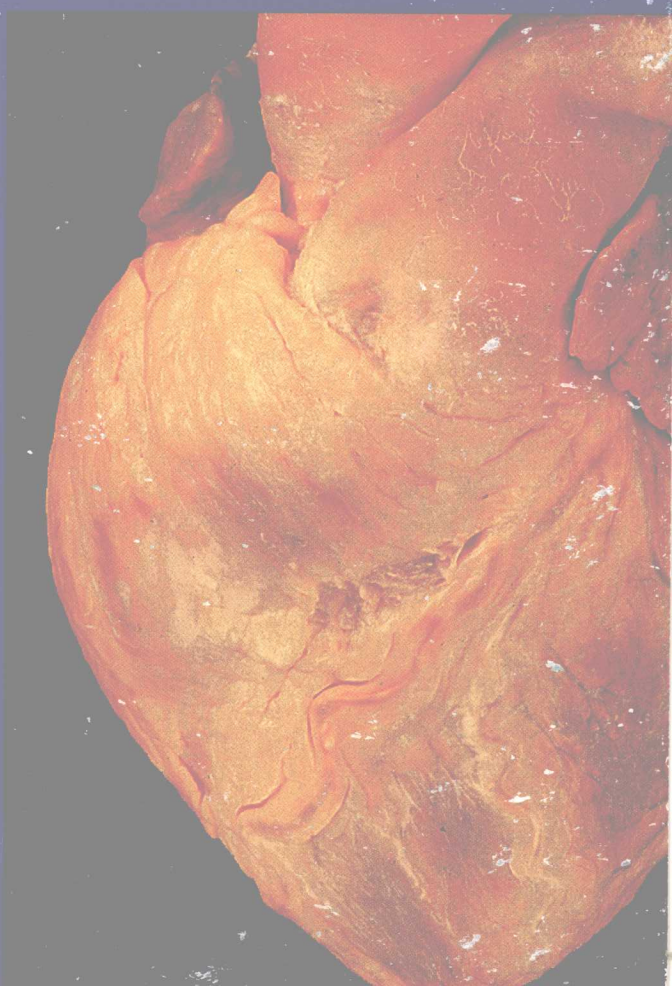
A PHOTOGRAPHIC ATLAS OF THE HUMAN BODY

With Selected Cat, Sheep, and Cow Dissections

GERARD J. TORTORA



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GERARD J. TORTORA
Bergen Community College

JOHN WILEY & SONS, INC.
New York • Chichester • Weinheim • Brisbane • Singapore • Toronto

Printer and Binder: Von Hoffmann Press

This book was printed and bound by Von Hoffmann Press, Inc. The cover was printed by Von Hoffmann Press, Inc.

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Library of Congress Cataloging in Publication Data:
Tortora, Gerard J.
A photographic atlas of the human body : with selected cat, sheep, and cow dissections / Gerard J. Tortora.
p. cm.
ISBN 0-471-37487-3
1. Human anatomy Atlases. 2. Cats—Dissection. 3. Sheep—Dissection. 4. Cows—Dissection. I. Title.
[DNLM: 1. Anatomy Atlases. 2. Dissection Atlases. 3. Physiology Atlases. / QS 17 T712p 2000]
QM25.T67 2000
611' .022'2—dc21
DNLM/DLC,
for Library of Congress 99-32135
CIP

ISBN: 0-471-37487-3

Printed in the United States of America.

10 9 8 7 6 5

PREFACE

A Photographic Atlas of the Human Body with Selected Cat, Sheep, and Cow Dissections is designed to accompany any textbook of anatomy or anatomy and physiology and may be used in conjunction with or in lieu of a laboratory manual.

The study of the gross anatomical features of the human body is enhanced by the use of a photographic atlas to supplement your experience in the dissecting room or in those courses that do not include actual dissection. The clearly labeled cadaver photographs in this atlas were provided mainly by Mark Nielsen, of the University of Utah. They are organized by body system, and provide you with a stunning, visual reference to gross anatomy. The cadaver photos are supplemented by histological aspects of various organ and surface anatomy photos. You will benefit further from the helpful orientation diagrams, which accompany many of the photographs.

As you will see from the table of contents, this atlas covers all of the topics discussed in a typical anatomy or a combined anatomy and physiology course. The atlas begins with anatomical orientation and tissues, then progresses through each organ system and ends with surface anatomy. Where comparisons are helpful sheep and cow dissection photos appear with their human counterpart. A complete set of cat dissection photographs appears in an appendix. In addition, a useful correlation guide between the atlas and A.D.A.M.® Interactive Anatomy points students who have access to that software to corresponding anatomical structures in the software.

Each photomicrograph in this atlas is accompanied by a line diagram and an inset that indicates a primary location of the tissue in the body. An icon with each photograph indicates whether it is a light or an electron micrograph and gives its magnification.

