

Session A Poster Abstracts**4 pm to 6 pm Monday July 6, 2009****--Pages 9 to 16--**

A001. Abundance, diversity, and activity of archaeal and bacterial nitrifiers in the California Current. Allyson E. Santoro⁽¹⁾, K. L. Casciotti⁽¹⁾, C. A. Francis⁽²⁾. ⁽¹⁾Woods Hole Oceanographic Institution; ⁽²⁾Stanford University.

A002. A nearly complete snap-shot genome analysis of a moderately thermophilic ammonia-oxidizing crenarchaeote. N. Rychlik^[1], R. Hatzenpichle^[2], M. Schillhabel^[3], T. Ratter^[4], P. Tischler^[4], M. Wagner^[2], W. Streit^[1], Eva Spieck^[1]. ^[1] Biozentrum Klein Flottbek der Universität Hamburg, Abteilung Mikrobiologie und Biotechnologie, Ohnhorststr. 18, D-22609 Hamburg, Germany. ^[2] Department für Mikrobielle Ökologie, Universität Wien, Althanstrasse 14, A-1090 Vienna, Austria. ^[3] Institut für klinische Molekularbiologie, Universitätsklinikum Schleswig-Holstein, Arnold-Heller-Str. 3, D-24105 Kiel, Germany. ^[4] Technische Universität München, Department of Genome Oriented Bioinformatics, Am Forum 1, D-85354 Freising, Germany.

A003. Dampened nitrification rates and shifts in nitrifier populations as a consequence of ocean acidification. J. Michael Beman⁽¹⁻³⁾, C.-E. Chow⁽²⁾, B. N. Popp⁽¹⁾, D.A. Hutchins⁽²⁾. ⁽¹⁾ School of Ocean and Earth Science and Technology, University of Hawaii Honolulu, Hawaii™ 96822, USA. ⁽²⁾ Department of Biological Sciences, University of Southern California, Los Angeles, California 90089, USA. ⁽³⁾ Present address: School of Natural Sciences, University of California, Merced, Merced, California 95344, USA.

A004. Temporal and spatial patterns in communities of ammonia-oxidizing prokaryotes across environmental gradients. Nicholas J. Bouskill¹, D. Eveillard², B.B. Ward¹. ¹Department of Geosciences, Princeton University, Princeton, NJ, 08544. ²University of Nantes, Nantes, France.

A005. Activity and diversity of ammonia-oxidizing prokaryotes in deep and cold waters. Minoru Idichi and Koji Hamasaki. Ocean Research Institute, The University of Tokyo, Tokyo, Japan.

A006. Ammonia-oxidizing bacteria and crenarchaeota inhabiting the coastal area of central Chile and factors explaining their variability. Veronica Molina, Oswaldo Ulloa, Lucy Belmar & Alvaro Olmos-Salvo. Laboratorio de Procesos Oceanográficos y Clima (PROFC). Departamento de Oceanografía y Centro de Investigación Oceanográfica en el Pacífico Suroriental (COPAS, Universidad de Concepción).

A007. Crenarchaeal nitrification in an acidic forest peat soil. Nejc Stopnisek¹, Cecile Rangin², Špela Höfferle¹, Graeme Nico², Ines Mandic-Mulec¹, Jim Prosser². ¹ Department of Food Science and Technology, Chair of Microbiology, Biotechnical Faculty, University of Ljubljana, 1000; ² Institute of Biological and Environmental Sciences, University of Aberdeen, Cruickshank Building, St. Machar Drive, Aberdeen AB24 3UU, United Kingdom.

A008. Identification of nitrite oxidizing bacteria of the genus *Nitrospira* by ¹³C labeling of fatty acid profiles in complex ecosystems. *Myriam Kruse*^{*1}, *Eva Spieck*², *André Lipski*³ and *Evert P. Bakker*¹. ¹University of Osnabrück, Microbiology, Barbarastr. 11, 49069 Osnabrück, Germany. ²University of Hamburg, Biocenter Klein Flottbek, Microbiology, Ohnhorststr. 18, 22609 Hamburg, Germany. ³MicroPro GmbH, Microbiology, Magdeburger Str. 26b, 39245 Gommern, Germany.

