

JOURNAL OF BACTERIOLOGY

Volume 171

October 1989

No. 10

MINIREVIEW

- The Constrained Hoop: an Explanation of the Overshoot in Cell Length during a Shift-Up of *Escherichia coli*.** Stephen Cooper 5239-5243

STRUCTURE AND FUNCTION

- Chromosome Partition in *Escherichia coli* Requires Postreplication Protein Synthesis.** William D. Donachie and Kenneth J. Begg 5405-5409

PLANT MICROBIOLOGY

- Conservation between Coding and Regulatory Elements of *Rhizobium meliloti* and *Rhizobium leguminosarum* *dct* Genes.** Jin Jiang, Baohua Gu, Lisa M. Albright, and B. Tracy Nixon 5244-5253
- Characterization of Conjugal Transfer Functions of *Agrobacterium tumefaciens* Ti Plasmid pTiC58.** Susanne Beck von Bodman, Jon E. McCutchan, and Stephen K. Farrand 5281-5289
- Construction of an *Agrobacterium tumefaciens* C58 *recA* Mutant.** Stephen K. Farrand, Susan P. O'Morchoe, and Jon McCutchan 5314-5321
- DNA Footprint Analysis of the Transcriptional Activator Proteins NodD1 and NodD3 on Inducible *nod* Gene Promoters.** Robert F. Fisher and Sharon R. Long 5492-5502
- Identification and Sequence Analysis of the *Rhizobium meliloti* *dctA* Gene Encoding the C₄-Dicarboxylate Carrier.** Thomas Engelke, Doris Jording, Dieter Kapp, and Alfred Pühler 5551-5560
- Bradyrhizobium japonicum* *glnB*, a Putative Nitrogen-Regulatory Gene, Is Regulated by NtrC at Tandem Promoters.** Gregory B. Martin, Michael F. Thomashow, and Barry K. Chelm 5638-5645
- Requirement for Chemotaxis in Pathogenicity of *Agrobacterium tumefaciens* on Roots of Soil-Grown Pea Plants.** Martha C. Hawes and Laura Y. Smith ... 5668-5671

GENETICS AND MOLECULAR BIOLOGY

- A Facile and Reversible Method To Decrease the Copy Number of the ColE1-Related Cloning Vectors Commonly Used in *Escherichia coli*.** Michael F. Henry and John E. Cronan, Jr. 5254-5261
- Overproduction, Purification, and ATPase Activity of the *Escherichia coli* RuvB Protein Involved in DNA Repair.** Hiroshi Iwasaki, Toshikazu Shiba, Kozo Makino, Atsuo Nakata, and Hideo Shinagawa 5276-5280
- Differential Regulation by Iron of *regA* and *toxA* Transcript Accumulation in *Pseudomonas aeruginosa*.** Dara W. Frank, Douglas G. Storey, Michael S. Hindahl, and Barbara H. Iglewski 5304-5313
- Bacillus subtilis* Mutant Allele *sup-3* Causes Lysine Insertion at Ochre Codons: Use of *sup-3* in Studies of Translational Attenuation.** Walter W. Mulbry, Nicholas P. Ambulos, Jr., and Paul S. Lovett 5322-5324