Acknowledgments

There are many people whom I wish to thank for their efforts in helping me prepare this atlas. Claire Brassert, Developmental Editor, guided the atlas to completion. Her professionalism and editorial judgments have earned my respect. Sharon Montooth, Production Supervisor, expertly and efficiently moved the atlas through the production process. Each time I work with Sharon, the experience becomes more rewarding. Bradley Burch, Photo Coordinator, supervised the photography of the animal photos in the atlas. Andrew Ogus, Text and Cover Designer, designed the striking cover which encapsulates the contents of the atlas. I would also like to thank Dell Redding, of Evergreen Valley State College, Dennis Strete, of McLennan Community College, and Patricia Munn, of Longview Community College, for their contributions to the development of the atlas.

I would like to thank the following people for their opinions and advice. These instructors answered surveys, attended focus groups, or reviewed manuscript in the preparation of the atlas:

William Cliff, Niagra University
John Conroy, University of Winnipeg
James Crowder, Brookdale Community College
Brian Curry, Grand Valley State College
Pat Dementi, Randolph-Macon College
Deanna Ferguson, Jackson State Community College
Greg Garman, Centralia College
Keith Graham, Lutheran College of Health Professions
Charles Grossman, Xavier University
Ann Harmer, Orange Coast College
Sue Higgins, Medicine Hat College
Jane Horlings, Saddleback Community College
Bill Horrine, Alvin Community College
Earl Lindbergh, Davidson College
Patricia Mansfield, Santa Ana College
John Martin, Clark College
Javanika Mody, Anne Arundel Community College
Bill Montgomery, Charles County Community College
J. Stephen Noe, Ivy Tech State College
Nathan Norris, West Valley Community College
Michael Palladino, Brookdale Community College
Michael Patrick, Pennsylvania State University
Dan Porter, Amarillo College
Rebecca A. Pyles, East Tennessee State University
Penny Revelle, Essex Community College
Jackie Reynolds, Richland College
Wayne Seifert, Brookhaven College
Rhonda Shepperd, College of West Virginia
Marvin Sigal, Gaston College
David Skyrja, UWC-Waukesha
David Smith, San Antonio Community College
Sandra Stewart, Vincennes University
Sarah Strong, Austin Community College
Kristin Stuempfle, Gettysburg College
Claudia Williams, Campbell University
Ned Williams, Mankato State University
E.J. Zalisko, Blackburn College

In preparing this photographic atlas, I have strived to keep uppermost in my mind your needs, as a student. As always, I could benefit from your comments and suggestions, which I hope you will send to me at the address below.

Gerard J. Tortora
Science and Health, S229
Bergen Community College
400 Paramus Road
Paramus, NJ 07652

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UNIT ONE | *Orientation to the Human Body*

TABLE 1.1 | *Directional Terms*

Name	Definition	Example
Superior (soo′-PEER-ē-or) (**cephalic** or **cranial**)	Toward the head or the upper part of a structure.	The heart is superior to the liver.
Inferior (in′-FEER-ē-or) (**caudal**)	Away from the head or toward the lower part of a structure.	The stomach is inferior to the lungs.
Anterior (an-TEER-ē-or) (**ventral**)*	Nearer to or at the front of the body.	The sternum (breastbone) is anterior to the heart.
Posterior (pos-TEER-ē-or) (**dorsal**)*	Nearer to or at the back of the body.	The esophagus is posterior to the trachea.
Medial (MĒ-dē-al)	Nearer to the midline† or midsagittal plane.	The ulna is on the medial side of the forearm.
Lateral (LAT-er-al)	Farther from the midline or midsagittal plane.	The lungs are lateral to the heart.
Intermediate (in′-ter-MĒ-dē-at)	Between two structures.	The transverse colon is intermediate to the ascending and descending colons.
Ipsilateral (ip-si-LAT-er-al)	On the same side of the midline or midsagittal plane.	The gallbladder and ascending colon are ipsilateral.
Contralateral (CON-tra-lat-er-al)	On the opposite side of the midline or midsagittal plane.	The ascending and descending colons are contralateral.
Proximal (PROK-si-mal)	Nearer to the attachment of a limb to the trunk; nearer to the point of origin.	The humerus is proximal to the radius.
Distal (DIS-tal)	Farther from the attachment of a limb to the trunk; farther from the point of origin.	The phalanges are distal to the carpals.
Superficial (soo′-per-FISH-al)	Toward or on the surface of the body.	The ribs are superficial to the lungs.
Deep (DĒP)	Away from the surface of the body.	The ribs are deep to the skin of the chest.

*In four-legged animals anterior = cephalic (toward the head), ventral = inferior, posterior = caudal (toward the tail), and dorsal = superior.

†The midline is an imaginary vertical line that divides the body into equal right and left sides.

