

EPITHELIAL TISSUES

Revised 30 August 2016
 Marieb, p111-113, Martini 110-121, 6th: 112-122, 7th: 107-118, 112-124, 10th: 111-126

Functions of epithelial tissues (covers or lines):

Protects, absorbs, filters, excretes, secretes

Traits: (p. 115)

Cellularity: composed almost entirely of cells
 (very little extracellular material)

Polarity: apical vs basal. Apical end free, surface specialized, esp. cilia and microvilli (p 116)

Attachment: **Basement Membrane:** cooperatively produced by:
Epithelium: barrier: synthesizes **basal lamina**, glycoprotein, collagenous barrier, resists invasion, but cancer can penetrate.

Connective: strength: fibroblasts synthesize **reticular lamina**, (reticular fibers), gives strength to basement membrane

Avascular: Nutrition gained by diffusion from underlying tissue (nerves present, vessels, not)

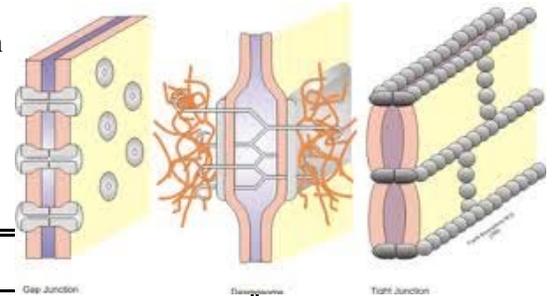
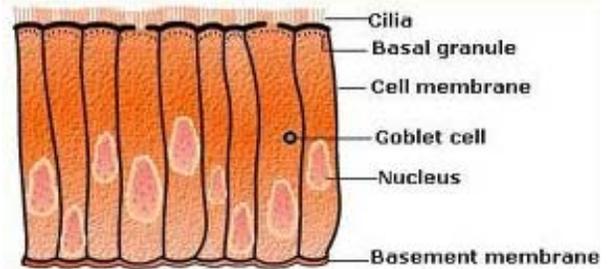
Regeneration: Necessary because of abuse received, germinative cells lie close to BM
 Highest mitotic rate, therefore prone to CA. (originating from epithelium = carcinoma)

Special connections between cells: (p. 117)

gap junction allow diffusion of small solutes between adjacent cells

desmosomes [band, bond, ligament] spot weld, the strongest junction

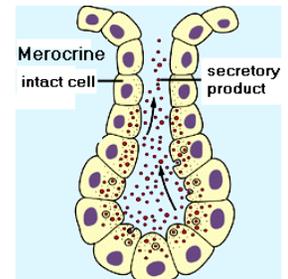
tight junctions seals epithelial surface (occluding), prevents leakage



CLASSIFICATION:

Arrangement and Shape: (p. 118-123)

	Simple (all attached to B. M.)	Stratified
squamous p. 119	low-friction , thin, in protected areas mesothelium, alveoli, endothelium	resists friction and severe mechanical stress: epidermis, oral cav, esophagus, anus, vagina
cubiod p. 121	ducts, secretion , limited protection, kidney tubules, pancreas, salivary	rare: protection, secretion, absorption, line ducts of sweat glands,
columnar p. 122	secrete, absorb, protect: stomach, intestine, oviducts, collecting ducts of kidneys	rare: salivary & mammary ducts, protection pseudostratified ciliated columnar protection, secretion, clearing of debris trachea, nasal cavity, bronchi

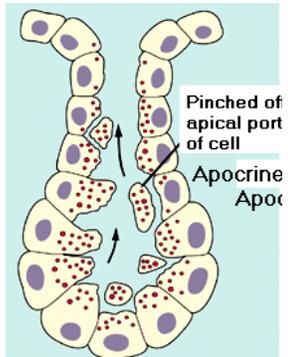


Five functional types of epithelium:

epidermis, glandular, mucous membrane, endothelium and mesothelium (serous memb).

GLANDULAR EPITHELIUM (p. 124) all glands are derived from epithelium:

exocrine and endocrine, but endocrine lose their connection to surface
 most glands form by invagination and branching of epithelium



- merocrine:** vesicles released by **exocytosis** (most glands) sweat, salivary, pancreas
- apocrine:** parts of cells detach into lumen mammary and pubic sweat glands
- holocrine:** whole cells released into lumen only sebaceous glands

simple vs compound glands p. 125

tubular vs alveolar (little cavity, pit socket, hollow) or acinar (grape) same as alveolar (p 123)

- simple tubular intestinal glands
- compound tubular Brunner's glands
- simple branched alveolar sebaceous
- simple coiled tubular sweat

