

GENETICS AND MOLECULAR BIOLOGY

- | | | |
|--|--|----------------|
| <p>Construction and Enhancement of a Minimal Genetic AND Logic Gate</p> | <p>Daniel J. Sayut, Yan Niu, and Lianhong Sun</p> | <p>637–642</p> |
| <p>Novel Nicotine Oxidoreductase-Encoding Gene Involved in Nicotine Degradation by <i>Pseudomonas putida</i> Strain S16</p> | <p>Hongzhi Tang, Lijuan Wang, Xiangzhou Meng, Lanying Ma, Shuning Wang, Xiaofei He, Geng Wu, and Ping Xu</p> | <p>772–778</p> |

ENZYMOLGY AND PROTEIN ENGINEERING

- | | | |
|---|---|----------------|
| <p>Molecular Determinants of the Regioselectivity of Toluene/o-Xylene Monooxygenase from <i>Pseudomonas</i> sp. Strain OX1</p> | <p>Eugenio Notomista, Valeria Cafaro, Giuseppe Bozza, and Alberto Di Donato</p> | <p>823–836</p> |
| <p>Analysis of Dibenzothiophene Desulfurization in a Recombinant <i>Pseudomonas putida</i> Strain</p> | <p>Javier Calzada, María T. Zamarro, Almudena Alcón, Victoria E. Santos, Eduardo Díaz, José L. García, and Felix Garcia-Ochoa</p> | <p>875–877</p> |

PHYSIOLOGY AND BIOTECHNOLOGY

- | | | |
|--|---|----------------|
| <p>Employment of a Promoter-Swapping Technique Shows that PhoU Modulates the Activity of the PstSCAB₂ ABC Transporter in <i>Escherichia coli</i></p> | <p>Christopher D. Rice, Jacob E. Pollard, Zachery T. Lewis, and William R. McCleary</p> | <p>573–582</p> |
| <p>Production of Glucaric Acid from a Synthetic Pathway in Recombinant <i>Escherichia coli</i></p> | <p>Tae Seok Moon, Sang-Hwal Yoon, Amanda M. Lanza, Joseph D. Roy-Mayhew, and Kristala L. Jones Prather</p> | <p>589–595</p> |
| <p>TatABC Overexpression Improves <i>Corynebacterium glutamicum</i> Tat-Dependent Protein Secretion</p> | <p>Yoshimi Kikuchi, Hiroshi Itaya, Masayo Date, Kazuhiko Matsui, and Long-Fei Wu</p> | <p>603–607</p> |
| <p><i>b</i>-Type Dihydroorotate Dehydrogenase Is Purified as a H₂O₂-Forming NADH Oxidase from <i>Bifidobacterium bifidum</i></p> | <p>Shinji Kawasaki, Takumi Satoh, Mitsunori Todoroki, and Youichi Niimura</p> | <p>629–636</p> |
| <p>Large-Scale Production of Poly(3-Hydroxyoctanoic Acid) by <i>Pseudomonas putida</i> GPo1 and a Simplified Downstream Process</p> | <p>Yasser Elbahloul and Alexander Steinbüchel</p> | <p>643–651</p> |
| <p>Overexpression of Wild-Type Aspartokinase Increases L-Lysine Production in the Thermotolerant Methylophilic Bacterium <i>Bacillus methanolicus</i></p> | <p>Øyvind M. Jakobsen, Trygve Brautaset, Kristin F. Degnes, Tonje M. B. Heggeset, Simone Balzer, Michael C. Flickinger, Svein Valla, and Trond E. Ellingsen</p> | <p>652–661</p> |
| <p>Bioreduction with Efficient Recycling of NADPH by Coupled Permeabilized Microorganisms</p> | <p>Wei Zhang, Kevin O'Connor, Daniel I. C. Wang, and Zhi Li</p> | <p>687–694</p> |
| <p>Energy Metabolism Response to Low-Temperature and Frozen Conditions in <i>Psychrobacter cryohalolentis</i></p> | <p>Pierre Amato and Brent C. Christner</p> | <p>711–718</p> |
| <p>Metabolomic Investigation of the Bacterial Response to a Metal Challenge</p> | <p>Valentina Tremaroli, Matthew L. Workentine, Aalim M. Weljie, Hans J. Vogel, Howard Ceri, Carlo Viti, Enrico Tatti, Ping Zhang, Alexander P. Hynes, Raymond J. Turner, and Davide Zannoni</p> | <p>719–728</p> |