A009. Cultivation of uncultured nitrite-oxidizing bacteria. *Hirotsugu Fujitani*¹, *Yoshiteru Aoi*², *Satoshi Tsuneda*¹. ¹Dept. Life Science and Medical Bio-Science, ²Waseda Institute for Advanced Study (WIAS).

A010. Denitrification and anammox in the Arabian Sea oxygen minimum zone. *Silvia E. Bulow*¹, *J.J. Rich*^{1,2}, and *B.B. Ward*¹. ¹ Princeton University, Princeton, NJ 08544. ² Brown University, Providence, RI 02912.

A011. Phylogenetic diversity, spatial distribution and abundances of anammox bacteria in mangrove sediment based on analysis of 16S rRNA and *hzo* genes. *Meng Li*¹, *Yi-Guo Hong*^{1,2}, *Huiluo Cao*¹ and *Ji-Dong Gu*^{1,3*}. ^{<1>} Division of Microbiology, School of Biological Sciences, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, P.R. China. ^{<2>} Key Laboratory of Tropical Marine Environment Dynamics (LED), South China Sea Institute of Oceanography, Chinese Academy of Sciences, 164 Xingang Road West, Guangzhou 510301, P.R. China. ^{<3>} Swire Institute of Marine Science, The University of Hong Kong, Shek O, Cape d'Aguilar, Hong Kong SAR, P.R. China.

A012. 16S rRNA and *hzo* gene analyses reveal a high diversity of *Candidatus Scalindua* anammox bacteria in the subseafloor sediment from South China Sea. *Yiguo Hong*^{1,2}, *Meng Li*¹ *Huiluo Cao*¹ and *Ji-Dong Gu*¹. ^{<1>} Division of Microbiology, School of Biological Sciences, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, P.R. China. ^{<2>} Key Laboratory of Tropical Marine Environment Dynamics (LED), South China Sea Institute of Oceanography, Chinese Academy of Sciences, 164 Xingang Road West, Guangzhou 510301, P.R. China.

A013. Anammox in paddy sediments with different duration of cultivation in Northeast China. *Jing Wang*, *Ji-Dong GU*. Division of Microbiology, School of Biological Sciences, Faculty of Science, The University of Hong Kong, Hong Kong SAR, CHINA.

A014. Molecular analysis of nitrogen transformation microorganisms at a site with very high concentration of inorganic nitrogen. *Leo Lee*^{1*}, *J.J. Jiao*², *Ya Wang*² and *Ji-Dong Gu*¹. ¹ School of Biological Sciences, ² Department of Earth Sciences, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, P.R. China.

A015. Investigation of a putative nitrogen cycle in a subsurface radioactive thermal spring. *Friedrich W. Gerb*¹, *Gerhard W. Weidler*, *Angelika Breiufuss* and *Helga Stan-Lotter*. Department of Molecular Biology, Division of Microbiology, University of Salzburg.

Session B Poster Abstracts**4 pm to 6 pm Tuesday July 7, 2009****--Pages 17 to 23--**

B001. Niche specialization of ammonia-oxidizing archaea and bacteria in estuary sediments. *Annika C. Mosier and Chris A. Francis. Stanford University.*

B002. Microbial ecology of sediment nitrogen cycling in the Derwent River estuary, Tasmania. *Guy C.J. Abell¹, John K. Volkman¹, Stanley S. Robert¹, John Keane³, Andrew T. Revill¹, Jo Banks² and Jeff Ross³.* ¹CSIRO, Marine and Atmospheric Research and Wealth from Oceans, National Research Flagship, Hobart 7000. ²Department of Zoology, The University of Melbourne, Melbourne VIC 3010. ³Tasmanian Aquaculture and Fisheries Institute, Marine Research Laboratories, Nubeena Crescent, Taroom Tas 7053.

