LAB.2

GLANDULAR EPITHELIA

Glandular epithelia consist of single cells or groups of cells specialized for secretion. They can be classified as **exocrine** (secretions distributed by duct systems) or **endocrine**(secretions distributed by blood vessels). Exocrine glands are generally classified on the basis of the following factors:

Number of Cells

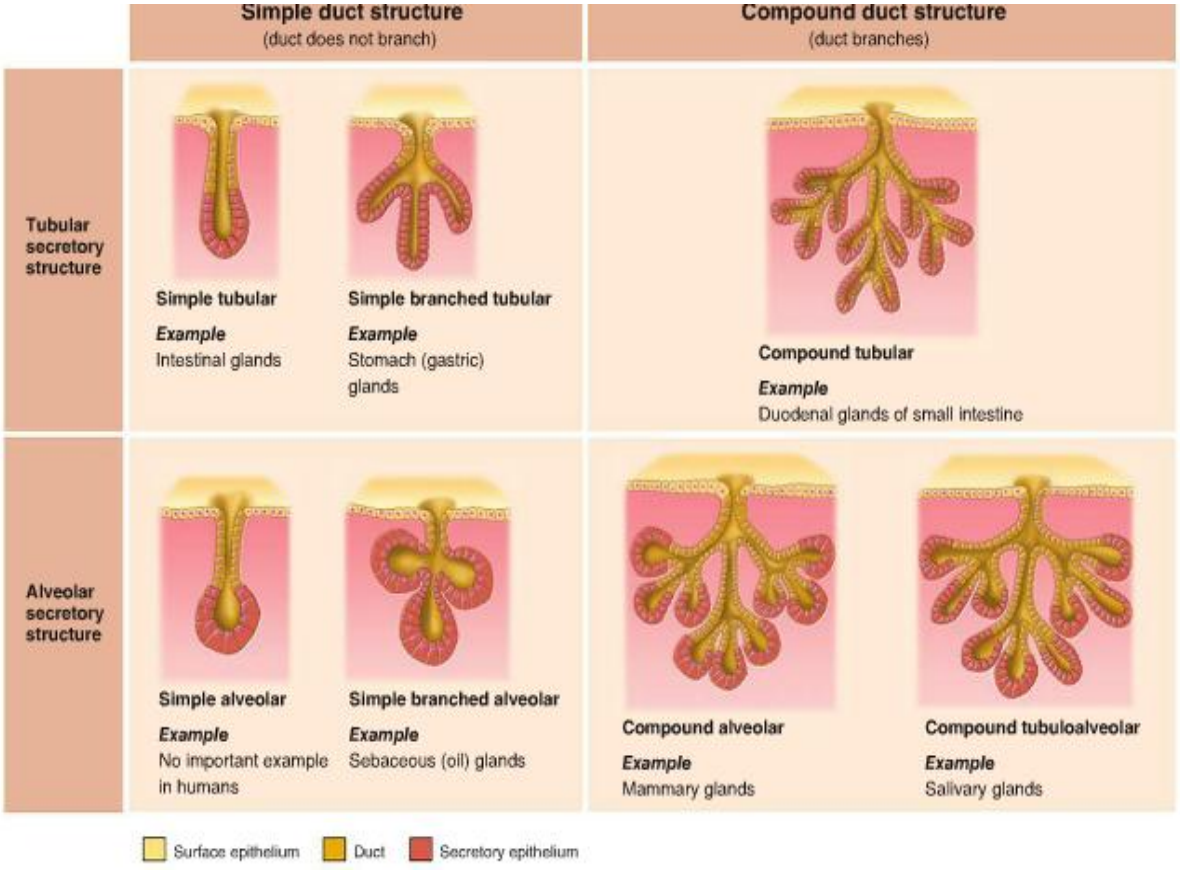
1. Unicellular glands are defined as single cells interspersed among other epithelial cells of different functions (e.g., mucus-secreting goblet cells).