| | | |
|---|---|---------|
| Bioinformatic and Expression Analyses of Genes Mediating Zinc Homeostasis in <i>Nostoc punctiforme</i> | Lee Hudek, L. C. Rai, David Freestone, Agnes Michalczyk, Maria Gibson, Y. F. Song, and M. Leigh Ackland | 784-791 |
| Structural and Molecular Basis of the Role of Starch and Sucrose in <i>Streptococcus mutans</i> Biofilm Development | M. I. Klein, S. Duarte, J. Xiao, S. Mitra, T. H. Foster, and H. Koo | 837-841 |
| Phage Lysin LysK Can Be Truncated to Its CHAP Domain and Retain Lytic Activity against Live Antibiotic-Resistant Staphylococci | Marianne Horgan, Gary O'Flynn, Jennifer Garry, Jakki Cooney, Aidan Coffey, Gerald F. Fitzgerald, R. Paul Ross, and Olivia McAuliffe | 872-874 |
| MYCOLOGY | | |
| Characterization of Serine Proteinase Expression in <i>Agaricus bisporus</i> and <i>Coprinopsis cinerea</i> by Using Green Fluorescent Protein and the <i>A. bisporus</i> SPRI Promoter | Mary N. Heneghan, Claudine Porta, Cunjin Zhang, Kerry S. Burton, Michael P. Challen, Andy M. Bailey, and Gary D. Foster | 792-801 |
| PUBLIC HEALTH MICROBIOLOGY | | |
| Antimicrobial Resistance in <i>Escherichia coli</i> Isolates from Swine and Wild Small Mammals in the Proximity of Swine Farms and in Natural Environments in Ontario, Canada | Gosia K. Kozak, Patrick Boerlin, Nicol Janecko, Richard J. Reid-Smith, and Claire Jardine | 559-566 |
| Detection and Quantification of Noroviruses in Shellfish | Françoise S. Le Guyader, Sylvain Parnaudeau, Julien Schaeffer, Albert Bosch, Fabienne Loisy, Monique Pommepuy, and Robert L. Atmar | 618-624 |
| Inactivation of <i>Ascaris</i> Eggs in Source-Separated Urine and Feces by Ammonia at Ambient Temperatures | Annika Nordin, Karin Nyberg, and Björn Vinnerås | 662-667 |
| Isolation and Characterization of Intestinal <i>Escherichia coli</i> Clones from Wild Boars in Germany | Peter Schierack, Antje Römer, Jörg Jores, Heike Kaspar, Sebastian Guenther, Matthias Filter, Jürgen Eichberg, and Lothar H. Wieler | 695-702 |
| Molecular Epidemiology of <i>Campylobacter jejuni</i> Isolates from Wild-Bird Fecal Material in Children's Playgrounds | Nigel P. French, Anne Midwinter, Barbara Holland, Julie Collins-Emerson, Rebecca Pattison, Frances Colles, and Philip Carter | 779-783 |
| Antibacterial Effects of Grape Extracts on <i>Helicobacter pylori</i> | Joseph C. Brown, Guohui Huang, Vivian Haley-Zitlin, and Xiuping Jiang | 848-852 |
| Shiga Toxins, and the Genes Encoding Them, in Fecal Samples from Native Idaho Ungulates | Jeremy J. Gilbreath, Malcolm S. Shields, Rebekah L. Smith, Larry D. Farrell, Peter P. Sheridan, and Kathleen M. Spiegel | 862-865 |
| Innovative Application of Mass Spectrometry for the Characterization of Staphylococcal Enterotoxins Involved in Food Poisoning Outbreaks | Jacques-Antoine Hennekinne, Virginie Brun, Marie-Laure De Buyser, Alain Dupuis, Annick Ostyn, and Sylviane Dragacci | 882-884 |
| ENVIRONMENTAL MICROBIOLOGY | | |
| Cytomorphological and Genetic Characterization of Troglolithic <i>Leptolyngbya</i> Strains Isolated from Roman Hypogea | Laura Bruno, Daniela Billi, Simona Bellezza, and Patrizia Albertano | 608-617 |
| Extensive Phylogenetic Analysis of a Soil Bacterial Community Illustrates Extreme Taxon Evenness and the Effects of Amplicon Length, Degree of Coverage, and DNA Fractionation on Classification and Ecological Parameters | Sergio E. Morales, Theodore F. Cosart, Jesse V. Johnson, and William E. Holben | 668-675 |

