

## **Costantino Vetriani - *Curriculum Vitae***

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### **Education**

- Ph.D., Molecular Biology, University of Rome Tor Vergata, Rome, Italy, 1994.
- M.S., Microbiology, University of Rome La Sapienza, Rome, Italy, 1990.

### **Professional Experience**

- 2014 – Present: Professor, Department of Biochemistry and Microbiology and Institute of Marine and Coastal Sciences, Rutgers University, NJ, USA.
- 2008 - Present: Director, Rutgers University's Undergraduate Program in Microbiology
- 2006 - 2014: Associate Professor, Department of Biochemistry and Microbiology and Institute of Marine and Coastal Sciences, Rutgers University, NJ, USA.
- 2001 - 2006: Assistant Professor, Department of Biochemistry and Microbiology and Institute of Marine and Coastal Sciences, Rutgers University, NJ, USA.
- 1999 - 2001: Research Assistant Professor, Institute of Marine and Coastal Sciences, Rutgers University.
- 1997 - 1999: Research Associate, Institute of Marine and Coastal Sciences, Rutgers University.
- 1996: Guest Investigator, Woods Hole Oceanographic Institution, Woods Hole, MA, USA.
- 1995 - 1997: Research Associate, Center of Marine Biotechnology, Baltimore, MD, USA.
- 1994 - 1995: Postdoctoral Fellow, University of Rome Tor Vergata, Rome, Italy.
- 1990 - 1994: Graduate Research Assistant, University of Rome Tor Vergata, Rome, Italy.

### **Fellowships and Awards**

- School of Environmental and Biological Sciences, Rutgers University, 2007: Research Excellence Award.
- Marine Biological Laboratory, Woods Hole, MA, 1998. Participation in workshop: Molecular Evolution.
- Institute of Marine and Coastal Sciences Postdoctoral fellowship, Rutgers University, 1997.
- Associated Western Universities Postdoctoral fellowship, 1997.
- Marine Biological Laboratory, Woods Hole, MA, 1995. Participation in course: Microbial Diversity.
- Office of Naval Research Award, Marine Biological Laboratory, 1995.
- Lucretia Crocker Scholarship Fund Award, Marine Biological Laboratory, 1995.
- IRBM (Institute for Research in Molecular Biology) Fellowship, Rome, Italy, 1994.
- UNIDO-ICGEB, Grignano, Italy, 1991. Participation in course: Bacterial Genetics.
- Summa cum Laude, Microbiology, University of Rome La Sapienza, Rome, Italy, 1990.

**External Funding (totaling \$ 4.0M; \$2.22M as P.I.; \$1.8M as Co-P.I.)**

- Foustoukos, D. and **Vetriani, C. (Co-PI)**. Synthrophic growth of piezophilic deep-sea vent bacteria. Center for Dark Energy Biosphere Investigations (C-DEBI). Recommended for funding. \$39,978 (Total award: \$79,996).
- Lutz, R. A. and **Vetriani, C. (Co-P.I.)**. Vertex Pharmaceuticals VOICE Project Phase II: Deep-sea drug discovery from hydrothermal vents. December 1, 2015 - March 15, 2017. \$343,201.
- Vetriani, C. (P.I.)**. Collaborative Research (with D. Giovannelli and D. Foustoukos): Evolution of early metabolism: Carbon fixation, anaerobic respiration and ROS detoxification in the anaerobic vent bacterium, *Thermovibrio ammonificans*. National Science Foundation (Cellular Dynamics and Function, MCB). August 15, 2015 - August 14, 2018. \$472,559 (Total award: \$667,190).
- Robb, F. T. and **Vetriani, C. (Co-P.I.)**. NASA Exobiology: Sentinel Microbes that Utilize Carbon Monoxide as Energy and Carbon Source. July 30, 2015 - July 29, 2018. \$270,003.
- Lutz, R. A. and **Vetriani, C. (Co-P.I.)**. Vertex Pharmaceuticals VOICE Project Phase I: Deep-sea drug discovery from hydrothermal vents. May 29, 2015 - November 30, 2015. \$40,000.
- Vetriani, C. (P.I.)**. Center for Dark Energy Biosphere Investigations (C-DEBI): Heterotrophy in deep-sea reducing environments: Physiology and metabolism of aerobic hydrocarbonoclastic bacteria. March 1, 2013 - February 28, 2014. \$49,972.
- Vetriani, C. (P.I.)**. Collaborative Research (with Sievert, S., Seewald, J., Taylor, C., Foustoukos, D., Stepanauskas, R.): DoB: An integrated study of energy metabolism, carbon fixation, and colonization mechanisms in chemosynthetic microbial communities at deep-sea vents. National Science Foundation (Biological Oceanography, OCE). October 1, 2011 - September 30, 2014. \$420,434 (Total award: \$1,918,359).
- Vetriani, C. (P.I.)**. Collaborative Research (with Sievert, S., Foustoukos, D.): Autotrophic carbon fixation at a shallow-water hydrothermal system: Constraining microbial activity, isotopic and geochemical regimes. National Science Foundation (Dimensions of Biodiversity, OCE). October 1, 2011 - September 30, 2013. \$196,655 (Total award: \$432,033).
- Lutz, R. A. (P.I.) and **Vetriani, C. (Co-P.I.)**. Collaborative Research (with Luther, G. W., Shank, T. M., Govenar, B.): Integrating geological, chemical, and biological processes: Implications for ecological succession on the East Pacific Rise. National Science Foundation (RIDGE, Biological Oceanography, OCE). September 1, 2009 – August 31, 2010. \$136,295 (Total award \$285,168).
- Vetriani, C. (P.I.)** and Bini, E. (Co-P.I.). Transcriptional analysis of the deep-sea vent *Epsilonproteobacterium*, *Caminibacter mediatlanticus*, in response to different growth conditions. National Science Foundation (Metabolic Biochemistry, MCB). March 15, 2009 – February 29, 2013. Total award: \$373,721.

**Vetriani, C. (P.I.).** Alkane oxidation in pure cultures and natural microbial communities from deep-sea hydrothermal vents: linking diversity and function. CEBIC (Center for Environmental and BioInorganic Chemistry). October 1, 2005 – September 30, 2006. Total award \$20,000.

**Vetriani, C. (P.I.).** Collaborative Research (with Casciotti, K.L., Sievert S.M.): MIP: Physiology and molecular ecology of thermophilic, nitrate-reducing microorganisms at deep-sea hydrothermal vents. National Science Foundation (Microbial Interactions and Processes, MCB). June 15, 2005 – May 31, 2008. \$315,169 (Total award: \$418,313).

Lutz, R. A. (P.I.) and **Vetriani, C. (Co-P.I.).** Collaborative Research (with Luther, G. W., Shank, T. M.): Integrated studies of biological community structure at deep-sea hydrothermal vents. National Science Foundation (RIDGE, Biological Oceanography, OCE). October 1, 2003 – September 30, 2007. \$363,457 (Total award: \$887,622).

Falkowski, P. G. (P.I.), Miller, K. G., Knoll, A., Schofield, O., and **Vetriani, C. (Co-P.I.).** Biocomplexity: The Evolution and Radiation of Eucaryotic Phytoplankton Taxa (EREUPT). National Science Foundation. September 1, 2000 - August 31, 2005. Total award: \$4,206,495.

### **Genome Sequencing Projects**

**Vetriani, C. (P.I.).** Department of Energy/Joint Genome Institute: *Thermovibrio ammonificans* DSM 15698.

**Vetriani, C. (P.I.).** Gordon and Betty Moore Foundation: *Caminibacter mediatlanticus* DSM 16658.

### **Internal Funding - Rutgers University (totaling ~ \$20,000)**

Rutgers University, Research Council Grant “Phage induction of lysogenic bacterial isolates from deep-sea hydrothermal vents”. 2012 - 2013. (P.I.)

Rutgers University, Research Council Grant “Analysis of functional gene transcripts in microbial chemosynthetic biofilms from deep-sea hydrothermal vents”. 2011 - 2012. (P.I.)

Rutgers University, Research Council Grant “Development of a system for the genetic manipulation of the deep-sea vent Epsilonproteobacterium, *Caminibacter mediatlanticus*”. 2008 - 2009. (P.I.)

Rutgers University, Basic Research Grant "Assessment of the Ecological Relevance of Nitrate-Ammonifying Microorganisms from Deep-Sea Vents". 2004. (P.I.)

Rutgers University, Research Council Grant “Isolation of Anaerobic Thermophilic Bacteria from Hydrothermal Vents”. 2003 - 2004. (P.I.)

Rutgers Undergraduate Research Fellow Program. “Isolation of Thermophilic, Chemolithotrophic, Nitrate-Reducing Bacteria from Deep-Sea Hydrothermal Vents. 2003 - 2004. (P.I.)

Institute of Marine and Coastal Sciences/Rutgers University Summer Research Program “Microbial Oxidation of *n*-Alkanes: Isolation of Organisms from Deep-Sea Vents and Cold Seeps, and Identification of Alkane Hydroxylase Genes”. 2003. (P.I.)

## Journal Articles (Refereed)

### Published

- Patwardhan, S. and **Vetriani, C.** (2016). *Varunaivibrio sulfuroxidans* gen. nov., sp. nov., a facultatively chemolithoautotrophic, mesophilic alphaproteobacterium from a shallow-water gas vent at Tor Caldara, Tyrrhenian Sea. *Intl. J. Syst. Evol. Microbiol.* 66:3579-3584. doi:10.1099/ijsem.0.001235.
- Giovannelli, D., d'Errico, G., Fiorentino, F., Fattorini, D., Regoli, F., Angeletti, L., Bakran-Petricioli, T., **Vetriani, C.**, Yucel, M., Taviani, M. and Manini, E. (2016). Diversity and distribution of prokaryotes within a shallow-water pockmark field. *Front. Microbiol.* 7:941. doi: 10.3389/fmicb.2016.00941.
- Giovannelli, D., Chung, M., Staley, J., Starovoytov, V., Le Bris, N. and **Vetriani, C.** (2016). *Sulfurovum riftiae* sp. nov., a mesophilic, thiosulfate-oxidizing, nitrate-reducing chemolithoautotrophic *Epsilonproteobacterium* isolated from the tube of the deep-sea hydrothermal vent polychaete, *Riftia pachytila*. *Intl. J. Syst. Evol. Microbiol.* 66:2697-2701. doi: 10.1099/ijsem.0.001106.
- Houghton, J.L., Foustoukos, D., Flynn T., **Vetriani, C.**, Brandley, A., Fike, D. (2016). Thiosulfate oxidation by *Thiomicrospira thermophila*: metabolic flexibility in response to ambient geochemistry. *Environ. Microbiol.* 18:3057-3072. doi: 10.1111/1462-2920.13232.
- O'Brien, C. E., Giovannelli, D., Govenar, B., Luther, G. W., Lutz, R. A., Shank, T. M. and **Vetriani, C.** (2015). Microbial biofilms associated with fluid chemistry and megafaunal colonization at post-eruptive deep-sea hydrothermal vents. *Deep-Sea Res. II* 121:31-40. doi:10.1016/j.dsr2.2015.07.020.
- Grosche, A., Sekaran, H., Pérez-Rodríguez, I., Starovoytov, V. and **Vetriani, C.** (2015). *Cetia pacifica* gen. nov., sp. nov., a novel chemolithoautotrophic, thermophilic, nitrate-ammonifying bacterium from a deep-sea hydrothermal vent. *Intl. J. Syst. Evol. Microbiol.* 65:1144-1150. doi: 10.1099/ijms.0.000070.
- Pérez-Rodríguez, I., Bolognini, M., Ricci, J., Bini, E. and **Vetriani, C.** (2015). From deep-sea volcanoes to human pathogens: A conserved quorum sensing signal in *Epsilonproteobacteria*. *ISME J.* 9:1222-1234. doi:10.1038/ismej.2014.214.
- Tasiemski, A., Jung, S., Boidin-Wichlacz, C., Jollivet, D., Cuvillier-Hot, V., Pradillon, F., **Vetriani, C.**, Hecht, O., Sönnichsen, F.D., Gelhaus, C., Hung, C.-W., Tholey, A., Leippe, M., Grötzinger, J. and Gaill, F. (2014). Characterization and function of the first antibiotic isolated from a vent organism: The extremophile metazoan *Alvinella pompejana*. *Plos One* 9:e95737. doi: 10.1371/journal.pone.0095737.

