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## **RESEARCH INTERESTS**

Environmental microbiology, ecological genomics, molecular microbial ecology and microbial diversity.

## **EDUCATION**

Ph.D. *Microbial ecology of anaerobic terminal carbon mineralization in Everglades soils, with emphasis on sulfate-reducing prokaryotic assemblages*. Soil and Water Science, **University of Florida**, 2003.

Microbial Diversity Course, **Marine Biological Laboratory**, Woods Hole, MA, 1998.

M.S. *Biodegradation patterns of polycyclic aromatic hydrocarbons in a coal tar-contaminated soil and sediment: impact of substrate availability*. Soil and Water Science, **University of Florida**, 1996.

Pharmaceutical Chemist, Facultad de Quimica, **Universidad de la Republica**, Uruguay, 1992.

B.S., Chemistry, Facultad de Quimica, **Universidad de la Republica**, Uruguay, 1988.

## **EMPLOYMENT**

Postdoctoral Research Associate, Biosciences Division, Oak Ridge National Laboratory, 2006-present.

Postdoctoral Associate, Soil and Water Science Department, University of Florida, 2003-2005.

Graduate Research Assistant, Soil and Water Science Department, University of Florida, 1994-2003.

Graduate Research Assistant, Microbiology Department, Universidad de la Republica, Uruguay, 1992-1993.

Pharmaceutical Chemist, Uruquim S.A., Uruguay, 1991-1992.

Pharmaceutical Chemist, Spefar S.A., Uruguay, 1990-1991.

## **PUBLICATIONS**

Ogram, A., **H. Castro** and A. Chauhan. 2007. Methods of soil microbial community analysis. In *Manual of Environmental Microbiology*, C. J. Hurst et al (eds), 3rd Edition. ASM Press. Washington, DC.

Smith J. M., **H. Castro**, and A. Ogram. 2007. Structure and function of methanogens along a short-term restoration chronosequence in the Florida Everglades. *Appl. Environ. Microbiol.* 73: 4135-4141.

Ogram A., **H. Castro**, E. Stanley, W. Chen, and J. Prenger. 2006. Distribution of methanotrophs in managed and highly disturbed watersheds. *Ecol. Indic.* 6:631-643.

**Castro, H.**, S. Newman, K. R. Reddy, and A. Ogram. 2005. Distribution and stability of sulfate-reducing prokaryotic and hydrogenotrophic methanogenic assemblages in nutrient-impacted regions of the Florida Everglades. *Appl. Environ. Microbiol.* 71: 2695-2704.

**Castro, H.**, A. Ogram, and K. R. Reddy. 2004. Phylogenetic characterization of methanogenic assemblages in eutrophic and oligotrophic areas of the Florida Everglades. *Appl. Environ. Microbiol.* 70: 6559-6568.

- Wilkie, A.C., **Castro, H. F.**, Cubinski, K.R., Owens, J.M. and Yan, S.C. 2004. Fixed-film anaerobic digestion of flushed dairy manure after primary treatment: wastewater production and characterisation. *Biosystems Eng.* 89:457-471.
- Duan, Y. P., **H. F. Castro**, T. E. Hewlett, J. H. White and A. V. Ogram. 2003. Detection and characterization of *Pasteuria* 16S rRNA gene sequences from nematodes and soils. *Int. J. Syst. Evol. Microbiol.* 53: 105-112.
- Castro, H.**, K. R. Reddy, and A. Ogram. 2002. Composition and function of sulfate-reducing prokaryotes in eutrophic and pristine areas of the Everglades. *Appl. Environ. Microbiol.* 68: 6129-6137.
- Castro, H.**, M. Queirolo, M. Quevedo, and L. Muxi. 2002. Preservation methods for the storage of anaerobic sludges. *Biotechnol. Lett.* 24: 329-333.
- Castro, H.**, and A. Ogram. 2002 . Soil genetic ecology. In: Encyclopedia of Environmental Microbiology, G. Bitton (ed.), Wiley, NY.
- Ogram, A.V., Y.P. Duan, S. Trabue, X. Feng, **H. Castro**, and L. Ou. 2000. Carbofuran degradation mediated by three related plasmid systems. *FEMS Microbiol. Ecol.* 32:197-203.
- Castro, H.**, N. Williams, and A. Ogram. 2000. Phylogeny of sulfate reducing bacteria. *FEMS Microbiol. Ecol.* 31:1-9.

