

Erick Cardenas Poire, Ph.D.

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INTERESTS

Role of microorganism on natural environment: Their contribution to biogeochemical cycles, their interactions with plants, their potential for bioremediation.

EDUCATION

Ph. D. Crop and Soil Sciences – Environmental Toxicology (January 2009)

Thesis Title: Analysis of microbial communities in a contaminated aquifer undergoing uranium bioremediation

Committee Members: James Tiedje (Chair), Terence Marsh, Sayed Hashsham and Phil Robertson

Michigan State University. East Lansing, Michigan, USA.

Degree awarded 05/08/2009

BS. In Biology (December 2000)

Universidad Nacional Agraria La Molina. Lima, Peru

RESEARCH EXPERIENCE

Post-doctoral Fellow (2012-Present)

University of British Columbia, Vancouver, Canada

Supervisor: William Mohn

- Conducted metagenomic studies of forest soils to study the effect of harvesting on the diversity of enzymes involved in carbohydrate and lignin degradation.
- Created Bash, Python, and R scripts to process and analyze next generation sequencing data.
- Mined metagenomes for novel cellulose and lignin-degrading enzymes.
- Recovered partial genomes using compositional and taxonomic binning.
- Provided bioinformatics support for lab members.
- Provided guidance and training for graduate and undergraduate students.
- Elaborated and collaborated in preparation of manuscripts for publication in peer-review journals and reports to funding agencies (Genome Canada).

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Visiting Research Associate (2009-2011)

Michigan State University, Center for Microbial Ecology
East Lansing, MI , USA
Supervisor: James M. Tiedje

- Conducted metagenomic studies of rhizosphere microbial communities to improve plant-microbe interactions for sustainable development of biofuel crops.
- Coordinated research efforts of a six-people team.
- Conducted competitive genome hybridization using DNA microarrays and data analysis to find genes that are candidates for virulence in *Burkholderia cenocepacia*.
- Trained and supervised three undergraduate and two Ph.D. students.
- Developed scripts for community and genome analysis using the R platform, high performance computer clusters, and cloud computing.
- Worked in collaboration with researchers at University of Wisconsin, Los Alamos National Laboratory, and University of Michigan.
- Elaborated and collaborated in preparation of manuscripts for publication in peer-review journals and reports to funding agencies (DOE)

Graduate Research Assistant (2003-2008)

Michigan State University, Center for Microbial Ecology
East Lansing, MI , USA
Supervisor: James M. Tiedje

- Applied DNA-based Stable Isotope Probing (SIP) methods to investigate uranium bioremediation processes in soils and sediments.
- Identified microorganisms in a denitrifying fluidized-bed reactor using 16S rRNA gene clone libraries, microcosms, DNA-SIP, and T-RFLP.
- Characterized the functional and phylogenetic composition of microbial communities performing reduction of nitrate, U, Cr and Tc in a contaminated aquifer.
- Worked in collaborations with researchers at the Oak Ridge Field Research Center, Argonne National Laboratory, Oklahoma University and Stanford University.
- Communicated research results in oral and written presentations.
- Elaborated and collaborated in preparation of manuscripts for publication in peer-review journals and reports to funding agencies (DOE).
- Managed computer resources at the laboratory. Administered user permissions, performed regular backups of the lab data, installed and updated software and bought and assembled hardware when needed.

Graduate Research Assistant (2007)

Michigan State University, Ribosomal Database Project
East Lansing, MI, USA
Supervisor: James Cole

- Created video tutorials for the features of the Ribosomal Database Project (<http://rdp.cme.msu.edu>) and Functional Gene Database/Pipeline (<http://fungene.cme.msu.edu>). Created scripts, recorded video and audio, edited and produced video tutorials in Mac- and PC-compatible formats.
- Proposed, designed, and coordinated the implementation of a new feature of the Ribosomal Database: Project Class Assignment Generation tool.
- Reviewed the features of the Ribosomal Database and the Functional Gene Database/Pipeline for debugging, clarifications and improved functionality.

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Laboratory Assistant (02/03-03/03)

Universidad Peruana Cayetano Heredia, Chemistry Department, Lima, Peru

- Conducted adsorption tests of Lead on chitosan polymers. Prepared solution and materials, run experiments and reported results to leading investigator.

