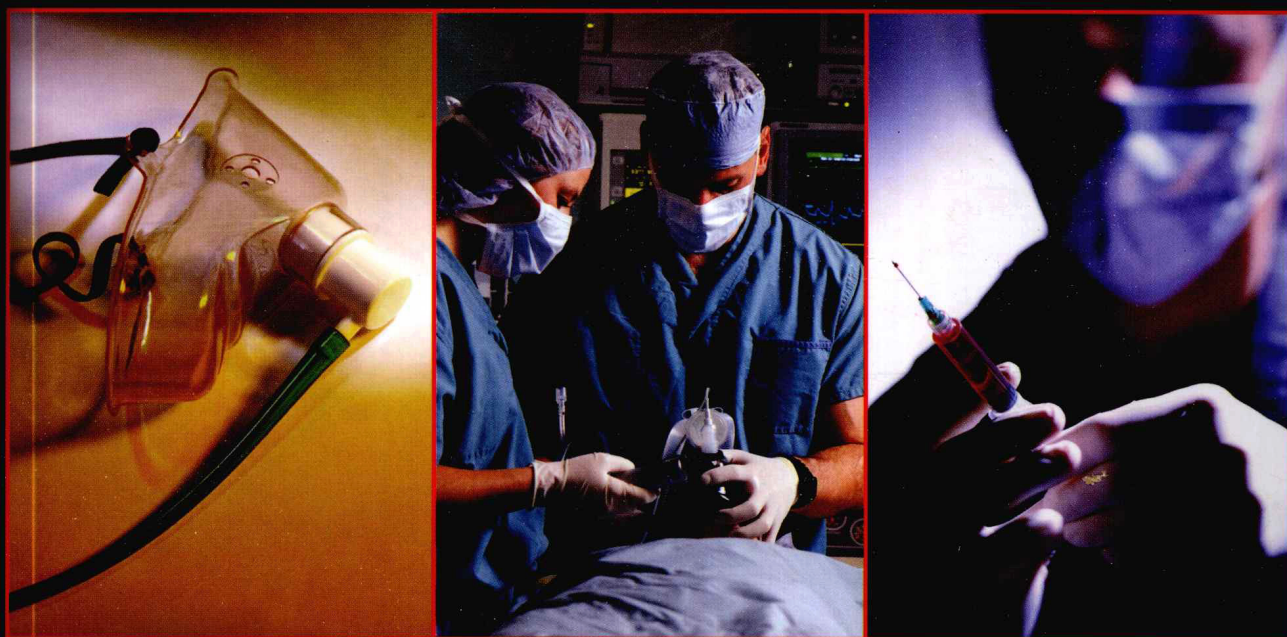


国家“十一五”重点图书

Miller's Anesthesia

第6版·上卷

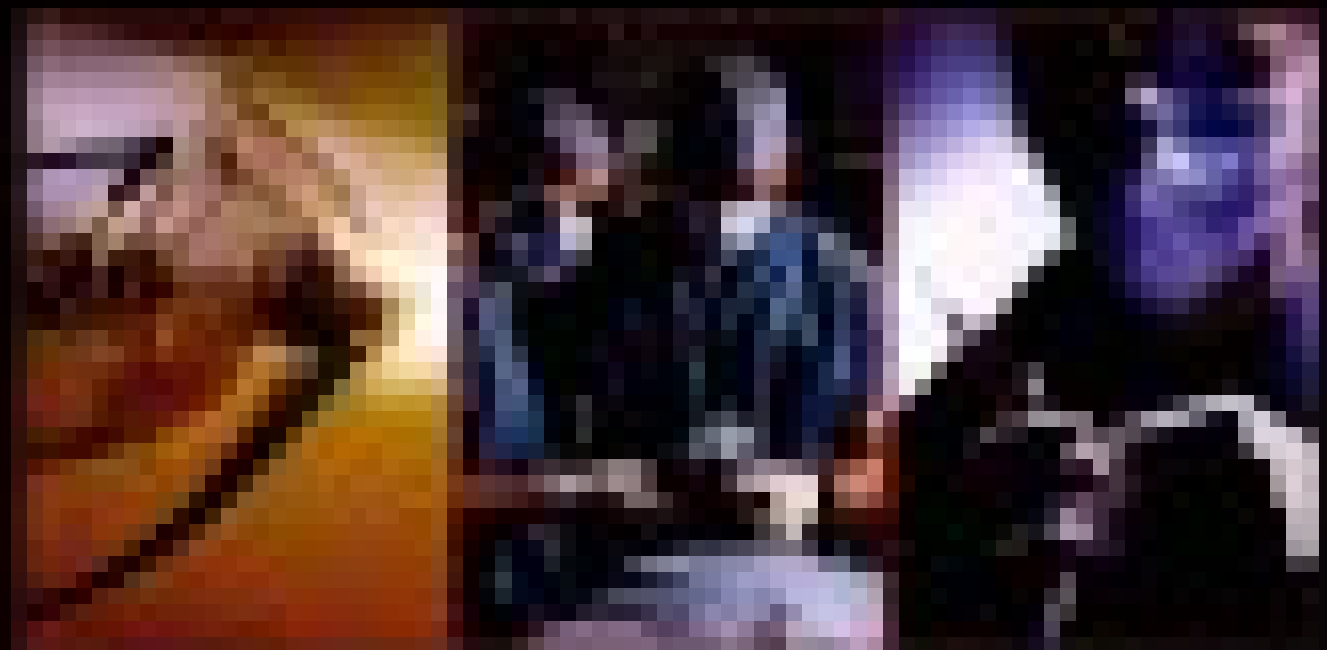


主 编 Ronald D. Miller
主 译 曾因明 邓小明
副主译 黄宇光 李文志 姚尚龙



北京大学医学出版社

THE UNIVERSITY OF CHICAGO



THE UNIVERSITY OF CHICAGO
 5408 S. UNIVERSITY AVE.
 CHICAGO, IL 60637
 TEL: 773.936.3333
 WWW.CHICAGO.EDU



米勒麻醉学

Miller's Anesthesia

第6版·上卷

主 编 Ronald D. Miller

主 译 曾因明 邓小明

副主译 黄宇光 李文志 姚尚龙

北京大学医学出版社
Peking University Medical Press

MILLER'S ANESTHESIA, sixth edition

Ronald D. Miller, et al

ISBN-13: 978-0-443-06618-4

ISBN-10: 0-443-06618-3

Copyright © 2005, 2000, 1994, 1990, 1986, 1981 by Elsevier Inc. All rights reserved.

