

APPLIED AND ENVIRONMENTAL MICROBIOLOGY

Volume 76

June 2010

No. 12

BIOTECHNOLOGY

- Structure, Function, and Insights into the Biosynthesis of a Head-to-Head Hydrocarbon in *Shewanella oneidensis* Strain MR-1** David J. Sukovich, Jennifer L. Seffernick, Jack E. Richman, Kristopher A. Hunt, Jeffrey A. Gralnick, and Lawrence P. Wackett 3842–3849
- Widespread Head-to-Head Hydrocarbon Biosynthesis in Bacteria and Role of OleA** David J. Sukovich, Jennifer L. Seffernick, Jack E. Richman, Jeffrey A. Gralnick, and Lawrence P. Wackett 3850–3862
- TDP-L-Megosamine Biosynthesis Pathway Elucidation and Megalomicin A Production in *Escherichia coli*** Mariana Useglio, Salvador Peirú, Eduardo Rodríguez, Guillermo R. Labadie, John R. Carney, and Hugo Gramajo 3869–3877
- Comparative Transcriptomic and Proteomic Profiling of Industrial Wine Yeast Strains** Debra Rossouw, Adri H. van den Dool, Dan Jacobson, and Florian F. Bauer 3911–3923
- Lactococcus lactis fabH*, Encoding β -Ketoacyl-Acyl Carrier Protein Synthase, Can Be Functionally Replaced by the *Plasmodium falciparum* Congener** Yu Du, Jolyn E. Gisselberg, Jacob D. Johnson, Patricia J. Lee, Sean T. Prigge, and Brian O. Bachmann 3959–3966
- Genetic Tool Development for a New Host for Biotechnology, the Thermotolerant Bacterium *Bacillus coagulans*** Ákos T. Kovács, Mariska van Hartkamp, Oscar P. Kuipers, and Richard van Kranenburg 4085–4088
- Characterization of a Thermostable Short-Chain Alcohol Dehydrogenase from the Hyperthermophilic Archaeon *Thermococcus sibiricus*** Tatiana N. Stekhanova, Andrey V. Mardanov, Ekaterina Y. Bezsudnova, Vadim M. Gumerov, Nikolai V. Ravin, Konstantin G. Skryabin, and Vladimir O. Popov 4096–4098

ENVIRONMENTAL MICROBIOLOGY

- TaqMan Real-Time PCR Assays To Assess Arbuscular Mycorrhizal Responses to Field Manipulation of Grassland Biodiversity: Effects of Soil Characteristics, Plant Species Richness, and Functional Traits** Stephan König, Tesfaye Wubet, Carsten F. Dormann, Stefan Hempel, Carsten Renker, and François Buscot 3765–3775
- Analysis of the Fine-Scale Population Structure of “*Candidatus Accumulibacter phosphatis*” in Enhanced Biological Phosphorus Removal Sludge, Using Fluorescence *In Situ* Hybridization and Flow Cytometric Sorting** Jeong Myeong Kim, Hyo Jung Lee, Sun Young Kim, Jae Jun Song, Woojun Park, and Che Ok Jeon 3825–3835

ENZYMOMOLOGY AND PROTEIN ENGINEERING

- Contribution of a Xylan-Binding Module to the Degradation of a Complex Cellulosic Substrate by Designer Cellulosomes** Sarah Morais, Yoav Barak, Jonathan Caspi, Yitzhak Hadar, Raphael Lamed, Yuval Shoham, David B. Wilson, and Edward A. Bayer 3787–3796
- Purification and Characterization of OmcZ, an Outer-Surface, Octaheme *c*-Type Cytochrome Essential for Optimal Current Production by *Geobacter sulfurreducens*** Kengo Inoue, Xinlei Qian, Leonor Morgado, Byoung-Chan Kim, Tünde Mester, Mounir Izallalen, Carlos A. Salgueiro, and Derek R. Lovley 3999–4007
- The Aminolysis Reaction of *Streptomyces* S9 Aminopeptidase Promotes the Synthesis of Diverse Prolyl Dipeptides** Jiro Arima, Masazumi Morimoto, Hirokazu Usuki, Nobuhiro Mori, and Tadashi Hatanaka 4109–4112

Continued on following page

EVOLUTIONARY AND GENOMIC MICROBIOLOGY

- Application of Multilocus Sequence Typing To Study the Genetic Structure of Megaplasms in *Medicago-Nodulating Rhizobia*** Peter van Berkum, Patrick Elia, and Bertrand D. Eardly 3967–3977
- Chromosome Stability and Gene Loss in Cockroach Endosymbionts** Zakee L. Sabree, Patrick H. Degnan, and Nancy A. Moran 4076–4079