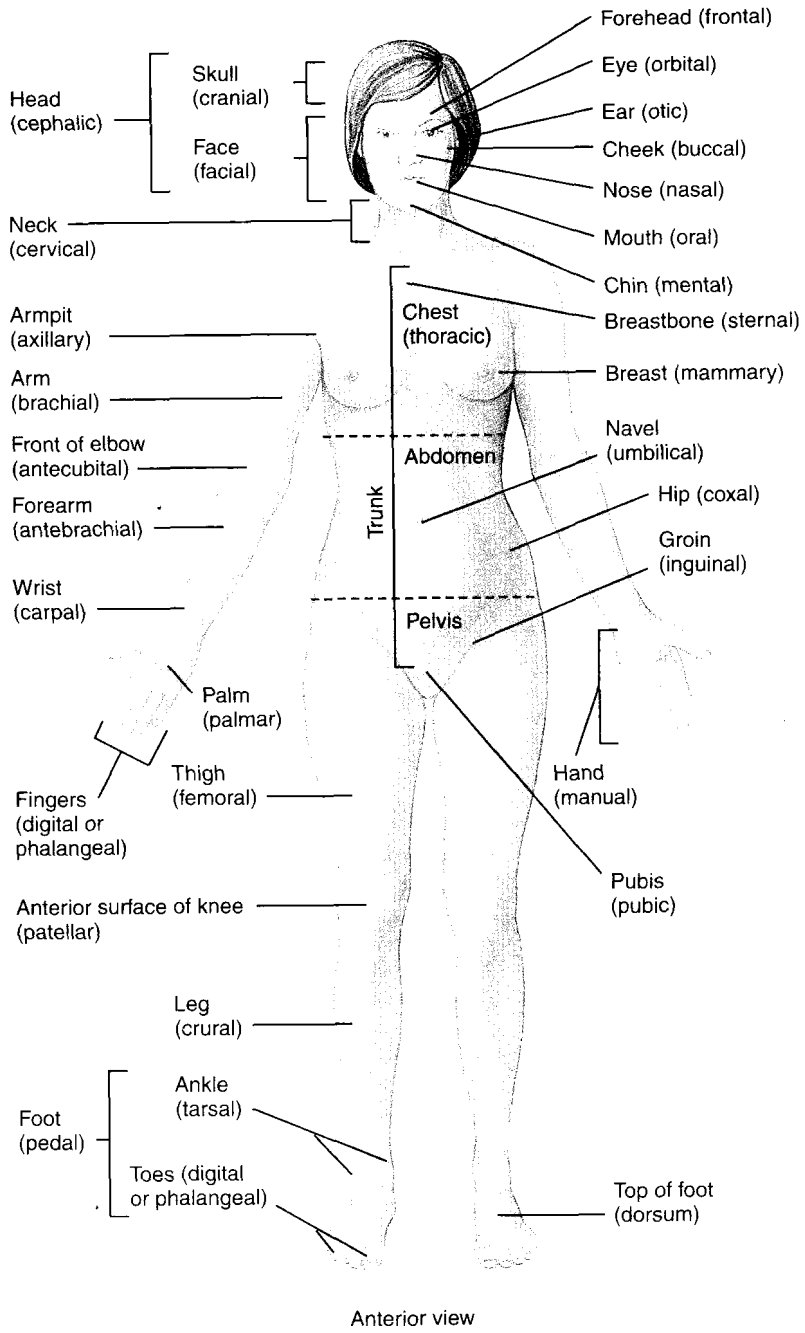


FIGURE 1.1 | ***The anatomical position and regional names. In the anatomical position, the subject stands erect facing the observer with the head and eyes facing forward. The feet are flat on the floor and directed forward, and the arms are at the sides with the palms turned forward. The common names and anatomical terms, in parentheses, are indicated for many regions of the body.***

