My assignment 2

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Questions

Describe the microanatomy of small and large intestine. Note: you are expected to state the functions, segment, layers, general features and epithelium of each part of the small and large intestine.

Answers

The micro anatomy small intestine

Functions : The small intestine is a tubular structure within the abdominal cavity that carries the food in continuation with the stomach up to the colon from where the large intestine carries it to the rectum and out of the body via the anus. The main function of this organ is to aid in digestion.

Segments: the small intestine has 3 major segments,

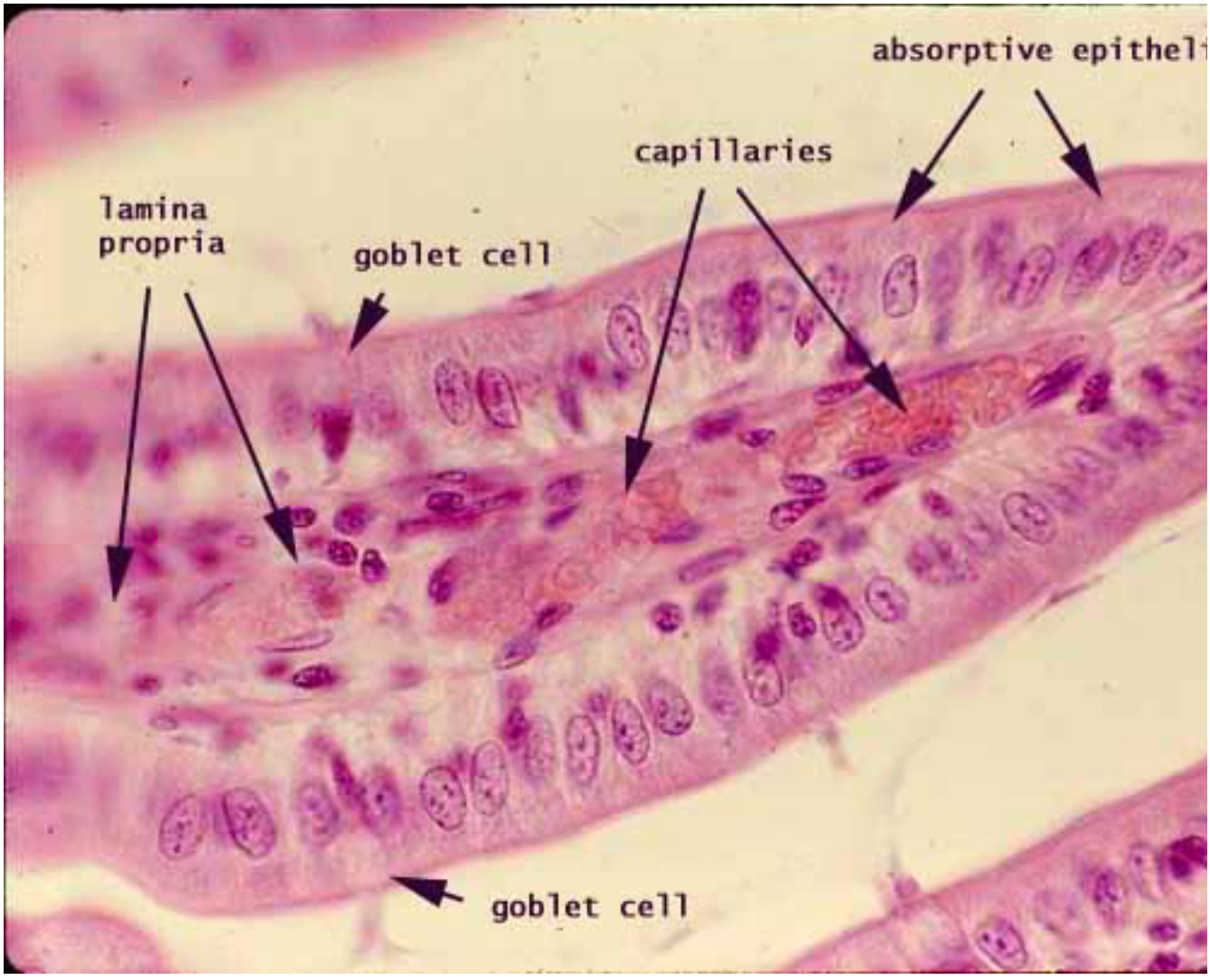
The first part, called the duodenum, connects to the stomachs readily distinguished from other regions of the small intestine by the presence of submucosal Brunner's glands, which may pack the submucosa so completely that the typical submucosal connective tissue is obscured. The middle part is the jejunum, also the longest and most "typical" region of the small intestine. It has no conspicuous characteristics of its own, except for the *absence* of those features which characterize the duodenum and ileum .The third part, called the ileum, attaches to the colon it also has has proportionally more goblet cells than more proximal sections of the small intestine.

