



WORKBOOK FOR USE WITH

ANATOMY & PHYSIOLOGY

FOUNDATIONS FOR THE HEALTH PROFESSIONS

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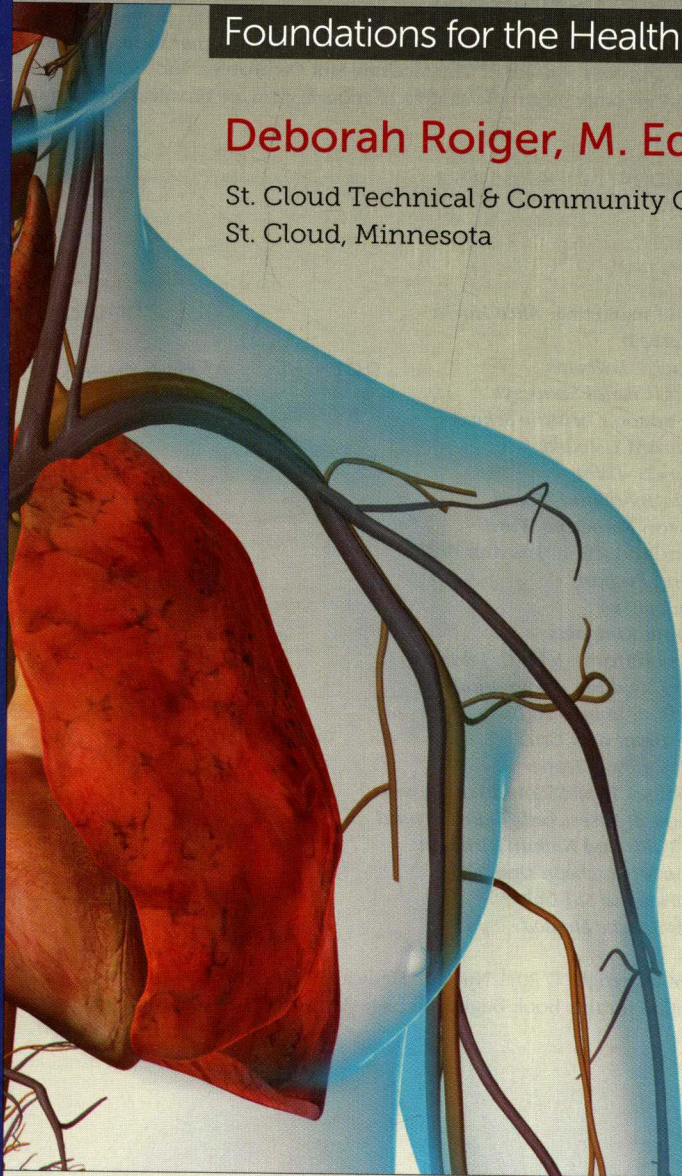
WORKBOOK FOR USE WITH

ANATOMY & PHYSIOLOGY

Foundations for the Health Professions

Deborah Roiger, M. Ed.

St. Cloud Technical & Community College
St. Cloud, Minnesota





Workbook for use with
Anatomy & Physiology: Foundations for the Health Professions, First Edition
Deborah Roiger

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preface

To the Student

Anatomy and Physiology is the foundational course for a wide variety of health careers. A firm understanding of the body's structures and functions will be essential to your success in whichever career you choose. This workbook is directly tied to the main text, and it provides additional practice on every lesson. The following workbook features are designed to help you master this content:

- **Learning outcomes.** As with the textbook, each chapter in this workbook is driven by the same learning outcomes that are stated at the beginning of the textbook chapters.

- **Word Roots & Combining Forms.** This section includes relevant word roots and combining forms to help you with medical terminology for each system.

