

Contents

VOLUME 1

PART 1 SCIENTIFIC PRINCIPLES OF RESPIRATORY MEDICINE

SECTION A

Anatomy and Development of the Respiratory Tract, 3

- 1** *Anatomy of the Lungs*, 3
KURT H. ALBERTINE
- 2** *Lung Growth and Development*, 22
JOHN M. SHANNON, KATHRYN A. WIKENHEISER-BROKAMP, and JAMES M. GREENBERG
- 3** *Genetics of Lung Disease*, 32
TASHA E. FINGERLIN, SCOTT T. WEISS, and DAVID A. SCHWARTZ

SECTION B

Respiratory Physiology, 44

- 4** *Ventilation, Blood Flow, and Gas Exchange*, 44
FRANK L. POWELL, PETER D. WAGNER, and JOHN B. WEST
- 5** *Respiratory System Mechanics and Energetics*, 76
WILLIAM HENDERSON, PETER A. PARÉ, and NAJIB T. AYAS
- 6** *Pulmonary Circulation and Regulation of Fluid Balance*, 92
JOE G. N. GARCIA
- 7** *Acid-Base Balance*, 111
RICHARD M. EFFROS and ERIK R. SWENSON

SECTION C

Defense Mechanisms and Immunology, 134

- 8** *Alveolar Epithelium and Pulmonary Surfactant*, 134
ROBERT J. MASON and LELAND G. DOBBS
- 9** *Alveolar Epithelium and Fluid Transport*, 150
MICHAEL A. MATTHAY and CHRISTINE CLERICI
- 10** *Airway Epithelium and Mucous Secretion*, 157
JAY A. NADEL
- 11** *Aerosol Deposition and Clearance*, 168
THOMAS G. O'RIORDAN and GERALD C. SMALDONE

12 *Innate Immunity*, 184

ELIZABETH F. REDENTE, CLAUDIA V. JAKUBZICK, THOMAS R. MARTIN, and DAVID W. H. RICHES

13 *Adaptive Immunity*, 206

ANDREW P. FONTENOT and PHILIP L. SIMONIAN

SECTION D

Respiratory Pathology and Inflammation, 225

- 14** *Pathology: Malignant and Interstitial Lung Diseases*, 225
W. DEAN WALLACE and WILLIAM D. TRAVIS
- 15** *Injury and Repair*, 251
RACHEL L. ZEMANS and GREGORY P. DOWNEY

PART 2 DIAGNOSIS AND EVALUATION OF RESPIRATORY DISEASE

SECTION E

Diagnosis, 263

- 16** *History and Physical Examination*, 263
J. LUCIAN DAVIS and JOHN F. MURRAY
- 17** *Microbiologic Diagnosis of Lung Infection*, 278
NIAZ BANAEI, STANLEY C. DERESINSKI, and BENJAMIN A. PINSKY
- 18** *Thoracic Radiology: Noninvasive Diagnostic Imaging*, 299
MICHAEL B. GOTWAY, PRASAD M. PANSE, JAMES F. GRUDEN, and BRETT M. ELICKER
- 19** *Thoracic Radiology: Invasive Diagnostic Imaging and Image-Guided Interventions*, 332
JEFFREY S. KLEIN and ANANT D. BHAVE
- 20** *Ultrasonography*, 348
DEVANAND ANANTHAM and ARMIN ERNST
- 21** *Positron Emission Tomography*, 360
JOHAN F. VANSTEENKISTE, CHRISTOPHE DEROOSE, and CHRISTOPHE DOOMS
- 22** *Diagnostic Bronchoscopy*, 372
ELIF KÜPELİ, DAVID FELLER-KOPMAN, and ATUL C. MEHTA

- 23 Therapeutic Bronchoscopy, 383**
DAVID FELLER-KOPMAN, ATUL C. MEHTA, and MOMEN M. WAHIDI

