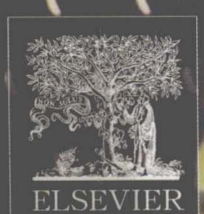
The Desk Encyclopedia of Microbiology

微生物学案头百科

Editor : Moselio Schaechter



英文原版名作系列
中文导读

科学出版社
www.sciencep.com

(Elsevier 英文原版名作中文导读系列)

The Desk Encyclopedia of Microbiology

微生物学案头百科

Editor
Moselio Schaechter

Consulting Editor
Joshua Lederberg

科学出版社
北京

图字：01-2006-05359 号

This is an annotated version of
The Desk Encyclopedia of Microbiology
Moselio Schaechter
Copyright © 2004 Elsevier Ltd.
ISBN 0-12-621361-5
All rights reserved.
No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

Published by arrangement with **Elsevier Pte Ltd.**

AUTHORIZED EDITION FOR SALE IN P. R. CHINA ONLY
本版本只限于在中华人民共和国境内销售

图书在版编目(CIP) 数据

微生物学案头百科＝The Desk Encyclopedia of Microbiology/（美）谢克特（Schaechter，M.）编. —北京：科学出版社，2006
（Elsevier 英文原版名作中文导读系列）
ISBN 7-03-016711-2

Ⅰ. 微… Ⅱ. 谢… Ⅲ. 微生物学-英文 Ⅳ. Q93

中国版本图书馆 CIP 数据核字（2005）第 155556 号

责任编辑：马学海 盖 宇
责任印制：钱玉芬/封面设计：耕者设计工作室

科学出版社出版
北京东黄城根北街 16 号
邮政编码：100717
http://www. sciencep. com
中国科学院印刷厂 印刷
科学出版社发行 各地新华书店经销
*
2006 年 4 月第 一 版 开本：889×1194 1/16
2006 年 4 月第一次印刷 印张：78 1/2 插页：4
印数：1—2 000 字数：2 444 000

定价：260.00 元
（如有印装质量问题，我社负责调换〈科印〉）

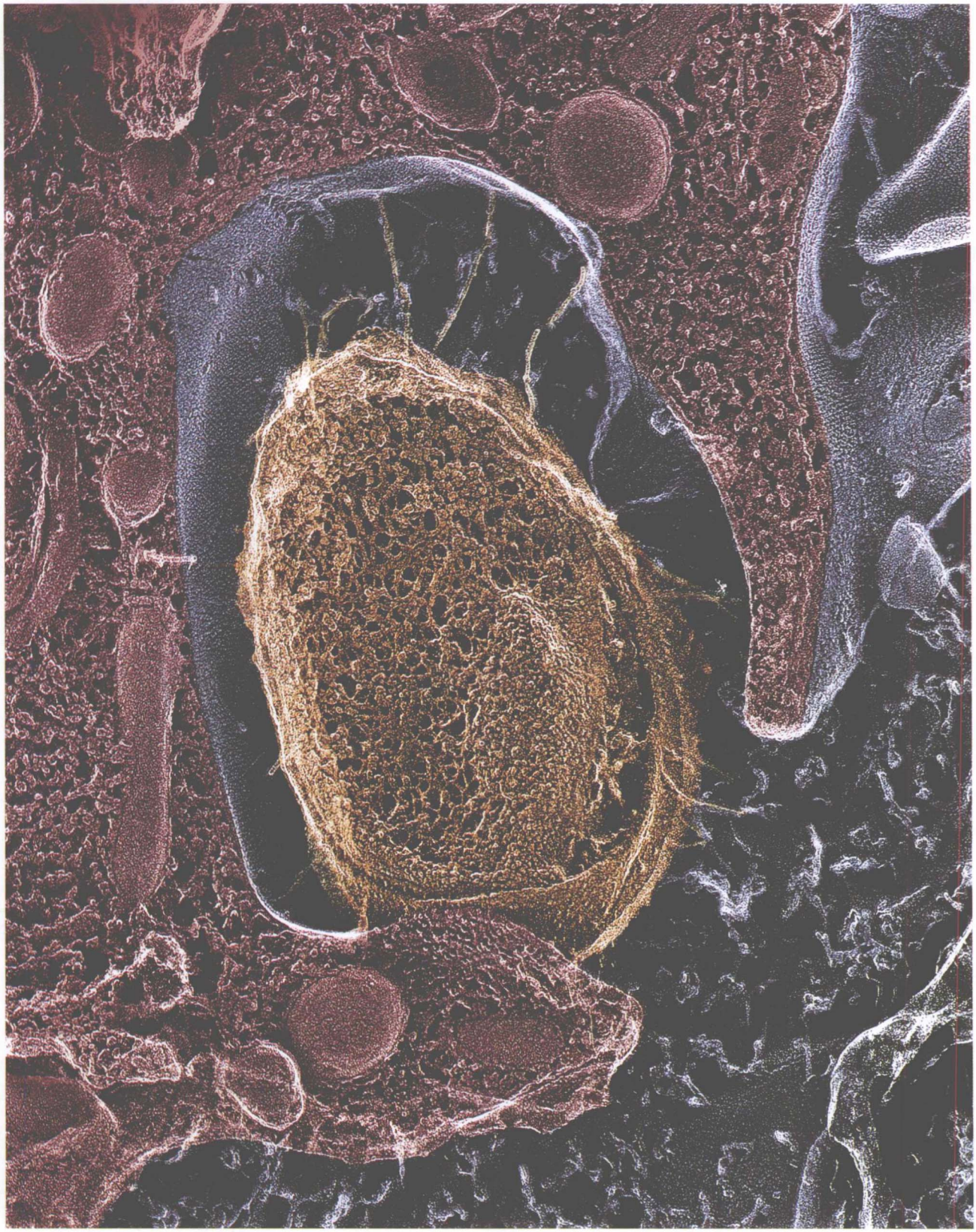


PLATE 1 The attachment of uropathogenic *Escherichia coli* to the luminal surface of the bladder epithelium by type 1 pili as visualized by high-resolution freeze-fracture, deep-etch electron microscopy. See Fig. 1.1.