Authorized Simplified Chinese translation from English Language edition published by the Proprietor.

978-981-259-393-1

981-259-393-4

Elsevier (Singapore) Pte Ltd.

3 Killiney Road, #08-01 Winsland House I, Singapore 239519

Tel: (65) 6349-0200, Fax: (65) 6733-1817

First Published 2006

2006 年初版

Simplified Chinese translation Copyright © 2006 by Elsevier (Singapore) Pte Ltd and Peking University Medical Press. All rights reserved.

Published in China by Peking University Medical Press under special agreement with Elsevier (Singapore) Pte Ltd. This edition is authorized for sale in China only, excluding Hong Kong SAR and Taiwan. Unauthorized export of this edition is a violation of the Copyright Act. Violation of this Law is subject to Civil and Criminal Penalties.

本书简体中文版由北京大学医学出版社与 Elsevier (Singapore) Pte Ltd. 在中国境内（不包括香港特别行政区及台湾）协议出版。本版仅限在中国境内（不包括香港特别行政区及台湾）出版及标价销售。未经许可之出口，是为违反著作权法，将受法律之制裁。

北京市版权局著作权合同登记号：图字：01-2005-6229

MILE MAZUOXUE

图书在版编目 (CIP) 数据

米勒麻醉学：第 6 版 / (美) 米勒 (Miller R. D.) 主编；曾因明，邓小明主译。—北京：北京大学医学出版社，2006. 9

书名原文：Miller's Anesthesia

ISBN 7-81071-982-3

I. 米… II. ①米…②曾…③邓… III. 麻醉学 IV. R614

中国版本图书馆 CIP 数据核字 (2006) 第 082021 号

米勒麻醉学 (上卷)

主 译：曾因明 邓小明

出版发行：北京大学医学出版社 (电话：010-82802230)

地 址：(100083) 北京市海淀区学院路 38 号 北京大学医学部院内

网 址：<http://www.pumpress.com.cn>

E - mail: booksale@bjmu.edu.cn

印 刷：北京圣彩虹制版印刷技术有限公司

经 销：新华书店

责任编辑：李海燕 冯智勇 药蓉 曹霞 责任校对：杜悦 责任印制：郭桂兰

开 本：889mm × 1194mm 1/16 印张：114.5 插页：2 字数：3649 千字

版 次：2006 年 12 月第 1 版 2006 年 12 月第 1 次印刷

书 号：ISBN 7-81071-982-3/R · 982

定 价：1280.00 元 (上、下卷)

版权所有，违者必究

(凡属质量问题请与本社发行部联系退换)

米勒麻醉学

Miller's Anesthesia

第6版

上
卷

注 意

麻醉学在不断进步。虽然有关安全问题的注意事项必须遵守，但是由于新的研究和临床经验对我们知识的不断扩展，在治疗和用药方面做出某些改变也许是必须的或适宜的。建议读者核对所处方每种药品其生产厂家的最新产品信息，确认药物的推荐剂量、服用方法、时间及相关禁忌证。根据自己的经验和患者的病情，决定每一位患者的服药剂量和最佳治疗方法，是经治医师的责任。不论是出版商还是著者，对于因本出版物引起的任何个人或财产的损伤和（或）损失，均不承担任何责任。

出版者



Miller (米勒) 教授与《米勒麻醉学》(第6版) 中文版 10 位编委的合影

自左至右：古妙宁 李文志 葛衡江 姚尚龙 曾因明 Miller(米勒) 邓小明 王俊科 黄宇光 熊利泽 刘进

译者名单

主 译 曾因明 (徐州医学院附属医院)
邓小明 (第二军医大学长海医院)

副主译 黄宇光 (中国协和医科大学北京协和医院)
李文志 (哈尔滨医科大学第二附属医院)
姚尚龙 (华中科技大学同济医学院附属协和医院)

委 员 (按姓氏笔画为序)
王俊科 (中国医科大学附属第一医院)
邓小明 (第二军医大学长海医院)
古妙宁 (南方医科大学附属南方医院)
刘 进 (四川大学华西医院)
李文志 (哈尔滨医科大学第二附属医院)
姚尚龙 (华中科技大学同济医学院附属协和医院)
黄宇光 (中国协和医科大学北京协和医院)
曾因明 (徐州医学院附属医院)
葛衡江 (第三军医大学大坪医院)
熊利泽 (第四军医大学西京医院)

主译助理 朱珊珊 (江苏省麻醉医学研究所)
李文献 (第二军医大学长海医院)

译 者 (按姓氏笔画为序)

丁正年	江苏省人民医院	王景阳	第二军医大学长海医院
丁 明	复旦大学附属中山医院	方向明	浙江大学医学院附属邵逸夫医院
于布为	上海交通大学医学院附属瑞金医院	邓小明	第二军医大学长海医院
万小健	第二军医大学长海医院	田 鸣	首都医科大学附属北京友谊医院
马正良	南京大学医学院附属鼓楼医院	包 睿	第二军医大学长海医院
马皓琳	上海交通大学医学院附属第一人民医院	古妙宁	南方医科大学附属南方医院
王俊科	中国医科大学附属第一医院	左云霞	四川大学华西医院
王志萍	徐州医学院附属医院	毕 敏	重庆西南医院
王保国	首都医科大学附属北京天坛医院	朱 涛	四川大学华西医院
王焱林	武汉大学医学院附属中南医院	朱珊珊	江苏省麻醉医学研究所
王祥瑞	上海交通大学医学院附属仁济医院	朱文忠	第二军医大学长海医院

