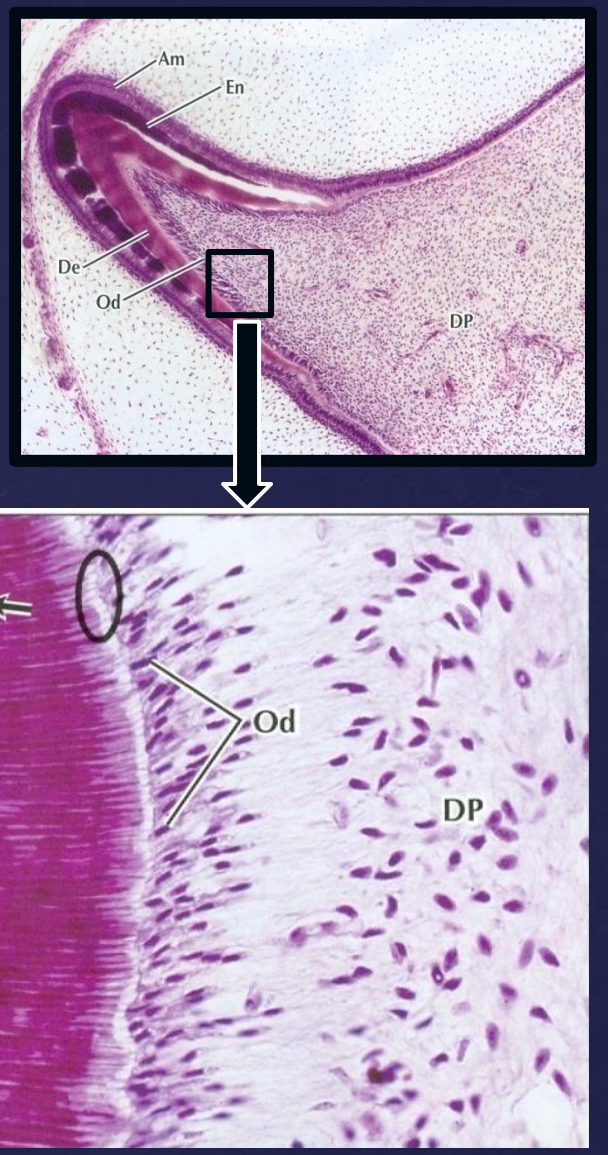
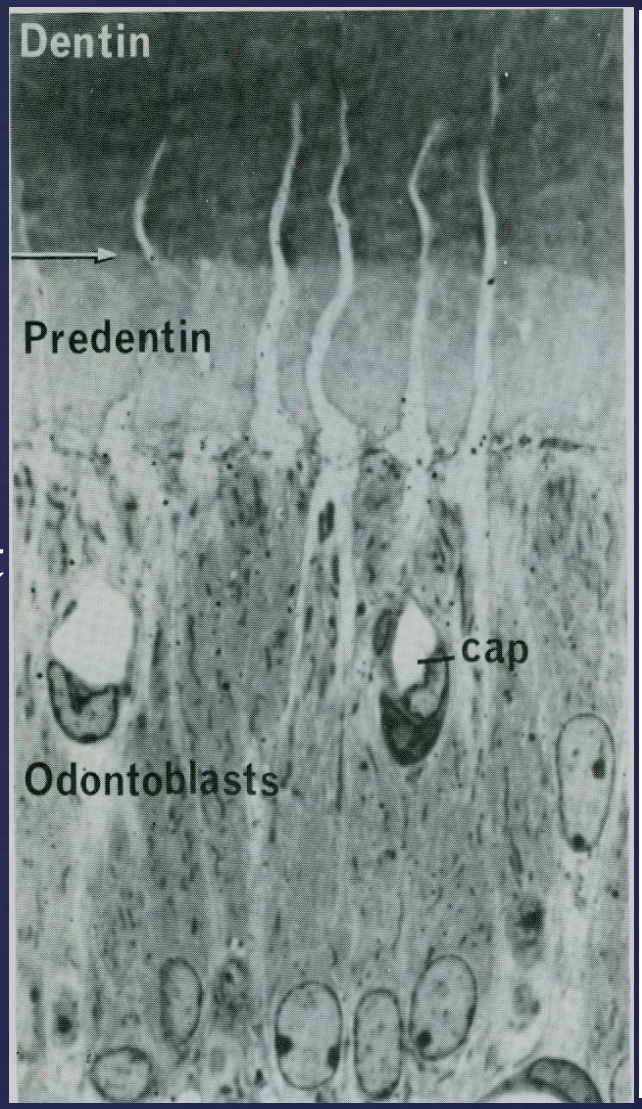
Dentin