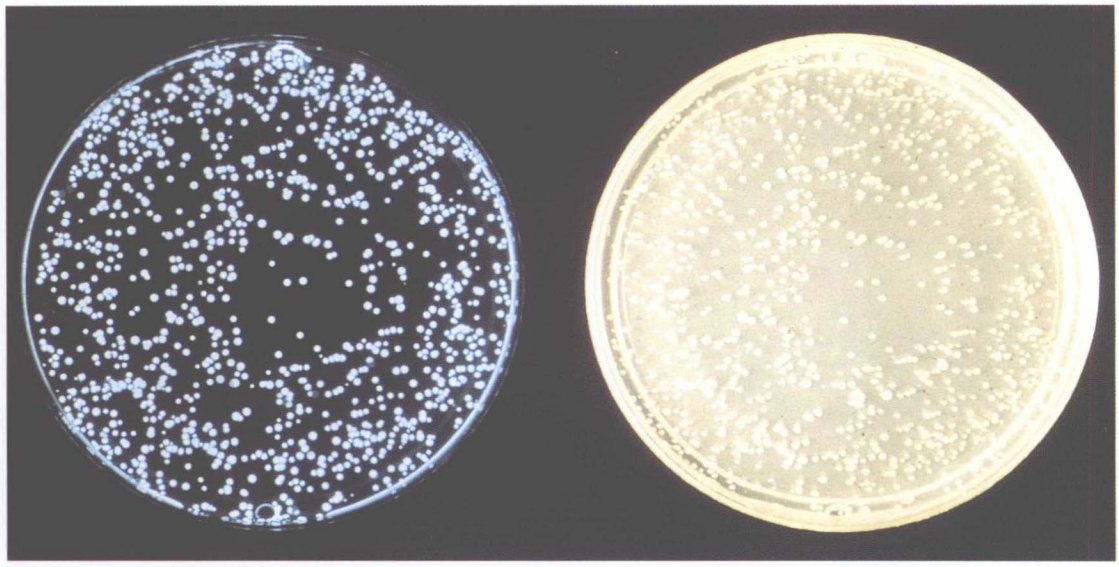


PLATE 2 Colonies of luminous bacteria photographed by their own light (left) and in room light (right). Light is emitted continuously but is controlled by a quorum-sensing mechanism (autoinducer) and is thus not proportional to growth or cell density. See Fig. 14.2.

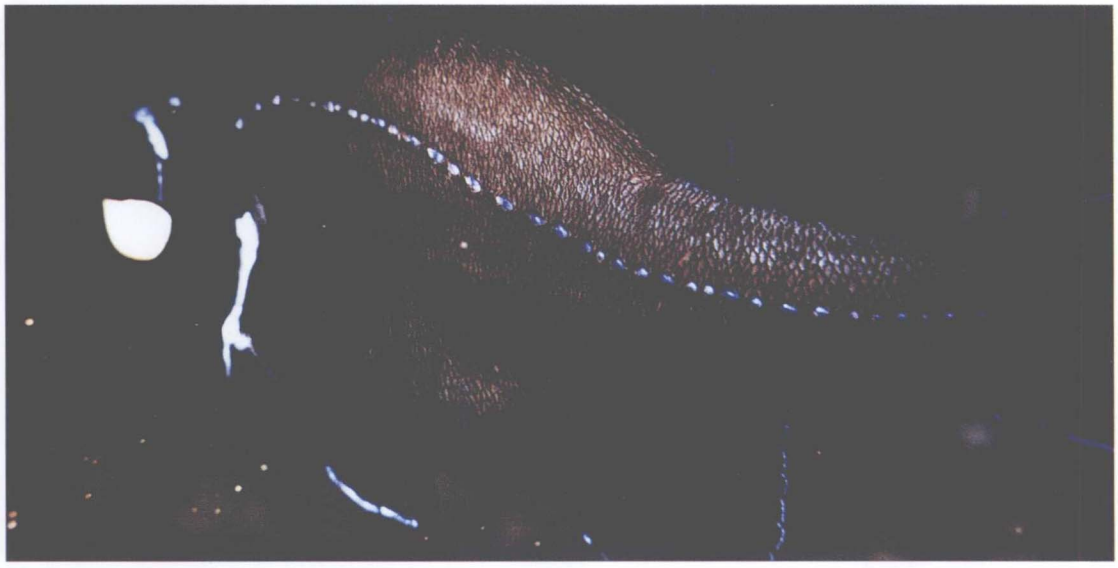


PLATE 3 The flashlight fish (photoblepharon) showing the exposed light organ, which harbors luminous bacteria and is located just below the eye. A special lid allows the fish to turn the light on and off. See Fig. 14.3.

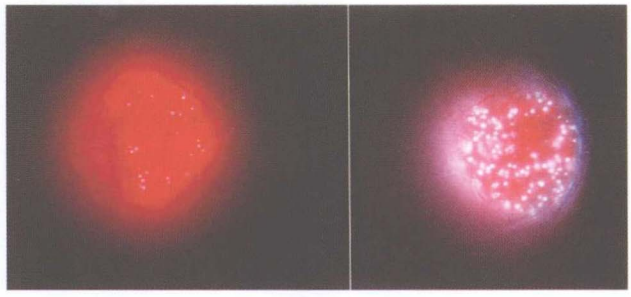


PLATE 4 Gonyaulax cells viewed by fluorescence microscopy showing scintillons (bioluminescent organelles) visualized by the fluorescence of dinoflagellate luciferin (λ_{max} of emission, 475 nm), with chlorophyll fluorescence as the red background. Scintillons are structurally formed and destroyed on a daily basis, controlled by the circadian clock. (Right) Night phase cell with many scintillons; (left) day phase cell with few scintillons. See Fig. 14.7.

此为试读,需要完整PDF请访问: www.ertongbook.com

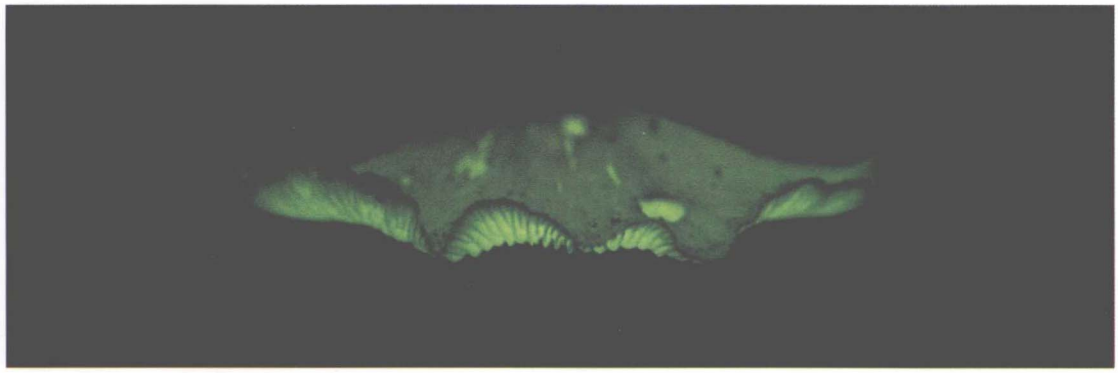


PLATE 5 Bioluminescent mushroom photographed by its own light. See Fig. 14.10.