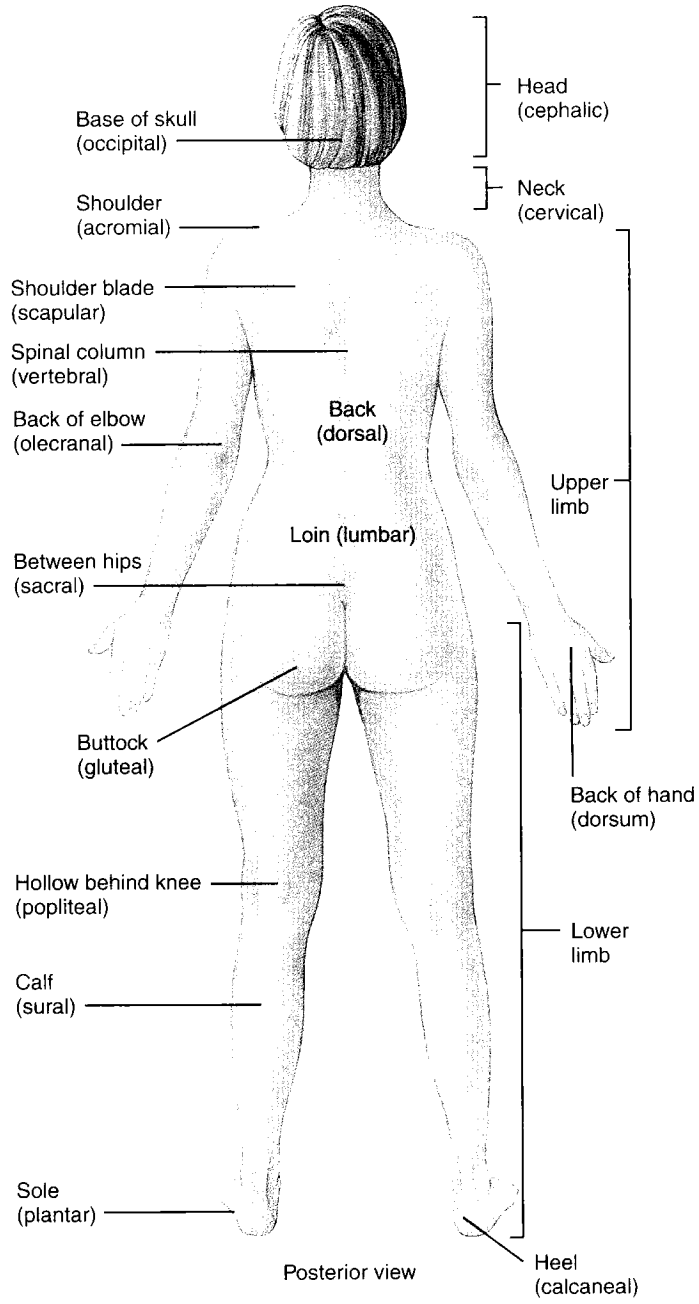
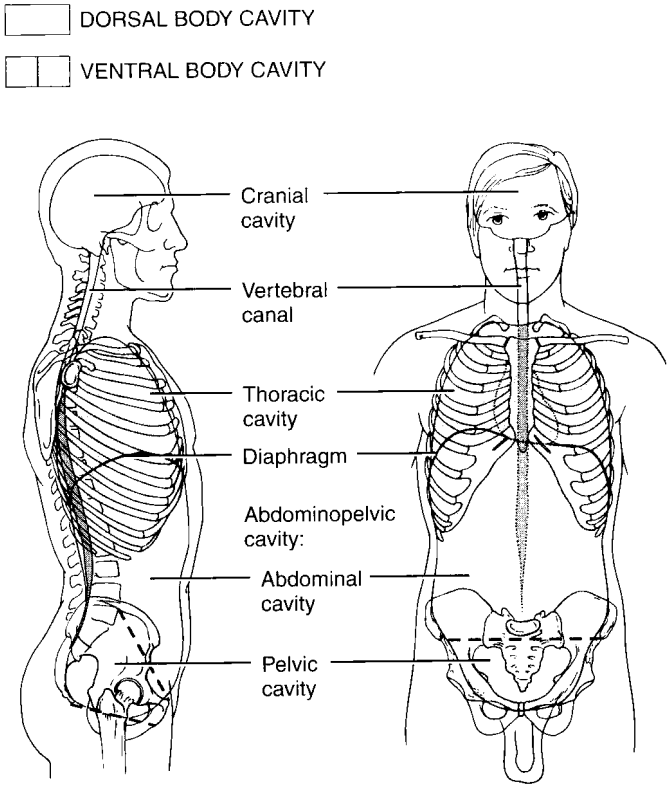


FIGURE 1.2 | ***The anatomical position and regional names***



CAVITY	COMMENTS
Dorsal	
Cranial	Formed by cranial bones and contains brain and its coverings.
Vertebral	Formed by vertebral column and contains spinal cord and beginnings of spinal nerves.
Ventral	
Thoracic	Chest cavity; separated from abdominal cavity by diaphragm.
Pleural	Contains lungs.
Pericardial	Contains heart.
Mediastinum	Region between the lungs from the breastbone to backbone that contains heart, thymus gland, esophagus, trachea, bronchi, and many large blood and lymphatic vessels.
Abdominopelvic	Subdivided into abdominal and pelvic cavities.
Abdominal	Contains stomach, spleen, liver, gallbladder, pancreas, small intestine, and most of large intestine.
Pelvic	Contains urinary bladder, portions of the large intestine, and internal female and male reproductive organs.

FIGURE 1.3 | ***Principal subdivisions of the dorsal and ventral body cavities***