- Vetriani, C.**, Voordeckers, J. W., Crespo-Medina, M., O'Brien, C., Giovannelli, D. and Lutz, R. A. (2014). Deep-sea hydrothermal vent *Epsilonproteobacteria* encode for a conserved and widespread nitrate reduction pathway (Nap). *ISME J.* 8:1510-1521. doi:10.1038/ismej.2013.246.
- Pérez-Rodríguez, I., Bohnert, K. A., Cuebas, M., Keddiss, R. and **Vetriani, C.** (2013). Detection and phylogenetic analysis of the membrane-bound nitrate reductase (NarG) in pure cultures and microbial communities from deep-sea hydrothermal vents. *FEMS Microbiol. Ecol.* 86:256-267. doi: 10.1111/1574-6941.12158.
- Yücel, M., Sievert, S., **Vetriani, C.**, Foustoukos, D., Giovannelli, D. and Le Bris, N. (2013). Eco-geochemical dynamics of a shallow-water hydrothermal vent system at Milos Island, Aegean Sea (Eastern Mediterranean). *Chem. Geol.* 356:11-20.
- Giovannelli, D., d'Errico, G., Manini, E., Yakimov, M. and **Vetriani, C.** (2013). Diversity and phylogenetic analyses of bacteria from a shallow-water hydrothermal vent in Milos island (Greece). *Front. Microbiol.* 4:184. doi: 10.3389/fmicb.2013.00184
- Bertrand, E. M., Keddiss, R., Groves, J. T., **Vetriani, C.** and Narehood Austin, R. (2013). Identity and mechanisms of alkane-oxidizing metalloenzymes from deep-sea hydrothermal vents. *Front. Microbiol.* 4:109. doi: 10.3389/fmicb.2013.00109
- Giovannelli, D., Grosche, A., Starovoytov, V. Yakimov, M., Manini, E. and **Vetriani, C.** (2012). *Galenea microaerophila* gen. nov., sp. nov., a mesophilic, microaerophilic, chemosynthetic, thiosulfate-oxidizing bacterium isolated from a shallow water hydrothermal vent. *Intl. J. Syst. Evol. Microbiol.* 62:3060-3066.
- Rosario-Passapera, R., Keddiss, R., Wong, R., Lutz, R. A., Starovoytov, V. and **Vetriani, C.** (2012). *Parvibaculum hydrocarbonoclasticum* sp. nov., a mesophilic, alkane-oxidizing *alphaproteobacterium* isolated from a deep-sea hydrothermal vent on the East Pacific Rise. *Intl. J. Syst. Evol. Microbiol.* 62:2921-2926.
- Andrianasolo, E., Haramaty, L., Rosario-Passapera, R., **Vetriani, C.**, Falkowski, P., White, E. and Lutz, R. (2012). Ammonificin C and D, hydroxyethylamine chroman derivatives from a cultured marine hydrothermal vent bacterium, *Thermovibrio ammonificans*. *Marine Drugs* 10:2300-2311.
- Giovannelli, D., Ricci, J., Pérez-Rodríguez, I. Hügler, M., O'Brien, C., Keddiss, R., Grosche, A., Goodwin, L., Bruce, D., Davenport, K., Detter, C., Han, J., Han, S., Ivanova, N., Land, M. L., Mikhailova, N., Nolan, M., Pitluck, S., Tapia, R., Woyke, T. and **Vetriani, C.** (2012). Complete genome sequence of *Thermovibrio ammonificans* HB-1<sup>T</sup>, a thermophilic chemolithoautotrophic bacterium from a deep-sea hydrothermal vent. *Stand. Genomic Sci.* 7:82-90.
- Pérez-Rodríguez, I., Grosche, A., Massenburg, L., Starovoytov, V. and **Vetriani, C.** (2012). *Phorcysia thermohydrogeniphila* gen. nov., sp. nov., a thermophilic, chemolithoautotrophic, nitrate-ammonifying bacterium isolated from a microbial biofilm from a deep-sea hydrothermal vent. *Intl. J. Syst. Evol. Microbiol.* 62:2388-2394.
- Sievert S. M. and **Vetriani, C.** (2012). Chemoautotrophy at deep-sea vents - Past, present, and future. *Oceanography* 25:218-233.
- Giovannelli, D., Ferreira, S., Johnson, J., Kravitz, S., Perez-Rodriguez, I., Ricci, J., O'Brian, C., Voordeckers, J. W., Bini, E. and **Vetriani, C.** (2011). Draft genome sequence of *Caminibacter*

*mediatlanticus* strain TB-2<sup>T</sup>, an *Epsilonproteobacterium* isolated from a deep-sea hydrothermal vent. *Stand. Genomic Sci.* 5:135-143.

- Andrianasolo, E., Haramaty, L., McPhail, K. L., White, E., **Vetriani, C.**, Falkowski, P. and Lutz, R. (2011). Bathymodiolamides A and B, ceramide derivatives from a deep-sea hydrothermal vent invertebrate mussel, *Bathymodiolus thermophilus*. *J. Nat. Prod.* 74: 842-846.
- Pérez-Rodríguez, I., Ricci, J., Voordeckers, J. W., Starovoytov, V. and **Vetriani, C.** (2010). *Nautilia nitratireducens* sp. nov, a thermophilic, anaerobic, chemosynthetic, nitrate-ammonifying bacterium isolated from a deep-sea hydrothermal vent on the East Pacific Rise. *Intl. J. Syst. Evol. Microbiol.* 60:1182-1186.
- Reed, A. J., Dorn, R., Van Dover, C. L., Lutz, R. A. and **Vetriani, C.** (2009). Phylogenetic diversity of methanogenic, sulfate-reducing and methanotrophic prokaryotes from deep-sea hydrothermal vents and cold seeps. *Deep-Sea Res.* 56: 1665-1674.
- Rona, P. A., Seilacher, A., de Vargas, C., Gooday, A. J., Bernhard, J. M., Bowser, S., **Vetriani, C.**, Wirsén, C. O., Mullineaux, L., Sherrel, R., Grassle, J. F., Low, S., and Lutz, R. A. (2009). *Paleodictyon nodosum*, a living fossil on the deep sea floor. *Deep-Sea Res.* 56: 1700-1712.
- Andrianasolo, E., Haramaty, L., Rosario-Passapera, R., Bidle, K., White, E., **Vetriani, C.**, Falkowski, P., Lutz, R. (2009). Ammonificin A and B, hydroxyethylamine chroman derivatives with antimicrobial and apoptosis-induction activities from a cultured marine hydrothermal vent bacterium, *Thermovibrio ammonificans*. *J. Nat. Prod.* 72:1216-1219.
- Crespo-Medina, M., Chatziefthimiou, A., Cruz-Matos R., Perez-Rodriguez, I., Barkay, T., Lutz, R. A., Starovoytov, V., and **Vetriani, C.** (2009). *Salinisphaera hydrothermalis* sp. nov, a mesophilic, halotolerant, facultative autotrophic, thiosulfate oxidizing “*gammaproteobacterium*” from deep-sea hydrothermal vents, and emended description of the genus *Salinisphaera*. *Intl. J. Syst. Evol. Microbiol.* 59:1480-1486.
- Sherman, L. Blum, J. D., Nordstrom, D. J., McCleskey, R. B., Barkay, T. and **Vetriani, C.** (2009). Mercury isotopic composition of hydrothermal systems in the Yellowstone Plateau volcanic field and Guaymas Basin sea-floor rift. *Earth Planet. Sci. Lett.* 279:86-96.
- Crespo-Medina, M., Chatziefthimiou, A.D., Bloom, N.S., Luther, G.W, Wright, D.D., Reinfelder, J.R., **Vetriani, C.**, and Barkay, T. (2009). Adaptation of Chemosynthetic Bacteria to Elevated Mercury Concentrations in Deep-Sea Hydrothermal Vents. *Limnol. Ocean.* 54:41-49.
- Voordeckers, J.W., Do, M., Hügler, M., Ko, V., Sievert, S.M., and **Vetriani, C.** (2008). Culture dependent and independent analyses of 16S rRNA and ATP citrate lyase genes: a comparison of microbial communities from different black smoker chimneys on the Mid-Atlantic Ridge. *Extremophiles* 12:627-640.
- Lutz, R.A., Shank, T.M., Luther, G.W., **Vetriani, C.**, Tolstoy, M., Nuzzio, D.B., Moore, T.S., Waldausser, F., Crespo-Medina, M., Chatziefthimiou, A., Annis, E.R., and Reed, A.J. (2008).

Interrelationships between vent fluid chemistry, temperature, seismic activity and biological community structure at a deep-sea hydrothermal vent along the East Pacific Rise. *Journal of Shellfish Research* 27:177-190.

Nees, H.A., Moore, T.S., Mullaugh, K.M., Holyoke, R.R., Janzen, C.P., Ma, S., Metzger, E., Waite, T.J., Yücel, M., Lutz, R.A., Shank, T.M., **Vetriani, C.**, Nuzzio, D.B., and Luther, G.W. (2008). Hydrothermal vent mussel habitat chemistry, pre- and post-eruption at 9°N50' North on the East Pacific Rise. *Journal of Shellfish Research* 27:169-175.

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.

Hügler, M., Huber, H., Molyneaux, S.J., **Vetriani, C.**, and Sievert, S.M. (2007) Autotrophic CO<sub>2</sub> fixation via the reductive tricarboxylic acid cycle in different lineages within the phylum *Aquificae*: Evidence for two ways of citrate cleavage. *Environmental Microbiology* 9:81-92.

