

TABLE OF CONTENTS

SPOTLIGHT

- Articles of Significant Interest Selected from This Issue by the Editors 2111

MINIREVIEW

- Homeostasis and Catabolism of Choline and Glycine Betaine: Lessons from *Pseudomonas aeruginosa* Matthew J. Wargo 2112–2120

BIODEGRADATION

- Cloning of a Novel Nicotine Oxidase Gene from *Pseudomonas* sp. Strain HZN6 Whose Product Nonenantioselectively Degrades Nicotine to Pseudooxynicotine Jiguo Qiu, Yun Ma, Jing Zhang, Yuezhong Wen, Weiping Liu 2164–2171
- Cytochrome P450 Initiates Degradation of *cis*-Dichloroethene by *Polaromonas* sp. Strain JS666 Shirley F. Nishino, Kwanghee A. Shin, James M. Gossett, Jim C. Spain 2263–2272
- Constitutive Expression of the Cytochrome P450 EthABCD Monooxygenase System Enables Degradation of Synthetic Dialkyl Ethers in *Aquicola tertiaricarbonis* L108 Judith Schuster, Jessica Purswani, Uta Breuer, Clementina Pozo, Hauke Harms, Roland H. Müller, Thore Rohwerder 2321–2327

BIOTECHNOLOGY

- Anaerobic Sulfur Metabolism Coupled to Dissimilatory Iron Reduction in the Extremophile *Acidithiobacillus ferrooxidans* Héctor Osorio, Stefanie Mangold, Yann Denis, Ivan Nancucheo, Mario Esparza, D. Barrie Johnson, Violaine Bonnefoy, Mark Dopson, David S. Holmes 2172–2181
- Identification of Homophenylalanine Biosynthetic Genes from the Cyanobacterium *Nostoc punctiforme* PCC73102 and Application to Its Microbial Production by *Escherichia coli* Kento Koketsu, Satoshi Mitsuhashi, Kazuhiko Tabata 2201–2208
- Identification of a Cyclosporine-Specific P450 Hydroxylase Gene through Targeted Cytochrome P450 Complement (CYPome) Disruption in *Sebekia benihana* Mi-Jin Lee, Hyun-Bum Kim, Yeo Joon Yoon, Kyuboem Han, Eung-Soo Kim 2253–2262
- Microfluidic Chip-Based Detection and Intraspecies Strain Discrimination of *Salmonella* Serovars Derived from Whole Blood of Septic Mice Adriana S. Patterson, Douglas M. Heithoff, Brian S. Ferguson, H. Tom Soh, Michael J. Mahan, Kevin W. Plaxco 2302–2311
- Combined Fluxomics and Transcriptomics Analysis of Glucose Catabolism via a Partially Cyclic Pentose Phosphate Pathway in *Gluconobacter oxydans* 621H Tanja Hanke, Katharina Nöh, Stephan Noack, Tino Polen, Stephanie Bringer, Hermann Sahn, Wolfgang Wiechert, Michael Bott 2336–2348
- Streptomyces lividans* Blastocidin S Deaminase and Its Application in Engineering a Blastocidin S-Producing Strain for Ease of Genetic Manipulation Li Li, Jun Wu, Zixin Deng, T. Mark Zabriskie, Xinyi He 2349–2357

ENVIRONMENTAL MICROBIOLOGY

- Evolutionary Acquisition and Loss of Saxitoxin Biosynthesis in Dinoflagellates: the Second “Core” Gene, *sxtG* Russell J. S. Orr, Anke Stüken, Shauna A. Murray, Kjetill S. Jakobsen 2128–2136
- Inactivation of Pathogens in Feces by Desiccation and Urea Treatment for Application in Urine-Diverting Dry Toilets Maria Elisa Magri, Luiz Sérgio Philippi, Björn Vinnerås 2156–2163
- Genetic Diversity of *Cryptosporidium* spp. within a Remote Population of Soay Sheep on St. Kilda Islands, Scotland L. Connelly, B. H. Craig, B. Jones, C. L. Alexander 2240–2246

