

# APPLIED AND ENVIRONMENTAL MICROBIOLOGY

Volume 77

March 2011

No. 5

## MINIREVIEWS

- Metallic Copper as an Antimicrobial Surface** Gregor Grass, Christopher Rensing, and Marc Solioz 1541–1547
- The Multifactorial Basis for Plant Health Promotion by Plant-Associated Bacteria** Young Cheol Kim, Johan Leveau, Brian B. McSpadden Gardener, Elizabeth A. Pierson, Leland S. Pierson III, and Choong-Min Ryu 1548–1555

## BIODEGRADATION

- Biochemical Characteristics of the Novel Haloalkane Dehalogenase DatA, Isolated from the Plant Pathogen *Agrobacterium tumefaciens* C58** Khomaini Hasan, Andrea Fortova, Tana Koudelakova, Radka Chaloupkova, Mayuko Ishitsuka, Yuji Nagata, Jiri Damborsky, and Zbynek Prokop 1881–1884

## BIOTECHNOLOGY

- Real-Time Solvent Tolerance Analysis of *Pseudomonas* sp. Strain VLB120ΔC Catalytic Biofilms** Babu Halan, Andreas Schmid, and Katja Buehler 1563–1571
- Identification of a *Saccharomyces cerevisiae* Glucosidase That Hydrolyzes Flavonoid Glucosides** Sabine Schmidt, Sandra Rainieri, Simone Witte, Ulrich Matern, and Stefan Martens 1751–1757
- Metabolic Engineering of *Saccharomyces cerevisiae* for Production of Eicosapentaenoic Acid, Using a Novel Δ5-Desaturase from *Paramecium tetraurelia*** Sabina Tavares, Thomas Grotkjær, Thomas Obsen, Richard P. Haslam, Johnathan A. Napier, and Nina Gunnarsson 1854–1861
- Transcriptome Analysis of an Antibiotic Downregulator Mutant and Synergistic Actinorhodin Stimulation via Disruption of a Precursor Flux Regulator in *Streptomyces coelicolor*** Seon-Hye Kim, Han-Na Lee, Hye-Jin Kim, and Eung-Soo Kim 1872–1877
- Efficient Homofermentative L-(+)-Lactic Acid Production from Xylose by a Novel Lactic Acid Bacterium, *Enterococcus mundtii* QU 25** Mohamed Ali Abdel-Rahman, Yukihiko Tashiro, Takeshi Zendo, Katsuhiko Hanada, Keisuke Shibata, and Kenji Sonomoto 1892–1895

## ENVIRONMENTAL MICROBIOLOGY

- Quantitative PCR Coupled with Melt Curve Analysis for Detection of Selected *Pseudo-nitzschia* spp. (Bacillariophyceae) from the Northwestern Mediterranean Sea** Karl B. Andree, Margarita Fernández-Tejedor, Laurence M. Elandaloussi, Sonia Quijano-Scheggia, Nagore Sampedro, Esther Garcés, Jordi Camp, and Jorge Diogène 1651–1659
- Ammonium Availability Affects the Ratio of Ammonia-Oxidizing Bacteria to Ammonia-Oxidizing Archaea in Simulated Creek Ecosystems** Martina Herrmann, Andrea Scheibe, Sharon Avrahami, and Kirsten Küsel 1896–1899

## ENZYMOMOLOGY AND PROTEIN ENGINEERING

- Terminal Olefin (1-Alkene) Biosynthesis by a Novel P450 Fatty Acid Decarboxylase from *Jeotgalicoccus* Species** Mathew A. Rude, Tarah S. Baron, Shane Brubaker, Murtaza Alibhai, Stephen B. Del Cardayre, and Andreas Schirmer 1718–1727

Continued on following page

## EVOLUTIONARY AND GENOMIC MICROBIOLOGY

- Saccharomyces cerevisiae* Genome-Wide Mutant Screen for Sensitivity to 2,4-Diacetylphloroglucinol, an Antibiotic Produced by *Pseudomonas fluorescens* Youn-Sig Kwak, Sangjo Han, Linda S. Thomashow, Jennifer T. Rice, Timothy C. Paulitz, Dongsup Kim, and David M. Weller 1770–1776