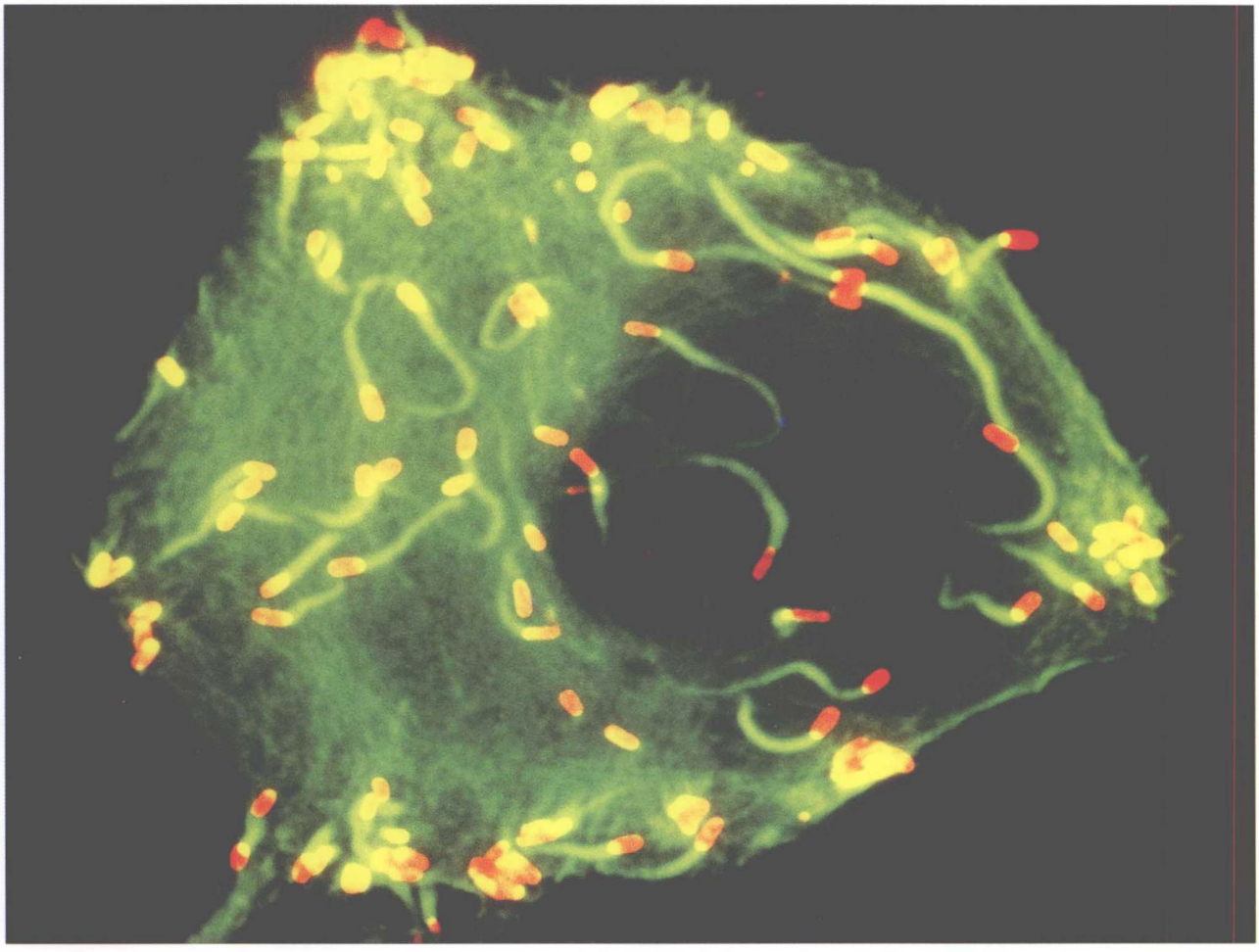


PLATE 6 Actin tail formation by *Shigella flexneri*. Actin microfilaments are polymerized at one end of the bacterium and help it to move within the host cell cytoplasm. Bacteria are stained in red and actin in green. The areas where bacteria and actin colocalize appear in yellow. See Fig. 34.1.

