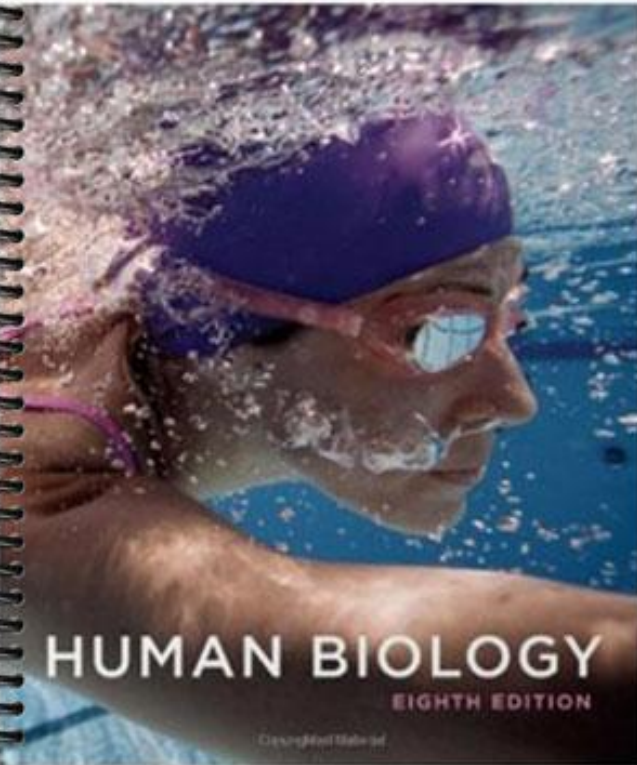


# SOLUTIONS MANUAL



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HUMAN BIOLOGY  
EIGHTH EDITION

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# Chapter 1 | Learning about Human Biology

## IMPACTS, ISSUES


### What Kind of World Do We Live in?

 **InfoTrac:** Avian-Flu “Firsts.” (Global diseases) (World Health Organization report) *Medical Laboratory Observer*, August 2006.

### 1.1 The Characteristics of Life

 **InfoTrac:** Life on Mars May be Hidden Like Earth’s Extremophiles. *Nature*, Sept 20, 2007.

### 1.2 Our Place in the Natural World

 **InfoTrac:** Redrawing Humanity’s Family Tree; Two Skulls, Found in Africa and in Europe, Challenge Theories of Human Origins and Migrations. (Science Times) *The New York Times*, August 6, 2002.

**Animation:** Figure 1.3, organism group classifications

 **ABC Video:** Biology in The Headlines, 2006: Ancient Human Skull


 **Hyperlink Examples:** <http://anthropology.si.edu/humanorigins/index2.htm>

### 1.3 Life’s Organization


 **InfoTrac:** 10 Ways Global Warming Could Hurt Your Health. *U.S. News & World Report*, Sept 15, 2008.

**Animation:** Figure 1.5, an overview of the levels of organization in nature; Figure 1.6, energy flow and nutrient cycling

### 1.4 Using Science to Learn about the Natural World

 **InfoTrac:** CSPI Claims Procter & Gamble Withheld Key Olestra Study Until After FDA Review in 1995. *Food Chemical News*, August 2, 1999.


### 1.5 Critical Thinking in Science and Life

 **InfoTrac:** Experts Revive Debate Over Cellphones and Cancer. *The New York Times*, June 3, 2008.


### 1.6 Science in Perspective

 **InfoTrac:** Is Beauty a Sign of Truth in Scientific Theories? *American Scientist*, March–April 1998.

### 1.7 Living in a World of Infectious Disease

 **InfoTrac:** West Nile Virus Infection: A Pediatric Perspective. *Pediatrics*, May 2004.

## EXPLORE ON YOUR OWN

 **InfoTrac:** How to (Almost) Schedule Innovation: The Scientific Method and Statistical Design of Experiments Can Help. *Research-Technology Management*, Jan–Feb 2002.


## Chapter 2 | Chemistry of Life

### IMPACTS, ISSUES


#### Fearsome Fats

 **InfoTrac:** AMA Ups National Fats Awareness Campaign. *Pharma Marketletter*, August 4, 2008.


#### 2.1 Atoms and Elements

 **InfoTrac:** Radioisotopes and Airport Security. *The Lancet*, July 23, 2005.

#### 2.2 How Much Are You Worth?

 **InfoTrac:** Most of What is Left of the Human Body after Funerary Cremation Consists of Carbon Ash. *National Review*, Sept 27, 2004.