Laboratory Assistant (02/03-03/03, 02/01 – 04/01)

Instituto del Mar del Perú (Peruvian Marine Research Institute), Lima, Peru.

Supervisor: Jorge Tam

- Isolated marine algae *Skeletonema costatum*. Sampled and filtered sea water, isolated individual cells, and maintained a pure line of *Skeletonema costatum*.
- Performed ecotoxicological test with a petroleum dispersant in sediments using *Emerita analoga*. Designed experiment, collected organisms in wild, run experiment and reported results to group leader.
- Maintained stock of invertebrates (crustaceans and mollusks) for ecotoxicological tests and microalgae cultures for invertebrate feeding.

PUBLICATIONS

- Leigh MB, Wu WM, Cardenas E, Uhlik O, Carroll S, Gentry T, Marsh TL, Zhou J, Jardine P, Criddle C, Tiedje JM. Microbial communities biostimulated by ethanol during uranium (IV) bioremediation in contaminated sediment as shown by stable isotope probing. *Frontiers of Environmental Science & Engineering*. 2014. In press.
- Uhlik O, Wald J, Strejcek M, Musilova L, Ridl J, Hroudova M, Vlcek C, Cardenas E, Mackova M, and Macek T. Identification of bacteria utilizing biphenyl, benzoate, and naphthalene in long-term contaminated soil. 2012. *PLoS ONE* 7(7): e40653. doi:10.1371/journal.pone.0040653
- Green SJ, Prakash O, Jasrotia P, Overholt WA, **Cardenas E**, Hubbard D, Tiedje JM, Watson DB, Schadt CW, Brooks SC, and Kostka JE. Denitrifying bacteria from the genus *Rhodanobacter* dominate bacterial communities in the highly contaminated subsurface of a nuclear legacy waste site. *Appl. Environ. Microbiol.* February 2012 vol. 78 no. 41039-1047.
- Wu WM, Carley JM, Watson DB, Gu B, Brooks SC, Kelly SD, Kemner KM, Van Nostrand J, Wu L, Zhou J, Luo J, **Cardenas E**, Fields MW, Marsh TL, Tiedje JM, Green S, Kostka J, Kitanidis PK, Jardine P, Criddle C. Bioreduction and immobilization of uranium in situ: a case study at a USA Department of Energy radioactive waste site, Oak Ridge, Tennessee. 2011. *Acta Scientiae Circumstantiae* 31(3)
- **Cardenas E**, Wu WM, Leigh MB, Carley J, Carroll S, Gentry T, Luo J, Watson D, Gu B, Ginder-Vogel M, Kitanidis PK, Jardine PM, Zhou J, Criddle CS, Marsh TL, Tiedje JM. A combined massively parallel sequencing - indicator species approach revealed significant association between sulfate-reducing bacteria and uranium-reducing microbial communities. *Appl Environ Microbiol.* 2010. 76(20):6778-86.
- Thomas SH, Sanford RA, Amos BK, Leigh MB, **Cardenas E**, Löffler FE. Unique ecophysiology among U(VI)-reducing bacteria as revealed by evaluation of oxygen metabolism in *Anaeromyxobacter dehalogenans* strain 2CP-C. *Appl Environ Microbiol.* 2010 Jan;76(1):176-83. Epub 2009 Nov 6.