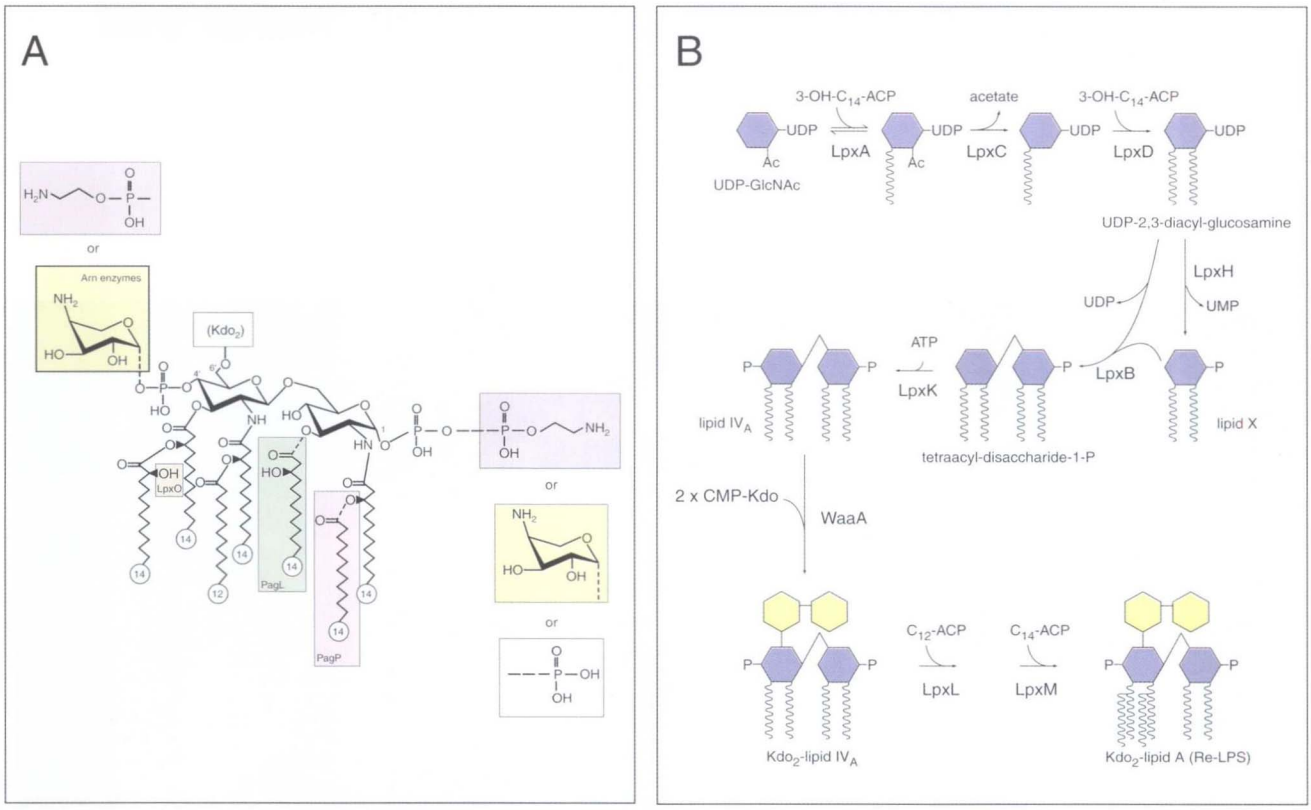


PLATE 7 Structure and biosynthesis of lipid A. Panel A shows the structure of the lipid A from *E. coli* and *Salmonella*. The basic structure is given in *black* and regulated modifications and, where known, the enzymes responsible are indicated in the *colored* boxes. 4-amino-L-arabinose (*yellow* box) is found mainly on the 4′ phosphate, whereas phosphorylethanolamine (*blue* box) is mainly located at position 1. Under some growth conditions a pyrophosphate group is found at position 1. PagP (*pink* box) is a PhoP/PhoQ-regulated palmitoyl transferase located in the outer membrane. PagL (*green* box) selectively removes a β-hydroxymyristoyl residue. LpxO (*brown* box) hydroxylates the 3′ secondary acyl chain and the process is oxygen-dependent. Panel B shows the pathway for biosynthesis of lipid A from *E. coli* K-12. The enzymes responsible for each step in the pathway are indicated. The completed Re-LPS provides an acceptor for sequential assembly of the core oligosaccharide at the cytoplasmic face of the inner membrane. The completed molecule is then exported across the inner membrane by the ABC-transporter, MsbA (not shown). See Fig. 56.2.

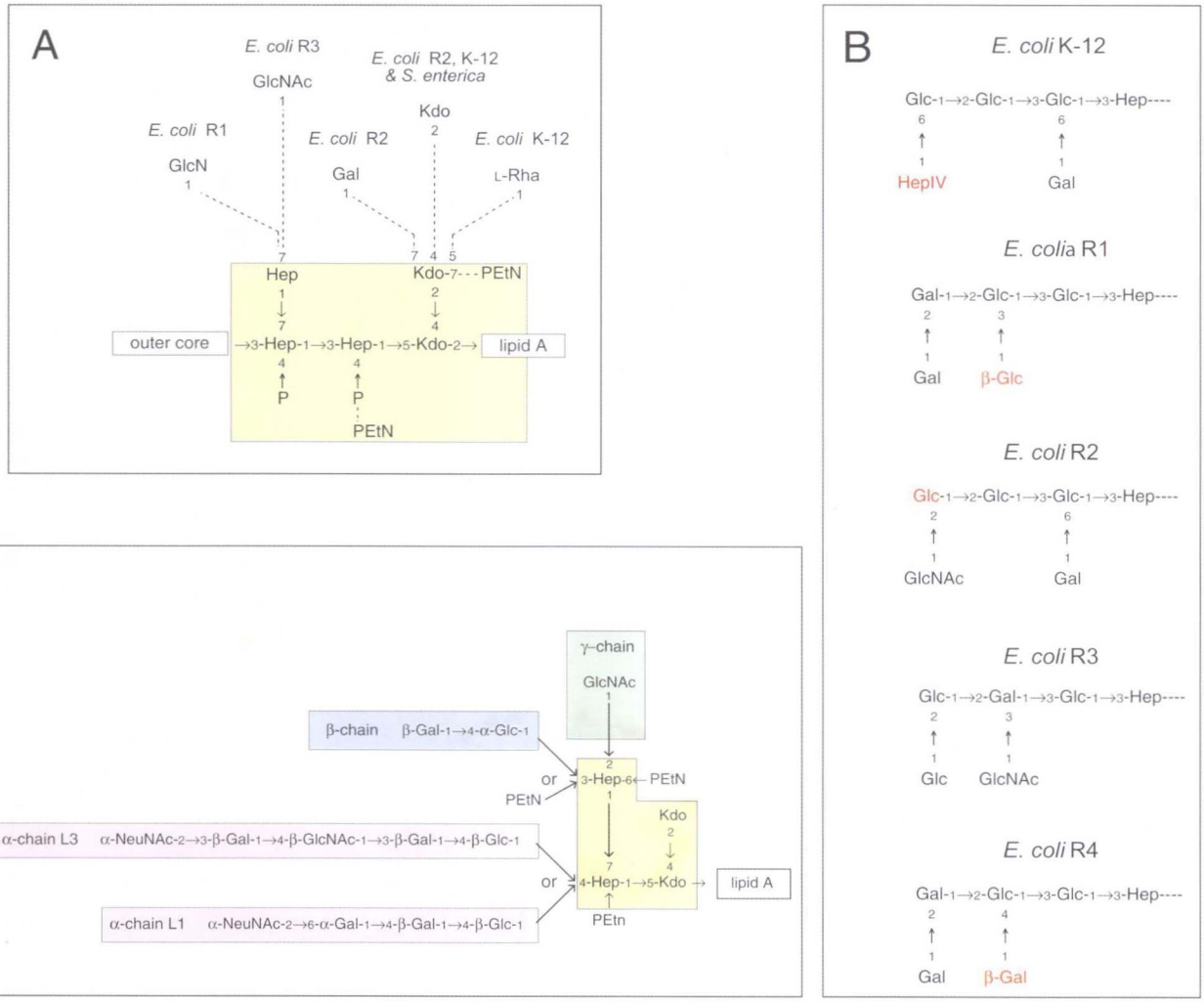


PLATE 8 Structure of the core OS region of LPS and LOS. Panel A shows the inner core region of the core OSs from *E. coli* K-12. The backbone structure (*yellow* box) is conserved but nonstoichiometric glycose modifications (dotted lines) vary in different core types. Panel B shows the known outer core structures from the five core OSs of *E. coli*. They share a common overall structure, consisting of five glycoses linked to Hep II, but they differ in glycose content, glycose sequence, and side branch position. The site of O-PS ligation is not known for all of the core OS types but, where it has been determined, the residue providing the attachment site is indicated in *red*. Panel C shows a representative LOS structure from *N. gonorrhoeae*. The LOS core (*yellow* box) is conserved among different strains but there are strain-specific differences in the attached oligosaccharide chains. Shown are 2 possible variants (L1 and L3) of α-chain (*pink* boxes) and the β- and γ-chains. Unless otherwise indicated, all residues in the various structures are linked in the α-configuration. See Fig. 56.3.

