

Gilberto E. Flores, Ph.D.

Curriculum Vitae

Assistant Professor
Department of Biology
California State University, Northridge
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Research Interests:

- Temporal dynamics of the human microbiome in health and disease
- Diversity and function of Archaea in natural environments
- Cross-domain interactions

Employment and Education:

2013-*current* Assistant Professor, Department of Biology, California State University, Northridge
2011-2013 Postdoctoral Fellow, CIRES, University of Colorado, Boulder
Advisor: Dr. Noah Fierer
2006-2011 Ph.D., Biology, Minor, IGERT Subsurface Biology, Portland State University
Advisor: Dr. Anna-Louise Reysenbach
Dissertation title: Microbial ecology of active marine hydrothermal vent deposits: the influence of geologic setting on microbial communities.
2004-2006 M.S., Environmental Science, University of Idaho
Advisor: Dr. Susan Childers
Thesis title: Microbial oxidation of inorganic arsenic in geothermal water of the Alvord Basin, Oregon: field and laboratory investigations.
2002-2004 Postgraduate researcher, University of California, Davis
Advisor: Terrel P. Salmon
1996-2001 B.S., Environmental Science, Humboldt State University

Other Training:

Participated in five oceanic research expeditions to various hydrothermal vent fields around the globe. Three of these cruises employed the manned *Alvin* submersible, while the other two used the *ROV Jason II* (2006 – 2010).

Duties included:

- Four *Alvin* dives (two as primary scientific observer) to collect hydrothermal vent deposits.

- Watch leader on *ROV Jason II* cruise to the Eastern Lau Spreading Center. Participated in the International FISH Course and extended six-week stay in the laboratory of Dr. Michael Wagner, University of Vienna, Vienna, Austria (Feb – April 2008).
- Two-week internship at the Joint Genome Institute (JGI) to learn Integrated Microbial Genome tools for genomic analysis, Walnut Creek, California (May 2007).
- Conducted field and laboratory studies examining arsenic transformations by thermophilic bacteria in geothermal waters of the Alvord Basin, Oregon (2004 – 2006).
- Conducted field and laboratory trials to study the affects of anticoagulant baiting strategies on rodent agricultural pests (2002 – 2004).
- Research Experience for Undergraduates (REU) program studying the anaerobic degradation of chlorinated phenols by sedimentary bacteria at the University of Idaho under Dr. Don Crawford (Summer 2001).

Grants, Honors, and Awards:

Awarded:

- Innovative Use of Instructional Fees – \$6,200 (Co-authored grant with PI Noah Fierer to integrate Student Microbiome data directly into undergraduate microbiology course) University of Colorado, Boulder (Spring 2012).
- Center for Dark Energy Biosphere Investigations (C-DEBI) research grant - \$49,418 (Co-PI with Radu Popa, Amy Smith and Martin Fisk, my portion of award is \$5,000) (2011 – 2013).
- National Science Foundation, OCE Award Number 0728391 – \$398,713 (Co-authored grant with PI Anna-Louise Reysenbach to fund my Ph.D. dissertation research, 2007 – 2011).
- Carl Storm Underrepresented Minority Travel Fellowship, Archaea Gordon Conference (2009).
- National Science Foundation, Integrative Graduate Education and Research Traineeship (IGERT) Fellowship, - \$69,000, Portland State University (2006 – 2008).
- Geochemistry Award, Honorable Mention, Geology Department, University of Idaho (2006).
- Student Travel Award, Goldschmidt Conference (2005).
- Student Travel Award, ISSM-ISEB Conference (2005).
- National Science Foundation Alliance for Minority Participation (AMP) summer head start program for entering freshman, Humboldt State University, Arcata, California (1996).

Rejected:

- RUI: Comparative Phylogenetic and Functional Genomics of Lizard-Bacteria Symbioses – \$968,602 (Co-PI with Robert Espinoza (PI, CSUN Biology) and Rachel Mackelprang (Co-PI, CSUN Biology)) National Science Foundation, Dimensions of Biodiversity Program (April 2014).
- Childhood Obesity and the Gut Microbiome: What Do We Know? – \$15,000 (PI with Dena Herman (Co-PI, CSUN, Family and Consumer Sciences)) CSUPERB: New Investigator Program (February 2014).

Upcoming:

- Quantitative Linkages Between Diet and Functional Diversity in the Gut Microbiome of Children \approx \$50,000 (PI) Global Probiotics Council, Young Investigator Grant for Probiotics Research (February 2015).

Natural Abundances of Probiotic Bacteria in Children Aged 2-9 Years ≈ \$25,000 (PI) American Gastroenterological Association-Elsevier Gut Microbiome Pilot Research Award (January 2015).

