CHAPTER-BY-CHAPTER CHANGES

This edition has been thoroughly updated. Specific chapter-by-chapter changes include:

Chapter 1: The Human Body: An Orientation
- All new Figure 1.2, rendered body systems figures
- New terms added to body landmarks
- New section added: Open Body Cavities

Chapter 2: Basic Chemistry
- Expanded discussion of forms of energy
- New Figure 2.4, Properties of a compound
- New Table 2.4, Factors Increasing the Rate of Chemical Reactions
- New figure questions for Figures 2.8 and 2.15
- New discussions on direction of chemical reactions and fatty acid chains and fats

Chapter 3: Cells and Tissues
- New figure question for Figure 3.2
- Expanded Figure 3.10, Diffusion through the plasma membrane

Chapter 4: Skin and Body Membranes
- Updated discussion of integumentary system
- Updated rules for recognizing melanoma
- New photomicrographs for Figure 4.6, Photomicrographs of cutaneous glands

Chapter 5: The Skeletal System
- All new bone art
- New Figure 5.3, Photo of the C-shaped spine typical of a newborn
- New Table 5.3, Summary of Joint Classes
- Expanded explanation of the bones of the arm and pelvic girdle

Chapter 6: The Muscular System
- All new muscle art
- New entry in Table 6.1 on connective tissue components, with art
- New entry in Table 6.4 on quadratus lumborum

Chapter 7: The Nervous System
- Updated discussion of cerebral cortex
- New photomicrograph in Figure 7.4, Structure of a motor neuron
- New Figure 7.15, Frontal section of the brain showing commissural fibers running between the cerebrum and the lower CNS
- New Figure 7.19, Hydrocephalus in a newborn (photo)
- New Figure 7.22, Schematic of ascending (sensory) and descending (motor) pathways between the brain and the spinal cord
- Updated information in Table 7.2, Spinal Nerve Plexuses
- Added adipose tissue as a target organ system to Table 7.3, Effects of the Sympathetic and Parasympathetic Divisions of the Autonomic Nervous System

Chapter 8: Special Senses
- New Figure 8.1, Surface anatomy of the eye (photo)
- New discussion of the pigmented and neural layers of the eye
- Updated discussion of the external ear and internal ear, taste buds
- Updated homeostatic imbalance sections on hearing and equilibrium deficits

Chapter 9: The Endocrine System
- New section heads on endocrine gland stimuli
- New Figure 9.5, Disorders of pituitary growth hormone (photos)
- New photo for Closer Look box on potential uses for growth hormone
- New Figure 9.11, Microscopic structure of the adrenal gland
- Added resistin to hormones in Table 9.2, Hormones Produced by Organs Other than the Major Endocrine Organs

Chapter 10: Blood
- Updated discussion of the components of blood, albumin, and granulocytes
- New mnemonic for listing WBCs in order of relative abundance in the blood
- Added column in Table 10.3, ABO Blood Groups, for Native American statistics on % of different blood types compared to other groups
- All new material for Closer Look box on artificial blood substitutes

Chapter 11: The Cardiovascular System
- New discussion of the coverings of the heart
- New Figure 11.4, Anatomical differences in right and left ventricles
- New flowchart for Figure 11.7, influence of selected factors on cardiac output; new flowchart for Figure 11.21, summary of factors causing an increase in arterial blood pressure
- New Figure 11.15, The basic scheme of the hepatic portal system and associated vessels
- Updated Closer Look box on atherosclerosis, including two new photos
- New Figure 11.23, Bulk fluid flow across capillary walls

Chapter 12: The Lymphatic System and Body Defenses
- Updated Table 12.3, Function of Cells and Molecules Involved in Immunity
- Immune response cells style updated in figures to be more realistic

Chapter 13: The Respiratory System
- New discussion of respiration mechanisms
- Reorganized Figure 13.12, Breathing control centers, sensory inputs, and effector nerves

Chapter 14: The Digestive System and Body Metabolism
- New part (d) for Figure 14.14 showing cardioesophageal sphincter relaxed
- Updated Closer Look box on peptic ulcers, with new statistics, new discussion of treatments, and new additional photo of ulcer-causing bacteria
- Intestinal gastrin added to Table 14.1, Hormones and Hormonelike Products That Act in Digestion
- New discussion of colon contractions
- New Figure 14.17, USDA Food Guide Pyramid, with new discussion
- Updated Closer Look box on obesity, with new discussion of weight-loss drugs and supplements, and different diets, with updated statistics and a new photo

Chapter 15: The Urinary System
- Updated Closer Look box on renal failure, with new statistics and warning signs of kidney trouble, new discussion of transplants
- New Figure 15.9, The continuous mixing of body fluids
- Added discussion of plasma circulation and the thirst mechanism

Chapter 16: The Reproductive System
- Added discussion on metabolic effects of estrogen
- Expanded discussion of breast cancer homeostatic imbalance, with new discussion of heredity defects, genetic roots, and risk factors, with statistics
- New Figure 16.17, Photo of the seven-week embryo
- Updated Closer Look on contraception, with new discussion of methods on the market