

# Gastrointestinal Tract Questions

# Readiness Assessment Questions



1. From which region of the stomach was this sample taken?

- Cardia
- Fundus
- Body
- Antrum





2. Which physiological process occurs in this region of the GI tract?

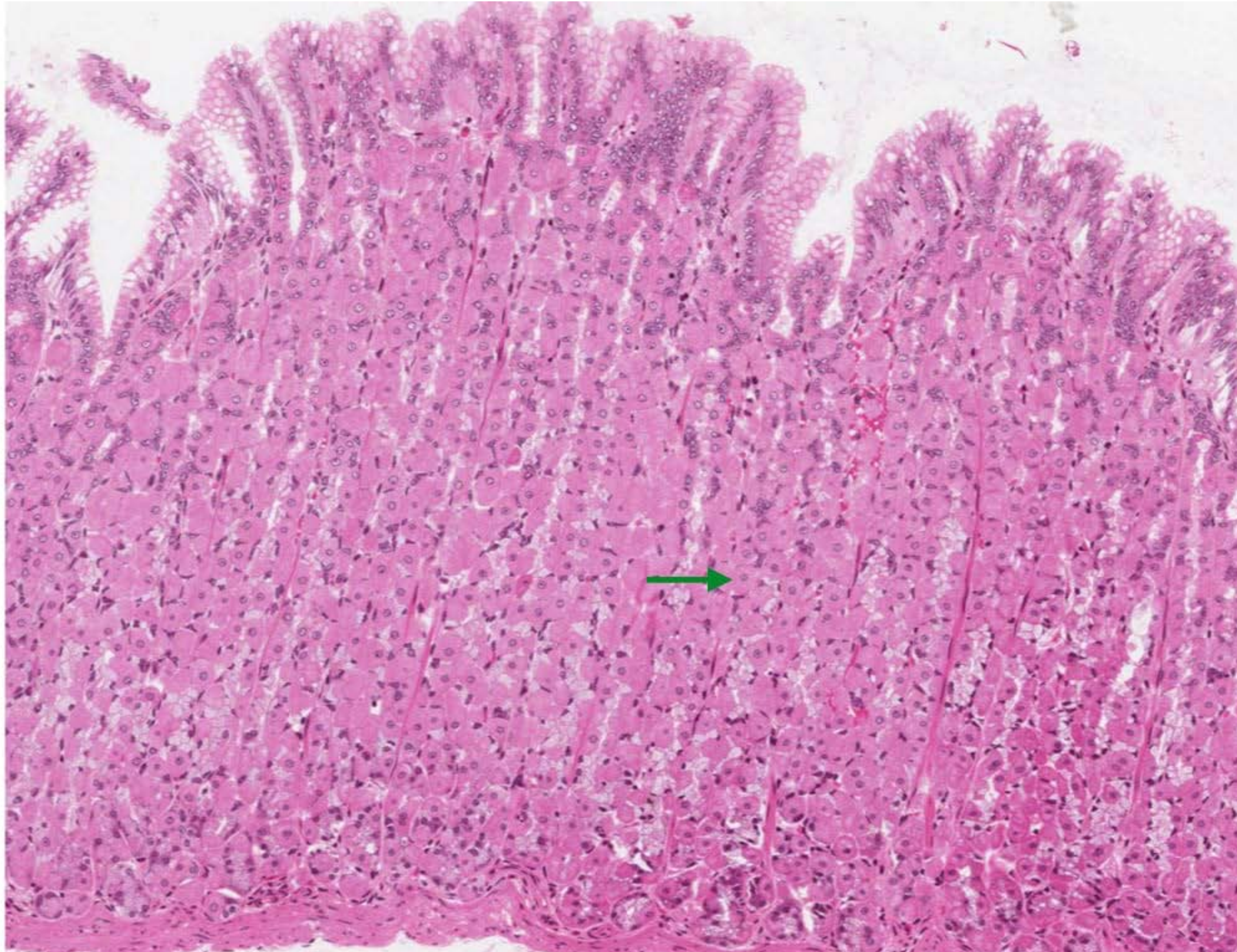
- Acid production
- Bicarbonate production
- Nutrient absorption
- Pepsinogen production





