

APPLIED AND ENVIRONMENTAL MICROBIOLOGY

Volume 73

February 2007

No. 3

MINIREVIEW

Bacterial Genes Responsible for the Biosynthesis of Eicosapentaenoic and Docosahexaenoic Acids and Their Heterologous Expression

Hidetoshi Okuyama, Yoshitake Orikasa, Takanori Nishida, Kazuo Watanabe, and Naoki Morita 665–670

GENETICS AND MOLECULAR BIOLOGY

A Two-Component System Regulates the Expression of an ABC Transporter for Xylo-Oligosaccharides in *Geobacillus stearothermophilus*

Smadar Shulami, Galia Zaide, Gennady Zolotnitsky, Yael Langut, Geoff Feld, Abraham L. Sonenshein, and Yuval Shoham 874–884

Exopolysaccharide Expression in *Lactococcus lactis* subsp. *cremoris* Ropy352: Evidence for Novel Gene Organization
An Efficient Fungal RNA-Silencing System Using the *DsRed* Reporter Gene

Eric P. Knoshaug, Jeff A. Ahlgren, and Janine E. Trempy 897–905
Danielle Janus, Birgit Hoff, Eckhard Hofmann, and Ulrich Kück 962–970

PHYSIOLOGY AND BIOTECHNOLOGY

***Shewanella oneidensis* MR-1 Fluxome under Various Oxygen Conditions**

Yinjie J. Tang, Judy S. Hwang, David E. Wemmer, and Jay D. Keasling 718–729

Coupling of *Methanothermobacter thermautotrophicus* Methane Formation and Growth in Fed-Batch and Continuous Cultures under Different H₂ Gassing Regimens

Linda M. I. de Poorter, Wim J. Geerts, and Jan T. Keltjens 740–749

Reduced Folate Supply as a Key to Enhanced L-Serine Production by *Corynebacterium glutamicum*

Michael Stolz, Petra Peters-Wendisch, Helga Etterich, Tanja Gerharz, Robert Faurie, Hermann Sahm, Holger Fersterra, and Lothar Eggeling 750–755

Use of Artificial Neural Networks and a Gamma-Concept-Based Approach To Model Growth of and Bacteriocin Production by *Streptococcus macedonicus* ACA-DC 198 under Simulated Conditions of Kasserli Cheese Production

Panayiota Poirazi, Frédéric Leroy, Marina D. Georgalaki, Anastassios Aktypis, Luc De Vuyst, and Effie Tsakalidou 768–776

Isolation and Characterization of Brewer's Yeast Variants with Improved Fermentation Performance under High-Gravity Conditions

Lies Blicck, Geert Toye, Françoise Dumortier, Kevin J. Verstrepen, Freddy R. Delvaux, Johan M. Thevelein, and Patrick Van Dijck 815–824

Microbial Community Structure and Dynamics of Dark Fire-Cured Tobacco Fermentation

Michele Di Giacomo, Marianna Paolino, Daniele Silvestro, Giovanni Vigliotta, Francesco Imperi, Paolo Visca, Pietro Alifano, and Dino Parente 825–837

Role of Cytochrome *bd* Oxidase from *Corynebacterium glutamicum* in Growth and Lysine Production

Armin Kabus, Axel Niebisch, and Michael Bott 861–868

Induction of a Global Stress Response during the First Step of *Escherichia coli* Plate Growth

Caroline Cuny, Maïalène Lesbats, and Sam Dukan 885–889

The Presence of N-Terminal Secretion Signal Sequences Leads to Strong Stimulation of the Total Expression Levels of Three Tested Medically Important Proteins during High-Cell-Density Cultivations of *Escherichia coli*

H. Sletta, A. Tøndervik, S. Hakvåg, T. E. Vee Aune, A. Nedal, R. Aune, G. Evensen, S. Valla, T. E. Ellingsen, and T. Brautaset 906–912