B003. Seasonal changes in abundance of ammonia-oxidizing archaea and ammonia-oxidizing bacteria and their nitrification in sand of an eelgrass zone (Tanoura Bay, Shizuoka, Japan). *Tatsunori Nakagawa¹, Yoshifumi Ando², Naoki Matsutan², Reiji Takahashi¹, Kiyoshi Yoshihara¹, Tatsuaki Tokuyama¹.* ¹College of Bioresource Sciences, Nihon University, ²Graduate School of Bioresource Science, Nihon University.

B004. Hotspots of archaeal nitrification in coastal marine environments *Hidetoshi Urakawa⁽¹⁾, Willm Martens-Habbena⁽¹⁾, Carme Huguet⁽²⁾ and Anitra E. Ingalls⁽²⁾ Jose de la Torre⁽³⁾ and David A. Stahl⁽¹⁾.* ¹Department of Civil and Environmental Engineering ⁽¹⁾ and School of Oceanography, University of Washington ⁽²⁾, Department of Biology, San Francisco State University ⁽³⁾.

B005. Relative abundance and diversity of ammonia-oxidizing archaea and bacteria in the sediments of a large, shallow, eutrophic freshwater lake (Lake Taihu, China) *Yucheng Wu, Yan Xiang, Qinglong Wu**. *State Key Laboratory of Lake and Environment, Nanjing Institute of Geography & Limnology, Chinese Academy of Sciences, Nanjing 210008, China.

B006. Combined geochemical and molecular analyses of archaeal and bacterial ammonia oxidizers in Columbia River sediments. *Mouzhong Xu, Jim Nurmi, Paul Tratnyek, and Holly Simon. Division of Environmental & Biomolecular Systems, Oregon Health & Science University.*

B007. Distribution and diversity of ammonia-oxidizing archaea and bacteria in soils along an upland to lowland transect receiving either high or low N inputs. *Peter J. Bottomley^{1,2}, Lydia H. Zeglin¹, Anne E. Taylor¹, and David D. Myrold¹,* ¹Crop and Soil Science Department, Oregon State University, ²Microbiology Department, Oregon State University.

B008. Obligate oligotrophic ammonia oxidation in mesophilic Crenarchaeota. *Willm Martens-Habbena, Hidetoshi Urakawa, Adam Gee, Kyle C. Costa, Jose de la Torre, David A. Stahl.* Department of Civil & Environmental Engineering, University of Washington, Seattle.

B009. Influence of starvation on the enrichment of ammonia oxidizers from the sediment of Lake Acton. *Jessica A. Kozlowski, Elizabeth French and Annette Bollmann. Miami University, Department of Microbiology, Oxford, OH, USA.*

B010. Influence of ammonium concentrations on the enrichment of ammonia-oxidizing bacteria from different freshwater environments in Ohio. *Elizabeth French, Jessica Kozlowski, Andrew Ohl and Annette Bollmann. Miami University, Department of Microbiology, Oxford OH, USA.*

B011. Growth of soil ammonia-oxidizers in response to elevated NH_4^+ measured with H_2^{18}O stable isotope probing. *Karen L. Adair and Egbert Schwartz. Northern Arizona University.*

B012. Key microbial players in the marine nitrogen cycle. *Suzanne C.M. Haaijer¹, Huub J.M. Op den Camp¹, Laura A.M.P. van Niftrik¹, Mike S.M. Jetten¹, Angela Pitcher², Stefan Schouten², Jaap Sinninghe Damste². ¹Microbiology IWWR Radboud University Nijmegen, NL. ²Biogeochemistry, NIOZ Texel NL.*

B013. Searching for putative ammonium-/ nitrite oxidizers in a subsurface thermal spring. *Angelika Breiufuss, Friedrich Gerbl and Helga Stan-Lotter. University of Salzburg, Austria.*