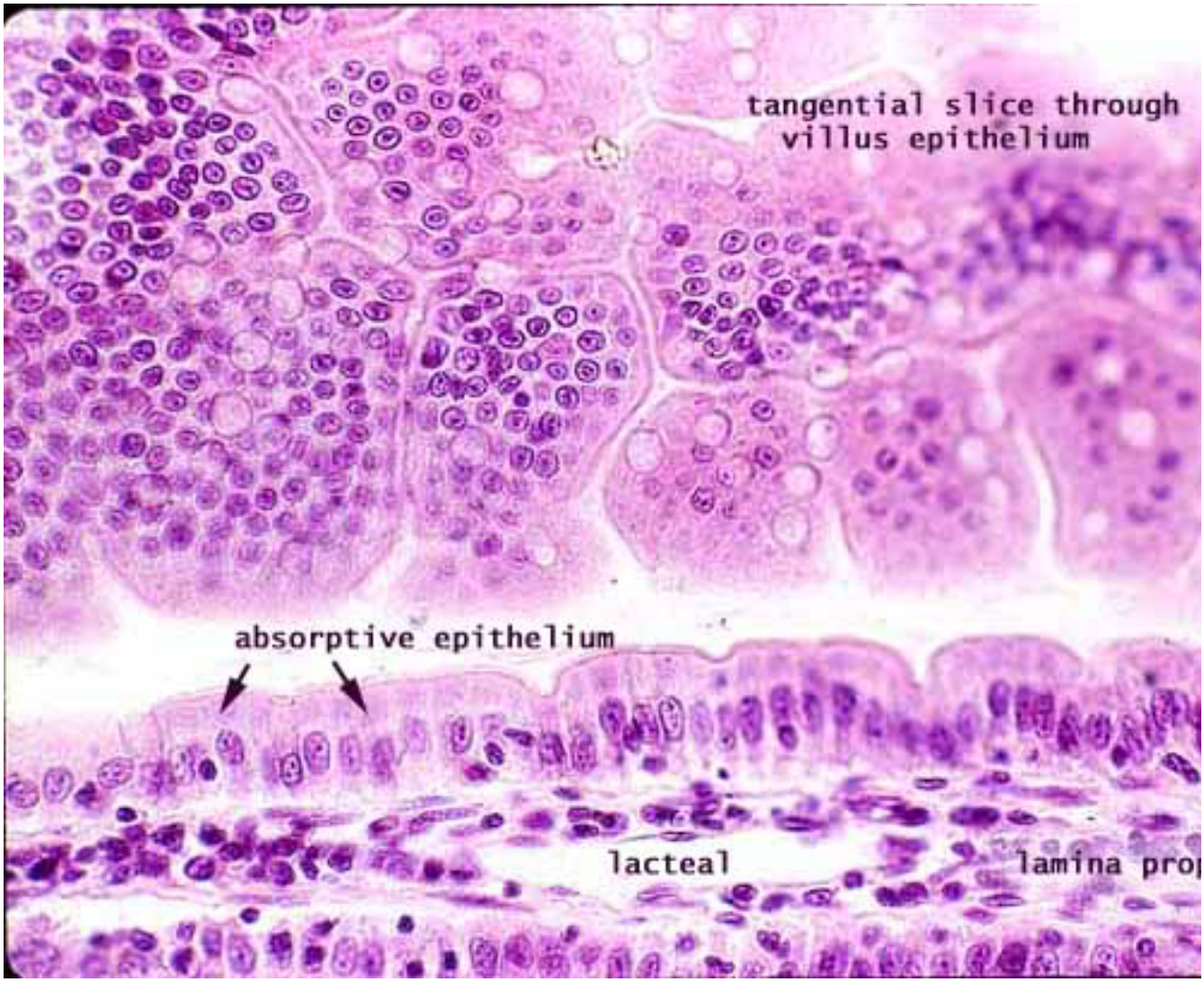
General features: The lining of the small intestine has tiny, finger-shaped tissues (villi). These raised tissues greatly increase the surface area of the intestine, which absorbs calories and nutrients from food.

