

APPLIED AND ENVIRONMENTAL MICROBIOLOGY

Volume 76

February 2010

No. 3

BIODEGRADATION

- Effect of Biostimulation and Bioaugmentation on Degradation of Polyurethane Buried in Soil** L. Cosgrove, P. L. McGeechan, P. S. Handley, and G. D. Robson 810–819
- Direct Link between Toluene Degradation in Contaminated-Site Microcosms and a *Polaromonas* Strain** Weimin Sun, Shuguang Xie, Chunling Luo, and Alison M. Cupples 956–959

BIOTECHNOLOGY

- Contributions of the Pre- and Pro-Regions of a *Staphylococcus hyicus* Lipase to Secretion of a Heterologous Protein by *Bacillus subtilis*** Thijs R. H. M. Kouwen, Allan K. Nielsen, Emma L. Denham, Jean-Yves F. Dubois, Ronald Dorenbos, Michael D. Rasmussen, Wim J. Quax, Roland Freudl, and Jan Maarten van Dijl 659–669
- Key Process Conditions for Production of C₄ Dicarboxylic Acids in Bioreactor Batch Cultures of an Engineered *Saccharomyces cerevisiae* Strain** Rintze M. Zelle, Erik de Hulster, Wendy Kloezen, Jack T. Pronk, and Antonius J. A. van Maris 744–750
- Extracellular Production of an RNA Aptamer by Ribonuclease-Free Marine Bacteria Harboring Engineered Plasmids: a Proposal for Industrial RNA Drug Production** Hiromichi Suzuki, Tomoaki Ando, So Umekage, Terumichi Tanaka, and Yo Kikuchi 786–793
- Adaptation of the Highly Productive T7 Expression System to *Streptomyces lividans*** François-Xavier Lussier, François Denis, and François Shareck 967–970
- Enhanced Display of Lipase on the *Escherichia coli* Cell Surface, Based on Transcriptome Analysis** Jong Hwan Baek, Mee-Jung Han, Seung Hwan Lee, and Sang Yup Lee 971–973

ENVIRONMENTAL MICROBIOLOGY

- Highly Diverse Cyanobactins in Strains of the Genus *Anabaena*** Niina Leikoski, David P. Fewer, Jouni Jokela, Matti Wahlsten, Leo Rouhiainen, and Kaarina Sivonen 701–709
- Determination of the Diversity of *Rhodopirellula* Isolates from European Seas by Multilocus Sequence Analysis** Nadine Winkelmann, Ulrike Jaekel, Carolin Meyer, Wilbert Serrano, Reinhard Rachel, Ramon Rosselló-Mora, and Jens Harder 776–785
- Reductive Debromination of Polybrominated Diphenyl Ethers by Anaerobic Bacteria from Soils and Sediments** Lip Kim Lee and Jianzhong He 794–802
- Lysogeny and Sporulation in *Bacillus* Isolates from the Gulf of Mexico** Jennifer Mobberley, R. Nathan Authement, Anca M. Segall, Robert A. Edwards, R. A. Slepecky, and J. H. Paul 829–842
- Diversity and Evolution of the Phenazine Biosynthesis Pathway** Dmitri V. Mavrodi, Tobin L. Peever, Olga V. Mavrodi, James A. Parejko, Jos M. Raaijmakers, Philippe Lemanceau, Sylvie Mazurier, Lutz Heide, Wulf Blankenfeldt, David M. Weller, and Linda S. Thomashow 866–879
- Acetate Permease (ActP) Is Responsible for Tellurite (TeO₃²⁻) Uptake and Resistance in Cells of the Facultative Phototroph *Rhodobacter capsulatus*** Roberto Borghese and Davide Zannoni 942–944

Continued on following page

ENZYMOMOLOGY AND PROTEIN ENGINEERING

- Application of a Short, Disordered N-Terminal Flagellin Segment, a Fully Functional Flagellar Type III Export Signal, to Expression of Secreted Proteins József Dobó, János Varga, Ráchel Sajó, Barbara M. Végh, Péter Gál, Péter Závodszy, and Ferenc Vonderviszt 891–899

