NAME:

DATE:

PLATE 4

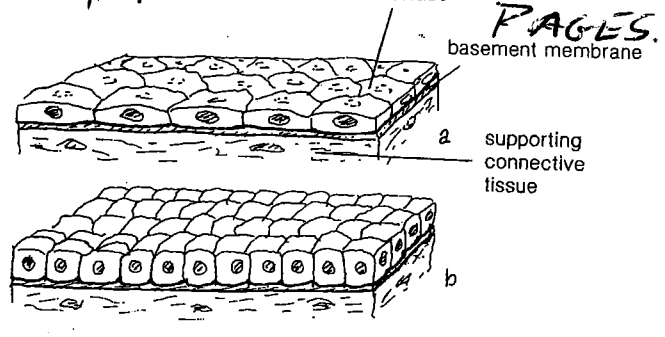
ORGANIZATION OF THE BODY TISSUES / EPITHELIUM *

CN 7

1. Color each block of tissue above the basement membrane. Color across all the cells making up the block.
2. Note that two of the subject headings are to be colored in dark gray or black.
3. Neither the pit of the exocrine gland nor the capillary of the endocrine is to be colored.

Cells of the body are organized into four fundamental tissues: epithelial, connective, muscle, and nerve. *Epithelial* tissues line *all* surfaces of the body: the skin, cavities, ducts, vessels. Epithelial tissues may be a single layer (simple) or several layers (stratified). They are named according to the cell shape on the free surface. Cells of a tissue are held together by the basement membrane and intercellular fibers. These tissues receive their nutrition by diffusion, for they are without blood vessels.

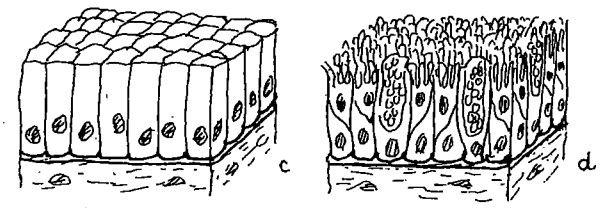
COLOUR CODE THIS PAGE + STUDY + READ THE OTHER PAGES.



LINING EPITHELIUM.

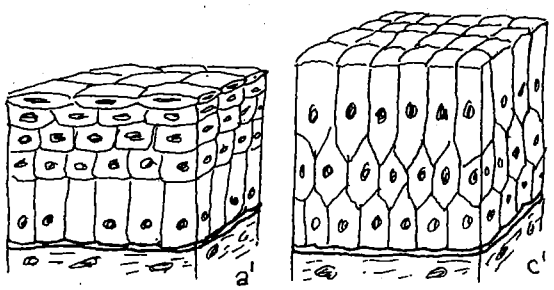
SIMPLE (ONE LAYER) *
SQUAMOUS a
CUBOIDAL b
COLUMNAR c
PSEUDOSTRATIFIED COLUMNAR WITH CILIA & GOBLET CELLS d

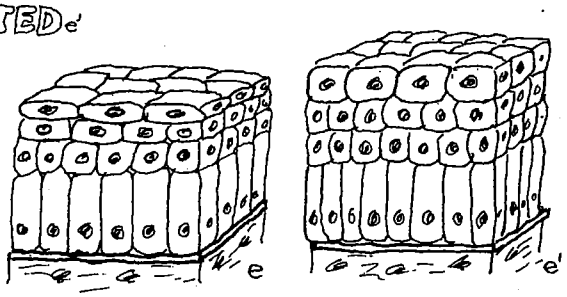
Simple squamous epithelium lines all blood and lymphatic vessels, including the heart, air cells of the lung, and certain tubules of the kidney. Filtration or diffusion occurs rapidly across this thin epithelial sheet. *Cuboidal* and *columnar* cells line glands and the digestive tract and are involved in secretion/absorption. *Pseudostratified columnar* tissue lines the respiratory tract. Its glands secrete mucus, and the cilia stroke the pollutant-laden mucus to the pharynx.



