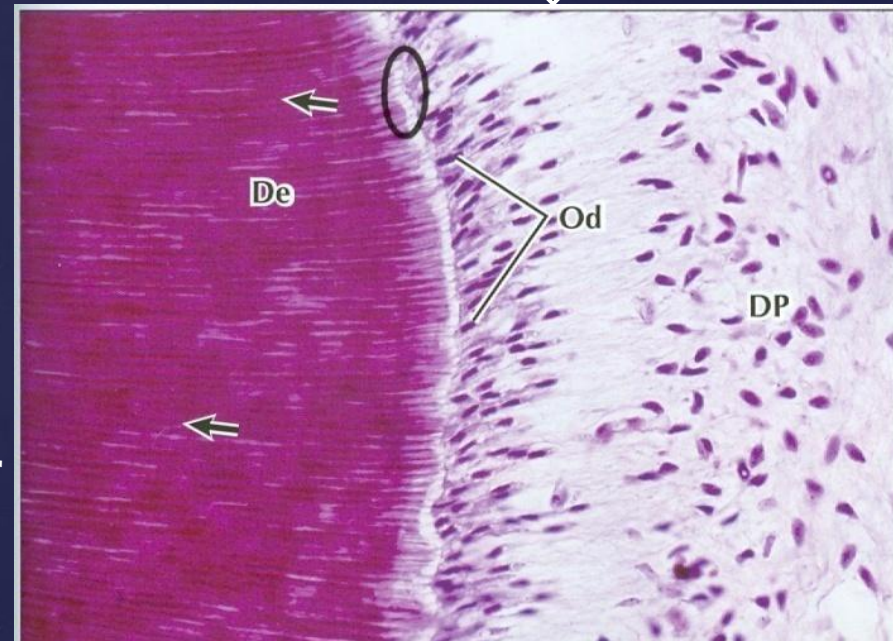
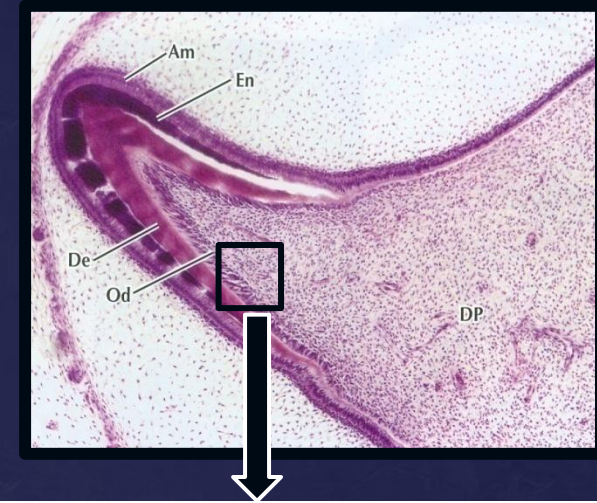


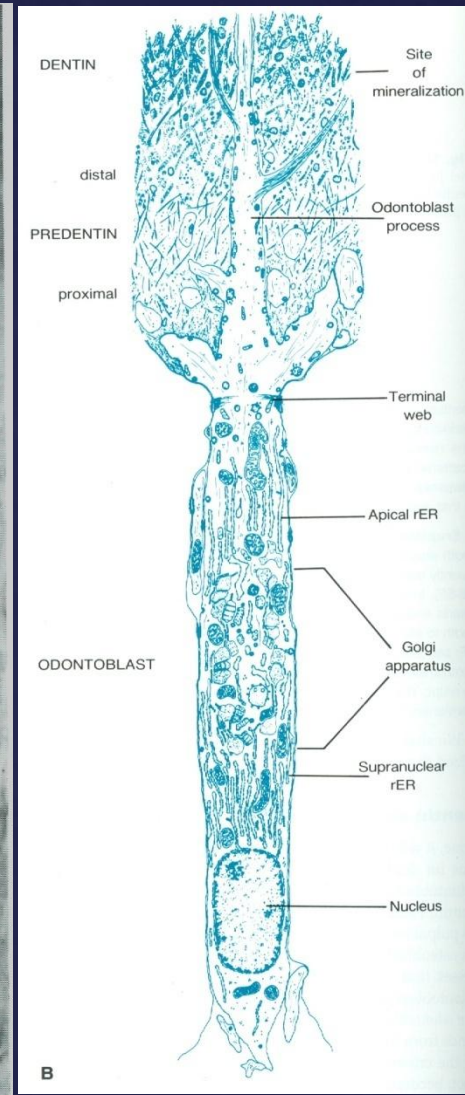
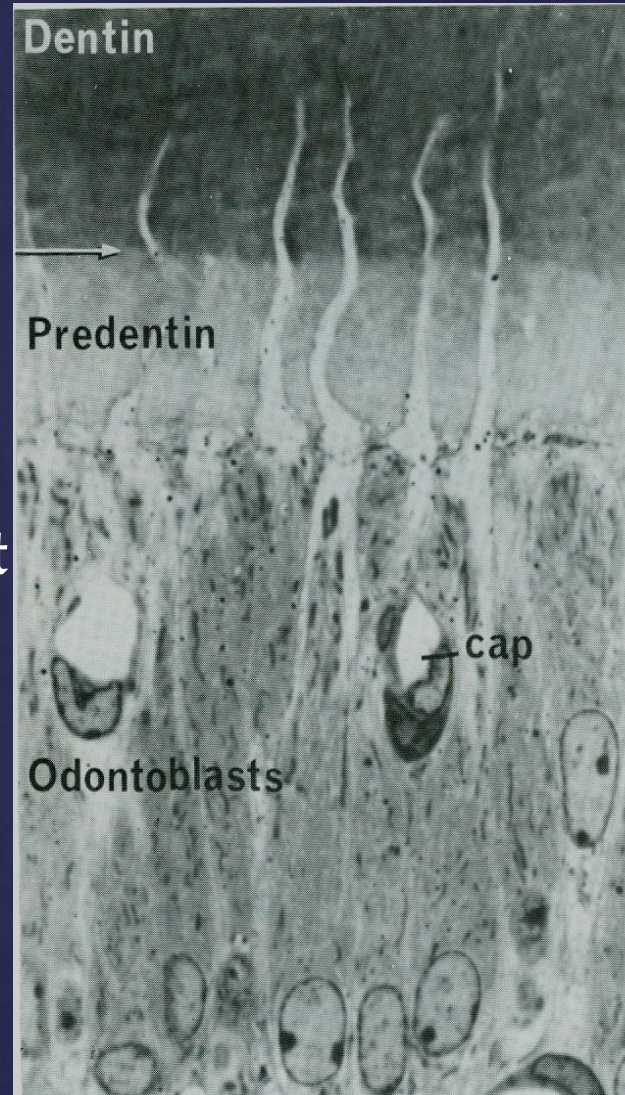
Dentin