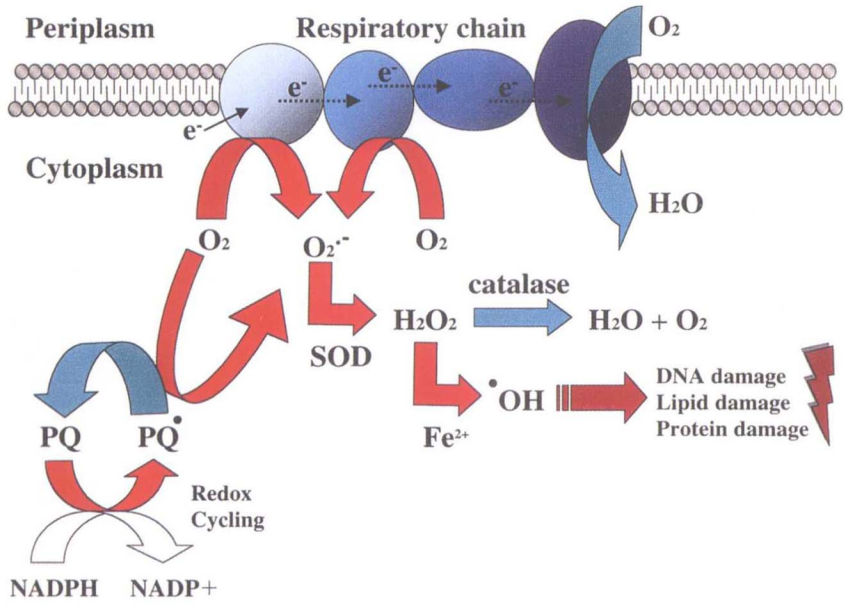


PLATE 9 Reactive oxygen species, oxidative stress, and cellular damage. The majority of the oxygen that enters the cell is reduced to water by the respiratory chain, a reaction that consumes four electrons. However, a small proportion of the oxygen molecules can be reduced in a series of one-electron reactions. Molecular oxygen forms superoxide ($O_2^{\bullet-}$) by reaction with reduced components of the respiratory chain. Superoxide can also be formed by reaction with redox-cycling drugs such as paraquat (PQ), which is enzymatically re-reduced at the expense of NADPH. Superoxide is eliminated by superoxide dismutase (SOD) to form hydrogen peroxide (H_2O_2). Hydrogen peroxide can either be detoxified by conversion into water and oxygen by catalase, or react with reduced transition metals such as iron and copper to form a hydroxyl radical (OH). The hydroxyl radical is a highly reactive molecule than can damage virtually all the fundamental cellular components. Solid arrows indicate reactions that yield oxidants. Open arrows indicate reactions that yield innocuous products. See Fig. 66.1.

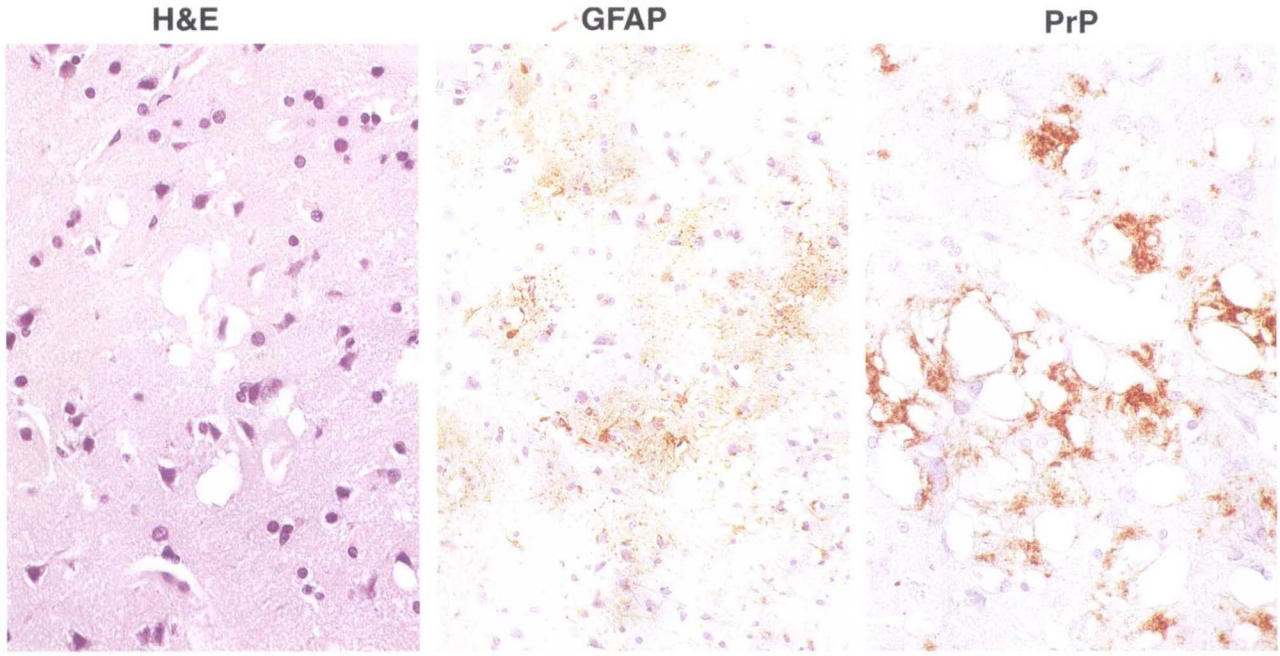


PLATE 10 Characteristic features of Creutzfeldt–Jakob disease. Hematoxylin–eosin stain (left) shows the typical vacuoles in the brain of a CJD patient, which leads to the spongiform appearance. Proliferation of reactive astrocytes is visualized by staining with antibodies against glial fibrillary acidic protein (GFAP, middle). PrP protein deposits are shown with anti-PrP immunostaining. See Fig. 71.7.

导读编译者

主编译：高　福　黄　力　谭华荣（中国科学院微生物研究所）

参加编译人员：（按汉语拼音排序）

陈　亮　陈　伟　陈　勇　程　浩　褚福亮
戴　欣　东秀珠　董　丽　段成国　冯春燕
冯友军　高　福　郭惠姗　郭　莉　郭　欣
郭银平　胡晋川　黄　力　黄晓星　黄　英
金　城　李　红　李希阳　李志新　刘　钢
刘俊娥　刘双江　刘文军　刘兴宇　刘杏忠
马俊才　马　凯　马延和　米朔甫　牛国清
牛莉莉　欧阳浩淼　宋晓晖　孙业平
谭华荣　陶　华　田新生　田宇清　王　芳
王贵华　王　颖　吴康云　向　华　校海霞
谢周杰　杨怀义　杨利敏　杨文斌　岳晓婧
张立奎　张强敏　张永杰　赵良真

Contributors

David W. K. Acheson
Center for Food Safety and Applied Nutrition, Food and Drug Administration, Rockville, MD 20740, USA

H.-W. Ackermann
Department of Medical Biology, Laval University, Local 2332, Pav. Ferdinand Vandry, Laval, Quebec, Canada G1K 7P4

George N. Agrios
Department of Plant Pathology, University of Florida, 1453 Fifield Hall, P.O. Box 110680, Gainesville, FL 32611, USA

Adriano Aguzzi
Institute of Neuropathology, University of Zurich, University Hospital of Zürich, Schmelzbergstrasse 12, Zurich CH-8091, Switzerland