Reed, A.J., Lutz, R.A., and **Vetriani, C.** (2006). Vertical Distribution and Diversity of Bacteria and Archaea in Sulfide and Methane-Rich Cold Seep Sediments Located at the Base of the Florida Escarpment. *Extremophiles* 10:199-211.

Voordeckers, J.W., Starovoytov, V., and **Vetriani, C.** (2005). *Caminibacter mediatlanticus* sp. nov., a thermophilic, chemolithoautotrophic, nitrate ammonifying bacterium isolated from a deep-sea hydrothermal vent on the Mid-Atlantic Ridge. *Intl. J. Syst. Evol. Microbiol.* 55:773-779.

**Vetriani, C.** Chew, Y.S., Miller, S.M., Yagi, J., Coombs, J., Lutz, R.A., and Barkay, T. (2005). Mercury adaptation among bacteria from a deep-sea hydrothermal vent. *Appl. Environ. Microbiol.* 71:220-226.

**Vetriani, C.**, Speck, M.D., Ellor, S.V., Lutz, R.A., and Starovoytov, V. (2004) *Thermovibrio ammonificans* sp. nov., a thermophilic, chemolithotrophic, nitrate ammonifying bacterium from deep-sea hydrothermal vents. *Intl. J. Syst. Evol. Microbiol.* 54:175-181.

**Vetriani, C.**, Tran, H.V., and Kerkhof, L.J. (2003) Fingerprinting Microbial Assemblages from the Oxidic/Anoxic Chemocline of the Black Sea. *Appl. Environ. Microbiol.* 69:6381-6488.

Koblížek, M., Bèjà, O., Bidigare, R.R., Christensen, S., Benitez-Nelson, B., **Vetriani, C.**, Kolber, M.K., Falkowski, P.G., and Kolber, Z.S. (2003) Isolation and characterization of *Erythrobacter* sp. strains from the upper ocean. *Arch. Microbiol.* 180:327-338.

Grzebyk, D., Schofield, O., **Vetriani, C.**, and Falkowski, P.G. (2003) The Mesozoic radiation of eukaryotic algae: The portable plastid hypothesis. *J. Phycol.* 39:1-10.

Kolber, Z.S., Plumley, F.G., Lang, A.S., Beatty, J.T., Blankenship, R.E., VanDover, C.L., **Vetriani, C.**, Koblížek, M., Rathgeber, C., and Falkowski, P.G. (2001) Contribution of aerobic photoheterotrophic bacteria to the carbon cycle in the ocean. *Science* 292:2492-2495.

- Britton, K. L., Yip, K. S. P., Sedelnikova, S. E., Stillman, T. J., Adams, M. W. W., Ma, K., Maeder, D. L., Robb, F. T., Tolliday, N., **Vetriani, C.**, Rice, D. W., and Baker, P. J. (1999) Structure Determination of the glutamate dehydrogenase from the hyperthermophile *Thermococcus litoralis* and its comparison with that from *Pyrococcus furiosus*. *J. Mol. Biol.* 293, 1121-1132.
- Vetriani, C.**, Jannasch, H.W., MacGregor, B.J., Stahl, D.A., and Reysenbach, A.-L. (1999) Population structure and phylogenetic characterization of marine benthic *Archaea* in deep-sea sediments. *Appl. Environ. Microbiol.* 65, 4375-4384.
- Sun, M.M., Tolliday, N., **Vetriani, C.**, Robb F.T., and Clark, D.S. (1999) Pressure-induced thermostabilization of glutamate dehydrogenase from the hyperthermophile *Pyrococcus furiosus*. *Protein Sci.* 5, 1056-1063.
- Vetriani, C.**, Maeder, D.L., Tolliday, N., Yip, K.S.P., Stillman, T.J., Britton, K.L., Rice, D.W., Klump, H.H. and Robb, F.T. (1998) Protein thermostability above 100°C: a key role for ionic interactions. *Proc. Natl. Acad. Sci. USA* 95, 12300-12305.
- Vetriani, C.**, Reysenbach, A.-L. and Doré, J. (1998) Recovery and phylogenetic analysis of *Archaea* from Continental Shelf sediments. *FEMS Microbiol. Letters* 161, 83-88.
- Yip, K.S.P., Britton, K.L., Stillman, T.J., Lebbink, J., Devos, W.M., Robb, F.T., **Vetriani, C.**, Maeder, D.L., Rice, D.W. (1998) Insights into the molecular basis of thermal stability from the analysis of ion-pair networks in the glutamate dehydrogenase family. *Europ. J. Biochem.* 255, 336-346.
- Dente, L., **Vetriani, C.**, Zucconi, A., Pelicci, G., Lanfrancone, L., Pelicci, P.G. and Cesareni, G. (1997) Modified peptide libraries as a tool to study specificity of phosphorylation and recognition of tyrosine containing peptides. *J. Mol. Biol.* 269, 694-703.
- Pelicci, G., Dente, L., De Giuseppe, A., Verducci-Galletti, B., Giuli, S., Mele, S., **Vetriani, C.**, Giorgio, M., Pandolfi, P.P., Cesareni, G. and Pelicci, P.G. (1996) A family of Shc related proteins with conserved PTB, CH1 and SH2 regions. *Oncogene* 12, 633-641.
- Castagnoli, L., **Vetriani, C.** and Cesareni, G. (1994) Linking an easily detectable phenotype to the folding of a common structural motif: Selection of rare turn mutation that prevent the folding of Rop. *J. Mol. Biol.* 237, 378-387.
- Visca, P., Chiarini, F., Mansi, A., **Vetriani, C.**, Serino, L. and Orsi, N. (1992) Virulence determinants in *Pseudomonas aeruginosa* strains from urinary tract infections. *Epidemiol. Infect.* 108,323-336.
- Visca, P., Chiarini, F., **Vetriani, C.**, Mansi, A., Serino, L. and Orsi, N. (1991) Epidemiological typing of uropathogenic *Pseudomonas aeruginosa* strains from hospitalized patients. *J. Hosp. Infect.* 19,153-165.



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### Chapters in books

Antunes, A., Simões, M.F., Crespo-Medina, M., **Vetriani, C.** and Yasuhiro, S. *Salinisphaera*. In *Bergey's Manual of Systematics of Archaea and Bacteria*, in Press.

**Vetriani, C.**, Crespo-Medina, M. and Antunes, A. (2014). Family *Salinisphaeraceae*. In “*The Prokaryotes - Gammaproteobacteria*”, 4th Edition. Rosenberg, E. *et al.* (Eds.). Springer-Verlag, Berlin Heidelberg. Epub ahead of print, doi: 10.1007/978-3-642-38922-1\_296.

**Vetriani, C.** Origin of Archaea. (2001) In “*Encyclopedia of Biodiversity*”, Ed. S. Levin, pp. 219-230, Academic Press.

**Vetriani, C.** and Reysenbach, A.-L. Archaea. (2000) In “*Encyclopedia of Microbiology*”, Ed. J. Lederberg, pp. 319-331, Academic Press.

Sun, M.M.C., Tolliday, N., **Vetriani, C.**, Robb, F.T., and Clark, D.S. "Pressure-Induced Thermostabilization of Glutamate Dehydrogenase from the Hyperthermophiles *Pyrococcus furiosus* and *Thermococcus litoralis*", in *High Pressure Bioscience and Biotechnology* (H. Ludwig, Ed.) Elsevier Science Publishing Co., New York, in press.

Reysenbach, A.-L. and **Vetriani, C.** “Homology cloning: a molecular taxonomy of the Archaea”. (1999) In “*PCR applications: protocols for functional genomics*”, Eds. M. Innis, D. Gelfand and J. Sninsky, pp. 377-391, Academic Press.

**Vetriani, C.**, Maeder, D.L., Tolliday, N., Klump, H.H., Yip, K.S.P., Rice, D.W. and Robb, F.T. (1998) Improving enzyme thermostability: the *Thermococcus litoralis* glutamate dehydrogenase model. In “*New developments in marine biotechnology*”, Eds. Y. Le Gal and H.O. Halvorson, pp. 221-225, Plenum Press.

Cesareni, G., Castagnoli, L., Dente, L., Iannolo, G., **Vetriani, C.**, Felici, F., Luzzago, A., Monaci, P., Nicosia, A. and Cortese, R. (1995) Construction and utilization of peptide libraries displayed by filamentous bacteriophage. In “*Immunological recognition of peptides in medicine and biology*”, Eds. N.D. Zegers, W.J.A. Boersma and E. Claassen, pp. 43-59, CRC Press, Boca Raton.

Cesareni, G., Minenkova, O., Dente, L., Iannolo, G., Zucconi, A., Helmer Citterich, M., Lanfrancotti, A., Castagnoli, L. and **Vetriani, C.** (1994) Structural and functional constraints in the display of peptides on filamentous phage capsids. In “*Combinatorial Libraries*”, R. Cortese (Ed.), pp. 113-127, Walter De Gruyter and Co., Berlin-New York.

Castagnoli, L., **Vetriani, C.**, Gonfloni, S., Felici, F., Santiago Vispo, N. and Cesareni, G. (1992) Selection from a peptide library of the antigenic determinants of a protein. In: “*Generation of*

antibodies by cell and gene immortalization”, *The Year in Immunology* 7, pp. 41-49, S. Karger AG, Basel.

### Online Publications

Ellor, S.V., Voordeckers, J. and **Vetriani, C.** 2004. Isolation and Characterization of a Thermophilic, Chemolithotrophic Nitrate-Reducing Bacterium from Deep-Sea Hydrothermal Vents. *The Rutgers Scholar - An Electronic Bulletin of Undergraduate Research*, Vol. 6, <http://rutgersscholar.rutgers.edu/volume06/eev/eev.htm>. Permanently archived.

Chew, Y.C., **Vetriani, C.** and Barkay, T. 2002. Mercury resistance and *merA* sequences of moderately thermophilic and mesophilic bacteria from hydrothermal vents. *The Rutgers Scholar - An Electronic Bulletin of Undergraduate Research*, Vol. 4, Sciences and Engineering. <http://rutgersscholar.rutgers.edu/volume04/chewbark/chewbark.htm>. Permanently archived.

### Journal Articles (non refereed)

**Vetriani, C.** 2000. Account of a Deep-Sea Diving Expedition. Published as: I predatori degli Archeobatteri perduti (Raiders of the lost Archaea). *Sette* (weekly supplement to *Il Corriere della Sera* – highest distribution newspaper in Italy) 9:110-112.

### Invited Lectures and Presentations

December 13, 2016. Italian Space Agency, Rome Italy. Invited to participate in the workshop: “Exobiology and extreme environments: from molecular chemistry to the biology of extremophiles”. Presented a talk entitled: “Life in the dark: Anaerobic chemosynthetic bacteria as models to reconstruct the evolutionary history of early metabolism”.

December 12, 2016. Department of Biology, University of Naples Federico II, Naples, Italy. Invited seminar “Life in the dark: Chemosynthetic communities at deep-sea hydrothermal vents”.