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- **Cardenas E.**, J.R. Cole, J.M. Tiedje and J. Park. Microbial community analysis using RDP II (Ribosomal Database Project II): Methods, tools and new advances. *Environ. Eng. Res.* 14(1): 3-9, 2009.
- **Cardenas E** and J.M. Tiedje. New tools for discovering and characterizing microbial diversity. *Curr. Opin. Biotechnol.* 2008 Dec: 19(6):544-9.
- Cole J.R., Q. Wang, **E. Cardenas**, J. Fish, B. Chai, R.J. Farris, A.S. Kulam-Syed-Mohideen, D.M. McGarrell, T. Marsh, G.M. Garrity and JM Tiedje. The Ribosomal Database Project: improved alignments and new tools for rRNA analysis. *Nucleic Acids Res.* 2009 Jan;37(Database issue):D141-5.
- **Cardenas E**, W-M. Wu, M.B. Leigh, J. Carley, S. Carroll, T. Gentry, J. Luo, D. Watson, B. Gu, M. Ginder-Vogel, P.K. Kitanidis, P.M. Jardine, J. Zhou, C.S. Criddle, T.L. Marsh and J.M. Tiedje. Microbial communities in contaminated sediments associated with bioremediation of uranium to submicromolar levels. 2008. *Appl. Environ. Microbiol.* 74(12): 3718-3729.
- J. R. Cole, B. Chai, R. J. Farris, Q. Wang, A. S. Kulam-Syed-Mohideen, D. M. McGarrell, A. M. Bandela, **E. Cardenas**, G. M. Garrity, and J. M. Tiedje . The Ribosomal Database Project (RDP-II): Introducing myRDP space and quality controlled public data. *Nucleic Acids Research.* 2007.35(Database Issue):D169-72.
- Wu, W-M., J. Carley, J. Luo, M.A. Ginder-Vogel, **E. Cardenas**, M.B. Leigh, C. Hwang, S.D. Kelly, C. Ruan, L. Wu, T. Gentry, K. Lowe, T. Mehlhorn, S. Carroll, M. W. Fields, B. Gu, D. Watson, K.M. Kemner, T.L. Marsh, J.M. Tiedje, J. Zhou, S. Fendorf, P.K. Kitanidis, P.M. Jardine, and C.S. Criddle. In situ bioreduction of uranium (VI) to submicromolar levels and reoxidation by dissolved oxygen. *Environ. Sci. Technol.* 2007 Aug 15; 41(16):5716-23.

MANUSCRIPTS IN PREPARATION

- **Cardenas E.**, Maas K, Scofield M, Hallam S, and Mohn WH .Effect of forest harvesting on the potential of the soil microbial community for lignocellulose decomposition. Draft in preparation. Targeted journal: ISME Journal.
- Howe A, Garoutte A, Guo J, **Cardenas E**, Yu J, Eddie T, Chain P, and Tiedje JM. Evaluation of ecosystem services of switchgrass isolates. Draft in preparation. Targeted journal: PLOS ONE.
- **Cardenas E**, Kalikin LM, Chain P, Rouillard J-M, Gulari E, Tiedje JM, and Lipuma JL. Characterization of core genome and candidate virulence genes from comparative genomic hybridization of a *Burkholderia cenocepacia* isolate collection. Draft in preparation. Targeted journal: mBio.
- **Cardenas E**, Kulam S, Wang Q, Cole JR, Tiedje JM, and Marsh T. Bacterial identification through comparative 16S rRNA analysis. Draft in preparation. Targeted journal: Microbe Library.
- Chain, P, Lo C-C, Scholz M, **Cardenas E**, Hu B, Tullis E, Lipuma JL, and Tiedje JM. Bacterial pathogen genome variation within a two decade circulating clinical epidemic lineage. Draft in preparation.

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International course

III Regional Microbiology School
(III ESCUELA REGIONAL DE MICROBIOLOGÍA)
Instituto de Investigaciones Biológicas “Clemente Estable”
Montevideo, Uruguay. September 23rd-October 5th, 2013

- Lectured on Microbial community analysis, and Functional gene analysis.
- Developed and directed a workshop on microbial community analysis.
- Hands-on workshop on statistical analysis using R, and MOTHUR.
- Duration: 12 hours.
- Participation of ten students from Master and Ph.D. programs, from Uruguay and Brazil.

International course

Analysis of massive sequencing data for the study of microbial communities
(Análisis de datos de secuenciación masiva para el estudio de comunidades microbianas)
Montevideo, Uruguay. March 28th-April 1st, 2011
Universidad de la Republica and Pasteur Institute de Montevideo

- Developed and organized content for workshop.
- Covered topics included microbial community analysis using functional and 16S rRNA genes with emphasis on next generation sequencing data, phylogenetics, bioinformatics, and cloud computing.
- Lecturer of theoretical classes, and instructor on hand-on computer sessions (12 hr)
- Participation of 21 students from Master and Ph.D. programs, from Uruguay and Brazil.