B014. Nitrification exhibits Haldane kinetics in agricultural soils. *Jenny M. Norton, J.M. Stark, T.E. Koper, M.Y. Habteselassie. Utah State University, Univ. Georgia, Griffin.*

Session C Poster Abstracts**4 pm to 6 pm Wednesday July 8, 2009****--Pages 24 to 28--**

C001. Crystal structure of “Blue” copper oxidase from *Nitrosomonas europaea*. Thomas J. Lawton⁽¹⁾, Luis A. Sayavedra-Soto⁽²⁾, Daniel J. Arp⁽²⁾, and Amy C. Rosenzweig⁽¹⁾. ⁽¹⁾ Departments of Molecular Biology and Cell Biology and of Chemistry, Northwestern University, Evanston, IL 60208, USA. ⁽²⁾ Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR 97331, USA.

C002. A nearly complete snap-shot genome analysis of a moderately thermophilic ammonia-oxidizing crenarchaeote. N. Rychlik⁽¹⁾, R. Hatzepichler⁽²⁾, M. Schillhabel⁽³⁾, T. Rattei⁽⁴⁾, P. Tischler⁽⁴⁾, M. Wagner⁽²⁾, W. Streit⁽¹⁾, Eva Spieck⁽¹⁾. ⁽¹⁾ Biozentrum Klein Flottbek der Universität Hamburg, Abteilung Mikrobiologie und Biotechnologie, Ohnhorststr. 18, D-22609 Hamburg, Germany. ⁽²⁾ Department für Mikrobielle Äkologie, Universität Wien, Althanstrasse 14, A-1090 Vienna, Austria. ⁽³⁾ Institut für klinische Molekularbiologie, Universitätsklinikum Schleswig-Holstein, Arnold-Heller-Str. 3, D-24105 Kiel, Germany. ⁽⁴⁾ Technische Universität München, Department of Genome Oriented Bioinformatics, Am Forum 1, D-85354 Freising, Germany.

C003. Genome sequencing of *Nitrosomonas* spp. AL212 and IS-79; ammonia-oxidizing bacteria adapted for growth at low ammonia concentrations. Y. Suwa¹, A. Bollmann², Jenny M. Norton³, M. G. Klotz⁴, L. Y. Stein⁵, H. J. Laanbroek⁶, D. J. Arp⁷, L.A. Goodwin⁸. ¹Chuo Univ., Tokyo, JAPAN, ²Miami Univ., Oxford, OH, ³Utah State Univ., Logan, UT, ⁴Univ. of Louisville, Louisville, KY, ⁵Univ. of Alberta, Edmonton, AB, CANADA, ⁶Netherlands Inst. of Ecology, Utrecht, NETHERLANDS, ⁷Oregon State Univ., Corvallis, OR, ⁸DOE Joint Genome Inst., Los Alamos Natl. Lab., Los Alamos, NM.

C004. Environmental genomics of *Nitrospira* illuminates the biology of key nitrite-oxidizing bacteria. Holger Daims⁽¹⁾, Sebastian Lucker⁽¹⁾, Frank Maixner⁽¹⁾, Eva Spieck⁽²⁾, Thomas Rattei⁽³⁾, Denis Le Paslier⁽⁴⁾, and Michael Wagner⁽¹⁾. ⁽¹⁾ Department of Microbial Ecology, Vienna Ecology Centre, University of Vienna, Vienna, Austria. ⁽²⁾ University of Hamburg, Biocenter Klein Flottbek, Hamburg, Germany. ⁽³⁾ Department of Genome Oriented Bioinformatics, Technische Universitat Munchen, Germany. ⁽⁴⁾ Genoscope, Evry, France.

C005. Regulation of a *Nitrosomonas*-like *nirK* operon and aerobic N-oxide metabolism in heterotrophic bacteria. Lynnie S. Cua⁽¹⁾ and Lisa Y. Stein⁽²⁾. ⁽¹⁾ Dept. of Environmental Sciences, University of California, Riverside, CA USA, ⁽²⁾ Dept. of Biological Sciences, University of Alberta, Edmonton AB, Canada.