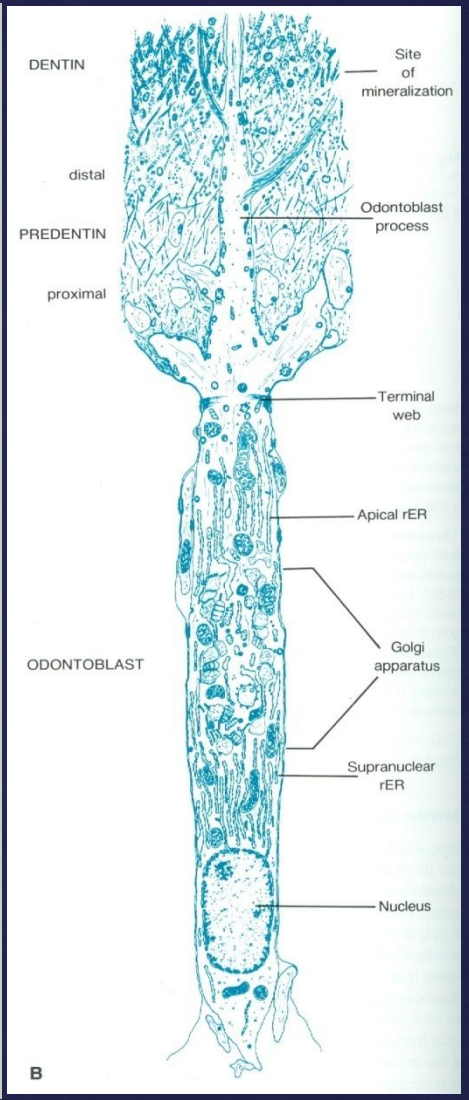
- Calcified tissue
  - harder than bone-higher content of Calcium salts (70%)
- Consists mainly of
  - Type I collagen
  - GAGs
  - hydroxyapatite crystals
- Dentin matrix secreted by ODONTOBLASTS
  - Form an epithelial layer over the inner surface of the dentin
  - Bear the same relation to dentine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



Dentin cont.

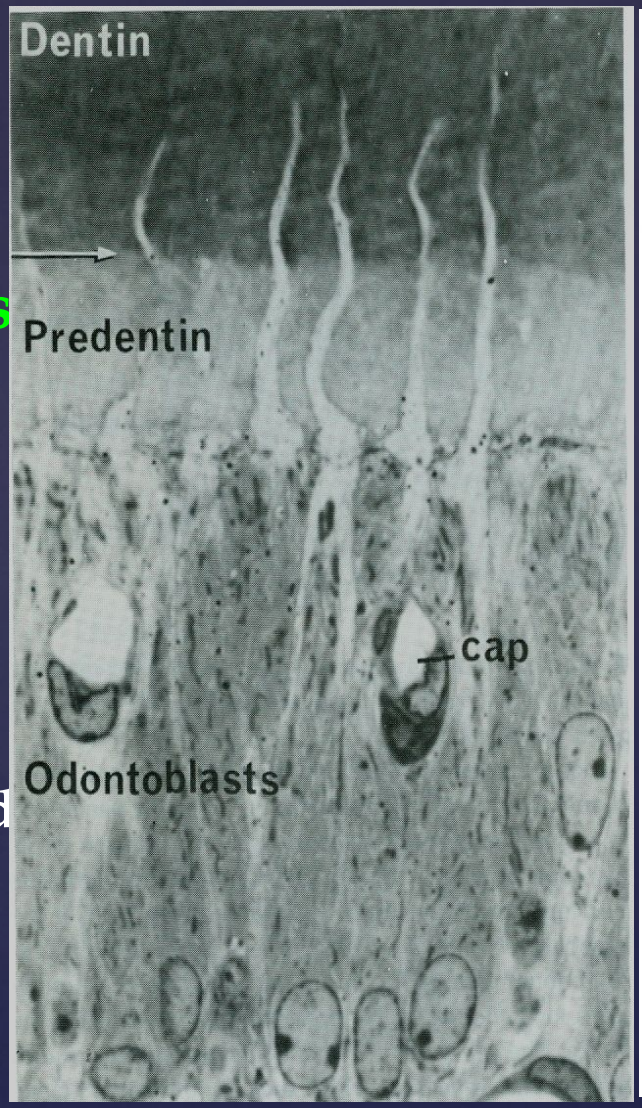
- Odontoblast is
  - elongate
  - well developed rER
  - large Golgi
- Apical surface in contact with the forming dentin
  - Apical junctional complexes between odontoblasts separate the dentin from the pulp