3. Which molecule decreases secretion from the cell indicated by the arrow?

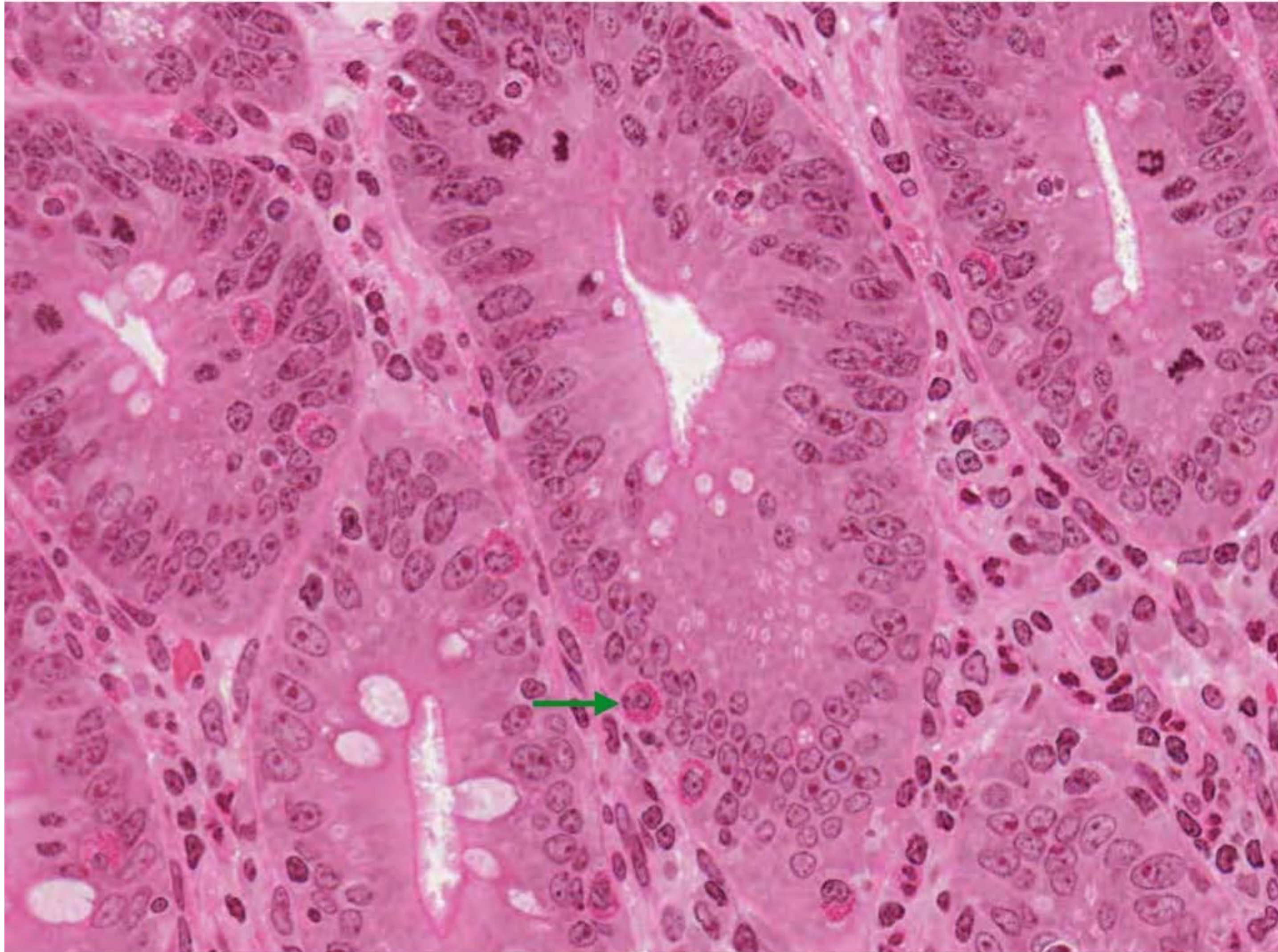
- Gastrin
- Somatostatin
- Acetylcholine
- Histamine





4. This cell in the small intestine releases factors that affect which activity?

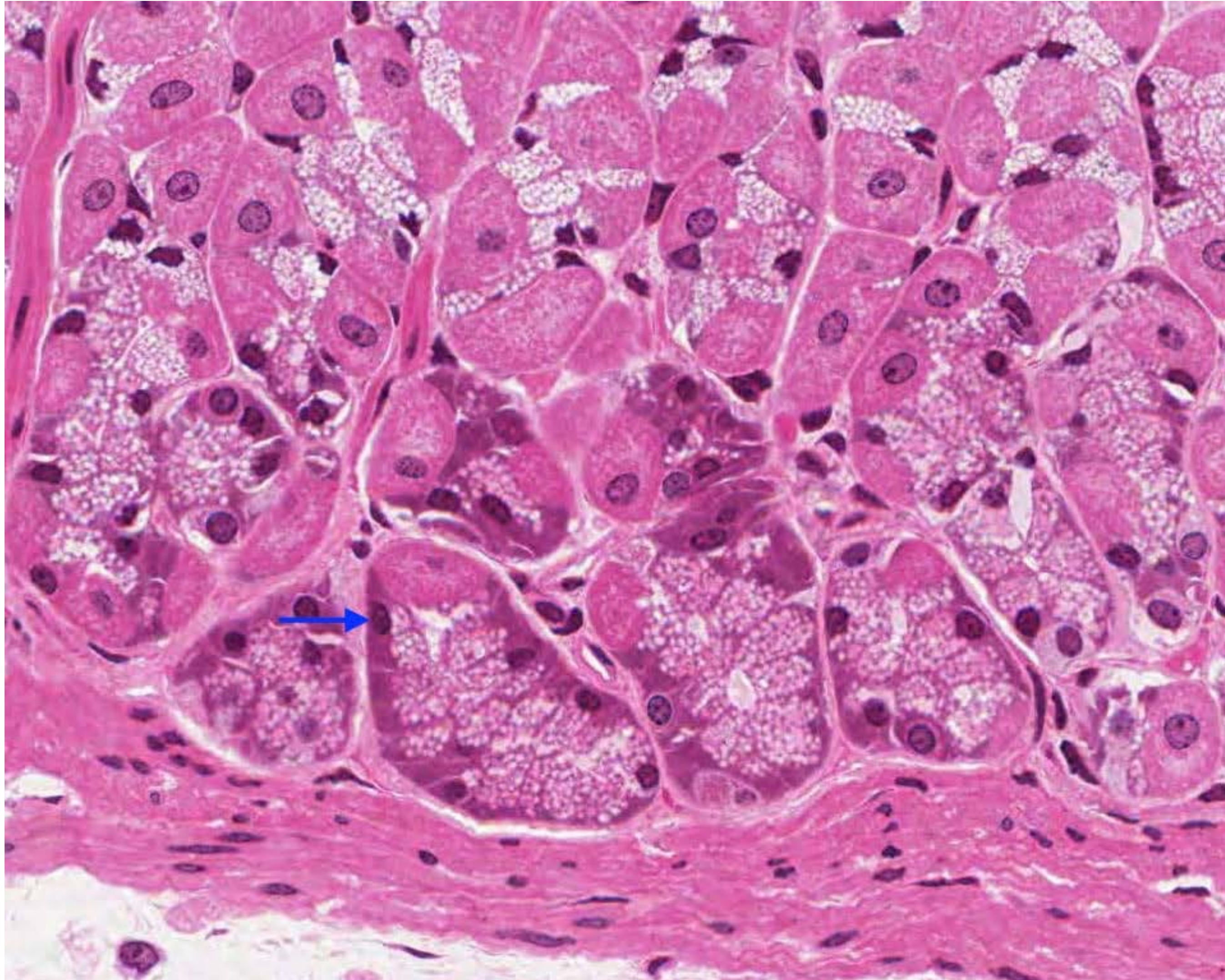
- Acid secretion
- Secretion of pepsinogen
- Bicarbonate release
- Microbial growth