STRATIFIED (SEVERAL LAYERS) *
SQUAMOUS a'
COLUMNAR c'
TRANSITIONAL DISTENDED e CONTRACTED e'

Stratified squamous epithelium lines the skin, oral cavity, much of the pharynx, esophagus, vagina, and anal canal. It protects against wear and tear. *Stratified columnar* is seen in the reproductive tract. *Transitional* epithelium is seen in the urinary bladder, ureters, and kidney. It is capable of distention and contraction in response to changing volumes of urine.





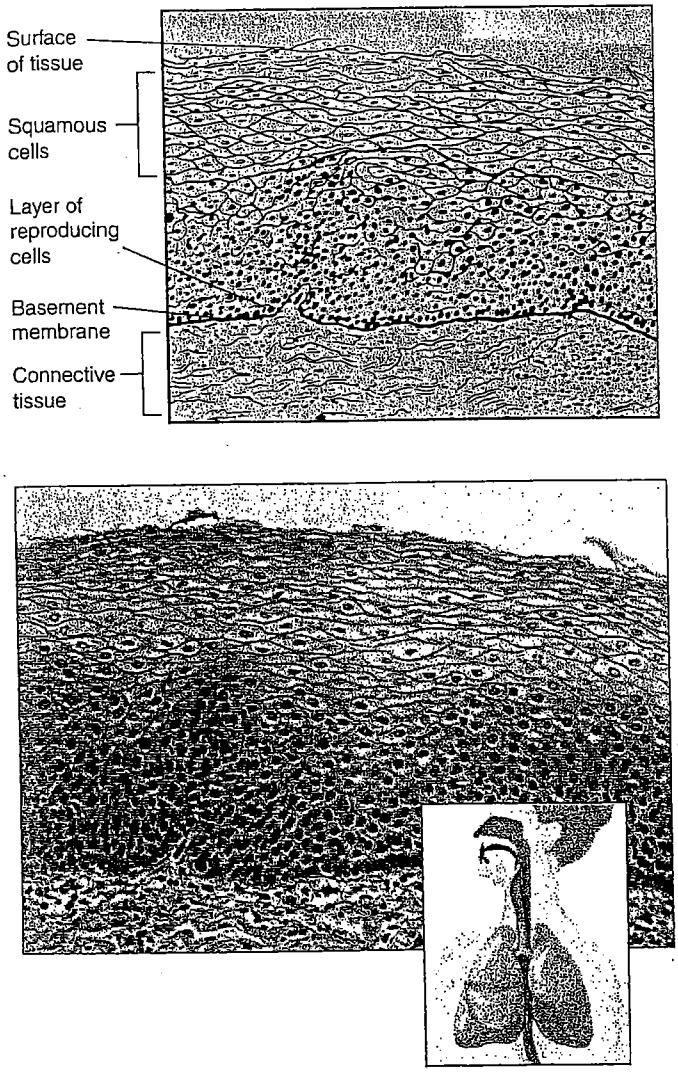


Figure 4.5 Stratified squamous epithelium (70×).
Structure: Several cell layers; cells in the innermost layer are cuboidal in shape but gradually become flattened as they migrate to the surface of the tissue.
Location: The keratinized type forms the epidermis of the skin; nonkeratinized type lines the mouth, esophagus, and vagina.
Function: Protection.