International Course

Analysis of massive sequencing data for the study of microbial communities
Prague, Czech Republic. April 30-31st, 2011
Institute of Chemical Technology, Prague

- Developed and organized content for workshop.
- Covered topics included microbial community analysis using functional and 16S rRNA genes with emphasis on next generation sequencing data.
- Lecturer of theoretical classes, and instructor on hand-on computer sessions (6hr).
- Participation of 21 students from Master and Ph.D. programs, from Czech Republic, USA, and Slovakia.

Teaching Assistant

MMG 302 Microbiology Laboratory, Michigan State University
Summer 2007 and Spring 2008 semesters

- Gave introductory lectures to the lab.
- Guided student in laboratory.
- Graded lab reports and evaluated student's technical competencies in basic microbiological practices such as microscopy, streaking, and Gram staining.
- Coordinated responsibilities of teaching assistants in section.
- Proposed and developed class activities based on bacterial phylogeny with the 16S rRNA gene.

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- Forest harvesting alters the genetic potential for lignocellulose decomposition in soil communities. **Erick Cardenas**. Center for Microbial Diversity Annual retreat, March 14th – 17th , 2013. Whistler, British Columbia, Canada.
- Comparative genomic analysis defines the *Burkholderia cenocepacia* core genome and candidate virulence genes. **Erick Cardenas**. International *Burkholderia cepacia* Working Group 17th Annual Meeting April 10-13, 2013. Ann Arbor, Michigan, USA
- Microbial community analysis of the rhizosphere of two biofuel crops. **Erick Cardenas** . Ecology of soil microorganisms. Prague, Czech Republic. April 27th-May 1st, 2011.
- Evaluation of microbial communities involved in bioremediation of metals and nitrate in groundwater (Evaluación de comunidades bacterianas involucradas en bioremediación de metales y nitratos en aguas subterráneas). **Erick Cardenas** .Encuentro Científico Internacional. Lima, Peru. January 2-4, 2008.
- Advances in bioremediation in ecology (Avances de la biorremediación en ecología) . **Erick Cardenas**. Seminario Internacional de Ciencia, Tecnología y Ambiente . Lima, Peru. January 5th, 2008.
- Radio interview. Radio Programas del Peru. Bioremediation as an alternative to fight contamination in Peru. January 2nd, 2008.
- **Cardenas E**. Forest harvesting reduces the soil metagenomic potential for biomass decomposition. Ninth Annual DOE Joint Genome Institute User meeting. March 18-20th, 2014. Walnut Creek, California, USA.
- **Cardenas Poire E**. Forest harvesting affects lignocellulose catabolism potential in soil microbial communities in the Interior Douglas Fir Ecozone. American Society of Microbiology 113th General Meeting. May 18th-21st, 2013. Denver, Colorado, USA.

POSTER PRESENTATIONS AND MEETINGS

- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Forest harvesting alters the genetic potential for lignocellulose decomposition in soil communities. Next Generation Sequencing Symposium: Improving Genomics through collaboration and Innovation. March 13 - 14, 2013. Vancouver, British Columbia, Canada. “Best concept” poster award
- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Forest harvesting alters the genetic potential for lignocellulose decomposition in soil communities. 2013 Joint Genome Institute User Meeting. March 26 - 28, 2013. Walnut Creek, California, USA
- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Organic matter removal associated with forest harvesting decreases the diversity of carbohydrate degradation enzymes in soil microbial communities. Canadian Society of Microbiologists Annual Conferences. June 20-23, 2012. Vancouver, Canada.
- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Forest harvesting alters the genetic potential for lignocellulose decomposition in soil communities. Next Generation Sequencing Symposium: Improving Genomics through collaboration and Innovation. March 13 - 14, 2013. Vancouver, British Columbia, Canada. “Best concept” poster award

