Book Review

Young B, Heath JW: *Wheater's Functional Histology: A Text and Colour Atlas, 4th Ed, 416 pp, Edinburgh, Churchill Livingstone, 2000 (\$62.95).*

Previous editions of *Wheater's Functional Histology* have been recognized as outstanding color atlases. The newest edition is dramatically revised. Updated and improved text and color illustrations have added a clear, concise descriptive component to the outstanding photomicrographs for which the *Wheater* atlas has been recognized since its first edition. The new drawings explain concepts and make the histology more "functional," in keeping with the title of the text and the philosophy of the authors.

Functional Histology is divided into three sections: (1) Cell Structure and Function, (2) Basic Tissue Types, and (3) Organ Systems. The introductory section on cell structure and function is well conceived and succinct but provides insufficient detail as a stand-alone cell biology primer for most graduate or professional school courses. The expansion of the sections on mitosis and meiosis from previous editions and the discussion of apoptosis are important additions. The inclusion of a section introducing microscopy is very helpful for the beginning student. One omission is a diagram comparing the optics of light and electron microscopes (scanning and transmission electron microscopes). Such a figure would assist students in understanding the differences between these instruments and the role of electron microscopy in studying cells, tissues, and organs. After all, as the authors mention in their preface, "electron microscopy is merely an extension of light microscopy." The arrangement of the staining section at the end of the book may be effective because it is cross-referenced to Part I of the text. I hope that students use the technique chapter to better understand staining patterns rather than ignore it as appendix material.

The tissue section is organized differently than most texts, with blood appearing before connective tissue and epithelium. The advantage of this ap-

proach is that students will develop an early appreciation of cell size (diameter of red blood cells = 7 μm); the disadvantage is that blood and bone marrow are difficult topics for presentation in the beginning of a microscopic anatomy course. The coverage of the tissues is excellent and includes sufficient electron microscopy for the beginning student of microscopic anatomy. The organ system section is very well-written and includes many outstanding photomicrographs and pertinent electron micrographs. The sections that require more ultrastructure (e.g., pulmonary and renal) appropriately include more electron micrographs. The *Wheater* text/atlas includes predominantly human specimens with only minimal inclusion of other animal tissue. The depth of material is appropriate and the new diagrams are designed to facilitate and enhance student learning. This is particularly true in the immune and reproductive system sections in which the difficult concepts of functional histology are incorporated with updated cell biology, immunology, and reproductive biology information.

I commend the authors on their efforts to convert a classic atlas with limited text into a unified text/atlas concept. Current trends in medical education emphasize integration, and the 4th edition of *Wheater's Functional Histology* will facilitate the integration of microscopic structure and function. I recommend this text/atlas to first-year medical students, pathology residents who need to review normal histology, and teaching and research faculty who require an atlas of normal human tissues. A compact disk (CD) is provided for faculty to create their own slide presentations. The CD is easy to use and should be very effective in situations in which microscope usage by students is limited or not possible. The CD also can be used by students as an alternative media review of histology before or after a microscope lab.

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