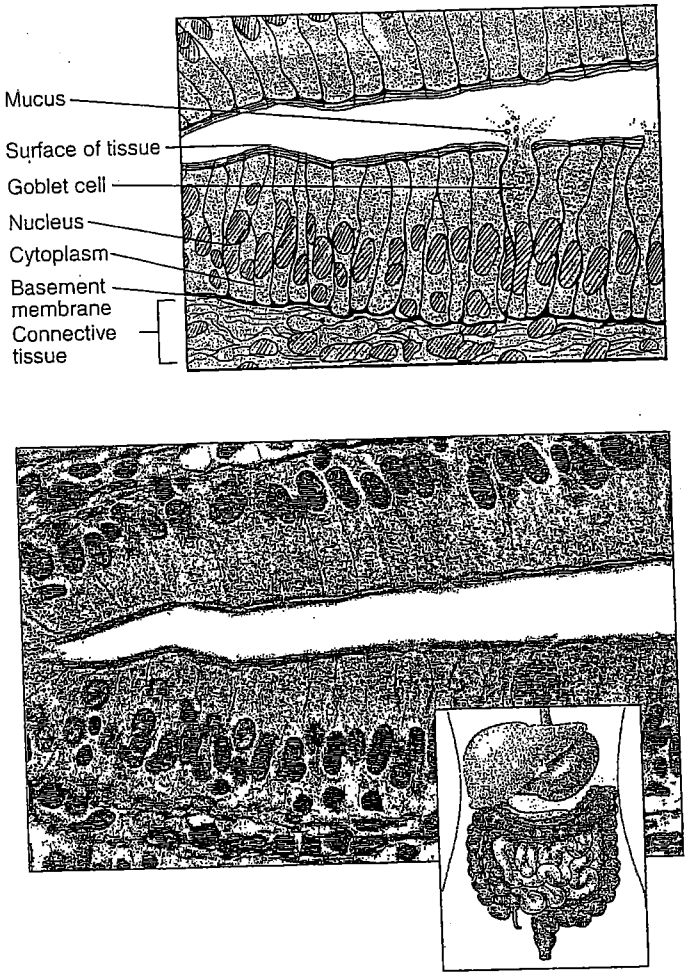


Figure 4.3 Simple columnar epithelium (400×).
Structure: A single layer of column-shaped cells; contains scattered goblet cells.
Location: Lines the interior of the stomach and intestines and the ducts of many glands.
Function: Absorption and secretion.

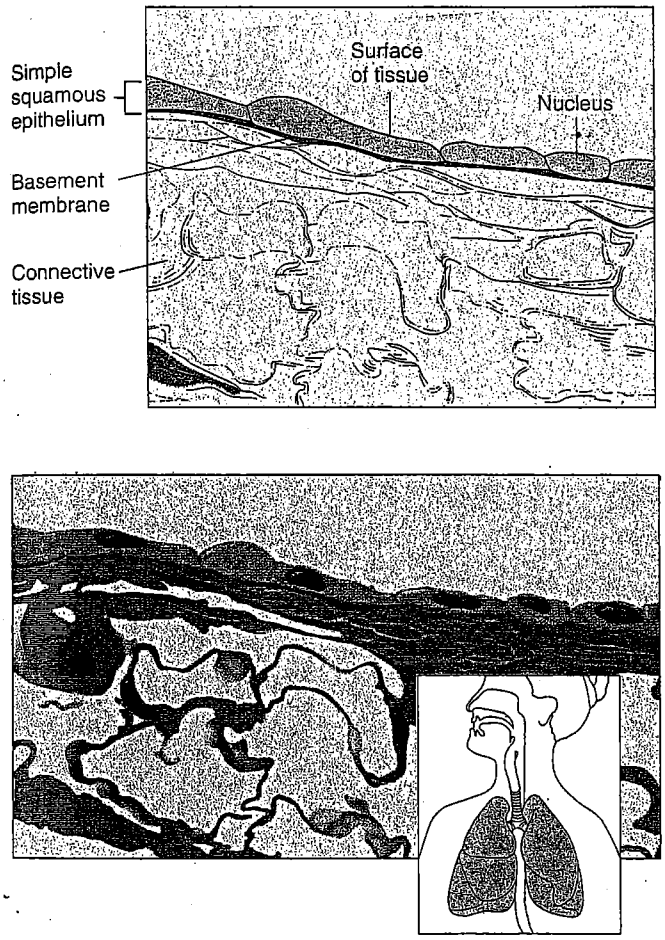
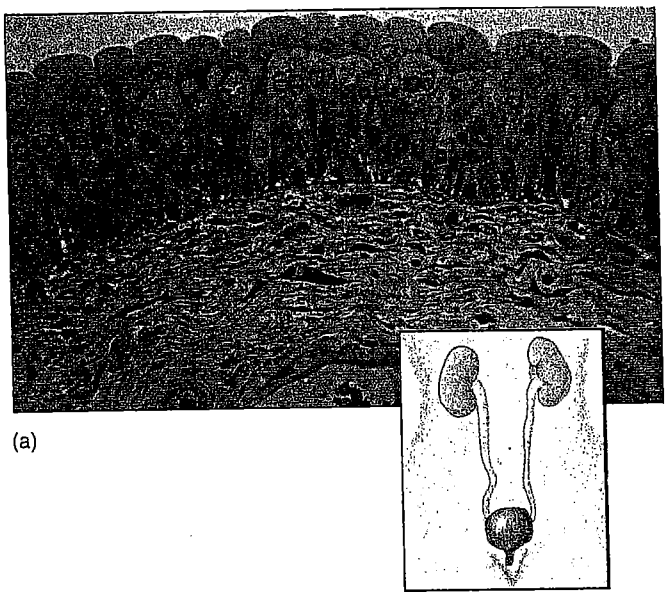
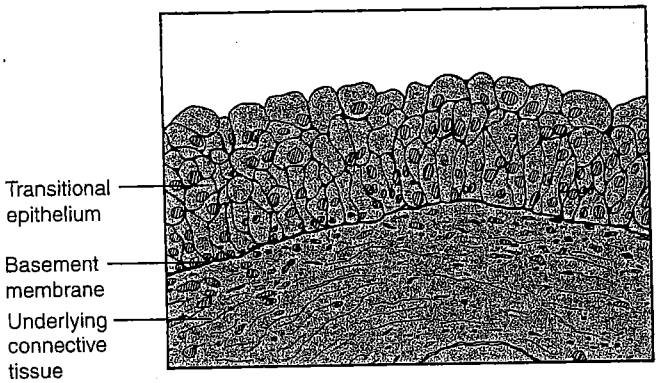