December 5-6, 2016. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Deep-sea ecosystems and extreme environments” as a lecturer on the themes: 1) “Molecular approaches for microbial ecology studies”, 2) “Chemoautotrophy and heterotrophy in the deep ocean”, and 3) “Microbial colonization and biofilm formation hydrothermal vents and cold seeps”.

December 10-11, 2015. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Deep-sea ecosystems and extreme environments” as a lecturer on the themes: 1) “Molecular approaches for microbial ecology studies”, 2) “Chemoautotrophy and heterotrophy in the deep ocean”, and 3) “Microbial colonization and biofilm formation hydrothermal vents and cold seeps”.

November 7, 2015. Metropolitan Association of College and University Biologists (MACUB) 48<sup>th</sup> Annual Fall Conference, Montclair State University, Montclair, NJ. Keynote speaker: “Life in Deep-Sea Vents”.

October 9, 2015. Waterfront Technology Center, Rutgers University, Camden NJ. Invited seminar: “From deep-sea volcanoes to mammalian hosts: *Epsilonproteobacteria* as models to reconstruct the evolutionary history of microbial adaptation”.

December 10-12, 2014. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Deep-sea ecosystems and extreme environments” as a lecturer on the themes: 1) “Molecular tools for microbial ecology studies”, and 2) “Microbial colonizers, biofilms and microbial adaptations to deep-sea hydrothermal vents”.

December 4-5, 2013. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Extreme environments and deep-sea ecosystems” as a lecturer on the themes: 1) “Molecular tools in microbial oceanography”, and 2) “Microbiology of deep-sea hydrothermal vents: Microbial colonization, biofilms, thermophiles”.

April 29, 2013. Invited seminar: “From mantle to genomes: Insights from volcanic eruptions in the deep-sea”. Institute of Marine and Coastal Sciences, Rutgers University.

December 6-7, 2012. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Extreme environments and deep-sea ecosystems” as a lecturer on the themes: 1) “Molecular tools in microbial oceanography”, and 2) “Microbiology of deep-sea hydrothermal vents: Microbial colonization, biofilms, thermophiles”.

February 3, 2012. Invited Presentation: “Chemosynthetic microbial biofilms at post eruptive vents on the East Pacific Rise at 9°N”. Microbiology at Rutgers: Second Annual Mini-Symposium, Rutgers University, New Brunswick, NJ.

December 5-7, 2011. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Extreme environments and deep-sea ecosystems” as a lecturer on the themes: 1) “Molecular tools in microbial oceanography”, and 2) “Microbiology of deep-sea hydrothermal vents: Microbial colonization, biofilms, thermophiles”.

December 1, 2011. IFM-GEOMAR, Kiel, Germany. Invited seminar: “Chemosynthetic microbial biofilms: Understanding the foundation of deep-sea hydrothermal vent ecosystems”.

- November 9, 2011. Queens College, New York, NY. Invited seminar: “Chemosynthetic microbial biofilms from deep-sea hydrothermal vents: insight from laboratory and in situ studies”.
- March 25, 2011. Universidad del Turabo, Gurabo, Puerto Rico. Invited talk: “Life without sun: A deep look into chemosynthetic microbial communities from hydrothermal vents”.
- December 1, 2010. Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited seminar: “Chemosynthetic microbial biofilms from deep-sea hydrothermal vents: insight from laboratory and in situ studies”.
- December 2-3, 2010. Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France. Invited to participate in the training course “Extreme environments and deep-sea ecosystems” as a lecturer on the theme: “Extremophilic microbes: adaptation to temperature and toxics /Microbial diversity and metal/hydrocarbon detoxification at vents and seeps”.
- June 23, 2009. Goldschmidt 2009, Davos, Switzerland. Keynote presentation: “Microbial Mechanisms of Energy Conservation, Carbon Transfer and Detoxification in Deep-Sea Extreme Environments”.
- April 20, 2009. Benjamin Franklin Medal in Earth and Environmental Science Symposium “Deep Sea, Ocean Floor Gas Vents”. Invited Speaker and Panelist, Honoring J. Frederick Grassle, Temple University, Philadelphia, PA.
- December 19, 2008. American Geophysical Union Fall Meeting, San Francisco, CA. Invited presentation: “Microbial Colonization of Post Eruptive Vents on the EPR at 9°N”.
- December 12, 2008. School of Marine and Atmospheric Sciences, Stony Brook University, Stony Brook, NY. Invited lecture: “Microbial colonization of deep-sea hydrothermal vents on the East Pacific Rise (9°N) following recent a volcanic eruption”.
- March 19, 2008. Department of Biological Sciences, Seton Hall University, South Orange, NJ. Invited lecture: “Microbial Colonization of Deep-Sea Hydrothermal Vents Following a Volcanic Eruption on the East Pacific Rise”.
- February 29, 2008. Second Annual Joint Molecular Biosciences Graduate Student Symposium, Rutgers University, Piscataway, NJ. Keynote Speaker: “Microbiology of Post-Eruptive Deep-Sea Hydrothermal Vents”.
- February 8, 2008. Microbiology at Rutgers: Second Annual Mini-Symposium, Rutgers University, New Brunswick, NJ. Invited Presentation: “Microbial Studies of Post-Eruptive Deep-Sea Hydrothermal Vents”.
- June 10-13, 2007. The Center for BioInorganic Chemistry (CEBIC) Summer Conference, Princeton University, Princeton, NJ. Invited talk: “Diversity of alkane-oxidizing bacteria and alkane hydroxylase genes in deep-sea hydrothermal vents”.

March 2, 2007. Microbial Observatories/Microbial Interaction and Processes Principal Investigators' Meeting and Workshop, Washington, DC, March 1-3, 2007. Invited Presentation: "MIP: Physiology and Molecular Ecology of Thermophilic Nitrate-Reducing Microorganisms at Deep-Sea Hydrothermal Vents".

December 7, 2006. Theobald Smith Society, New Jersey Branch of the American Society for Microbiology, Rutgers University, Piscataway, N.J. Invited Speaker for the Three-Speaker Meeting: "Microbiology of Deep-Sea Vents: A View of Ancient Microbial Processes".

November 15, 2006. Columbia Earth Microbiology Initiative, Workshop on Subsurface Microbiology, Lamont-Doherty Earth Observatory, Palisades, NY. Invited seminar: "Microbial Diversity of Deep-Sea Reducing Environments: Hydrothermal Vents and Cold Seeps".

July 30, 2006. Jacques Cousteau Coastal Education Center, Tuckerton, NJ. Invited lecture: "Introduction to the IMAX Movie Volcanoes of the Deep-Sea", for the Sixth Grade MARE Workshop.

March 30, 2006. School of Natural Sciences, Fairleigh Dickinson University, Teaneck, NJ. Invited speaker for the Biology Seminar Course: "Microbiology of deep-sea hydrothermal vents".

September 26, 2005. Department of Biology, University of Rome III, Rome, Italy. Invited seminar: "Volcanoes and Bacteria at the bottom of the ocean".

September 24, 2005. Symposium on Marine Extremophiles and Metabolic Diversity. Italian Society of General Microbiology and Microbial Biotechnology, Riva del Garda, Italy. Invited lecture: "Chemosynthetic processes and energy metabolism in hydrothermal vent bacteria".

June 27, 2005. Jacques Cousteau Coastal Education Center, Tuckerton, NJ. Invited lecture: "Microbiology of the Deep-Sea", for "The Sea You Can't See", a NSF-sponsored marine microbiology workshop for high school teachers.

June 12-15, 2005. The Center for BioInorganic Chemistry (CEBIC) Summer Conference, Princeton University, Princeton, NJ. Invited talk: "Alkane-oxidizing bacteria from deep-sea hydrothermal vents".

February 24, 2005. Department of Biology, College of Science, Texas A & M University, College Station, TX. Invited seminar: "Chemolithotrophy and hydrogen-based energy metabolism in thermophilic microorganisms from deep-sea hydrothermal vents".

November 19, 2004. Fifth Annual West Point Microbiology Symposium, Department of Chemistry and Life Sciences, The United States Military Academy, West Point, NY. Invited lecture: "Microbiology of Deep-Sea Hydrothermal Vents".

March 5, 2004. Department of Microbiology, University of New Hampshire, Durham, NH. Invited lecture: "Microbiology of Deep-Sea Hydrothermal Vents" for the Marine Microbiology course.

- March 4, 2004. Department of Microbiology, University of New Hampshire, Durham, NH. Invited seminar: “Microbial processes at deep-sea vents: Nitrate respiratory metabolism and mercury reduction”.
- February 2, 2004. “Astrobiology and Extrasolar Planets” Seminar Series, Department of Geosciences, Princeton University, Princeton, NJ. Invited seminar: "Deep-sea hydrothermal vent systems: Contemporary windows into ancient microbial processes".
- October 10, 2003, Department of Environmental Sciences, Rutgers University, New Brunswick, NJ. Invited seminar: “A microbial link between the carbon and nitrogen cycling at deep-sea hydrothermal vents”.
- August 6, 2003. Institute of Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ. Invited lecture: “Deep-Sea Vent Microbes: A Link Between Geology, Chemistry and Biology” for the “Volcanoes of the Deep-Sea” workshop, sponsored by NSF’s Centers for Ocean Science Education Excellence (COSEE).
- April 10, 2003, Department of Ecology, Evolution and Natural Resources, Rutgers University, New Brunswick, NJ. Invited seminar: “Microbial interactions with hydrothermal fluids at deep-sea vents”.
- May 2, 2002, Department of Biology, Woods Hole Oceanographic Institution, Woods Hole, MA. Invited seminar: “Diversity, distribution and physiological adaptations of deep-sea hydrothermal vent microorganisms”.
- March 6, 2002, Department of Geosciences, Princeton University. Princeton, NJ. Invited seminar: “Diversity, distribution and physiological adaptations of deep-sea hydrothermal vent microorganisms”.
- March 7, 2001, Department of Biochemistry and Microbiology, Rutgers University, New Brunswick, NJ. Invited seminar: “Microbial Communities in Deep-Sea Extreme Environments: Population Structure and Biophysical Adaptations”.
- July 24, 2000. Center of Marine Biotechnology, Baltimore, MD. Invited lecture: “Diversity, Ecology and Phylogeny of the Archaea” for the course: “Extremophile Research: Theory and Techniques”.
- March 24, 1999, Department of Biology, California State University Long Beach, Long Beach, CA. Invited seminar: “Archaea in Marine Environments: Perspectives on their Diversity, Community Structure and Evolution”.
- July 26, 1999. Center of Marine Biotechnology, Baltimore, MD. Invited lecture: “Diversity, Ecology and Phylogeny of the Archaea” for the course: “Extremophile Research: Theory and Techniques”.

### **Conference Proceedings**

Giovannelli, D. and **Vetriani, C.** Acquired and ancestral metabolic traits in the evolution of metabolism.

Modeling Origin of Life Conference, Washington DC, November 2015.