- Calcified tissue
 - **harder than bone**-higher content of Calcium salts (70%)
- **Consists** mainly of
 - Type I collagen
 - GAGs
 - hydroxyapatite crystals
- Dentin matrix secreted by **ODONTOBLASTS**
 - Form an **epithelial layer** over the inner surface of the dentin
 - Bear the same **relation** to dentine as osteoblasts do to bone



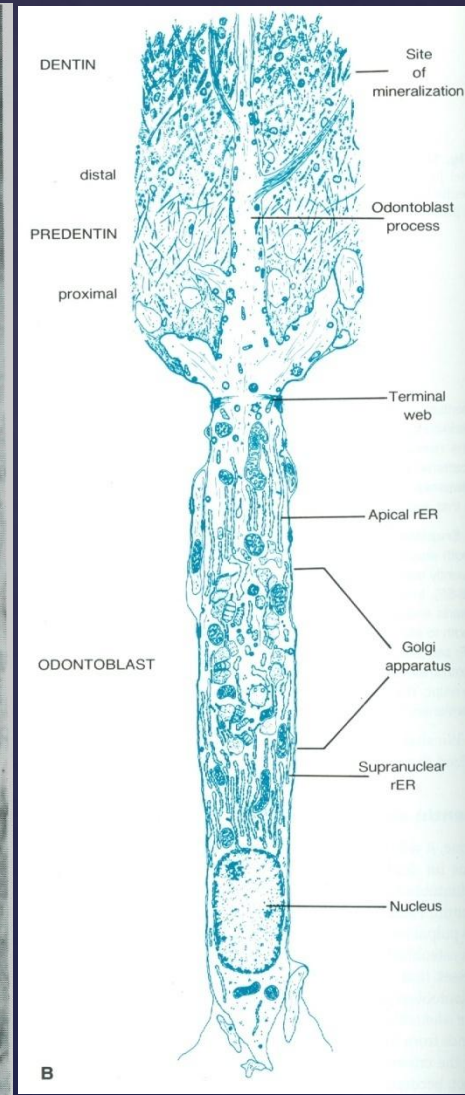
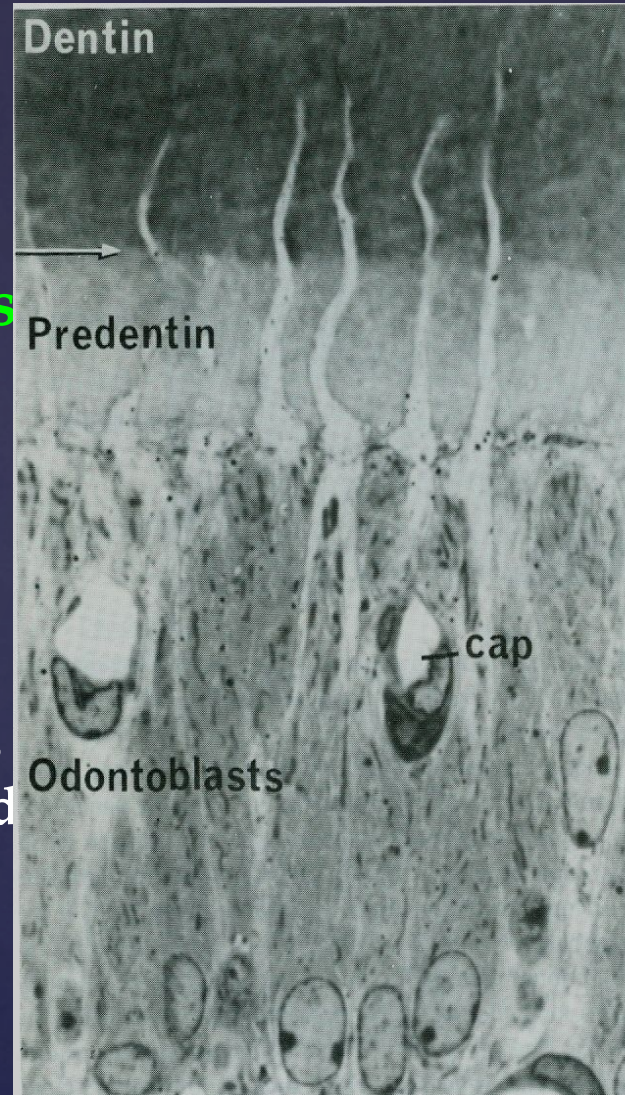
Dentin cont.