FOOD MICROBIOLOGY

- Fates of Acid-Resistant and Non-Acid-Resistant Shiga Toxin-Producing *Escherichia coli* Strains in Ruminant Digestive Contents in the Absence and Presence of Probiotics Frédérique Chaucheyras-Durand, Fahima Faqir, Aurélie Ameilbonne, Christine Rozand, and Christine Martin 640–647
- Direct-Imaging-Based Quantification of *Bacillus cereus* ATCC 14579 Population Heterogeneity at a Low Incubation Temperature Heidi M. W. den Besten, Diego Garcia, Roy Moezelaar, Marcel H. Zwietering, and Tjakko Abec 927–930
- Physical Characteristics of Spores of Food-Associated Isolates of the *Bacillus cereus* Group Chandrakant Ankolekar and Ronald G. Labbé 982–984

GENETICS AND MOLECULAR BIOLOGY

- CalA, a Cyanobacterial AbrB Protein, Interacts with the Upstream Region of *hypC* and Acts as a Repressor of Its Transcription in the Cyanobacterium *Nostoc* sp. Strain PCC 7120 Åsa Agervald, Xiaohui Zhang, Karin Stensjö, Ellenor Devine, and Peter Lindblad 880–890
- Characterization of the *ars* Gene Cluster from Extremely Arsenic-Resistant *Microbacterium* sp. Strain A33 Asma Achour-Rokbani, Audrey Cordi, Pascal Poupin, Pascale Bauda, and Patrick Billard 948–955

GEOMICROBIOLOGY

- Correlation of *Dehalococcoides* 16S rRNA and Chloroethene-Reductive Dehalogenase Genes with Geochemical Conditions in Chloroethene-Contaminated Groundwater Bas van der Zaan, Fredericke Hannes, Nanne Hoekstra, Huub Rijnaarts, Willem M. de Vos, Hauke Smidt, and Jan Gerritse 843–850

INVERTEBRATE MICROBIOLOGY

- Stability of a *Spodoptera frugiperda* Nucleopolyhedrovirus Deletion Recombinant during Serial Passage in Insects Oihane Simón, Trevor Williams, Robert D. Possee, Miguel López-Ferber, and Primitivo Caballero 803–809
- Alanine Scanning Analyses of the Three Major Loops in Domain II of *Bacillus thuringiensis* Mosquitocidal Toxin Cry4Aa Mohammad Tofazzal Hossain Howlader, Yasuhiro Kagawa, Ai Miyakawa, Ayaka Yamamoto, Tetsuya Taniguchi, Tohru Hayakawa, and Hiroshi Sakai 860–865
- Association of Hemolytic Activity of *Pseudomonas entomophila*, a Versatile Soil Bacterium, with Cyclic Lipopeptide Production Isabelle Vallet-Gely, Alexey Novikov, Luis Augusto, Peter Liehl, Gérard Bolbach, Maria Péchy-Tarr, Pierre Cosson, Christoph Keel, Martine Caroff, and Bruno Lemaitre 910–921

METHODS

- Coupling of Denaturing High-Performance Liquid Chromatography and Terminal Restriction Fragment Length Polymorphism with Precise Fragment Sizing for Microbial Community Profiling and Characterization Christian Penny, Thierry Nadalig, Malek Alioua, Christelle Gruffaz, Stéphane Vuilleumier, and Françoise Bringel 648–651
- New Architectures for Tet-On and Tet-Off Regulation in *Staphylococcus aureus* Elena Stary, Rosmarie Gaupp, Sabrina Lechner, Martina Leibig, Evelyn Tichy, Martina Kolb, and Ralph Bertram 680–687