Continued on following page

Transcriptomic and Genetic Analysis of Direct Interspecies Electron Transfer	Pravin Malla Shrestha, Amelia-Elena Rotaru, Zarath M. Summers, Minita Shrestha, Fanghua Liu, Derek R. Lovley	2397–2404
Survival, Sublethal Injury, and Recovery of Environmental <i>Burkholderia pseudomallei</i> in Soil Subjected to Desiccation	Eloise Larsen, James J. Smith, Robert Norton, Maree Corkeron	2424–2427
Changes in Enterococcal Populations and Related Antibiotic Resistance along a Medical Center-Wastewater Treatment Plant-River Continuum	Roland Leclercq, Kenny Oberlé, Sébastien Galopin, Vincent Cattoir, Hélène Budzinski, Fabienne Petit	2428–2434
Evaluating the Pathogenic Potential of Environmental <i>Escherichia coli</i> by Using the <i>Caenorhabditis elegans</i> Infection Model	Alexandra Merckx-Jacques, Anja Coors, Roland Brousseau, Luke Masson, Alberto Mazza, Yuan-Ching Tien, Edward Topp	2435–2445
Phylogenetic Delineation of the Novel Phylum <i>Armatimonadetes</i> (Former Candidate Division OP10) and Definition of Two Novel Candidate Divisions	K. C. Y. Lee, C. W. Herbold, P. F. Dunfield, X. C. Morgan, I. R. McDonald, M. B. Stott	2484–2487
Differential Decay of Enterococci and <i>Escherichia coli</i> Originating from Two Fecal Pollution Sources	Asja Korajkic, Brian R. McMinn, Valerie J. Harwood, Orin C. Shanks, G. Shay Fout, Nicholas J. Ashbolt	2488–2492
ENZYMOLGY AND PROTEIN ENGINEERING		
Characterization of a Novel Metagenome-Derived 6-Phospho- β -Glucosidase from Black Liquor Sediment	Chunyu Yang, Yu Niu, Chunfang Li, Deyu Zhu, Wei Wang, Xinqiang Liu, Bin Cheng, Cuiqing Ma, Ping Xu	2121–2127
Thermostable Alcohol Dehydrogenase from <i>Thermococcus kodakarensis</i> KOD1 for Enantioselective Bioconversion of Aromatic Secondary Alcohols	Xi Wu, Chong Zhang, Izumi Orita, Tadayuki Imanaka, Toshiaki Fukui, Xin-Hui Xing	2209–2217
EVOLUTIONARY AND GENOMIC MICROBIOLOGY		
Recent Evolutionary Radiation and Host Plant Specialization in the <i>Xylella fastidiosa</i> Subspecies Native to the United States	Leonard Nunney, Danel B. Vickerman, Robin E. Bromley, Stephanie A. Russell, John R. Hartman, Lisa D. Morano, Richard Stouthamer	2189–2200
FOOD MICROBIOLOGY		
Quantitative Detection of Viable <i>Bifidobacterium bifidum</i> BF-1 Cells in Human Feces by Using Propidium Monoazide and Strain-Specific Primers	Junji Fujimoto, Koichi Watanabe	2182–2188
Modulation of Porcine β -Defensins 1 and 2 upon Individual and Combined <i>Fusarium</i> Toxin Exposure in a Swine Jejunal Epithelial Cell Line	Murphy Lam-Yim Wan, Chit-Shing Jackson Woo, Kevin J. Allen, Paul C. Turner, Hani El-Nezami	2225–2232
Genome Instability in <i>Lactobacillus rhamnosus</i> GG	Wilbert Sybesma, Douwe Molenaar, Wilfred van IJcken, Koen Venema, Remco Kort	2233–2239
Influence of Therapeutic Ceftiofur Treatments of Feedlot Cattle on Fecal and Hide Prevalences of Commensal <i>Escherichia coli</i> Resistant to Expanded-Spectrum Cephalosporins, and Molecular Characterization of Resistant Isolates	John W. Schmidt, Dee Griffin, Larry A. Kuehn, Dayna M. Brichta-Harhay	2273–2283
A Hydrolase from <i>Lactobacillus sakei</i> Moonlights as a Transaminase	Quirin Sinz, Simone Freiding, Rudi F. Vogel, Wilfried Schwab	2284–2293
Stochasticity in Colonial Growth Dynamics of Individual Bacterial Cells	Konstantinos P. Koutsoumanis, Alexandra Lianou	2294–2301
Frequent Occurrence of Extended-Spectrum Beta-Lactamase- and Transferable AmpC Beta-Lactamase-Producing <i>Escherichia coli</i> on Domestic Chicken Meat in Sweden	Stefan Börjesson, Maria Egervärn, Mats Lindblad, Stina Englund	2463–2466