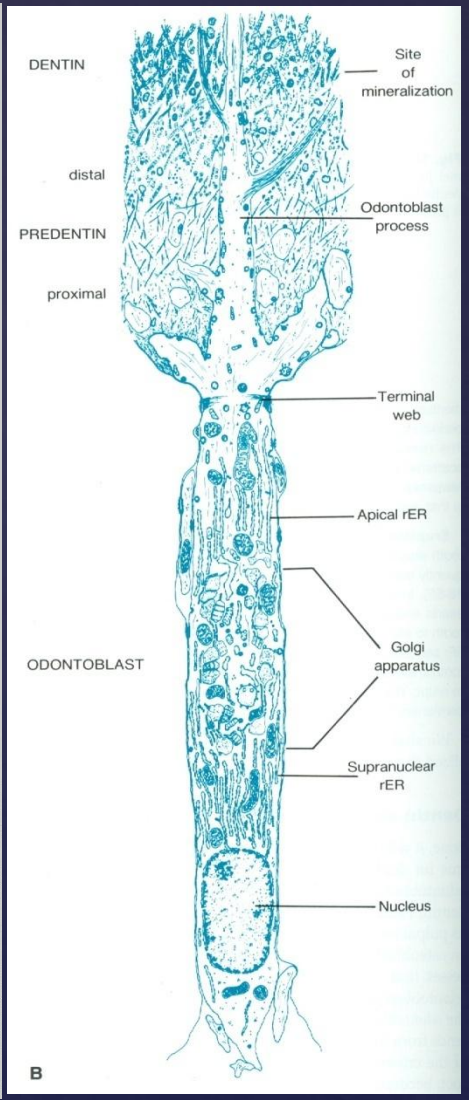




Dentin cont.

