

Preface (continued)

Chapter-Specific Changes (continued)

19 Viruses, Bacteria, and Archaea Improved art comparing viral structures. Updated information about Ebola, AIDS, West Nile virus. Added information about the Zika virus. New figure shows viral reassortment. Added figure illustrating the three common bacterial shapes. New table lists common bacterial diseases. New subsection discusses metagenomics, relationships among prokaryotes, and the relationship between prokaryotes and eukaryotes.

20 The Protists New table lists the various protist groups and their traits. Chapter now organized around the major eukaryotic supergroups. New overview of protist cell structure. New information about African trypanosomiasis and expanded coverage of malaria.

21 Plant Evolution Revised life cycle graphics throughout the chapter; improved figure illustrating generalized process of seed production.

22 Fungi Added text and table comparing traits of fungi, plants, and animals. New photos of athlete's foot and ringworm. Updated information about white nose syndrome. New information about medical use of psilocybin.

23 Animals I: Major Invertebrate Groups More on the similarities between choanoflagellates and animals. Coverage of placozoans deleted. New figure illustrates bivalve (clam) anatomy, and sea star anatomy figure has been updated. Expanded coverage of roundworms as a model organism. New information about overharvesting of krill and about copepods as reservoirs for cholera-causing bacteria.

24 Animals II: The Chordates Updated lancelet art. New subsection and figure devoted to declining amphibian diversity. New figure of avian skeleton. Updated discussion of fossil hominins and evidence of interbreeding among humans, Neandertals, and Denisovans.

25 Plant Tissues Many new photos. Expanded Application material includes carbon release by decomposition, relative stability of dead plant matter, and CO₂ and climate change.

26 Plant Nutrition and Transport Many new photos and updated art pieces. Mechanism of regulation of water flow through bordered pits updated per current research.

27 Reproduction and Development of Flowering Plants Revisions include addition/illustration of nastic movements, and explanation of *Phylloxera* resistance in American

involving resveratrol. New Application on plant secondary metabolites using epicatechin in cocoa via the low pH pathway among the Kuna tribe, with emphasis on metabolic pathways in plants and humans.

28 Animal Tissues and Organs New table describing tissue types. Improved figures of relative volumes of the fluid components of blood. New information about brown fat versus white fat and gray matter. New graphic illustrating cell types in muscle cells. Updated information about the differentiation of induced pluripotent stem cells.

29 Neural Control New overview of the nervous system. Revised/reorganized coverage of the endocrine system. New photo of a paralyzed person's skeleton. New subsection covers the endocrine system. Updated Application with the latest research on age among professional football players.

30 Sensory Perception Simplified coverage of sensation. Added frontal view to illustrate the eye. New graphic depicts the structure of the ear. Includes light-channeling neurobiology. Updated information about both cochlear and retinal implants.

31 Endocrine Control Added information about the production of human steroid hormone production. Added information about hormone regulation (steroid) to Table 31.1. Updated figure illustrating the production of thyroid hormone.

32 Structural Support and Movement New figure depicting locomotion of fly and earthworm. Updated showing the structure of skeletal muscle.

33 Circulation Updated photo of a blood vessel. Updated blood pressure. Expanded coverage of heart disease. Art depicts atherosclerosis. Added information about symptoms and of causes and symptoms of heart disease. Analysis exercise on hypertension.

34 Immunity Text updates reflect the latest research on keratinocytes as immune cells. Updated details vaccination and benefits of vaccination. New narrative by a mother whose unborn child has Down syndrome. New health consequences of congenital infections.

35 Respiration Improved photo of a lung. Increased emphasis on evolutionary changes in vertebrate lungs. Updated information about the structure of the