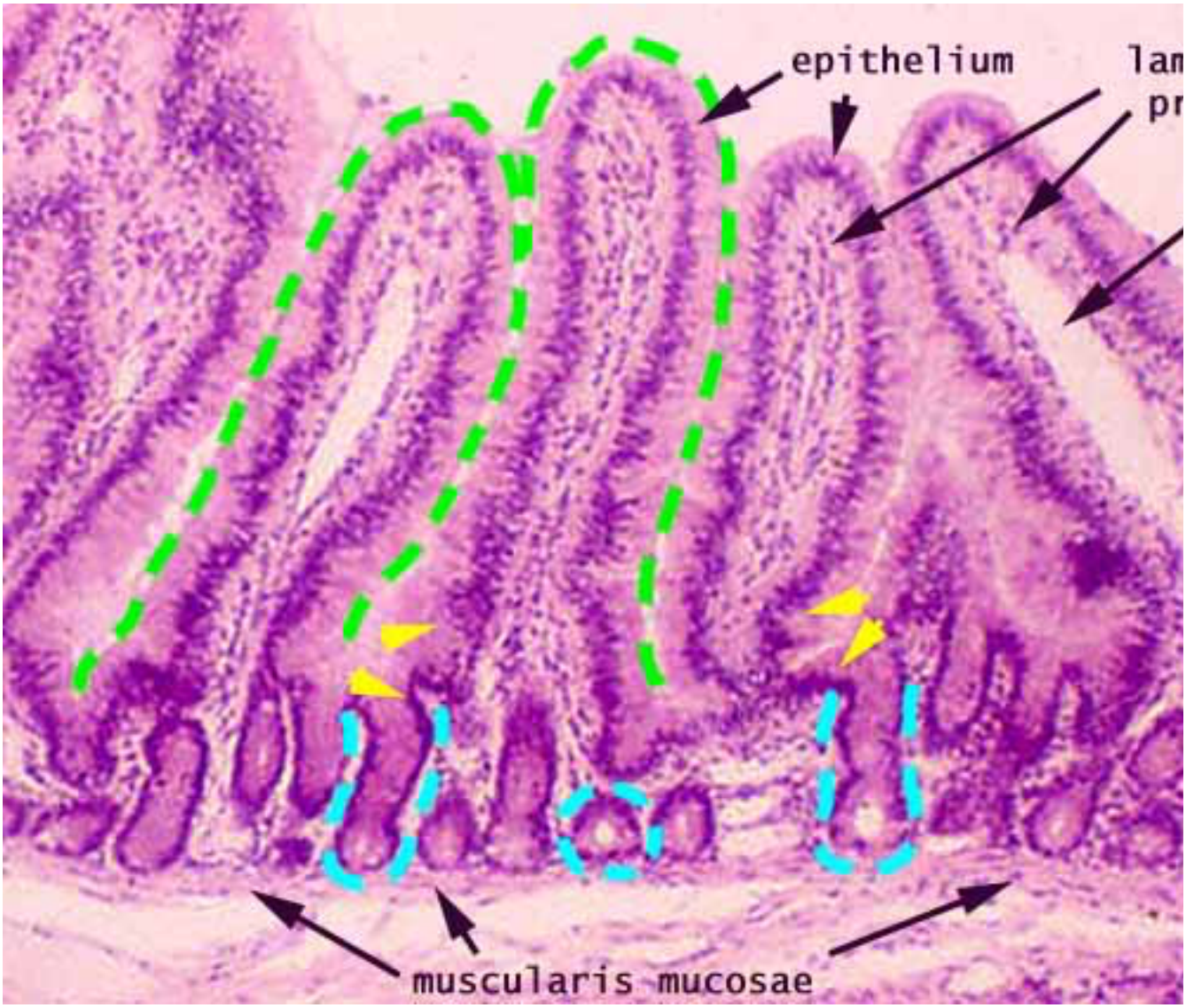
layers: The mucosa of the small intestine is characterized by evagination into plicae and

