IV Grigoriev, and A Pringle. 2014. Transposable element dynamics among asymptomatic and ectomycorrhizal *Amanita* fungi. *Genome Biology and Evolution* 6: 1564-1578.
- Lawrence, DA, CF Maurice, RN Carmody, DB Gootenberg, JE Button, BE Wolfe, AV Ling, S Devlin, M Fischbach, SB Biddinger, RJ Dutton, PJ Turnbaugh. 2014. Diet rapidly and reproducibly alters the human gut microbiome. *Nature* 505: 559-563.
- Cheng-Chih H, MS EINaggar, Y Peng, J Fang, LM Sanchez, SJ Mascuch, KA Møller, EK Alazeh, J Pikula, RA Quinn, Y Zeng, BE Wolfe, RJ Dutton, L Gerwick, L Zhang, X Liu, M Mansson, and Pieter C. Dorrestein. 2013. Real-time metabolomics on living microorganisms using ambient electrospray ionization flow-probe. *Analytical Chemistry* 85: 7014-7018.
- Wolfe, BE, RE Tulloss, and A Pringle. 2012. The irreversible loss of a decomposition pathway marks the single origin of an ectomycorrhizal symbiosis. *PLoS One* 7(7): e39597.
- Wolfe, BE, M. Kuo, and A Pringle. 2012. *Amanita thiersii* is saprotrophic and expanding its range in the United States. *Mycologia* 104: 22-33.
- Wolfe, BE, and A Pringle. 2012. Geographically structured host specificity is caused by the range expansions and host shifts of a symbiotic fungus. *The ISME Journal* 6: 745-755.
- Wolfe, BE, F Richard, HB Cross, and A Pringle. 2010. Distribution and abundance of the introduced ectomycorrhizal fungus *Amanita phalloides* in North America. *New Phytologist* 185: 803-816.
- Vellinga, EC, BE Wolfe, and A Pringle. 2009. Global patterns of ectomycorrhizal introductions. *New Phytologist* 181: 960-973.
- Rodgers, VL, BE Wolfe, L Werden, and AC Finzi. 2008. The invasive species *Alliaria petiolata* (garlic mustard) increases soil nutrient availability in northern hardwood-conifer forests. *Oecologia* 157: 459-471.

- Peterson, CN, S Day, BE Wolfe, AM Ellison, R Kolter, and A Pringle. 2008. A keystone predator controls bacterial diversity in the pitcher plant (*Sarracenia purpurea*) microecosystem. *Environmental Microbiology* 10: 2257-2266.
- Wolfe, BE, VL Rodgers, KA Stinson and A Pringle. 2008. The invasive plant *Alliaria petiolata* (garlic mustard) inhibits ectomycorrhizal fungi in its introduced range. *Journal of Ecology* 96: 777-783.
- Wolfe, BE, MC Rillig, DL Mummey, & JN Klironomos. 2007. Small-scale spatial heterogeneity of arbuscular mycorrhizal fungi in a calcareous fen. *Mycorrhiza* 17: 175-183.
- Wolfe, BE, PA Weishampel, & JN Klironomos. 2006. Arbuscular mycorrhizal fungi and water table affect wetland plant community composition. *Journal of Ecology* 94: 905-914.
- Stinson, KA, SA Campbell, JR Powell, BE Wolfe, RM Callaway, GC Thelen, SG Hallett, D Prati, and JN Klironomos. 2006. Invasive plant suppresses the growth of native tree seedlings by disrupting belowground mutualisms. *PLoS Biology* 4: 727-731.
- Wolfe, BE, and JN Klironomos. 2005. Breaking new ground: soil communities and exotic plant invasion. *BioScience* 55: 477-487.
- Wolfe, BE, BC Husband, and JN Klironomos. 2005. Effects of a belowground mutualism on an aboveground mutualism. *Ecology Letters* 8:218-223.
- Klironomos JN, MF Allen, MC Rillig, J Piotrowski, S Makvandi-Nejad, BE Wolfe, and JR Powell. 2005. Abrupt rise in atmospheric CO₂ overestimates community response in a model plant-soil system. *Nature* 433:621-624.

Scholarly book chapters

- Wolfe BE, Dutton RJ. 2014. Towards an ecosystems approach to cheese microbiology. In *Cheese and Microbes*. Edited by C.W. Donnelly. ASM Press. Washing, DC. Chapter 12. Pg. 311-322
- Wolfe BE, JL Parrent, AM Koch, BA Sikes, M Gardes, and JN Klironomos. 2009. Spatial heterogeneity in mycorrhizal populations and communities: scales and mechanisms. In *Mycorrhizas – Functional Processes and Ecological Impact*. Edited by C. Azcon-Aguilar, J.M. Barea, S. Gianinazzi, V. Gianinazzi-Pearson. Springer-Verlag. Berlin Heidelberg. Chapter 12. Pg. 167- 18.