- **Coloring Book.** This section will help you locate the structures of the body and understand their relationship to each other. By coloring, you will become aware of the edges of each structure in the human anatomy in different views and of the way each structure relates to neighboring structures. Coloring or outlining will give you a broader understanding than would simply labeling structures on a diagram.

learning outcomes

This chapter of the workbook is designed to help you learn the anatomy and physiology of the endocrine system. After completing this chapter in the text and this workbook, you should be able to:

- 8.1 Use medical terminology related to the endocrine system.
- 8.2 Compare and contrast the endocrine and nervous systems in terms of type, specificity, speed, and duration of communication.
- 8.3 Define *gland*, *hormone*, and *target tissue*.
- 8.4 List the major hormones, along with their target tissues and functions, of each of the endocrine system glands.

word roots & combining forms

arter/o, arteri/o: artery

ather/o: fatty substance

atri/o: atrium

brady/: slow

cardi/o: heart

Skeletal Muscles

Figures 5.1 to 5.7 show the skeletal muscles of the body by region. Color the box next to each term. Use the same color for the corresponding structures in the figures.

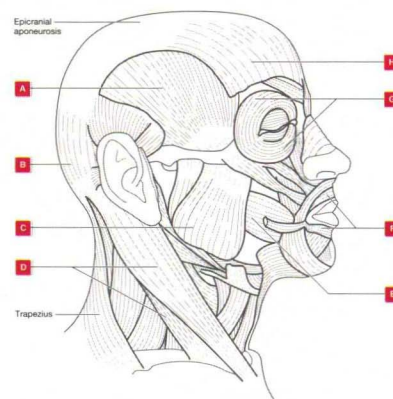


FIGURE 5.1 Muscles of the head and neck.

Muscles of the Head and Neck

- | | |
|---|---|
| <input type="checkbox"/> Temporalis ^(A) | <input type="checkbox"/> Buccinator ^(F) |
| <input type="checkbox"/> Occipitalis ^(B) | <input type="checkbox"/> Orbicularis oris ^(F) |
| <input type="checkbox"/> Masseter ^(C) | <input type="checkbox"/> Orbicularis oculi ^(G) |
| <input type="checkbox"/> Sternocleidomastoid ^(D) | <input type="checkbox"/> Frontalis ^(H) |

- **Lab Exercises and Activities.** This section will help you understand the physiology of the human body. The exercises and activities will reinforce the concepts you have studied in the textbook.

Key Words

The following key words are defined in the glossary of the textbook.

acquired immunity	diapedesis	major histocompatibility complex (MHC)
acquired immunodeficiency syndrome (AIDS)	epitope	margination
anaphylaxis	humoral immunity	mitogenic
antigen-presenting cell (APC)	interferon	nonspecific resistance
cellular immunity	isotransfusion	pyrogen
chemotaxis	lymph	specific immunity
complement system	lymphadenitis	

Concept Maps

Use key words and other bold words from the chapter to complete the following concept maps (Figures 11.4 to 11.8).

Cells of the Lymphatic System

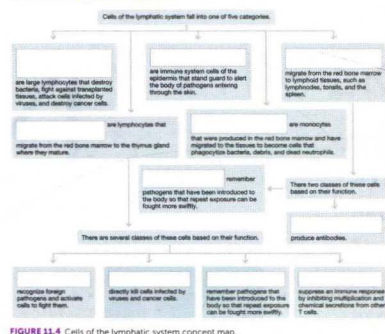


FIGURE 11.4 Cells of the lymphatic system concept map.

KEY WORD CONCEPT MAPS

- **Key Word Concept Maps.** Each chapter of the workbook contains several concept maps that will help you understand the relationships between anatomy and physiology by linking concepts together. Making connections is a sure sign you are doing the critical thinking that will be invaluable in your new career.

Figure 2.34 shows eight mystery fluids. A strip of pH paper was dipped into each fluid.

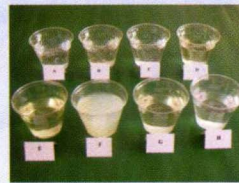


FIGURE 2.34 Eight mystery fluids.

Use the results of the pH test shown in Figure 2.35 to answer the following:

1. Using the letter names for each liquid, order the liquids by pH, lowest to highest.
2. Which of the liquids are acids?
3. Which of the liquids is the strongest acid?
4. Which of the liquids are bases?
5. Which of the liquids is the strongest base?
6. Which ion would be more abundant in liquid D (H^+ or OH^-)?
7. What is the difference in the amount of ions between liquid G and liquid D? Explain.



FIGURE 2.35 Completed pH test.