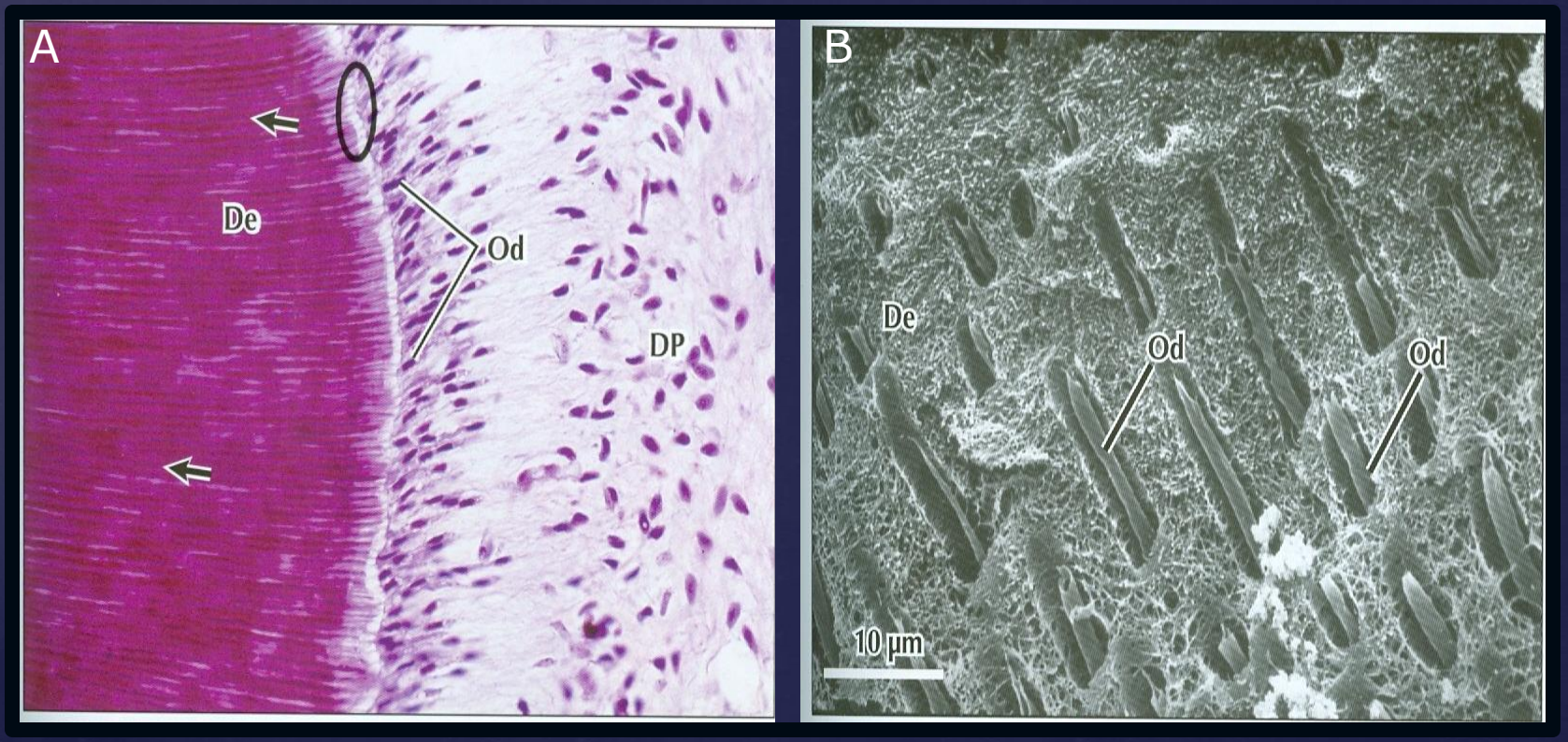
- Odontoblasts have **branched apical processes** that penetrates perpendicularly through the dentin
  - Called **odontoblast processes**
  - Processes **become longer** as the odontoblast is displaced centrally during dentin deposition





Dentin cont.