Patwardhan, S., Giovannelli, D. and **Vetriani, C.** Microbial Diversity at a Shallow-Water Hydrothermal Vent in the Tyrrhenian Sea. Society of Industrial Microbiology and Biotechnology Annual Meeting and Exhibition, Philadelphia, PA, August 2-6, 2015.

Grosche, A., Giovannelli, D. and **Vetriani, C.** Community Structure and Function During Biofilm Formation at Deep-Sea Hydrothermal Vents. NEMPET (Northeast Microbiologists: Physiology, Ecology, Taxonomy, Minnowbrook Lodge, Blue Mountain Lake, New York, NY, June 26-28, 2015.

Grosche, A., Giovannelli, D., Sievert, S. M. and **Vetriani, C.** The composition of active microbial communities in the shallow subsurface and in seafloor biofilms at deep-sea hydrothermal vents. American Society of Microbiology, Theobald Smith Society Meeting, New Brunswick, NJ, April, 2015.

Giovannelli, D., Hügler, M., Sievert, S. M. and **Vetriani, C.** Insight into the evolution of carbon fixation revealed by comparative genomic and proteomic analysis of the anaerobic chemosynthetic bacterium *Thermovibrio ammonificans*. Deep Carbon Observatory International Science Meeting, Munich, Germany, March 26-28, 2015.

Giovannelli, D., Foustoukos, D. I., Le Bris, N., Yücel, M., Sievert, S. M. and **Vetriani, C.** Spatial and temporal diversity of microbial mats in the shallow-water hydrothermal system of Milos Island (Greece). Deep Carbon Observatory International Science Meeting, Munich, Germany, March 26-28, 2015.

Giovannelli, D., Foustoukos, D. I., Le Bris, N., Yücel, M., Sievert, S. M. and **Vetriani, C.** Spatial and temporal diversity of microbial mats in the shallow-water hydrothermal system of Milos Island (Greece). American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014.

Grosche, A., Giovannelli, D. and **Vetriani, C.** Tolerance to oxidative stress as a mechanism to facilitate dispersal of subsurface microorganisms: A case study using the model bacterium, *Thermovibrio ammonificans*. 10th International Congress on Extremophiles, Saint Petersburg, Russia, September 7-11, 2014.

Giovannelli, D., Hugler, M., Sievert, S. M. and **Vetriani, C.** Insight into the evolution of carbon fixation revealed by comparative genomic of the anaerobic chemosynthetic bacterium *Thermovibrio ammonificans*. Deep Carbon Observatory Summer School 2014, Yellowstone National Park, MT, July 13-18, 2014.

Patwardhan, S., Giovannelli, D. and **Vetriani, C.** Bacterial Diversity at a Shallow-Water Hydrothermal Vent in the Tyrrhenian Sea. Gordon Research Conference and Seminar in Marine Microbes, Waltham, MA, June 22-27, 2014.

Yücel, M., Sievert, S. M., \*Giovannelli, D., **Vetriani, C.**, Foustoukos, D. I. and Le Bris, N. Microbial population and geochemical dynamics in the shallow-water hydrothermal vents of Milos (Greece). European Geoscience Union, General assembly, Vienna, Austria, April 27-May 2, 2014.

- Patwardhan, S., D.Giovannelli and **Vetriani, C.** Bacterial Diversity at a Shallow-Water Hydrothermal Vent in the Tyrrhenian Sea. Theobald Smith Society Meeting in Miniature, Rutgers University, New Brunswick, NJ, April 3, 2014.
- Vetriani, C.**, Barkay, T., Borin, S., Bolognini, M., Crespo-Medina, M., O'Brien, C., Perez-Rodriguez, I., Ricci, J., and Wawrick, B. Chemosynthetic Microbial Biofilms at Post Eruptive Vents on the East Pacific Rise at 9°N. 112<sup>th</sup> General Meeting, American Society for Microbiology, San Francisco, CA, June 16-19, 2012.
- Perez, I., Ricci, J., Bini, E., Starovoytov, V. and **Vetriani, C.** AI-2 mediated quorum sensing in anaerobic chemosynthetic Epsilonproteobacteria from deep-sea hydrothermal vents. 8th International Congress on Extremophiles, Ponta Delgada, Azores, Portugal, September 12-16, 2010. **Winner of the ISE Poster Award 2010.**
- Porter, A.W., **Vetriani, C.** and Young, L.Y. Aromatic Carboxylic Acids are Anaerobically Transformed in Guaymas Basin Sediments. Goldschmidt 2010, Knoxville, TN, June 13-18, 2010.
- Ricci, J., Crespo-Medina, M., Starovoytov, V., Wawrik, B. and **Vetriani, C.** Metatranscriptomic Analysis of Microbial Biofilms from Deep-Sea Hydrothermal Vents. 110<sup>th</sup> General Meeting, American Society for Microbiology, San Diego, CA, May 23-27, 2010. **This poster was selected to be included in the Outstanding Student Poster Session.**
- Rosario-Passapera. R., Cruz-Matos, R., Wong, R., Lutz, R.A., Starovoytov, V. and **Vetriani, C.** Characterization of *Parvibaculum hydrocarbonoclasticus* sp. nov., an alkane-oxidizing *Alphaproteobacterium* isolated from a deep-sea hydrothermal vent. The Fourth Annual Mini-Symposium on Microbiology at Rutgers University: Cultivating Traditions, Current Strength and Future Frontiers, New Brunswick, NJ, February 1-2, 2010.
- Cruz, R. and **Vetriani, C.** Diversity of alkane oxidizing bacteria and alkane hydroxylase genes in deep-sea hydrothermal vents. The Fourth Annual Mini-Symposium on Microbiology at Rutgers University: Cultivating Traditions, Current Strength and Future Frontiers, New Brunswick, NJ, February 1-2, 2010.
- Perez, I., Ricci, J., Bini, E., Starovoytov, V. and **Vetriani, C.** The role of biofilm formation in the evolution of early microbial processes: anaerobic chemosynthetic *Epsilonproteobacteria* from deep-sea hydrothermal vents. The Fourth Annual Mini-Symposium on Microbiology at Rutgers University: Cultivating Traditions, Current Strength and Future Frontiers, New Brunswick, NJ, February 1-2, 2010.
- Ricci, J., Crespo-Medina, M., Starovoytov, V., Wawrik, B. and **Vetriani, C.** Metatranscriptomic analysis of microbial biofilms from deep-sea hydrothermal vents. The Fourth Annual Mini-Symposium on Microbiology at Rutgers University: Cultivating Traditions, Current Strength and Future Frontiers, New Brunswick, NJ, February 1-2, 2010.
- O'Brien, C., Govenar, B., Luther, G.W., Lutz, R.A., Shank, T.M. and **Vetriani, C.** Composition of microbial biofilm communities from diffuse flow deep-sea hydrothermal vents on the East Pacific Rise at 9°N. The Fourth Annual Mini-Symposium on Microbiology at Rutgers University:



Cultivating Traditions, Current Strength and Future Frontiers, New Brunswick, NJ, February 1-2, 2010.

- Vetriani, C.**, Barkay, T., Borin, S., Crespo-Medina, M., Cruz, R., Govenar, B., LeBris, N., Luther, G.W., Lutz, R.A., Nuzzio, D., Perez, I., Shank, T.M., Sievert, S., Wawrik, B. and Yucel, M. An integrated view of microbial biofilms at post eruptive vents on the EPR at 9°N. Ridge 2000 Integration and Synthesis Workshop: Developing a holistic view of oceanic spreading center processes, St. Louis, MO, October 1-3, 2009.
- Shank, T.M., Govenar, B., Luther, G.W., and **Vetriani, C.**, Sievert, S., Gulman, L., Seyfried, W.E., Fornari, D.J., Tolstoy, M., and Lutz, R.A. Long-term integrated studies on the East Pacific Rise: Spatial and temporal patterns of interactions among vent fluid chemistry, microbial community structure and faunal colonization associated with volcanic disturbances. Ridge 2000 Integration and Synthesis Workshop: Developing a holistic view of oceanic spreading center processes, St. Louis, MO, October 1-3, 2009.
- Lutz, R.A., Shank, T.M., Luther, G.W., and **Vetriani, C.** Interdisciplinary studies of biological community structure at deep-sea hydrothermal vents along the East Pacific Rise. Ridge 2000 Integration and Synthesis Workshop: Developing a holistic view of oceanic spreading center processes, St. Louis, MO, October 1-3, 2009.
- Perez, I. and **Vetriani, C.** Physiological characterization of an anaerobic chemosynthetic, nitrate-reducing bacterium from a deep-sea vent at 9°N on the EPR. 109<sup>th</sup> General Meeting, American Society for Microbiology, Philadelphia, PA, May 17-21, 2009.
- Cruz, R., and **Vetriani, C.** Diversity of alkane oxidizing bacteria and alkane hydroxylase genes in deep-sea hydrothermal vents. 109<sup>th</sup> General Meeting, American Society for Microbiology, Philadelphia, PA, May 17-21, 2009.
- Porter, A.W., **Vetriani, C.** and Young, L.Y. Anaerobic Hydrocarbon Transformation in Guaymas Basin Enrichments Q-075. 109<sup>th</sup> General Meeting, American Society for Microbiology, Philadelphia, PA, May 17-21, 2009.
- Vetriani, C.**, Barkay, T., Borin, S., Crespo-Medina, M., Cruz, R., Luther, G.W., Perez, I., and Voordeckers, J.W. Microbial colonization of post eruptive vents on the EPR at 9°N. Ridge 2000 meeting: Mantle to Microbe: Integrated Studies at Oceanic Spreading Centers, Portland, OR, March 25-28, 2008.
- Vetriani, C.**, Voordeckers, J.W., Sievert, S.M., and Hügler, M. Culture dependent and independent analyses of 16S rRNA and ATP citrate lyase genes: a comparison of microbial communities from different black smoker chimneys on the Mid-Atlantic Ridge. Ridge 2000 meeting: Mantle to Microbe: Integrated Studies at Oceanic Spreading Centers, Portland, OR, March 25-28, 2008.
- Crespo-Medina, M., Bloom, N., Chatziefthimiou, A., Luther, G.W., Reinfelder, J., **Vetriani, C.** and Barkay, T. Microbe-Mercury Interactions at Deep-sea Hydrothermal Vents from the East Pacific

Rise at 9°N. 2008 Ocean Sciences Meeting, Orlando, FL, March 2-7, 2008. Winner of the Ocean Sciences Award of Recognition.

Cruz, R. and **Vetriani, C.** Diversity of Alkane Oxidizing Bacteria and Alkane Hydroxylase Genes in Deep-Sea Hydrothermal Vents. InterRidge Theoretical Institute Workshop: Biogeochemical Interactions at Deep-Sea Vents, Woods Hole, MA, September 10-14, 2007.

Crespo-Medina, M., Cuebas. M., Borin, S., Luther, G.W., 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 Workshop: Biogeochemical Interactions at Deep-Sea Vents, Woods Hole, MA, September 10-14, 2007.