Application of Recognition of Individual Genes-Fluorescence In Situ Hybridization (RING-FISH) To Detect Nitrite Reductase Genes (*nirK*) of Denitrifiers in Pure Cultures and Environmental Samples

Jennifer Pratscher, Catrin Stichternoth, Katrin Fichtl, Karl-Heinz Schleifer, and Gesche Braker 802-810

MICROBIAL ECOLOGY

Secondary Metabolites Produced by the Marine Bacterium *Halobacillus salinus* That Inhibit Quorum Sensing-Controlled Phenotypes in Gram-Negative Bacteria

Margaret E. Teasdale, Jiayuan Liu, Joselynn Wallace, Fatemeh Akhlaghi, and David C. Rowley 567-572

Ecological Specialization in a Spatially Structured Population of the Thermophilic Cyanobacterium *Mastigocladus laminosus*

Scott R. Miller, Carin Williams, Aaron L. Strong, and Darla Carvey 729-734

Fumarole-Supported Islands of Biodiversity within a Hyperarid, High-Elevation Landscape on Socompa Volcano, Puna de Atacama, Andes

Elizabeth K. Costello, Stephan R. P. Halloy, Sasha C. Reed, Preston Sowell, and Steven K. Schmidt 735-747

Bacterial Diversity in a Mine Water Treatment Plant

Elke Heinzl, Sabrina Hedrich, Eberhard Janneck, Franz Glombitza, Jana Seifert, and Michael Schlömann 858-861

GEOMICROBIOLOGY

Discovery of Stable and Variable Differences in the *Mycobacterium avium* subsp. *paratuberculosis* Type I, II, and III Genomes by Pan-Genome Microarray Analysis

Elena Castellanos, Alicia Aranaz, Katherine A. Gould, Richard Linedale, Karen Stevenson, Julio Alvarez, Lucas Dominguez, Lucia de Juan, Jason Hinds, and Tim J. Bull 676-686

FOOD MICROBIOLOGY

Quantifying Transmission of *Campylobacter jejuni* in Commercial Broiler Flocks

Twan van Gerwe, Jeanette K. Mifflin, Jillian M. Templeton, Annemarie Bouma, Jaap A. Wagenaar, Wilma F. Jacobs-Reitsma, Arjan Stegeman, and Don Klinkenberg 625-628

Enhanced Secretion of Biologically Active Murine Interleukin-12 by *Lactococcus lactis*

Antonio Fernandez, Nikki Horn, Udo Wegmann, Claudio Nicoletti, Michael J. Gasson, and Arjan Narbad 869-871

PLANT MICROBIOLOGY

Genome Survey and Characterization of Endophytic Bacteria Exhibiting a Beneficial Effect on Growth and Development of Poplar Trees

Safiyh Taghavi, Craig Garafola, Sébastien Monchy, Lee Newman, Adam Hoffman, Nele Weyens, Tanja Barac, Jaco Vangronsveld, and Daniel van der Lelie 748-757

Effects of Compost on Colonization of Roots of Plants Grown in Metalliferous Mine Tailings, as Examined by Fluorescence In Situ Hybridization

Sadie L. Iverson and Raina M. Maier 842-847

Simultaneous Analysis of Bacterioferritin Gene Expression and Intracellular Iron Status in *Pseudomonas putida* KT2440 by Using a Rapid Dual Luciferase Reporter Assay

