

Curriculum Vitae

Jamie Susan Foster

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Professional Preparation

University of Hawai'i, Honolulu	Ph.D.	Zoology	1996-2000
University of Southern California	M.S.	Biological Sciences	1993-1996
University of Massachusetts, Amherst	B.S.	Zoology	1988-1992

Professional Experience

2012 – present	<u>Associate Professor</u> , Department of Microbiology and Cell Science University of Florida, Space Life Science Laboratory, Merritt Island, FL
2005 - 2012	<u>Assistant Professor</u> , Department of Microbiology and Cell Science University of Florida, Space Life Science Laboratory, Merritt Island, FL
2004 - 2005	<u>Postdoctoral Researcher</u> , NASA Ames Research Center, Moffett Field, CA
2003 - 2004	<u>Visiting Scholar</u> , Purdue University, West Lafayette, IN
2001 - 2003	<u>Postdoctoral Researcher</u> , National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda, MD

Peer-Reviewed Publications (34 total; * corresponding author)

- Foster***, J.S. and J.A. Lemus (2014) Developing the critical thinking skills of undergraduate students through creative and scientific inquiry. *Journal of Geoscience Education* in review.
- Foster***, J.S., R. Wheeler and R. Pamphile (2014) Host-microbe interactions in microgravity: assessment and implications. *Life* 4(2): 250-266.
- Ahrendt, S.R., J.M. Mobberley, P.T. Visscher, L.L. Koss and **J.S. Foster*** (2014) Effects of elevated carbon dioxide and salinity on the microbial diversity in lithifying microbial mats. *Minerals* 4:145-169.
- Chaturvedi, P., BA Hauser, **JS Foster**, E Karplus; LH Levine, JL Coutts, JT Richards, ES McLamore* (2014) A multiplexing fiber optic microsensor system for monitoring spatially resolved oxygen patterns. *Sensors & Actuators: B. Chemical* 196:71-79.
- Grant, KC, CLM. Khodadad, and **JS Foster*** (2014) Role of Hfq in an animal-microbe symbiosis under simulated microgravity conditions. *International Journal of Astrobiology* 13:53-61.
- JHW Saw, M Schatz, MV Brown, D Kunkel, **JS Foster**, H Schick, S Christensen, S Hou, M Alam, SP Donachie* (2013) Cultivation and complete genome sequencing of *Gloeobacter kilaueensis* sp. nov., from a lava cave in Kilauea Caldera, Hawai'i. *PLOS ONE* 8(10) e76376.
- Mobberley, JM, CLM Khodadad and **JS Foster*** (2013) Metabolic potential of lithifying cyanobacteria-dominated thrombolitic mats. *Photosynthesis Research* 118:125-140.
- Foster***, JS, CLM Khodadad, SR Ahrendt and ML Parrish (2013) Impact of simulated microgravity on the normal developmental time line of an animal-bacteria symbiosis. *Scientific Reports* 3:1340.
- Foster***, J.S. (2012) Impact of microgravity on the physiology and genetics of microbes. *Microbiologist* 13:26-30.
- Bowlin, EM, J Klaus, **JS Foster**, MS Andres, L Custals, and RP Reid* (2012) Environmental controls on microbial community cycling in modern marine stromatolites. *Sedimentary Geology* 263-264:45-55.
- Khodadad, CLM and **JS Foster*** (2012) Metagenomic and metabolic profiling of nonlithifying and lithifying stromatolitic mats of Highborne Cay, The Bahamas. *PLOS ONE* 7(5): e38229.
- Mobberley, J.M., M Ortega, **JS Foster*** (2012) Comparative diversity analyses of modern marine thrombolites by barcoded pyrosequencing. *Environmental Microbiology* 14: 82-100.