## PUBLICATIONS SUBMITTED OR IN PREPARATION

- H. F. Castro**, J. M. Smith, K. R. Park, and A. V. Ogram. Seasonal microbial community characterization in restoration of the Hole-in-the-Donut, Everglades National Park. In preparation.
- Austin, E. E., **Castro, H. F.**, Schadt, C. W., Sides, K. T., and Classen, A. T. In preparation. Tracing the effects of elevated CO<sub>2</sub> from bacterial community structure to ecosystem function. In preparation.
- Castro, H. F.**, Austin, E. E., Crawford, K. M., Classen, A. T., Norby, R. J. and Schadt, C. W. Microbial communities in a multifactor world: effects of climate change on soil communities. In preparation.

## RESEARCH FUNDING

Carbon Drivers of the Microbe-Switchgrass Rhizosphere Interface. PIs: C. W. Schadt, H. Castro, A. T Classen and C. T Garten. FY 2008-2009. ORNL- Director's R&D Fund: \$703,000.

## HONORS AND AWARDS

- Soil and Water Science Department Award for Excellence in Graduate Studies, University of Florida, 2003.
- Member of Honor Society of Agriculture Gamma Sigma Delta, University of Florida, 2003.
- Student Travel Award, ASM 102<sup>nd</sup> General Meeting, Salt Lake City, Utah, 2002.
- Marine Biological Laboratory financial aid award, Microbial Diversity course, Woods Hole, MA 1998.
- Outstanding academic achievement by an international student, Office of International Studies and Programs, University of Florida, 1995-1996.
- Sam Polston Scholarship, Soil and Water Science Department, University of Florida, 1995.
- Scholarship of the Organization of American States, Master studies, Soil and Water Science Department, University of Florida, 1994-1996.

## **TEACHING EXPERIENCE**

Co-instructor, Molecular Ecology of Biodegradation, sponsored by American Society for Microbiology, Institute of Microbial Technology (IMTECH), Chandigarh, India, 2005.

Graduate teaching assistant, Techniques in Soil Molecular Ecology, Soil and Water Science Department, University of Florida, 1999.

Graduate teaching assistant, General Soils, Soil and Water Science Department, University of Florida, 1999.

Teaching assistant of General Microbiology, Microbiology Department, Universidad de la Republica, Uruguay, 1989-1991.

## **ADVISING**

Student advisees at UF: J. Smith (03-05), M. Doron (05), E. Stanley (03-05).

Student advisees at ORNL: E. Austin (06-07), K. Crawford (06, UT); S. Gray (06, UIL Urbana-Champaign), S. Kortebain (06, Farragut High School).

## **CURRENT AFFILIATIONS**

American Society for Microbiology, Ecological Society of America, American Association for the Advancement of Science, International Society for Microbial Ecology.

## **PROFESSIONAL SERVICES**

Reviewer for the following journals: Current Microbiology, Enzyme and Microbial Technology, Journal of Applied Microbiology, Microbial Ecology, Soil Science Society of America Journal.

## **PUBLISHED ABSTRACTS**

Austin, E. E., Castro, H. F., Schadt, C. W., Sides, K. T., and Classen, A. T. 2007. Tracking the effects of elevated [CO<sub>2</sub>] from microbial community structure to ecosystem function. Southeastern Population Ecology and Evolutionary Genetics Conference, Great Smoky Mountain National Park, TN.

**Castro, H. F.**, Austin, E. E., Crawford, K. M., Classen, A. T., Norby, R. J. and Schadt, C. W. 2007. Towards approaches for disentangling root from microbial contributions to total soil respiration measurements using molecular genetic approaches. Ecological Society of America and Society for Ecological Restoration Joint Annual Meeting, San Jose, CA.