C006. Heme-copper nitric oxide Reductases: evidence for multiple independent origins. James Hemp, Laura A. Pace, Robert B. Gennis, Lisa Y. Stein, and Martin G. Klotz. University of Illinois at Urbana-Champaign, University of Alberta, and University of Louisville.

C007. RT-qPCR transcriptional profiling of the electron flow inventory in *Nitrosococcus oceani* ATCC 19707, a marine, aerobic obligate ammonia-oxidizing bacterium (aOAOb). Mark A. Campbell¹ and Martin G. Klotz^{1,2}. Departments of Biology¹ and Microbiology & Immunology², University of Louisville, Louisville, KY 40292, USA.

C008. Transcriptional profiling of *Nitrosomonas europaea* under iron-limitation conditions. Neeraja Vajjala, Luis Sayavedra-Soto, Peter J Bottomley, Daniel J Arp. Oregon State University, Corvallis OR, 97331, USA.

C009 Quantitative proteomic analysis of *Nitrosomonas europaea*: Comparison of growing and energy-starved cells. William Hickey¹, Brian Halligan², Mark Scalf³, Molly Pellitteri-Hahn², Jun Zhu¹ and Lloyd Smith³. ¹Dept. Soil Science, Univ. Wisconsin-Madison; ²Biotechnology and Bioengineering Center, Medical College of Wisconsin; ³Dept. Chemistry, Univ. Wisconsin-Madison.

C010. Hydrazine metabolism by anammox bacteria. Wouter Maalcke, Boran Kartal, Harry Harhangi, Huub op den Camp, Jan Keltjens, Mike Jetten. Microbiology, IWW, Radboud University, Nijmegen.

C011. Expanding nomenclature for microbial Metabolism of nitrogen oxides. Martin G. Klotz¹ and Lisa Y. Stein². ¹Departments of Biology and Microbiology & Immunology, University of Louisville, Louisville, KY 40292, USA, and ²Department of Biological Sciences, University of Alberta, Edmonton, AB T6G 2E9, CANADA.

Session D Poster Abstracts**4 pm to 6 pm Thursday July 9, 2009****--Pages 29 to 35--**

D001. Separating the relative contributions of ammonia-oxidizing archaea and bacteria to soil nitrification. *Anne E. Taylor¹, David D. Myrold¹, and Peter J. Bottomley^{1,2}.* ¹*Crop and Soil Science Department, Oregon State University,* ²*Microbiology Department, Oregon State University.*

D002. Nitrifiers respond rapidly to wet-up in annual grassland soils. *Sarah A. Placella, Donald J Herman, and Mary K Firestone.* *Department of Environmental Science, Policy and Management, University of California-Berkeley, Berkeley, CA USA.*

D003. Adaptation of ammonia oxidizers to different water contents and ammonium point pollution in a peat soil vertical profile. *Špela Höfferle¹, Graeme Nicol², Levin Pal¹, Janez Hacin¹, James I. Prosser², Ines Mandic-Mulec¹* ¹*University of Ljubljana, Biotechnical Faculty, Department of Food Science and Technology, Chair of Microbiology, Vecna pot 111, SI-1000 Ljubljana, Slovenia, ines.mandic@bf.uni-lj.si* ² *University of Aberdeen, Institute of Biological and Environmental Sciences, Cruickshank Building, St Machar Drive, Scotland, AB24 3UU, UK.*

D004. Transformation and removal of mineral nitrogen applied to peat soil during sequential oxic/anoxic cycling. *Levin Pal, Blaz Stres, Simona Leskovec, Tjasa Danevcic, Ines Mandic-Mulec* *University of Ljubljana, Biotechnical Faculty, Department of Food Science and Technology, Vecna pot 111, 1000 Ljubljana, Slovenia, ines.mandic@bf.uni-lj.si.*

