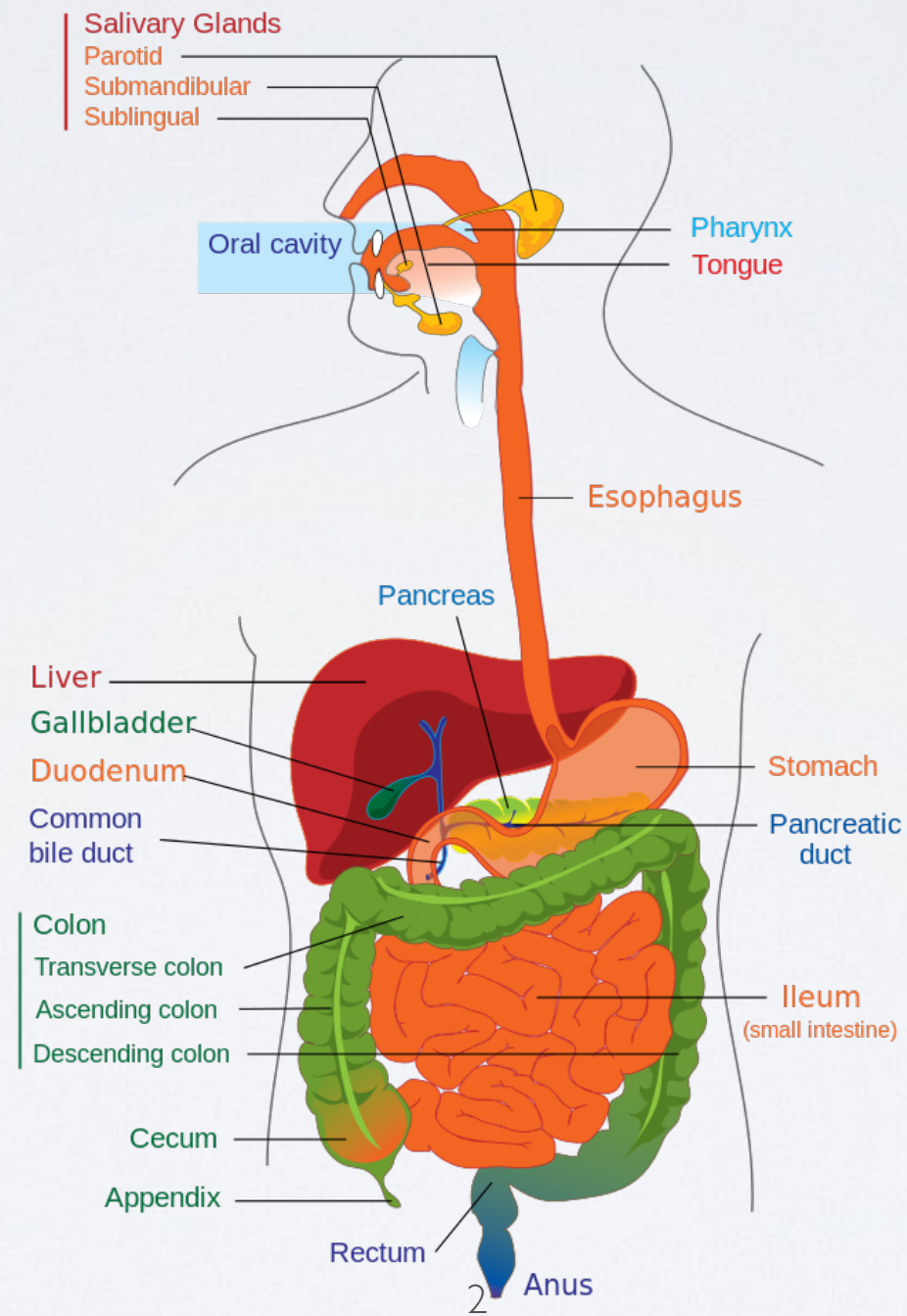


GASTROINTESTINAL SYSTEM