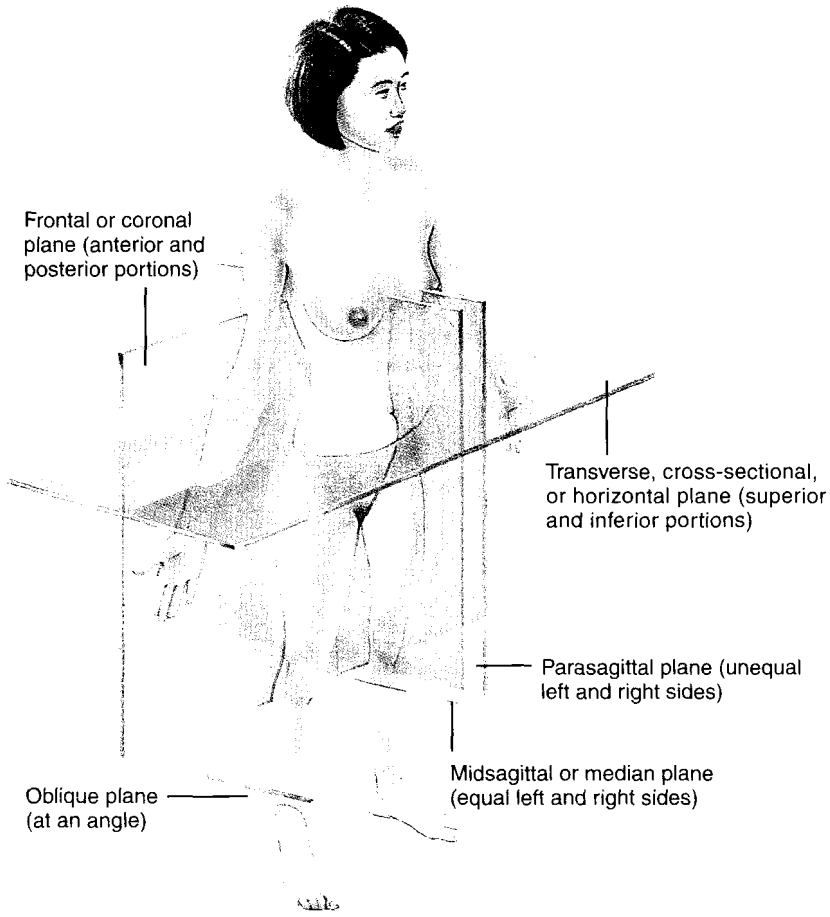


FIGURE 1.4 | ***Planes are imaginary flat surfaces that divide the entire body or individual organs into various portions. The descriptions in parentheses indicate how each plane divides the body.***

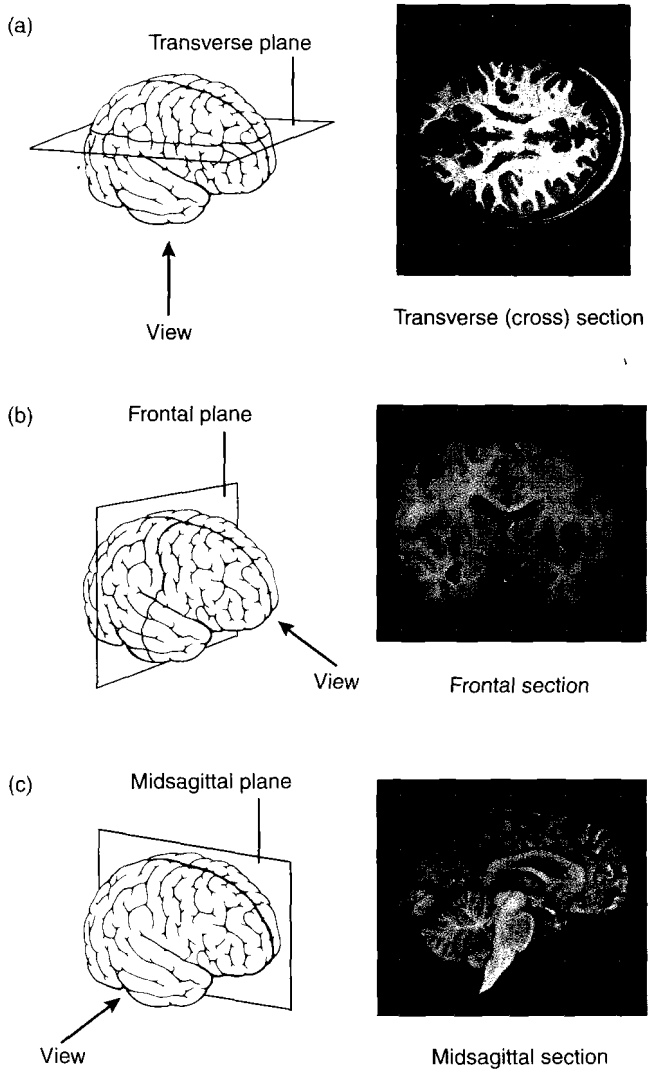


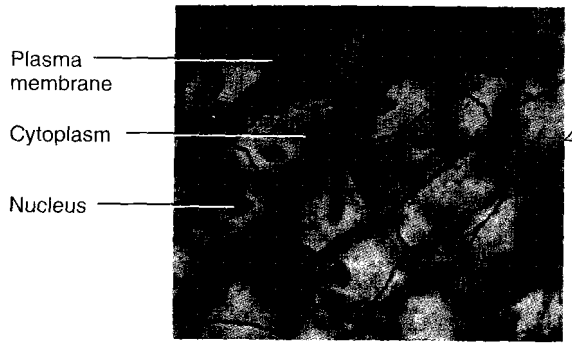
FIGURE 1.5 | ***Planes and sections. The planes are shown in the diagrams on the left and the sections that result are shown in the photographs of the brain on the right.***

