Melitza Crespo-Medina
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Education

- **Ph.D. January 2009**, Graduate School of Biomedical Science, Department of Microbiology and Molecular Genetics, Rutgers The State University of New Jersey. New Brunswick, NJ 08901
  Advisors: Dr. Costantino Vetriani and Dr. Tamar Barkay
- **B.S. Biology, May 2002**. University of Puerto Rico, Mayagüez Campus, Mayagüez, PR 00682

Professional Experience

- **July 2014 – Present.** Assistant Professor/Researcher. Center for Environmental Education, Conservation and Research (CECIA). Inter American University of Puerto Rico. San Germán, PR 00683
- **January 2014 – June 2014.** Visiting Scholar. Department of Biology, East Carolina University, Greenville, NC 27858
- **January 2014 – June 2014.** Research Associate. Department of Geological Sciences, Michigan State University, East Lansing, MI 48824
  Supervisor: Dr. Matthew Schrenk
- **January 2013 – December 2013.** Postdoctoral Research Fellow - Deep Carbon Observatory. Department of Biology, East Carolina University, Greenville, NC 27858
  Supervisor: Dr. Matthew Schrenk
- **January 2009 – December 2012.** Postdoctoral Research Associate. Department of Marine Sciences, University of Georgia, Athens, GA 30602
  Supervisor: Dr. Samantha B. Joye
- **Summer 2008.** Teaching Fellow for RISE at Rutgers/UMDNJ summer program. Rutgers, The State University of NJ. New Brunswick, NJ 08901
- **2003 - 2008.** Research Assistant. Rutgers, The State University of NJ. New Brunswick, NJ 08901
- **2002 - 2003.** Teaching Assistant. University of Puerto Rico, Mayagüez Campus, Mayagüez, PR 00682

Current Research Interests

- Synergistic application of geochemical, molecular, and culturing techniques to understand microbial ecology, activity, and diversity in natural environments
- Microbial activity and carbon metabolism in extreme environments
- Microbial methane production and oxidation and impact on global methane geochemical cycle
- Microbial adaptations to heavy metals in natural and contaminated environments

Fellowships and Awards

- **National Science Foundation Graduate Research Fellowship Program (**2005-2008)
- **Outstanding Student Poster Award,** at the 2008 Ocean Science Meeting, held at Orlando, FL March 2 – 7, 2008
- **Outstanding Student Poster Presentation Award**, at the Eight International Conference on Mercury as a Global Pollutant, held at Madison WI, August 6 –11, 2006
- **Karl C. Ivarson Student Assistance Fund Award (2006),** to attend to the Eight International Conference on Mercury as a Global Pollutant
- **National Institute of Health Grant GM58389,** Bridge program between UPR-Mayaguez and UMDNJ/Rutgers University (2003-2005)

Grants

- **Integrated Metagenomic and Metatranscriptomic Analyses of Active Microbial Communities Involved in Carbon Metabolism at a Tropical Serpentinizing Environment (Santa Elena Ophiolite, Costa Rica) –** Census of Deep Life (CoDL) Sequencing Proposal

- **Caracterización de comunidades metanotróficas y metanogénicas en manantiales alcalinos del Ofiolito de Santa Elena, Costa Rica.** Fondo Semilla para el Fomento de la Investigación

Subvencionada. Vicepreseidencia Auxiliar de Investigación Académica y Recursos Externos. Universidad Interamericana de Puerto Rico.