- Foster***, **J.S.**, and N. Shiel-Rolle (2011) Building scientific literacy through summer science camps: a strategy for design, implementation and assessment. *Science Education International* 22:85-98.
- Foster***, **J.S.**, K.R. Kerney, M.L.Parrish, C.L.M. Khodadad and S.R. Ahrendt (2011) Potential of the *Euprymna/Vibrio* symbiosis as a model to assess the impact of microgravity on bacteria-induced animal development. *Gravitational and Space Biology* 25:44-47.
- Khodadad, C.L.M., A.R. Zimmerman, S. Uthandi, S.J. Green, **J.S. Foster*** (2011) Taxa-specific changes in soil microbial composition induced by pyrogenic carbon amendments. *Soil Biology and Biochemistry* 43: 385-392.
- Myshrall, K.L., J.M. Mobberley, S.A. Havemann, S.J. Green, P.T. Visscher, R.P. Reid, and **J.S. Foster*** (2010) Biogeochemical cycling and microbial diversity in the modern marine thrombolites of Highborne Cay, Bahamas. *Geobiology*: 8(4):337-354
- Foster***, **J.S.**, S.J. Green, S.R. Ahrendt*, S. Golubic, R.P. Reid, K.L. Hetherington, and L. Bebout. (2009) Molecular and morphological characterization of cyanobacterial diversity in the marine stromatolites of Highborne Cay, Bahamas. *ISME Journal* 3: 573-587.
- Foster***, **J.S.**, and Drew, J.C. (2009). Astrobiology undergraduate education: students' knowledge and perceptions of the field. *Astrobiology* 9: 325-333.
- Stolz*, J.F., R.P. Reid, P.T. Visscher, A.W. Decho, R.S. Norman, R.J. Aspden, E.M. Bowlin, J. Franks, **J.S. Foster**, D.M. Paterson, K.M. Przekop, G.J.C. Underwood, and L. Prufert-Bebout (2009) The microbial communities of the modern marine stromatolites at Highborne Cay, Bahamas. *Atoll Research Bulletin* 567:1-24.
- Foster***, **J.S.**, S.A. Havemann, A. Singh, and L.A. Sherman (2009) Role of *mrgA* in peroxide and light stress in the cyanobacterium *Synechocystis* sp. PCC 6803. *FEMS Microbiology Letters* 293:298-304.
- Foster***, **J.S.** and S.A. Havemann (2008). The basics of educational podcasting: enhancing the student learning experience. University of Florida, *IFAS EDIS publication* MB004 <http://edis.ifas.ufl.edu/MB004>
- Havemann, S. A. and **J. S. Foster*** (2008) A comparative characterization of the microbial diversity in an artificial microbialite model and a natural stromatolite. *Applied Environmental Microbiology* 74: 7410-7421.
- Donachie*, S., **J. Foster**, and M. Brown (2007) Culture clash: Challenging the dogma of microbial diversity. *ISME Journal* 1: 97-102.
- Foster**, **J.S.**, A.K. Singh, L.J. Rothschild and L.A. Sherman* (2007) Growth-phase dependent differential gene expression in *Synechocystis* sp. strain PCC 6803 and regulation by a group 2 sigma factor. *Archives of Microbiology* 187(4): 265-79.
- Foster**, **J.S.** and P.E. Kolenbrander* (2004) Development of a multi-species oral bacterial community in a saliva-conditioned flowcell. *Applied and Environmental Microbiology* 70(7): 4340-8.
- Foster** **J.S.**, P.C. Pan, and P.E. Kolenbrander* (2004) Effects of antimicrobial agents on oral biofilms in a saliva-coated flowcell. *Biofilms* 1:3-10.
- Foster**, **J.S.**, R.J. Palmer Jr., and P.E. Kolenbrander* (2003) The human oral cavity as a model for the study of genome-genome interactions. *Biological Bulletin*. 204:200-204.
- Kolenbrander*, P. E., R.A. Anderson, D.S. Blehert, P.G. Eglund, **J.S. Foster**, and R.J. Palmer Jr. (2002) Communication among oral bacteria. *Microbiology and Molecular Biology Reviews*. 66:486-505.
- Foster**, **J.S.**, S. von Boletsky, and M.J. McFall-Ngai* (2002) A comparison of light organ development between *Euprymna scolopes* Berry and *Sepioloa robusta* Naef (cephalopod:sepiolidae). *Bulletin of Marine Science*. 70:141-153.
- Foster**, **J.S.**, M.A. Apicella, and M.J. McFall-Ngai* (2000) *Vibrio fischeri* lipopolysaccharide induces developmental apoptosis but not complete morphogenesis of the *Euprymna scolopes* light organ. *Developmental Biology*. 226:242-254.
- Visick, K.L., **J.S. Foster**, J.A. Doino, M.J., McFall-Ngai, and E.G. Ruby* (2000) *Vibrio fischeri* lux genes play an important role in colonization and development of the host light organ. *Journal of Bacteriology*. 182:4578-4586.
- Foster**, **J.S.** and M.J. McFall-Ngai* (1998) Induction of apoptosis by cooperative bacteria in the morphogenesis of host epithelial tissues. *Development Genes and Evolution* .208:295-303