- 24 Thoracoscopy, 393**
ROBERT LODDENKEMPER and JULIUS P. JANSSEN

SECTION F Evaluation, 407

- 25 Pulmonary Function Testing, 407**
WARREN M. GOLD and LAURA L. KOTH

- 26 Clinical Exercise Testing, 436**
ANDREW M. LUKS and ROBB W. GLENNY

- 27 Preoperative Evaluation, 458**
PAUL H. ALFILLE, JEANINE P. WIENER-KRONISH, and ARANYA BAGCHI

- 28 Evaluation of Respiratory Impairment and Disability, 469**
ANNYCE S. MAYER and LISA A. MAIER

PART 3 CLINICAL RESPIRATORY MEDICINE

SECTION G Symptoms of Respiratory Disease and Their Management, 485

- 29 Dyspnea, 485**
RICHARD M. SCHWARTZSTEIN and LEWIS ADAMS

- 30 Cough, 497**
KIAN FAN CHUNG and STUART B. MAZZONE

- 31 Chest Pain, 515**
BRETT E. FENSTER, TEOFILO L. LEE-CHIONG, G. F. GEBHART, and
RICHARD A. MATTHAY

SECTION H Infectious Diseases of the Lungs, 527

- 32 Viral Infections, 527**
FRANCES EUN-HYUNG LEE and JOHN J. TREANOR

- 33 Bacterial Pneumonia and Lung Abscess, 557**
ANTONI TORRES, ROSARIO MENÉNDEZ,
and RICHARD G. WUNDERINK

- 34 Ventilator-Associated Pneumonia, 583**
JEAN CHASTRE and CHARLES-EDOUARD LUYT

- 35 Tuberculosis, 593**
PHILIP C. HOPEWELL, MIDORI KATO-MAEDA and JOEL D. ERNST

- 36 Nontuberculous Mycobacterial Infections, 629**
CHARLES L. DALEY and DAVID E. GRIFFITH

- 37 Endemic Mycoses, 646**
JOSHUA D. NOSANCHUK

- 38 Opportunistic Mycoses, 661**
JENNIFER L. HORAN-SAULLO and BARBARA D. ALEXANDER

- 39 Parasitic Infections, 682**
KAMI KIM, LOUIS M. WEISS, and HERBERT B. TANOWITZ

- 40 Bioterrorism, 699**
CHRISTIAN E. SANDROCK

SECTION I Obstructive Diseases, 713

- 41 Asthma: Pathogenesis and Phenotypes, 713**
PRESCOTT G. WOODRUFF, NIRAV R. BHAKTA, and JOHN V. FAHY

- 42 Asthma: Clinical Diagnosis and Management, 731**
NJIRA LUGOGO, LORETTA G. QUE, DANIEL L. GILSTRAP,
and MONICA KRAFT

- 43 COPD: Pathogenesis and Natural History, 751**
WILLIAM MACNEE, JØRGEN VESTBO, and ALVAR AGUSTI

- 44 COPD: Clinical Diagnosis and Management, 767**
MEILAN K. HAN and STEPHEN C. LAZARUS

- 45 Genetics in Asthma and COPD, 786**
VICTOR E. ORTEGA and EUGENE R. BLEECKER

- 46 Smoking Hazards and Cessation, 807**
NEAL L. BENOWITZ and PAUL G. BRUNETTA

- 47 Cystic Fibrosis, 822**
STEVEN M. ROWE, WYNTON HOOVER, GEORGE M. SOLOMON,
and ERIC J. SORSCHER

- 48 Bronchiectasis, 853**
EDWARD D. CHAN and MICHAEL D. ISEMAN

- 49 Upper Airway Disorders, 877**
MARK S. COUREY and STEVEN D. PLETCHER

- 50 Bronchiolitis and Other Intrathoracic Airway Disorders, 897**
JONATHAN P. SINGER, KIRK JONES, and STEPHEN C. LAZARUS

VOLUME 2

SECTION J Neoplasms of the Lung, 912

- 51 Biology of Lung Cancer, 912**
PIERRE P. MASSION, LECIA V. SEQUIST, and WILLIAM PAO