Shin-Ichi Aizawa
Soft Nano-Machine Project, CREST, Japan Science and Technology Agency, 1064-18 Takahori, Hirata, Takanezawa, Shioya-gun, Tochigi 329-1206, Japan

Orna Amster-Choder
Department of Molecular Biology, Hebrew University School of Medicine, P.O. Box 12272, Bldg. 3, 2nd Floor, Room 34, Jerusalem 91120, Israel

Thomas M. Anderson
Microbiology Manager, Archer Daniels Midland BioProducts, P.O. Box 1470, Decatur, IL 62525, USA

Ann M. Arvin
Department of Pediatrics, Stanford University School of Medicine, Mailcode 5208, 300 Pasteur Drive, G-312A Stanford, CA 94305, USA

Mariette R. Atkinson
Department of Biological Chemistry, University of Michigan Medical School, 4310 Med Sci I, 1301 Catherine, Ann Arbor, MI 48109-0606, USA

Farah K. Bahrani-Mougeot
Department of Medicine, University of Maryland School of Medicine, MSTF 90, 656 W Baltimore St., Baltimore, MD 21201-1559, USA

Joseph T. Barbieri
Department of Microbiology, Medical College of Wisconsin, P.O. Box 26509, 8701 Watertown Plank Rd., Milwaukee, WI 53226-0509, USA

Douglas H. Bartlett
Center for Marine Biotechnology and Biomedicine, University of California, San Diego, Scripps Institution of Oceanography, 9500 Gilman Drive, Dept 0202, La Jolla, CA 92093-0202, USA

Arnold J. Bendich
Professor of Botany and Genetics, Department of Biology, 522 Hitchcock Hall, University of Washington, Box 351800, Seattle, WA 98195, USA

Peter M. Bennett
Department of Pathology and Microbiology, University of Bristol, School of Medical Sciences, University Walk, Bristol BS8 1TD, UK

Mary K.B. Berlyn
Department of Biology, Yale University, 355-OML, 165 Prospect St., New Haven, CT 06520-8104, USA

Paul Blum
George Beadle Center for Genetics, Nebraska University-Lincoln, P.O. Box 880666, Lincoln, NE 68588-066, USA

此为试读,需要完整PDF请访问: www.ertongbook.com

Andrea D. Branch
Division of Liver Diseases, Department of Medicine, Mount Sinai Medical Center, Recanati/Miller Transplantation Institute, One Gustave L. Levy Place, Box 1633, New York, NY 10029-6574, USA

Yves V. Brun
Department of Biology, Indiana University, Jordan Hall, Bloomington, IN 47405, USA

Trevor N. Bryant
Medical Statistics and Computing, University of Southampton, Southampton General Hospital, Tremona Rd, Southampton SO16 6YD, UK

George H. Bowden
Department of Oral Microbiology, University of Manitoba, Faculty of Dentistry, 780 Bannatyne Avenue, Winnipeg, Manitoba, Canada R3E 0W2

Arturo Casadevall
Department of Medicine, Infectious Diseases, Albert Einstein College of Medicine, Golding Bldg. Rm. 701, 1300 Morris Park Avenue, Bronx, NY 10461, USA

Ricardo Cavicchioli
Department of Microbiology and Immunology, University of New South Wales, Sydney, NSW 2052, Australia

Jane A. Cecil
The Johns Hopkins University, Ross Research Building 1159, 720 Rutland Avenue, Baltimore, MD 21205-2196, USA

Peter J. Christie
Department of Microbiology and Molecular Genetics, University of Texas Health Science Center, 6431 Fannin St., Houston, TX 77030-1501, USA

Laurie E. Comstock
Channing Laboratory, Harvard Medical School, 181 Longwood Avenue, Boston, MA 02115-5899, USA

Sandra Da Re
Department of Molecular Biology, Princeton University, 330 Lewis Thomas Lab, Princeton, NJ 08544, USA

Robert B. Dadson
University of Maryland, Eastern Shore, Princess Anne, Maryland, USA

Julian Davies
Department of Microbiology and Immunology, University of British Columbia, Vancouver, British Columbia, Canada

Bruce Demple
Department of Cancer Cell Biology, Harvard School of Public Health, Bldg. 1 Floor 6, 665 Huntington Avenue, Boston, MA 02115-6021, USA

Kevin M. Devine
Department of Genetics, Trinity College, Dublin, Lincoln Place Gate, Dublin 2, UK

Vidula Dixit
George Beadle Center for Genetics, Nebraska University-Lincoln, P.O. Box 880666, Lincoln, NE 68588-066, USA

Karen W. Dodson
Department of Molecular Microbiology, Washington University School of Medicine, Campus Box 8230, 660 S Euclid Avenue, 8230, St. Louis, MO 63110-1010, USA

Michael S. Donnenberg
Department of Medicine, University of Maryland School of Medicine, MSTF 90, 656 W Baltimore St., Baltimore, MD 21201-1559, USA

Brian A. Dougherty
Department of Applied Genomics, Bristol-Myers Squibb Company, Pharmaceutical Research Institute, 5 Research Parkway, Wallingford, CT 06492-7660, USA

Angela E. Douglas
Department of Biology, University of York, P.O. Box 373, York YO1 5YW, UK

Karl Drlica
Public Health Research Institute, 225 Warren Street, Newark, NJ 07103

Charles F. Earhart
Department of Microbiology, University of Texas, ESB 226, A5000, 24th St. & Speedway, Austin, TX 78712-1095, USA

Thomas Egli
Department of Microbiology, Swiss Federal Institute for Environmental Science and Technology, BU-D04, Ueberlandstrasse 133, Dübendorf CH-8600, Switzerland

Gerald H. Elkan
Department of Microbiology, North Carolina State University, Raleigh, NC 27605, USA

Karen T. Elvers
Hatherly Labs, University of Exeter, Exeter, Prince of Wales Road, Devon EX4 4PS, UK

Larry E. Erickson
Department of Chemical Engineering, Kansas State University, 105 Durland Hall, Manhattan, KS 66506-5102, USA

Ana A. Espinel-Ingroff
Department of Medicine, Division of Infectious Diseases, Medical College of Virginia, Sanger Hall, Room 7049, 1101 E. Marshall Street, Richmond, VA 23298, USA

Stuart J. Ferguson
Department of Biochemistry, University of Oxford, South Parks Road, Oxford OX1 3QU, UK

Laura S. Frost
Department of Biological Sciences, University of Alberta, CW 405 Biological Sciences Bldg., Edmonton, Alberta T6G 2E9, Canada

Clay Fuqua
Department of Biology, 1001 E. 3rd Street, Jordan Hall 418, Indiana University Bloomington, IN 47405

Jorge Galan
Department of Microbial Pathogenesis, Yale University, New Haven, CT 06520, USA

Emil C. Gotschlich
Laboratory of Bacterial Pathogenesis and Immunology, Rockefeller University, 1230 York Avenue, New York, NY 10021-6399, USA