5. What does this cell in the stomach secrete?

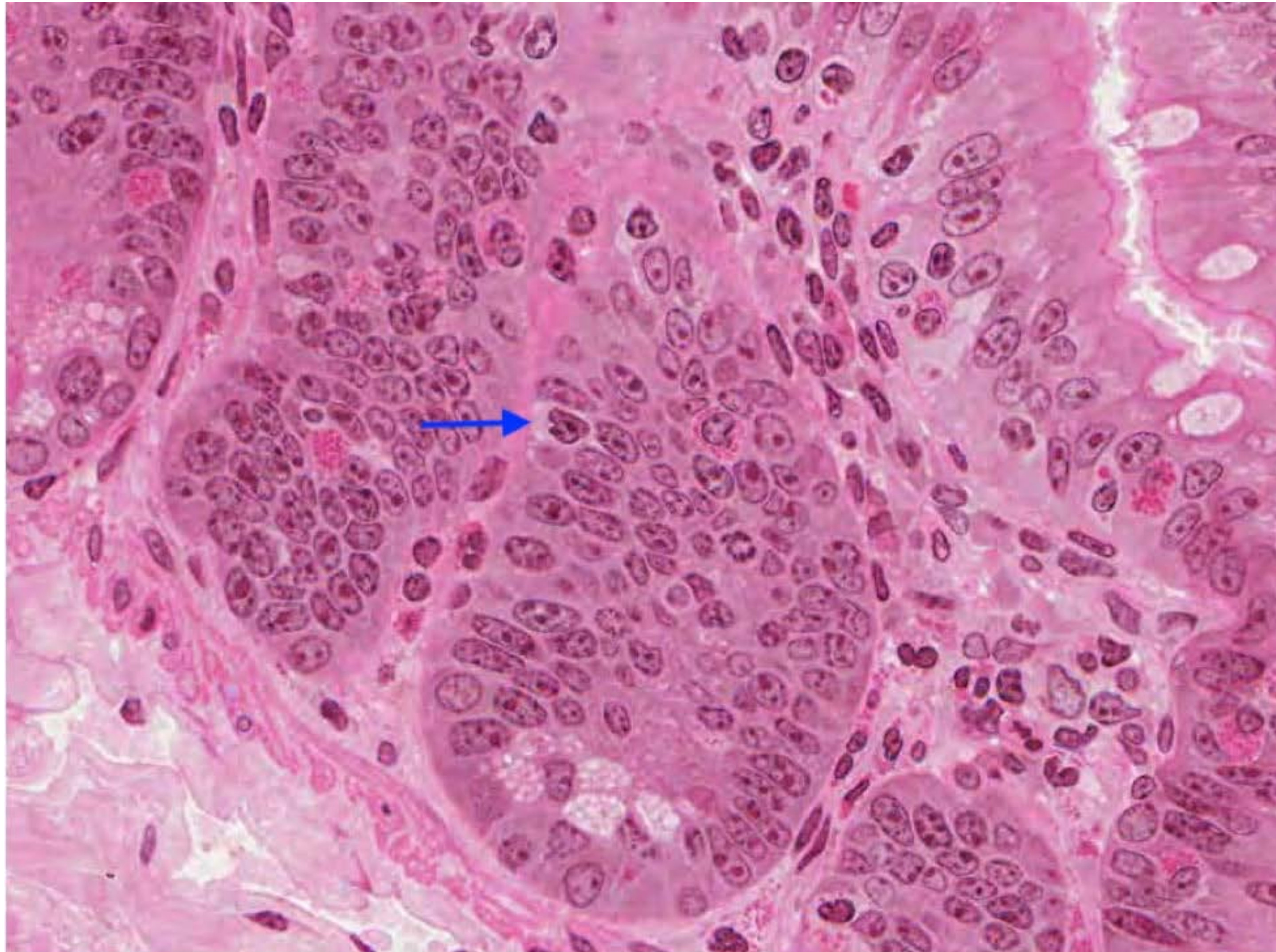
- Hydrogen ions
- Gastrin
- Pepsinogen
- Histamine





6. Which process would be least affected by a mutation that inhibited secretion from this type of cell in the small intestine?