Word Deconstruction. In the textbook, you built words to fit a definition using combining forms, prefixes, and suffixes. Here you are to break down the term into its parts (prefixes, roots, and suffixes) and give a definition. Prefixes and suffixes can be found inside the back cover of the textbook.

FOR EXAMPLE: Dermatitis: *derma/tic/itis*—inflammation of the skin

1. Poliomyelitis: _____
2. Gangliectomy: _____
3. Neurodynia: _____
4. Encephalitis: _____
5. Cephalocoele: _____

Multiple Select: Select the correct choices for each statement. The choices may be all correct, all incorrect, or any combination of correct and incorrect.

1. How is the nervous system organized?
 - a. The nervous system is divided into the central nervous system and the autonomic nervous system.
 - b. The cerebrum is composed of three lobes.
 - c. The hypothalamus is part of the diencephalon.
 - d. The peripheral nervous system is composed of afferent and efferent neurons.
 - e. The autonomic division is composed of afferent neurons only.
2. How are neurons classified?
 - a. Bipolar neurons are sensory.
 - b. Multipolar neurons are sensory.
 - c. Unipolar neurons are efferent.
 - d. Unipolar neurons are motor.
 - e. Bipolar neurons are afferent.
3. What is (are) the function(s) of neuroglial cells?
 - a. Astrocytes fight pathogens.
 - b. Ependymal cells prevent medications from reaching the brain.
 - c. Schwann cells form myelin in the PNS.
 - d. Satellite cells regulate the composition of the CSF.
 - e. Microglia regulate the environment of ganglia in the PNS.
4. Agnes is suspected of having meningitis. Her physician performed a lumbar puncture. Why is this a good idea?
 - a. Cerebrospinal fluid may contain the pathogen.
 - b. The lumbar area contains an enlargement of the cord, so it will be easier to hit.
 - c. The cauda equina is located in the lumbar region.
 - d. Cerebrospinal fluid can be found in the subdural space.
 - e. Cerebrospinal fluid circulates over the entire brain and spinal cord, so it will likely pick up a pathogen if it is in the CNS.
5. How is the anatomy of a nerve organized?
 - a. Epineurium surrounds a neuron.
 - b. Neuron axons are bundled in fascicles.
 - c. Endoneurium surrounds a fascicle.
 - d. Perineurium surrounds a nerve.
 - e. Epineurium surrounds a nerve.
6. How does the sympathetic division compare to the parasympathetic division?
 - a. The preganglionic neuron is longer in the sympathetic division than in the parasympathetic division.

CHAPTER 6 REVIEW QUESTIONS

This section of the chapter is designed to help you find where each outcome is covered in the workbook.

Outcomes	Coloring Book, Lab Exercises and Activities, Concept Maps	Assessments
1.1 Use medical terminology related to the integumentary system.	Word roots: Combining forms	Word Deconstruction: 1-5
1.2 Describe the histology of the epidermis, dermis, and hypodermis.	Coloring book: Skin Figure 3.11 Concept maps: Layers of the skin Figure 3.7	Multiple Select: 2
1.3 Describe the cells of the epidermis and their function.	Concept maps: Layers of the skin Figure 3.7	Multiple Select: 3 Critical Thinking: 2
1.4 Describe the structures of the dermis and their functions.	Coloring book: Skin Figure 3.11 Lab exercises and activities: Skin observations 1-3 Figures 3.4-3.6 Concept maps: Layers of the skin Figure 3.7	Multiple Select: 3
1.5 Compare and contrast the glands of the skin in terms of their structure, products, and functions.	Concept maps: Cutaneous glands Figure 3.8	Matching: 1-5
1.6 Describe the histology of a hair and hair follicle.	Coloring book: Hair and hair follicle Figure 3.12	Matching: 6-10
1.7 Explain how a hair grows and is lost.	Coloring book: Nail Figure 3.3	Multiple Select: 4
1.8 Explain how the layers and structures of the skin work together to carry out the functions of the system.	Lab exercises and activities: Skin observation 3 Figure 3.6	Multiple Select: 5
1.9 Explain how the skin responds to injury and repairs itself.		Multiple Select: 9 Critical Thinking: 1
1.10 Describe the symptoms of inflammation and explain their cause in terms of the structure and function of the skin.		Completion: 1-5
1.11 Compare and contrast three degrees of burns in terms of symptoms, signs of the skin affected, and method used by the body for healing.	Concept maps: Burns Figure 3.9	Multiple Select: 10 Critical Thinking: 1
1.12 Describe the extent of a burn using the rule of nines.		
1.13 Summarize the effects of aging on the integumentary system.		Multiple Select: 7
1.14 Describe three forms of skin cancer in terms of the body area most affected, appearance, and ability to metastasize.	Lab exercises and activities: Skin observation 4 Figure 3.4 Concept maps: Skin cancer Figure 3.10	Multiple Select: 8
1.15 Describe an example of a bacterial, viral, and a fungal infection of the skin.		Multiple Select: 1