Shicheng Chen, William F. Bleam, and William J. Hickey 866-868

INVERTEBRATE MICROBIOLOGY

- Differential Role of Passerine Birds in Distribution of *Borrelia Spirochetes*, Based on Data from Ticks Collected from Birds during the Postbreeding Migration Period in Central Europe** Lenka Dubska, Ivan Literak, Elena Kocianova, Veronika Taragelova, and Oldrich Sychra 596-602
- Molecular Detection, Penetrance, and Transmission of an Inherited Virus Responsible for Behavioral Manipulation of an Insect Parasitoid** Sabine Patot, David Lepetit, Delphine Charif, Julien Varaldi, and Frédéric Fleury 703-710
- A 1.1-Kilobase Region Downstream of the *bin* Operon in *Bacillus sphaericus* Strain 2362 Decreases Bin Yield and Crystal Size in Strain 2297** Hyun-Woo Park, Mujin Tang, Yuko Sakano, and Brian A. Federici 878-881

METHODS

- Modular Spectral Imaging System for Discrimination of Pigments in Cells and Microbial Communities** Lubos Polerecky, Andrew Bissett, Mohammad Al-Najjar, Paul Faerber, Harald Osmers, Peter A. Suci, Paul Stoodley, and Dirk de Beer 758-771

BIODEGRADATION

- Biotransformations of 2-Methylisoborneol by Camphor-Degrading Bacteria** Richard W. Eaton and Peter Sandusky 583-588

EVOLUTIONARY AND GENOMIC MICROBIOLOGY

- Genome Analysis of the Meat Starter Culture Bacterium *Staphylococcus carnosus* TM300** Ralf Rosenstein, Christiane Nerz, Lalitha Biswas, Alexandra Resch, Guenter Raddatz, Stephan C. Schuster, and Friedrich Götz 811-822
- Widespread Occurrence and Lateral Transfer of the Cyanobactin Biosynthesis Gene Cluster in Cyanobacteria** Niina Leikoski, David P. Fewer, and Kaarina Sivonen 853-857

ERRATA

- Potential Role of a Novel Psychrotolerant Member of the Family *Geobacteraceae*, *Geopsychrobacter electrodiphilus* gen. nov., sp. nov., in Electricity Production by a Marine Sediment Fuel Cell** Dawn E. Holmes, Julie S. Nicoll, Daniel R. Bond, and Derek R. Lovley 885
- Escherichia coli* Biofilms Formed under Low-Shear Modeled Microgravity in a Ground-Based System** S. V. Lynch, K. Mukundakrishnan, M. R. Benoit, P. S. Ayyaswamy, and A. Matin 886

Cover photograph (Copyright © 2009, American Society for Microbiology. All Rights Reserved.): Transmission electron micrograph of a cross-section of a tubule of the nascent light organ of a larval stage of the marine fish *Nuchequula nuchalis* (Leiognathidae) shortly after colonization by the luminous bacterium *Photobacterium leiognathi*. The tubule lumen is approximately 8 μm in diameter, and the bacterial cells are approximately 0.9 by 1.8 μm . At the upper right is a tubule that is beginning to form but is not yet colonized. Photo prepared by Sasha Meshinchi, Microscopy and Image Analysis Laboratory, and David Bay and Paul Dunlap, Department of Ecology and Evolutionary Biology, University of Michigan. (See related article in December 2008, vol. 74, no. 24, p. 7471.)

