

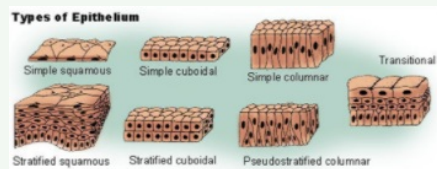
### Epithelial Tissue

epi: above, over, outer

characteristics:

- 1) closely packaged cells
- 2) polarity: apical (free) surface and basal (attached) surface
- 3) supported underneath by connective tissue
- 4) has nerves, but no blood vessels (avascular)
- 5) can regenerate easily

### Types of Epithelium Image



### What makes a tissue connective?

- 1) common origin: mesenchyme
- 2) variation in blood supply
  - ~blood and bone are vascular
  - ~tendons and ligaments are poorly vascular
- 3) extracellular matrix
  - ~ground substance, fibers, cells

### Ground Substance, Fibers, Cells Image



### Root Words

-blast: build, create

-cyte: cell

Adip-: fat

Chondro-: cartilage

Osteo-: bone

Hema-: blood

### Cartilage Tissue Image



### Epithelial Glands

gland: group of epithelial cells that make and secrete a product

secretion: both the process and the "stuff" that comes out of a gland

### Glands in Skin Image



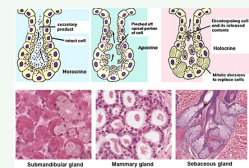
### Exocrine Gland Examples

merocrine gland: no part of the cell is lost with the secretion (ex: salivary gland)

apocrine gland: the top of the cell is lost with the secretion (ex: mammary glands)

holocrine gland: the whole cell detaches with the secretion (ex: sebaceous glands)

### Exocrine Gland Examples Image



### Cardiac Muscles

structure: ~branched

~1 or 2 nuclei

~striated

speed: ~in between slow and fast

control: ~involuntary (automatic; brain takes over)

location: ~heart

### Cardiac Muscle Image



### Serous Membrane

structure: ~composed of the mesothelium

~outer layer: lines the body cavities called parietal

~inner layer: covers the internal organs called visceral

~made up of simple squamous epithelial cells and loose connective tissue

function: secretes serous fluid that lubricates the membrane and reduces abrasion and friction between the two layers

location: ~line the body cavities closed to the exterior of the body

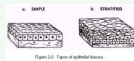
~(ex) the peritoneal, pleural, and pericardial cavities

### Layers of Epithelial Tissue

simple: one layer

stratified: more than one layer

### Layers of Epithelial Tissue Image



### Where can we find some of this tissue?

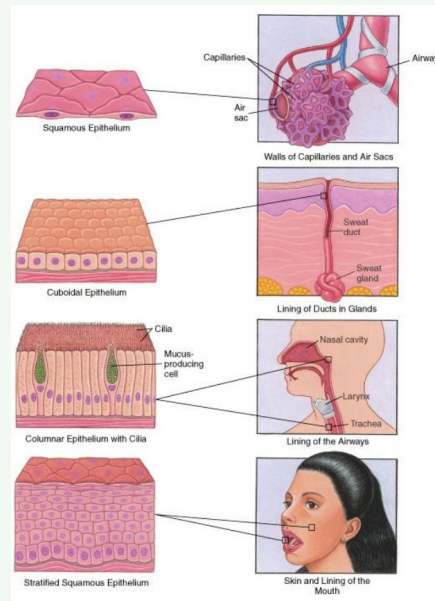
squamous: walls of capillaries and alveoli in lungs

cuboidal: lining of ducts in glands

columnar: lining of airways

stratified squamous: skin and lining of mouth

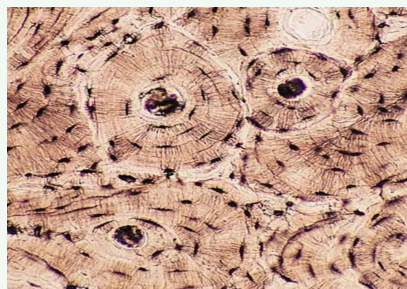
### Where can we find some of this tissue? Image



### Areolar Tissue Image



### Bone Tissue Image



### Endocrine Gland

structure: varied

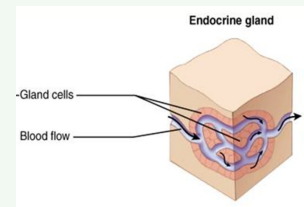
function: endocrine glands produce hormones that are secreted into surrounding extracellular space

~stay inside the body

~travel to other organs/cells to have an effect

location: ex) pineal, hypothalamus, pituitary, thyroid, parathyroid, thymus, adrenal, pancreas, ovary, and testes

### Endocrine Gland Image



### Smooth Muscles

structure: ~spindle shaped

~1 nuclei

speed: ~slow

control: ~involuntary (automatic; brain takes over)

location: ~walls of hollow organs (e.g. stomach)

~walls of blood vessels



By **julescrisfulla**

[cheatography.com/julescrisfulla/](https://cheatography.com/julescrisfulla/)

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Page 2 of 4.