CHAPTER 3 MAPPING

- **Chapter Mapping.** Just as the Chapter Mapping section of the text chapters helps you find where each learning outcome is addressed in the text, this Chapter Mapping section will do the same for the workbook chapters.

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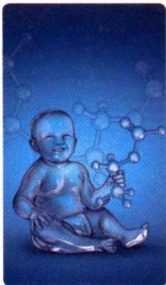
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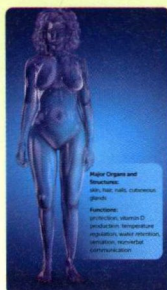
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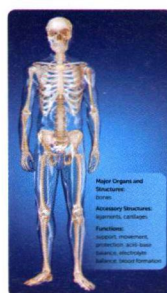
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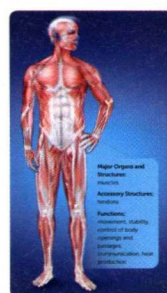
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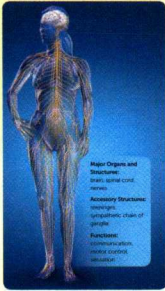
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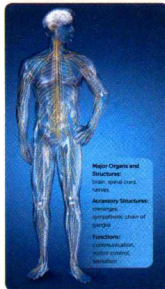
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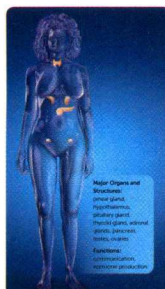
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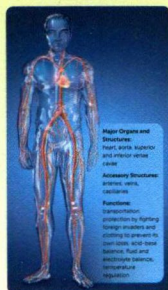
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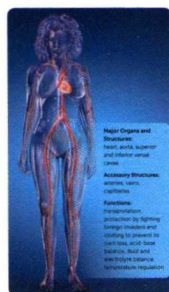
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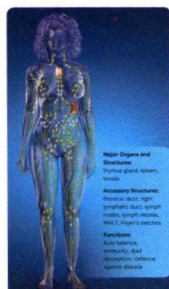
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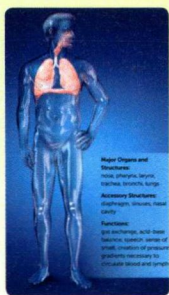
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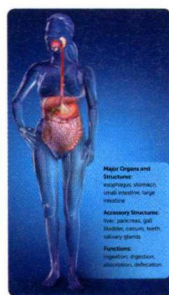
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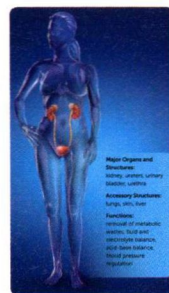
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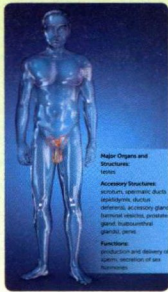
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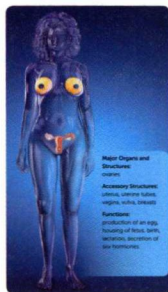
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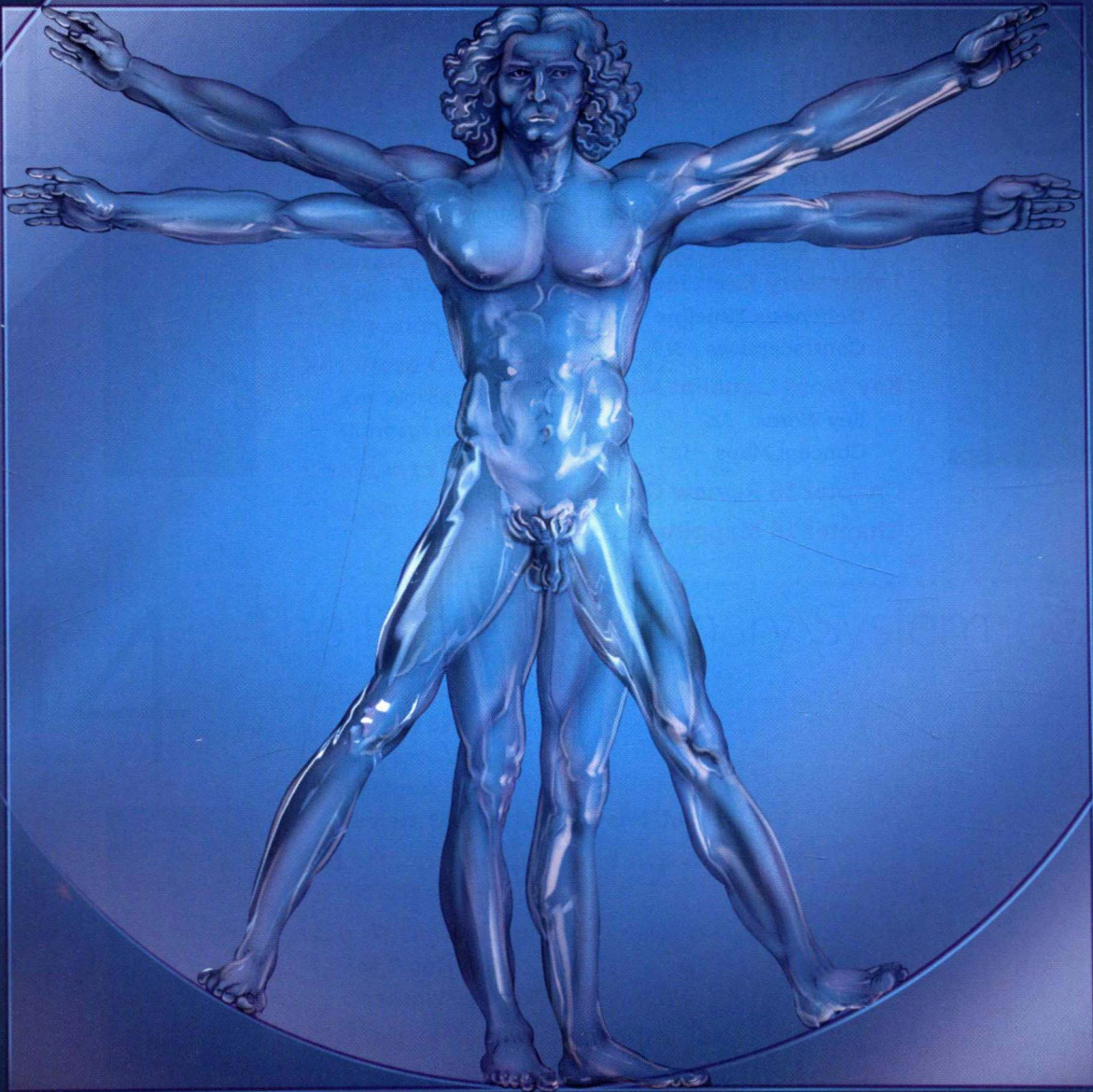