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

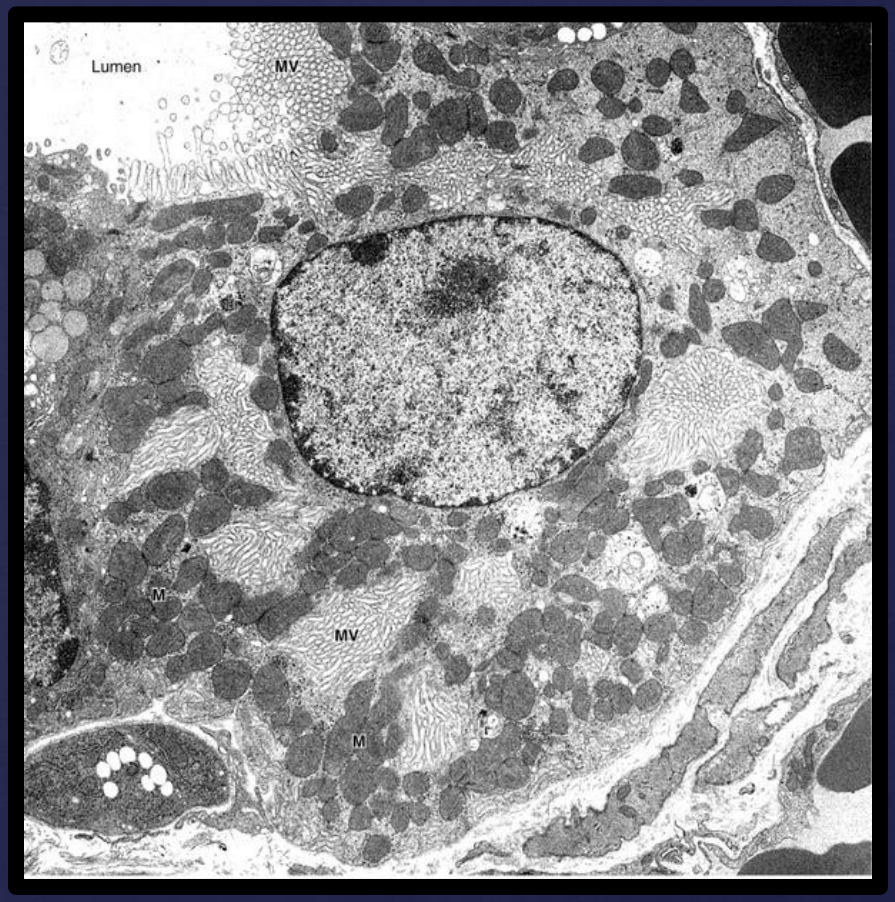


Fundic Glands: Parietal Cells

- 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

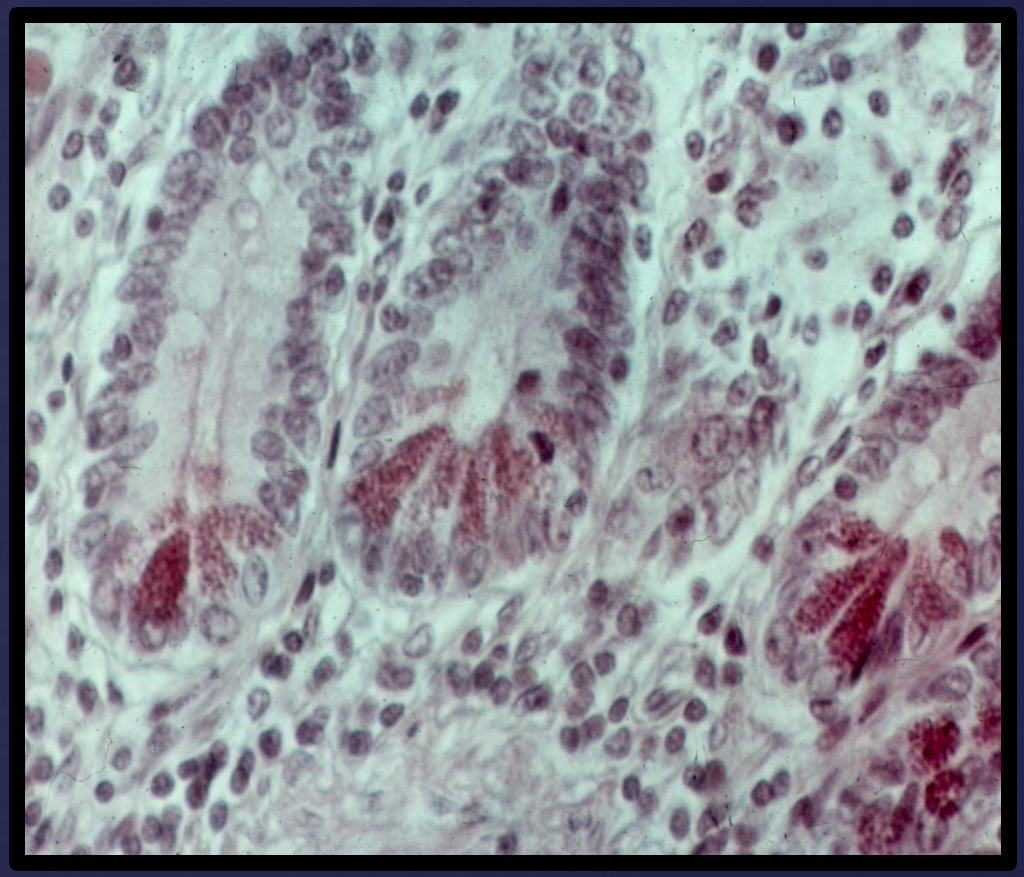
Fundic Glands: Parietal Cell cont.