- **Odontoblast** is
 - elongate
 - well developed **rER**
 - large **Golgi**
- Apical surface in contact with the forming dentin
 - Apical **junctional complexes** between odontoblasts separate the dentin from the pulp



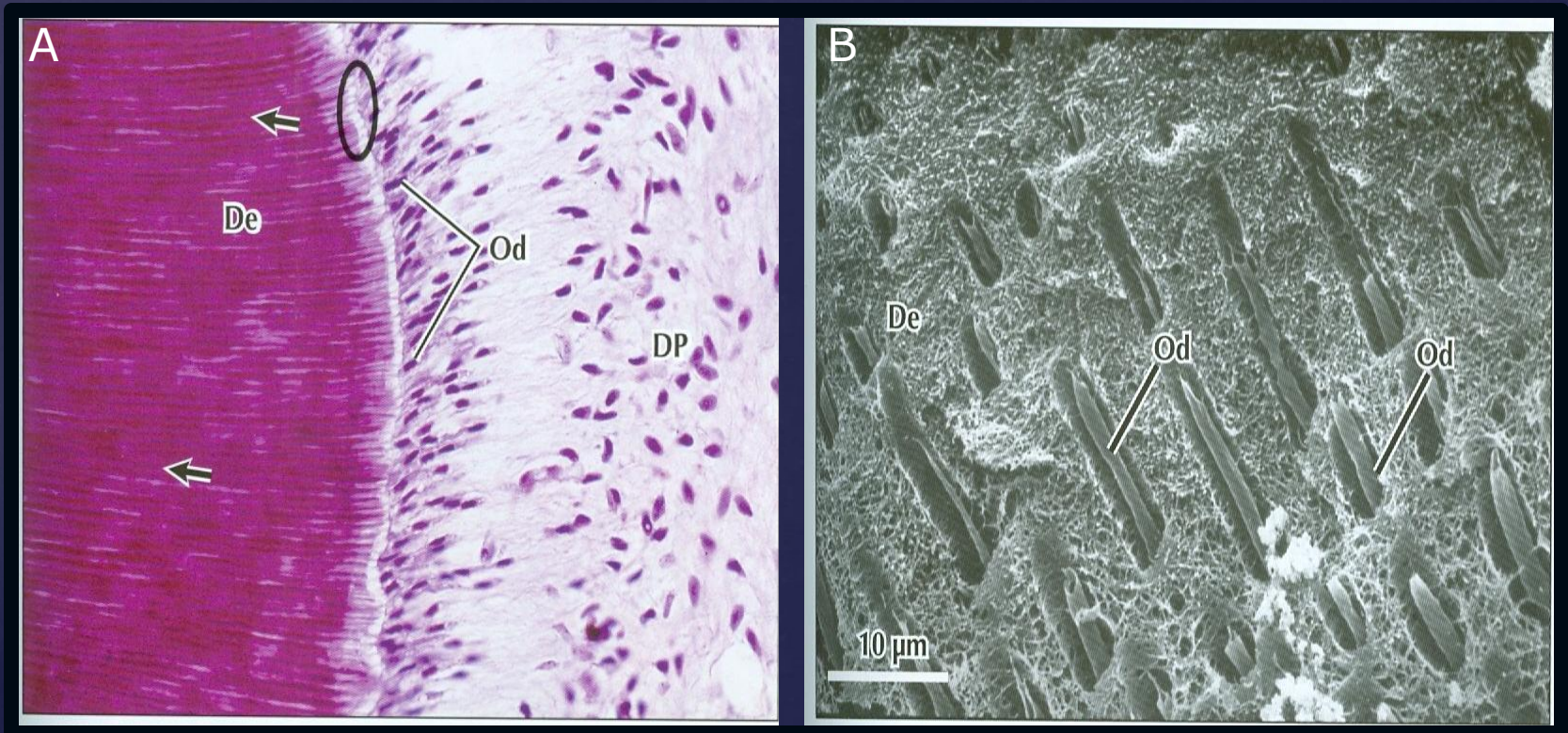
Dentin cont.

- Odontoblasts have **branched apical processes** that penetrates perpendicularly through the dentin
 - Called **odontoblast processes**
 - Processes **become longer** as the odontoblast is displaced centrally during dentin deposition