TEACHING and MENTORING EXPERIENCE:

- 2016 (Fa): Food Systems (ENV 009), Tufts University, Environmental Studies Program
 2016 (Sp): Microbiology w/ Lab (Bio 106), Tufts University, Department of Biology
 2015 (Fa): *Microbiology of Food* (Bio 196-05), Tufts University, Department of Biology
 2015 (Sp): Microbiology w/ Lab (Bio 106), Tufts University, Department of Biology
 2014 (Sp): *Microbiology of Food*, Boston University, Gastronomy Program
 2013 (Su): *Feast and Famine: The Microbiology of Food*, Harvard Summer School
 2012 (Su): Director, Harvard Microbial Sciences Initiative Undergraduate Fellowship Program
 2012 (Su): *Feast and Famine: The Microbiology of Food*, Harvard Summer School
 2012 (Su): Director, Harvard Microbial Sciences Initiative Undergraduate Fellowship Program

Undergraduate Research Mentoring:

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|---------------------------------------------------------------|-------------------------------|
| Jonah Schwartz – Fall 2016 to present | Claire Forgan – Fall 2015 |
| Lucas Brown – Fall 2016 to present | Ezra Schwartz – Fall 2015 |
| Kate Williams – Summer 2016 to present | Michael Zalesne – Spring 2015 |
| Jason Shaffer – Spring 2016 to present | Robert Sucsy – Spring 2016 |
| Liam Easton-Calabria – Fall 2016 to present | Tom Ollerhead – Spring 2015 |
| Claire Walter - Spring 2015 semester to present | Josh Norville – Spring 2015 |
| Ina Bodinaku – Fall 2014 - Summer 2016 (Tufts Summer Scholar) | |
| Kaite Zhang - Fall 2014 to Summer 2016 (Carpenter Internship) | |

Graduate Research Advising:

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|-----------------------------------------|----------------------------------------------|
| Esther Miller - Spring 2015 to present | Casey Cosetta - Fall 2015 to present |
| Elizabeth Landis - Fall 2015 to present | Gabriela Garcia – Fall 2016 rotation student |

Undergraduate Academic Mentoring:

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| 13 major advisees | 10 pre-major advisees |
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Undergraduate Honors Thesis Committees:

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|--------------------------|--------------------------------|
| Jenna Wick (Spring 2015) | Brittany Ruhland (Spring 2015) |
|--------------------------|--------------------------------|

Graduate Thesis Committees:

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| Josef Bober (Tufts, Engineering) | Rachael Bonoan (Tufts, Biology) |
| Robert Burns (Tufts, Biology) | Yue Yu (Tufts, Biology) |

UNIVERSITY SERVICE:

Department Activities:

Department of Biology, Graduate Admissions Committee (Spring 2015 - current)

University Activities:

Long-term activities

- Environmental Studies Executive Committee (Fall 2015 - present)
- Science, Technology, and Society Executive Committee (Fall 2016 – present)
- Director of Microbiology Practice, Tufts University Sensory and Science Center (Spring 2015 - present)

Short-term activities

- Tufts STS Program, “The Modern History of Microbes,” panelist, February 4th, 2016
- Interviewed Experimental College Spring 2016 Lecturers, November 11th, 2015
- Biology Representative at Marathon of Majors, October 22nd, 2015
- Faculty Lecturer for Parents and Family Weekend, October 17th, 2015
- Co-hosted Art-Science Mashup with Liz Canter Tufts Art Gallery, September 29th, 2015
- New Faculty Orientation panelist, September 3rd, 2015
- Tufts oSTEM panelist, September 29th, 2014

PROFESSIONAL SERVICE:

Peer reviewer for following journals and university publishers: *mBio*, *mSystems*, *mSphere*, *Journal of Bacteriology*, *Applied and Environmental Microbiology*, *Microbial Ecology*, *FEMS Microbiology Ecology*, *Ecology Letters*, *Ecology*, *Ecological Entomology*, *New Phytologist*, *Plant & Soil*, *Biological Invasions*, *Fungal Ecology*, *Mycorrhiza*, *Pedobiologia*, *PLoS One* University of California Press

Ad hoc reviewer for following granting agencies: National Science Foundation (NSF), Division of Environmental Biology, Population and Community Ecology Cluster; NSF Integrated and Organismic Systems; Research Grants Council of Hong Kong; Estonian Research Council.