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



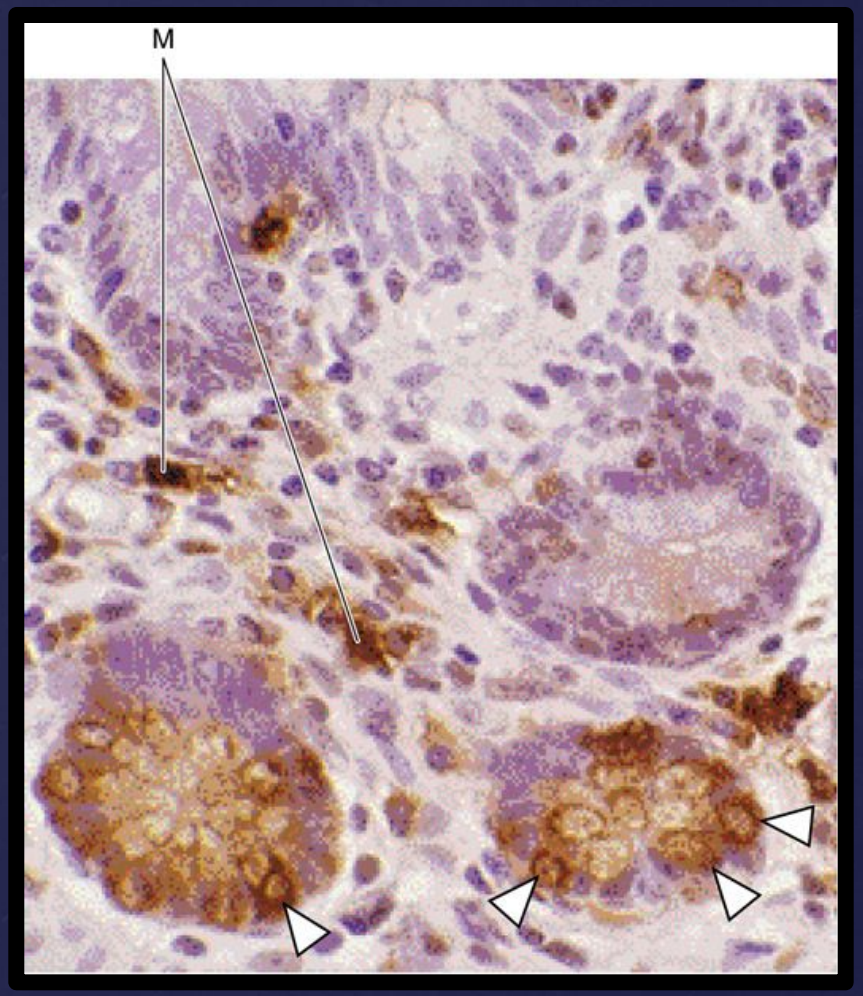
Small Intestine: Paneth Cell

- 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



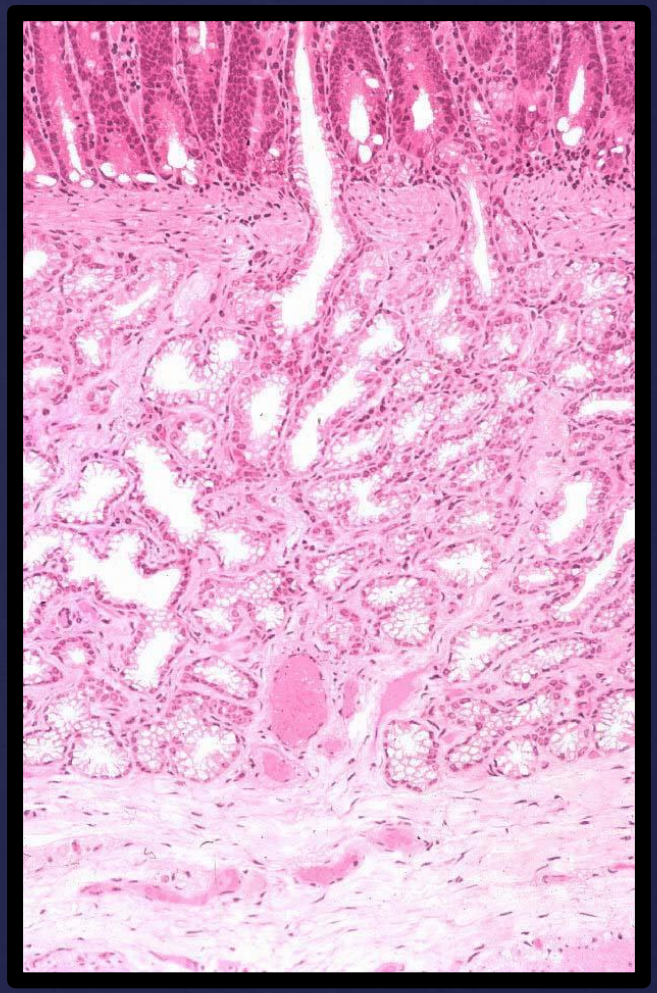
Small Intestine: Paneth Cell cont.