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### Smooth Muscle Image



### Nervous Tissue

composed of: ~neurons

~supporting cells

function: ~generate and transmit chemical and electrical signals to...

1) respond to stimulus

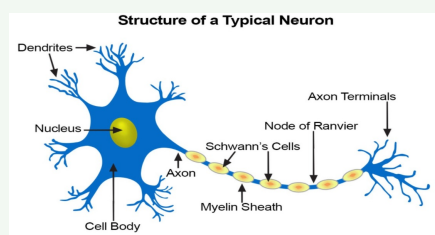
2) communicate within the body

location: ~brain

~spinal cord

~peripheral nerves (throughout body tissues)

### Nervous Tissue Image



### Cutaneous Membrane

structure: ~consists of keratinized stratified squamous epithelium

function: ~protects the body from desiccation and pathogens

location: ~skin, covers the body surface

### Shape of Cells

squamous: cells are flat

cuboidal: cells are shaped like cubes

columnar: cells are shaped like columns

basement membrane: bottom; connective tissue

pseudostratified columnar: false layers of columnar shaped cells

### Shape of Cells Image



### Connective Tissue

most abundant and widely distributed tissue

functions:

1) binding and support

2) protection

3) insulation

4) transport substances

### Connective Tissue Fibers

provide support

~elastic: branched; provides stretch

~reticular: fine branched network

~collagen: no branching; strength

### Connective Tissue Cells

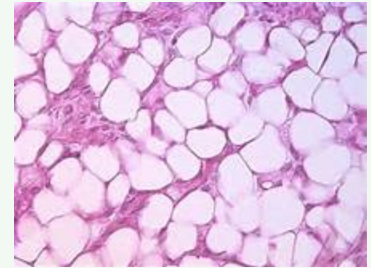
fibroblast: make connective tissue proper

chondroblast: make cartilage

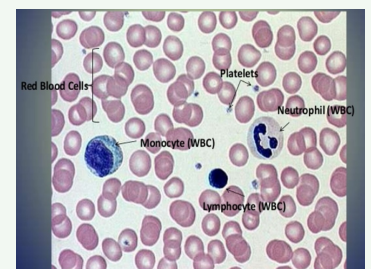
osteoblast: make bone

hematopoietic stem cell: make blood

### Adipose Tissue Image



### Blood Image



### Exocrine Gland

structure: unicellular and multicellular (simple (unbranched) and compound (branched))

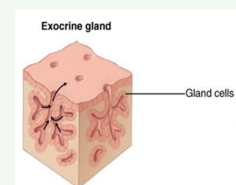
function: secrete out onto body cavity surfaces or on to body surfaces

location: skin and body cavities

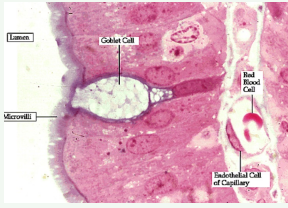
~ex) goblet cells: produce mucus in the intestinal and respiratory tracts

~ex) sweat, oil, salivary glands...

### Exocrine Gland Image



### Goblet Cell Image



### Skeletal Muscles

structure: ~multinucleated

~straight

~striated

speed: ~fast

control: ~voluntary (you control it)

location: ~throughout the body

~attached to tendons and bone

~attach to aponeurosis

### Skeletal Muscle Image



### Mucous Membrane

structure: ~coated with secretions of mucous glands

~composite of connective and epithelial tissue

function: ~secrete mucous

~helps support the fragile epithelial layers

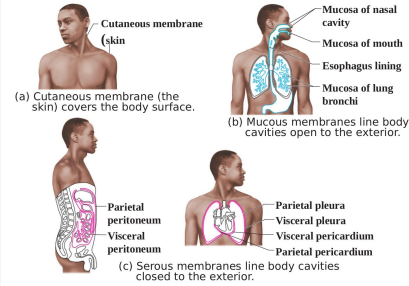
~prevents bodily tissues from becoming dehydrated

### Mucous Membrane (cont)

location: ~line the digestive, respiratory, urinary, and reproductive tracts

### Membrane Locations Image

Figure 4.11 Classes of membranes.



By **julescrisfulla**



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