Publications

- **Crespo-Medina, M.,** C.D. Meile, K.S. Hunter, A.R. Diercks, V.L. Asper, V.J. Orphan, P.L. Tavormina, L.M.Nigro, J.J. Battles, J.P. Chanton, A.M. Shiller, D.J. Joung, R.M.W. Amon, A. Bracco, J.P Montoya, T.A. Villareal, A.M. Wood, and S.B. Joye. (2014). The rise and fall of methanotrophy following a deepwater oil-well blowout. *Nature Geoscience* 7, 423-427. doi:10.1038/ngeo2156.
- Sánchez-Murillo, R., E. Grazel, E. Schwarzenbach, **M. Crespo-Medina**, M.O. Schrenk, B.C. Gill, and J. Boll. (2014). Geochemical evidence for active tropical serpentinization in the Santa Elena Ophiolite, Costa Rica: an analogue of a humid early Earth? *Geochemistry, Geophysics, Geosystems Journal* 15(5), 1783-1800.
- Vetriani, C., Voordeckers, J.W., **Crespo-Medina**, **M.**, O'Brien, C.E., Giovannelli, D., and Lutz R. A. (2014). Deep-sea hydrothermal *Epsilonproteobacteria* encode a conserved and widespread nitrate reduction pathway (Nap). *ISME J*. 8, 1510-1521. doi:10.1038/ismej.2013.246.
- Vetriani, C., **Crespo-Medina, M.,** and Antunes, A. Family *Salinisphaeraceae*. In "*The Prokaryotes-Gammaproteobacteria",* 4th Edition. Rosenberg, E. (Eds.). Springer-Verlag Berlin Heidelberg., in press. Epub ahead of print, doi:10.1007/978-3-642-38922-1_296.
- **Crespo-Medina, M.** Lo invisible de la catástrofe**.** Newspaper: El Nuevo Día. June 7, 2010.
- **Crespo-Medina, M.,** I. Pérez-Rodríguez, A. Chatziefthimiou, V. Staravoytov, T. Barkay, and C. Vetriani. (2009). *Salinisphaera hydrothermalis* sp. nov., a mesophilic, facultative autotrophic thiosulfate oxidizing gamma-*Proteobacterium* from deep-sea hydrothermal vents. International Journal of Systematic and Evolutionary Microbiology. 59: 1497-1503.
- **Crespo-Medina, M.,** A.D. Chatziefthimiou, N.S. Bloom, G.W. Luther III, D.D. Wright, J.R. Reinfelder, C. Vetriani, and T. Barkay. (2009). Adaptation of Chemosynthetic Bacteria to Elevated Mercury Concentrations in Deep-sea Hydrothermal Vents. Limnology and Oceanography. 54: 41-49.
- Lutz, R.A., T.M. Shank, G.W. Luther III, C. Vetriani, M.Tolstoy, D.B Nuzzio, T.S. Moore, F. Waldauser, **M. Crespo-Medina,** A. Chatziefthimiou, E.R. Annis, and A.J. Reed. (2008). Interrelationships between vent fluid chemistry, temperature, seismic activity and biological community structure at a mussel-dominated, deep-sea hydrothermal vent along the East Pacific Rise. Journal of Shellfish Research. 27 (1): 177-190.
- Chatziefthimiou, A.D., **Crespo-Medina, M.,** Wang, Y., Vetriani, C., and Barkay, T. (2007). The Isolation and Initial Characterization of Mercury Resistant Chemolithotrophic and Thermophilic Bacteria from Mercury Rich Geothermal Springs. Extremophiles. 11: 469-479.

Articles Submitted or in Preparation

- **Crespo-Medina,** M., M.W. Bowles, V. Samarkin, S.B. Joye. Microbial diversity and activity in seafloor brine lake sediments (Alaminos Canyon 601, Gulf of Mexico). (Submitted to *Geobiology,* 2013)**.**
- Kleindienst, S., S. Grim, M. Sogin, **M. Crespo-Medina**, and S. B. Joye. The sudden response of diverse low-abundance bacteria to a deep-sea hydrocarbon plume. (Submitted to *PNAS,* 2014)
- Cruz, K., **M. Crespo-Medina,** C. Vetriani, and T. Barkay. Mercury tolerance in chemosynthetic deep-sea hydrothermal vent bacteria isolated from East Pacific Rise 9ºN. (Submitted to *AEM, 2014*).
- **Crespo-Medina, M.,** K. Cruz, T. Barkay, and C. Vetriani. Diversity of chemosynthetic thiosulfate oxidizing bacteria from deep sea hydrothermal vents. (In preparation for *AEM*).
- **Crespo-Medina, M.,** M.W. Bowles, and S.B. Joye. Methanogenesis in seafloor cold seep sediments along the Gulf of Mexico lower continental slope. (In preparation for *ISME J*).