**Castro, H. F.**, E. E. Austin, K. M. Crawford, A. T. Classen, R. J. Norby and C. W. Schadt. 2007. Interpreting changes in microbial communities in a multifactor world: interactive effects of atmospheric carbon dioxide and surface temperature. 107th General Meeting of the American Society for Microbiology, Toronto, Canada.

Schadt, C. W., Castro, H. F., Austin, E. E., and Classen, A. T. 2007. Elevated Carbon Dioxide and Temperature Effects on Soil Microbial Communities: a Genomics Based Approach. Soil Ecology Society Meeting, Moab, UT.

**Castro, H. F.**, J. M. Smith, K. R. Park, K. Sharma, M. W. Clark, K. R. Reddy, M. R. Norland, A. V. Ogram. 2005. Seasonal microbial community characterization in restoration of the Hole-In-The-Donut, Everglades National Park. 105th General Meeting of the American Society for Microbiology, Atlanta, GA.

- Castro, H. F.**, K. R. Park, K. Sharma, M. W. Clark, A. Ogram, K. R. Reddy, and M. R. Norland. 2004. Linkage Between Microbial Metabolic Diversity and Restoration Age in the Hole-in-the-Donut, Everglades National Park. First National Conference on Ecosystem Restoration (NCER), Lake Buena Vista, FL.
- Castro, H.**, A. Ogram, K. R. Reddy. 2004. Microbial ecology of anaerobic terminal carbon mineralization in Everglades soils. 10<sup>th</sup> International Symposium on Microbial Ecology, Cancun, Mexico.
- A. Ogram, H. Castro, A. Chauhan. 2004. Influence of nutrient status on composition of sulfate reducing prokaryotes and methanogen assemblages in the Florida Everglades. 7th Intecol International Wetlands Conference, Utrecht, The Netherlands.
- Castro, H.**, K. R. Park, M. Clark, A. Ogram, K. R. Reddy, and M. Norland. 2004. Linkage between periphyton mat composition and restoration in the Hole-in-the-Donut, Everglades National Park. 104th General Meeting of the American Society for Microbiology, New Orleans, LA.
- Ogram A., Castro, H., K.R. Reddy. 2003. Composition of sulfate reducing prokaryote assemblages in nutrient impacted soils of the Florida Everglades. Eighth Symposium on Biogeochemistry of Wetlands, Gent, Belgium.
- Castro, H.**, K. R. Reddy, and A. Ogram. 2003. Agrochemical impact on sulfate-reducing prokaryotic communities in the Everglades. 225<sup>th</sup> ACS National Meeting, Session Young Scientists Recognition Award, New Orleans, LA.
- Castro, H.**, K. R. Reddy, and A. Ogram. 2003. Selection for metabolic diversity of sulfate-reducing prokaryotes in eutrophic and pristine regions of the Everglades. 103rd General Meeting of the American Society for Microbiology, Washington, DC .
- Ogram A., A. Chauhan, H. Castro, I. Uz, and K.R. Reddy. 2003. Microbial trophic levels within the carbon cycle in oligotrophic and nutrient impacted regions of Water Conservation Area 2-A. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystem "From Kissimmee to the Keys", Palm Harbor, FL.
- Ogram A.V., H. Castro, A. Chauhan, and K.R. Reddy. 2002. Composition and function of microbial assemblages along nutrient gradients in the Everglades, USA. 17th World Congress of Soil Science, International Union of Soil Sciences, Bangkok, Thailand.
- Castro, H.**, K. R. Reddy, and A. Ogram. 2002. Genetic diversity of sulfate-reducing bacteria along a nutrient gradient in the Everglades. 102nd General Meeting of the American Society for Microbiology, Salt Lake City, UT.
- Chauhan, A., M. Seo, H. Castro, A. Krishnakumar, J. Prenger, A. Ogram, and K.R. Reddy. 2002. Composition and function of syntrophic associations in soils from a nutrient impacted fresh water marsh. Inter-Disciplinary Linkages in Aquatic Sciences and Beyond, American Society of Limnology and Oceanography, Victoria, British Columbia, Canada.
- Ogram, A., H. F. Castro, Y. P. Duan, and L. T. Ou. 2000. Plasmid mediated metabolism of pesticides. Southeastern and South Carolina branches of the American Society for Microbiology, Statesboro, GA.
- Castro, H.** 1997. Metabolismo del carbofuran mediado por plasmidos. Primeras Jornadas de Investigadores en el Exterior (1st Workshop of Uruguayan Scientist Abroad), Programa de Desarrollo de las Ciencias Basicas (PEDECIBA), Facultad de Quimica, Montevideo, Uruguay.