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1

The Basics



This chapter of the workbook is designed to help you learn the basic terms of anatomy and physiology of the human body. Like the following chapters in this workbook, this chapter is divided into five sections:

- **COLORING BOOK.** This section will help you locate the structures of the body and understand their relationship to each other.
- **LABORATORY EXERCISES AND ACTIVITIES.** This section will help you understand the physiology of the human body. The exercises and activities may include the use of common household items.
- **KEY WORD CONCEPT MAPS.** This section will help you understand the relationships between anatomy and physiology by linking concepts together.
- **CHAPTER REVIEW QUESTIONS.** This section is similar to the review questions in the text. It will give you more practice to assess how much you have learned.
- **CHAPTER MAPPING.** Just as the Chapter Mapping section of the text chapter helps you find where each learning outcome is addressed in the text, this Chapter Mapping section will help you do the same in the workbook chapter.

o u t c o m e s

After completing this chapter in the text and this workbook, you should be able to:

- 1.1 Define *anatomy* and *physiology*.
- 1.2 Describe the location of structures in the human body using anatomical terms of direction, regions, planes, positions, and cavities.
- 1.3 Locate serous membranes by their individual names and relative location to organs.
- 1.4 Define *homeostasis* and explain why it is so important in human physiology.
- 1.5 Define *negative feedback* and *positive feedback* and explain their importance to homeostasis.