- | | | | |
|-----|-------------------|-----|-------------------|
| 朱科明 | 第二军医大学长海医院 | 杨天德 | 第三军医大学新桥医院 |
| 朱也森 | 上海交通大学医学院附属第九人民医院 | 杭燕南 | 上海交通大学医学院附属仁济医院 |
| 江 来 | 第二军医大学长海医院 | 金 琳 | 复旦大学附属中山医院 |
| 庄心良 | 上海交通大学医学院附属第一人民医院 | 金熊元 | 上海交通大学医学院附属新华医院 |
| 刘 进 | 四川大学华西医院 | 招伟贤 | 广州中医药大学第二附属医院 |
| 刘 薇 | 中国协和医科大学北京协和医院 | 范晓华 | 第二军医大学长海医院 |
| 刘 毅 | 第二军医大学长海医院 | 孟 岩 | 第二军医大学长海医院 |
| 刘功俭 | 徐州医学院附属医院 | 类维富 | 山东大学齐鲁医院 |
| 刘金锋 | 哈尔滨医科大学第二附属医院 | 姚尚龙 | 华中科技大学同济医学院附属协和医院 |
| 刘怀琼 | 第三军医大学大坪医院 | 姚立农 | 第四军医大学唐都医院 |
| 刘和平 | 上海交通大学医学院附属第九人民医院 | 姜 红 | 上海交通大学医学院附属第九人民医院 |
| 刘 佳 | 第二军医大学长海医院 | 徐 昆 | 重庆医科大学第二附属医院 |
| 许平波 | 第二军医大学长海医院 | 徐 辉 | 上海交通大学医学院附属第九人民医院 |
| 孙大金 | 上海交通大学医学院附属仁济医院 | 徐世元 | 南方医科大学附属南方医院 |
| 李德馨 | 南京军区总医院 | 徐咏梅 | 哈尔滨医科大学第二附属医院 |
| 李文硕 | 天津医科大学总医院 | 顾漪闻 | 上海交通大学医学院附属仁济医院 |
| 李文志 | 哈尔滨医科大学第二附属医院 | 郭悦平 | 哈尔滨医科大学第二附属医院 |
| 李文献 | 第二军医大学长海医院 | 黄宇光 | 中国协和医科大学北京协和医院 |
| 李士通 | 上海交通大学医学院附属第一人民医院 | 黄文起 | 中山大学附属第一医院 |
| 吴滨阳 | 中国医科大学附属第一医院 | 黄静霞 | 第二军医大学长海医院 |
| 闵 苏 | 重庆医科大学第一附属医院 | 陶 军 | 第三军医大学新桥医院 |
| 苏殿三 | 上海交通大学医学院附属仁济医院 | 陶国才 | 第三军医大学西南医院 |
| 张 莹 | 上海交通大学医学院附属第一人民医院 | 曾因明 | 徐州医学院附属医院 |
| 张育才 | 中国人民解放军九七医院 | 曾邦雄 | 华中科技大学同济医学院附属协和医院 |
| 张诗海 | 华中科技大学同济医学院附属协和医院 | 蒋 豪 | 复旦大学附属中山医院 |
| 岳 云 | 首都医科大学附属北京朝阳医院 | 景 亮 | 东南大学附属中大医院 |
| 岳子勇 | 哈尔滨医科大学第二附属医院 | 葛衡江 | 第三军医大学大坪医院 |
| 陈伯奎 | 河北省人民医院 | 彭 捷 | 第二军医大学长海医院 |
| 陈晓光 | 中国医科大学附属第一医院 | 路志红 | 第四军医大学西京医院 |
| 陈 辉 | 第二军医大学长海医院 | 熊利泽 | 第四军医大学西京医院 |
| 杨 涛 | 第二军医大学长海医院 | 熊源长 | 第二军医大学长海医院 |
| 杨承祥 | 佛山市第一人民医院 | 薛张刚 | 复旦大学附属中山医院 |

著者名单

Editor

Ronald D. Miller, M.D.

Professor and Chair, Department of Anesthesia and Perioperative Care

Professor of Cellular and Molecular Pharmacology

University of California, San Francisco

School of Medicine, San Francisco, California

Consulting Editors

Lee A. Fleisher, M.D.

Robert Dunning Dripps Professor and Chair of Anesthesia

Professor of Medicine

University of Pennsylvania School of Medicine

Philadelphia, Pennsylvania

Roger A. Johns, M.D.

Professor

Department of Anesthesiology and Critical Care Medicine

The Johns Hopkins University School of Medicine

Consultant

The Johns Hopkins Hospital

Baltimore, Maryland

John J. Savarese, M.D.

Joseph F. Artusio, Jr. Professor and Chairman

Department of Anesthesiology

Weill Medical College of Cornell University

Anesthesiologist-in-Chief

Department of Anesthesia

New York Presbyterian Hospital

New York, New York

Jeanine P. Wiener-Kronish, M.D.

Professor of Anesthesia and Medicine

Vice Chair, Department of Anesthesia and Perioperative Care

University of California, San Francisco

School of Medicine

San Francisco, California

William L. Young, M.D.

James P. Livingston Professor and Vice Chair

Department of Anesthesia and Perioperative Care

Professor of Neurological Surgery and Neurology

Director, Center for Cerebrovascular Research

University of California, San Francisco
School of Medicine
San Francisco, California

Atlas of Regional Anesthesia Procedures illustrated by
Gwenn Afton-Bird, M.S.