Crespo-Medina, M., Cuebas. M., Borin, S., Luther, G.W., 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. 107<sup>th</sup> General Meeting, American Society for Microbiology, Toronto, Canada, May 21-25, 2007.

**Vetriani, C.,** Voordeckers, J., and Crespo-Medina, M. Detection of the periplasmic nitrate reductase (NapA) in thermophilic, chemolithoautotrophic *Epsilonproteobacteria* and in deep-sea hydrothermal vent microbial communities. Extremophiles 2006, Brest, France, September 17-21, 2006.

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. International Conference: “Mercury as a Global Pollutant”, Madison, WI, August 6-11, 2006.

Voordeckers, J.W., Crespo-Medina, M., and **Vetriani, C.** Detection and Diversity of the Periplasmic Nitrate Reductase (NapA) in *Epsilonproteobacteria* and Natural Microbial Communities in Deep-sea Hydrothermal Vents. 106<sup>th</sup> General Meeting, American Society for Microbiology, Orlando, FL, May 21-25, 2006.

Lutz, R.A., **Vetriani, C.,** Luther, G., Shank, T., and Tolstoy, M. Integrated studies of biological community structure at deep-sea hydrothermal vents: a project overview. RIDGE 2000 Progress and Planning Workshop, Vancouver, BC, Canada, October 30-November 2, 2005.

**Vetriani, C.,** Voordeckers, J., Hügler, M., and Sievert, S. Nitrate respiration and carbon fixation in thermophilic, chemolithoautotrophic nitrate-reducing bacteria from deep-sea hydrothermal vents. Third International Symposium on Hydrothermal Vent and Seep Biology, La Jolla, CA, September 12-16, 2005.

Reed, A.J., Lutz, L.A., and **Vetriani, C.** Analysis of the Vertical Zonation of Sedimentary Archaea Via Analysis of 16S rDNA and mcr Genes from Cold Seep Areas of the Florida Escarpment (Gulf of Mexico) and the Blake Ridge (Atlantic Ocean). 105th General Meeting, American Society for Microbiology, Atlanta, GA, June 5-9, 2005. N-071.

Austin, R.N., Alexander-Ozinskas, M., Bertrand, E.M., Zylstra, G.J., Groves, J.T., Rozhkova, E.A., and **Vetriani, C.** Mechanistic Studies of Hydrocarbon-Degrading Metalloenzymes in Pristine, Polluted and Extreme Environments. 229<sup>th</sup> National Meeting, American Chemical Society, San Diego, CA,

March 13-17, 2005.

- Vetriani, C.**, Voordeckers, J.W., and Sievert, S.M. Characterization of Thermophilic, Chemolithoautotrophic, Nitrate-Reducing Bacteria from Deep-Sea Hydrothermal Vents, and Identification of the Genes Involved in Nitrate Reduction and Carbon Fixation. *Extremophiles* 2004, American Society of Microbiology, Cambridge, MD, September 19-23, 2004.
- 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. *Extremophiles* 2004, American Society of Microbiology, Cambridge, MD, September 19-23, 2004.
- Voordeckers, J., Haggblom, M., and **Vetriani, C.** Isolation and Characterization of Novel Thermophilic, Chemolithoautotrophic, Nitrate-reducing Isolates from Deep-Sea Hydrothermal Vents that Belong to the Genus *Caminibacter*. 104<sup>th</sup> General Meeting, American Society for Microbiology, New Orleans, LA, May 24-27, 2004. N-274.
- Wong, R. and **Vetriani, C.** Isolation of Alkane-Oxidizing Bacteria from Deep-Sea Hydrothermal Vents and Identification of Alkane Hydroxylase Encoding Genes. 104<sup>th</sup> General Meeting, American Society for Microbiology, New Orleans, LA, May 24-27, 2004. N-250.
- Chatziefthimiou, A., **Vetriani, C.**, and Barkay, T. Isolation and Characterization of Mercury Resistant, Thermophilic, Thiosulfate-Oxidizing Bacteria from a Hot Spring in Mount Amiata, Italy. 104<sup>th</sup> General Meeting, American Society for Microbiology, New Orleans, LA, May 24-27, 2004. N-244.
- Rona, P.A., Seilacher, A. Luginland, H., Seilacher, E., de Vargas, C., **Vetriani, C.**, Bernhard, J.M., Sherrel, R.M., Grassle, J.F., Low, S. and Lutz, R.A. (2003). *Paleodictyon*, a living fossil on the deep-sea floor. *EOS Trans. Am. Geophys. Union* 84:46.
- Vetriani, C.** and Voordeckers, J. Isolation and characterization of thermophilic, chemolithotrophic nitrate ammonifying bacteria from deep-sea hydrothermal vents. Ridge 2000 Community Meeting, Boulder, CO, November 6-8, 2003.
- Vetriani, C.**, Speck, M.D., and Ellor, S.V. Isolation and Characterization of Thermophilic, Chemolithotrophic Nitrate Ammonifying Bacteria from Deep-Sea Hydrothermal Vents. 103<sup>st</sup> General Meeting, American Society for Microbiology, Washington, DC, May 18-22, 2003.
- Voordeckers, J., Haggblom, M., Van Dover, C. L., and **Vetriani, C.** Phylogenetic and Functional Analysis of Microbial Communities Associated with Active Black Smokers at Mid-Atlantic Ridge Hydrothermal Vents. 103<sup>st</sup> General Meeting, American Society for Microbiology, Washington, DC, May 18-22, 2003.
- Reed, A.J., Lutz, R.A., Van Dover, C. L., and **Vetriani, C.** Diversity, Community Structure and Vertical Zonation of Sedimentary Bacteria and Archaea from the Base of the Florida Escarpment, Gulf of Mexico. 103<sup>st</sup> General Meeting, American Society for Microbiology, Washington, DC, May 18-22, 2003.

- Chew, Y., **Vetriani, C.**, and Barkay, T. Mercury resistance and *merA* sequences of mesophilic and moderately thermophilic bacteria from hydrothermal vents. 102<sup>nd</sup> General Meeting, American Society for Microbiology, Salt Lake City, UT, May 19-23, 2002.
- Barkay, T., Schaefer, J., Yagi, J., Chew, Y., and **Vetriani, C.** The mercury resistance operon: old paradigms, new frontiers. Bioremediation and Biodegradation: Current Advances in Reducing Toxicity, Exposure and Environmental Consequences, Pacific Grove, CA, June 9-12, 2002.
- Kerkhof, L.J. and **Vetriani, C.** High Density Sampling in the Coastal Ocean. Ocean Sciences meeting, Honolulu, HI, Feb. 11-15, 2002.
- Grzebyk, D. Schofield, O., **Vetriani, C.** and Falkowski P.G. Comparative Evolution of Plastid Genomes in Eukaryotic Algae. Ocean Sciences meeting, Honolulu, HI, Feb. 11-15, 2002.
- Vetriani, C.**, Reed, A.J., Speck, M.D., and Lutz, R.A. Microbial community analysis along temperature and chemical gradients associated with deep-sea hydrothermal vents along the East Pacific Rise ridge (9° 50' N). Second international symposium on deep-sea hydrothermal vent biology, Brest, France, October 8-12, 2001.
- Reed, A.J., Speck, M.D., Lutz, R.A., and **Vetriani, C.** Microbial community analysis along temperature and chemical gradients associated with deep-sea hydrothermal vents along the East Pacific Rise ridge (9° 50' N). 101<sup>st</sup> General Meeting, American Society for Microbiology, Orlando, FL, May 20-24, 2001.
- Vetriani, C.**, Tran, H.V., and Kerkhof, L.J. Phylogenetic and functional analysis of microbial communities at the oxic/anoxic interface in the Black Sea. 101<sup>st</sup> General Meeting, American Society for Microbiology, Orlando, FL, May 20-24, 2001.
- Koblizek, M., **Vetriani, C.** Falkowski P.G., and Kobler, Z. Marine Aerobic Photosynthetic Bacteria. Life on the Edge of Photosynthesis. Eighteenth Annual Eastern Regional Photosynthesis Conference, Woods Hole, MA, April 20-22, 2001.
- Kolber, Z.S. and **Vetriani, C.** Detection and characterization of aerobic anoxygenic photosynthetic bacteria in the upper ocean. ASLO Aquatic Sciences 2001, Albuquerque, NM, February 12-16, 2001.
- Sun, M.M.C., Mak, G.S., Maeder, D.L., Lee, M., **Vetriani, C.**, Robb, F.T., and Clark, D.S. Effect of amino acid mutations and pressure on the stability and flexibility of hyperthermophilic glutamate dehydrogenase. 219<sup>th</sup> National Meeting of the American Chemical Society, San Francisco, CA, March 26-30, 2000.
- Vetriani, C.**, and Kerkhof, L.J. Phylogenetic and functional characterization of microbial assemblages at the oxic/anoxic interface in the Black Sea. 2000 Ocean Sciences Meeting, San Antonio, TX, Jan. 24-28, 2000. Published in: *EOS Trans. Am. Geophys. Union* 80:288.

- Sun, M.M.C., Maeder, D.L., Tolliday, N., **Vetriani, C.**, Robb, F.T., and Clark, D.S. Stability of Hyperthermophilic Glutamate Dehydrogenases: Insights into the Mechanism of Pressure Stabilization and the Effect of Charge Interactions," NATO Advanced Study Institute on High Pressure Molecular Science, Il Ciocco, Italy, October, 1998.
- Sun, M.M.C., **Vetriani, C.**, Tolliday, N., Maeder, D.L., Robb, F.T., and Clark, D.S. Improving the stability of hyperthermophilic enzymes by protein engineering and application of high pressure. American Chemical Society Annual Meeting, Boston, MA, August, 1998.
- Sun, M.M.C., Maeder, D.L., Tolliday, N., **Vetriani, C.**, Robb, F.T., and Clark, D.S. Stability of Thermophilic Glutamate Dehydrogenases: Insights into the Mechanism of Pressure Stabilization and the Effect of Charge Interactions. American Chemical Society Annual Meeting, Boston, MA, August, 1998.
- Vetriani, C.**, Jannasch, H.W., Grassle, J.F., Robb, F.T. and Reysenbach, A.-L. Vertical distribution and phylogenetic characterization of benthic *Archaea* in coastal and deep-sea sediments. 1998 Ocean Sciences Meeting, San Diego, CA, Feb. 9-13, 1998.
- Vetriani, C.**, Maeder, D.L., Tolliday, N., Yip, K.S.P., Stillman, T.J., Britton, K.L., Rice, D.W., Klump, H.H. and Robb, F.T. Protein thermostability above 100°C: a key role for ionic interactions. International Congress on Extremophiles, Yokohama, Japan, Jan. 18-22, 1998.
- L'Haridon, S., Speck, M., **Vetriani, C.**, Reysenbach, A.-L., Prieur, D. and Jeanthon, C. The *Desulfobacteriaceae*, a new family of thermophilic bacteria from deep-sea hydrothermal vents. Thermophiles 1998, Brest, France.
- Reysenbach, A.-L. and **Vetriani, C.** Molecular markers in biodiversity studies. International Workshop for Agricultural Biotechnology, Dec. 97, Sao Paulo, Brazil.
- Sun, M.M., Clark, D.S., DiRuggiero, J., **Vetriani, C.** and Robb, F.T. Pressure-regulated activity and stability of hyperthermophilic enzymes. 1997 American Institute of Chemical Engineers Meeting, Los Angeles, CA, Nov. 16-21, 1997.
- Vetriani, C.**, Maeder, D.L., Tolliday, N., Klump, H.H., Yip, K.S.P., Rice, D.W. and Robb, F.T. (1997) Improving enzyme thermostability: The *Thermococcus litoralis* glutamate dehydrogenase model. 4th International Biotechnology Conference, Stazione Zoologica "Anton Dohrn", Naples, Italy, Sept. 22-29, 1997.
- Vetriani, C.**, Maeder, D.L., Tolliday, N., Rice, D.W., Britton, K.L., Klump, H.H. and Robb, F.T. (1996) Marked elevation of thermostability of *Thermococcus litoralis* glutamate dehydrogenase by site-directed mutagenesis. Thermophiles '96 Conference, The University of Georgia, Athens, GA, Sept 4-9, 1996.
- Maeder, D.L., Yip, K.S.P., Rice, D.W., Stillman, T.J., Britton, K.L., **Vetriani, C.**, Tolliday, N., DiRuggiero, J., Klump, H.H. and Robb, F.T. (1996) The structural basis for enzyme stability at or near 100°C: Comparative structural and biophysical studies on glutamate dehydrogenases from