D005. Relationship between diversity and abundance of ammonia-oxidizing archaea (AOA) and bacteria (AOB) and environmental parameters in polluted mangrove sediment of Hong Kong *Huiluo Cao¹, Meng Li¹, Yi-Guo Hong², Ji-Dong, Gu¹.* ¹ *School of Biological Sciences, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, People's Republic of China.* ² *Key Laboratory of Tropical Marine Environment Dynamics (LED), South China Sea Institute of Oceanography, Chinese Academy of Sciences, 164 Xingang Road West, Guangzhou 510301, People's Republic of China*

D006. Post-stress recovery of a complex ammonia oxidizing bacterial community following heavy metal cadmium stress. *Ameet J. Pinto^(1,2), and Nancy G. Love⁽¹⁾.* ⁽¹⁾*Department of Civil and Environmental Engineering, University of Michigan, Ann Arbor, MI.* ⁽²⁾*Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, VA.*

D007. Biofilms of *Nitrosomonas europaea* exposed to phenol and toluene. *Ellen Swogger, Tyler Radniecki, and Lewis Semprini.* *School of Chemical, Biological and Environmental Engineering, 102 Gleeson Hall, Oregon State University, Corvallis, OR 97331.*

D008. Linking NE1545 expression with cell size changes in *Nitrosomonas europaea* cells exposed to phenol. *Tyler S. Radniecki, Caslin Gilroy and Lewis Semprini.* *School of Chemical, Biological and Environmental Engineering. Oregon State University, Corvallis OR 97331*

D009. Ammonia-oxidizing bacterial and archaeal dynamics in a highly aerated full-scale activated sludge nitrifying bioreactor. *George F. Wells*⁽¹⁾, *Hee-Deung Park*⁽²⁾, *Yongyang Wang*⁽¹⁾, *Brad Eggleston*⁽³⁾, *Christopher A. Francis*⁽⁴⁾, and *Craig S. Criddle*⁽¹⁾⁽¹⁾ *Environmental Engineering and Science, Stanford University, Stanford, CA, USA.*⁽²⁾ *Civil, Environmental, and Architectural Engineering, Korea University, Seoul, South Korea.*⁽³⁾ *Palo Alto Regional Water Quality Control Plant, Palo Alto, CA, USA.*⁽⁴⁾ *Environmental and Earth System Science, Stanford University, Stanford, CA, USA.*

D010. Nitrification activity and community structure of nitrite-oxidizing bacteria in the bioreactors operated with addition of selected pharmaceuticals. *Barbara Kraigher*¹, *Tina Kosjek*^{2,3}, *Ester Heath*², *Ines Mandic-Mulec*¹ ¹ *Department of Food Science and Technology, Chair of Microbiology, Biotechnical Faculty, University of Ljubljana, Vecna pot 111, 1000 Ljubljana, Slovenia.* ² *Department of Environmental Sciences, Jožef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia.* ³ *Institute of Sanitary Engineering, Faculty of Civil and Geodetic Engineering, University of Ljubljana, Hajdrihova 28, 1000 Ljubljana, Slovenia, ines.mandic@bf.uni-lj.si.*

D011. Effect of organic carbon source on ammonia oxidizing bacteria community. *LeeAnn Racz, Tania Datta, Shireen M. Kotay, and Ramesh Goel.* *Department of Civil and Environmental Engineering, University of Utah.*

D0012. SCAR-based real-time PCR for quantifying a heterotrophic nitrifier *Pseudomonas putida* sp. DN1.2 in wastewater treatment system*. *Yonggui Zhao and Jun Huang* **. *Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu 610041.*

D013. Enrichment culture analysis of nitrifying bacteria from a constructed sewage treatment wetland. *Kenneth W. Hammer and Rebecca V. Ferrell.* *Metropolitan State College of Denver.*

D014. Nitrification in recirculating aquaculture systems(RAS). *Hassan Abhari Segonbad, Khadijeh Delfan.* *Division of Fisheries, Department of Marine Natural Resource, Khorramshahrmarine Science and Technology University, Khorramshahr, Iran.*