Use of a Foam Spatula for Sampling Surfaces after Bioaerosol Deposition	Rafał Lewandowski, Krystyna Kozłowska, Małgorzata Szpakowska, Małgorzata Stępińska, and Elżbieta A. Trafny	688–694
Use of <i>Hydrogenophaga pseudoflava</i> Penetration To Quantitatively Assess the Impact of Filtration Parameters for 0.2-Micrometer-Pore-Size Filters	A. Lee, J. McVey, P. Faustino, S. Lute, N. Sweeney, V. Pawar, M. Khan, K. Brorson, and D. Hussong	695–700
Development of a Loop-Mediated Isothermal Amplification Assay for Sensitive and Rapid Detection of the <i>tdh</i> and <i>trh</i> Genes of <i>Vibrio parahaemolyticus</i> and Related <i>Vibrio</i> Species	Wataru Yamazaki, Yuko Kumeda, Naoaki Misawa, Yoshitsugu Nakaguchi, and Mitsuaki Nishibuchi	820–828
Double Labeling of Oligonucleotide Probes for Fluorescence <i>In Situ</i> Hybridization (DOPE-FISH) Improves Signal Intensity and Increases rRNA Accessibility	Kilian Stoecker, Christiane Dorninger, Holger Daims, and Michael Wagner	922–926
Molecular Detection of Viable Bacterial Pathogens in Water by Ratiometric Pre-rRNA Analysis	Gerard A. Cangelosi, Kris M. Weigel, Clarita Lefthand-Begay, and John S. Meschke	960–962
Use of Green Fluorescent Protein To Monitor Cell Envelope Stress in <i>Lactococcus lactis</i>	Ana Belén Campelo, Ana Rodríguez, and Beatriz Martínez	978–981
Use of <i>rpsL</i> as a Counterselectable Marker in <i>Borrelia burgdorferi</i>	Dan Drecktrah, J. Miles Douglas, and D. Scott Samuels	985–987
MICROBIAL ECOLOGY		
Broad Habitat Range of the Phylogenetically Narrow R-BT065 Cluster, Representing a Core Group of the Betaproteobacterial Genus <i>Limnohabitans</i>	Karel Šimek, Vojtěch Kasalický, Jan Jezbera, Jitka Jezberová, Josef Hejzlar, and Martin W. Hahn	631–639
Archaeal and Bacterial Communities Respond Differently to Environmental Gradients in Anoxic Sediments of a California Hypersaline Lake, the Salton Sea	Brandon K. Swan, Christopher J. Ehrhardt, Kristen M. Reifel, Lilliana I. Moreno, and David L. Valentine	757–768
Aggregate Size and Architecture Determine Microbial Activity Balance for One-Stage Partial Nitrification and Anammox	Siegfried E. Vlaeminck, Akihiko Terada, Barth F. Smets, Haydée De Clippeleir, Thomas Schaubroeck, Selin Bolca, Lien Demeestere, Jan Mast, Nico Boon, Marta Carballa, and Willy Verstraete	900–909
Physiological Versatility of the Extremely Thermoacidophilic Archaeon <i>Metallosphaera sedula</i> Supported by Transcriptomic Analysis of Heterotrophic, Autotrophic, and Mixotrophic Growth	Kathryne S. Auernik and Robert M. Kelly	931–935
PHYSIOLOGY		
Role of <i>Saccharomyces cerevisiae</i> Oxidoreductases Bdh1p and Ara1p in the Metabolism of Acetoin and 2,3-Butanediol	Eva González, M. Rosario Fernández, Didac Marco, Eduard Calam, Lauro Sumoy, Xavier Parés, Sylvie Dequin, and Josep A. Biosca	670–679
LccA, an Archaeal Laccase Secreted as a Highly Stable Glycoprotein into the Extracellular Medium by <i>Haloferax volcanii</i>	Sivakumar Uthandi, Boutaiba Saad, Matthew A. Humbard, and Julie A. Maupin-Furlow	733–743
Inhibitory Effects of Low-Energy Pulsed Ultrasonic Stimulation on Cell Surface Protein Antigen C through Heat Shock Proteins GroEL and DnaK in <i>Streptococcus mutans</i>	Kazuya Ishibashi, Koichi Shimada, Takayuki Kawato, Shigejyu Kaji, Masao Maeno, Shuichi Sato, and Koichi Ito	751–756
Metabolic Impact of Increased NADH Availability in <i>Saccharomyces cerevisiae</i>	Jin Hou, Gionata Scalcinati, Marco Oldiges, and Goutham N. Vemuri	851–859