Genetic Determinants for Cadmium and Arsenic Resistance among <i>Listeria monocytogenes</i> Serotype 4b Isolates from Sporadic Human Listeriosis Patients	Sangmi Lee, M. Rakic-Martinez, L. M. Graves, T. J. Ward, R. M. Siletzky, S. Kathariou	2471–2476
GENETICS AND MOLECULAR BIOLOGY		
Hha Controls <i>Escherichia coli</i> O157:H7 Biofilm Formation by Differential Regulation of Global Transcriptional Regulators FlhDC and CsgD	Vijay K. Sharma, Bradley L. Bearson	2384–2396
Bifunctional Gene Cluster <i>InqBCDEF</i> Mediates Bacteriocin Production and Immunity with Differential Genetic Requirements	Shun Iwatani, Yuko Horikiri, Takeshi Zendo, Jiro Nakayama, Kenji Sonomoto	2446–2449
INVERTEBRATE MICROBIOLOGY		
Coinfection of <i>Dermacentor silvarum</i> Olenov (Acari: Ixodidae) by <i>Coxiella</i> -Like, <i>Arsenophonus</i> -Like, and <i>Rickettsia</i> -Like Symbionts	Limeng Liu, Lingxia Li, Jiannan Liu, Yonghong Hu, Zhao Liu, Lida Guo, Jingze Liu	2450–2454
Symbiont-Mediated Protection against Fungal Pathogens in Pea Aphids: a Role for Pathogen Specificity?	Benjamin J. Parker, Chelsea J. Spragg, Boran Altincicek, Nicole M. Gerardo	2455–2458
Symbiotic Characterization of <i>Vibrio fischeri</i> ES114 Mutants That Display Enhanced Luminescence in Culture	Noreen L. Lyell, Eric V. Stabb	2480–2483
METHODS		
Genetic Tools To Enhance the Study of Gene Function and Regulation in <i>Staphylococcus aureus</i>	Jeffrey L. Bose, Paul D. Fey, Kenneth W. Bayles	2218–2224
Development of a Rapid, Sensitive, and Field-Deployable Razor Ex BioDetection System and Quantitative PCR Assay for Detection of <i>Phymatotrichopsis omnivora</i> Using Multiple Gene Targets	M. Arif, J. Fletcher, S. M. Marek, U. Melcher, F. M. Ochoa-Corona	2312–2320
Multilocus Sequence Typing and FlaA Sequencing Reveal the Genetic Stability of <i>Campylobacter jejuni</i> Enrichment during Coculture with <i>Acanthamoeba polyphaga</i>	Petra Griekspoor, Jenny Olofsson, Diana Axelsson-Olsson, Jonas Waldenström, Björn Olsen	2477–2479
MICROBIAL ECOLOGY		
Thaumarchaeotal Signature Gene Distribution in Sediments of the Northern South China Sea: an Indicator of the Metabolic Intersection of the Marine Carbon, Nitrogen, and Phosphorus Cycles?	Hongyue Dang, Haixia Zhou, Jinying Yang, Huangmin Ge, Nianzhi Jiao, Xiwu Luan, Chuanlun Zhang, Martin G. Klotz	2137–2147
High Frequency of Virulence Factor Genes <i>tdh</i> , <i>trh</i> , and <i>tlh</i> in <i>Vibrio parahaemolyticus</i> Strains Isolated from a Pristine Estuary	Casandra K. Gutierrez West, Savannah L. Klein, Charles R. Lovell	2247–2252
Glucose Triggers ATP Secretion from Bacteria in a Growth-Phase-Dependent Manner	Ippei Hironaka, Tadayuki Iwase, Shinya Sugimoto, Ken-ichi Okuda, Akiko Tajima, Katsuhiko Yanaga, Yoshimitsu Mizunoe	2328–2335
MYCOLOGY		
Evidence from <i>Serpula lacrymans</i> that 2,5-Dimethoxyhydroquinone Is a Lignocellulolytic Agent of Divergent Brown Rot Basidiomycetes	Premasagar Korripally, Vitaliy I. Timokhin, Carl J. Houtman, Michael D. Mozuch, Kenneth E. Hammel	2377–2383
Redundancy among Manganese Peroxidases in <i>Pleurotus ostreatus</i>	Tomer M. Salame, Doriv Knop, Dana Levinson, Oded Yarden, Yitzhak Hadar	2405–2415

PHYSIOLOGY

- Pathogenicity of Dodecyltrimethylammonium Chloride-Resistant *Salmonella enterica*** Megan J. M. Kautz, Aleksey Dvorzhinskiy, Jonathan G. Frye, Natalie Stevenson, Diane S. Herson 2371–2376
- Taxis of *Pseudomonas putida* F1 toward Phenylacetic Acid Is Mediated by the Energy Taxis Receptor Aer2** Rita A. Luu, Benjamin J. Schneider, Christie C. Ho, Vasyl Nesteryuk, Stacy E. Ngwesse, Xianxian Liu, Juanito V. Parales, Jayna L. Ditty, Rebecca E. Parales 2416–2423
- Direct Assessment of Metabolite Utilization by *Pseudomonas aeruginosa* during Growth on Artificial Sputum Medium** Volker Behrends, Benedikt Geier, Huw D. Williams, Jacob G. Bundy 2467–2470

PLANT MICROBIOLOGY

- Photosynthetic *Bradyrhizobium* sp. Strain ORS285 Is Capable of Forming Nitrogen-Fixing Root Nodules on Soybeans (*Glycine max*)** Eric Giraud, Lei Xu, Clémence Chaintreuil, Daniel Gargani, Djamel Gully, Michael J. Sadowsky 2459–2462

PUBLIC HEALTH MICROBIOLOGY

- Persistence of the 2009 Pandemic Influenza A (H1N1) Virus on N95 Respirators** A. D. Coulliette, K. A. Perry, J. R. Edwards, J. A. Noble-Wang 2148–2155
- Genetic Relationships of *Vibrio parahaemolyticus* Isolates from Clinical, Human Carrier, and Environmental Sources in Thailand, Determined by Multilocus Sequence Analysis** Chonchanok Theethakaew, Edward J. Feil, Santiago Castillo-Ramírez, David M. Aanensen, Orasa Suthienkul, Douglas M. Neil, Robert L. Davies 2358–2370