#### 2.3 Chemical Bonds: How Atoms Interact

 **InfoTrac:** Fueling U.S. Transportation: The Hydrogen Economy and its Alternatives. *Environment*, Oct 2007.


**Animation:** Figure 2.3, the shell model helps you visualize the vacancies in an atom's orbitals

#### 2.4 Important Bonds in Biological Molecules


 **InfoTrac:** Masson Gulland: Hydrogen Bonding in DNA. *Chemistry and Industry*, Oct 20, 1997.


**Animation:** Figure 2.4, symbols are a “shorthand” way to describe chemical reactions; Figure 2.5, two oppositely charged atoms may stay together in an ionic bond

#### 2.5 Water: Indispensable for Life


 **InfoTrac:** Muddying the Waters. *Environment*, March 2002.

**Animation:** Figure 2.8, water is essential for life; Figure 2.9, shows clusters of water molecules around ions


 **ABC Video:** Biology in the Headlines, 2008: What's in Your Water?

 **Hyperlink Examples:** [www.epa.gov/waterscience/](http://www.epa.gov/waterscience/)

#### 2.6 How Antioxidants Protect Cells


 **InfoTrac:** Free Radicals, Antioxidants, and Human Disease: Curiosity, Cause, or Consequence? *The Lancet*, Sept 10, 1994.

#### 2.7 Acids, Bases, and Buffers: Body Fluids in Flux

 **InfoTrac:** Albany Battles Acid Rain Fed by Other States. *The New York Times*, May 2, 2000.


**Animation:** Figure 2.11, the pH scale indicates the acidity of a solution

#### 2.8 Molecules of Life

 **InfoTrac:** The Sex Hormone Secrets. Baker, Sherry. *Psychology Today*, Jan–Feb 2007.

**Animation:** Figure 2.13, functional groups are important parts of biological molecules; Figure 2.15, metabolic reactions build, rearrange, and break apart most biological molecules

#### 2.9 Carbohydrates: Plentiful and Varied


 **InfoTrac:** A Chewing Gum Sweetener Dentist's Love: Long-Term University of Michigan Research Study Finds Xylitol Twice as Effective at Preventing Cavities. *Food Processing*, June 1993.

#### 2.10 Lipids: Fats and Their Chemical Kin

 **InfoTrac:** Fighting Cholesterol with Saturated Fat? *Science News*, Oct 9, 2004.


**Animation:** Figure 2.18, fatty acids are the building blocks of fats; Figure 2.19, triglycerides have three fatty acid tails

#### 2.11 Proteins: Biological Molecules with Many Roles

 **InfoTrac:** Weight Loss at a Cost: Implications of High-Protein, Low-Carbohydrate Diets. *The Journal of Physical Education, Recreation & Dance (JOPERD)*, Feb 2002.


**Animation:** Figure 2.23, all amino acids have the same basic chemical parts; Figure 2.24, a protein is built as peptide bonds form between amino acids

#### 2.12 A Protein's Shape and Function

 **InfoTrac:** Crystallization Method Facilitates Protein Structure Study. *Bioscience Technology*, March 2008.


**Animation:** Figure 2.26, proteins can have up to four levels of organization; Figure 2.27, hemoglobin is a protein with quaternary structure

#### 2.13 Nucleotides and Nucleic Acids


 **InfoTrac:** Nuke Your Growth; Nucleotides—a Component of DNA—are Proving to be a Supplemental Advantage to Bodybuilders. *Joe Weider's Muscle & Fitness*, June 2008.

**Animation:** Figure 2.29, ATP is the energy-carrying nucleotide in cells; Figure 2.30, chains of nucleotides form nucleic acids such as DNA

#### 2.14 Food Production and a Chemical Arms Race

 **InfoTrac:** Organically Grown Foods Higher in Cancer-Fighting Chemicals. *Cancer Weekly*, March 25, 2003.

### EXPLORE ON YOUR OWN

 **InfoTrac:** Go with the Flow: Research Dating Back 60 Years Has Found New Life in Repellent Coatings. *Chemistry and Industry*, Sept 18, 2006.