Continued on following page

Nucleotide Sequence of the <i>Salmonella typhimurium mutL</i> Gene Required for Mismatch Repair: Homology of MutL to HexB of <i>Streptococcus pneumoniae</i> and to PMS1 of the Yeast <i>Saccharomyces cerevisiae</i>. John A. Mankovich, Christine A. McIntyre, and Graham C. Walker.....	5325–5331
Nucleotide Sequence of the <i>Streptococcus pneumoniae hexB</i> Mismatch Repair Gene: Homology of HexB to MutL of <i>Salmonella typhimurium</i> and to PMS1 of <i>Saccharomyces cerevisiae</i>. Marc Prudhomme, Bernard Martin, Vincent Mejean, and Jean-Pierre Claverys.....	5332–5338
Cloning and Nucleotide Sequence of DNA Mismatch Repair Gene <i>PMS1</i> from <i>Saccharomyces cerevisiae</i>: Homology of PMS1 to Prokaryotic MutL and HexB. Wilfried Kramer, Barbara Kramer, Marsha S. Williamson, and Seymour Fogel.....	5339–5346
Cloning and Characterization of <i>srfB</i>, a Regulatory Gene Involved in Surfactin Production and Competence in <i>Bacillus subtilis</i>. Michiko M. Nakano and Peter Zuber.....	5347–5353
Cloning and Characterization of the Regulatory <i>Bacillus subtilis</i> Competence Genes <i>comA</i> and <i>comB</i>. Nancy Guillen, Yvette Weinrauch, and David A. Dubnau.....	5354–5361
Sequence and Transcription Mapping of <i>Bacillus subtilis</i> Competence Genes <i>comB</i> and <i>comA</i>, One of Which Is Related to a Family of Bacterial Regulatory Determinants. Yvette Weinrauch, Nancy Guillen, and David A. Dubnau....	5362–5375
Cloning and Characterization of a Cluster of Linked <i>Bacillus subtilis</i> Late Competence Mutations. Mark Albano and David A. Dubnau.....	5376–5385
Nucleotide Sequence and Genetic Organization of the <i>Bacillus subtilis comG</i> Operon. Mark Albano, Reinhard Breitling, and David A. Dubnau.....	5386–5404
Gramicidin S Biosynthesis Operon Containing the Structural Genes <i>grsA</i> and <i>grsB</i> Has an Open Reading Frame Encoding a Protein Homologous to Fatty Acid Thioesterases. Jörn Krättschmar, Michael Krause, and Mohamed A. Marahiel.....	5422–5429
The Translation Start Signal Region of TEM β-Lactamase mRNA Is Responsible for Heat Shock-Induced Repression of <i>amp</i> Gene Expression in <i>Escherichia coli</i>. Yoshitaka Kuriki.....	5452–5457
Cloning of the Altered mRNA Stability (<i>ams</i>) Gene of <i>Escherichia coli</i> K-12. Felix Claverie-Martin, Maria R. Diaz-Torres, Stephanie D. Yancey, and Sidney R. Kushner.....	5479–5486
Activation of <i>glnA</i> Transcription by Nitrogen Regulator I (NR_I)-Phosphate in <i>Escherichia coli</i>: Evidence for a Long-Range Physical Interaction between NR_I-Phosphate and RNA Polymerase. Lawrence J. Reitzer, Benjamin Movsas, and Boris Magasanik.....	5512–5522
New Mutations <i>fts-36</i>, <i>fts-33</i>, and <i>ftsW</i> Clustered in the <i>mra</i> Region of the <i>Escherichia coli</i> Chromosome Induce Thermosensitive Cell Growth and Division. Fumitoshi Ishino, Hai Kwan Jung, Masato Ikeda, Masaki Doi, Masaaki Wachi, and Michio Matsushashi.....	5523–5530
(S)-3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase, a Product of the <i>mva</i> Operon of <i>Pseudomonas mevalonii</i>, Is Regulated at the Transcriptional Level. Yuli Wang, Michael J. Beach and Victor W. Rodwell.....	5567–5571
Isolation and Characterization of Mutants with Deletions in <i>dnaQ</i>, the Gene for the Editing Subunit of DNA Polymerase III in <i>Salmonella typhimurium</i>. Edward D. Lancy, Miriam R. Lifshics, David G. Kehres, and Russell Maurer.....	5572–5580

Nucleotide Sequences of <i>dnaE</i>, the Gene for the Polymerase Subunit of DNA Polymerase III in <i>Salmonella typhimurium</i>, and a Variant That Facilitates Growth in the Absence of Another Polymerase Subunit. Edward D. Lancy, Miriam R. Lifsics, Patricia Munson, and Russell Maurer	5581–5586
Regulation of the Phosphate Regulon of <i>Escherichia coli</i>: Analysis of Mutant <i>phoB</i> and <i>phoR</i> Genes Causing Different Phenotypes. Masami Yamada, Kozo Makino, Mitsuko Amemura, Hideo Shinagawa, and Atsuo Nakata	5601–5606
Cloning, Characterization, and Heterologous Expression of the <i>Saccharopolyspora erythraea</i> (<i>Streptomyces erythraeus</i>) Gene Encoding an EF-Hand Calcium-Binding Protein. David G. Swan, Jesus Cortes, Richard S. Hale, and Peter F. Leadlay.....	5614–5619
Genetic and Biochemical Analysis of the MetR Activator-Binding Site in the <i>metE metR</i> Control Region of <i>Salmonella typhimurium</i>. Mark L. Urbanowski and George V. Stauffer.....	5620–5629
Molecular Analysis of <i>lcrGVH</i>, the V Antigen Operon of <i>Yersinia pestis</i>. Stuart B. Price, Ka Yin Leung, Shirish S. Barve, and Susan C. Straley.....	5646–5653
DNA Replication in <i>Escherichia coli</i> Mutants That Lack Protein HU. Tohru Ogawa, Morimasa Wada, Yasunobu Kano, Fumio Imamoto, and Tuneko Okazaki.....	5672–5679
Cloning and Analysis of an <i>Escherichia coli</i> Operon Containing the <i>rpmF</i> Gene for Ribosomal Protein L32 and the Gene for a 30-Kilodalton Protein. Yoshikazu Tanaka, Atsushi Tsujimura, Nobuyuki Fujita, Setsuko Isono, and Katsumi Isono.....	5707–5712
Regulation of Expression and Nucleotide Sequence of the <i>Anabaena variabilis recA</i> Gene. George W. Owtrim and John R. Coleman.....	5713–5719
Localization of the <i>Escherichia coli rnt</i> Gene Encoding RNase T by Using a Combination of Physical and Genetic Mapping. Lisa M. Case, Xiaowei Chen, and Murray P. Deutscher.....	5736–5737
Methylation of GATC Sites Is Required for Precise Timing between Rounds of DNA Replication in <i>Escherichia coli</i>. Andreas Bakker and Douglas W. Smith.....	5738–5742
Transformation of a Filamentous Cyanobacterium by Electroporation. Teresa Thiel and Haryoung Poo.....	5743–5746
Timing of <i>spoII</i> Gene Expression Relative to Septum Formation during Sporulation of <i>Bacillus subtilis</i>. Ahmad Gholamhoseinian and Patrick J. Piggot....	5747–5749
Tn5 Mutagenesis of <i>Anabaena</i> sp. Strain PCC 7120: Isolation of a New Mutant Unable To Grow without Combined Nitrogen. Dulal Borthakur and Robert Haselkorn.....	5759–5761