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- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Forest harvesting alters the genetic potential for lignocellulose decomposition in soil communities. 2013 Joint Genome Institute User Meeting. March 26 - 28, 2013. Walnut Creek, California, USA
- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Organic matter removal associated with forest harvesting decreases the diversity of carbohydrate degradation enzymes in soil microbial communities. Canadian Society of Microbiologists Annual Conferences. June 20-23, 2012. Vancouver, Canada.
- **Cardenas Poire E**, Mitchell K, Scofield M, Hallam S, and Mohn WW. Organic matter removal associated with forest harvesting decreases the diversity of carbohydrate degradation enzymes in soil microbial communities. Center for Microbial Diversity and Evolution Annual Retreat. May 23-25, 2012. Harrison Springs, Canada. "Best poster" award
- Howe A, **Cardenas E**, Fish J, Guo J, Garoutte, A, Pell J, Hintze A, Cole JR, Chain P, Tringe S, Jansson J, Brown CT, and Tiedje JM. Developing a Toolbox for Soil Metagenomes. DOE Genomic Science Awardee Meeting X. February 26-29, 2012. Bethesda, Maryland. USA.
- **Cardenas E**, Kalikin L, Chain P, Rouillard JM, Gulari E, Tiedje JM, and LiPuma J. Genomotyping of *Burkholderia cenocepacia* strains to detect genetic differences between epidemic and non-epidemic strains The International *Burkholderia cenocepacia* Working Group Meeting. April 21-24, 2010. Seattle, USA.
- Wu W-M, Criddle CS, Kitanidis P, Jardine PM, Watson D, Gu B, Brooks S, Gentry T, Xu M, Wu L, van Nostrand J, Zhou J, **Cardenas E**, Leigh MB, Marsh TL, Tiedje JM, Hwang C, Fields M, Kelly SD, and Kemner KM. 2010. Microbial community dynamics during in situ uranium reduction and re-oxidation in contaminated subsurface. Invited presentation at 2010 Annual Meeting on Microbial Ecology, Microbial Ecology Committee of China Ecology Association, August 12-13, 2010. Harbin, China.
- Wu, W-M, Kitanidis PK, Watson D, Gu B, Brooks S, Kelly SS, Kemner KM, Van Nostrand JD, Wu L, Xu M, Zhou J, Luo J, **Cardenas E**, Hwang C, Fields MW, Gentry T, Marsh TL, Tiedje JM, Jardine P M, Criddle CS. 2010. Biological reduction/immobilization of uranium in contaminated subsurface. Presentation at 10th Annual Meeting of China Chemistry Society & Mainland-Taiwan Water and Wastewater Treatment Conference, August 8-10, 2010. Harbin, China
- **Cardenas E**, Leigh MB, W. Wu, J. Carley, S. Carroll, T. Gentry, T. Marsh, J. Zhou, P. Jardine, C. Criddle, J. Tiedje. Microbial indicator species analysis of a contaminated aquifer undergoing uranium bioremediation. Poster presented at the 109th ASM General Meeting. May 17-21, 2009. Philadelphia, Pennsylvania, USA.
- Tiedje, J.M., T. L. Marsh, **Cardenas E.**, C. Harzman, F. Yang, J. Zhou, C. Hemme, Z. He, S. D. Kelly, K. M. Kemner, C. Criddle & W. Wu. Metagenomics-enabled understanding of the functions and activities of microbial communities at ERSP Field Research Center at Oak Ridge, TN. Poster for the U.S. Department of Energy (DOE) Environmental Remediation Sciences Division (ERSD) PI Meeting. April 7-9, 2008. Warrenton, VA, USA.