Contributors

J. Jeff Andrews, M.D.

Professor and Vice Chair for Education, Department of Anesthesiology, University of Alabama School of Medicine, University of Alabama at Birmingham, Birmingham, Alabama

Michael K. Ang-Lee, M.D.

Staff Anesthesiologist, Western Washington Medical Group, Providence Everett Medical Center, Everett, Washington

William P. Arnold III, M.D.

Associate Professor of Anesthesiology, University of Virginia School of Medicine, Charlottesville, Virginia

Solomon Aronson, M.D.

Glencoe, Illinois

David J. Baker, D.M.

Department of Anesthesiology and Critical Care, SAMU de Paris, Hôpital Necker-Enfants Malades, Paris, France

James Baker, M.D.

Assistant Clinical Professor, Department of Anesthesiology and Perioperative Care, University of California, San Francisco, San Francisco, California

Steven J. Barker, M.D.

Professor and Head, Department of Anesthesiology, University of Arizona College of Medicine, Tucson, Arizona

Perry S. Bechtel, D.O.

Professor, Department of Anesthesiology, Mayo Clinic College of Medicine, Rochester, Minnesota; Consultant in Anesthesia, Mayo Clinic, Jacksonville, Florida

James D. Beckman, M.D.

Assistant Clinical Professor, Department of Anesthesiology, Weill Medical College of Cornell University; Attending Anesthesiologist, Hospital for Special Surgery, New York, New York

Jonathan L. Benumof, M.D.

Professor, Department of Anesthesiology, University of California, San Diego, School of Medicine, San Diego, California

Charles B. Berde, M.D., Ph.D.

Professor, Department of Anesthesia (Pediatrics), Harvard Medical School; Chief, Division of Pain Medicine, Department of Anesthesiology, Perioperative and Pain Medicine, Children's Hospital, Boston, Massachusetts

Sean M. Berenholtz, M.D.

Assistant Professor, Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland

David J. Birnbach, M.D.

Professor, Department of Anesthesiology and Obstetrics and Gynecology; Associate Director, Institute for Women, University of Miami School of Medicine; Chief, Women's Anesthesia, Jackson Memorial Medical Center, Miami, Florida

Susan Black, M.D.

Professor, Department of Anesthesiology, University of Alabama School of Medicine, University of Alabama at Birmingham, Birmingham, Alabama

Russell C. Brockwell, M.D.

Associate Professor, Department of Anesthesiology, University of Alabama at Birmingham, School of Medicine; Chief of Anesthesiology, Department of Veterans Affairs, Birmingham Veterans Affairs Medical Center, Birmingham, Alabama

David L. Brown, M.D.

Professor and Head, Department of Anesthesia, University of Iowa Carver College of Medicine, Iowa City, Iowa

Ingrid M. Browne, M.D.

Visiting Assistant Professor, University of Miami School of Medicine, Miami, Florida

Michael K. Cahalan, M.D.

Professor and Chair, Department of Anesthesiology, University of Utah School of Medicine, Salt Lake City, Utah

Enrico M. Camporesi, M.D.

Professor and Chairman, Department of Anesthesiology, State University of New York Upstate Medical University; Attending Anesthesiologist and Director, Hyperbaric Treatment Unit, University Hospital; Attending Anesthesiologist, Veterans Affairs Medical Center; Consultant, Crouse Hospital, Syracuse, New York; Attending Anesthesiologist, Specialty Surgery Center, Liverpool, New York

Charles J. Coté, M.D.

Professor, Departments of Anesthesiology and Pediatrics, Northwestern University Feinberg School of Medicine; Vice Chairman, Director of Research, Department of Pediatric Anesthesiology, Children's Memorial Hospital, Chicago, Illinois

Roy F. Cucchiara, M.D.

Professor, Department of Anesthesiology, Mayo Clinic College of Medicine, Rochester, Minnesota; Consultant and Professor, Mayo Clinic, Jacksonville, Florida

Bernard J. Dalens, M.D.

Associate Professor, Department of Anesthesia, Laval University, Quebec City; Anesthesiologist, Center Hospitalier Universitaire de Quebec, Sainte Foy, Quebec, Canada

Brian M. Daniel, R.R.T.

Adult Clinical Team Leader, Department of Respiratory Care, University of California, San Francisco, San Francisco, California

Clifford S. Deutschman, M.S., M.D.

Professor, Departments of Anesthesia and Surgery, University of Pennsylvania; Director, Fellowship in Critical Care; Director, Fellowship in Anesthesia/Critical Care Research; and Attending Physician, Surgical Critical Care Service, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania

Sudhir Diwan, M.D., M.S.

Director, Quad-Institutional Pain Fellowship, Department of Anesthesiology, Weill Medical College of Cornell University, New York, New York

John V. Donlon, Jr., M.D.

Staff Anesthesiologist, North Shore Cataract and Laser Center, Stoneham, Massachusetts

D. John Doyle, M.D., Ph.D.

Staff Anesthesiologist, Department of General Anesthesiology, Cleveland Clinic Foundation, Cleveland, Ohio

John C. Drummond, M.D.

Professor and Chair, Department of Anesthesiology, University of California, San Diego, School of Medicine, San Diego, California

Richard P. Dutton, M.D., M.B.A.

Associate Professor, Department of Anesthesiology, University of Maryland School of Medicine; Director of Trauma Anesthesiology, R. Adams Cowley Shock Trauma Center, University of Maryland Medical System, Baltimore, Maryland

Edmond I. Eger II, M.D.

Professor, Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, California

Neil E. Farber, M.D., Ph.D.

Associate Professor, Departments of Anesthesiology, Pediatrics, Pharmacology, and Toxicology, Medical College of Wisconsin; Director, Pediatric Anesthesia Research, Children's Hospital of Wisconsin, Milwaukee, Wisconsin

Ronald J. Faust, M.D.