- 52 Epidemiology of Lung Cancer, 927**
ANTHONY J. ALBERG, MALCOLM V. BROCK,
and JONATHAN M. SAMET

- 53 Clinical Aspects of Lung Cancer, 940**
GERARD A. SILVESTRI, NICHOLAS J. PASTIS, NICHOLE T. TANNER,
and JAMES R. JETT

54 Rare Primary Lung Tumors, 965

NICOLAS GIRARD, JACQUES CADRANEL, ELISABETH BRAMBILLA,
and JEAN-FRANÇOIS CORDIER

55 Metastatic Malignant Tumors, 981

DOUGLAS A. ARENBERG and ALLAN PICKENS

56 Benign Lung Tumors, 991

JEFFREY L. MYERS and DOUGLAS A. ARENBERG

SECTION K**Disorders of the Pulmonary Circulation, 1001****57 Pulmonary Thromboembolism, 1001**

TIMOTHY A. MORRIS and PETER F. FEDULLO

58 Pulmonary Hypertension, 1031

KELLY CHIN and RICHARD N. CHANNICK

59 Pulmonary Hypertension due to Lung Disease, 1050

CHRISTOPHER F. BARNETT and TERESA DE MARCO

60 Pulmonary Vasculitis, 1066

KEVIN K. BROWN, STEPHEN K. FRANKEL, and CARLYNE D. COOL

61 Pulmonary Vascular Abnormalities, 1081

CLAIRE L. SHOVLIN and JAMES E. JACKSON

62 Pulmonary Edema, 1096

MICHAEL A. MATTHAY and JOHN F. MURRAY

SECTION L**Infiltrative and Interstitial Lung Diseases, 1118****63 Idiopathic Interstitial Pneumonias, 1118**

JAY H. RYU, MOISÉS SELMAN, THOMAS V. COLBY,
and TALMADGE E. KING, JR.

64 Hypersensitivity Pneumonitis, 1153

KAREN C. PATTERSON and CECILE S. ROSE

65 Connective Tissue Diseases, 1165

TAMERA J. CORTE, ROLAND M. DU BOIS, and ATHOL U. WELLS

66 Sarcoidosis, 1188

MARC A. JUDSON, ADAM S. MORGENTHAU,
and ROBERT P. BAUGHMAN

67 Alveolar Hemorrhage and Rare Infiltrative Diseases, 1207

HAROLD R. COLLARD, TALMADGE E. KING, JR.,
and MARVIN I. SCHWARZ

68 Eosinophilic Lung Diseases, 1221

VINCENT COTTIN and JEAN-FRANÇOIS CORDIER

69 Lymphangiomyomatosis, 1243

FRANCIS X. McCORMACK and YOSHIKAZU INOUE

70 Pulmonary Alveolar Proteinosis Syndrome, 1260

BRUCE C. TRAPNELL and MAURIZIO LUISETTI

71 Drug-Induced Pulmonary Disease, 1275

MEGAN M. DULOHERY, FABIEN MALDONADO, and ANDREW H. LIMPER

SECTION M**Environmental and Occupational Hazards, 1295****72 Asthma in the Workplace, 1295**

CATHERINE LEMIERE and OLIVIER VANDENPLAS

73 Pneumoconioses, 1307

ROBERT L. COWIE and MARGARET R. BECKLAKE

74 Indoor and Outdoor Air Pollution, 1331

JOHN R. BALMES and MARK D. EISNER

75 Acute Responses to Toxic Exposures, 1343

PAUL D. BLANC

76 Trauma and Blast Injuries, 1354

D. DANTE YEH and JARONE LEE

77 High Altitude, 1367

ANDREW M. LUKS, ROBERT B. SCHOENE, and ERIK R. SWENSON

78 Diving Medicine, 1385

ALFRED A. BOVE and TOM S. NEUMAN

SECTION N**Disorders of the Pleura, 1396****79 Pleural Effusion, 1396**

V. COURTNEY BROADDUS and RICHARD W. LIGHT

80 Pleural Infections, 1425

NICK A. MASKELL and RICHARD W. LIGHT

81 Pneumothorax, Chylothorax, Hemothorax, and Fibrothorax, 1439

RICHARD W. LIGHT and Y. C. GARY LEE

82 Pleural Tumors, 1461

V. COURTNEY BROADDUS and BRUCE W. S. ROBINSON

SECTION O**Disorders of the Mediastinum, 1478****83 Mediastinal Tumors and Cysts, 1478**