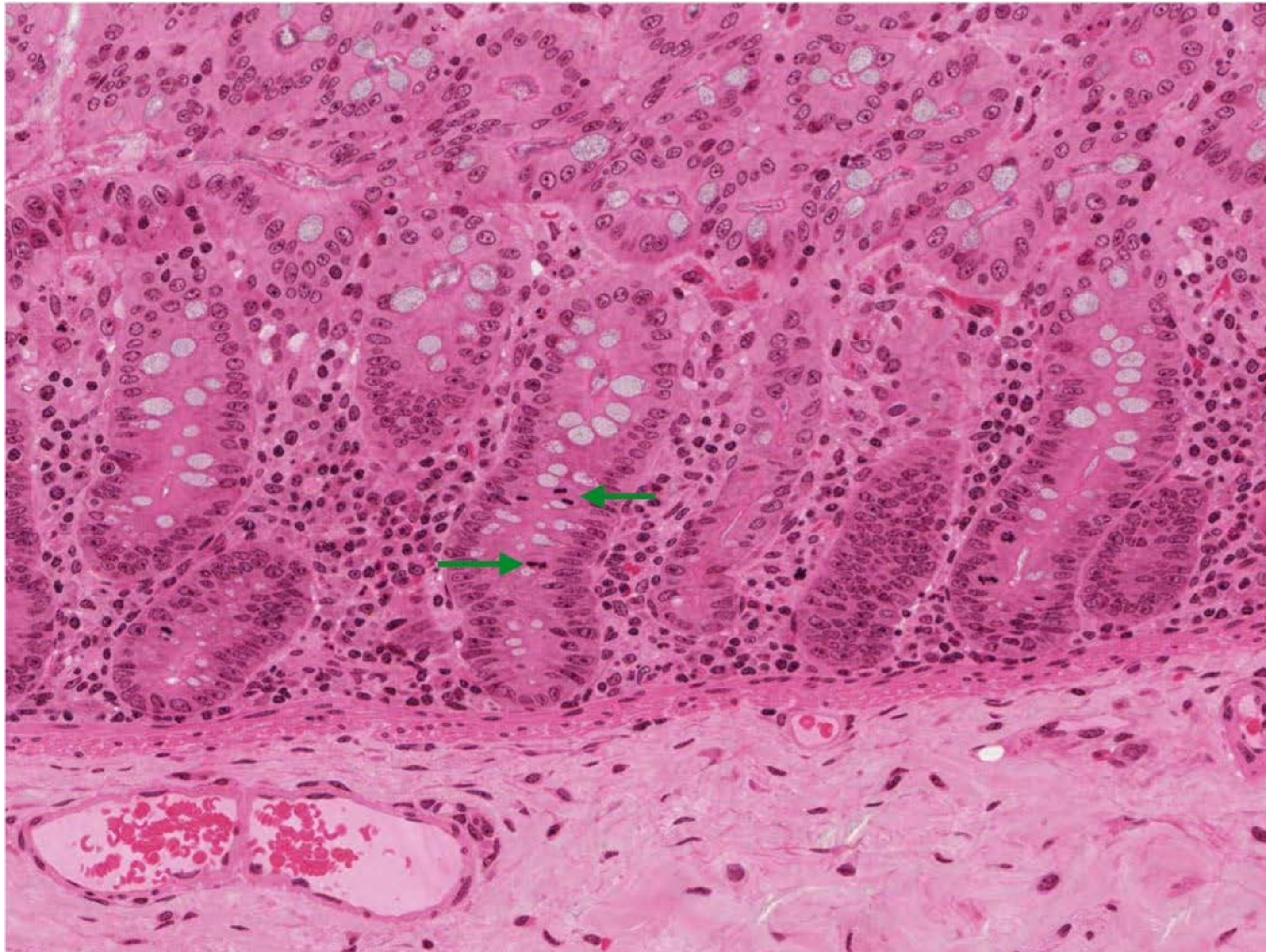
- Rate of bicarbonate production
- Rate of acid production
- Rate of digestive enzyme production
- Rate of peristalsis