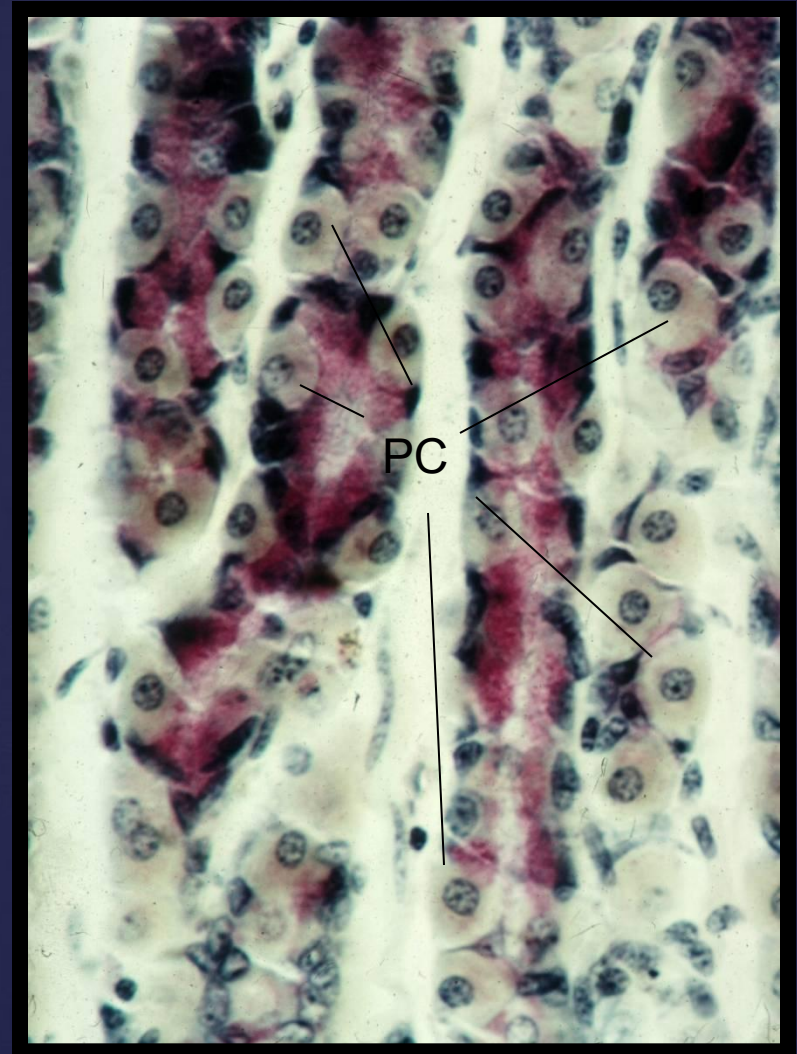
Dentin cont.

- Processes contained in canals called **DENTINAL TUBULES**
 - Odontoblast processes are 3-4 μm dia near cell body; thinner near enamel or cementum



Fundic Glands: Parietal Cells

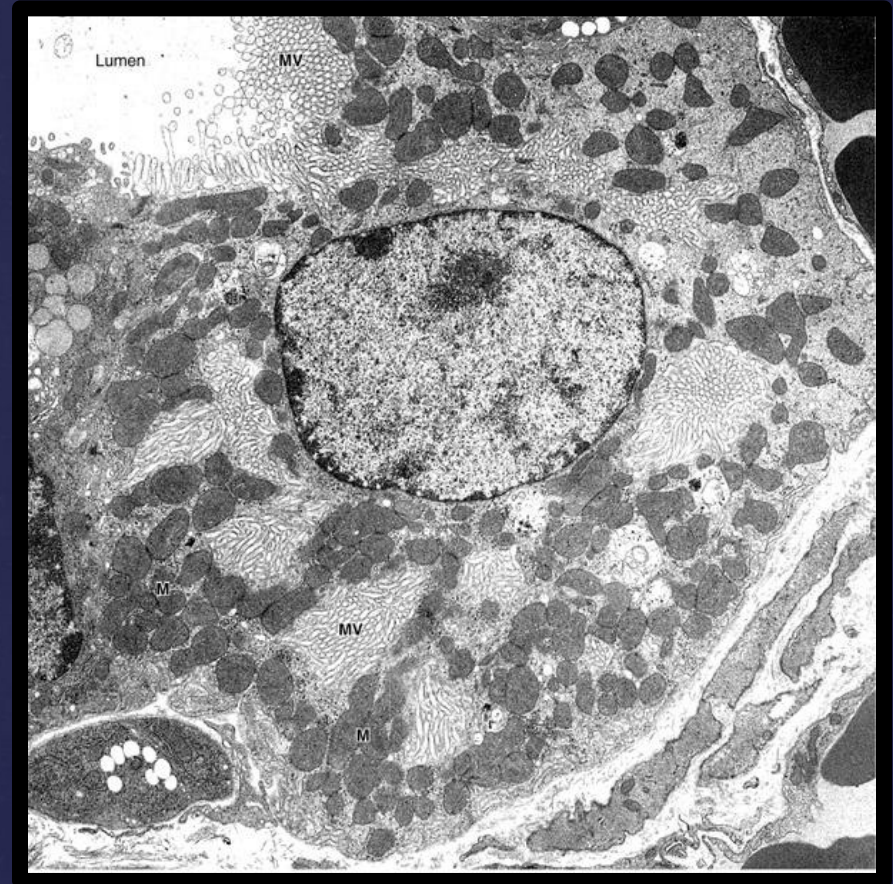
- Called **OXYNTIC CELLS**
- Secrete **HCl**
- and **intrinsic factor**
- Most numerous in **upper** and **middle** region of the gland
- Large cells
- Appear **round to triangular**
 - with apex directed toward lumen of gland