PLASMIDS AND TRANSPOSONS

DnaA Protein Is Not Essential for Replication of IncFII Plasmid NR1. Xiao Buo Tang, David D. Womble, and Robert H. Rownd	5290–5295
IS861, a Group B Streptococcal Insertion Sequence Related to IS150 and IS3 of <i>Escherichia coli</i>. C. E. Rubens, L. M. Heggen, and J. M. Kuypers.....	5531–5535
A Plasmid Carrying <i>mucA</i> and <i>mucB</i> Genes from pKM101 in <i>Haemophilus influenzae</i> and <i>Escherichia coli</i>. Deborah Spikes and Jane K. Setlow.....	5753–5755

EUCARYOTIC CELLS

- Cloning of 18S and 25S rDNAs from the Pathogenic Fungus *Cryptococcus neoformans*.** Blanca I. Restrepo and Alan G. Barbour 5596–5600
- Isolation, Purification, and Properties of *Penicillium charlesii* Alkaline Protease.** C. A. Abbas, S. Groves, and J. E. Gander 5630–5637
- REV3*, a *Saccharomyces cerevisiae* Gene Whose Function Is Required for Induced Mutagenesis, Is Predicted To Encode a Nonessential DNA Polymerase.** Alan Morrison, Roshan B. Christensen, John Alley, Anton K. Beck, Edward G. Bernstine, Jeffrey F. Lemontt, and Christopher W. Lawrence 5659–5667

CELL SURFACES

- Release of Outer Membrane Fragments from Wild-Type *Escherichia coli* and from Several *E. coli* Lipopolysaccharide Mutants by EDTA and Heat Shock Treatments.** Hans J. P. Marvin, Martin B. A. ter Beest, and Bernard Witholt 5262–5267
- Fusion of Small Unilamellar Vesicles with Viable EDTA-Treated *Escherichia coli* Cells.** Hans J. P. Marvin, Martin B. A. ter Beest, Dick Hoekstra, and Bernard Witholt 5268–5275
- Structure, Surface Charge, and Self-Assembly of the S-Layer Lattice from *Bacillus coagulans* E38-66.** Dietmar Pum, Margit Sára, and Uwe B. Sleytr 5296–5303
- Use of *phoA* Fusions To Study the Topology of the *Escherichia coli* Inner Membrane Protein Leader Peptidase.** Jose Luis San Millan, Dana Boyd, Ross Dalbey, William Wickner, and Jon Beckwith 5536–5541
- Separation of *Escherichia coli* Penicillin-Binding Proteins into Different Membrane Vesicles by Agarose Electrophoresis and Sizing Chromatography.** Monte J. Leidenix, Gertrude H. Jacoby, Thomas A. Henderson, and Kevin D. Young 5680–5686
- Crystalline Cell Surface Layer of *Mycobacterium bovis* BCG.** K. Lounatmaa and E. Brander 5756–5758