Synergistic Effects of the <i>Lactobacillus acidophilus</i> Surface Layer and Nisin on Bacterial Growth	Mariano Prado-Acosta, Sandra M. Ruzal, Mariana C. Allievi, María Mercedes Palomino, and Carmen Sanchez Rivas	974–977
PLANT MICROBIOLOGY		
Expression of a Synthesized Gene Encoding Cationic Peptide Cecropin B in Transgenic Tomato Plants Protects against Bacterial Diseases	Pey-Shynan Jan, Hsu-Yuang Huang, and Hueih-Min Chen	769–775
PUBLIC HEALTH MICROBIOLOGY		
High Heterogeneity within Methicillin-Resistant <i>Staphylococcus aureus</i> ST398 Isolates, Defined by Cfr9I Macrorestriction–Pulsed-Field Gel Electrophoresis Profiles and <i>spa</i> and SCCmec Types	M. A. Argudín, A. Fetsch, B.-A. Tenhagen, J. A. Hammerl, S. Hertwig, J. Kowall, M. R. Rodicio, A. Käsbohrer, R. Helmuth, A. Schroeter, M. C. Mendoza, J. Bräunig, B. Appel, and B. Guerra	652–658
Transport and Distribution of <i>Salmonella enterica</i> Serovar Typhimurium in Loamy and Sandy Soil Monoliths with Applied Liquid Manure	Tina B. Bech, Kaare Johnsen, Anders Dalsgaard, Mette Laegdsmand, Ole Hørbye Jacobsen, and Carsten S. Jacobsen	710–714
Quantitative Detection of Human Adenoviruses in Wastewater and Combined Sewer Overflows Influencing a Michigan River	Theng-Theng Fong, Mantha S. Phanikumar, Irene Xagorarakis, and Joan B. Rose	715–723
Presence of Pathogens and Indicator Microbes at a Non-Point Source Subtropical Recreational Marine Beach	Amir M. Abdelzاهر, Mary E. Wright, Cristina Ortega, Helena M. Solo-Gabriele, Gary Miller, Samir Elmir, Xihui Newman, Peter Shih, J. Alfredo Bonilla, Tonya D. Bonilla, Carol J. Palmer, Troy Scott, Jerzy Lukasiak, Valerie J. Harwood, Shannon McQuaig, Chris Sinigalliano, Maribeth Gidley, Lisa R. W. Plano, Xiaofang Zhu, John D. Wang, and Lora E. Fleming	724–732
Bacteria Associated with Immunoregulatory Cells in Mice	Laura L. Presley, Bo Wei, Jonathan Braun, and James Borneman	936–941
Genetic Analysis for the Lack of Expression of the O157 Antigen in an O Rough:H7 <i>Escherichia coli</i> Strain	Lydia V. Rump, Peter C. H. Feng, Markus Fischer, and Steven R. Monday	945–947
Influence of Plasmid pO157 on <i>Escherichia coli</i> O157:H7 Sakai Biofilm Formation	Ji Youn Lim, Hyun Joon La, Haiqing Sheng, Larry J. Forney, and Carolyn J. Hovde	963–966
AUTHOR'S CORRECTION		
Dispersion of Multidrug-Resistant <i>Enterococcus faecium</i> Isolates Belonging to Major Clonal Complexes in Different Portuguese Settings	Ana R. Freitas, Carla Novais, Patricia Ruiz-Garbajosa, Teresa M. Coque, and Luísa Peixe	988

Cover photograph (Copyright © 2010, American Society for Microbiology. All Rights Reserved.): Laminated sediments representing ~102 years of history of the Salton Sea, California, a large (980-km²), moderately hypersaline lake. Dramatic geochemical gradients found within the sediments are formed by salt deposits dissolving within deeper layers (gray-colored sediment). Merged onto this image is a similarity dendrogram showing large shifts in bacterial community structure with depth. In contrast, the archaeal community showed little change along the depth-related gradients. This suggests that *Archaea* may be better adapted than *Bacteria* to geochemical changes within energetically stressful environments. Length of sediment core, ~45 cm. Photo courtesy of Kristen M. Reifel and Brandon K. Swan. (See related article on page 757.)