Fundic Glands: Parietal Cell

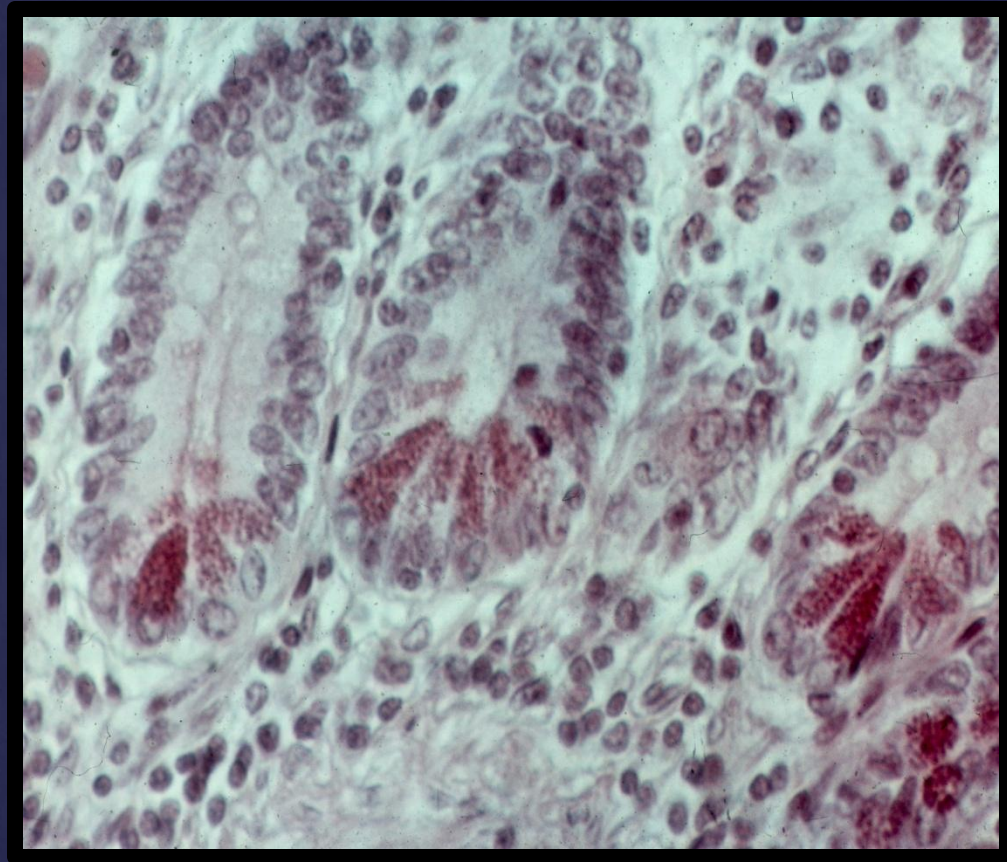
cont.

- Nucleus is spherical
- Cytoplasm intensely **eosinophilic**
- easily recognized by **size** and **staining**
- Numerous **mitochondria**
(eosinophilia)
 - Provide energy for ion trafficking



Small Intestine: Paneth Cell

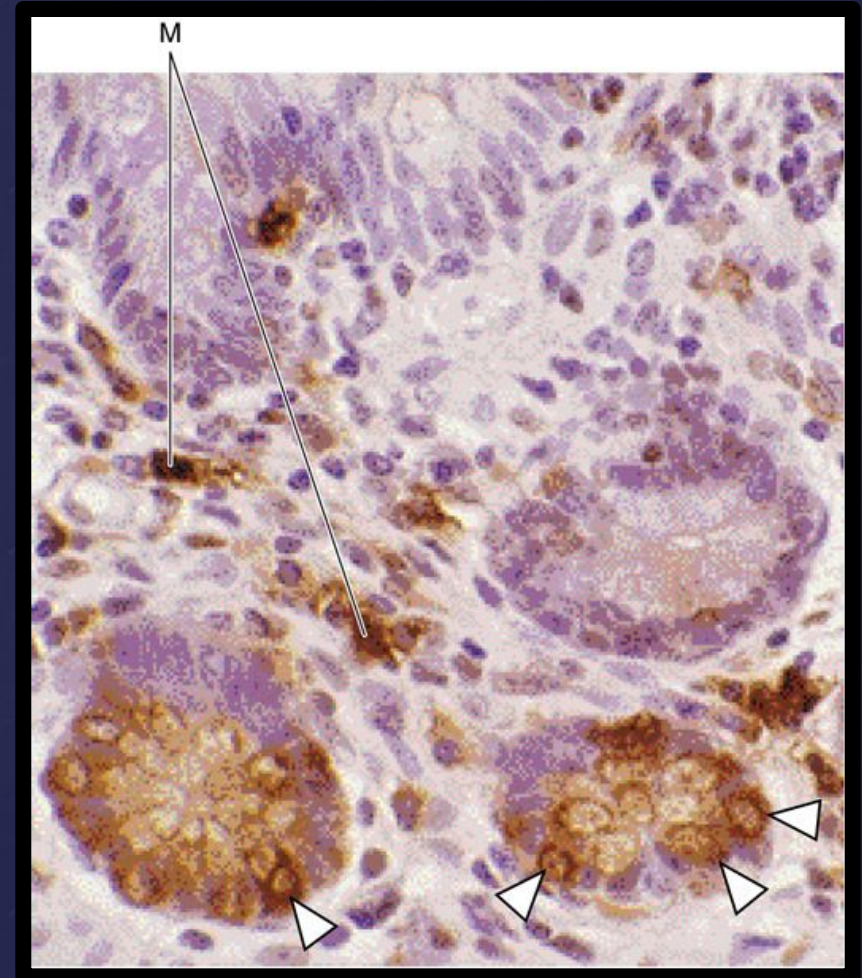
- Found in **bases of intestinal glands**
 - May be seen in colon as well
- Large apical **secretory granules**
 - very **eosinophilic**
 - **refractile**
 - Granules permit **identification** of these cells