Role of Heterotrophic Archaea in Salt Marsh Environments Through Space and Time ≈ \$100,000 (PI) National Science Foundation, Ocean Sciences Research Initiation Grants (January 2015).

RUI: Comparative Phylogenetic and Functional Genomics of Lizard-Bacteria Symbioses ≈ \$TBD (Co-PI with Robert Espinoza (PI, CSUN Biology) and Rachel Mackelprang (Co-PI, CSUN Biology)) National Science Foundation (BIO), Physiological and Structural Systems Cluster (January 2015).

RUI: The Composition and Role of Beetle Microbiomes in the Infestation Pattern of Nematodes ≈ \$TBD (Co-PI with Ray Hong (PI, CSUN Biology), National Science Foundation (BIO), Physiological and Structural Systems Cluster (January 2015).

Teaching Experience:

Developed and instructed Microbial Ecology lecture (BIOL 419) and laboratory (BIOL 419L) courses at California State University, Northridge. (Fall 2014).

Taught Principles of Microbiology lecture (BIOL 315) and laboratory (BIOL 315L) courses at California State University, Northridge. (Fall 2013, Spring 2014).

Developed and instructed hands-on laboratory module for upper-division Microbiology course (EBIO 3400) based on Student Microbiome research project, University of Colorado, Boulder (Spring 2012).

Taught laboratory portion of the upper-division Microbiology course (BI 480) at Portland State University (Spring and Fall terms 2010).

Student mentoring:

Graduate Students Mentored:

Ulises Lopez, B.A. (2014-current)

Undergraduate Students Mentored:

Eugene Choi (2013-current)

Danielle Duce (2013-current)

Alison Gambou (2013-current)

Zelzah Guzman (2014-current)

James Kelly (2013)

Marco Lopez, B.S. (2013)

Ulises Lopez, B.A. (2013-2014)

Jennifer Lemus (2013-current)

Jeremy Ramsey, M.D. (2002-2004)

Nicholas Rhoades (2014-current)

Richard Sor (2014-current)

Joshua Steinberg, B.S. (high school student, 2008-2010)

Vanessa Sun (2013-current)

Graduate Committees:

Ulises Lopez (Chair, current)
Rachel Rhymer (Member, current)
Stefanie Kapucija (Member, current)
Andrew Oliver (Member, current)
Jason Warner, M.S. (External member, Spring 2014)
Lauren Conroy, M.S. (External member, Spring 2014)

Peer-Reviewed Publications:

Flores, G.E., Caporaso, J.G., Henley, J.B., Rideout, J.R., Domogala, D., Chase, J., Leff, J.W., Vazquez-Baeza, Y., Gonzalez, A., Knight, R., Dunn, R.R., and Fierer, N (*in press*)
Temporal variability is a personalized feature of the human microbiome. *Genome Biology*.

Smith, A.R., Fisk, M.R., Colwell, F.S., Thurber, A.R., **Flores, G.E.**, Mason O.U. and Popa, R. (*in review*) Mineralogy Determines Attached Microbial Community Structure in the Warm Suboceanic Aquifer. *The ISME Journal*.

Flores, G.E., Seite, S., Henley, J.B., Martin, R., Zelenkova, H., Aguilar, L., and Fierer, N. (2014) Microbiome of affected and unaffected skin of patients with atopic dermatitis before and after emollient treatment. *Journal of Drugs in Dermatology*. **13**: 1365-1372.

Flores, G.E., Bates, S., Caporaso, J.G., Lauber, C.L., Leff, J.W., Knight, R. and Fierer, N. (2013) Diversity, distribution and sources of bacteria in residential kitchens. *Environmental Microbiology*. **15**: 588-596.

Bates, S.T., Clemente, J.C., **Flores, G.E.**, Walters, W.A., Wegener-Parfrey, L., Knight, R. and Fierer, N. (2013) Global biogeography of highly diverse protistan communities in soil. *The ISME Journal*. **7**: 652-659.

Fierer, N., Ferrenberg, S., **Flores, G.E.**, Gonzalez, A., Kueneman, J., Legg, T., Lynch, R.C., McDonald, D., Mihaljevic, J.R., O'Neill, S.P., Rhodes, M.E., Song, S. and Walters, W.A. (2012) From animalcules to an ecosystem: application of ecological concepts to the human microbiome. *Annual Review of Ecology, Evolution, and Systematics* **43**: 137-155.

Flores, G.E., Henley, J. and Fierer, N. (2012) A direct PCR approach to accelerate analyses of human-associated microbial communities. *PLoS ONE*. **7**: e44563.

