

lines reflects the European bias of the book. The authors talk about the promising aspects of sparfloxacin and grepafloxacin, 2 fluoroquinolones that have been removed from the American market. There is a limited discussion on novel antibiotics for community-acquired pneumonia. The chapter on chronic bronchial suppuration reviews the pathophysiology, microbiology, and clinical features of COPD. There is an overview of the nonpharmacologic therapy for COPD and an extensive discussion of the principles of antibiotic treatment and antibiotics used to treat COPD. The cystic fibrosis chapter reviews the antibiotic and nonantibiotic therapy of cystic fibrosis. The discussion on antibiotic therapy reviews the general principles but also provides discussion on prophylaxis, suppression, and therapies for specific pathogens. The chapter also highlights the various therapeutic interventions for treating *Pseudomonas aeruginosa* infections.

Part IV, "Pulmonary Vascular Diseases," is divided into 3 chapters that review the pathophysiology and current and future therapies for pulmonary vascular disease. The pathophysiology chapter reviews the general mechanisms of pulmonary arterial hypertension, pulmonary vascular remodeling, and the genetic contribution to vascular disease. The section on current therapies for pulmonary vascular disease briefly reviews the definition and classification, clinical assessment, investigation, and selection and evaluation of drug therapies. This chapter reviews the agents available for treating primary and secondary pulmonary hypertension, their selection, administration, monitoring, and determination of a positive response. The future therapy chapter discusses agents targeted at inhibiting inflammation, metalloproteinases, and suppressors of vascular smooth muscle growth.

Part V, "Lung Cancer," is limited to the molecular pathology of lung cancer and small-cell cancer. The chapter on the molecular abnormalities of lung cancer provides an extensive discussion of the genetic changes in lung cancer. The chapter on small-cell cancer reviews staging, tumor markers, prognostic factors, and chemotherapy.

Part VI, "Cough," includes 2 chapters, one that thoroughly discusses the mechanism of cough and the second that reviews the current treatments of cough. The chapter on cough mechanisms reviews the physiology and anatomic site of cough, the role

of the central nervous system, and the site of action of antitussive agents. The other chapter thoroughly reviews therapy of chronic cough, the various disease states associated with cough, and the nonspecific antitussive therapies.

The strength of the book is its in-depth discussion of each topic. The authors use figures, radiographs, and tomography images to support their discussions. The overviews of pulmonary pathophysiology form the bases for the discussions of the drugs. The physiology sections discuss the basic clinical physiology of the respiratory diseases and genetic alterations that account for the disease state physiology. The pharmacology chapters discuss the contemporary agents used to treat respiratory diseases and also provide an update on currently experimental therapies. Another strength of the book is its chapter bibliographies, which are exhaustive and include classic and contemporary reports.

Drugs for the Treatment of Respiratory Diseases meets its goal. It is as current a pharmacology reference as one can expect and reviews the drugs commonly used to treat respiratory diseases as well as the agents that may be available in the future. The book is geared toward the pulmonary subspecialist who is interested in the physiologic and pharmacologic basis of drug treatment of pulmonary disease. It is not geared to the primary care provider who is looking for a dosing reference for commonly prescribed pulmonary medications. This book would be a welcome addition to any pulmonologist's reference library.

Gregory M Susla PharmD
Pharmacology Consulting Section
VHA Consulting Services
Frederick, Maryland

Physiology Secrets, 2nd edition. Hershel Raff PhD. Philadelphia: Hanley & Belfus. 2003. Soft cover, illustrated, 414 pages, \$34.95.

I have used the first version of this book for several years and found it a useful source for short-answer essay questions that cover physiology concepts, from the basic to the advanced. The second edition has been updated. New chapters have been added—on cell signaling, physiologic genomics, bone physiology, endocrine-metabolism integration, endocrine-immunity integration, and the physiology of aging. The chapters on cardiovascular physiology and respiratory

physiology have been substantially expanded. The content is formatted as essay-type questions, with the answer following each question.

This book will be a useful source of information to anyone interested in physiology. The material is clearly and concisely organized and easy to read. The author states that the book is "designed to be used as an adjunct to, not a substitute for, a standard textbook," and I agree that the book will be a useful adjunct for understanding both basic and advanced physiology concepts.