INVITED TALKS:

- **Mycological Society of America Conference**, “Ecology and Evolution of Fungi in Fermented Foods,” August 9, 2016
- **American Society for Microbiology Conference**, “Using Fermented Foods to Dissect Patterns and Processes in Microbiomes” June 18, 2016 (**plenary talk**)
- **Great Lakes Mycology Conference**, “Delicious rot: fungi in fermented foods,” April 30, 2016
- **University of Toronto, Ecology and Evolutionary Biology**, “Using fermented foods to dissect microbial diversity,” April 29, 2016
- **MIT Cross-STS**, “Fermented foods as model ecosystems,” April 21, 2016
- **Boston College**, “Using fermented foods to dissect microbial diversity,” April 19, 2016
- **AgMicrobiomes Conference**, “Using model systems to discover processes and mechanisms driving microbiome diversity,” March 15, 2016
- **Tufts University Graduate Student Research Symposium**, “Using food to improve microbial literacy,” February 26, 2016
- **MIT Quantitative Ecology Meeting**, “Using fermented foods to dissect microbial diversity,” January 29, 2016
- **Bates College, Biology Department**, “Using fermented foods to dissect microbial diversity,” January 28, 2016
- **The Geisel School of Medicine at Dartmouth**, December 15, 2015
- **University of Connecticut, Department of Molecular and Cell Biology**, “Using fermented foods to dissect microbial diversity,” November 10, 2015
- **Wellesley College**, “Parallel lives of chefs and scientists,” September 21, 2015
- **American Cheese Society**, “Mushrooms and Molds,” September 1, 2015
- **Forsyth Institute**, “Using fermented foods to dissect microbial diversity,” June 25, 2015
- **University of Missouri - Columbia, Department of Biology**, “Dissecting microbial diversity using cheese rinds,” May 5, 2015
- **Harvard Microbial Sciences Initiative Symposium**, “Dissecting microbial diversity using cheese rinds,” April 18, 2015
- **Clark University, Department of Biology**, “Dissecting microbial diversity using cheese rinds,” April 1, 2015

- **Fungal Genetics Conference**, “Fungi as drivers of microbial community assembly: moving from patterns to molecular mechanisms,” March 18, 2015
- **Tufts University, Friedman School of Nutrition**, “The secret life of cheese: Using cheese rinds to dissect microbial diversity,” December 3, 2014
- **MIT, Microbial Systems Seminar**, “Dissecting microbial diversity using cheese rinds,” December 3, 2014
- **Yale Food Systems Symposium**, “Cheese rind microbiology,” November 14, 2014
- **University of Nebraska, Department of Food Science**, “Dissecting microbial diversity using cheese rinds,” November 10, 2014
- **iGEM Jamboree 2014**, “Cultured Products Showcase - Cheese,” November 1, 2014
- **Duke University, Departments of Biology and Emerging Humanities Networks**, “Subnatural cultures in and around the creamery,” September 16, 2014

SCIENCE OUTREACH:

Writing

MicrobiaFoods.org – *digesting the science of fermented foods*. I co-founded, designed, and write for this website, which provides free accessible summaries of scientific literature on the microbiology of fermented foods.

“[To the Phyllosphere and Beyond](#)” *Lucky Peach* magazine (online)

“[Why Does the Sea Smell Like the Sea?](#)” *Lucky Peach* magazine. Issue 12. 2014

“Tales from the Yeast.” *World of Fine Wine*. Issue 41. 2013

“[Chefology](#)” - An online series (2013-214) on the biology of food for *Boston* magazine

“[American microbial terror](#).” *Lucky Peach* magazine. Issue 4. 2012

Public lectures, workshops, and other outreach activities

- Science Media Awards & Summit @ WGBH, “Precision Food,” September 20, 2016
- Food Microbiomes Booth at **Boston Fermentation Festival**, August 28th, 2016
- Gastropod Podcast Live Shot @ the **Boston Museum of Science**, May 4th, 2016
- Bacterial Bonanza, **MIT Museum**, April 7th, 2016
- Food Microbiomes Booth at **Tufts Community Day**, October 4th, 2015
- Food Microbiomes Booth at **Boston Fermentation Festival**, October 4th, 2015
- Scholar-in-Residence at **American Cheese Society**, Providence, Rhode Island, August 31st - September 1st, 2015
- **WGBH NOVA CafeSci** lecture on fermented foods, August 18th 2015
- Scientists in the Kitchen (lecture), **Tufts Culinary Society**, April 13th, 2015

Media Contributions and Coverage (since time at Tufts):

- **Netflix**, “Cooked,” Episode 4: <https://www.netflix.com/title/80022456>
- **Gastropod (podcast)**, “Kombucha Culture”: <https://gastropod.com/kombucha-culture/>
- **The Economist**, “Out of a Pickle”: <http://econ.st/1QvFXjn>
- **National Geographic** (Online): “Gene-swapping Cheese Molds are Ripe for Investigation”: <http://bit.ly/1Rif7OO>
- **Wired Magazine** (Online), “Microbiologists Hold the Secrets to Making Perfect Cheese”: <http://bit.ly/1RwM2TF>
- **The Daily Beast**, “I’ll Take my Latte with a Shot of Bacteria”: <http://thebea.st/1SCXb2T>
- **Improper Bostonian**, “Cheese Whiz”: <http://bit.ly/1eR3XCm>
- **Gastropod (podcast)**, “Say Cheese”: <https://gastropod.com/say-cheese-2/>