villi, which increase the surface area for nutrient absorption, and by short tubular invaginations, the crypts, which provide a protected site for stem cells.The mucosa of the small intestine is lined by a **simple columnar epithelium** which consists primarily of absorptive cells (enterocytes), with scattered goblet cells and occasional enteroendocrine cells. In crypts the epithelium also includes panted cells and stem cells .
The muscular mucosa of the small intestine forms a thin layer (only a few muscle fibers in thickness) beneath the deep ends of the crypts.
The submucosa of the small intestine is relatively unspecialized, except in the duodenum where it is packed with the mucous-secreting Brunner's glands.

Here are some image slides of the small intestine:




tangential slice through
villus epithelium
absorptive epithelium
lacteal
lamina pro



The micro anatomy of the large intestine

Functions: Its function is to absorb water from the remaining indigestible food matter, and then to pass the useless waste material from the body.

Segments: The large intestine consists of the cecum, colon, rectum, and anal canal.

General features: The large intestine differs in physical form from the small intestine in being much wider. The longitudinal layer of the muscularis is reduced to three strap-like structures known as the taeniae coli—bands of longitudinal muscle fibers, each about 1/5 in wide. These three bands start at the base of the appendix and extend from the cecum to the rectum.

Epithelium: The wall of the large intestine is lined with simple columnar epithelium.The large intestine has invaginations (the intestinal glands). While both the small intestine and the

large intestine have **goblet cells** that secrete **mucin** to form mucus in water, they are abundant in the large intestine.

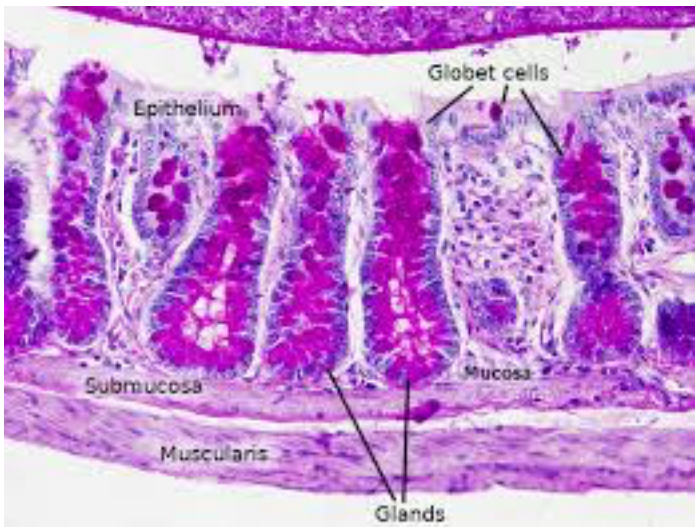
Layers:

Large Intestine Mucosa: The large intestinal mucosa is architecturally arranged as a layer of deep, densely packed, straight glands that do not extend villi into the lumen.

Large Intestine Submucosa: The large intestinal submucosa is a largely collagenous layer with occasional aggregations of MALT and larger vasculature and lymphatics.

Large intestine muscular propria: This is perhaps the most prominent layer of the large intestine and is responsible for the powerful peristaltic activity of the colon, required for propulsion of increasingly solid feces. The muscularis propria possesses the traditional inner circular layer and outer longitudinal layer of smooth muscle cells common to all GI tract segments.

Some images of the large intestine histology:



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