Epithelial Tissue

epi: above, over, outer

characteristics:

1) closely packaged cells

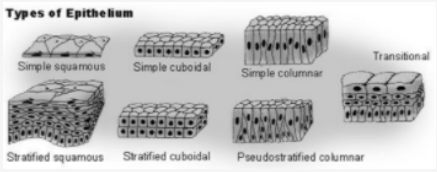
2) polarity: apical (free) surface and basal (attached) surface

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

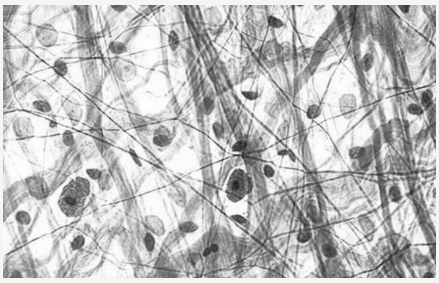
~blood and bone are vascular

~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

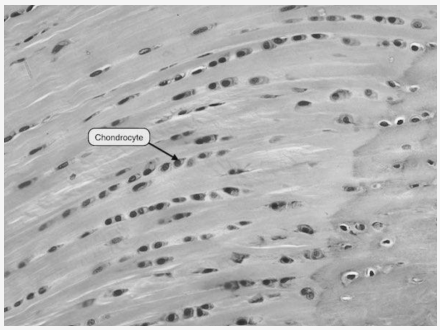
Adip-: fat

Chondro-: cartilage

Osteo-: bone

Hema-: blood

Cartilage Tissue Image

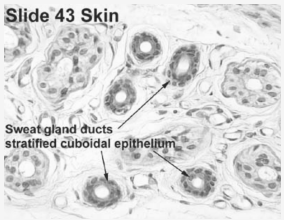


Epithelial Glands

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



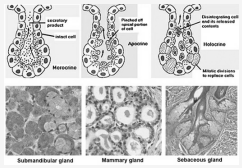
Exocrine Gland Examples

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

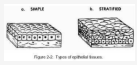
structure:	~composed of the mesothelium
	~outer layer: lines the body cavities called parietal
	~inner layer: covers the internal organs called visceral
	~made up of simple squamous epithelial cells and loose connective tissue
function:	secretes serous fluid that lubricates the membrane and reduces abrasion 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?

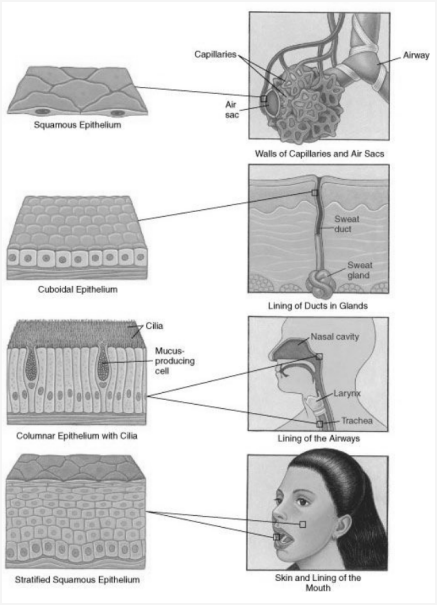
squamous: walls of capillaries and alveoli in lungs

cuboidal: lining of ducts in glands

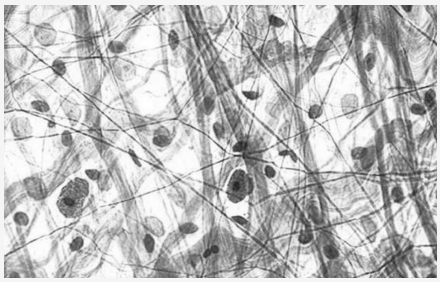
columnar: lining of airways

stratified squamous: skin and lining of mouth

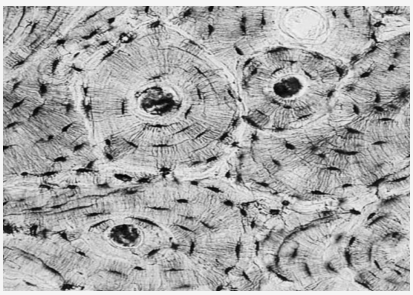
Where can we find some of this tissue? Image



Areolar Tissue Image



Bone Tissue Image



Endocrine Gland

structure: varied

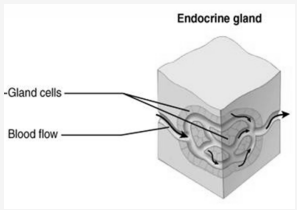
function: endocrine glands produce hormones that are secreted into surrounding extracellular space

~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

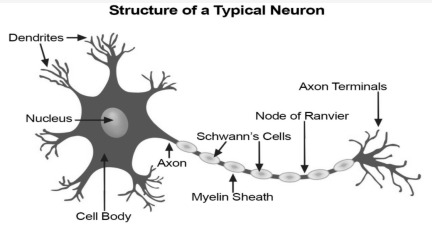
structure:	~spindle shaped
	~1 nuclei
speed:	~slow
control:	~involuntary (automatic; brain takes over)
location:	~walls of hollow organs (e.g. stomach)
	~walls of blood vessels

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 desicc-ation and pathogens
location:	~skin, covers the body surface

Shape of Cells

squamous: cells are flat

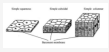
cuboidal: cells are shaped like cubes

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

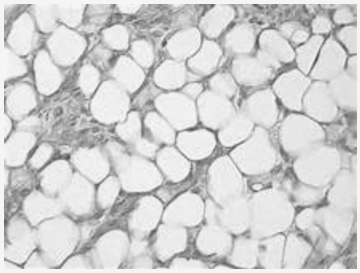
fibroblast: make connective tissue proper

chondroblast: make cartilage

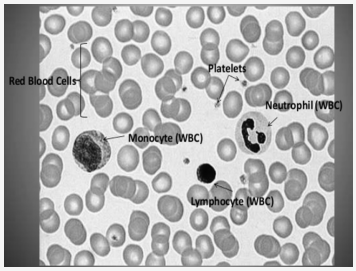
osteoblast: make bone

hematopoietic stem cell: make blood

Adipose Tissue Image



Blood Image



Exocrine Gland

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

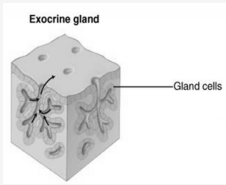
function: secrete out onto body cavity surfaces or on to body surfaces

location: skin and body cavities

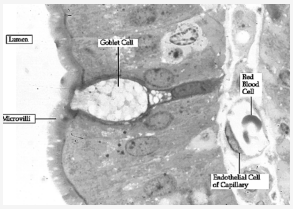
~ex) goblet cells: produce mucus in the intestinal and respiratory tracts

~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