Author Index

- Ackland, M. Leigh, 784
 Akhlaghi, Fatemeh, 567
 Albertano, Patrizia, 608
 Alcón, Almudena, 875
 Al-Najjar, Mohammad, 758
 Alvarez, Julio, 676
 Amato, Pierre, 711
 Aranaz, Alicia, 676
 Atmar, Robert L., 618
- Bailey, Andy M., 792
 Balzer, Simone, 652
 Barac, Tanja, 748
 Bellezza, Simona, 608
 Billi, Daniela, 608
 Bissett, Andrew, 758
 Biswas, Lalitha, 811
 Bleam, William F., 866
 Boerlin, Patrick, 559
 Bosch, Albert, 618
 Bouma, Annemarie, 625
 Bozza, Giuseppe, 823
 Braker, Gesche, 802
 Brautaset, Trygve, 652
 Brown, Joseph C., 848
 Brun, Virginie, 882
 Bruno, Laura, 608
 Bull, Tim J., 676
 Burton, Kerry S., 792
- Cafaro, Valeria, 823
 Calzada, Javier, 875
 Carter, Philip, 779
 Carvey, Darla, 729
 Castellanos, Elena, 676
 Ceri, Howard, 719
 Challen, Michael P., 792
 Charif, Delphine, 703
 Chen, Shicheng, 866
 Christner, Brent C., 711
 Coffey, Aidan, 872
 Colles, Frances, 779
 Collins-Emerson, Julie, 779
 Cooney, Jakki, 872
 Cosart, Theodore F., 668
 Costello, Elizabeth K., 735
- Date, Masayo, 603
 de Beer, Dirk, 758
 De Buyser, Marie-Laure, 882
 Degnes, Kristin F., 652
 de Juan, Lucia, 676
 Díaz, Eduardo, 875
 Di Donato, Alberto, 823
 Dominguez, Lucas, 676
 Dragacci, Sylviane, 882
 Duarte, S., 837
 Dubska, Lenka, 596
 Dupuis, Alain, 882
- Eaton, Richard W., 583
 Eichberg, Jürgen, 695
 Elbahloul, Yasser, 643
 Ellingsen, Trond E., 652
- Faerber, Paul, 758
 Farrell, Larry D., 862
 Federici, Brian A., 188
- Fernandez, Antonio, 869
 Fewer, David P., 853
 Fichtl, Katrin, 802
 Filter, Matthias, 695
 Fitzgerald, Gerald F., 872
 Fleury, Frédéric, 703
 Flickinger, Michael C., 652
 Foster, Gary D., 792
 Foster, T. H., 837
 Freestone, David, 784
 French, Nigel P., 779
- Garafola, Craig, 748
 García, José L., 875
 Garcia-Ochoa, Felix, 875
 Garry, Jennifer, 872
 Gasson, Michael J., 869
 Gibson, Maria, 784
 Gilbreath, Jeremy J., 862
 Glombitza, Franz, 858
 Götz, Friedrich, 811
 Gould, Katherine A., 676
 Guenther, Sebastian, 695
- Haley-Zitlin, Vivian, 848
 Halloy, Stephan R. P., 735
 He, Xiaofei, 772
 Hedrich, Sabrina, 858
 Heggeset, Tonje M. B., 652
 Heinzel, Elke, 858
 Heneghan, Mary N., 792
 Hennekinne, Jacques-Antoine, 882
 Hickey, William J., 866
 Hinds, Jason, 676
 Hoffman, Adam, 748
 Holben, William E., 668
 Holland, Barbara, 779
 Horgan, Marianne, 872
 Horn, Nikki, 869
 Huang, Guohui, 848
 Hudek, Lee, 784
 Hynes, Alexander P., 719
- Itaya, Hiroshi, 603
 Iverson, Sadie L., 842
- Jacobs-Reitsma, Wilma F., 625
 Jakobsen, Øyvind M., 652
 Janecko, Nicol, 559
 Janneck, Eberhard, 858
 Jardine, Claire, 559
 Jiang, Xiuping, 848
 Johnson, Jesse V., 668
 Jores, Jörg, 695
- Kaspar, Heike, 695
 Kawasaki, Shinji, 629
 Kikuchi, Yoshimi, 603
 Klein, M. I., 837
 Klinkenberg, Don, 625
 Kocianova, Elena, 596
 Koo, H., 837
 Kozak, Gosia K., 559
- Lanza, Amanda M., 589