PHYSIOLOGY AND METABOLISM

- Characterization of *Acinetobacter calcoaceticus catM*, a Repressor Gene Homologous in Sequence to Transcriptional Activator Genes.** Ellen L. Neidle, Christopher Hartnett, and L. Nicholas Ornston 5410–5421
- Pyrimidine Regulation of Tandem Promoters for *carAB* in *Salmonella typhimurium*.** Chung-Dar Lu, Mogens Kilstrup, Jan Neuhard, and Ahmed Abdelal 5436–5442
- Nucleotide Sequence and Regulation of the *Escherichia coli* Gene for Ferrienterobactin Transport Protein FepB.** Margaret F. Elkins and Charles F. Earhart 5443–5451
- Aromatic Aminotransferase Activity and Indoleacetic Acid Production in *Rhizobium meliloti*.** Barbara Lewis Kittell, Donald R. Helinski, and Gary S. Ditta 5458–5466
- Sodium Dependence of Acetate Formation by the Acetogenic Bacterium *Acetobacterium woodii*.** Reno Heise, Volker Müller, and Gerhard Gottschalk 5473–5478
- Activation of a Cryptic Pathway for Threonine Metabolism via Specific IS3-Mediated Alteration of Promoter Structure in *Escherichia coli*.** Benjamin D. Aronson, Mark Levinthal, and Ronald L. Somerville 5503–5511
- Thiol-Sensitive Genes of *Escherichia coli*.** George T. Javor 5607–5613

Isolation and Characterization of an <i>Escherichia coli</i> Mutant Having Temperature-Sensitive Farnesyl Diphosphate Synthase. Shingo Fujisaki, Tokuzo Nishino, Hirohiko Katsuki, Hiroshi Hara, Yukinobu Nishimura, and Yukinori Hirota.	5654-5658
Apparent Phosphate Retrieval System in <i>Bacillus cereus</i>. Per Henrik Guddal, Terje Johansen, Knut Schulstad, and Clive Little.	5702-5706
Chemiosmotic Energy from Malolactic Fermentation. Donald J. Cox and Thomas Henick-Kling	5750-5752

ENZYMES AND PROTEINS

Isolation and Characterization of Acetyl-Coenzyme A Synthetase from <i>Methanotrix soehngenii</i>. Mike S. M. Jetten, Alfons J. M. Stams, and Alexander J. B. Zehnder	5430-5435
Enzymatic Dehalogenation of Pentachlorophenol by Extracts from <i>Arthrobacter</i> sp. Strain ATCC 33790. Thilo Schenk, Rudolf Müller, Frank Mörsberger, Manfred K. Otto, and Franz Lingens	5487-5491
Cloning, Sequencing, and Expression of the Gene for NADH-Sensitive Citrate Synthase of <i>Pseudomonas aeruginosa</i>. Lynda J. Donald, Gilles F. Molgat, and Harry W. Duckworth.	5542-5550
Structure of the <i>cel-3</i> Gene from <i>Fibrobacter succinogenes</i> S85 and Characteristics of the Encoded Gene Product, Endoglucanase 3. Martin J. McGavin, Cecil W. Forsberg, Bill Crosby, Alexander W. Bell, Daniel Dignard, and David Y. Thomas	5587-5595
β-Lactam Biosynthesis in a Gram-Negative Eubacterium: Purification and Characterization of Isopenicillin N Synthase from <i>Flavobacterium</i> sp. Strain SC 12.154. Harriet Palissa, Hans von Döhren, Horst Kleinkauf, Hong-Hoi Ting, and Jack E. Baldwin	5720-5728
Structure-Function Relationships in the α Subunit of <i>Klebsiella pneumoniae</i> Nitrogenase MoFe Protein from Analysis of <i>nifD</i> Mutants. David Govezensky and Ada Zamir	5729-5735

POPULATION GENETICS AND EVOLUTION

Molecular Relationship of Chromosomal Genes Encoding Biphenyl/Polychlorinated Biphenyl Catabolism: Some Soil Bacteria Possess a Highly Conserved <i>bph</i> Operon. Kensuke Furukawa, Nobuki Hayase, Kazunari Taira, and Noboru Tomizuka	5467-5472
Restriction Fragment Length Polymorphism Analysis of <i>Rhizobium galegae</i> Strains. Seppo Kaijalainen and Kristina Lindström	5561-5566
Identification and Sequence of the Gene for Abequose Synthase, Which Confers Antigenic Specificity on Group B Salmonellae: Homology with Galactose Epimerase. Paul Wyk and Peter Reeves	5687-5693
Identification and Sequence of <i>rfbS</i> and <i>rfbE</i>, Which Determine Antigenic Specificity of Group A and Group D Salmonellae. Naresh Verma and Peter Reeves	5694-5701