

Gastrointestinal Pathophysiology (HST-121)

Laboratory Assignment #1

(Due Wednesday November 2nd)

NAME:

Recommended reading:

1. Lecture notes on Overview of Embryology and Physiology
2. Lecture notes on Non-Neoplastic Diseases of the Esophagus and Stomach

Decide if each of the following statements is true or false?

- *Meckel's diverticulum* is the most common type of omphalomesenteric remnant and typically occurs on the mesenteric aspect of the jejunum.
- *Duodenal atresia* or complete occlusion of the duodenal lumen is uncommon, but it affects 20-30% of infants with Trisomy 21 and 20% of premature infants.
- In individuals with an *annular pancreas*, duodenal obstruction may result in infancy, or in the adult life as a result of pancreatitis or malignancy in the annular portion.
- *Alpha-amylase* breaks the 1:6 glucosidic linkage of starch molecules.
- *Omphaloceles* result from failure of the intestines to return to the abdominal cavity during the tenth week of gestation.
- *Umbilical hernias* result when the intestines do not return to the abdominal cavity during the tenth week, but later herniate through an incompletely closed umbilicus.
- *Pepsinogen* is converted to pepsin by the brush border endopeptidases.
- *Gastroschisis* is a linear defect near the median plane of the ventral abdominal wall that permits extrusion of the abdominal viscera without involving the umbilical cord.
- *Secretin* and *CCK* are secreted by the duodenal mucosa and stimulate pancreatic secretion.
- The three most common types of *esophageal atresia and tracheoesophageal fistula* are: proximal EA with distal TEF (85% of cases), pure EA (8-10% of cases), and H-TEF (3-4% of cases).

Gastrointestinal Pathophysiology (HST-121)

Case 1:

The microscopic slide labeled GI-1 shows a histological section from the distal esophagus of a 65-year-old man with long-standing history of heart-burn.¹

- 1A) What epithelial cell type present in this section does not belong to normal esophagus or stomach?
- 1B) Why was this man's esophagus and proximal stomach resected?

Case 2:

Scan the microscopic slide labeled GI-3 under low magnification. Compare the veins with the relatively normal esophageal veins in the slide labeled GI-1.

- 2A) What is your diagnosis? (two words only!)
- 2B) Which of the following is the most likely clinical history for the patient from whom this specimen was obtained?
- 55-year-old man with long-standing gastroesophageal reflux disease
 - 40-year-old woman with hemophilia
 - 45-year-old man with long-standing history of alcohol abuse and abnormal liver function tests

Case 3:

The microscopic slide labeled GI-5 is a section of stomach with a large gastric ulcer.

- 3A) Focus on the ulcer and the underlying tissue under the microscope. Why do gastric ulcers bleed and present with melena and/or "coffee ground" emesis?
- 3B) Focus on the surrounding mucosa and fill in the correct sentence below:
- The ulcer is located in the antrum because of the presence of _____ cells in the mucosa.
- The ulcer is located in the corpus because of the presence of _____ cells in the mucosa.

¹ All HST-121 glass slides are available in small white boxes in the HST Skills area.