EPITHELIAL TISSUES

10/11/91, 10/13/92, 10/4/94, 10/3/95, 12 Oct 99, 3 Oct 01, 29Sept04, 28 Sept 05, 1 Oct08
Marieb, p111-113, Martini 110-121, 6th: 112-122, 7th: 107-118, 112-124

Functions of epithelial tissues (covers or lines):
Protects, absorbs, filters, excretes, secretes

Traits: (p. 112)

Cellularity: Composed almost entirely of cells, very little extracellular material

Polarity: **apical vs basal.** One end free, surface specialized, esp cilia and microvilli (p 113)

Attachment: **Basement Membrane:** cooperatively produced by:

Epithelium: synthesizes **basal lamina**, glycoprotein, collagenous barrier

Connective: synthesizes **reticular lamina**, reticular layer made by fibroblasts, gives strength to basement membrane

resists invasion, but cancer can penetrate.

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

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

special connections between cells: (p. 115)

tight junctions	(occluding)seal epithelium surface
intermediate junctions:	bonded by proteoglycans (like hyaluronic acid)
desmosomes	spot weld [band, bond, ligament]
gap junction	allow diffusion of small solutes

CLASSIFICATION:
Arrangement and **Shape:** (p. 116-120)

	Simple	**Stratified**
squamous	thin, low-friction, in protected areas mesothelium, alveoli, endothelium	resists severe mechanical stress, friction epidermis, oral cav, esophagus, anus, vagina
cubiod	limited protection, secretion, ducts kidney tubules, pancreas, salivary	rare: protection, secretion, absorption, line ducts of sweat glands,
columnar	protect, secrete, absorb stomach, intestine, oviducts, collecting ducts of kidneys	rare: protection, salivary & mammary ducts
		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. 122)
most glands form by invagination and branching of epithelium

all glands are derived from epithelium: exocrine and endocrine, but endocrine lose their connection to surface.

merocrine:	vesicles released by exocytosis	most glands this: sweat, salivary, pancreas
apocrine:	parts of cells detach	mammary and pubic sweat glands
holocrine:	whole cells released	only sebaceous glands

simple vs compound glands
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