I did find several glaring errors that need to be corrected in the next edition. In the chapter on cells, nerves, and muscles there is a table that compares intracellular and extracellular concentrations of electrolytes and glucose. The table gives the intracellular and extracellular concentrations of glucose as 100 mg/dL and approximately 10 mEq/L, respectively. The extracellular value should be approximately 90 mg/dL. On page 4 of the same chapter, in the discussion of diffusion coefficients, the author used a hypothetical plasma membrane with an "area of 1 cm." That should be "1 cm²." In chapter 4, on cardiovascular physiology, it is stated in a discussion of the cardiac muscle action potential that the "long plateau phase of up to 300 ms, . . . provides time for cardiac filling." That statement is inaccurate: the plateau phase allows for adequate calcium influx for excitation-contraction coupling to occur. In that same chapter, on page 77, in a discussion of vascular resistance the Poiseuille's equation is given as:

$$R = \frac{\pi r^4}{8 \eta l}$$

That equation is upside down and will therefore lead to the wrong conclusions about the effects of radius, vessel length, and blood viscosity on vascular resistance. Later in the book, on page 133, in the section on renal physiology, the equation is given correctly.

In the chapter on respiratory physiology I found several errors that need to be corrected. On page 98 the term "expired minute volume" is used. This may be my personal bias, but I believe that should be "expired minute ventilation," not "volume." The discussion of Fick's law of diffusion, on page 106, gives an incorrect equation:

$$D_{\text{gas}} = A \times D_c/T \times (P_1 - P_2)$$

The correct equation, which is accurate in the first edition of the book, should be:

$$D_{\text{gas}} = \frac{A \times D_c}{T} \times (P_1 - P_2)$$

In the figure on page 109 the arrows showing the distribution of ventilation and perfusion of the lungs are confusing. The figure is trying to show an increase in both ventilation and perfusion, but it shows a difference in ventilation-perfusion ratio between the apex and the base of the lungs.

The first question on page 113 asks, "Under what circumstances would mixed venous oxygen tension be equal to inspired oxygen tension?" This question needs to be corrected by changing "mixed venous" to "alveolar." Then the answer is correct.

On page 113, in the discussion of oxygen content, the amount of oxygen bound to hemoglobin is stated as 1.34 mL oxygen per gram of hemoglobin. Some have asserted that the value 1.34 mL is no longer valid and that 1.39 mL is the actual value, but that is still a disputed issue.¹⁻³

The discussion of hypoxic drive on pages 119 and 120 needs to be updated. The description of the role of hypoxia in stimulating ventilation by stimulation of the periph-

eral chemoreceptors is accurate. However, the statement that "the drive can be dampened by supplemental oxygen, and thus, when titrating oxygen it is best to monitor the P_{aCO_2} as well as the P_{aO_2} " may not be completely correct. Though I agree with the latter part of that statement, recent research indicates that the increase in P_{aCO_2} might be by pulmonary mechanisms and not the dampening of the hypoxic drive. The discussion of ventilation changes during exercise, on page 121, states that "changes in ventilation can be accomplished by increasing tidal volume, respiratory rate, frequency, or a combination." That sentence should have either "respiratory rate" or "frequency" removed, since they are equivalent.

The chapter on renal physiology shows an incorrect version of Starling's equation for fluid flux between plasma and interstitial fluid. The discussion of creatinine clearance, on page 132, incorrectly calls it "creatinine" in one place. In the chapter on endocrine physiology, the substance involved in peptide hormone action at the cell membrane is identified as IP_2 (on page 201). That should be IP_3 (inositol trisphosphate).

The final section of the book consists of a set of multiple-choice questions for each chapter. Although I have not used these questions extensively, they appear to be helpful

for quickly testing one's mastery of the physiologic concepts in each chapter.

Even with the minor errors I have outlined, I found this book an excellent source for review of physiology concepts. The answers to the essay questions are easy to understand and are short and to the point. Although the book is aimed mainly at medical students in medical physiology courses, I would recommend it to any respiratory therapist, nurse, or physician to review medical physiology. I highly recommend this text as an excellent supplement to current textbooks in medical physiology.

Wesley M Granger PhD RRT

Department of Critical Care
Respiratory Therapy Program
University of Alabama at Birmingham
Birmingham, Alabama

REFERENCES

1. Boron WF, Boulpaep EL. Medical physiology: a cellular and molecular approach. New York: Saunders; 2003:656.
2. Guyton AC, Hall JE. Textbook of medical physiology, 10th ed. New York: Saunders; 2000:466.
3. Johnson LR. Essential medical physiology, 2nd ed. Philadelphia: Lippincott-Raven; 1998:268.