development are described, for example, in situ hybridization.

Chapter 3, on genetics, is a concise review of chromosome and cell division, DNA transcription and translation, inheritance patterns and population genetics, and the terminology of chromosomal mutations. Common molecular biologic tools such as Northern and Southern blots, RFLP, PCR, and gene probes are also described succinctly. Three pages at the end of the chapter describe some common inherited ocular disorders. Also, an update is presented of known chromosomal loci of several eye diseases. This clinical part of the chapter, however, seems truncated, and more examples of ocular genetics would be more satisfying.

Chapter 4 starts with an excellent but terse review of basic biochemistry, cell and extracellular matrix physiology, and metabolism. This is followed by a summary of each of the components of the eye and what biochemical processes affect them, as well as pertinent current research. For example, laminin and integrin relationships in corneal wound healing are explored, and the components and dynamics of aqueous humor and possible mechanisms of cataract formation are discussed. There is also a long but easy-to-follow description of retina and RPE physiology and biochemistry. This chapter also brings one up to speed on the variety of matrix proteins, membrane components, and receptors that are being discovered so rapidly.

Chapter 5 reviews the physiology of the visual system and includes an explanation of perception as related to optical physics (diffraction, wavelength absorption spectra) and the receptive fields in the retina and brain. It reviews binocular vision and electrophysiologic testing. The visual areas of the brain and control of eye movement are also described.

Chapter 6 surveys basic principles of drug delivery and pharmacokinetics. Various classes of ocular drugs and their mechanisms are described, as well. Highlighted boxes contain lists of commonly used medications and their actions.

Chapter 7 contains the least amount of information directly pertaining to the eye, but it is extremely helpful in updating current knowledge on basic principles of immunology. It begins with a review of the currently known components and roles of the cellular and humoral immune system. Large tables list recently discovered immunologic components, for example, the 25 types of cytokines. This chapter "decodes" the rather confusing names (usually consisting of three to four capital letters) that newly discovered molecules tend to possess. Leukocyte activation and mediators of inflammation are reviewed as well as the major participants of the immune system (B cells, T cells, MHC, superantigens, and the like). The chapter ends with three pages of ophthalmologic correlates, including such topics as immune-mediated corneal melt and the role of ACAID in corneal grafting.

Chapter 8 briefly reviews basic mechanisms of viral, bacterial, fungal, and parasite pathology and how they relate to the eye. A brief two-page discussion of antimicrobial principles is then presented but without a comprehensive listing of specific medications. The last chapter reviews the pathologic features of infectious and noninfectious inflammatory ocular diseases, trauma, vascular disease, metabolic and degenerative diseases, malformations and dystrophies, and neoplasias. Each section describes the class of disease and contains a short, pertinent description of affected ocular components and histology. This chapter is particularly helpful as a clinical review.

This book, written with a clear and logical framework, is an extensive update on basic sciences with a focus on ophthalmologic correlations. It is perfect for medical students interested in ophthalmology, ophthalmology residents studying for the Ophthalmic Knowledge Assessment Program Examination or the American Board of Ophthalmology Examination, and for general ophthalmologists who would like to know what is happening in the basic sciences that may affect their clinical practice.

• **Pathology of the Eye on CD-ROM.** By Robert Folberg. London, England, Mosby, 1996.

REVIEWED BY EYTAN Z. BLUMENTHAL AND JACOB PE'ER
Jerusalem, Israel

PATHOLOGY OF THE EYE ON CD-ROM, BY ROBERT Folberg, is a clinically oriented, comprehensive self-study course in ophthalmic pathology, prepared exclusively in an electronic format (that is, not preceded by a book version). In this course, a major

emphasis is placed on transforming fundamental concepts of ocular pathology into clinically useful practical knowledge.

The material in this package is presented in a textbook and atlas format. At the beginning of each section, a short explanatory note accompanies each short introduction and image. Although on-screen images rarely match the resolution of high-quality color reproductions, the images in this package are among the best we have seen on-screen.

The course contains 12 chapters, ranging from fundamentals (basic "medical school" pathology), trauma, and retina and intraocular tumors to phacomatoses and congenital anomalies. Numerous histologic sections, as well as external, fundus, gross pathology photographs, illustrations, and animations are included on this CD, for a total of approximately 1,200 images. A glossary section enables the user to retrieve any one of over 500 alphabetically arranged terms, each accompanied by a histologic image. At several points along the course, the user is presented with interactive self-assessment challenges. Fifty hours are estimated for completing the entire course.

"Labels on," a unique and excellent feature of this software, enables the user to toggle on-off labels that outline each specimen. These labels include arrows, lines, and text, all marking relevant aspects of the slide as well as tracing the various contours of the specimen. Two typical examples are a section of retinoblastoma and Coats' disease. The user can view the naked slides, then add the labels by clicking the "labels on" icon, which enables the user to identify landmarks within the section. This feature can also be used for testing one's understanding of any particular histologic section. Similarly, an "enlarge" (zoom-in) icon enables the user to view each image in an enlarged form. Zooming in is particularly useful when several photographs appear beside each other on a single screen.

One minor drawback we found relates to navigation within the chapters. Although the sections are extensively outlined and indexed, it is sometimes confusing to follow the branching sections within the study course. The meticulous indexing, however, makes it possible to easily find a screen or photograph of interest. We found this reasonably priced Windows package to be user-friendly, even for novice computer users. Minimal hardware requirements for the Windows version are a 486 IBM PC or compatible computer, and we found that the package performs very well on a computer equipped as such, even with only a double-speed CD-ROM drive. The Windows version 3.1 (or Windows 95) requires 4 MB RAM (8 MB recommended) and a 256 VGA color graphics display. A Macintosh version is also available.

Residents as well as other physicians and researchers who are interested in mastering or brushing up their knowledge of ophthalmic pathology will find this course both rewarding and enjoyable. We highly recommend ophthalmology departments to consider incorporating self-study sessions based on this CD-ROM into their curriculum.

• **Clinical Procedures for Ocular Examination, 2nd edition.** By Nancy B. Carlson, Daniel Kurtz, David A. Heath, and Catherine Hines. Stanford, Connecticut, Appleton & Lange, 1996. Softcover, 493 pages, index, illustrated. $39.95

REVIEWED BY ROANNE FLOM
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CLINICAL PROCEDURES FOR OCULAR EXAMINATION describes the step-by-step procedures for several dozen tests used in comprehensive eye examinations. This second edition has been expanded to include systemic health and neurological screening procedures, additional tests of ocular health, and a new contact lens section. Other additions include more complete section introductions, flow charts, and "Procedures at a Glance" charts.

About one third of this handbook concerns tests of refractive error, accommodation, and vergences. Another third involves tests of ocular health, while the remainder is divided between contact lens evaluation and preliminary testing.

Each section begins with a reasonable set of introductory comments. For specific procedures, the authors usually indicate the purpose, equipment, set-up, step-by-step procedures, recording, and expected findings. The back of the book contains an adequate set of references for each section.

Section 1, "Case History," is quite reasonable in scope. Recommendations for standardized and concise notation of case history data might be a valuable