Peter H. Graham
Department of Soil, Water and Climate, University of Minnesota, 256 Borlaug Hall, 1991 Upper Buford Circle, St. Paul, MN 55108, USA

Carol A. Gross
Department of Microbiology, University of California, San Francisco, Medical Sciences Rm 534, #0512, 513 Parnassus Avenue, San Francisco, CA 94143-0512, USA

Lawrence Grossman
Department of Biochemistry, Johns Hopkins University School of Hygiene and Public Health, 615 N Wolfe Street, Baltimore, MD 21205-2179, USA

Janine Guespin-Michel
Laboratoire de Microbiologie du Froid, IFR CNRS – Université de Rouen, Faculté de Sciences et Techniques, Place Emile Blondel, Mont-Saint-Aignan 76821, France

Ian R. Hamilton
Department of Oral Microbiology, University of Manitoba, Faculty of Dentistry, 780 Bannatyne Avenue, Winnipeg, Manitoba R3E 0W2, Canada

Fawzy Hashem
University of Maryland, Eastern Shore, Princess Anne, Maryland, USA

J. Woodland Hastings
Department of Biology, Harvard University, Biological Laboratories, 16 Divinity Avenue, Cambridge, MA 02138-2020, USA

Jack A. Heinemann
Norweigian Institute of Gene Ecology, Tromso, Norway

James A. Hejna
Department of Molecular and Medical Genetics, Oregon Health Sciences University, M/C L103, 3181 SW Sam Jackson Park Rd., Portland, OR 97201-3098, USA

Christophe Herman
Department of Microbiology, University of California, San Francisco, Medical Sciences Rm 534, #0512, 513 Parnassus Avenue, San Francisco, CA 94143-0512, USA

David L. Heymann
Executive Director, Communicable Diseases, World Health Organization, Geneva 27 CH-1211, Switzerland

Susan K. Hoiseth
Wyeth Vaccines Research, Pearl River, New York, USA

Joachim-V. Höltje
Max-Planck-Institut für Entwicklungsbiologie, Abteilung Biochemie, Spemannstrasse 35, Tübingen D-72076, Germany

Joseph B. Hughes
Energy and Environmental Systems Institute, Rice University, 6100 S. Main, MS-316, Houston, TX 77005, USA

Scott James Hultgren
Department of Molecular Microbiology, Washington University School of Medicine, Campus Box 8230, 660 S Euclid Avenue, 8230, St. Louis, MO 63110-1010, USA

Francoise Joset
Laboratoire de Chimie Bactérienne, CNRS 13412 Marseille, France

Robert J. Kadner
Department of Microbiology, University of Virginia School of Medicine, Box 441, Health Sciences Center, Charlottesville, VA 22908, USA

Isao Karube
School of Bionics, Tokyo University of Technology, 1404-1 Katakura-cho, Hachioji, Tokyo 192-0982, Japan

Dennis L. Kasper
Channing Laboratory, Harvard Medical School, 181 Longwood Avenue, Boston, MA 02115-5899, USA

Michael J. Klug
Department of Microbiology, Michigan State University, W.K. Kellogg Biological Station, 3700 East Gull Lake Drive, Hickory Corners, MI 49060, USA

Roger Knowles
Department of Natural Resource Sciences, McGill University, MacDonald Campus, 21,111 Lakeshore Road, Ste-Anne de-Bellevue, Quebec, Canada H9X 3V9

L. David Kuykendall
Agricultural Research Service, Beltsville, US Department of Agriculture, Bldg. 011A, Barc West Rm. 252, Plant Molecular Pathology Laboratory, PSI, Beltsville, MD 20705, USA

Hilary M. Lappin-Scott
Hatherly Labs, University of Exeter, Exeter, Prince of Wales Road, Devon EX4 4PS, UK

Piet Lens
Department of Environmental Technology, Wageningen Agricultural University, P.O. Box 8129, Wageningen 6700 EV, The Netherlands

Charles R. Lovell
Department of Biological Sciences, University of South Carolina, Coker Life Sciences 408, Columbia, SC 29208, USA

K. Brooks Low
Department of Therapeutic Radiology, Yale University, Hunter Radiation Therapy, M353, 333 Cedar Street, New Haven, CT 06520, USA

Millicent Masters
Institute of Cell & Molecular Biology, University of Edinburgh, Darwin Bldg. King's Buildings, Mayfield Road, Edinburgh EH9 3JR, UK

A. C. Matin
Department of Microbiology and Immunology, Stanford University, Sherman Fairchild Science Bldg. D317, Stanford, CA 94305-5402, USA

Peter A. Meacock
Department of Genetics, University of Leicester, Adrian Building, University Road, Leicester LE1 7RH, UK

Ian R. McDonald
Department of Biological Sciences, University of Warwick, Coventry CV4 7AL, UK

Paul Messner
Center for Ultrastructure Research and Institute for Molecular Nanotechnology, University of Agricultural Sciences, Vienna, Gregor-Mendel-Str. 33, Vienna A-1180, Austria

Linda A. Miller
Department of Automicrobial Profiling/ Clinical Microbiology, SmithKline Beecham Pharmaceuticals, P.O. Box 5089, 1250 S. Collegeville Rd., Mail Code UP1340, Collegeville, PA 19426-0989, USA

Saroj K. Mishra
Division of Life Sciences, NASA/Johnson Space Center, Houston, 3600 Bay Area Blvd., Houston, TX 77058, USA

Luc Montagnier
Institut Pasteur, 25–28 rue du Dr Roux, 75015 Paris, France and Department of Biology, Queens College, NY 11367, USA

Stephen S. Morse
DARPA – Defense Advanced Research Project Agency, Columbia University, 3701 N Fairfax Drive, Room 838, Arlington, VA 22203-1714, USA

Robb E. Moses
Department of Molecular and Medical Genetics, Oregon Health Sciences University, M/C L103, 3181 SW Sam Jackson Park Rd., Portland, OR 97201-3098, USA

Matthew A. Mulvey
Department of Molecular Microbiology, Washington University School of Medicine, Campus Box 8230, 660 S Euclid Avenue, 8230, St. Louis, MO 63110-1010, USA

Noreen E. Murray
Institute of Cell and Molecular Biology, University of Edinburgh, King's Buildings, Mayfield Road, Edinburgh, EH9 3JR, UK

J. Colin Murrell
Department of Biological Sciences, University of Warwick, Coventry CV4 7AL, UK

Christine Musahl
Institute of Neuropathology, University of Zurich, University Hospital of Zürich, Schmelzbergstrasse 12, Zurich CH-8091, Switzerland

C. Nelson Neale
Energy and Environmental Systems Institute, Rice University, 6100 S. Main, MS-316, Houston, TX 77005, USA