Professor, Department of Anesthesiology, Mayo Clinic College of Medicine; Consultant in Anesthesiology, Mayo Clinic, Rochester, Minnesota

Thomas W. Feeley, M.D.

Helen Shafer Fly Distinguished Professor of Anesthesiology and Head, Division of Anesthesiology and Critical Care, University of Texas M.D. Anderson Cancer Center, Houston, Texas

Marc Allan Feldman, M.D., M.H.S.

Head, Section of Anesthesia, Cole Eye Institute, The Cleveland Clinic Foundation, Cleveland, Ohio

Lee A. Fleisher, M.D.

Robert Dunning Dripps Professor and Chair of Anesthesia, Professor of Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania

Alejandro Recart Freire, M.D.

Staff Anesthesiologist, Padre Hurtado General Hospital, Santiago de Chile, Chile

Kazuhiko Fukuda, M.D.

Department of Anesthesia, Kyoto University Hospital, Kyoto, Japan

David M. Gaba, M.D.

Associate Dean for Immersive and Simulation-Based Learning and Professor of Anesthesia, Stanford University School of Medicine; Director, Patient Simulation Center of Innovation, VA Palo Alto Health Care System, Palo Alto, California

Thomas J. Gal, M.D.

Professor, Department of Anesthesiology, University of Virginia; Attending Anesthesiologist, University of Virginia Health Systems, Charlottesville, Virginia

Simon Gelman, M.D., Ph.D.

Professor and Chairman Emeritus, Department of Anesthesiology, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts

Peter S. A. Glass, M.B., Ch.B.

Professor and Chairman, Department of Anesthesiology, State University of New York at Stony Brook; Anesthesiologist-in-Chief, University Hospital at State University of New York at Stony Brook, Stony Brook, New York

David Glick, M.D., M.B.A.

Assistant Professor, Department of Anesthesia and Critical Care, University of Chicago; Medical Director, Postanesthesia Care Unit, University of Chicago Hospitals, Chicago, Illinois

Lawrence T. Goodnough, M.D.

Professor of Medicine and Pathology and Immunology, Department of Pathology, Washington University School of Medicine; Director of the Blood Bank, Barnes-Jewish Hospital, St. Louis, Missouri

Mark T. Grabovac, M.D.

Assistant Clinical Professor, Department of Anesthesiology and Critical Care Medicine, University of California, San Francisco, San Francisco, California

William J. Greeley, M.D., M.B.A.

Professor of Anesthesia and Pediatrics, University of Pennsylvania School of Medicine; Chair and Anesthesiologist-in-Chief, Department of Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

George A. Gregory, M.D.

Professor Emeritus, Department of Anesthesiology and Pediatrics, University of California, San Francisco, School of Medicine, San Francisco, California

Gerald A. Gronert, B.S., M.D.

Professor Emeritus, Department of Anesthesiology, University of California, Davis, School of Medicine, Davis, California

Michael A. Gropper, M.D., Ph.D.

Professor, Departments of Anesthesia and Physiology, University of California, San Francisco; Director, Critical Care Medicine, University of California, San Francisco, San Francisco, California

Raymond Hernandez, B.A., R.R.T.

Department of Respiratory Care, University of California, San Francisco, San Francisco, California

Zaharia Hillel, M.D.

Professor, Department of Anesthesiology, Columbia University College of Physicians and Surgeons; Director, Cardiac Anesthesia, St. Luke's-Roosevelt Hospital Center, New York, New York

Terese T. Horlocker, M.D.

Professor, Department of Anesthesiology, Mayo Clinic College of Medicine, Rochester, Minnesota

Eileen Connolly Inda, B.A., M.D.

Attending Anesthesiologist, Boys Town National Research Hospital, Omaha, Nebraska

Roger A. Johns, M.D.

Professor, Department of Anesthesiology and Critical Care Medicine, The Johns Hopkins University School of Medicine; Consultant, The Johns Hopkins Hospital, Baltimore, Maryland

Jean L. Joris, M.D., Ph.D.

Professor, Department of Anesthesia and Intensive Care Medicine, University of Liège; Head, Department of Anesthesia and Intensive Care Medicine, Centre Hospitalier Universitaire de Liège, Liège, Belgium

Alan D. Kaye, M.D., Ph.D.

Professor and Chairman and Program Director, Department of Anesthesiology, and Professor, Department of Pharmacology, Texas Tech University Health Sciences Center, Lubbock, Texas

Judy R. Kersten, M.D.

Professor, Departments of Anesthesiology, Pharmacology, and Toxicology, Medical College of Wisconsin, Milwaukee, Wisconsin

Kevin K. Kim, M.D.

Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, California

James Kindscher, M.D.

Professor and Vice Chair, Department of Anesthesiology, Kansas University School of Medicine; Medical Director, Operating Rooms, Kansas University Medical Center, Kansas City, Kansas

Donald D. Koblin, M.D., Ph.D.

Professor, Department of Anesthesia and Perioperative Care, University of California, San Francisco, School of Medicine; Staff Anesthesiologist, Veterans Affairs Medical Center, San Francisco, California

W. Daniel Kovarik, M.D.

Clinical Associate Professor, Department of Anesthesiology, University of Vermont School of Medicine, Burlington, Vermont; Director of Pediatric Anesthesiology, Maine Medical Center, Portland, Maine

Ian J. Kucera, Pharm.D., M.D.

Assistant Professor of Anesthesiology, Texas Tech University Health Sciences Center, Lubbock, Texas

Merlin D. Larson, M.D.

Clinical Professor, Department of Anesthesia and Perioperative Care, and Clinical Professor, Moffitt-Long Hospitals, University of California, San Francisco, San Francisco, California

Cynthia A. Lien, M.D.