Figure 4.1 Simple squamous epithelium (250×).
Structure: A single layer of flattened cells.
Location: Inner lining of the heart, blood vessels, and the ventral body cavity; forms air sacs of the lungs and glomeruli of the kidneys.
Function: Absorption, secretion, and filtration.





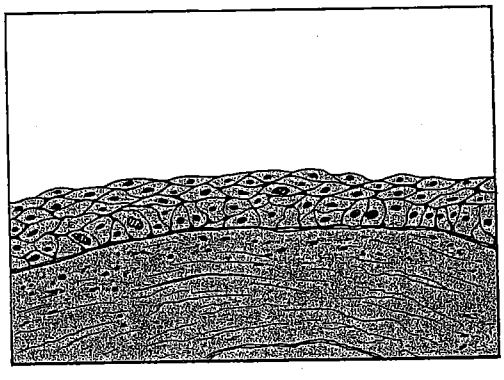
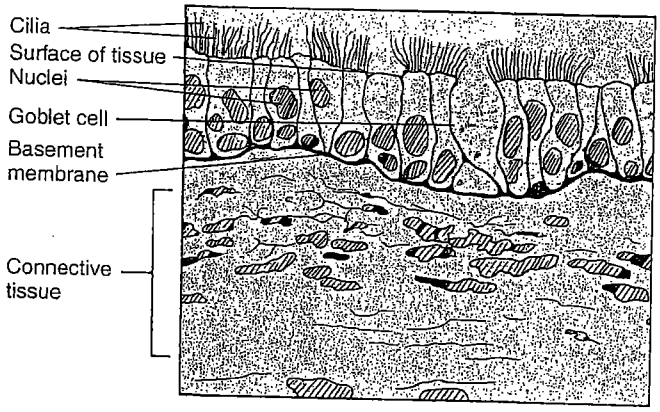


Figure 4.6 Transitional epithelium.
(*a*) A photomicrograph (250×) and (*b*) drawing showing several layers of rounded cells when the urinary bladder wall is contracted. (*c*) When the bladder wall is stretched, the tissue and cells become flattened.
Structure: Several layers of large, rounded cells that become flattened when stretched.
Location: Lines the interior of the urinary bladder.
Function: Protection; permits stretching of the bladder wall.