GENETICS AND MOLECULAR BIOLOGY

- Iron-Dependent Remodeling of Fungal Metabolic Pathways Associated with Ferrichrome Biosynthesis** Alexandre Mercier and Simon Labbé 3806–3817
- Abolition of Biofilm Formation in Urinary Tract *Escherichia coli* and *Klebsiella* Isolates by Metal Interference through Competition for Fur** Viktoria Hancock, Malin Dahl, and Per Klemm 3836–3841
- Plasmid Transduction Using Bacteriophage Φ adh for Expression of CC Chemokines by *Lactobacillus gasseri* ADH** Leonard H. Damelin, Demetra Mavri-Damelin, Todd R. Klaenhammer, and Caroline T. Tiemessen 3878–3885
- Heptahelical Receptors GprC and GprD of *Aspergillus fumigatus* Are Essential Regulators of Colony Growth, Hyphal Morphogenesis, and Virulence** Alexander Gehrke, Thorsten Heinekamp, Ilse D. Jacobsen, and Axel A. Brakhage 3989–3998
- Formation and Attachment of the Deoxysugar Moiety and Assembly of the Gene Cluster for Caprazamycin Biosynthesis** Leonard Kaysser, Emmanuel Wemakor, Stefanie Siebenberg, Jose A. Salas, Jae Kyung Sohng, Bernd Kammerer, and Bertolt Gust 4008–4018
- High-Yield Intra- and Extracellular Protein Production Using *Bacillus megaterium*** Simon Stammen, Britta Katrin Müller, Claudia Korneli, Rebekka Biedendieck, Martin Gamer, Ezequiel Franco-Lara, and Dieter Jahn 4037–4046
- Species-Specific Type II Restriction-Modification System of *Xylella fastidiosa* Temecula1** Ayumi Matsumoto and Michele M. Igo 4092–4095

GEOMICROBIOLOGY

- Alignment of the *c*-Type Cytochrome OmcS along Pili of *Geobacter sulfurreducens*** Ching Leang, Xinlei Qian, Tünde Mester, and Derek R. Lovley 4080–4084

METHODS

- Development of a Chip Assay and Quantitative PCR for Detecting Microcystin Synthetase E Gene Expression** Hanna Sipari, Anne Rantala-Ylinen, Jouni Jokela, Ilona Oksanen, and Kaarina Sivonen 3797–3805
- Comparison of Normalization Methods for Construction of Large, Multiplex Amplicon Pools for Next-Generation Sequencing** J. Kirk Harris, Jason W. Sahl, Todd A. Castoe, Brandie D. Wagner, David D. Pollock, and John R. Spear 3863–3868
- Multiplex Identification of Microbes** Richard W. Hyman, Robert P. St. Onge, Edward A. Allen, Molly Miranda, Ana Maria Aparicio, Marilyn Fukushima, and Ronald W. Davis 3904–3910
- Bioluminescence Imaging of *Clavibacter michiganensis* subsp. *michiganensis* Infection of Tomato Seeds and Plants** Xiulan Xu, Sally A. Miller, Fulya Baysal-Gurel, Karl-Heinz Gartemann, Rudolf Eichenlaub, and Gireesh Rajashekara 3978–3988
- Application of Paramagnetically Tagged Molecules for Magnetic Resonance Imaging of Biofilm Mass Transport Processes** B. Ramanan, W. M. Holmes, W. T. Sloan, and V. R. Phoenix 4027–4036