Small Intestine: Paneth Cell

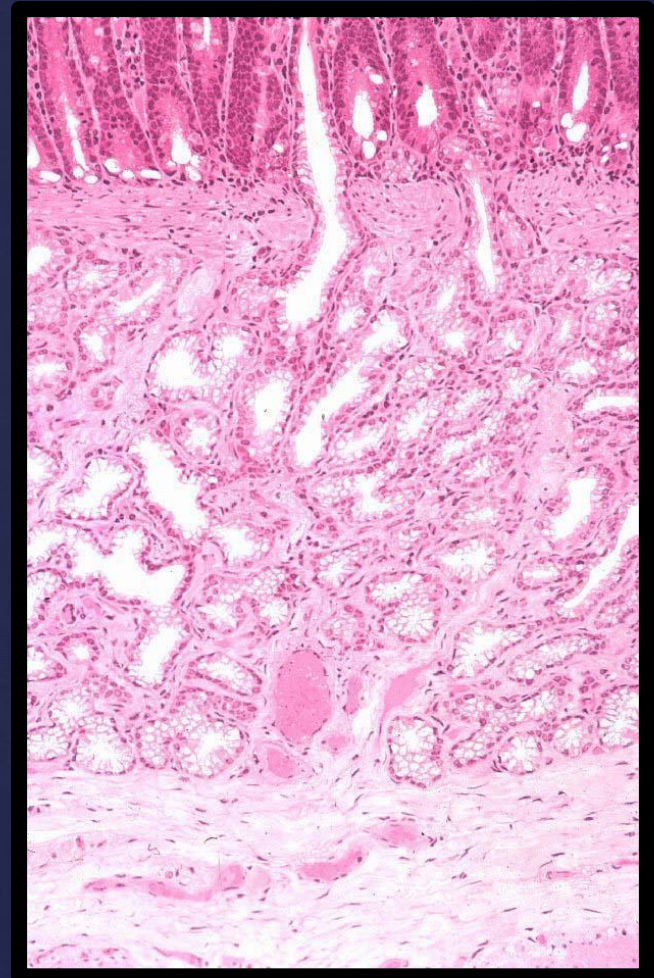
cont.

- Granules contain
 - **LYSOZYME**
 - LYSOZYME digests cell walls of certain **bacteria**
 - **α-DEFENSINS**
- Paneth cells probably
 - **Regulate normal bacterial flora** of small intestine



Small Intestine: Submucosa

- Consists of
 - **dense connective tissue**
 - aggregates of adipose cells
- Conspicuous feature of **duodenum** is
 - submucosal glands
(**BRUNNER'S GLANDS**)



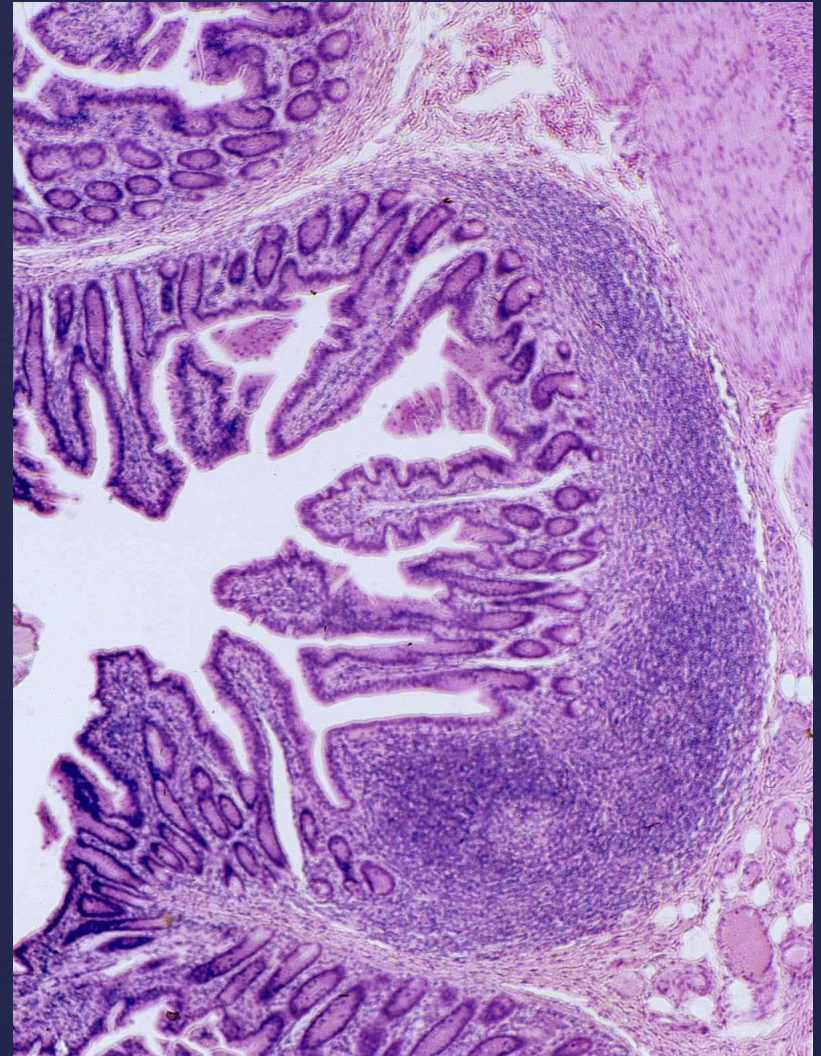
Small Intestine: Submucosa cont.