hyperthermophiles. International Conference on Protein Folding and Design, National Institute of Health, Bethesda, MD, April 23-26, 1996.

Castagnoli, L., Abril, M., **Vetriani, C.**, Portoghese, A., Helmer-Citterich, M., Ausiello, G. and Cesareni, G. (1994) Why Rop folds in a four  $\alpha$ -helix bundle. Convegno Congiunto ABCD-AGI-SIBBM-SIMGBM, Montesilvano Lido, Italy, Sept 26-30, 1994.

**Vetriani, C.**, Iannolo, G., Minenkova, O., Dente, L. and Cesareni, G. (1993) The amino-terminus of the major coat protein of filamentous phage and phage assembly. 1993 Meeting on Molecular Genetics of Bacteria and Phages, Cold Spring Harbor, NY, Aug. 24-29, 1993.

**Vetriani, C.**, Castagnoli, L., Felici, F., Gonfloni, S., Jappelli, R., Musacchio, A., Tataseo, P. and Cesareni, G. (1991) Selection of ligands from a phage displayed peptide library. Convegno Congiunto SIBBM-AGI, Porto Conte, Italy, Oct. 2-5, 1991.

Tataseo, P., **Vetriani, C.** and Cesareni, G. (1991) Genetic analysis of the interaction between filamentous phages and bacterial pili. 1991 Meeting on Molecular Genetics of Bacteria and Phages, Cold Spring Harbor, NY, Aug. 20-25, 1991.

Visca, P., **Vetriani, C.**, Serino, L. and Orsi, N. (1989) Production of siderophore and iron regulated outer membrane proteins by *Pseudomonas aeruginosa* clinical isolates. 4th International Symposium on Clinical Microbiology, Monteporzio, Italy, 1989.

## Teaching

- Graduate Courses: Microbial Life (16:682:501)  
Seminar in Applied, Environmental and Industrial Microbiology (16:682:685)
- Undergraduate Courses: General Microbiology (1:447:390, 11:680:390)  
Seminar in Microbiology (11:680:495)  
Perspective on Agriculture and the Environment (11:015:101)
- 2008 - Present: Director, Microbiology Undergraduate Program

## Mentoring

### Graduate Students

Graduate program in Microbiology and Molecular Genetics: Research advisor of four graduate students (James Voordeckers, Melitza Crespo-Medina, Aspasia Chatziefthimiou, Charles O'Brien)

Graduate program in Ecology and Evolution: Research advisor of two graduate students (Ileana Perez, Andrew Reed)

Graduate Program in Environmental Science: Research advisor of one graduate student (Ramaydalis Cruz)

Graduate Program in Oceanography: Research advisor of one graduate student (Sushmita Patwardhan)

Graduate Program in Microbial Biology: Research advisor of one graduate student (Ashley Grosche)

Masters Program in Business and Science in Biotechnology and Genomics: Research advisor of one graduate student (Marie Bolognini)

National Research Council of Italy - ISMAR Ancona and Graduate School in Applied Biology, University Federico II, Naples, Italy: Research advisor of one visiting graduate student (Donato Giovannelli)

Of these eleven graduate students, nine graduated between 2007 and 2013 and two are current.

### Undergraduate Students

Major in Biotechnology: Research advisor of 15 undergraduate students (Yein Chew, Ronald Wong, Susan Ellor, Umang Patel, Jasmine Ashraf, Kimberly Kendra, Amber Jensen, Kai Li Tan, Leticia Aquino, Katrina Koon, Danielle Leake, Justin Staley, Julia Dreifus, Daniel Pittaro, Lynn Hamade.)

Major in Biological Sciences: Research advisor of 7 undergraduate students (Bethany Little, Christy Hoang, Sherry Yee, Barbara Wilimczyk, Vivian Ko, Molly McMahon, Nitish Sharma)

Major in Microbiology: Research advisor of 11 undergraduate students (Rashmi Bhagwatkar, Katherine Piso, Smita Pataskar, Rima Patel, Matthew Chang, Hema Sekaran, Ahmed Anwar, Mohamad Anwar, Nicole Adams, Peter Caruso, Brielle Hrymoc)

Major in Biochemistry: Research advisor of 2 undergraduate students (Rahul Singh, Jessica Ricci)

Major in Marine Sciences: Research advisor of 3 undergraduate students (My Do, Ashley Grosche, Kelli Mullane)

Research Internships in Ocean Sciences: Research advisor of 4 undergraduate students (Adam Bonhert, Kristin Heidenreich, Caroline Toney, Jessica Ricci)

Douglass Project for Rutgers Women in the Sciences, Technology, Engineering and Math (S.T.E.M.) disciplines: Research advisor of 1 undergraduate student (Lynnica Massenburg)

University of Ancona, Italy, Major in Marine Sciences: Research advisor of 1 visiting undergraduate student (Alberto Domenighini)

Of these 44 undergraduate students, all graduated and three are current. Eight of these students graduated with honors theses (G. H. Cook Program), four were named Rutgers Undergraduate Research Fellows, one obtained a summer research fellowship from the Institute of Marine and Coastal Sciences and three were named outstanding seniors in Marine and Coastal Sciences. Thirteen of these students are co-authors each of one or more peer-reviewed publication.

### **Postdoctoral Associates**

Francesco Smedile (2016-present)

Donato Giovannelli (2013-16)

### **Fulbright Scholars**

Sara Borin

### **High School Students**

Liberty Science Center's Partner In Science Program: Research advisor of one high school student (Ronna Bansal)

### **Education and Outreach**

**NSF Center for Ocean Science Education Excellence.** Works with the education staff at the Institute of Marine & Coastal Sciences at Rutgers University to translate vent research for K-12 and public audiences. Delivers lectures to science teachers and educators. Translate research to a public audience by (1) participating in established K-12 professional development programs offered by the NSF-sponsored Mid Atlantic Center for Ocean Science Education Excellence (MA COSEE: [http://www.macosee.net/res\\_ed/guide4a.htm](http://www.macosee.net/res_ed/guide4a.htm)) and (2) by the creation of a “science page” in a major New Jersey newspaper as part of an established series highlighting research at IMCS.

**NSF/RIDGE Student Experiments at Sea.** Participant in the Student Experiments at Sea (SEAS) program, sponsored by NSF/RIDGE (<http://ridge2000.bio.psu.edu/SEAS/>). Offers guidance to students interested in designing experiments that then are carried out at sea during the course of oceanographic expeditions. SEAS is a pilot program for middle and high school students studying earth science, life science, or other related subjects, who are interested in learning about real science and about the deep-sea environment.

**NSF/IMCS Research Internships in Ocean Sciences.** Participant, as a mentor, in the Research Internships in Ocean Sciences (RIOS) program, sponsored by NSF and Rutgers University's Institute of Marine and Coastal Sciences (<http://www.marine.rutgers.edu/rios/>). RIOS is a Summer Fellowship Program for undergraduate students. This ten-week research experience for undergraduates is designed to provide students with opportunities to explore and participate in ocean science research at IMCS.

**“Partners in Science” Program.** Participant in the “Partners in Science” Program ([http://www.lsc.org/school\\_resources/partnersinscience/pis.home.html](http://www.lsc.org/school_resources/partnersinscience/pis.home.html)), in connection with the Liberty Science Center, Jersey City, NJ, by mentoring 10<sup>th</sup> to 12<sup>th</sup> grade students during the summer. This



program is highly selective: first, the school must recommend the students, and then the Liberty Science Center puts them through a further selection process including a personal interview. The students are then assigned to a volunteer mentor and are expected to work 30-35 hours a week in the mentor's laboratory. At the end of the summer they are expected to present their research project to parents, mentors and other Partners in Science participants in a symposium at the Liberty Science Center, and to write report in the form of a journal article.

**Deep-Sea Microbiology Lab Website.** Construction of a laboratory website, the Deep-Sea Microbiology Lab (<https://marine.rutgers.edu/deep-seamicrobiology/index.html>), to disseminate results from his research projects. This website was reviewed by the NSF-sponsored National Science Digital Library (NSDL) and reported to be “one of great quality and merit”. The Deep-Sea Microbiology Lab website was featured in the October 15, 2004 issue of the NSDL Scout Report for the Life Sciences (Vol. 3, No. 21; <https://scout.wisc.edu/report/nsdl/lis/2004/1015>).

### **Service and Other Professional Activities**

July 2008 - Present: Director of Rutgers University's Undergraduate Program in Microbiology.

February 2017: *Ad hoc* reviewer for the Schmidt Ocean Institute.

January 14, 2017. Invited participant in the ELSI Origins Network (EON) Annual Meeting, Ours Inn Hankyu Oimachi Hotel, Tokyo, Japan.

January 11-13, 2017. Invited participant in the 5<sup>th</sup> ELSI (Earth-Life Science Institute) International Symposium: “Expanding Views on the Emergence of the Biosphere”, Kuramae Hall, Tokyo Tech Front, Tokyo, Japan.

September 2016. Review panel, Schmidt Ocean Institute, Washington, DC.

February 2016. Review panel, National Science Foundation, Division of Molecular and Cellular Biosciences, Microbial Systems, Washington, DC.

January 12-15, 2016. Invited participant in the 4<sup>th</sup> ELSI International Symposium: “Early Earth, Venus & Mars. Three Experiments in Biological Origins”, Kuramae Hall, Tokyo Tech Front, Tokyo, Japan.