GUANG-SHING CHENG, THOMAS K. VARGHESE, JR., and DAVID R. PARK

84 Pneumomediastinum and Mediastinitis, 1496

GUANG-SHING CHENG, THOMAS K. VARGHESE, JR., and DAVID R. PARK

SECTION P**Disorders of Sleep and Control of Breathing, 1511****85 Control of Breathing and Upper Airways During Sleep, 1511**

RICHARD L. HORNER and ATUL MALHOTRA

- 86 Hypocapnia and Hypercapnia, 1527**
GERARD F. CURLEY, BRIAN P. KAVANAGH, and JOHN G. LAFFEY

- 87 Consequences of Sleep Disruption, 1547**
AARON R. MUNCEY and ATUL MALHOTRA

- 88 Obstructive Sleep Apnea, 1552**
R. JOHN KIMOFF

- 89 Central Sleep Apnea, 1569**
CLODAGH M. RYAN and T. DOUGLAS BRADLEY

SECTION Q

Respiratory Manifestations of Extrapulmonary Disorders, 1583

- 90 Pulmonary Complications of HIV Infection, 1583**
KRISTINA CROTHERS, ALISON MORRIS, and LAURENCE HUANG

- 91 Pulmonary Complications of Stem Cell and Solid Organ Transplantation, 1612**
DAVID K. MADTES

- 92 Pulmonary Complications of Primary Immunodeficiencies, 1624**
JOHN M. ROUTES

- 93 Pulmonary Complications of Abdominal Diseases, 1639**
ROBERTO RODRIGUEZ-ROISIN and GÉRARD HUCHON

- 94 Pulmonary Complications of Hematologic Diseases, 1653**
ROBERTO F. MACHADO and MARK T. GLADWIN

- 95 Pulmonary Complications of Endocrine Diseases, 1671**
LESLIE ZIMMERMAN

- 96 The Lungs in Obstetric and Gynecologic Diseases, 1679**
STEPHEN E. LAPINSKY and CATHERINE NELSON-PIERCY

- 97 The Respiratory System and Neuromuscular Diseases, 1691**
JOSHUA O. BENDITT and F. DENNIS McCOOL

- 98 The Respiratory System and Chest Wall Diseases, 1707**
GEORGE E. TZELEPIS and F. DENNIS McCOOL

SECTION R

Management of Respiratory Failure, 1723

- 99 Acute Ventilatory Failure, 1723**
NICHOLAS S. HILL

- 100 Acute Hypoxemic Respiratory Failure and ARDS, 1740**
WARREN L. LEE and ARTHUR S. SLUTSKY

- 101 Mechanical Ventilation, 1761**
NEIL R. MACINTYRE

- 102 Noninvasive Ventilation, 1778**
LAURENT BROCHARD, DAN ADLER, RICARDO LUIZ CORDIOLI, and EVANGELIA AKOUMIANAKI

- 103 Extracorporeal Support of Gas Exchange, 1794**
NICOLÒ PATRONITI, GIACOMO GRASSELLI, and ANTONIO PESENTI

- 104 End-of-Life Care in Respiratory Failure, 1807**
DOUGLAS B. WHITE

- 105 Pulmonary Rehabilitation, 1821**
BARTOLOME R. CELLI and RICHARD L. ZUWALLACK

- 106 Lung Transplantation, 1832**
ROBERT M. KOTLOFF and SHAF KESHAVJEE

Appendix, A-1