Doran, P., Wharton* Jr., R.A., S.A. Spaulding and **J.S. Foster** (1994) Paleolimnology of Taylor Valley, Antarctica. *Antarctic Journal of the United States*. 29:234-239

Book Chapters (*corresponding author)

Foster*, **JS** and SJ Green (2011) Microbial diversity in modern stromatolites. In: *Cellular origin, Life in Extreme Habitats and Astrobiology: Interactions with Sediments* (eds J Seckbach, V Tewari) Springer, pp. 385-405.

Reid*, P., **J.S. Foster**, G. Radtke, S. Golubic (2010) Modern marine stromatolites of Little Darby Island, Exuma Archipelago, Bahamas: environmental setting, accretion mechanisms and role of euendoliths. In: *Advances in Stromatolite Geology*, (Reitner, J; Thrauth, M.H.; Stüwe, K.; Yuen, D., Eds.) Springer, Berlin, pp. 77 - 90.

Foster*, **J.S.** and J.M. Mobberley (2010) Past, present, and future: microbial mats as models for astrobiological research. In: *Cellular Origin, Life in Extreme Habitats and Astrobiology: Microbial Mats: Modern and Ancient Microorganisms in Stratified Systems*. (J. Seckbach and A. Oren, eds.) Springer, Berlin pp. 563-582.

Kolenbrander*, P.E., R.F. Lerud, D.S. Blehert, P.G. Eglund, **J.S. Foster**, and R.J. Palmer, Jr. (2003) The role of coaggregation in oral biofilm formation. In: *Biofilms in Medicine, Industry and Environmental Biotechnology*. Eds. P. Lens, A.P. Moran, T. Mahony, P. Stoodley, V. O'Flaherty. IWA Publishing, London. pp. 32-46.

Research Funding Awards

Current Funding

1. **NASA Astrobiology: Exobiology and Evolutionary Biology** (PI); 9/1/14 – 8/31/16; \$369,225; Biodiversity, functional genomics, and carbonate microstructure: an integrated approach to defining the stromatolite microbiome
2. **NASA Space Biology** (PI); 12/1/13 – 11/30/16; \$491,334; Impact of microgravity on the cell-cell interactions between a mutualistic bacterium and its animal host
3. **NASA Astrobiology: Exobiology and Evolutionary Biology** (PI); 1/17/12 – 1/16/16; \$795,207 Metatranscriptome and biogeochemistry of marine thrombolitic microbial mats: pathways to biosignatures
4. **Florida Space Institute** (PI); \$73,984; Dec 17, 2012 – 9/15/14; Effects of microgravity on bacteria-induced animal development
5. **Florida Space Grant Consortium** (Co-I); \$24,599; 09/1/13 – 08/31/14; Portable Biosensor Technology for Monitoring Microbialite Biogeochemistry
6. **Florida Space Grant Consortium** (Co-I); \$8,779; 09/1/13 – 08/31/14; Bridging the gap between undergraduate and graduate STEM education: development of a post-baccalaureate internship at the Space Life Sciences Lab

Previous Funding (past 5 years)