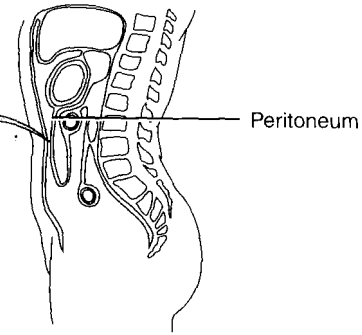
TABLE 2.1 | *Tissues*

Tissue	Comment
Epithelial Tissue	
I. Covering and lining	Forms outer covering of body and some viscera; lines body cavities, some viscera, blood vessels, and ducts; makes up parts of sense organs.
A. Simple	Single layer of cells.
Squamous	Flat, scalelike cells.
Cuboidal	Cube-shaped cells.
Columnar	Rectangular-shaped cells.
B. Stratified	Two or more layers of cells.
Squamous	Flat, scalelike cells in superficial layer.
Cuboidal	Cube-shaped cells in superficial layer.
Columnar	Rectangular-shaped cells in superficial layer.
Transitional	Cells variable in shape.
C. Pseudostratified	Single layer of cells that appears to be stratified.
II. Glandular	Forms secretory portions of glands.
A. Exocrine	Secrete products into ducts.
B. Endocrine	Secrete hormones into the blood.
Connective Tissue	
I. Embryonic	Present primarily in embryo and fetus.
A. Mesenchyme	Embryonic tissue from which all other connective tissues develop.
B. Mucous	Fetal tissue found in umbilical cord.
II. Mature	Found in newborn.
A. Loose	
Areolar	One of the most abundant connective tissues.
Adipose	Specialized for fat storage.
Reticular	Forms stroma (framework) of certain organs.

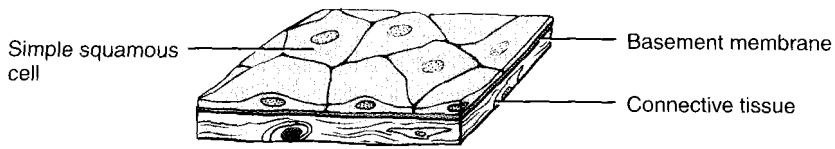
Tissue	Comment
Connective Tissue, continued	
B. Dense	
Dense regular	Forms tendons and ligaments.
Dense irregular	Found in dermis of skin, fasciae, and membranes around various structures.
Elastic	Provides stretch and strength.
C. Cartilage	Has no blood or nerve supply.
Hyaline	Found at ends of long bones and ribs.
Fibrocartilage	Found in pubic symphysis and intervertebral discs.
Elastic	Found in larynx and external ear.
D. Bone (osseous)	Contains very rigid intercelluar substance and is classified as compact or spongy.
E. Blood (vascular)	Liquid connective tissue consisting of plasma and formed elements (red blood cells, white blood cells, and platelets).
Muscle Tissue	Highly specialized for contraction.
I. Skeletal	Usually attached to bones, striated, voluntary.
II. Cardiac	Found in the heart, striated, involuntary.
III. Smooth (visceral)	Found in viscera and blood vessels, nonstriated, involuntary.
Nervous Tissue	
I. Neurons	Specialized for detecting stimuli, converting them into action potentials, and conducting action potentials.
II. Neuroglia	Protect and support neurons.

FIGURE 2.1 | ***Histology of epithelial tissues***

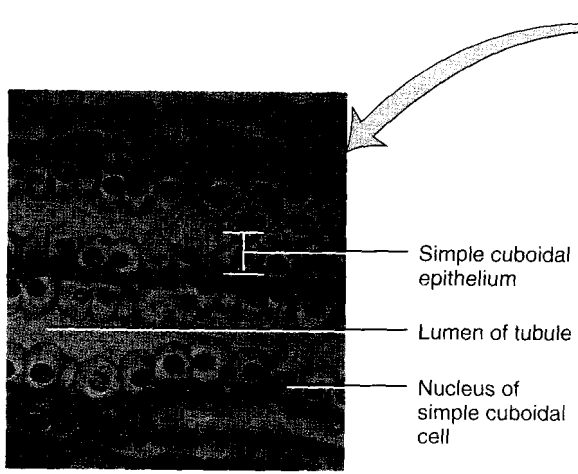




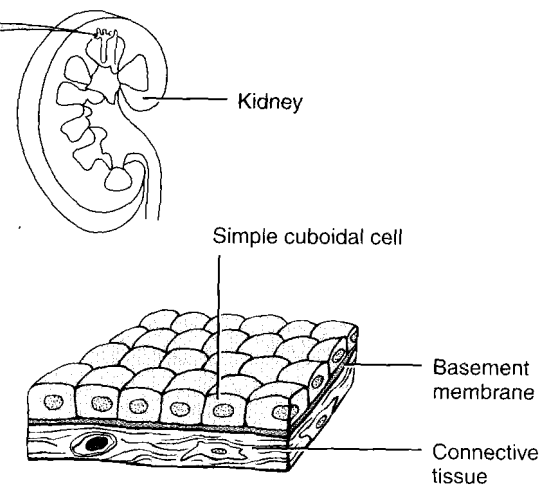
Surface view of mesothelial lining of peritoneum