 Le Guyader, Françoise S., 618
 Leikoski, Niina, 853
- Lepetit, David, 703
 Lewis, Zachery T., 573
 Li, Zhi, 687
 Linedale, Richard, 676
 Literak, Ivan, 596
 Liu, Jiayuan, 567
 Loisy, Fabienne, 618
- Ma, Lanying, 772
 Maier, Raina M., 842
 Matsui, Kazuhiko, 603
 McAuliffe, Olivia, 872
 McCleary, William R., 573
 Meng, Xiangzhou, 772
 Michalczyk, Agnes, 784
 Midwinter, Anne, 779
 Mifflin, Jeanette K., 625
 Miller, Scott R., 729
 Mitra, S., 837
 Monchy, Sébastien, 748
 Moon, Tae Seok, 589
 Morales, Sergio E., 668
- Narbad, Arjan, 869
 Nerz, Christiane, 811
 Newman, Lee, 748
 Nicoletti, Claudio, 869
 Niimura, Youichi, 629
 Niu, Yan, 637
 Nordin, Annika, 662
 Notomista, Eugenio, 823
 Nyberg, Karin, 662
- O'Connor, Kevin, 687
 O'Flynn, Gary, 872
 Osmer, Harald, 758
 Ostyn, Annick, 882
- Park, Hyun-Woo, 878
 Parnaudeau, Sylvain, 618
 Patot, Sabine, 703
 Pattison, Rebecca, 779
 Polerecky, Lubos, 758
 Pollard, Jacob E., 573
 Pommepuy, Monique, 618
 Porta, Claudine, 792
 Prather, Kristala L. Jones, 589
 Pratscher, Jennifer, 802
- Raddatz, Guenter, 811
 Rai, L. C., 784
 Reed, Sasha C., 735
 Reid-Smith, Richard J., 559
 Resch, Alexandra, 811
 Rice, Christopher D., 573
 Römer, Antje, 695
 Rosenstein, Ralf, 811
 Ross, R. Paul, 872
 Rowley, David C., 567
 Roy-Mayhew, Joseph D., 589
- Sakano, Yuko, 878
 Sandusky, Peter, 583
 Santos, Victoria E., 875
 Satoh, Takumi, 629
 Sayut, Daniel J., 637
 Schaeffer, Julien, 618
 Schierack, Peter, 695
- Schleifer, Karl-Heinz, 802
 Schlömann, Michael, 858
 Schmidt, Steven K., 735
 Schuster, Stephan C., 811
 Seifert, Jana, 858
 Sheridan, Peter P., 862
 Shields, Malcolm S., 862
 Sivonen, Kaarina, 853
 Smith, Rebekah L., 862
 Song, Y. F., 784
 Sowell, Preston, 735
 Spiegel, Kathleen M., 862
 Stegeman, Arjan, 625
 Steinbüchel, Alexander, 643
 Stevenson, Karen, 676
 Stichternoth, Catrin, 802
 Stoodley, Paul, 758
 Strong, Aaron L., 729
 Suci, Peter A., 758
 Sun, Lianhong, 637
 Sychra, Oldrich, 596
- Taghavi, Safiyh, 748
 Tang, Hongzhi, 772
 Tang, Mujin, 878
 Taragelova, Veronika, 596
 Tatti, Enrico, 719
 Teasdale, Margaret E., 567
 Templeton, Jillian M., 625
 Todoroki, Mitsunori, 629
 Tremaroli, Valentina, 719
 Turner, Raymond J., 719
- Valla, Svein, 652
 van der Lelie, Daniel, 748
 van Gerwe, Twan, 625
 Vangronsveld, Jaco, 748
 Varaldi, Julien, 703
 Vinnerås, Björn, 662
 Viti, Carlo, 719
 Vogel, Hans J., 719
- Wagenaar, Jaap A., 625
 Wallace, Joselynn, 567
 Wang, Daniel I. C., 687
 Wang, Lijuan, 772
 Wang, Shuning, 772
 Wegmann, Udo, 869
 Weljie, Aalim M., 719
 Weyens, Nele, 748
 Wieler, Lothar H., 695
 Williams, Carin, 729
 Workentine, Matthew L., 719
 Wu, Geng, 772
 Wu, Long-Fei, 603
- Xiao, J., 837
 Xu, Ping, 772
- Yoon, Sang-Hwal, 589
- Zamarro, María T., 875
 Zannoni, Davide, 719
 Zhang, Cunjin, 792
 Zhang, Ping, 719
 Zhang, Wei, 687