## FOOD MICROBIOLOGY

- Extended-Spectrum Beta-Lactamase Gene Sequences in Gram-Negative Saprophytes on Retail Organic and Nonorganic Spinach Eva Raphael, Lisa K. Wong, and Lee W. Riley 1601–1607
- Comparison of *Arcobacter* Isolation Methods, and Diversity of *Arcobacter* spp. in Cheshire, United Kingdom J. Y. Merga, A. J. H. Leatherbarrow, C. Winstanley, M. Bennett, C. A. Hart, W. G. Miller, and N. J. Williams 1646–1650
- Effect of Desiccation on Tolerance of *Salmonella enterica* to Multiple Stresses Nadia Gruzdev, Riky Pinto, and Shlomo Sela 1667–1673
- Cellodextrin Utilization by *Bifidobacterium breve* UCC2003 Karina Pokusaeva, Mary O'Connell-Motherway, Aldert Zomer, John MacSharry, Gerald F. Fitzgerald, and Douwe van Sinderen 1681–1690
- Arcobacter* Population Dynamics in Pigs on Farrow-to-Finish Farms Sarah De Smet, Lieven De Zutter, Lies Debruyne, Frédéric Vangroenweghe, Peter Vandamme, and Kurt Houf 1732–1738
- Diversity of Multidrug-Resistant *Salmonella enterica* Strains Associated with Cattle at Harvest in the United States Dayna M. Brichta-Harhay, Terrance M. Arthur, Joseph M. Bosilevac, Norasak Kalchayanand, Steven D. Shackelford, Tommy L. Wheeler, and Mohammad Koohmaraie 1783–1796
- Comprehensive Approaches to Molecular Biomarker Discovery for Detection and Identification of *Cronobacter* spp. (*Enterobacter sakazakii*) and *Salmonella* spp. Xianghe Yan, Joshua Gurtler, Pina Fratamico, Jing Hu, Nereus W. Gunther IV, Vijay Juneja, and Lihan Huang 1833–1843
- Plasmid-Mediated Quinolone Resistance in *Pseudomonas putida* Isolates from Imported Shrimp Quynh T. Tran, Mohamed S. Nawaz, Joanna Deck, Kiet T. Nguyen, and Carl E. Cerniglia 1885–1887

## GENETICS AND MOLECULAR BIOLOGY

- Identification of Cold-Temperature-Regulated Genes in *Flavobacterium psychrophilum* Shohreh Hesami, Devon S. Metcalf, John S. Lumsden, and Janet I. MacInnes 1593–1600
- Analyses of both the *alkB* Gene Transcriptional Start Site and *alkB* Promoter-Inducing Properties of *Rhodococcus* sp. Strain BCP1 Grown on *n*-Alkanes M. Cappelletti, S. Fedi, D. Frascari, H. Ohtake, R. J. Turner, and D. Zannoni 1619–1627
- Role of the Cell Wall Microenvironment in Expression of a Heterologous SpaP-S1 Fusion Protein by *Streptococcus gordonii* Elisabeth Davis, Dustin Kennedy, Scott A. Halperin, and Song F. Lee 1660–1666
- Entianin, a Novel Subtilin-Like Lantibiotic from *Bacillus subtilis* subsp. *spizizenii* DSM 15029<sup>T</sup> with High Antimicrobial Activity Sebastian W. Fuchs, Thorsten W. Jaskolla, Sophie Bochmann, Peter Kötter, Thomas Wichelhaus, Michael Karas, Torsten Stein, and Karl-Dieter Entian 1698–1707
- A New Wine *Saccharomyces cerevisiae* Killer Toxin (Klus), Encoded by a Double-Stranded RNA Virus, with Broad Antifungal Activity Is Evolutionarily Related to a Chromosomal Host Gene Nieves Rodríguez-Cousiño, Matilde Maqueda, Jesús Ambrona, Emiliano Zamora, Rosa Esteban, and Manuel Ramírez 1822–1832