T. G. Nagaraja
Department of Diagnostic Medicine/ Pathobiology, Kansas State University, College of Veterinary Medicine, Manhattan, KS 66506-5606, USA

Alexander J. Ninfa
Department of Biological Chemistry, University of Michigan Medical School, 4310 Med Sci I, 1301 Catherine, Ann Arbor, MI 48109-0606, USA

Yoko Nomura
School of Bionics, Tokyo University of Technology, 1404-1 Katakura-cho, Hachioji, Tokyo 192-0982, Japan

David A. Odelson
Invitrogen Corp. Carlsbad, CA, USA

Donald B. Oliver
Department of Molecular Biology and Biochemistry, Wesleyan University, Hall-Atwater and Shanklin Labs, Middletown, CT 06459-0175, USA

Mary J. Osborn
Department of Microbiology, University of Connecticut Health Center, Farmington, CT 06032, USA

Carol J. Palmer
Department of Pathobiology, University of Florida, USA

Sarad R. Parekh
Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268-1054, USA

Christine Paszko-Kolva
Accelerated Technology Laboratories, Inc., Belmont, CA, 496 Holly Grove School Road, West End, NC 27376, USA

D. L. Pierson
Division of Life Sciences, NASA/Johnson Space Center, Houston, 3600 Bay Area Blvd., Houston, TX 77058, USA

Patrick J. Piggot
Department of Microbiology and Immunology, Temple University School of Medicine, 3400 N Broad Street, Philadelphia, PA 19140-5104, USA

Look Hulshoff Pol
Department of Environmental Technology, Wageningen Agricultural University, P.O. Box 8129, Wageningen 6700 EV, The Netherlands

Pablo J. Pomposiello
Department of Microbiology, University of Massachusetts, Amherst, MA 01003, USA

James A. Poupard
Department of Automicrobial Profiling/Clinical Microbiology, SmithKline Beecham Pharmaceuticals, P.O. Box 5089, 1250 S. Collegeville Rd., Mail Code UP1340, Collegeville, PA 19426-0989, USA

Thomas C. Quinn
The Johns Hopkins University, Ross Research Building 1159, 720 Rutland Avenue, Baltimore, MD 21205-2196, USA

Mary F. Roberts
Chemistry Department, 140 Commonwealth Avenue, Boston College, Chestnut Hill, MA 02467, USA

Milton J. Schlesinger
Department of Molecular Microbiology, Washington University School of Medicine, Box 8230, 4566 Scott Avenue, St. Louis, MO 63110-1093, USA

Sondra Schlesinger
Department of Molecular Microbiology, Washington University School of Medicine, Box 8230, 4566 Scott Avenue, St. Louis, MO 63110-1093, USA

Kate M. Scow
Department of Land, Air, Water Resources, University of California, Hoagland Hall, Davis, CA 95616-5224, USA

Uwe B. Sleytr
Center for Ultrastructure Research and Institute for Molecular Nanotechnology, University of Agricultural Sciences, Vienna, Gregor-Mendel-Str. 33, Vienna A-1180, Austria

Joan L. Slonczewski
Department of Biology,
Kenyon College, 100 College Road,
Gambier, OH 43022, USA

Peter G. Sohnle
Department of Infectious Diseases,
Medical College of Wisconsin,
Research Service/151, VA Medical Center,
Milwaukee, WI 53295, USA

Mohammad Sondossi
Department of Microbiology,
Weber State University, 2506 University Circle,
Ogden, UT 84408-2506, USA

Gabriel E. Soto
Department of Molecular Microbiology,
Washington University School of Medicine,
Campus Box 8230, 660 S Euclid Avenue, 8230,
St. Louis, MO 63110-1010, USA

Kevin R. Sowers
Center of Marine Biotechnology, University of
Maryland Biotechnology Institute, Suite 236,
Columbus Center, 701 E Pratt Street, Baltimore,
MD 21202-4031, USA

Jeff B. Stock
Department of Molecular Biology,
Princeton University, 330 Lewis Thomas Lab,
Princeton, NJ 08544, USA

Morton N. Swartz
Infectious Disease Unit, Massachusetts General
Hospital and Harvard Medical School, 70 Blossom
Street, Boston, MA 02114-2696, USA

Christopher M. Thomas
School of Biological Sciences,
University of Birmingham, Edgbaston,
Birmingham B15 2TT, UK

Torsten Thomas
Department of Microbiology and Immunology,
University of New South Wales, Sydney, NSW 2052,
Australia

Sue Tolin
Department of Plant Pathology, Virginia
Polytechnic Institute and State University,
Blacksburg, VA 24061, USA

Arthur O. Tzianabos
Channing Laboratory, Harvard Medical School,
181 Longwood Avenue, Boston,
MA 02115-5899, USA

Marcus Vallero
Department of Environmental Technology,
Wageningen Agricultural University, P.O. Box 8129,
Wageningen 6700 EV, The Netherlands

Costantino Vetriani
Department of Environmental Biology,
Portland State University, Science Building 2,
1719 S.W. 10th Avenue, Portland,
OR 97201, USA

Anne Vidaver
Department of Plant Pathology,
University of Nebraska-Lincoln,
Lincoln, NE 68588, USA

David K. Wagner
Department of Infectious Diseases,
Medical College of Wisconsin,
Research Service/151, VA Medical Center,
Milwaukee, WI 53295, USA

Graeme M. Walker
School of Molecular and Life Sciences,
University of Albertay Dundee,
Kydd Building, Bell Street,
Dundee, DD1 1HG, UK

C. Herb Ward
Energy and Environmental Systems Institute,
Rice University, 6100 S. Main, MS-316, Houston,
TX 77005, USA

Vera Webb
Lookfar Solutions Inc.,
P.O. Box 811, Tofino V0R2Z0,
British Columbia, Canada

Chris Whitfield
Department of Microbiology, University of Guelph,
172 Chemistry-Microbiology, Guelph,
Canada ON N1G 2W1

Richard J. Whitley
Department of Pediatrics, University of Alabama
School of Medicine, Ambulatory Care Center 616,
1600 7th Avenue S, Birmingham,
AL 35294-0011, USA

Brian M. Wilkins[†]
Department of Genetics, University of Leicester,
Adrian Building, University Road,
Leicester LE1 7RH, UK

[†] Deceased.

Kevin W. Winterling
Department of Biology, Emory and Henry College,
P.O. Box 75, One Garnand Drive, Emory,
VA 24327, USA

Bernard S. Wostmann
Lobund Laboratory, University of Notre Dame,
16977 Adams Road, Granger,
IN 46530, USA

Charles Yanofsky
Department of Biological Science, Stanford University,
Gilbert Bldg., 371 Serra Street, Stanford,
CA 94305, USA

Judith W. Zyskind
San Diego State University, Elitra Pharmaceuticals,
3510 Dunhill St, Suite A, San Diego,
CA 92121, USA

此为试读,需要完整PDF请访问: www.ertongbook.com