

Epithelia Tissue			Glands		Stratified Cuboidal Epithelia	Simple Cuboidal Epithelia
Avascular; innervated			Endocrine Glands	Exocrine Glands	Very rare	Single layer of cells
Forms boundaries					Found in some sweat and mammary glands	For secretion and absorption
Polarity					Typically two cell layers thick	Forms walls of smallest ducts of glands
Specialized contacts					Stratified Squamous Epithelia	FOUND IN: kidney tubules and ovary surface
Supported by connective tissue			Most widespread of stratified epithelia			
Can regenerate			Free surface squamous, deeper layers cuboidal or columnar			
Multicellular Exocrine Glands					Simple Squamous	
Merocrine Gland	Apocrine Gland	Holocrine Gland	Hormones travel through blood or lymph to target organ	Secrets into ducts	Cells flattened laterally	
Produce secretion, but gland is not damaged	Bud secretions off through vesicles	Secretions destroy cell	Glandular Epithelia		Cytoplasm is sparse	
			One or more cells that makes and secretes a fluid called secretion		Function where rapid diffusion is priority	
			Classified by site of product release and relative # of cells forming gland		Secretes lubricating substances in serosae	
Most common type; Secretes products as produced	Only apex ruptures	Accumulates product then ruptures	Transitional Epithelia		FOUND IN: kidney; lungs; lining of heart; lymphatic vessels	
			Forms lining of hollow urinary organs		Bone	
Composed of a duct and secretory unit; usually surrounded by supported connective tissue			Basal layer is cuboidal or columnar		⦿ aka <i>osseous tissue</i>	
Unicellular Exocrine Glands			Ability to change shape with stretch		⦿ Supports and protects body structures	
Mucous cells and Goblet cells			Apical cells vary in appearance		⦿ Stores fat and synthesizes blood cells in cavities	
Found in epithelial lining of intestinal and respiratory tracts			Stratified Columnar Epithelia		⦿ More collagen than cartilage	
All produce <i>mucin</i> (dissolves in water to form mucus)			Limited distribution in body		⦿ Has inorganic calcuim salts	
			Only apical layer is columnar		⦿ Osteoblasts product matrix	
			FOUND IN: some glandular ducts; transition areas between other epithelia		⦿ Osteocytes maintain matrix	
					⦿ Osteons are structural units	
					⦿ Richly vascularized	
					<i>Cartilage DOES NOT turn into bone</i>	

Blood			Types of Cartilage (cont)			Dense Irregular Connective Tissue		Areolar Connective Tissue	
- Most atypical connective tissue--is a fluid - Red blood cells most common cell type - Also contains white blood cells and platelets - Fibers are soluble proteins that precipitate during blood clotting - Functions in transport			Supports and reinforces	Maintains shape of structure	Thick collagen fibers dominate	Same elements but bundles of collagen are thicker and irregularly arranged		Support and bind other tissues	
			Resilient cushion	Allows great flexibility	Absorbs compressive shock	Resists tension from many directions		Most widely distributed	
			Resists compression	Supports external ear	Discs of knee joint	Provides structural strength		Provides reservoir of water and salts	
Connective Tissue			Costal cartilage of ribs			Dense Regular Connective Tissue		Defend against infection	
Most abundant of primary tissues	Has mesenchyme					Closely packed bundles of collagen fibers; runs parallel to direction of pull		Store nutrients as fat	
Binding and support	Varying degrees of vascularity		Cartilage			Fibroblasts manufacture fibers and ground substance		Has fibroblasts	
Protecting	Has extracellular matrix		- Contains chondroblasts and chondrocytes - Tough yet flexible - Lacks nerve fibers - Up to 80% water so it can rebound after compression ★ Avascular so receives nutrients from membrane surrounding it (<i>perichondrium</i>)			Few Cells		Loose arrangement of fibers	
Insulating						Poorly vascularized		When inflamed it soaks up fluid → edema	
Storing reserve fuel						Reticular Connective Tissue		Connective Tissue Proper	
Transporting substances						Resembles areolar but fibers are reticular fibers		Loose Connective Tissue	Dense Connective Tissue
			Elastic Connective Tissue			Fibroblasts called <i>reticular cells</i>		Areolar	Dense Regular
			Some ligaments very elastic (ones connecting adjacent vertebrae)			Supports free blood cells in lymph nodes, spleen, and bone marrow		Adipose	Dense Irregular
			Allows recoil after stretching			Adipose Tissue		Reticular	Elastic
			Found in walls of large arteries			White Fat	Brown Fat	<i>All connective tissue except bone, cartilage, and blood</i>	
Types of Cartilage						Cell is <i>adipocyte</i>	Use lipid fuels to heat bloodstream	Other Cell Types in Connective Tissue	
Hyaline	Elastic	Fibrocartilage				Scanty matrix	Does not use ATP	Fat Cells <i>store nutrients</i>	
Amorphous but firm matrix	Elastic fibers in matrix	Matrix less firm than hyaline				Richly vascularized	Found mostly in infants	White Blood Cells <i>Tissue response to injury</i>	
						Shock absorption, insulation, energy storage		Mast Cells <i>Initiate local inflammatory response against foreign bodies</i>	

Cells in Connective Tissue			Skeletal Muscle	Neuroglia			Covering and Lining Membranes (cont)	
"Blast" cells are <i>immature form; mitotically active; secrete ground substances and fibers</i> Fibroblasts <i>in connective tissue proper</i> Chondroblasts <i>in cartilage</i> Osteoblasts <i>in bone</i> Hematopoietic stem cells <i>in bone marrow</i> "Cyte" cells are <i>mature form; maintain matrix</i> Chondrocytes <i>in cartilage</i> Osteocytes <i>in bone</i>			Found in skeletal muscle	Supporting cells that support, insulate, and protect neurons			Epithelial sheet lies over layer of connective tissue called lamina propria	Moist membranes
			Voluntary movement					
			Long, cylindrical, multinucleate cells; has striations					
			Cardiac Muscle					
			Found in walls of heart	Skin	Mucosa indicates location; not composition	<i>Serosae</i> found in ventral cavity		
Involuntary control								
Branching, striated, generally uninucleate cells								
Contains intercalated discs			Dry Membrane	All called <i>mucosae</i>	Parietal serosae line internal body cavity walls	Mesothelium rests on thin areolar connective tissue		
Smooth Muscle								
Spindle-shaped cells with central nuclei								
No striations			Keratinized strat. squamous attached to thick layer of connective tissue (dermis)	Moist membrane bathed by secretions	Visceral serosae cover internal organs	<i>Composed of at least two primary tissue types</i> ⊙ Epithelium bound to underlying connective tissue proper ⊙ Are simple organs		
Cells arranged closely to form cheets								
Involuntary control; propels substances along passageway								
Found mostly in walls of hollow organs								
Connective Tissue Fibers			Nervous Tissue					
Collagen	Elastic	Reticular	Main component of nervous system					
Strongest; most abundant	Networks of elastin fibers	Highly branched collagenous fibers	Transmit electrical signals from sensory receptors to effectors					
Tough provides tensile strength			Neurons					
			Specialized nerve cells that generate and conduct nerve impulses					
			Branching cells					
			Located in brain, spinal cord, and nerves					