Continued from preceding page

<b>Novel Structural Elements within the Nonproteolytic <i>Clostridium botulinum</i> Type F Toxin Gene Cluster</b>	N. Dover, J. R. Barash, K. K. Hill, J. C. Detter, and S. S. Arnon	1904–1906
<b>INVERTEBRATE MICROBIOLOGY</b>		
<b>Lambda Red-Mediated Genetic Modification of the Insect Endosymbiont <i>Sodalis glossinidius</i></b>	Mauricio H. Pontes and Colin Dale	1918–1920
<b>METHODS</b>		
<b>Identification and Characterization of Novel and Potent Transcription Promoters of <i>Francisella tularensis</i></b>	Galia Zaide, Haim Grosfeld, Sharon Ehrlich, Anat Zvi, Ofer Cohen, and Avigdor Shafferman	1608–1618
<b>Recovery of <i>Bacillus</i> Spore Contaminants from Rough Surfaces: a Challenge to Space Mission Cleanliness Control</b>	Alexander Probst, Rainer Facius, Reinhard Wirth, Marco Wolf, and Christine Moissl-Eichinger	1628–1637
<b>Development of an Aerosol Surface Inoculation Method for <i>Bacillus</i> Spores</b>	Sang Don Lee, Shawn P. Ryan, and Emily Gibb Snyder	1638–1645
<b>Subpopulation-Specific Metabolic Pathway Usage in Mixed Cultures as Revealed by Reporter Protein-Based <sup>13</sup>C Analysis</b>	Martin Rühl, Wolf-Dietrich Hardt, and Uwe Sauer	1816–1821
<b>Detection of <i>Cryptosporidium molnari</i> Oocysts from Fish by Fluorescent-Antibody Staining Assays for <i>Cryptosporidium</i> spp. Affecting Humans</b>	Rona Barugahare, Michelle M. Dennis, Joy A. Becker, and Jan Šlapeta	1878–1880
<b>MICROBIAL ECOLOGY</b>		
<b>Persistence of Free-Living Protozoan Communities across Rearing Cycles in Commercial Poultry Houses</b>	Julie Baré, Kurt Houf, Tine Verstraete, Mario Vaerewijck, and Koen Sabbe	1763–1769
<b>Terminal Oxidase Diversity and Function in “<i>Metallosphaera yellowstonensis</i>”: Gene Expression and Protein Modeling Suggest Mechanisms of Fe(II) Oxidation in the <i>Sulfolobales</i></b>	M. A. Kozubal, M. Dlakić, R. E. Macur, and W. P. Inskeep	1844–1853
<b>MYCOLOGY</b>		
<b>Influence of the Host Contact Sequence on the Outcome of Competition among <i>Aspergillus flavus</i> Isolates during Host Tissue Invasion</b>	H. L. Mehl and P. J. Cotty	1691–1697
<b>Catalytic Properties and Classification of Cellobiose Dehydrogenases from Ascomycetes</b>	Wolfgang Harreither, Christoph Sygmond, Manfred Augustin, Melanie Narciso, Mikhail L. Rabinovich, Lo Gorton, Dietmar Haltrich, and Roland Ludwig	1804–1815
<b>Phosphate Transporter Genes as Reliable Gene Markers for the Identification and Discrimination of Arbuscular Mycorrhizal Fungi in the Genus <i>Glomus</i></b>	Serge Sokolski, Yolande Dalpé, and Yves Piché	1888–1891
<b>PHYSIOLOGY</b>		
<b>The Mode of Cell Wall Growth in Selected Archaea Is Similar to the General Mode of Cell Wall Growth in Bacteria as Revealed by Fluorescent Dye Analysis</b>	Reinhard Wirth, Annett Bellack, Markus Bertl, Yvonne Bilek, Thomas Heimerl, Bastian Herzog, Madeleine Leisner, Alexander Probst, Reinhard Rachel, Christina Sarbu, Simone Schopf, and Gerhard Wanner	1556–1562

