SECRETORY EPITHELIA & GLANDS

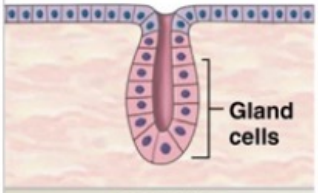
Characteristics

- Epithelial cells that function mainly to produce and secrete various macromolecules.
- Secretory cells may synthesize, store, and release proteins, lipids, or complexes of carbohydrates and proteins
- Epithelia of mammary glands secrete all three substances.
- Unicellular glands: scattered secretory cells are common in simple cuboidal, simple columnar, and pseudostratified epithelia

Classification

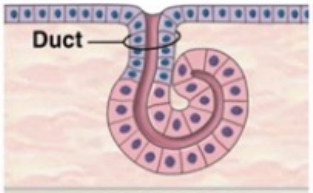
- Unicellular VS multicellular.
- Simple (ducts not branched) or compound (ducts with two or more branches).
- Secretory portions can be tubular (either short or long and coiled) or acinar (rounded and saclike
- Compound glands can have branching ducts and can have multiple tubular, acinar, or tubuloacinar secretory portions.

SIMPLE GLANDS



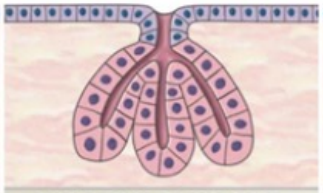
SIMPLE TUBULAR

Examples:
- Intestinal glands



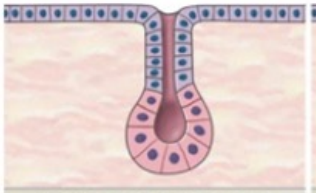
SIMPLE COILED TUBULAR

Examples:
- Merocrine sweat glands



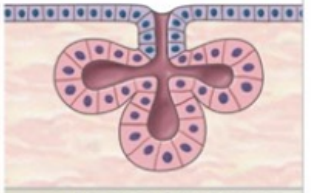
SIMPLE BRANCHED TUBULAR

Examples:
- Gastric glands
- Mucous glands of esophagus, tongue, duodenum



SIMPLE ALVEOLAR (ACINAR)

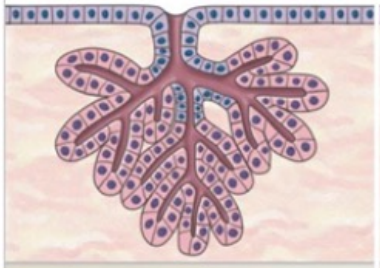
Examples:
- Not found in adult; a stage in development of simple branched glands



SIMPLE BRANCHED ALVEOLAR

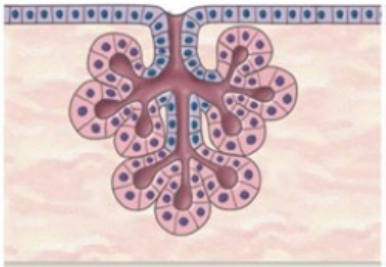
Examples:
- Sebaceous (oil) glands

COMPOUND GLANDS



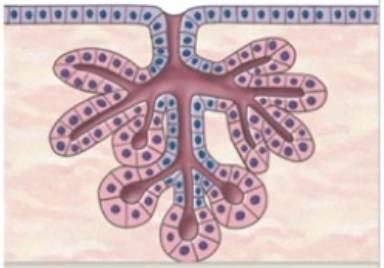
COMPOUND TUBULAR

Examples:
- Mucous glands (in mouth)
- Bulbourethral glands (in male reproductive system)
- Testes (seminiferous tubules)



COMPOUND ALVEOLAR (ACINAR)