7. These cells in small intestine are an indication of what process?

- Tumorigenesis
- Hormone secretion
- Protein secretion
- Epithelial renewal





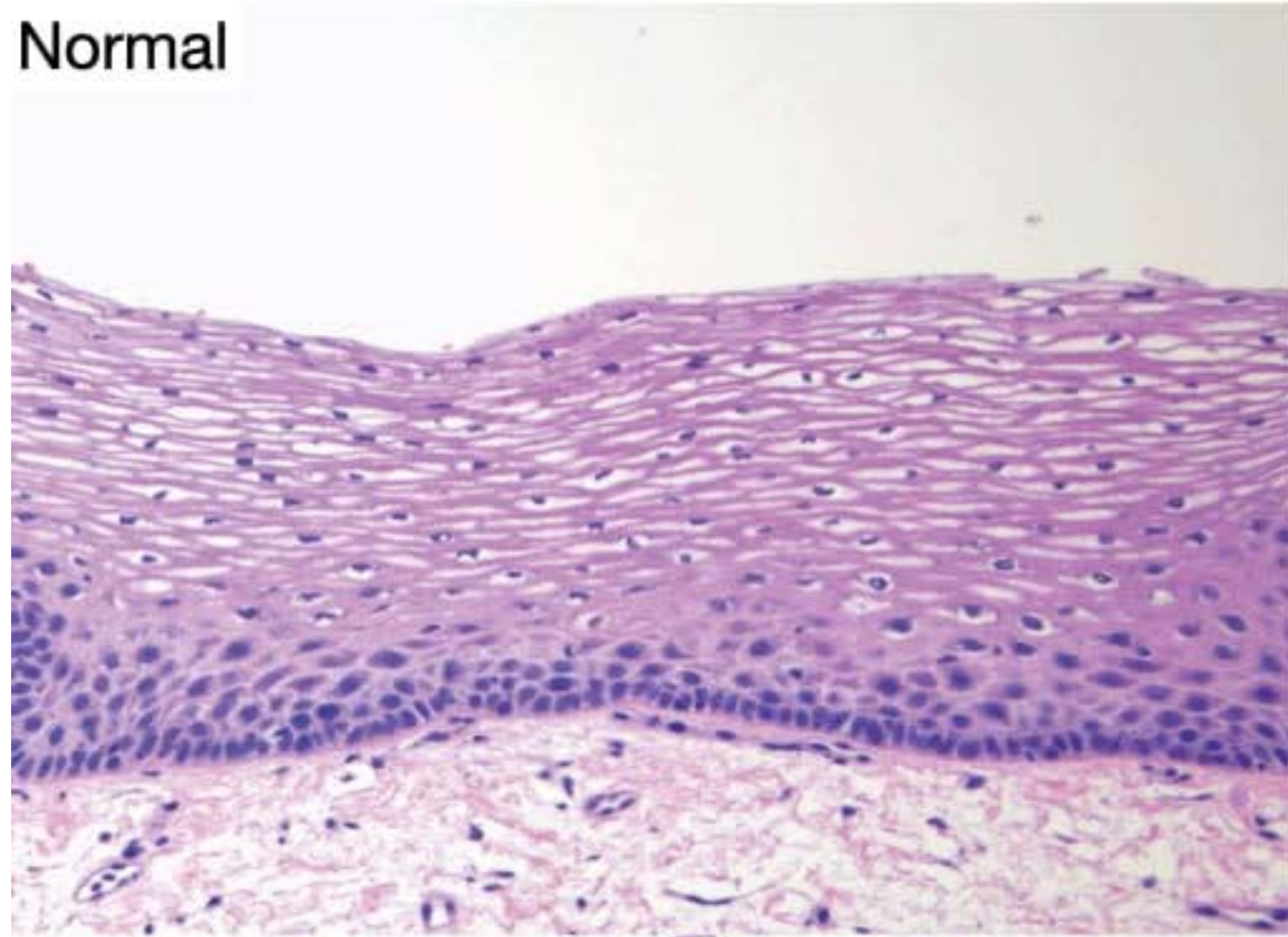
# Application Questions



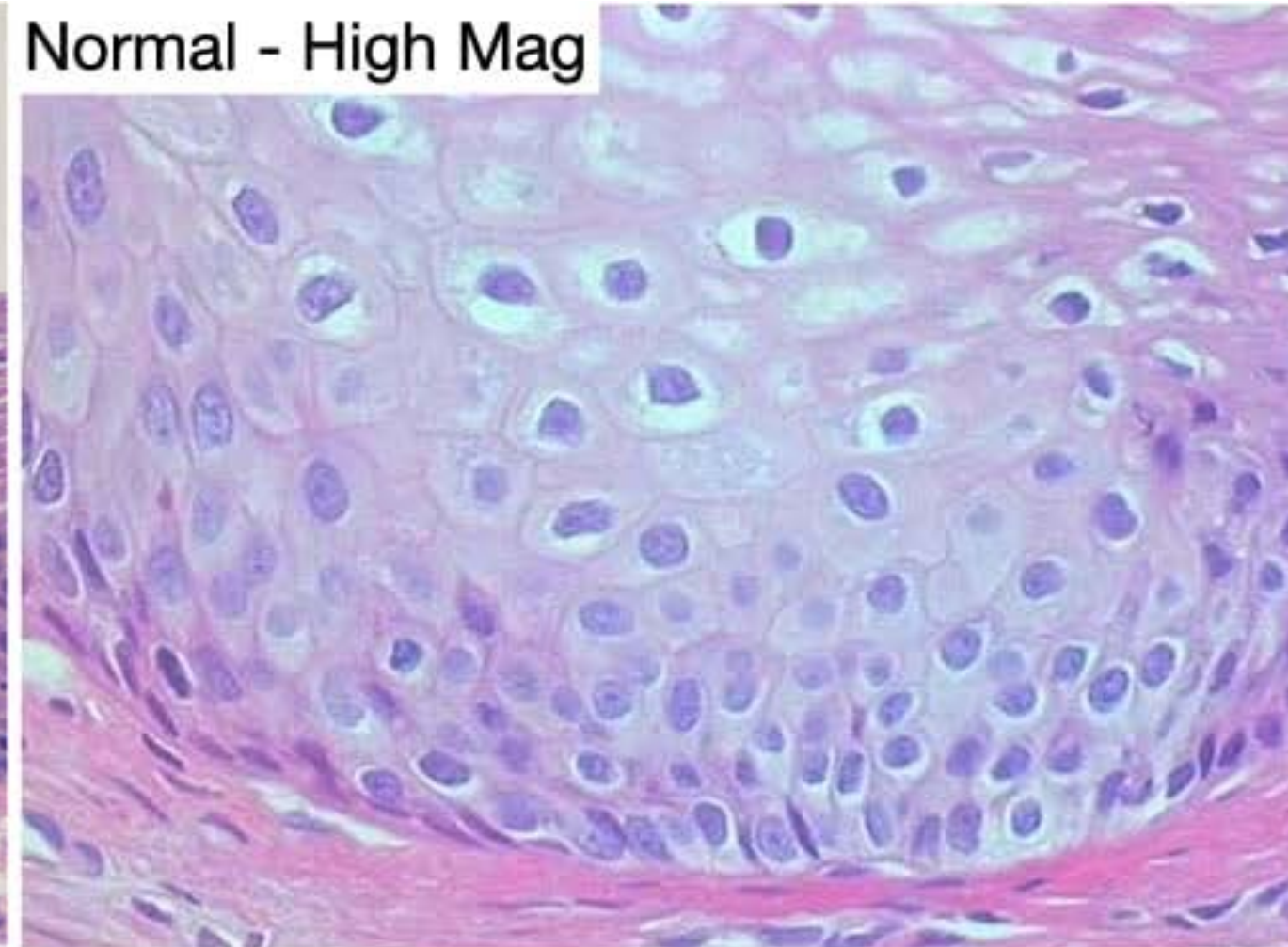
A 54-year old patient presents with a sensation of burning pain that radiates to their arms and back. The patient reports the pain is usually worse after eating. The patient's heart rate is 78/min and blood pressure is 145/90. An EKG is normal and a blood test measures Troponin T at 0.02 ng/mL (normal 0 - 0.04 ng/mL). An endoscopy of the esophagus reveals little observable change, but a biopsy of the esophagus from just above the esophageal-gastric junction reveals the images below.

- Describe the changes to the epithelium and list the most likely causes for the changes.
- Inhibiting which protein(s) might alleviate the patient's symptoms?