Identification and Typing of <i>Lactococcus lactis</i> by Matrix-Assisted Laser Desorption Ionization–Time of Flight Mass Spectrometry	Kana Tanigawa, Hiroaki Kawabata, and Koichi Watanabe	4055–4062
MICROBIAL ECOLOGY		
Characterization of Variation in Rumen Methanogenic Communities under Different Dietary and Host Feed Efficiency Conditions, as Determined by PCR-Denaturing Gradient Gel Electrophoresis Analysis	Mi Zhou, Emma Hernandez-Sanabria, and Le Luo Guan	3776–3786
Diversity of 16S rRNA Genes within Individual Prokaryotic Genomes	Anna Y. Pei, William E. Oberdorf, Carlos W. Nossa, Ankush Agarwal, Pooja Chokshi, Erika A. Gerz, Zhida Jin, Peng Lee, Liying Yang, Michael Poles, Stuart M. Brown, Steven Sotero, Todd DeSantis, Eoin Brodie, Karen Nelson, and Zhiheng Pei	3886–3897
Diversity of Oligotrichia and Choreotrichia Ciliates in Coastal Marine Sediments and in Overlying Plankton	Mary Doherty, Maiko Tamura, Jan A. C. Vriezen, George B. McManus, and Laura A. Katz	3924–3935
Low Pore Connectivity Increases Bacterial Diversity in Soil	Jennifer K. Carson, Vanesa Gonzalez-Quiñones, Daniel V. Murphy, Christoph Hinz, Jeremy A. Shaw, and Deirdre B. Gleeson	3936–3942
MYCOLOGY		
An Old Yellow Enzyme Gene Controls the Branch Point between <i>Aspergillus fumigatus</i> and <i>Claviceps purpurea</i> Ergot Alkaloid Pathways	Christine M. Coyle, Johnathan Z. Cheng, Sarah E. O'Connor, and Daniel G. Panaccione	3898–3903
Diverse Bacteria Inhabit Living Hyphae of Phylogenetically Diverse Fungal Endophytes	Michele T. Hoffman and A. Elizabeth Arnold	4063–4075
PHYSIOLOGY		
<i>Cellulosilyticum ruminicola</i>, a Newly Described Rumen Bacterium That Possesses Redundant Fibrolytic-Protein-Encoding Genes and Degrades Lignocellulose with Multiple Carbohydrate-Borne Fibrolytic Enzymes	Shichun Cai, Jiabao Li, Fen Ze Hu, Kegui Zhang, Yuanming Luo, Benjamin Janto, Robert Boissy, Garth Ehrlich, and Xiuzhu Dong	3818–3824
Ethanol-Independent Biofilm Formation by a Flor Wine Yeast Strain of <i>Saccharomyces cerevisiae</i>	Severino Zara, Michael K. Gross, Giacomo Zara, Marilena Budroni, and Alan T. Bakalinsky	4089–4091
Killing of Bacteria by Copper Surfaces Involves Dissolved Copper	Cristina Molteni, Helge K. Abicht, and Marc Solioz	4099–4101
Monomethylamine as a Nitrogen Source for a Nonmethylotrophic Bacterium, <i>Agrobacterium tumefaciens</i>	Yin Chen, Kathryn L. McAleer, and J. Colin Murrell	4102–4104
PLANT MICROBIOLOGY		
Characterization of Strains unlike <i>Mesorhizobium loti</i> That Nodulate <i>Lotus</i> spp. in Saline Soils of Granada, Spain	María J. Lorite, Socorro Muñoz, José Olivares, María J. Soto, and Juan Sanjuán	4019–4026
PUBLIC HEALTH MICROBIOLOGY		
Role of Absolute Humidity in the Inactivation of Influenza Viruses on Stainless Steel Surfaces at Elevated Temperatures	James McDevitt, Stephen Rudnick, Melvin First, and John Spengler	3943–3947

Oral Bacteria as Potential Probiotics for the Pharyngeal Mucosa	Simone Guglielmetti, Valentina Taverniti, Mario Minuzzo, Stefania Arioli, Milda Stuknyte, Matti Karp, and Diego Mora	3948–3958
“<i>Candidatus Anadelfobacter veles</i>” and “<i>Candidatus Cyrtobacter comes</i>,” Two New <i>Rickettsiales</i> Species Hosted by the Protist Ciliate <i>Euplotes harpa</i> (Ciliophora, Spirotrichea)	Claudia Vannini, Filippo Ferrantini, Karl-Heinz Schleifer, Wolfgang Ludwig, Franco Verni, and Giulio Petroni	4047–4054
<i>Caenorhabditis elegans</i> as an Alternative Model Host for <i>Legionella pneumophila</i>, and Protective Effects of <i>Bifidobacterium infantis</i>	Tomomi Komura, Chikako Yasui, Hiroshi Miyamoto, and Yoshikazu Nishikawa	4105–4108
Molecular Detection and Characterization of Aichi Viruses in Sewage-Polluted Waters of Venezuela	Ana Alcalá, Esmeralda Vizzi, Jesús Rodríguez-Díaz, José L. Zambrano, Walter Betancourt, and Ferdinando Liprandi	4113–4115
Hollow-Fiber Ultrafiltration and PCR Detection of Human-Associated Genetic Markers from Various Types of Surface Water in Florida	Stephaney D. Leskinen, Miriam Brownell, Daniel V. Lim, and Valerie J. Harwood	4116–4117
Genetic Detection of Extended-Spectrum β-Lactamase-Containing <i>Escherichia coli</i> Isolates from Birds of Prey from Serra da Estrela Natural Reserve in Portugal	Luís Pinto, Hajer Radhouani, Céline Coelho, Paulo Martins da Costa, Roméo Simões, Ricardo M. L. Brandão, Carmen Torres, Gilberto Igrejas, and Patrícia Poeta	4118–4120
AUTHOR'S CORRECTION		
Type II Diacylglycerol Acyltransferase from <i>Claviceps purpurea</i> with Ricinoleic Acid, a Hydroxyl Fatty Acid of Industrial Importance, as Preferred Substrate	Ioannis Mavraganis, Dauenpen Meesapyodsuk, Patricia Vrinten, Mark Smith, and Xiao Qiu	4121

Cover photograph (Copyright © 2010, American Society for Microbiology. All Rights Reserved.): Back-scattered scanning electron micrographs of polished-resin-embedded soils in cross-section, depicting variations in pore structure and particle loading in soil (top) and silt+clay (bottom) treatment specimens. Sand-sized quartz particles (false colored) are visible in both treatment specimens, while small ground quartz particles are present only within the pore spaces of the silt+clay treatment specimen. Altering the pore connectivity of a soil by decreasing the water potential and increasing the content of silt- and clay-sized particles has provided evidence supporting the theory that low pore connectivity increases the diversity of bacterial communities in soil. (See related article on page 3936.)