Anatomical Terms of Direction

Figure 1.1 shows the basic anatomical terms of direction. Color the box next to each term below. Use the same color for the corresponding arrow(s) in the drawing.

- ☐ **Cranial/superior^(A)**. These terms mean closer to the head end of the body or higher in the body than another structure. They are used for the axial region only.
- ☐ **Anterior/ventral^(B)**. These terms mean closer to the front or belly side of the body.
- ☐ **Posterior/dorsal^(C)**. These terms mean closer to the back side of the body.
- ☐ **Medial^(D)**. This term means closer to the midline of the body along the sagittal plane.
- ☐ **Lateral^(E)**. This term means farther from the midline of the body along the sagittal plane.
- ☐ **Proximal^(F)**. This term means closer to the attachment to the body. It is used for the appendicular region only.
- ☐ **Distal^(G)**. This term means farther from the attachment to the body. It is used for the appendicular region only.
- ☐ **Inferior^(H)**. This term means farther from the head end of the body or lower in the body than another structure. It is used for the axial region only.

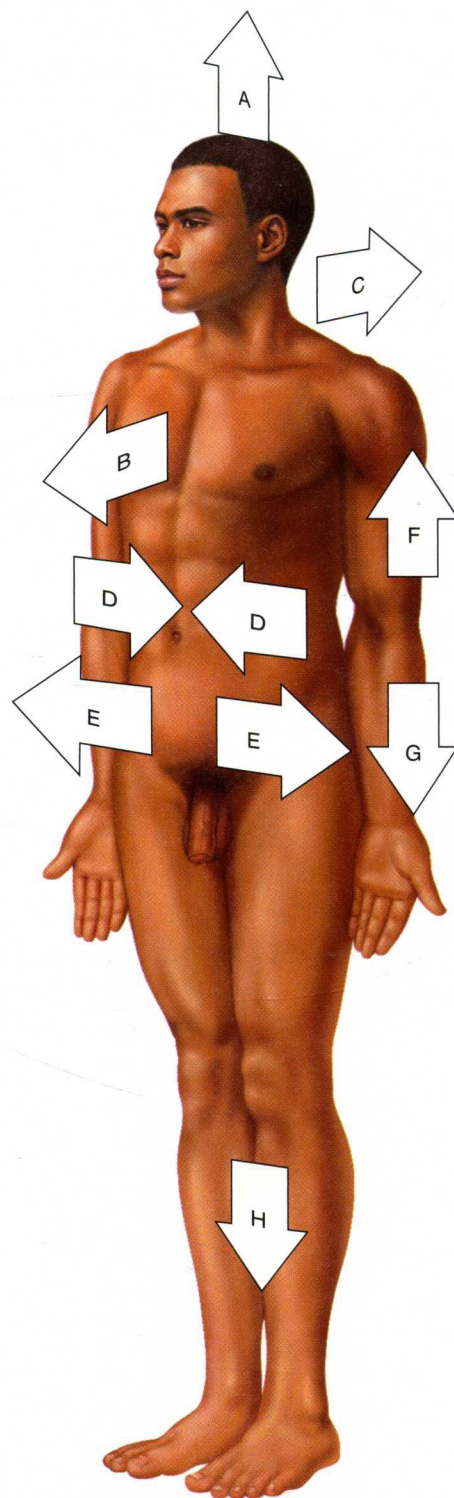


FIGURE 1.1 Anatomical terms of direction.

Anatomical Regions

Figure 1.2 shows anatomical regions. Color the box next to each region name below. Use the same color for the arrow pointing to the corresponding region on the drawing.