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- Wu, W-M., J. Carley, J. Van Nostrand, S. D. Kelly, P. Waldron, G. Zhang, **E. Cardenas**, S. Carroll, J. Luo, L. Wu, T. Mehlhorn, , K. M. Kemner, C. Schadt, J. Zhou, P. Kitanidis, T. L. Marsh, J.M. Tiedje, J. Kostka, L. Kerkhof, D. Watson , C. S. Criddle; P. M. Jardine. Reoxidation of Bio-reduced Uranium by Dissolved Oxygen and Nitrate and Restoration of Reduced Conditions at Area 3, IFC site, Oak Ridge, TN. Poster for the U.S. Department of Energy (DOE) Environmental Remediation Sciences Division (ERSD) PI Meeting. April 7-9, 2008. Warrenton, VA, USA.
- Cole, J.R., Q. Wang, B. Chai, **E. Cardenas**, R.J. Farris, A.S. Kulam-Syed-Mohideen, D.M. McGarrell, J.A. Fish, G.M. Garrity, and J.M. Tiedje. The Ribosomal Database Project. Genomics: GTL Awardee Workshop VI and Metabolic Engineering Working Group Interagency Conference on Metabolic Engineering 2008. Bethesda, Maryland, USA. February 10–13, 2008.
- **Cardenas, E.** , J.R. Cole, A.S. Kulam-Syed-Mohideen, Q. Wang, B. Chai, B. Upham, S. Hashsham, J. Trosko, and N.E. Kaminski.. The MSU SBRP Molecular Biology Tools Repository. Poster at the Superfund Basic Research Program. December 3-5, 2007. Durham, NC USA.
- Leigh, M.B., **E. Cardenas**, W-M. Wu, O. Uhlik, J. Carley, S. Carroll, T.L. Marsh, J. Zhou, P. Jardine, C.S. Criddle and J.M. Tiedje. Microbial bioremediation of a Uranium(Vi) contaminated aquifer. 4th Symposium on Biosorption and Bioremediation. August 26 - 30, 2007. Prague, Czech Republic.
- Wu, W-M., J. Carley, **E. Cardenas**, C. Hwang, S. D. Kelly, J. Van Nostrand, M. Leigh, B. Boonchayaanant, S. Carroll, K. Lowe, J. Luo, W. Luo, L. Wu, T. Mehlhorn, D. Watson, K. M. Kemner, M. W. Fields, B. Gu, J. Zhou, S. Fendorf, P. Kitanidis, T. L. Marsh, J. Tiedje, P. Jardine and C. S. Criddle. Biological Reduction/immobilization of Uranium to Below EPA MCL Levels in situ at the ERSP Field Research Center, Oak Ridge, TN. 107th ASM General Meeting. May 21-25, 2007. Toronto, Canada.
- Chai, B., Q. Wang, **E. Cardenas**, A. M. Bandela, A.S. Kulam-Syed-Mohideen, R.J. Farris, D.M. McGarrell, R.J. Farris, G.M. Garrity, J.M. Tiedje, and J.R. Cole. The Ribosomal Database Project II: Introducing myRDP Space and quality-controlled public data. 107th ASM General Meeting. May 21-25, 2007. Toronto, Canada.
- Cole, j.R., Q. Wang, B. Chai, **E. Cardenas**, R. J. Farris, A. M. Bandela,, A. S. Kulam-Syed-Mohideen, D. M. McGarrell, G. M. Garrity, and J. M. Tiedje. The Ribosomal Database Project II: Introducing myRDP Space and quality-controlled public data. Joint Genomics: GTL Awardee Workshop V and Metabolic Engineering 2007. February 11-14, 2007. North Bethesda, MD, USA.
- **Cardenas, E.**, J.R. Cole, A.S. Kulam-Syed-Mohideen, B. Upham, S. Hashsham, J. Trosko, and N.E. Kaminski. Technology Transfer Through Personal Interaction and the Internet. Annual Meeting of the Superfund Basic Research Program December 11-12, 2006. San Diego, California, USA.
- Chai, B., Q. Wang, A.S. Kulam-Syed-Mohideen, A. Bandela, **E. Cardenas**, R. Farris, D. McGarrell, G. Garrity, J.M. Tiedje and J. Cole. The Ribosomal Database Project-II: Sequences and Tools for High-Throughput rRNA Analysis. 2006 Fall Meeting of the Michigan Branch of The American Society For Microbiology . October 7, 2006. Lansing, MI. USA.

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POSTER PRESENTATIONS AND MEETINGS (continued)