6. **NASA Graduate Student Researchers Program** (PI); \$90,000; 08/15/10 – 07/31/13; Molecular and metabolic mechanisms of carbon sequestration in marine thrombolites for bioregenerative life support; Graduate Student Fellowship for one of my Ph.D. students.
7. **Florida Space Grant Consortium** (PI); \$24,668; 08/1/11 – 07/31/12; Effects of microgravity on bacteria-induced animal development
8. **Florida Space Grant Consortium** (PI); \$5,000; 11/1/10 – 10/31/2011; Effects of microgravity on the development of animal-bacterial symbioses
9. **University of Florida College of Agricultural and Life Sciences** (PI); \$4000; 09/1/10 – 04/30/11; Integrating research-based activities into distance education courses using reusable learning objects and podcasting
10. **Florida Space Grant Consortium** (PI); \$25,000; 10/1/2009 – 3/31/2011; Optimizing carbon sequestration with environmental manipulations of modern microbialites
11. **NASA Astrobiology: Exobiology and Evolutionary Biology** (PI); \$99,998; 9/1/2009 – 8/31/2011; Molecular and metabolic analyses of thrombolitic mats
12. **IFAS Innovation Fund** (PI); \$47,000; 10/1/2009 – 9/30/2010; Effects of environmental flux on carbonate

biomineralization in marine microbial mats

13. **ICBR Space Biology** (PI); \$3,317; 01/15/2009 – 5/30/2009; Modeling microbial carbonate precipitation in simulated environmental conditions

14. **Florida Space Grant Consortium** (PI); \$25,000; 8/14/2007 – 8/14/2009; Microbial Mats, Solar Radiation and the Molecular Response

Education Related Activities

- Developed curriculum for international stromatolite and science camp in Bahamas for low-income students
- Developing Astrobiology Podcasts for UF undergraduates <http://jamiefosterscience.com/education.html>
- Served as a research mentor for summer NSF REU program, Space Florida Internship program, NASA Ames High School Apprenticeship Research Program (SHARP), NASA Motivating Undergraduates in Science and Technology; and NASA Planetary Biology Internship.
- Developed and taught Astrobiology course for undergraduate students at UF (2007 - present)
- Hosted and organized the session: “Astrobiology: Pushing life to the limits” for the 2006 American Society for Microbiology General Meeting

Ad Hoc Reviewer for Scientific Journals (Past Five Years)

Advances in Space Research; Applied and Environmental Microbiology; Astrobiology; Biotechniques; Environmental Microbiology; Environmental Microbiology Reports; FEMS Microbial Ecology; Geobiology; Gravitational and Space Biology; Harmful Algae; ISME Journal; Journal of Experimental Marine Biology and Ecology; Journal of Photochemistry and Photobiology B: Biology; Meteoritics & Planetary Science; Microbial Ecology; PLoS ONE; Science Education International; Vie et Milieu.

Reviewer for Granting Agencies

Department of Defense, National Science Foundation, NASA, Florida Space Grant Consortium

Collaborators & Other Affiliations

• Collaborators (Past Five Years)

L. Bebout (NASA-Ames), A. Decho (University of South Carolina), S. Donachie (University of Hawai’i), J. Drew (University of Florida), S. Golubic (Boston University), S.J. Green (Florida State University), K. Kostantinidis (Georgia Tech), A. Singh (Washington University), P. Reid (University of Miami), L. Sherman (Purdue University), P.T. Visscher (University of Connecticut), A. Zimmerman (University of Florida).

• Graduate Advisors and Postdoctoral Sponsors

Margaret McFall-Ngai (University of Wisconsin; formerly University of Hawai’i)
Paul E. Kolenbrander (NIH - NIDCR),
Lynn J. Rothschild (NASA Ames Research Center)
Louis Sherman (Purdue University)

• Thesis Advisor and Postgraduate-Scholar Sponsor

Graduate Students (6 total): Joany Babilonia (Ph.D., 2017); Artemis Louyakis, University of Florida, Ph.D., 2016; Regine Pamphile, University of Florida, M.S. (2014) Jennifer Mobberley, University of Florida, Ph.D. 2013; Matoya Robinson, University of Florida, M.S. 2007; Kristin Myshrrall, University of Connecticut, Ph.D. 2012 (summer intern); Varun Paul, Missouri University of Science and Technology, Ph.D. 2014 (summer NASA Planetary Biology Intern).

Postgraduate- Scholars (3 total): Giorgio Cassaburi (2014 – 2016), Christina Khodadad (2008 – 2013); Stephanie Havemann (2007 – 2008).

Mentored Undergraduates: (12 total): note two of the undergraduate students were NSF REU students.

Mentored High School Students (2 total): note one was NASA High School Apprenticeship Research Program.