Flores, G.E., Shakya, M., Meneghin, J., Yang, Z.K., Seewald, J.S., Wheat, C.G., Podar, M. and Reysenbach, A.-L. (2012) Inter-field variability in the microbial communities of hydrothermal vent deposits from a back-arc basin. *Geobiology*. **10**: 333-346.

- Flores, G.E.,** Wagner, I., Liu, Y. and Reysenbach, A.-L. (2012) Distribution, abundance, and diversity patterns of the thermoacidophilic “deep-sea hydrothermal vent euryarchaeota 2.” *Frontiers in Microbiology*. **3**: 47.
- Flores, G.E.,** Hunter, R. C., Liu, Y., Mets, A., Schouten, S. and Reysenbach, A.-L. (2012) *Hippea jasoniae* sp. nov. and *Hippea alviniae* sp. nov., thermoacidophilic members of the class *Deltaproteobacteria* isolated from deep-sea hydrothermal vent deposits. *International Journal of Systematic and Evolutionary Microbiology*. **62**:1252-1258.
- Flores, G.E.,** Bates, S.T., Knights, D., Lauber, C.L., Stombaugh, J., Knight, R. and Fierer, N. (2011) Microbial biogeography of public restroom surfaces. *PLoS ONE*. **6**: e28132.
- Smith, A., Popa, R., Fisk, M., Nielsen, M., Wheat, C.G., Jannasch, H.W., Fisher, A.T., Becker, K., Sievert, S. and **Flores, G.E.** (2011) In situ enrichment of ocean crust microbes on igneous minerals and glasses using an osmotic flow-through device. *Geochemistry, Geophysics, Geosystems*. **12**: Q06007.
- Flores, G.E.,** Campbell, J., Kirshtein, J., Meneghin, J., Podar, M., Steinberg, J.I. Tivey, M.K., Voytek, M., Yang, Z.K. and Reysenbach, A.-L. (2011) Microbial community structure of hydrothermal deposits from geochemically different vent fields along the Mid-Atlantic Ridge. *Environmental Microbiology*. **13**: 2158-2171.
- Flores, G.E.** and Reysenbach, A.-L. (2011) Hydrothermal environments, marine. In *Encyclopedia of Earth Science Series: Encyclopedia of Geobiology*, J. Reitner, and V. Thiel (ed.), Springer, Dordrecht, The Netherlands, p. 456-466.
- Flores, G.E.,** Liu, Y., Ferrera, I., Beveridge, T.J. and Reysenbach, A.-L. (2008) *Sulfurihydrogenibium kristjanssonii* sp. nov., a hydrogen- and sulfur-oxidizing thermophile isolated from a terrestrial Icelandic hot spring. *International Journal of Systematic and Evolutionary Microbiology*, **58**; 1153-1158.
- Reysenbach, A.-L. and **Flores, G.E.** (2008) Electron microscopy encounters with unusual thermophiles helps direct genomic analysis of *Aciduliprofundum boonei*. *Geobiology*, **6**: 331-336.

Invited Talks and Seminars:

- March 2014, *Temporal variability of the human microbiome*, Department of Biology, San Diego State University.
- April 2013, *Microbial community ecology: from the deep-sea to the human body*, Department of Biology, California State University, Northridge.
- May 2011, *The influence of geologic setting on microbial communities in deep-sea hydrothermal vents*, Department of Biology, Portland State University.
- May 2006, *Microbial oxidation of inorganic arsenic in geothermal water of the Alvord Basin, Oregon*, Department of Environmental Science, University of Idaho.

Posters, Presentations, and Non-Refereed Writings:

- Rhymer, R.S., Robertson, J.M, **Flores, G.E.**, and Espinoza, R.E. (2014) Why do parents care? Testing the roles of maternal care in an Argentinean lizard. *Joint Meeting of Ichthyologists and Herpetologists*. Chattanooga, Tennessee, July 30-August 3.
- Seite, S., Fierer, N., **Flores, G.E.**, Aguilar, L., Zelenkova, H., and Martin R. (2014) Use of an emollient to control skin microbiome dysbiosis associated with atopic dermatitis. *International symposium on atopic dermatitis*, Nottingham, United Kingdom, May 21-23.
- Smith, A.R., **Flores, G.E.**, Fisk, M.R., Colwell, F.S., Thurber, A.R., Mason O.U. and Popa, R. (2013) A comparison of microbial communities from deep igneous crust. *AGU Fall Meeting*, San Francisco, California, December 9-13.
- Flores, G.E.**, Caporaso, J.G., Domogala, D., Gebert, M.J., Henley, J.B., Humphrey, G., Dunn, R., Lauber, C.L., Knight, R. and Fierer, N. (2012) Temporal and spatial variability in the college student microbiome. *ASM Conference on Beneficial Microbes*. San Antonio, Texas, October 22-26.
- Flores, G.E.** (2012) Methanogens. <http://invisiblelife.yourwildlife.org/methanogens/>.
- Flores, G.E.** (2011) Microbial ecology of active marine hydrothermal vent deposits: the influence of geologic setting on microbial communities. *Portland State University*. Thesis.
- Smith, A.R., Popa, R., Fisk, M.R., Nielsen, M.E., Wheat, C.G., Jannasch, H.W., Fisher, A.T., Becker, K., Sievert, S.M. and **Flores, G.E.** (2011) Microbial phylogeny of igneous minerals and glasses in deep ocean crust. *AGU Fall Meeting*, San Francisco, California, December 5-9.
- Flores, G.E.**, Campbell, J., Kirshtein, J., Meneghin, J., Podar, M., Steinberg, J.I. Tivey, M.K., Voytek, M. and Reysenbach, A.-L., (2010) Microbial community structure of marine hydrothermal vent deposits shaped by host-rock composition, *International Society for Microbial Ecology*. Seattle, Washington, August 22-27.
- Flores, G.E.**, Steinberg, J.I., Podar, M. and Reysenbach, A.-L., (2010) Microbial diversity of sulfide chimneys collected from contrasting vent fields along the Mid-Atlantic Ridge, *Ocean Sciences Meeting*, Portland, Oregon, February, 22-26.
- Tivey, M.K., Reysenbach, A.-L., Hirsch M., Steinberg, J., and **Flores, G.E.** (2010) Investigating microbial colonization in actively forming hydrothermal deposits using thermocouple arrays. *AGU Fall Meeting*, San Francisco, California, December 13-17.
- Sithole, A., **Flores, G.E.**, Reysenbach, A.-L., Shearer, M.J., Butenhoff, C.L., and Khalil, A.M. (2010) Responses of mcrA and pmoA gene copies and methane fluxes to soil temperature changes in rice microcosms. *AGU Fall Meeting*, San Francisco, California, December 13-17.

Flores, G.E., Liu, Y., Podar, M. and A.-L. Reysenbach (2009) Thermoacidophiles of marine hydrothermal systems: investigations of the Deep-Sea Hydrothermal Vent *Euryarchaeota* 2, *Ridge 2000 Workshop: Developing a Holistic View of Oceanic Spreading Center Processes*. St. Louis, Missouri, October 1-3.

Flores, G.E., Liu, Y., Podar, M. and A.-L. Reysenbach, (2009) Thermoacidophiles of marine hydrothermal systems: investigations of the Deep-Sea Hydrothermal Vent *Euryarchaeota* 2, *Gordon Research Conference: Archaea Ecology, Metabolism & Molecular Biology*. Waterville Valley, New Hampshire, July 26-31.

Flores, G.E. and A.-L. Reysenbach (2007) Ecology of thermoacidophilic microorganisms inhabiting deep-sea hydrothermal chimneys. *Poster presented at annual IGERT Subsurface Biosphere Symposium*, Newport, Oregon, June 17-19.

Flores, G.E., (2006) Microbial oxidation of inorganic arsenic in geothermal water of the Alvord Basin, Oregon: Field and Laboratory Investigations. *University of Idaho*. Thesis.

Flores, G.E. and S.E. Childers (2005) Microbial oxidation of arsenic in geothermal waters. *15th Annual V. M. Goldschmidt Conference*, Moscow, Idaho, May 20-24.

Flores, G.E. and S.E. Childers (2005) Microbial redox transformations of arsenic in geothermal waters. *The Joint International Symposium of Subsurface Microbiology and Environmental Biogeochemistry*, Jackson Hole, Wyoming, August 14-19.

Salmon, T.P. and **Flores, G.E.** (2004) Anticoagulant baiting strategies for Pocket Gopher Control, *Final report to the California Department of Food and Agriculture on completion of project 01-0540*, 67 pp.

Synergistic activities:

Ad-hoc reviewer for: *Antonie van Leeuwenhoek, Environmental Microbiology, Extremophiles, Geobiology, Microbes and the Environment, Microbial Ecology, PLoS ONE, Scientific Reports, and The ISME Journal*.

Guest speaker with the McNair Scholars program, University of Colorado, Boulder (2012).

American Society for Microbiology, member (2012).

International Society of Microbial Ecology (ISME), member (2010).

Executive secretary on the NASA Exobiology Panel (2009).

American Geophysical Union, member (2009).

Judge for the Aardvark Science Exposition for Oregon Episcopal School (2009).