- Castro H.**, and A. Wilkie. 1997. Microbial ecology of a methanogenic fixed-film reactor. 97th General Meeting of the American Society for Microbiology, Miami Beach, FL.
- Castro, H.**, and A. Wilkie. 1996. Biological treatment of a coal tar contaminated soil. Soil and Crop Society Florida Branch Meeting, Daytona Beach, FL.
- Castro, H.**, and A. Wilkie. 1996. Impact of substrate availability on bioremediation. American Society For Microbiology, Florida Branch Meeting, Davie, FL.
- Castro, H.**, and A. Wilkie. 1996. Bioavailability of polycyclic aromatic hydrocarbons in a tar-contaminated soil. American Society for Microbiology, Southeastern Branch Meeting, Gainesville, FL.
- Wilkie A., K. Cubinski, and **H. Castro**. 1995. A laboratory-scale reactor for soil bioremediation studies. International Symposium on Clean-up of Manufactured Gas Plants, Prague, Czech Republic.
- Wilkie, A., **H. Castro**, P.S. Rao, and K. Waterhouse. 1995. Biodegradation of PAHs in soil and sediments. Tri-Service Workshop on Bioavailability of Organic Contaminants in Soils and Sediments, Monterey, CA.
- Castro, H.**, K. Cubinski, and A. Wilkie. 1995. Enumeration and activity of microorganisms indigenous to a PAH-contaminated soil. 95th General Meeting of the American Society for Microbiology, Washington, DC.
- Tarlera, S., **H. Castro**, M. Quevedo, and L. Muxi. 1995. Denitrifying activity of anaerobic sludges. 95th General Meeting of the American Society for Microbiology, Washington, DC.
- Castro, H.**, and A. Wilkie. 1994. Bioremediation of PAH-contaminated soil: An investigation of microbial population dynamics and biodegradation kinetics. 86th Annual Meeting of the Soil Science Society of America, Seattle, WA.
- Castro, H.**, M. Queirolo, M. Quevedo, and L. Muxi. 1994. Preservation of anaerobic sludges. 3rd Latin American Workshop on the Anaerobic Treatment of Wastewaters, Montevideo, Uruguay.
- Soubes, M., L. Muxi, A. Fernandez, S. Tarlera, M. Queirolo, J. Menes, and **H. Castro**. 1994. Microbiological and biochemical studies on anaerobic degradation of wool scouring wastewater. Seventh International Symposium on Anaerobic Digestion, Cape town, South Africa.
- Fernandez, A., S. Tarlera, **H. Castro**, M. Queirolo, J. Menes, L. Muxi, and M. Soubes. 1993. Method for the determination of specific methanogenic activity of non-adapted sludges. 3rd Latin American and National Symposium of Biotechnology, Santiago de Chile, Chile.
- Castro, H.**, and L. Muxi. 1993. Effect of freezing and freeze-drying on the methanogenic activity of anaerobic sludges. 2nd Workshop of Microbiology of the Rio de la Plata, Montevideo, Uruguay.
- Tarlera, S., **H. Castro**, and L. Muxi. 1993. Evaluation of the denitrifying activity of anaerobic sludges. 2nd Workshop of Microbiology of the Rio de la Plata, Montevideo, Uruguay.

## **REFERENCES**

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