- 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)

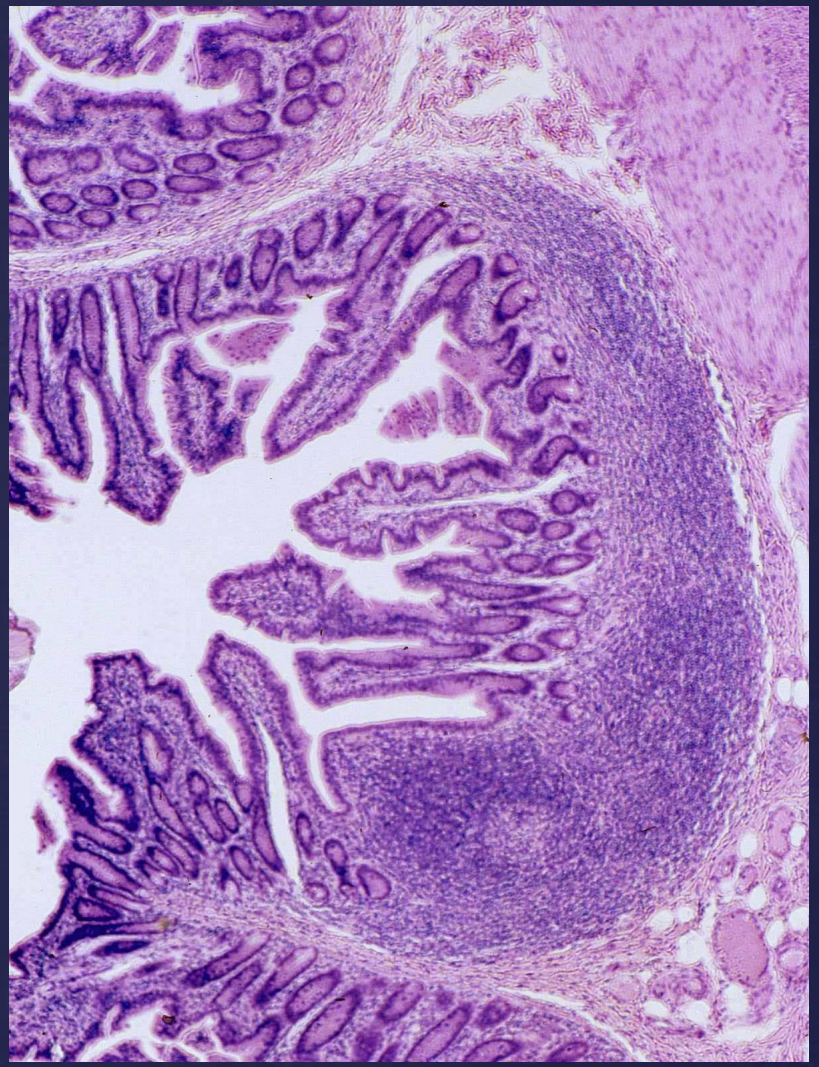


Small Intestine: Submucosa cont.

- 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

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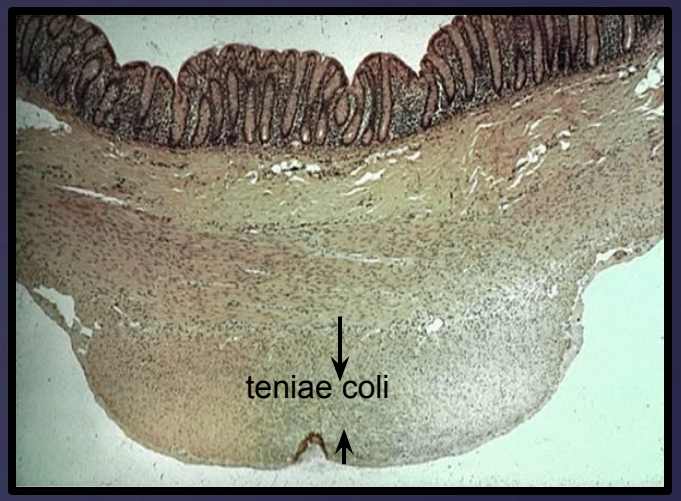
Large Intestine