Professor of Clinical Anesthesiology, Weill Medical College of Cornell University; Attending Anesthesiologist, New York Presbyterian Hospital, New York, New York

Lawrence Litt, M.D., Ph.D.

Professor, Department of Anesthesia and Perioperative Care, University of California, San Francisco; Attending Anesthesiologist, University of California, San Francisco Affiliated Hospitals, San Francisco, California

Linda L. Liu, M.D.

Associate Professor of Clinical Anesthesia, Department of Anesthesia and Perioperative Care, University of California, San Francisco, School of Medicine, San Francisco, California

David A. Lubarsky, M.D., M.B.A.

Emanuel M. Papper Professor and Chair, Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Miami School of Medicine, and Professor, Department of Management, University of Miami School of Business; Chief of Staff, Jackson Health System, Miami, Florida

Alex Macario, M.D., M.B.A.

Associate Professor of Anesthesiology and Health Research and Policy, Stanford University School of Medicine; Director, Fellowship in Management of Perioperative Services, Department of Anesthesia, Stanford University Medical Center, Stanford, California

Michael E. Mahla, M.D.

Professor, Departments of Anesthesiology and Neurosurgery, University of Florida College of Medicine; Anesthesiology Residency Program Director, Shands Hospital at the University of Florida, Gainesville, Florida

Vinod Malhotra, M.D.

Department of Anesthesiology, New York Presbyterian Hospital-Weill Cornell Medical Center, New York, New York

Jonathan B. Mark, M.D.

Professor and Vice Chairman, Department of Anesthesiology, Duke University School of Medicine; Chief, Anesthesiology Service, Veterans Affairs Medical Center, Durham, North Carolina

Jackie L. Martin, Jr., M.D.

Associate Professor, Division of Cardiac Anesthesiology, Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland

J. A. Jeevendra Martyn, M.D.

Professor, Department of Anesthesiology, Harvard Medical School; Anesthetist and Director, Clinical and Biochemical Pharmacology Laboratory, Massachusetts General Hospital; Anesthetist-in-Chief, Shriners Hospital for Children, Boston, Massachusetts

Maureen McCunn, M.D.

Assistant Professor, Department of Anesthesiology and Critical Care, University of Maryland School of Medicine; Medical Director of Neurotrauma Critical Care and Physician Director of Continuous Renal Replacement Therapies, R. Adams Cowley Shock Trauma Center, University of Maryland Medical System, Baltimore, Maryland

Matthew D. McEvoy, M.D.

Resident, Department of Anesthesiology, Medical University of South Carolina College of Medicine, Charleston, South Carolina

Brian P. McGlinch, M.D.

Assistant Professor of Anesthesiology, Mayo Clinic College of Medicine, Rochester, Minnesota

Berend Mets, M.B., Ch.B., Ph.D.

Eric A. Walker Professor and Chair, Department of Anesthesiology, Pennsylvania State University College of Medicine, Milton S. Hershey Medical Center, Hershey, Pennsylvania

Ronald D. Miller, M.D.

Professor and Chair, Department of Anesthesia and Perioperative Care, Professor of Cellular and Molecular Pharmacology, University of California, San Francisco, School of Medicine, San Francisco, California

Jørgen Viby Mogensen, M.D.

Professor, Department of Anaesthesia, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark

Terri G. Monk, M.D.

Professor, Department of Anesthesiology, Duke University School of Medicine; Anesthesiologist, Duke University Medical Center and Veterans Affairs Medical Center, Durham, North Carolina

Richard E. Moon, B.Sc., M.D., C.M., M.Sc.

Professor of Anesthesiology, Associate Professor of Medicine, Departments of Anesthesiology and Medicine, and Attending Anesthesiologist and Pulmonologist, and Medical Director, Center for Hyperbaric Medicine and Environmental Physiology, Duke University Medical Center, Durham, North Carolina

Kenjiro Mori, M.D.

Department of Anesthesia, Takamatsu Red Cross Hospital, Takamatsu, Japan

Jonathan Moss, M.D., Ph.D.

Professor of the College, The University of Chicago, Pritzker School of Medicine; Professor and Vice Chairman for Research, Department of Anesthesia and Critical Care, The University of Chicago Hospitals, Chicago, Illinois

Sheila M. Muldoon, M.D.

Professor, Department of Anesthesiology, Uniformed Services University of the Health Sciences, Bethesda, Maryland

Phillip S. Mushlin, M.D., Ph.D.

Vice Chairman, Faculty Development and Education, and Anesthesiologist, Brigham and Women's Hospital, Department of Anesthesiology, Perioperative and Pain Medicine, Boston, Massachusetts

Mohamed Naguib, M.B., B.Ch., M.Sc., M.D.

Professor of Anesthesia, University of Iowa; Professor, University of Iowa Health Care, Roy J. and Lucille A. Carver College of Medicine, Iowa City, Iowa

Shinichi Nakao, M.D.

Department of Anesthesiology, Kansai Medical University, Osaka, Japan

Patrick J. Neligan, M.A., M.B., B.Ch.

Assistant Professor, Department of Anesthesia, University of Pennsylvania; Attending Physician, Surgical Critical Care Service, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania

Dorre Nicholau, M.D., Ph.D.

Clinical Professor, Department of Anesthesia and Perioperative Care, University of California, San Francisco, San Francisco, California

Susan C. Nicolson, M.D.

Professor of Anesthesia, University of Pennsylvania, Director, School of Medicine; Director, Division of Cardiothoracic Anesthesia, and Attending Anesthesiologist, Department of Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

Claus U. Niemann, M.D.

Assistant Professor in Residence, Department of Anesthesia and Perioperative Care, University of California, San Francisco, School of Medicine, San Francisco, California

Ervant V. Nishanian, M.D., Ph.D.