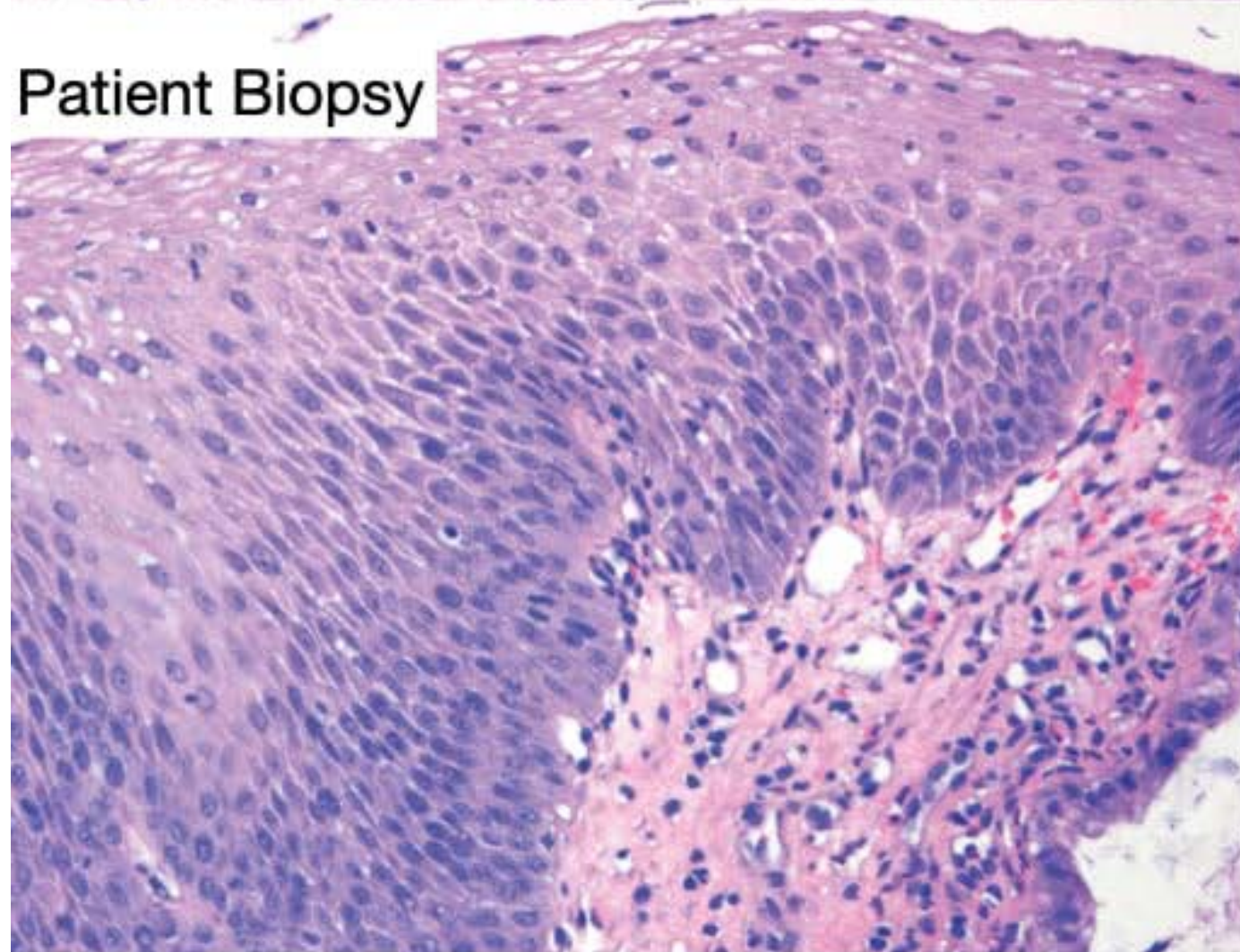
**Normal**



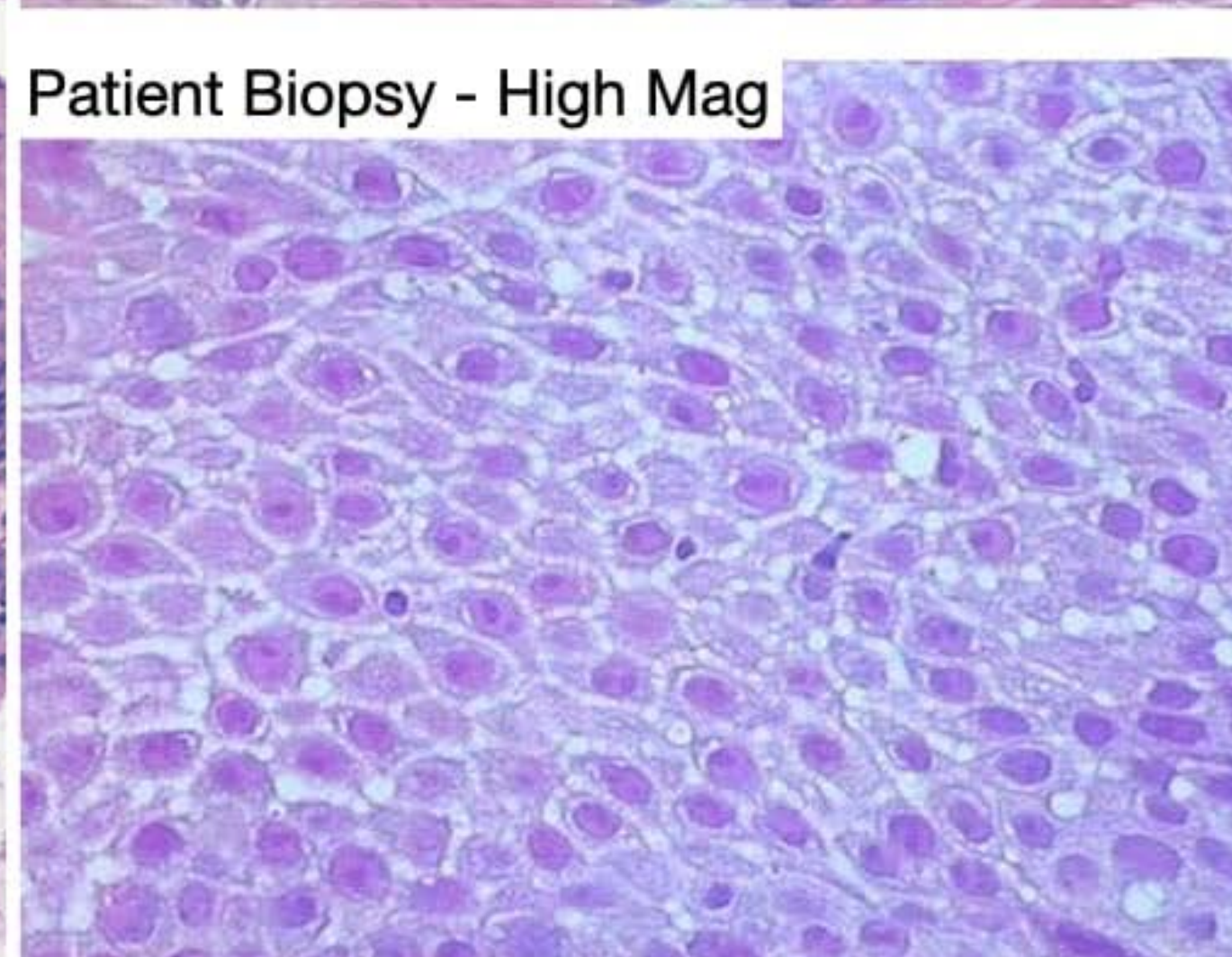
**Normal - High Mag**



**Patient Biopsy**

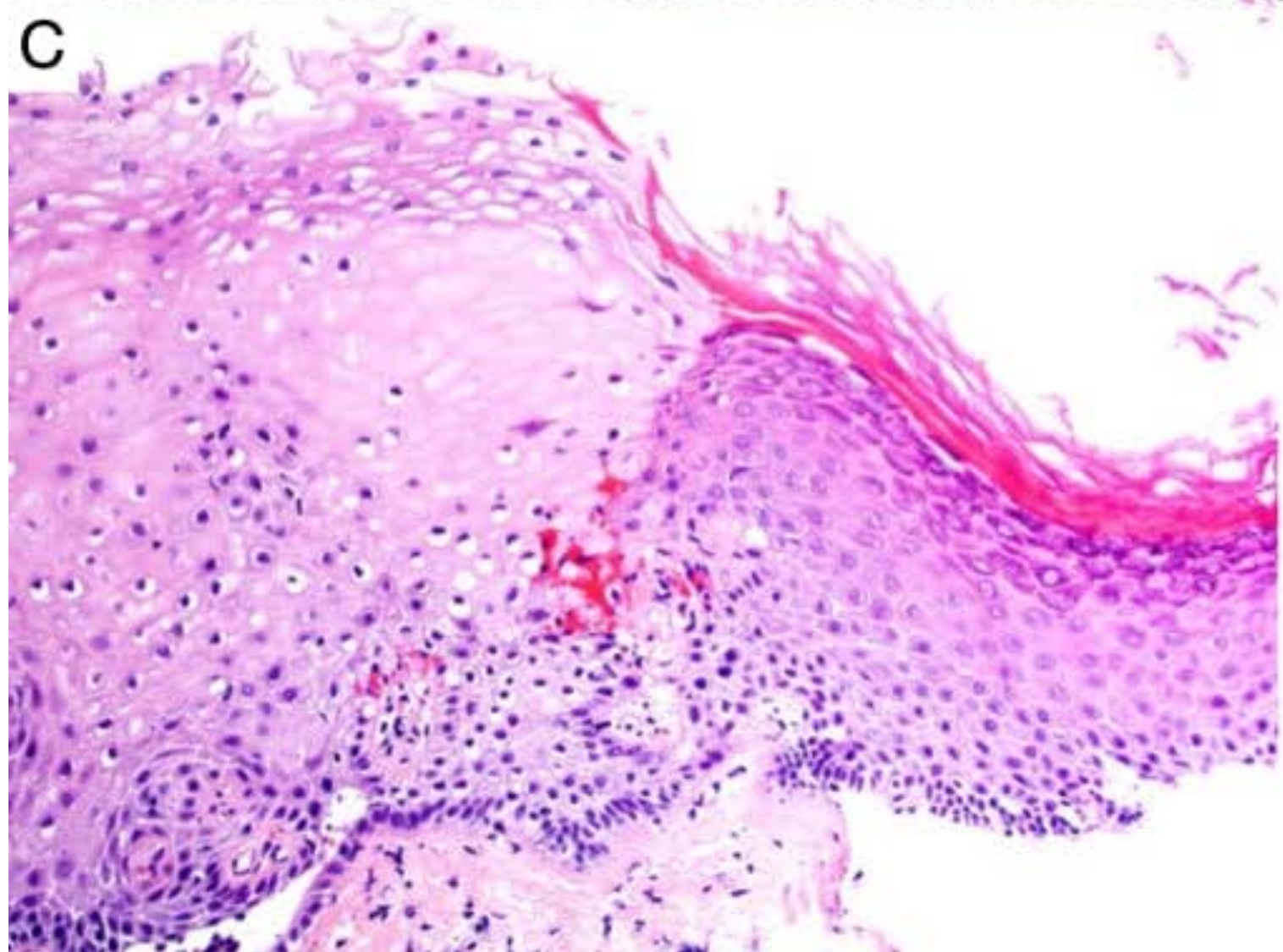
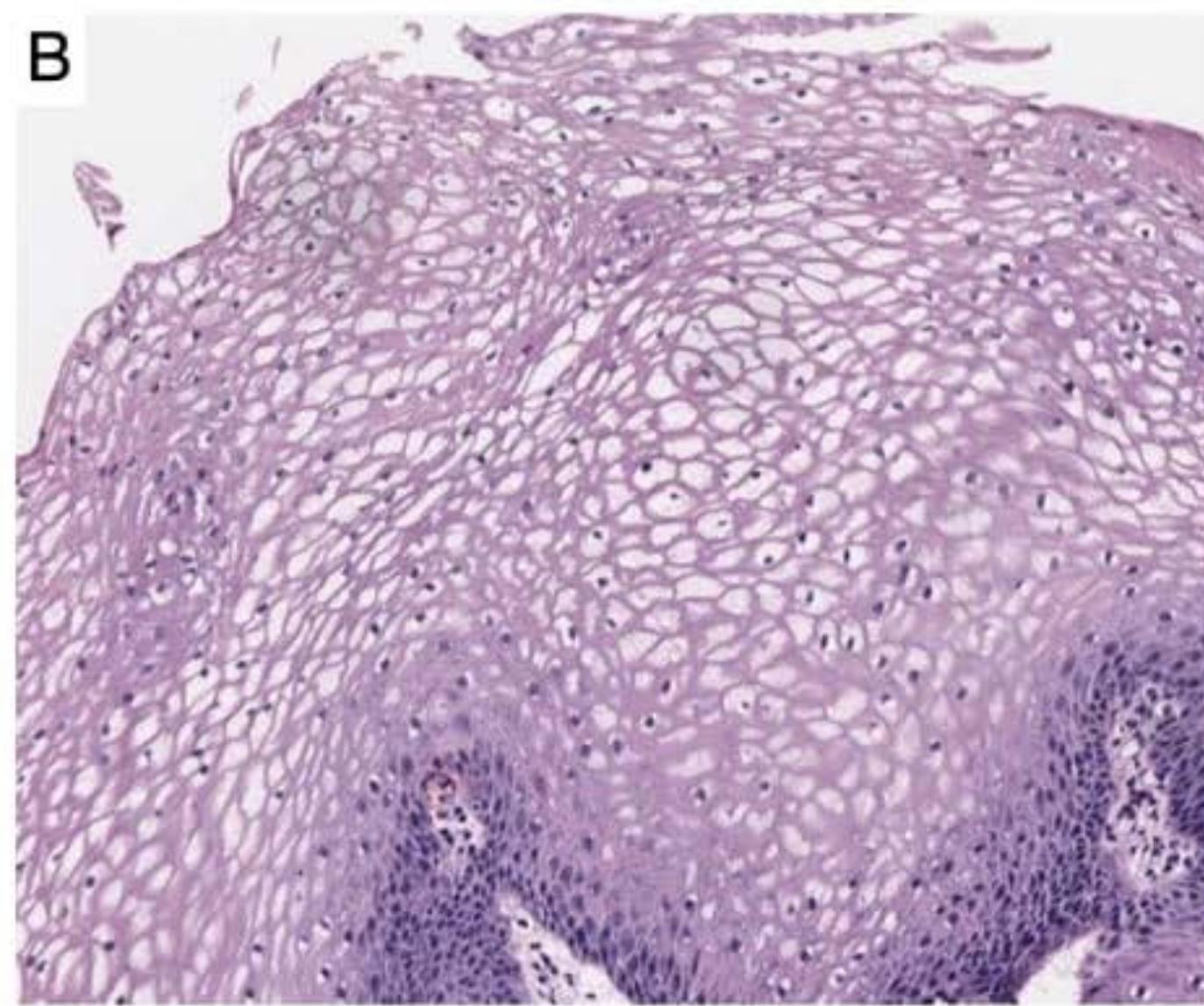
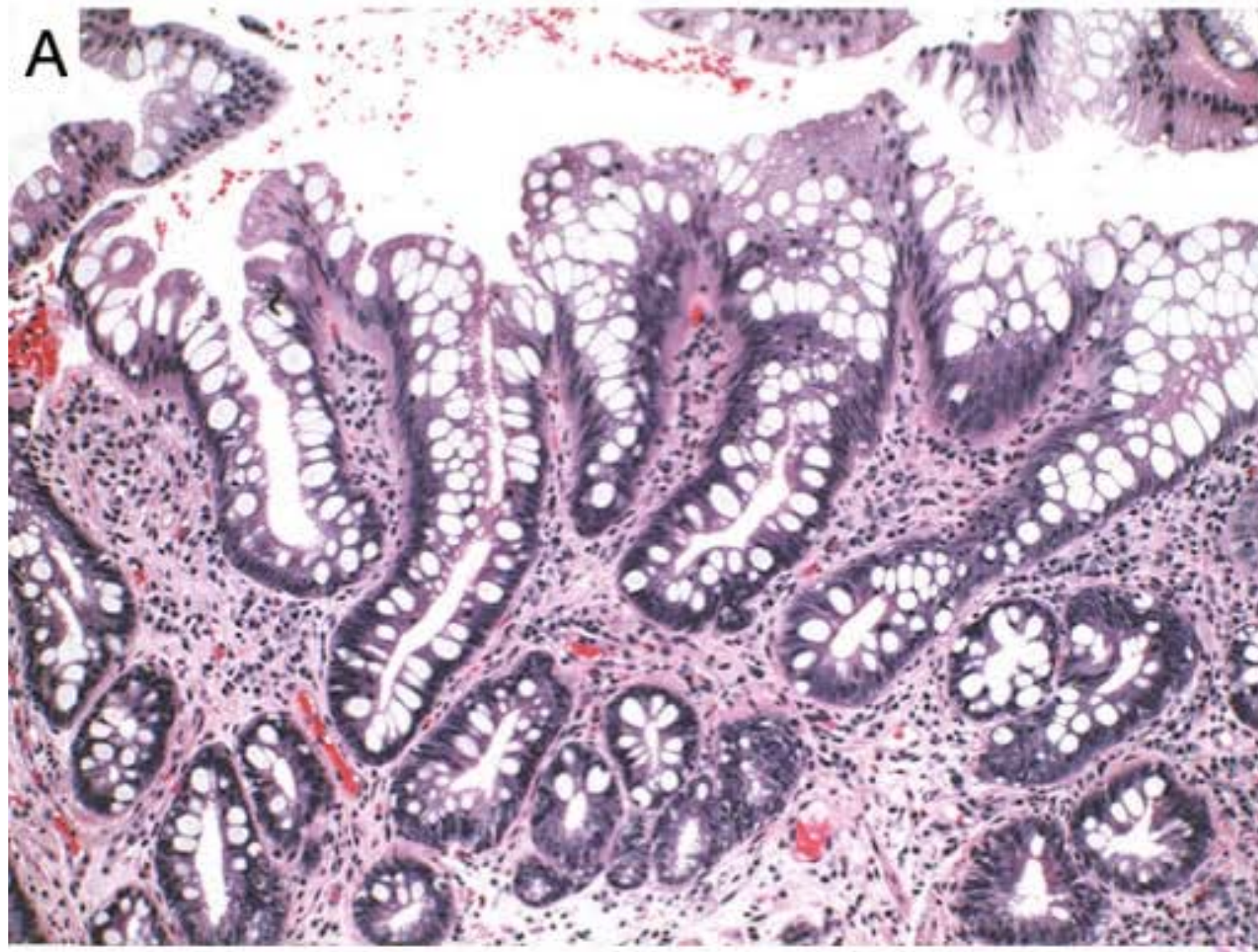


**Patient Biopsy - High Mag**





If the patient's symptoms are not addressed, which change to the epithelium should you most likely observe? What are potential long-term risks of this change?





A 32-year old, female patient presents with repeated episodes of diarrhea and abdominal pain. The patient's recent history shows significant weight loss. A blood test measures serum ferritin at 8 ng/ml (normal 13 ng/ml - 150 ng/ml). Endoscopy is performed and a biopsy of the duodenum is taken. The image below is an H&E stain of the biopsy.

What changes do you observe to overall structure of the mucosa?

Examine the epithelium closely. What do you observe?

What explains the structural and cellular changes you observe?