- 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

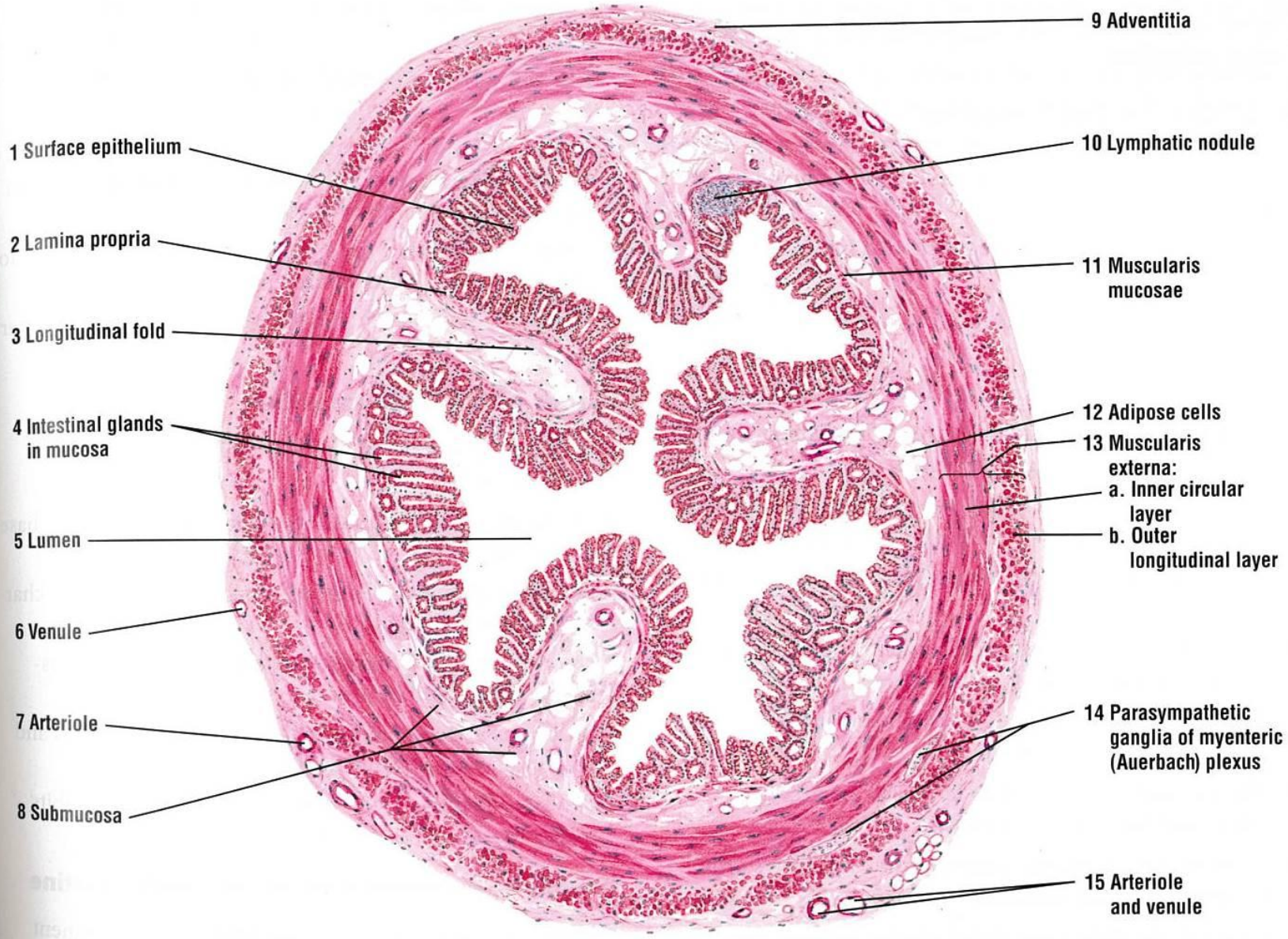


FIGURE 15.13 ■ Rectum (panoramic view, transverse section). Stain: hematoxylin and eosin. Low magnification.