Assistant Professor and Director of Cardiothoracic Anesthesiology, Columbia University College of Physicians and Surgeons, New York, New York

Edward J. Norris, M.D., M.B.A.

Associate Professor, Department of Anesthesiology and Critical Care Medicine, The Johns Hopkins Medical Institutions; Director, Vascular and Endovascular Anesthesia, The Johns Hopkins Hospital, Baltimore, Maryland

Daniel Nyhan, B.Sc., M.B., M.D.

Professor, Department of Anesthesia, The Johns Hopkins University School of Medicine; Chief, Cardiac Anesthesia, The Johns Hopkins Hospital, Baltimore, Maryland

Christopher J. O'Connor, M.D.

Associate Professor of Anesthesiology, Rush Medical College; Director, Cardiothoracic Anesthesia, Rush University Medical Center, Chicago, Illinois

Fredrick K. Orkin, M.D., M.B.A., M.Sc.

Professor of Anesthesiology and Health Evaluation Sciences, Department of Anesthesiology, Pennsylvania State University College of Medicine; Anesthesiologist, Milton S. Hershey Medical Center, Hershey, Pennsylvania

Paul S. Pagel, M.D., Ph.D.

Director, Cardiac Anesthesia, and Professor, Department of Anesthesiology, Medical College of Wisconsin; Professor of Biomedical Engineering, Marquette University, Milwaukee, Wisconsin

Piyush M. Patel, M.D.

Professor, Department of Anesthesia, University of California, San Diego; Staff Anesthesiologist, Veterans Affairs Medical Center, San Diego, California

Ronald Pauldine, M.D.

Assistant Professor, Department of Anesthesia and Critical Care Medicine, Johns Hopkins University School of Medicine; Staff, John Hopkins Bayview Medical Center, Baltimore, Maryland

Isaac N. Pessah, Ph.D.

Professor, Department of Molecular Biosciences; Director, Center for Children's Environmental Health and Disease Prevention, University of California, Davis, Davis, California

Peter J. Pronovost, M.D., Ph.D.

Associate Professor, Departments of Anesthesiology and Critical Care Medicine and Surgery, Johns Hopkins University School of Medicine, School of Public Health, and School of Nursing; Medical Director, Center for Innovations in Quality Patient Care, Johns Hopkins Medical Institutions, Baltimore, Maryland

Thomas E. Quinn, M.D.

Clinical Fellow, Department of Critical Care Medicine, University of California, San Francisco, San Francisco, California

Marcus Rall, M.D.

Director, Center for Patient Safety and Simulation
TuPASS, Department of Anesthesiology and Intensive
Care Medicine, University of Tuebingen Medical
School and University Hospital, Tuebingen, Germany

Ira J. Rampil, M.S., M.D.

Professor of Anesthesiology and Neurological Surgery
and Director of Clinical Research, State University of
New York at Stony Brook, Stony Brook, New York

J. G. Reves, M.D.

Vice President for Medical Affairs and Dean, Medical
University of South Carolina School of Medicine,
Charleston, South Carolina

Michael F. Roizen, M.D.

Professor, Departments of Anesthesiology and Medicine,
State University of New York Upstate Medical University;
President, CNY Biotechnology Corporation, Syracuse,
New York

Stanley H. Rosenbaum, M.D.

Professor of Anesthesiology, Internal Medicine, and
Surgery and Vice Chairman for Academic Affairs,
Department of Anesthesiology, Yale University School
of Medicine, New Haven, Connecticut

Steven Roth, M.D.

Associate Professor of Anesthesia and Critical Care and
Chief, Department of Neuroanesthesia, University
of Chicago, Chicago, Illinois

David M. Rothenberg, M.D.

Professor, Department of Anesthesiology, and Associate
Dean, Rush Medical College; Medical Director,
Surgical Intensive Care Unit, Rush University Medical
Center, Chicago, Illinois

John C. Rowlingson, M.D.

Professor of Anesthesiology and Director of Pain
Medicine Service, Department of Anesthesiology,
University of Virginia School of Medicine,
Charlottesville, Virginia

Marc A. Rozner, M.D., Ph.D.

Associate Professor, Departments of Anesthesiology
and Cardiology, University of Texas M.D. Anderson
Cancer Center; Adjunct Assistant Professor,
Department of Integrative Biology and
Pharmacology, University of Texas-Houston
Health Science Center; Associate Anesthesiologist,
University of Texas M.D. Anderson Cancer Center,
Houston, Texas

John J. Savarese, M.D.

Joseph F. Artusio, Jr. Professor and Chairman,
Department of Anesthesiology, Weill Medical College
of Cornell University; Anesthesiologist-in-Chief,
Department of Anesthesia, New York Presbyterian
Hospital, New York, New York

Alan J. Schwartz, M.D., M.Ed.

Clinical Professor of Anesthesia, University of
Pennsylvania School of Medicine; Director of
Education and Program Director, Pediatric
Anesthesiology Residency, Department of
Anesthesiology and Critical Care Medicine, The
Children's Hospital of Philadelphia, Philadelphia,
Pennsylvania

Johanna Schwarzenberger, M.D.

Assistant Professor of Anesthesiology, Division of
Pediatric Anesthesiology, Columbia University College
of Physicians and Surgeons, New York, New York

Debra A. Schwinn, B.S., M.D.

James B. Duke Professor of Anesthesiology, Professor
of Pharmacology and Cancer Biology, Professor of
Surgery, Vice Chairman for Research, and Director of
Molecular Pharmacology Laboratory and Perioperative
Genomics, Department of Anesthesiology, Duke
University Medical Center, Durham, North Carolina

Daniel I. Sessler, M.D.

Professor of Anesthesiology and Pharmacology,
Vice Dean for Research, Associate Vice President for
Health Affairs, Director of Outcomes Research
Institute, and Lolita and Samuel Weakley
Distinguished University Chair, University of
Louisville, Louisville, Kentucky

Steven L. Shafer, M.D.