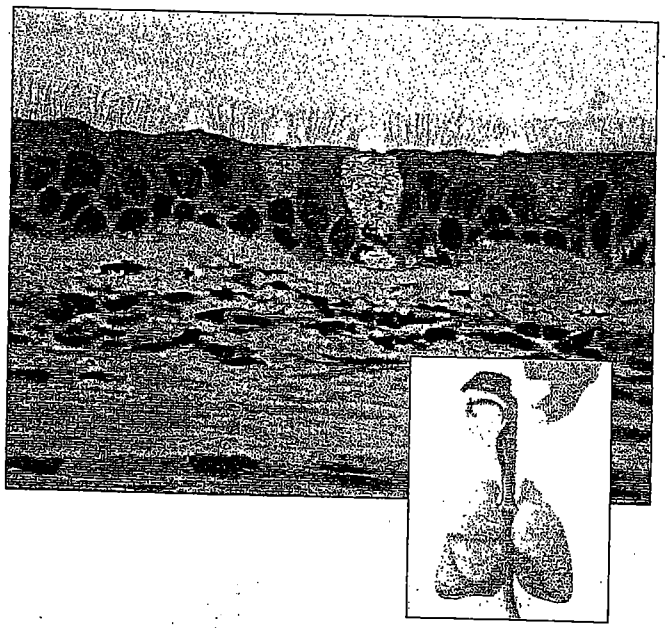
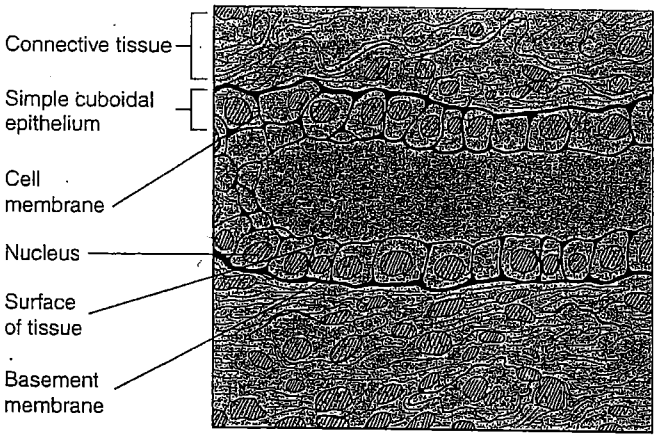


Figure 4.4 Pseudostratified ciliated columnar epithelium (500×).
Structure: A single layer of ciliated columnar cells that appears to be more than one layer of cells; contains scattered goblet cells.
Location: Lines most of the upper respiratory tract.
Function: Secretion of mucus; beating cilia remove secreted mucus and entrapped particles.



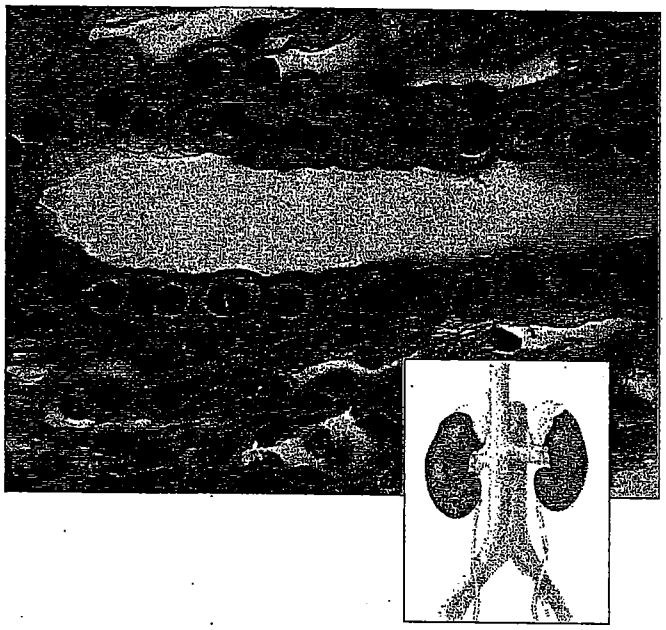


Figure 4.2 Simple cuboidal epithelium (250×).
Structure: A single layer of cube-shaped cells.
Location: Forms kidney tubules, ducts of some glands, and the surface layer of the ovaries.
Function: Absorption and secretion.