2. Multicellular glands occur as many adjacent secretory cells within the epithelium (e.g.,surface mucous cells of stomach) or as complex glands with ducts (see next section).

Pattern of Duct System (simple; compound) ***and Secretory Portion*** (tubular; acinar/ alveolar; tubuloacinar)

1. Simple glands have a simple, unbranched duct with tubular or acinar shaped secretory pieces.

2. Compound glands have a branched duct system with tubular, acinar, or tubuloacinar shaped secretory units.



Types of the Secretion (mucous, serous, mixed)

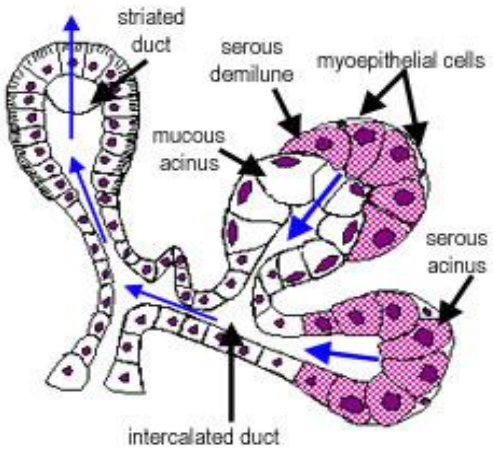
1. Mucous glands are characterized by their

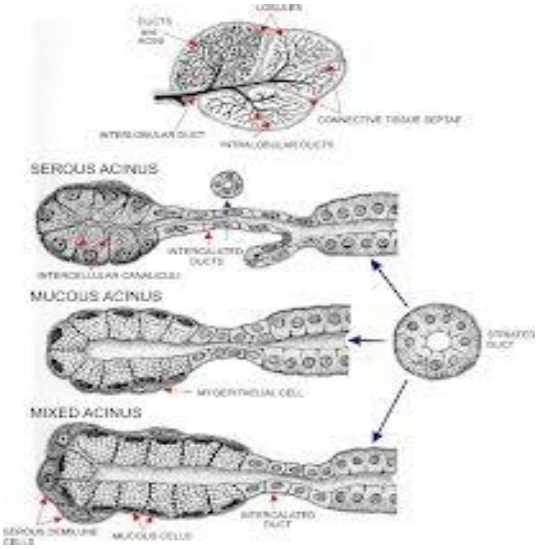
viscous secretions and typical histologic appearance . **mucous secretory units** are mostly **tubular** and composed of tall pyramidal to columnar secretory cells. Although the cytoplasm of these cells contains many mucin granules (mucigens), their cytoplasm quite pale in sections. Nuclei with a squamous-like appearance and other organelles are characteristically flattened at the base of cells due to abundant mucigens .

2. Serous glands are characterized by their watery, protein-containing secretions and morphology that is consistent with protein-secreting cells. **serous secretory units** are **acinar** and composed of shorter pyramidal cells arranged around a small lumen. Characteristically, the nucleus is basal in location, but

round in shape. The apical cytoplasm typically contains numerous secretory granules.

3. Mixed glands contain both mucous and serous secretory units, either separate or as mixed units. It is now clear that even single cells may be of the mixed variety.





Mechanisms of the Secretion

1. Merocrine secretion is the method of exocytosis; the membrane of the secretory granule fuses with the plasma membrane to release the contents of the granule. Most exocrine glands secrete by this mechanism, including salivary glands and pancreas

2. Apocrine secretion is the mechanism whereby both the secretory product and a portion of the apical secretory cell cytoplasm are pinched off and released. This process has been described as ***decapitation secretion***.Examples of this mechanism apparently occur in all apocrine glands and have been clearly demonstrated in apocrine sweat glands, mammary glands ,ceruminous glands of the external ear canal and glands of Moll in the eyelid. Apocrine secretion has also been

described in nonciliated bronchiolar epithelial (Clara) cells of lung

3. Holocrine secretion is the method involving the release of entire cells and their contained secretory product.This process is apparently the result of **apoptosis** which is programmed secretory cell death