Professor, Department of Anesthesia, Stanford
University School of Medicine, Stanford, California;
Adjunct Professor of Biopharmaceutical Science,
University of California, San Francisco, San Francisco,
California; Staff Anesthesiologist, VA Palo Alto Health
Care System, Palo Alto, California

Nigel E. Sharrock, M.B., Ch.B.

Assistant Clinical Professor of Anesthesia, Weill Medical
College of Cornell University; Attending
Anesthesiologist, Department of Anesthesiology,
Hospital for Special Surgery, New York, New York

Koh Shingu, M.D.

Professor and Chair, Department of Anesthesiology,
Kansai Medical University, Moriguchi, Osaka, Japan

Frederick E. Sieber, M.D.

Associate Professor, Department of Anesthesia and
Critical Care Medicine, Johns Hopkins University
School of Medicine; Chair, Department of Anesthesia,
Johns Hopkins Bayview Medical Center, Baltimore,
Maryland

Robert N. Sladen, M.B., Ch.B.

Professor of Anesthesiology and Vice Chair, Department
of Anesthesiology, Columbia University College of
Physicians and Surgeons; Director, Cardiothoracic
and Surgical Intensive Care Units, Columbia
Presbyterian Medical Center of the New York
Presbyterian Hospital, New York, New York

Thomas F. Slaughter, M.D.

Professor and Director of Cardiothoracic Anesthesia,
Virginia Commonwealth University Reanimation
Engineering Shock Center, Virginia Commonwealth
University, Richmond, Virginia

Donald R. Stanski, M.D.

Professor, Department of Anesthesia, Stanford
University School of Medicine, Stanford, California

John K. Stene, M.D., Ph.D.

Professor, Department of Anesthesiology, Pennsylvania
State University College of Medicine; Co-Director,
Surgical Intensive Care Unit, Pennsylvania State
University Milton S. Hershey Medical Center,
Hershey, Pennsylvania

Paul E. Stensrud, M.D.

Pediatric Cardiac Anesthesiologist, Department
of Anesthesiology, Mayo Clinic, Rochester,
Minnesota

James M. Steven, M.D., S.M.

Associate Professor of Anesthesia, University of
Pennsylvania School of Medicine; Chief Medical
Officer, Attending Anesthesiologist, and Associate
Anesthesiologist-in-Chief, Department of
Anesthesiology and Critical Care Medicine, The
Children's Hospital of Philadelphia, Philadelphia,
Pennsylvania

Gary R. Strichartz, Ph.D.

Professor of Anesthesia (Pharmacology), Harvard
Medical School; Vice Chair for Research, Department
of Anesthesiology, Perioperative and Pain Medicine,
Brigham and Women's Hospital, Boston,
Massachusetts

Vijayendra Sudheendra, M.D.

Department of Cardiothoracic Anesthesia and Critical
Care Medicine, Cleveland Clinic Foundation,
Cleveland, Ohio

Lena S. Sun, M.D.

Associate Professor of Anesthesiology and Pediatrics,
Columbia University College of Physicians and
Surgeons; Chief, Pediatric Anesthesiology, Children's
Hospital of New York, New York, New York

James F. Szocik, M.D.

Clinical Associate Professor, Department of
Anesthesiology, University of Michigan, Ann Arbor,
Michigan

Timothy J. Tautz, M.D.

Assistant Professor and Director, Malignant
Hyperthermia Diagnostic Laboratory, Department
of Anesthesiology and Pain Medicine, University
of California, Davis, School of Medicine, Davis,
California

Stephen J. Thomas, M.D.

Topkins-Van Poznak Distinguished Professor of
Anesthesiology, Department of Anesthesiology, Weill
Medical College of Cornell University; Vice Chair,
Department of Anesthesiology, Weill Cornell Medical
Center-New York Presbyterian Hospital, New York,
New York

Daniel M. Thys, M.D.

Professor of Anesthesiology, Columbia University
College of Physicians and Surgeons; Chairman,
St. Luke's-Roosevelt Hospital Center, New York,
New York

Kevin K. Tremper, M.D.

Professor and Chair, Department of Anesthesiology,
University of Michigan, Ann Arbor, Michigan

Robert D. Truog, M.D.

Professor of Anesthesia (Pediatrics) and Professor of
Medical Ethics, Harvard Medical School; Division
Chief, Critical Care Medicine, Children's Hospital,
Boston, Massachusetts

Kenneth J. Tuman, M.D.

Professor of Anesthesiology, Rush Medical College;
Vice Chair, Department of Anesthesiology, Rush
University Medical Center, Chicago, Illinois

Thomas C. Vary, Ph.D.

Professor, Department of Cellular and Molecular
Physiology, Pennsylvania State University College
of Medicine, Hershey, Pennsylvania

Daniel P. Vezina, M.D., M.Sc.

Assistant Professor and Director of the Perioperative
Echocardiography Service, Department of
Anesthesiology, Department of Internal Medicine,
Division of Cardiology, University of Utah School
of Medicine; Director of Cardiology,
Echocardiography Laboratory, Veterans
Administration Hospital, Salt Lake City, Utah

David B. Waisel, M.D.

Assistant Professor, Department of Anesthesia, Harvard
Medical School; Director, Pediatric Anesthesia
Fellowship Program, Children's Hospital, Boston,
Massachusetts

David C. Warltier, M.D., Ph.D.

Senior Vice Chairman, Department of Anesthesiology;
Professor of Anesthesiology, Pharmacology, and
Toxicology, Medical College of Wisconsin; Professor
of Biomedical Engineering, Marquette University,
Milwaukee, Wisconsin

Denise J. Wedel, M.D.

Professor, Department of Anesthesiology, Mayo Clinic
College of Medicine, Rochester, Minnesota