Teaching Experience

- **Guest lecturer in Marine Biology class (BIOL4800),** East Carolina University. April 2014
- **Guest lecturer in Marine Biology class (BIOL4800),** East Carolina University. April 2013
- **Guest lecturer in Astrobiology honors class (BIOL2130),** East Carolina University. March 2013
- **Guest lecturer in Microbial Ecology class (MARS6620),** University of Georgia. October 19, 2011
- **Guest lecturer for third graders at Froebel Bilingual School,** Aguadilla, PR. February 22, 2011
- **Guest lecturer in Introduction to Water Resources (WASR1020),** University of Georgia, Fall 2010
- **General Microbiology Class, three lectures (11:680:390),** Rutgers University, Fall 2008.

- **Teaching Fellow for the 2008 RISE at Rutgers/UMDNJ summer program,** Rutgers University, Summer 2008
- **Guest lecturer at Microbial Ecology class (11:680:491),** Rutgers University, Spring 2008
- **Guest lecturer at Microbial Ecology class (11:680:491),** Rutgers University, Fall 2005
- **Teaching Assistant, Introduction to Biology for Non Biology Majors (CIBI3031, CIBI3032).** Biology Department, University of Puerto Rico, Mayagüez Campus, Mayagüez, PR. August 2002- May 2003

Mentoring of undergraduate students and laboratory assistants

- Emery Register, Fall 2012
- J. Joy Battles, Summer and Fall 2011
- Kara Tinker, REU Student, University of Georgia, Summer 2011
- Arya Aghdasi, University of Georgia, Spring and Fall 2011
- Chassidy Mann, University of Georgia, Summer 2010-Fall 2012
- Lauren Bailey, University of Georgia, Fall 2009
- Smita Pataskar, Biotechnology Program, Rutgers University, Spring 2007
- Amber G. Jensen, Biotechnology Program, Rutgers University, Summer 2006 and Fall 2006
- My H. Do, Marine Science Major, 2005-2006
- Catherine Rivera, RISE Summer Program, Rutgers University, 2005
- Adam Bohnert, RIOS Summer Program, Rutgers University, 2005
- Umang Patel, Biotechnology Program, Rutgers University, 2004-2005

Field Sampling and Oceanographic Expeditions

- February 2014, Santa Elena Ophiolite, Costa Rica, Group Leader and expedition organizer
- December 2013, Coast Range Ophiolite Microbial Observatory (CROMO), Lower Lake, CA
- August 2013, Coast Range Ophiolite Microbial Observatory (CROMO), Lower Lake, CA
- August 2013, Ligurian Ophiolite, Liguria, Italy
- March 2013, Coast Range Ophiolite Microbial Observatory (CROMO), Lower Lake, CA
- June-July 2012, on board of R/V Endeavor. Gulf of Mexico, Group Leader
- May-June 2012, on board of R/V Endeavor. Gulf of Mexico, Group Leader
- July 2011, on board of R/V Endeavor. Gulf of Mexico, Group Leader
- November 2010, on board of R/V Atlantis and DSV Alvin Dives 4640 and 4642, Gulf of Mexico
- August 2010, on board of R/V Oceanus. Oil Spill Response Research Cruise, Gulf of Mexico
- May 2010, on board of R/V F.G. Walton Smith. Oil Spill Rapid Response Cruise, Gulf of Mexico
- October 2008, on board of R/V Atlantis and DSV Alvin Dive 4467, East Pacific Rise 9^{o}N, 104^{o}W
- October 2007, on board of R/V Atlantis and DSV Alvin Dive 4358, Guaymas Basin
- January 2007, on board of R/V Atlantis and DSV Alvin Dive 4299, East Pacific Rise 9^{o}N, 104^{o}W

Memberships

- Geochemical Society, member since 2010
- National Postdoctoral Association, member since 2009
- AAAS, member since 2007
- American Society of Limnology and Oceanography, member since 2007
- American Society of Microbiology, member since 2004