Examples:
- Mammary glands



COMPOUND TUBULOALVEOLAR

Examples:
- Salivary glands
- Glands of respiratory passages
- Pancreas

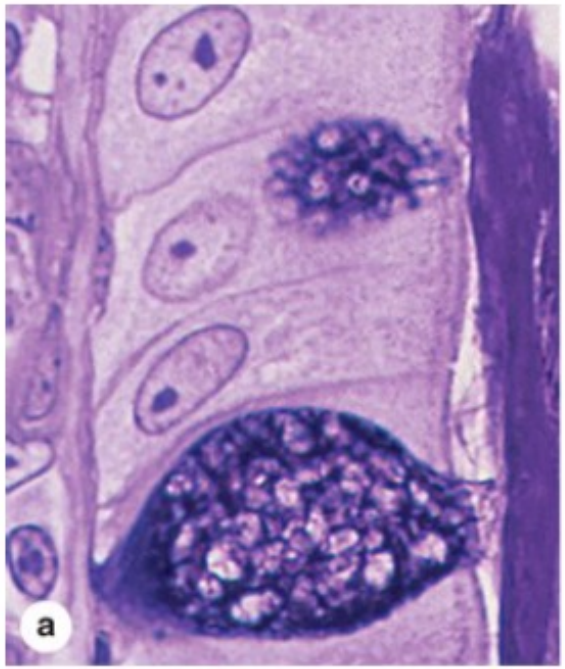
Simple Glands

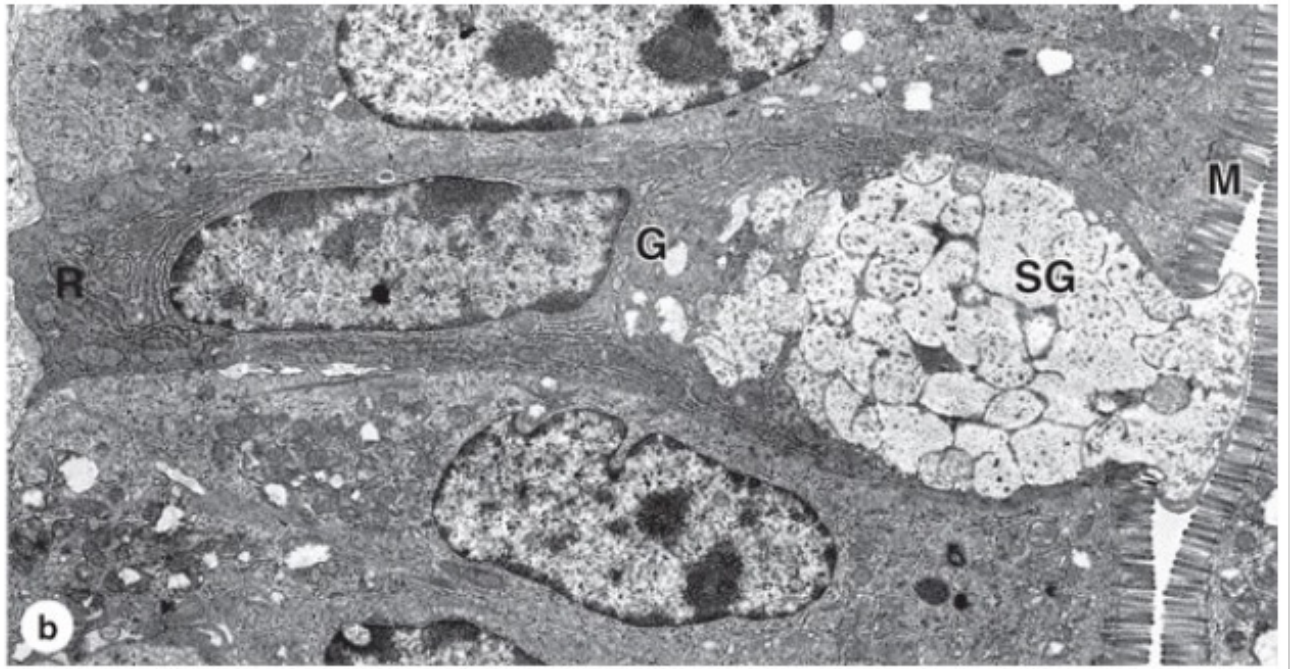
SIMPLE Glands (Ducts Do Not Branch)					
Class	**Simple Tubular**	**Branched Tubular**	**Coiled Tubular**	**Acinar (or Alveolar)**	**Branched Acinar**
Features	Elongated secretory portion; duct usually short or absent	Several long secretory parts joining to drain into 1 duct	Secretory portion is very long and coiled	Rounded, saclike secretory portion	Multiple saclike secretory parts entering the same duct
Examples	Mucous glands of colon; intestinal glands or crypts (of Lieberkühn)	Glands in the uterus and stomach	Sweat glands	Small mucous glands along the urethra	Sebaceous glands of the skin