Continued on following page

<b>Inhibition of <i>Streptococcus mutans</i> Biofilm Formation by <i>Streptococcus salivarius</i> FruA</b>	Ayako Ogawa, Soichi Furukawa, Shuhei Fujita, Jiro Mitobe, Taketo Kawarai, Naoki Narisawa, Tsuyoshi Sekizuka, Makoto Kuroda, Kuniyasu Ochiai, Hirokazu Ogihara, Saori Kosono, Saori Yoneda, Haruo Watanabe, Yasushi Morinaga, Hiroshi Uematsu, and Hidenobu Senpuku	1572–1580
<b>Formic Acid Triggers the “Acid Crash” of Acetone-Butanol-Ethanol Fermentation by <i>Clostridium acetobutylicum</i></b>	Shaohua Wang, Yanping Zhang, Hongjun Dong, Shaoming Mao, Yan Zhu, Runjiang Wang, Guodong Luan, and Yin Li	1674–1680
<b>Lag Phase of <i>Salmonella enterica</i> under Osmotic Stress Conditions</b>	K. Zhou, S. M. George, A. Métris, P. L. Li, and J. Baranyi	1758–1762
<b>Contribution of the <i>Klebsiella pneumoniae</i> Capsule to Bacterial Aggregate and Biofilm Microstructures</b>	Stephen P. Dzul, Margaret M. Thornton, Danial N. Hohne, Elizabeth J. Stewart, Aayush A. Shah, David M. Bortz, Michael J. Solomon, and John G. Younger	1777–1782
<b>Thermodynamics of Microbial Growth Coupled to Metabolism of Glucose, Ethanol, Short-Chain Organic Acids, and Hydrogen</b>	Eric E. Roden and Qusheng Jin	1907–1909
<b>PLANT MICROBIOLOGY</b>		
<b>Differentiation of “<i>Candidatus Liberibacter asiaticus</i>” Isolates by Variable-Number Tandem-Repeat Analysis</b>	Hiroshi Katoh, Siti Subandiyah, Kenta Tomimura, Mitsuru Okuda, Hong-Ji Su, and Toru Iwanami	1910–1917
<b>PUBLIC HEALTH MICROBIOLOGY</b>		
<b>Detection, Isolation, and Characterization of <i>Helicobacter</i> Species from the Gastrointestinal Tract of the Brushtail Possum</b>	Thosaporn Coldham, Kerrie Rose, Jani O’rourke, Brett A. Neilan, Helen Dalton, Adrian Lee, and Hazel Mitchell	1581–1587
<b>Viability of <i>Bacillus licheniformis</i> and <i>Bacillus thuringiensis</i> Spores as a Model for Predicting the Fate of <i>Bacillus anthracis</i> Spores during Composting of Dead Livestock</b>	Tim Reuter, Trevor W. Alexander, and Tim A. McAllister	1588–1592
<b>Specific Real-Time PCR for Simultaneous Detection and Identification of <i>Legionella pneumophila</i> Serogroup 1 in Water and Clinical Samples</b>	N. Mérault, C. Rusniok, S. Jarraud, L. Gomez-Valero, C. Cazalet, M. Marin, E. Brachet, P. Aegerter, J. L. Gaillard, J. Etienne, J. L. Herrmann, the DELPH-I Study Group, C. Lawrence, and C. Buchrieser	1708–1717
<b>Persistent Infection or Successive Reinfection of Deer Mice with <i>Bartonella vinsonii</i> subsp. <i>arupensis</i></b>	Ying Bai, Charles H. Calisher, Michael Y. Kosoy, J. Jeffrey Root, and Jeffrey B. Doty	1728–1731
<b>Molecular Epidemiology of <i>Salmonella enterica</i> Serovar Typhimurium Isolates from Cattle in Hokkaido, Japan: Evidence of Clonal Replacement and Characterization of the Disseminated Clone</b>	Yukino Tamamura, Ikuo Uchida, Kiyoshi Tanaka, Hizuru Okazaki, Satoru Tezuka, Hideki Hanyu, Natsumi Kataoka, Sou-ichi Makino, Masato Kishima, Takayuki Kubota, Toru Kanno, Shinichi Hatama, Ryoko Ishihara, Eiji Hata, Hironari Yamada, Yuuji Nakaoka, and Masato Akiba	1739–1750

Continued from preceding page

<b>Survival of <i>Escherichia coli</i>, Enterococci, and <i>Campylobacter</i> spp. in Sheep Feces on Pastures</b>	Elaine M. Moriarty, Margaret L. Mackenzie, Naveena Karki, and Lester W. Sinton	1797–1803
<b>Inactivation of a Human Norovirus Surrogate by High-Pressure Processing: Effectiveness, Mechanism, and Potential Application in the Fresh Produce Industry</b>	Fangfei Lou, Huda Neetoo, Haiqiang Chen, and Jianrong Li	1862–1871
<b>Gene Cluster Conferring Streptomycin, Sulfonamide, and Tetracycline Resistance in <i>Escherichia coli</i> O157:H7 Phage Types 23, 45, and 67</b>	K. Ziebell, R. P. Johnson, A. M. Kropinski, R. Reid-Smith, R. Ahmed, V. P. Gannon, M. Gilmour, and P. Boerlin	1900–1903

#### **LETTERS TO THE EDITOR**

<b>Recombination in <i>Wolbachia</i> Endosymbionts of Filarial Nematodes?</b>	Jeremy Foster, Barton Slatko, Claudio Bandi, and Sanjay Kumar	1921–1922
<b>What Is <i>Mycobacterium avium</i> subsp. <i>paratuberculosis</i>?</b>	<i>Letter:</i> Rodrick J. Chiodini and William M. Chamberlin. <i>Reply:</i> Stacy Pfaller	1923–1924