Service and Professional Development

- Reviewer for the World Journal of Microbiology and Biotechnology
- Deep Carbon Observatory Early Career Workshop, February 18-21, 2014, San José, Costa Rica
- C-DEBI Professional Development Workshop, October 6^{th}, 2013, Marina, CA
- Deep Carbon Observatory-Deep Life Workshop, May 14-15, 2013, Portland, OR
- Meeting-Mentor for ASLO Multicultural Program, Ocean Science Meeting, February 19-24, 2013, Salt Lake City, UT
- Advanced Radiation Worker Certificate, May 2011

Oral Presentations

- **"Microbial Metabolism of Carbon and Hydrogen Compounds in Serpentinite Fluids".** DCO Early Career Workshop, February 18, 2014. San José, CR.
- **"Microbial Metabolism in Serpentinite Associated Fluids"** AGU Fall Meeting 2013. December 10, 2013. San Francisco, CA
- **"Microbial Metabolism in Serpentinite Fluids"** Goldschmidt 2013 Conference. August 30, 2013. Florence Italy.
- **"Water Column Methane Dynamics in Response to the Deepwater Horizon Hydrocarbon Spill"** East Carolina University, Department of Biology, Research in Progress Seminar Series. February 25th, 2013.
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- **"Water Column Methane Dynamics in Response to the Deepwater Horizon Hydrocarbon Spill"** UNC-Chapel Hill, Department of Marine Sciences. Invited Speaker, Spring 2013 Seminar Series. February 20th, 2013.
- **"Offshore Oil and Gas Dynamics Following the Deepwater Horizon Blowout"** EPA Invited Seminar Speaker. November 17, 2011. Athens, GA.
- **"Undersea Impacts form the BP Blowout"** CERF Meeting. November 9, 2011. Daytona Beach, FL.
- **"Water Column Methane Dynamics in Response to the Deepwater Horizon Hydrocarbon Spill"** Deepwater Horizon PI Workshop. October 25, 2011. St. Petersburg, FL
- **"Oil Distributions and Impacts in the Gulf of Mexico following the Macondo Blowout"** Georgia Association of Marine Educators (GAME) Meeting. Skidaway Marine Institute. October 22, 2011. Skidaway Island, GA.
- **"Gulf Oil Spill- One Year Later. Status Report of the Gulf and Implications for Future Deep-Water Drilling in National and International Waters".** UGA Legislative Retreat. August 16, 2011. University of Georgia, Athens, GA.
- **"Evolution of Water Column Methane Dynamics following the 2010 Macondo Blowout in the Gulf of Mexico".** ASM General Meeting. May 22, 2011. New Orleans, LA.
- **"Patterns of Water Column Aerobic Methane Oxidation Rates in Response to the Deepwater Horizon Hydrocarbon Spill".** The Third Annual Scientific Research Day. May 20th, 2011. Paul D. Coverdell Center, University of Georgia, Athens, GA.
- **"The Impact of the Deepwater Horizon Oil Spill on Microbial Community Composition and Dynamics".** Oconee Rivers Audubon Society. May 5th, 2011. Odum School of Ecology Auditorium, University of Georgia, Athens, GA.
- **"Offshore Ocean Dynamics following the Deepwater Horizon Blowout".** League of Women Voters of Alabama Convention. April 30, 2011. Mobile, AL.
- **"Patterns of Water Column Aerobic Methane Oxidation Rates in Response to the Deepwater Horizon Hydrocarbon Spill".** ASLO- Aquatic Sciences Meeting. February 14, 2011, San Juan, PR.
- **"Spatial Patterns in Sediment Microbial Diversity Around Gulf of Mexico Brine Lakes".** Goldschmidt 2010 Conference. June 15, 2010. Knoxville, TN.
- **"Microbial Diversity in Brine-influenced Sediments form the Gulf of Mexico".** Department of Marine Sciences, Graduate Student Seminar Series. March 31, 2010. University of Georgia, Athens, GA.
- **"Aerobic Chemosynthesis and Microbial Mercury Resistance at Diffuse Flow Hydrothermal Vents from the East Pacific Rise".** Department of Marine Sciences, Graduate Student Seminar Series. April 22, 2009. University of Georgia, Athens, GA.
- **Discussion Panel: Applying for Graduate Study Fellowships.** Major Government-Sponsored Scholarship and Fellowship Programs for Research: Your Options and How to Submit Competitive Applications. Sponsored by The Resource Center for Graduate External Support. April 14, 2008. Rutgers University, Piscataway, NJ.
- **"Aerobic Chemosynthesis and Microbial Mercury Resistance at Diffuse Flow Hydrothermal Vents from the East Pacific Rise at 9ºN".** InterRidge Theoretical Institute: Biogeochemical Interaction at Deep-Sea Vents. September 12, 2007. Woods Hole Oceanographic Institution, Woods Hole, MA.
- **"Interactions of Chemosynthetic Bacteria with Mercury at Deep-Sea Hydrothermal Vents".** Department of Biochemistry and Microbiology, Departmental Seminar. March 2, 2007. Rutgers University, New Brunswick, NJ.