- Wu, W-M., J. Carley, M. A. Ginder-Volgel, J. Luo, C. Hwang, S. D. Kelly, M. B. Leigh, **E. Cardenas**, L. Wu, C. Ruan, W. Luo, M. E. Gentile, T. Gentry, J. Nyman, M. Fienen, S. Carroll, K. Lowe, T. Mehlhorn, T. L. Marsh, D. Watson, M. W. Fields, B. Gu, J. Zhou, K. M. Kemner, J. Tiedje, P. M. Jardine, S. Fendorf, P. K. Kitanidis and C. S. Criddle. Biological Uranium (VI) reduction/immobilization Near Source Zone at the ERSP Field Research Center, Oak Ridge, TN. Poster for the U.S. Department of Energy (DOE) Environmental Remediation Sciences Division (ERSD) PI Meeting. Oct.23-25, 2006, Oak Ridge, TN, USA.
- **Cardenas, E.**, M. B. Leigh, T. Gentry, T. L. Marsh, W. Wu, J. Zhou, C. Criddle, J. M. Tiedje. Microbial Communities Involved in Uranium, Metal and Nitrate Reduction in a Groundwater Bioremediation Site. 11th International Symposium on Microbial Ecology (ISME- 11). August, 20-25, 2006. Vienna, Austria.
- **Cardenas, E.**, M.B. Leigh, W. Wu, J. Carley, S. Carroll, T. Gentry, T. L. Marsh, J. Zhou, C. Criddle, J. M. Tiedje; Microbial Communities Involved in Uranium, Metal and Nitrate Reduction in a Groundwater Bioremediation Site. American Society for Microbiology (ASM) 106th General Meeting, May 21-25, 2006. Orlando, FL, USA.
- Hemme, C., T. Gentry, C. Harzman, **E. Cardenas**, M.B. Leigh, W. Wu, C.S. Criddle, J. Zhou, T.L. Marsh and J. M. Tiedje. Genomic and physiological perspectives on bioremediation processes at the FRC. U.S. Department of Energy (DOE) Environmental Remediation Sciences Division (ERSD) PI Meeting. April 3-5 2006. Warrenton, VA.
- **Cardenas, E.**, M.B. Leigh, T. L. Marsh, N. Ostrom, J. Zhou, C. Criddle, J. M. Tiedje. Stable-Isotope Probing of an Ethanol-Stimulated Denitrifying Bioreactor Community. American Society for Microbiology (ASM) 105th General Meeting, June 5-9, 2005 Atlanta, GA, USA.
- Leigh, M. B. , **E. Cardenas**, C. Harzman, W. Gao, T. Gentry, J. Zhou, N. Ostrom, T. Marsh and J. M. Tiedje. Understanding the bioremediative potential of FRC microbial communities. Poster presentation. U.S. Department of Energy (DOE) Natural and Accelerated Bioremediation Research (NABIR) PI Meeting, April 18-20, 2005. Warrenton, VA.
- Tiedje, J. M., J. Zhou, T. L. Marsh, W. Gao, M. B. Leigh, N. Ostrom, S. Miller, Z. Yang, **E. Cardenas** and S.-H. Kim. Probing for active metal reducers at the FRC using stable isotope probing, new enrichment strategies and metagenomics. Poster presentation. U.S. Department of Energy (DOE) Natural and Accelerated Bioremediation Research (NABIR) PI Workshop, March 15-17, 2004, Warrenton, VA.

LANGUAGES

Spanish	Native speaker
English	Full professional proficiency

PROGRAMMING

Proficient in Python, Bash, and R programming languages

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American Society for Microbiology 2005-Present
Canadian Society of Microbiologists 2012-Present
International Society for Microbial Ecology 2006-2007

UBC Faculty of Science PDF Travel Awards Committee 13/14

- Assisted in adjudicating application for awards

MSU Student association Treasurer 07/08

- Latin-American Community at Michigan State University
- Administered the budget of the student organization. Applied for and secured funding from the Council of Graduate students at Michigan State University
- Prepared activities report for the Executive Board, and to the Council of graduate students
- Participated in coordinated fundraising efforts
- Collaborated in the organization of monthly dinners
- Prepared presentations at university festivals and student fairs
- Helped in distributing welcoming baskets to newly admitted Latin-American students

MSU Student association President 05/06

- Lead the Executive Board of the organization
- Planned and coordinated monthly dinners
- Participated in parking assistance at the MSU football games for fundraising
- Communicated and advised newly admitted Latin-american students. Coordinated airport rides and gave welcoming baskets
- Obtained Honorary Mention in the "Student Organization Achievement" category at the Student Life leadership Awards at Michigan State University

MSU Department Representative 05/06

- Represented the Department of Crop and Soil Sciences at the Council of Graduate Students at Michigan State University
- Attended monthly Council meetings and reported findings to the graduate students at the Department of Crop and Soil Sciences

MSU University Committee member 05/08

- University Committee on In-State fees, Michigan State University
- Reviewed applications for In-State fees status re-categorization
- Communicated decisions to head of the committee
- Participated in in-person appeals to the committee

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