Compounds Glands

COMPOUND Glands (Ducts from Several Secretory Units Converge into Larger Ducts)			
Class	**Tubular**	**Acinar (Alveolar)**	**Tubuloacinar**
Features	Several *elongated* coiled secretory units and their ducts converge to form larger ducts	Several *saclike* secretory units with small ducts converge at a larger duct	Ducts of both tubular and acinar secretory units converge at larger ducts
Examples	Submucosal mucous glands (of Brunner) in the duodenum	Exocrine pancreas	Salivary glands

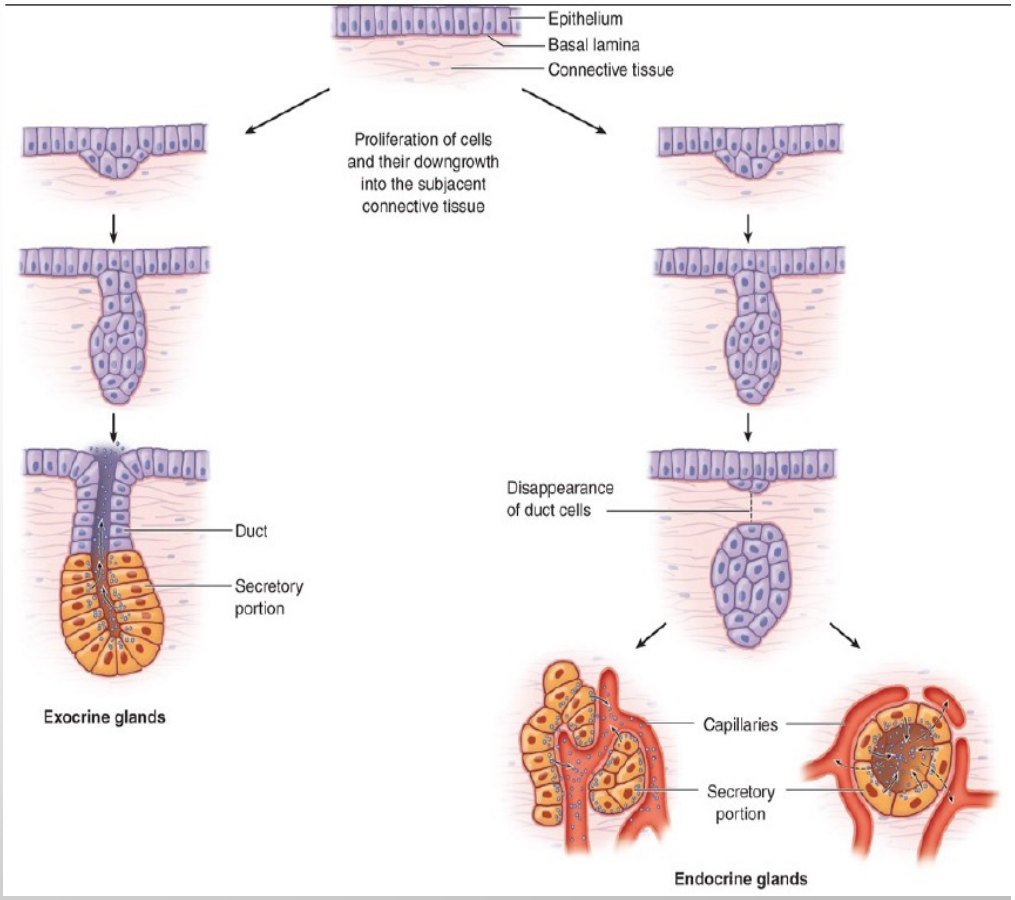
Goblet Cells





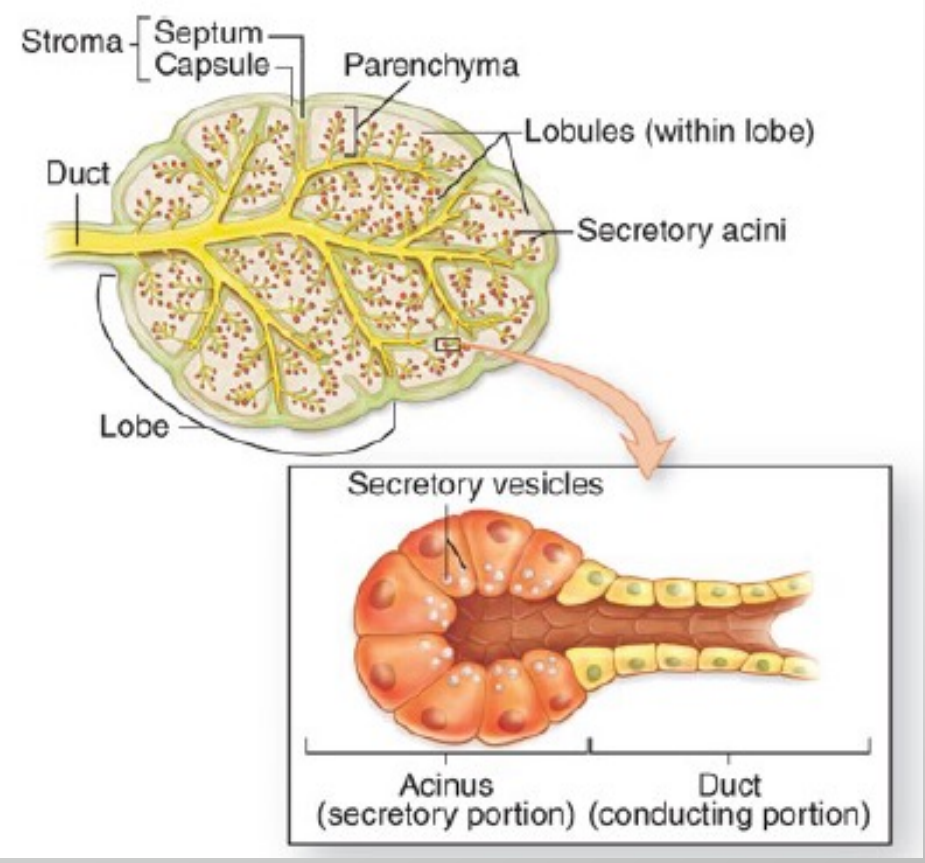
Development

- Glands develop from covering epithelia in the fetus by cell proliferation and growth into the underlying connective tissue… differentiation.
- Exocrine glands remain connected with the surface epithelium…ducts.
- Endocrine glands lose the connection to their original epithelium…..No duct.



Organization

- Organized as a secretory portions and ducts that transport the secretion out of the gland.
- In both exocrine and endocrine glands, the secretory units are supported by a stroma of connective tissue.



Mode Of Secretion

- **Merocrine** secretion: most common method of protein or glycoprotein secretion, exocytosis…salivary glands.

- **Holocrine** secretion: cells accumulate product continuously as they enlarge…cell disruption that releases the product and cell debris into the gland's lumen….. Sebaceous glands.

- **Apocrine** secretion: product accumulates at the cells' apical ends….Lipid droplets are secreted in the mammary gland in this manner.

MODE OF SECRETION