Selected Poster Presentations

- **Crespo-Medina, M.,** Brazelton, W.J., Twing, K.I., Kubo, M.D., Hoehler, T.M., and Schrenk, M.O. **"Microbial Activity and Carbon Metabolism in Low Biomass Serpentinite Fluids"**. 2013 C-DEBI Annual Meeting. October 6-9, 2013. Marina, CA.
- Kleindienst, S., Grim, S., Sogin, M., **Crespo-Medina, M.,** and Joye, S. **"Impacts of the Deepwater Horizon oil spill on pelagic microbial community compositions".** 2013 Gulf of Mexico Oil Spill and Ecosystem Science Conference. January 21-23, 2013. New Orleans, LA.
- Sibert, R., **Crespo-Medina, M**., Hunter, K., Montoya, J., and Joye, S. **"Depression of microbial respoiration rates in Gulf of Mexico sediments following the Deepwater Horizon spill".** 2013 Gulf of Mexico Oil Spill and Ecosystem Science Conference. January 21-23, 2013. New Orleans, LA.
- **Crespo-Medina, M.,** Chatziefthimiou, A., Bloom, N., Reinfelder, J., Vetriani,C., and Barkay, T. **"Microbe-Mercury Interactions at Deep-Sea Hydrothermal Vents"**. 2008 Ocean Science Meeting. March 2-9, 2008. Orlando, Fl.
- **Crespo-Medina, M**., Cuebas, M., Borin, S., Luther, G., Waite, T., Barkay, T. and Vetriani, C. **"Isolation and Partial Characterization of Aerobic Chemosynthetic Thiosulfate Oxidizing Bacteria from Diffuse Flow Hydrothermal Vents on the East Pacific Rise"**. InterRidge Theoretical Institute: Biogeochemical Interaction at Deep-Sea Vents. September 10-14, 2007. Woods Hole Oceanographic Institution, Woods Hole, MA.
- **Crespo-Medina, M.,** Cuebas, M., Borin, S., Luther, G., Waite, T., Barkay, T. and Vetriani, C. **"Isolation and Partial Characterization of Aerobic Chemosynthetic Thiosulfate Oxidizing Bacteria from Diffuse Flow Hydrothermal Vents on the East Pacific Rise"**. 107th American Society of Microbiology General Meeting. May 21-25, 2007. Toronto, Canada.
- **Crespo-Medina, M.,** Bloom, N., Chatziefthimiou, A., Reinfelder, J., Vetriani,C., and Barkay, T. "**Interactions of Chemosynthetic Bacteria with Mercury at Deep-sea Hydrothermal Vents".** Eighth International Conference on Mercury as a Global Pollutant. August 6-11, 2006. Madison, WI.
- **Crespo-Medina, M.,** Barkay, T. and Vetriani, C. **"Mercuric reductase enzymes from mesophilic bacteria are optimally active at a moderately thermophilic to thermophilic temperature range".** 2nd Annual Yale Bouchet Conference on Diversity in Graduate Education. April 1-2, 2005. Yale Graduate School. New Haven, CT.

References

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