Epithelium

Functions:	Covering, lining, absorption, secretion. Covers body surfaces, lines cavities, constitutes glands; for protection, absorption, secretion.
General Features:	Basal lamina, avascular, regeneration, polarity, junctional complex..
Classification:	Simple, stratified, pseudostratified; squamous, cuboidal, columnar.

Specific Types:

Simple Squamous: Thin barrier, facilitates exchange (e.g., lung alveoli).	Pseudostratified: Appears stratified; secretion, cilia-mediated transport (e.g., respiratory tract).
Simple Cuboidal: Absorption and secretion (e.g., exocrine glands).	Stratified Squamous: Protection, prevents water loss (e.g., skin, esophagus).
Simple Columnar: Absorption, secretion, lubrication (e.g., intestine).	Transitional: Distensible property, changes shape (e.g., bladder).

Simple Epithelia: Single layer; types include squamous, cuboidal, columnar. Stratified Epithelia: Multiple layers; types include squamous (keratinized, non-keratinized), cuboidal, columnar, transitional. Special Structures: Microvilli, cilia, stereocilia for absorption, secretion, sensory functions.

Connective Tissue

Functions: Connects tissues, metabolic support, highly vascular. Components: Extracellular matrix (ground substance and fibers), connective tissue cells. Fibers: Collagen (tensile strength), elastic (elasticity), reticular (support). Cells: Fibroblasts (extracellular matrix synthesis), adipocytes (fat storage), macrophages (immune response), mast cells (inflammation mediators).

Connective Tissue

Functions: Connects, supports, binds, or separates other tissues or organs. Components: Extracellular Matrix (ECM): Ground substance and fibers (collagen, elastic, reticular). Cells: Fibroblasts (principal cells), adipocytes, macrophages, mast cells, various blood cells. Types: Loose Connective Tissue: More cells, less fibers; supports organs, vessels, nerves. Dense Connective Tissue: More fibers, less cells; types include regular (tendons, ligaments) and irregular (dermis). Specialized Connective Tissue: Cartilage, bone, blood.

Muscle Tissue

Characteristics: Contractility, movement, shape and size change of organs. Types: Skeletal Muscle: Striated, voluntary control. Cardiac Muscle: Striated, involuntary control, intercalated discs. Smooth Muscle: Non-striated, involuntary control, lines hollow organs.

Learning objectives

ANT.2: Understand the microscopic anatomy and functional correlates of epithelia.

ANT.2.1.Describethegeneralmicroscopiccharacteristicsofepithelia.

ANT.2.2.Classifythetypesofepitheliabasedontheirmicroscopicfeatures,sites,andfunctions.

MCB.16.1.Determinethetypeofcell-cell-and/orcell-matrixinteractionimportantforthenormalfunctionofatissue.

ANT.2.3.Describethemicroscopicanatomyofglands,theirmodesofsecretion,andfunctions.

ANT.3: Understand the microscopic anatomy and functions of connective tissues and muscles.

ANT.3.1.Differentiatethehistologicfeaturesofthetypesofconnectivetissue.

ANT.3.2.Distinguishconnectivetissuecellsandtheirfunctions.

ANT.3.3.Differentiatethemicroscopicanatomyofsmooth,skeletalandcardiacmuscletypes.

Textbook readings:

• PawlinaW. & Ross M. H. (2024). Histology: A Text and Atlas with Correlated Cell and Molecular Biology (9th ed.). Philadelphia, PA: Wolters Kluwer / Lippincott Williams and Wilkins. • http://auamed.idm.oclc.org/login?url=https://premiumbasicsciences.lwwhealthlibrary.com/book.aspx?bookid=3290

• Agur, A. M. R., Dalley, A. F., & Moore, K. L. (2024). Moore's Essential Clinical Anatomy (7th ed.). Philadelphia: Wolters Kluwer.http://auamed.idm.oclc.org/login?url=https://premiumbasicsciences.lwwhealthlibrary.com/book.aspx?bookid=3243