Continued on following page

Induction by Hypoxia of Heterologous-Protein Production with the KIPDC1 Promoter in Yeasts	Andrea Camattari, Michele M. Bianchi, Paola Branduardi, Danilo Porro, and Luca Brambilla	922–929
Cyclohexane Carboxylate and Benzoate Formation from Crotonate in <i>Syntrophus aciditrophicus</i>	Housna Mouttaki, Mark A. Nanny, and Michael J. McInerney	930–938
Mixed-Valence Cytoplasmic Iron Granules Are Linked to Anaerobic Respiration	S. Glasauer, S. Langley, M. Boyanov, B. Lai, K. Kemner, and T. J. Beveridge	993–996
Role of Branched-Chain Fatty Acids in pH Stress Tolerance in <i>Listeria monocytogenes</i>	Efstathios S. Giotis, David A. McDowell, Ian S. Blair, and Brian J. Wilkinson	997–1001
Chaperone Hsp31 Contributes to Acid Resistance in Stationary-Phase <i>Escherichia coli</i>	Mirna Mujacic and François Baneyx	1014–1018
MYCOLOGY		
Rhizonin, the First Mycotoxin Isolated from the Zygomycota, Is Not a Fungal Metabolite but Is Produced by Bacterial Endosymbionts	Laila P. Partida-Martinez, Carina Flores de Looß, Keishi Ishida, Mie Ishida, Martin Roth, Katrin Buder, and Christian Hertweck	793–797
PUBLIC HEALTH MICROBIOLOGY		
Colonization, Persistence, and Tissue Tropism of <i>Escherichia coli</i> O26 in Conventionally Reared Weaned Lambs	İlknur Aktan, Roberto M. La Ragione, and Martin J. Woodward	691–698
High-Throughput and Quantitative Procedure for Determining Sources of <i>Escherichia coli</i> in Waterways by Using Host-Specific DNA Marker Genes	Tao Yan, Matthew J. Hamilton, and Michael J. Sadowsky	890–896
Detection of UV-Induced Thymine Dimers in Individual <i>Cryptosporidium parvum</i> and <i>Cryptosporidium hominis</i> Oocysts by Immunofluorescence Microscopy	B. H. Al-Adhami, R. A. B. Nichols, J. R. Kusel, J. O'Grady, and H. V. Smith	947–955
Prevalence of <i>Escherichia coli</i> O157:H7 in Gallbladders of Beef Cattle	S. Reinstein, J. T. Fox, X. Shi, and T. G. Nagaraja	1002–1004
Molecular Characterization of <i>Cryptosporidium</i> Isolates from Humans and Animals in Iran	Ahmad Reza Meamar, Karine Guyot, Gabriela Certad, Eduardo Dei-Cas, Mino Mohraz, Mehdi Mohebali, Kazem Mohammad, Amir Ali Mehbod, Sasan Rezaie, and Mostafa Rezaian	1033–1035
MICROBIAL ECOLOGY		
Correlation of Functional Instability and Community Dynamics in Denitrifying Dispersed-Growth Reactors	M. E. Gentile, C. M. Jessup, J. L. Nyman, and C. S. Criddle	680–690
Prevalence of <i>Streptococcus suis</i> Genotypes in Wild Boars of Northwestern Germany	Christoph G. Baums, Gerd Josef Verkühlen, Thomas Rehm, Luciana M. G. Silva, Martin Beyerbach, Klaus Pohlmeier, and Peter Valentin-Weigand	711–717
Diversity of Fungi, Bacteria, and Actinomycetes on Leaves Decomposing in a Stream	Mitali Das, Todd V. Royer, and Laura G. Leff	756–767
Identification of Bacterial Groups Preferentially Associated with Mycorrhizal Roots of <i>Medicago truncatula</i>	P. Offre, B. Pivato, S. Siblot, E. Gamalero, T. Corberand, P. Lemanceau, and C. Mougél	913–921
Succession of Sulfur-Oxidizing Bacteria in the Microbial Community on Corroding Concrete in Sewer Systems	Satoshi Okabe, Mitsunori Odagiri, Tsukasa Ito, and Hisashi Satoh	971–980

Chronic <i>Helicobacter pylori</i> Infection Does Not Significantly Alter the Microbiota of the Murine Stomach	Mai Ping Tan, Maria Kaparakis, Maja Galic, John Pedersen, Martin Pearse, Odilia L. C. Wijburg, Peter H. Janssen, and Richard A. Strugnell	1010–1013
Prevalence of ColE1-Like Plasmids and Colicin K Production among Uropathogenic <i>Escherichia coli</i> Strains and Quantification of Inhibitory Activity of Colicin K	Matija Rijavec, Maruška Budič, Peter Mrak, Manica Müller-Premru, Zdravko Podlesek, and Darja Žgur-Bertok	1029–1032
FOOD MICROBIOLOGY		
Greater Diversity of Shiga Toxin-Encoding Bacteriophage Insertion Sites among <i>Escherichia coli</i> O157:H7 Isolates from Cattle than in Those from Humans	Thomas E. Besser, Nurmohammad Shaikh, Nicholas J. Holt, Phillip I. Tarr, Michael E. Konkel, Preeti Malik-Kale, Coilin W. Walsh, Thomas S. Whittam, and James L. Bono	671–679
Antibiotic Resistances of Starter and Probiotic Strains of Lactic Acid Bacteria	Anja S. Hummel, Christian Hertel, Wilhelm H. Holzapfel, and Charles M. A. P. Franz	730–739
Biotransformation of Patulin by <i>Gluconobacter oxydans</i>	A. Ricelli, F. Baruzzi, M. Solfrizzo, M. Morea, and F. P. Fanizzi	785–792
Inhibitory Impact of Bifidobacteria on the Transfer of β-Lactam Resistance among <i>Enterobacteriaceae</i> in the Gnotobiotic Mouse Digestive Tract	C. Moubareck, M. Lecso, E. Pinloche, M. J. Butel, and F. Doucet-Populaire	855–860
Inhibition of <i>Staphylococcus aureus</i> Growth on Tellurite-Containing Media by <i>Lactobacillus reuteri</i> Is Dependent on CyuC and Thiol Production	Mark S. Turner, Raquel Lo, and Philip M. Giffard	1005–1009
Recovery of <i>Mycobacterium bovis</i> from Soft Fresh Cheese Originating in Mexico	N. Beth Harris, Janet Payeur, Doris Bravo, Ruben Osorio, Tod Stuber, David Farrell, Debra Paulson, Scarlett Treviso, Andrea Mikolon, Alfonso Rodriguez-Lainz, Shannon Cernek-Hoskins, Robert Rast, Michele Ginsberg, and Hailu Kinde	1025–1028
Differentiation of <i>Listeria monocytogenes</i> Serovars by Using Artificial Neural Network Analysis of Fourier-Transformed Infrared Spectra	Cecilia A. Rebuffo-Scheer, Jürgen Schmitt, and Siegfried Scherer	1036–1040
PLANT MICROBIOLOGY		
Expression of a Novel Small Antimicrobial Protein from the Seeds of Motherwort (<i>Leonurus japonicus</i>) Confers Disease Resistance in Tobacco	Xingyong Yang, Yuehua Xiao, Xiaowen Wang, and Yan Pei	939–946
INVERTEBRATE MICROBIOLOGY		
Isolation of <i>Rickettsia rhipicephali</i> and <i>Rickettsia bellii</i> from <i>Haemaphysalis juxtakochi</i> Ticks in the State of São Paulo, Brazil	Marcelo B. Labruna, Richard C. Pacheco, Leonardo J. Richtzenhain, and Matias P. J. Szabó	869–873
Characterization of Chimeric <i>Bacillus thuringiensis</i> Vip3 Toxins	Jun Fang, Xiaoli Xu, Ping Wang, Jian-Zhou Zhao, Anthony M. Shelton, Jiaan Cheng, Ming-Guang Feng, and Zhicheng Shen	956–961
Coral Disease Diagnostics: What's between a Plague and a Band?	T. D. Ainsworth, E. Kramasky-Winter, Y. Loya, O. Hoegh-Guldberg, and M. Fine	981–992