April 20-22, 2015. Invited participant in the NOVAE Workshop: “Axial Volcano: Wired and Restless!”, University of Washington, Seattle, WA.

March 16-18, 2015: Member of the Center for Microbial Oceanography: Research and Education (C-MORE) on site review panel, National Science Foundation, University of Hawaii at Manoa, Honolulu, HI.

March and August 2014, February 2015: *Ad hoc* reviewer for the Schmidt Ocean Institute.

July 2013: Review panel, National Science Foundation, Dimensions of Biodiversity program, Washington, DC.

November 2013. Member of the deep-submergence vehicle *Alvin* science verification cruise committee.

November 2012: Deep-submergence vehicle *Alvin* science verification cruise committee.

December 2010 – 2014: Invited lecturer in the training course “Deep-sea ecosystems and extreme environments”. Universite Pierre et Marie Curie, Observatoire Oceanologique de Banyuls-sur-Mer, Banyuls-sur-Mer, France.

Spring 2010. Chair, Search Committee for a tenure-track faculty position in the Department of Biochemistry and Microbiology

June 15<sup>th</sup> – 17<sup>th</sup>, 2009, Sasbachwalden, Germany. Represented the US in the EU-sponsored CAREX Workshop: “Identification of Model Organisms in Extreme Environments”.

2008-2010. Member of the RIDGE 2000 Executive Committee

([http://www.ridge2000.org/science/info/stcom\\_bio.php](http://www.ridge2000.org/science/info/stcom_bio.php)).

2007-2010. Member of the RIDGE 2000 Steering Committee

([http://www.ridge2000.org/science/info/stcom\\_bio.php](http://www.ridge2000.org/science/info/stcom_bio.php)).

October 2007: Dr. Vetriani led, in the capacity of Chief Scientist, a two-week deep-sea oceanographic expedition in the Gulf of California aboard the Research Vessel *Atlantis*. The expedition included sixteen dives in the deep-submergence vehicle *Alvin*, and it involved scientists from Rutgers University, Woods Hole Oceanographic Institution, University of Delaware, and University of Southern California.

Fall 2006. Member of the steering committee for the Spring symposium: “Small Matters: Microbes and Their Role in Conservation”. American Museum of Natural History, New York, NY, April 26-27, 2007.

2006 – 2009 Councilor, Theobald Smith Society (New Jersey Branch of the American Society for Microbiology)

April-May 2005: Dr. Vetriani led, in the capacity of Chief Scientist, a three-week deep-sea oceanographic expedition in the Pacific Ocean aboard the Research Vessel *Atlantis*. The chief scientist is responsible for all science operations on board, and serves as liaison between the science party and the ship crew. This expedition was sponsored by one of Dr. Vetriani’s NSF grants, and it involved scientists from Rutgers University, Woods Hole Oceanographic Institution, University of Delaware, Lamont Doherty Earth Observatory, and Scripps Institution of Oceanography. The expedition included sixteen dives in the deep-submergence vehicle *Alvin*, and hosted the Student Experiments at Sea (SEAS), an NSF/RIDGE-sponsored educational and outreach program (<http://ridge2000.bio.psu.edu/SEAS/>).

July 2006 – July 2012. Member of the Editorial Board, *FEMS Microbiology Ecology*.

September 2003 – September 2006. Member of the Editorial Board, *Aquatic Microbial Ecology*.

September 2004 – September 2007. Member of the Editorial Board, *Archaea*.

Frequent reviewer, averaging 10 to 20 manuscripts per year, for the following journals: *Archaea*, *Applied and Environmental Microbiology*, *Aquatic Microbial Ecology*, *Deep-Sea Research*, *FEMS Microbiology Ecology*, *Geobiology*, *Limnology and Oceanography*, *Microbiology*, *Proceedings of the Ocean Drilling Program*, *Science*.

Frequent reviewer, averaging 4 to 8 proposals per year, for the following funding agencies:

National Science Foundation, (mailed reviews): LExEn - Life in Extreme Environments; IBN - Ecological and Evolutionary Physiology; Biological Oceanography.

Schmidt Ocean Institute

NOAA, (mailed reviews): National Undersea Research Program; Office of Ocean Exploration.

Maryland Sea Grant Program; New Hampshire Sea Grant Program, (mailed reviews).

NASA, (mailed reviews): Astrobiology Program.

Genome Canada

Danish National Science Foundation

April 2003. Review panel, Department of Energy, NABIR Program.

2001-2003,.Advisory board: Member of the science advisory board for the NSF/Rutgers University - sponsored Imax film, “Volcanoes of the Deep-Sea”.

1999 and 2000. Invited Lecturer, “Extremophile Research: Theory and Techniques” workshop, Center of Marine Biotechnology

Science writer for “Il Corriere della Sera” (highest distribution Italian daily newspaper)

### **Memberships**

- American Association for the Advancement of Science
- American Society for Limnology and Oceanography
- American Society for Microbiology

### **Oceanographic Expeditions**

- R/V *Atlantis*, December 2013 - January 2014. ROV Jason dives 758-762, East Pacific Rise, sampling at 9° and 13°N deep-sea hydrothermal vents. Chief scientist: Stefan Sievert, Woods Hole Oceanographic Institution.
- Milos island, Greece, May 2012. Sediment, porewater and microbial biofilm sampling of the shallow-water hydrothermal system of Paleochori Bay, Milos island, Greece. NSF-sponsored collaborative research project between C. Vetriani (Rutgers University), S. Sievert (WHOI) and D. Foustoukos (Carnegie Institution).
- L/S *Poseidon*, April/May 2011. ROV exploration and sampling of the hydrothermal systems of the Palinuro seamount and Panarea island, Italy. Chief scientist: Sven Petersen, IFM-GEOMAR, Kiel, Germany.
- N/O *L'Atalante/Nautile*, April/May 2010. DSV Nautile dives 1726-1730, East Pacific Rise, sampling at 9° and 13°N deep-sea hydrothermal vents. Chief scientist: Nadine Le Bris, Observatoire Océanologique de Banyuls sur mer, France.
- R/V *Atlantis/Alvin*, October 2008. DSV Alvin dives 4557-4462, Gulf of California, sampling at deep-sea vents in the Guaymas Basin. Chief scientist: Stefan Sievert, Woods Hole Oceanographic Institution.
- R/V *Atlantis/Alvin*, December 2007 - January 2008. DSV Alvin dives 4385-4398, East Pacific Rise, sampling at 9° and 13°N deep-sea hydrothermal vents. Chief scientist: Stefan Sievert, Woods Hole Oceanographic Institution.

- R/V *Atlantis/Alvin*, October 2007. DSV *Alvin* dives 4355-4359, Gulf of California, sampling at deep-sea vents in the Guaymas Basin. Chief scientist: Costantino Vetriani, Rutgers University.
- R/V *Atlantis/Alvin*, January - February 2007. DSV *Alvin* dives 4297-4318, East Pacific Rise, sampling at 9°N deep-sea hydrothermal vents. Chief scientist: Timothy Shank, Woods Hole Oceanographic Institution.
- R/V *Atlantis/Alvin*, May 2005. DSV *Alvin* dives 4099-4113, East Pacific Rise, sampling at 9°N deep-sea hydrothermal vents. Chief scientist: Costantino Vetriani (Rutgers University), Co-P.I.s: R. Lutz (Rutgers U.), G. Luther (U. Delaware), T. Shank (WHOI).
- R/V *Atlantis/Alvin*, April 2004. DSV *Alvin* dives 3996-3412, East Pacific Rise, sampling at 9°N deep-sea hydrothermal vents. Chief scientist: Richard Lutz (Rutgers University), Co-PIs: C. Vetriani (Rutgers U.), G. Luthers (U. Delaware), and T. Shank (WHOI).
- R/V *Atlantis/Alvin*, June/July 2001. DSV *Alvin* dives 3663-3682, Mid-Atlantic Ridge, sampling at six deep-sea hydrothermal vent sites. Chief scientist: Cindy L. Van Dover, College of William and Mary, Williamsburg, VA.
- R/V *Atlantis/Alvin*, April 2000. DSV *Alvin* dives 3440-3550, East Pacific Rise, sampling at 9°N deep-sea hydrothermal vents. Chief scientist: Richard Lutz, Rutgers University, New Brunswick, NJ.
- R/V *Atlantis/Alvin*, November 1999. DSV *Alvin* dives 3488-3502, East Pacific Rise, sampling at 9°N deep-sea hydrothermal vents. Chief scientist: Richard Lutz, Rutgers University, New Brunswick, NJ.
- R/V *Atlantis/Alvin*, May 1999. DSV *Alvin* dives 3394-3414, East Pacific Rise, sampling at 9°N deep-sea hydrothermal vents. Chief scientist: Craig Cary, University of Delaware, Lewes, DE.
- R/V *Atlantis/Alvin*, July 1997. DSV *Alvin* dives 3116-3133, Mid-Atlantic Ridge, sampling at seven deep-sea hydrothermal vent sites. Chief scientist: Robert Vrijenhoek, Rutgers University, New Brunswick, NJ.
- R/V *Atlantis/Alvin*, June 1997. DSV *Alvin* dives 3114-3115, Mid-Atlantic Ridge, sampling at Lucky Strike deep-sea hydrothermal vent. Chief scientist: Daniel Fornari, Woods Hole Oceanographic Institution, Woods Hole, MA.
- R/V *Oceanus*, July 1996. North Atlantic Abyssal Plain and Atlantis Canyon, deep-sea sediment and water sampling. Chief scientist: Holger Jannasch, Woods Hole Oceanographic Institution, Woods Hole, MA.
- R/V *Asterias*, July 1996. North Atlantic Continental Shelf, coastal sediment sampling. Chief scientist: Holger Jannasch, Woods Hole Oceanographic Institution, Woods Hole, MA.
- R/V *Atlantis II/Alvin*, June 1996. DSV *Alvin* dives 3075-3084, Long-term Ecosystem Observatory 2500 (LEO 2500), North Atlantic Continental Rise, deep-sea sediment sampling. Chief scientist: Frederick Grassle, Rutgers University, New Brunswick, NJ.
- SS/V *Corwith Cramer*, July 1995. North Atlantic Continental Shelf, coastal sediment and water sampling. Sea Education Association/Marine Biological Laboratory, Woods Hole, MA.

### **Research interests**

Physiology and ecology marine microorganisms (deep-sea sediments, geothermal environments and hydrocarbon seeps). Evolution of microbial metabolism. Biophysical adaptations to extreme environments (thermophily; psychrophily; barophily).

### **Skills**

SCUBA diving (35-year experience, teaching experience in diving schools).  
Photography (Specialized in underwater photography, darkroom techniques).

## **Advisors**

Ph. D            Gianni Cesareni (University of Rome)

Postdoctoral    Frank Robb (COMB, University of Maryland)  
                      Holger Jannasch (Woods Hole Oceanographic Institution, deceased)  
                      Anna-Louise Reysenbach (Portland State University)