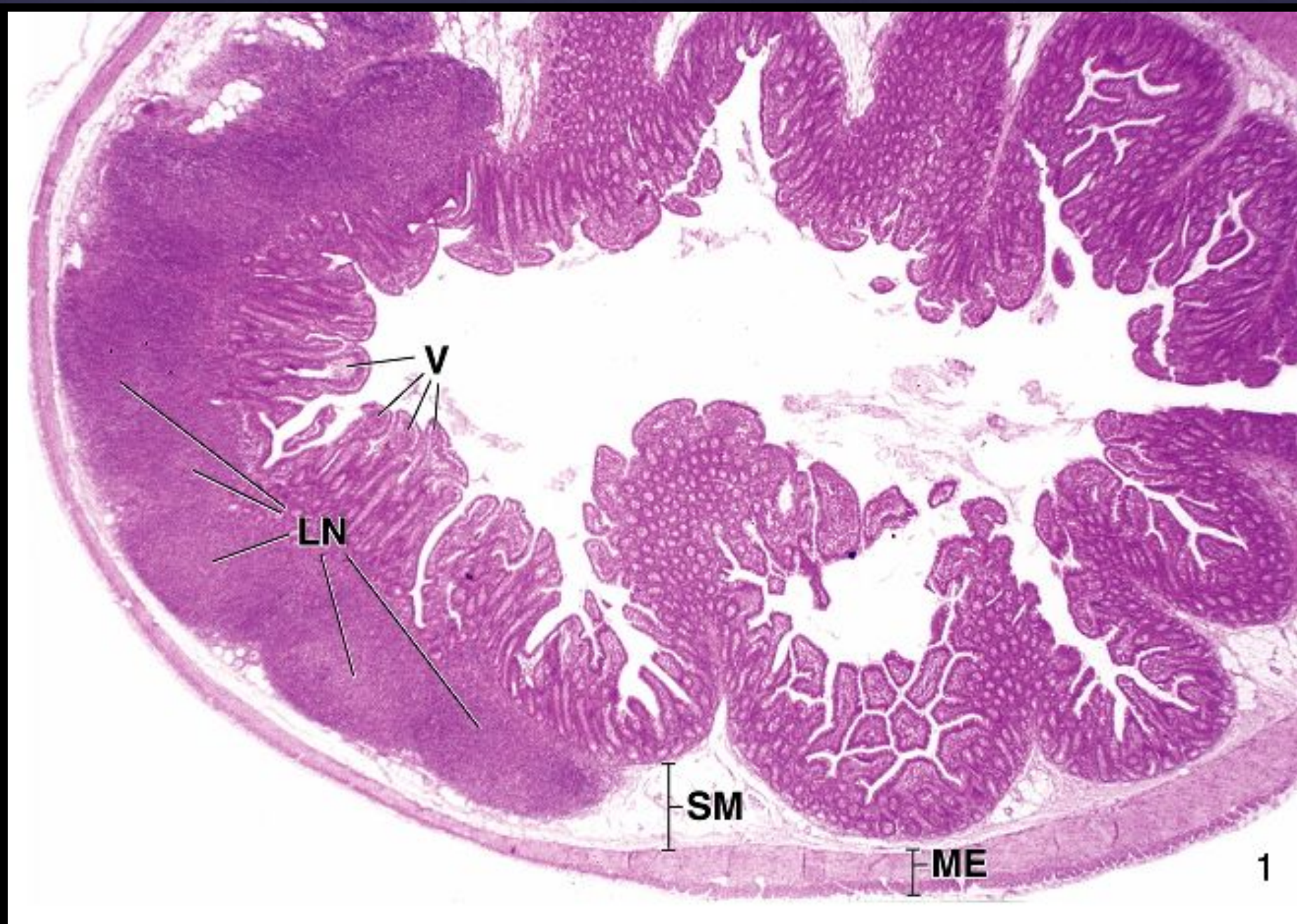
- Cells of **Brunner's glands** have characteristics of both **mucous and serous secretions**
- pH of secretions is **8.1-9.3**
 - **protects** proximal small intestine
 - neutralizes acid from stomach
 - creates **optimal pH for enzymes**



Features of Small Intestine Mucosa: Lamina Propria cont.

- Lamina propria also contains
 - lymphatic nodules
 - important part of GALT
 - Nodules are especially large in ileum
 - called PEYER'S PATCHES
- Muscularis mucosae
 - 2 thin layers of smooth muscle
 - inner circular
 - outer longitudinal