METHODS

Novel Quantitative Biosystem for Modeling Physiological Fluid Shear Stress on Cells	Eric A. Nauman, C. Mark Ott, Ed Sander, Don L. Tucker, Duane Pierson, James W. Wilson, and Cheryl A. Nickerson	699–705
Evaluation of a Wipe Surface Sample Method for Collection of <i>Bacillus</i> Spores from Nonporous Surfaces	Gary S. Brown, Rita G. Betty, John E. Brockmann, Daniel A. Lucero, Caroline A. Souza, Kathryn S. Walsh, Raymond M. Boucher, Mathew Tezak, Mollye C. Wilson, and Todd Rudolph	706–710
Construction of a <i>Vibrio splendidus</i> Mutant Lacking the Metalloprotease Gene <i>vsm</i> by Use of a Novel Counterselectable Suicide Vector	Frédérique Le Roux, Johan Binesse, Denis Saulnier, and Didier Mazel	777–784
Nutrient Amendments in Soil DNA Stable Isotope Probing Experiments Reduce the Observed Methanotroph Diversity	Aurélie Cébron, Levente Bodrossy, Nancy Stralis-Pavese, Andrew C. Singer, Ian P. Thompson, James I. Prosser, and J. Colin Murrell	798–807
Multiplex Quantitative Real-Time Reverse Transcriptase PCR for F⁺-Specific RNA Coliphages: a Method for Use in Microbial Source Tracking	Marek Kirs and David C. Smith	808–814
Operon Prediction for Sequenced Bacterial Genomes without Experimental Information	Nicholas H. Bergman, Karla D. Passalacqua, Philip C. Hanna, and Zhaohui S. Qin	846–854
Luminescent Whole-Cell Cyanobacterial Bioreporter for Measuring Fe Availability in Diverse Marine Environments	Ramakrishna Boyanapalli, George S. Bullerjahn, Christa Pohl, Peter L. Croot, Philip W. Boyd, and R. Michael L. McKay	1019–1024

EVOLUTIONARY AND GENOMIC MICROBIOLOGY

The Unique 16S rRNA Genes of Piezophiles Reflect both Phylogeny and Adaptation	Federico M. Lauro, Roger A. Chastain, Lesley E. Blankenship, A. Aristides Yayanos, and Douglas H. Bartlett	838–845
---	--	---------

Cover photograph (Copyright © 2007, American Society for Microbiology. All Rights Reserved.): Photograph of a wild boar. Wild boars have become very abundant in Germany, where they constitute an important hunting bag. Case reports of *Streptococcus suis* meningitis in European hunters have suggested transmission of *S. suis* through butchering of wild boars. In this issue, Baums et al. show that wild boars in northwestern Germany frequently carry potentially human-pathogenic *cps2*⁺ *S. suis* strains. The putative zoonotic potential of these *cps2*⁺ wild boar strains is supported by the finding that they were almost indistinguishable in different genotyping approaches from a meningitis strain isolated from a hunter who was infected with *S. suis* after butchering a wild boar. Results indicate a wildlife reservoir of *S. suis*. Photo by Gregor Schlaeger. (See related article on page 711.)