(a) Simple squamous epithelium

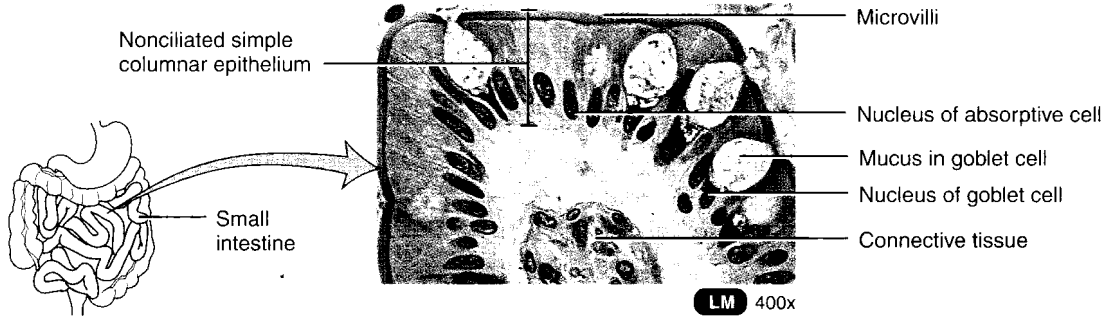


Sectional view of kidney tubules

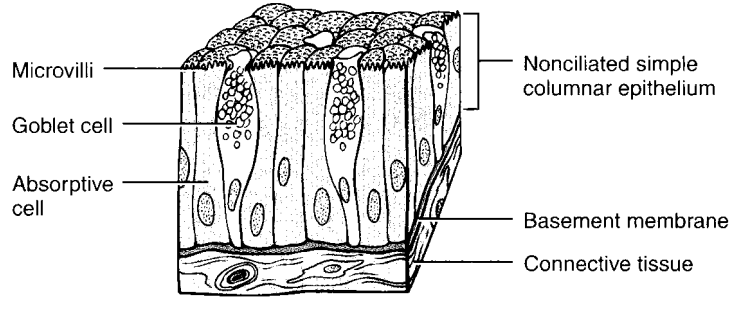


(b) Simple cuboidal epithelium

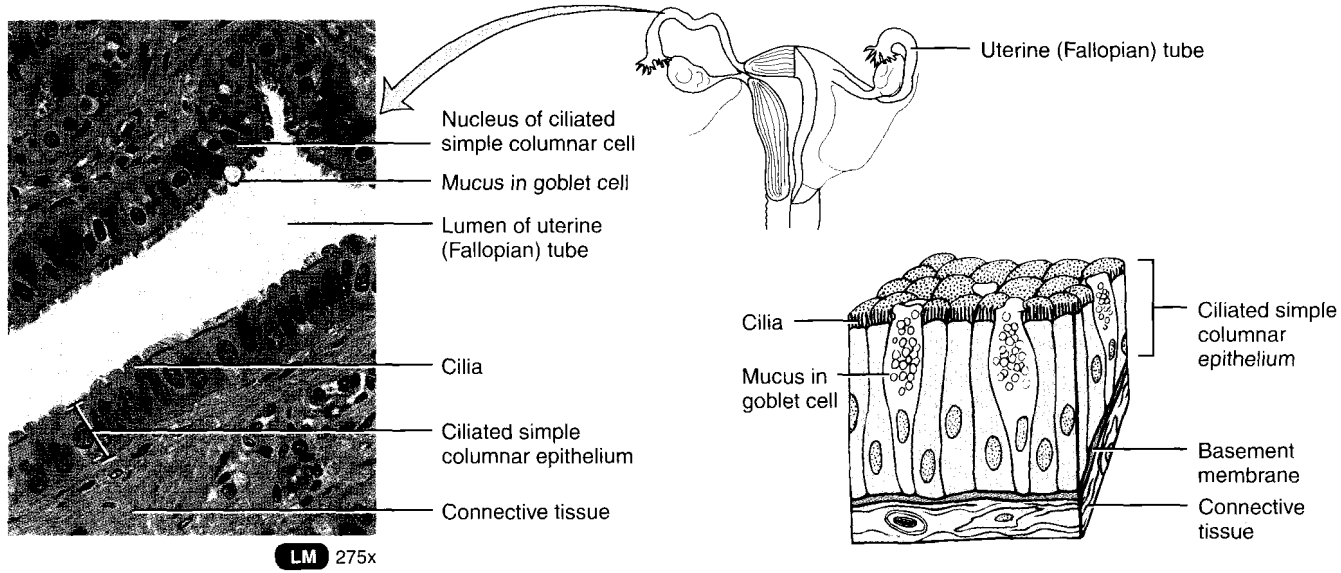
FIGURE 2.1 ***Histology of epithelial tissues, continued***



