Anatomy : Review for USMLE, Step 1

Kurt E. Johnson
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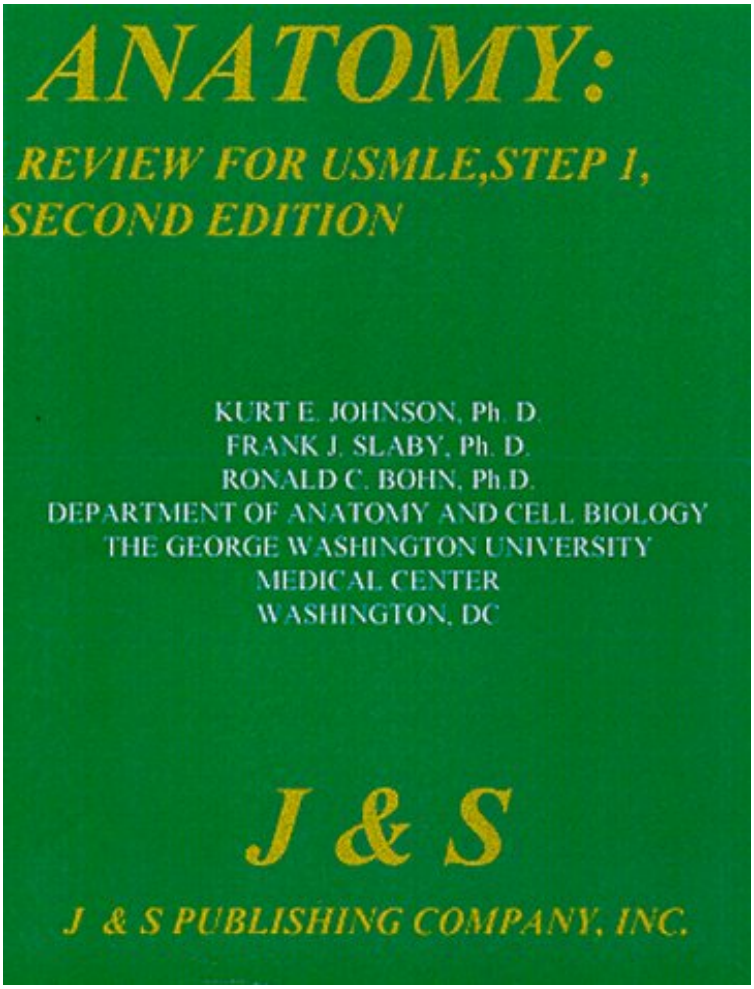

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Brief review of anatomy, histology and cell biology, embryology, gross anatomy, and neuroanatomy. Questions are formatted like current national board exams. Illustrated. Clinical scenarios are included. Previous edition entitled: Anatomy: Review for New National Boards, c1995. Softcover.

Excerpt. Reprinted by permission. All rights reserved.From Chapter 1 Histology and Cell Biology Items 1-5 For each

statement of structure, function or embryological origin in the items below, select the MOST appropriate structure in Figure 1.1 (a histological section of the adrenal gland) Answers may be used once, more than once, or not at all. Figure 1.1 1. This structure is derived from the neural crest. 2. This structure has cells with abundant smooth endoplasmic reticulum, mitochondria with tubular cristae, and especially large lipid droplets. 3. This structure secretes mineralocorticoids. 4. This structure secretes sex steroids and is derived from the lining of the primitive coelomic cavity. 5. Epithelial cells in this structure are arranged in long straight cords running parallel to long straight sinusoids. ANSWERS AND TUTORIAL ON ITEMS 1-5 The answers are 1-E; 2-C; 3-B; 4-D; 5-C. Figure 1.1 is a photomicrograph of the human adrenal gland. It is surrounded by a connective tissue capsule (A). The adrenal cortex (B-D) arises from proliferation of mesodermally derived coelomic epithelium and consists of three layers of cells. The outer layer is the zona glomerulosa (B). It is the source of mineralocorticoids. The middle and thickest layer is the zona fasciculata (C). It consists of long, straight cords of epithelial cells arranged between long sinusoids. The cortical cells all have an abundance of smooth endoplasmic reticulum and mitochondria with tubular cristae, ultrastructural features common to all steroid-secreting cells. The cells of the zona fasciculata have a foamy appearance in the light microscope due to a profusion of large, lipid-rich vacuoles. The cells of the zona fasciculata secrete glucocorticoids. The cells of the zona reticularis (D) secrete sex steroids. The adrenal medulla (E) is derived from the neural crest and consists of two populations of cells, one secreting epinephrine and the other secreting norepinephrine.