Axial Region

- ☐ Abdominal region^(A)
- ☐ Axillary region^(B)
- ☐ Cranial/cephalic region^(C)
- ☐ Cervical region^(D)
- ☐ Facial region^(E)
- ☐ Inguinal region^(F)
- ☐ Pelvic region^(G)
- ☐ Thoracic region^(H)
- ☐ Umbilical region^(I)

Appendicular Region

- ☐ Brachial region^(J)
- ☐ Carpal region^(K)
- ☐ Cubital region^(L)
- ☐ Femoral region^(M)
- ☐ Palmar region^(N)
- ☐ Patellar region^(O)
- ☐ Plantar region^(P)
- ☐ Tarsal region^(Q)

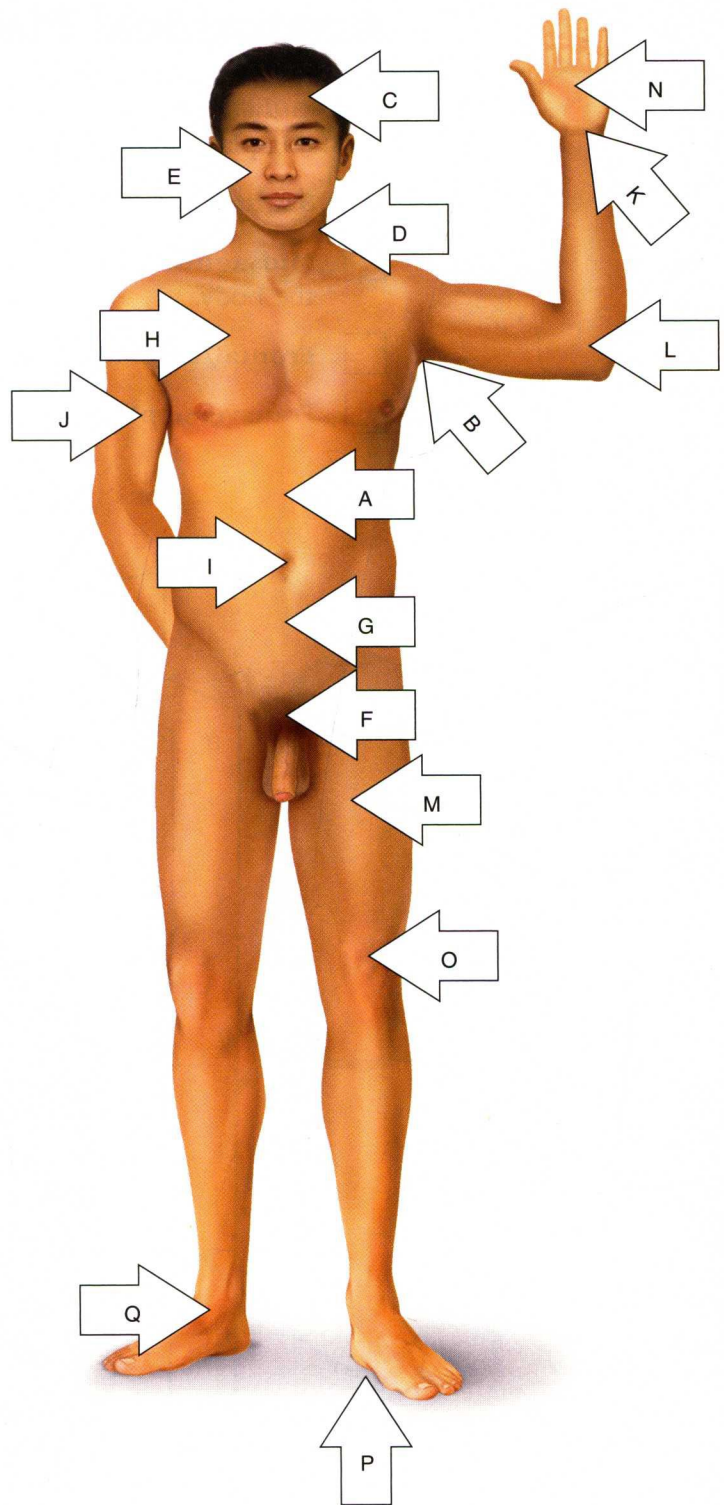


FIGURE 1.2 Anatomical regions.