Sectional view of epithelium of a villus from the lining of the small intestine



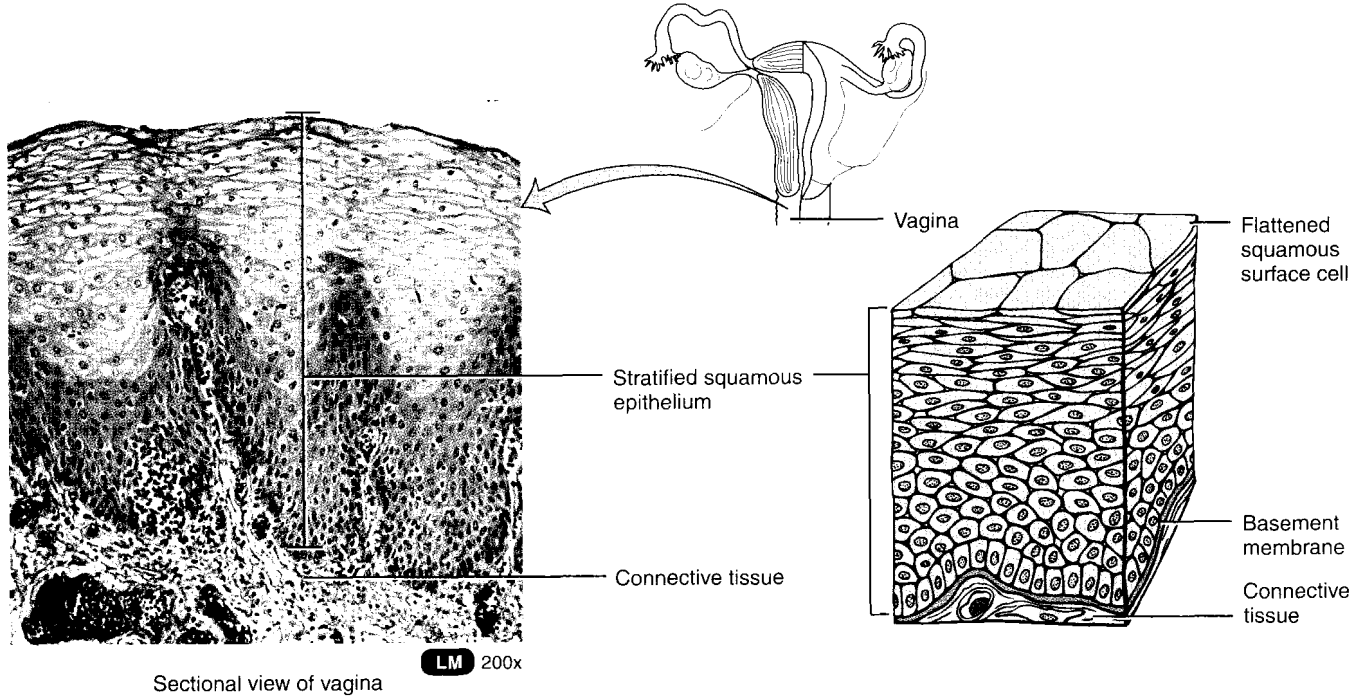
(c) Nonciliated simple columnar epithelium



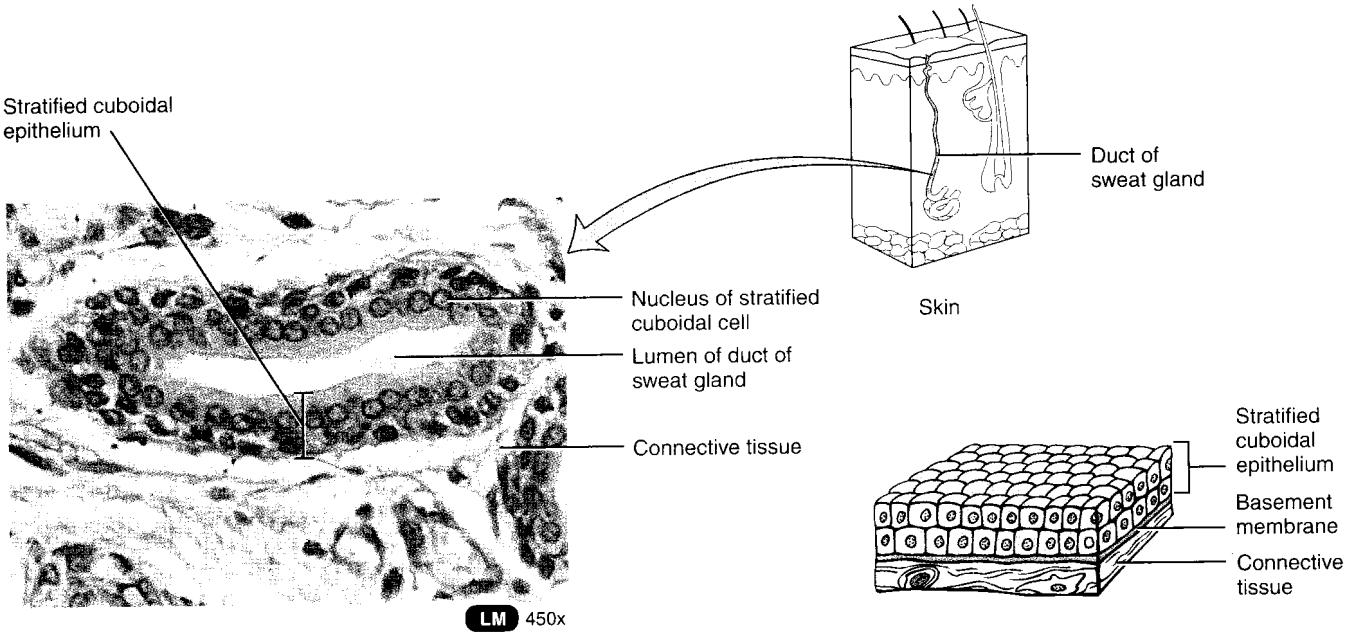
Sectional view of uterine (Fallopian) tube

(d) Ciliated simple columnar epithelium

FIGURE 2.1 ***Histology of epithelial tissues, continued***



(e) Stratified squamous epithelium



Sectional view of the duct of a sweat gland

(f) Stratified cuboidal epithelium