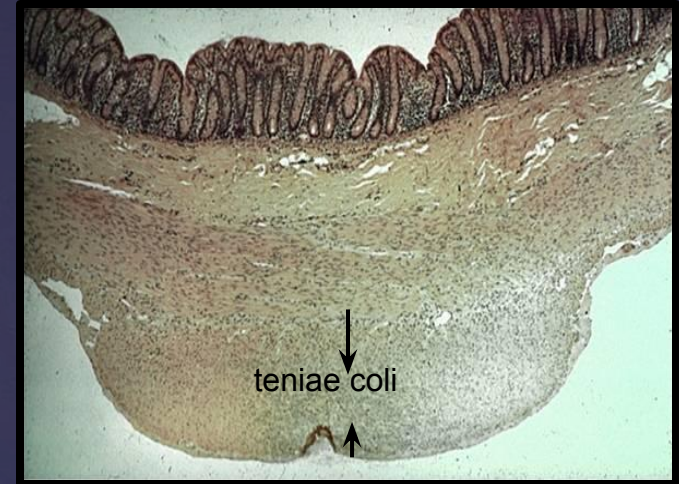
Large Intestine

- Composed of :

- Cecum
- Ascending colon
- Transverse colon
- Descending colon
- Sigmoid colon
- Rectum
- Anal canal

- Contain 4 histologic layers of GI tract; exceptions are

- Mucosa is smooth (no villi)
- Outer muscle layer
 - has 3 equally spaced bands (teania coli)



Large Intestine: Rectum & Anal Canal

- **Rectum** is **dilated** distal portion of GIT
 - Upper part is distinguished
 - **TRANSVERSE RECTAL FOLDS**
 - Mucosa similar to distal colon
- **Anal canal** is most distal part of the GIT
 - Upper part of anal canal has
 - longitudinal folds
 - Called **ANAL COLUMNS**
 - Depressions between anal columns called **ANAL SINUSES**

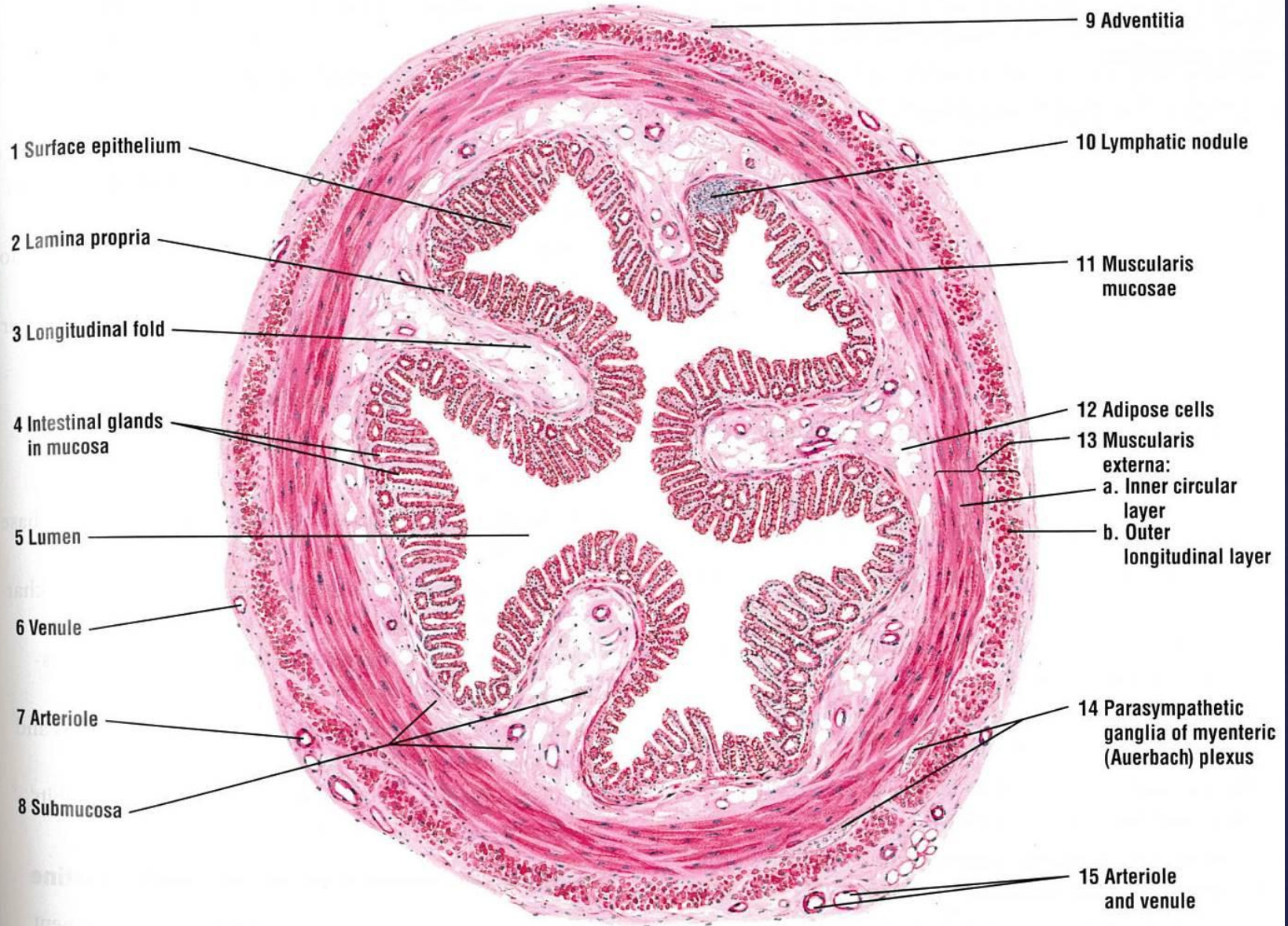


FIGURE 15.13 ■ Rectum (panoramic view, transverse section). Stain: hematoxylin and eosin. Low magnification.