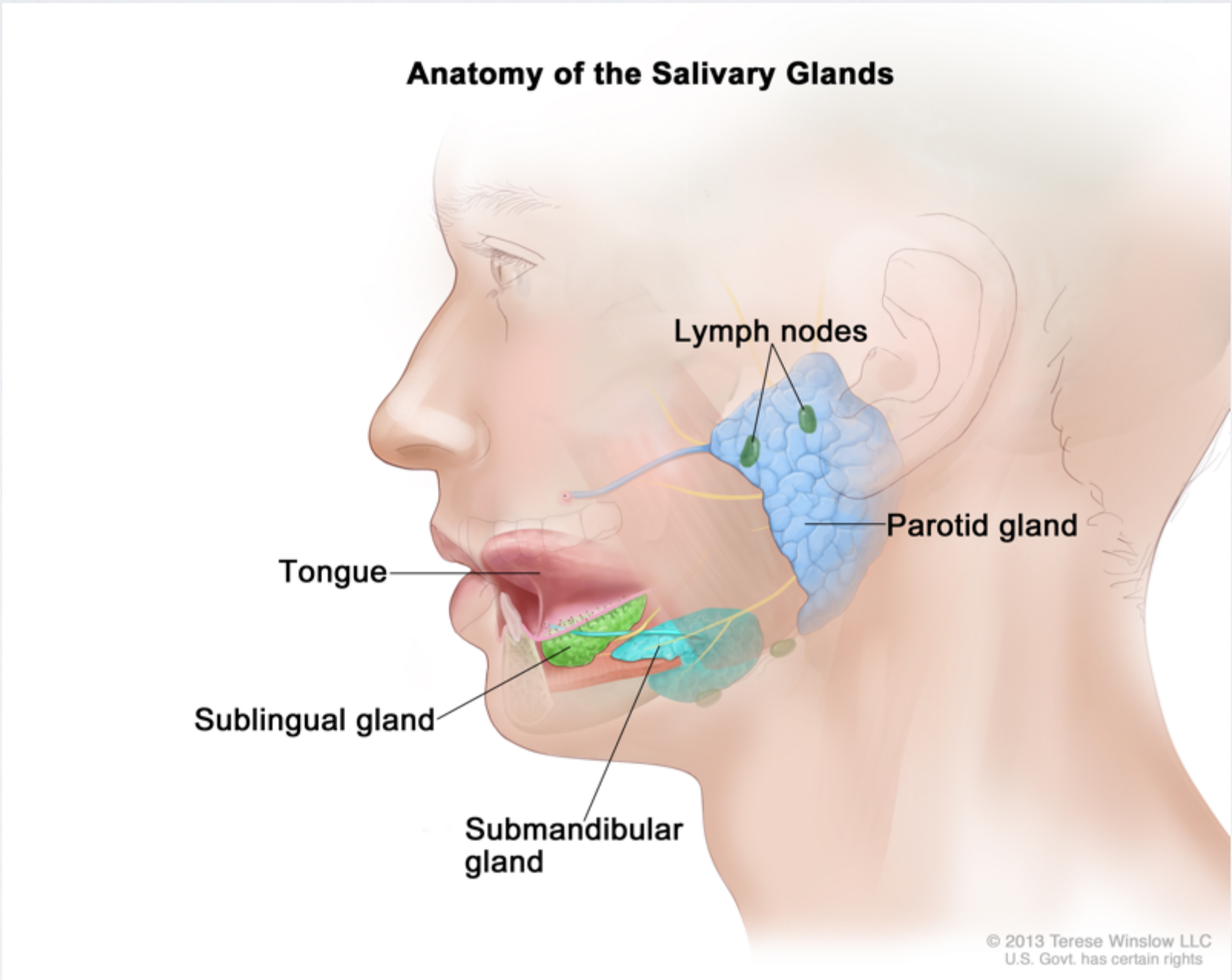
PBM 218

Fall 2023

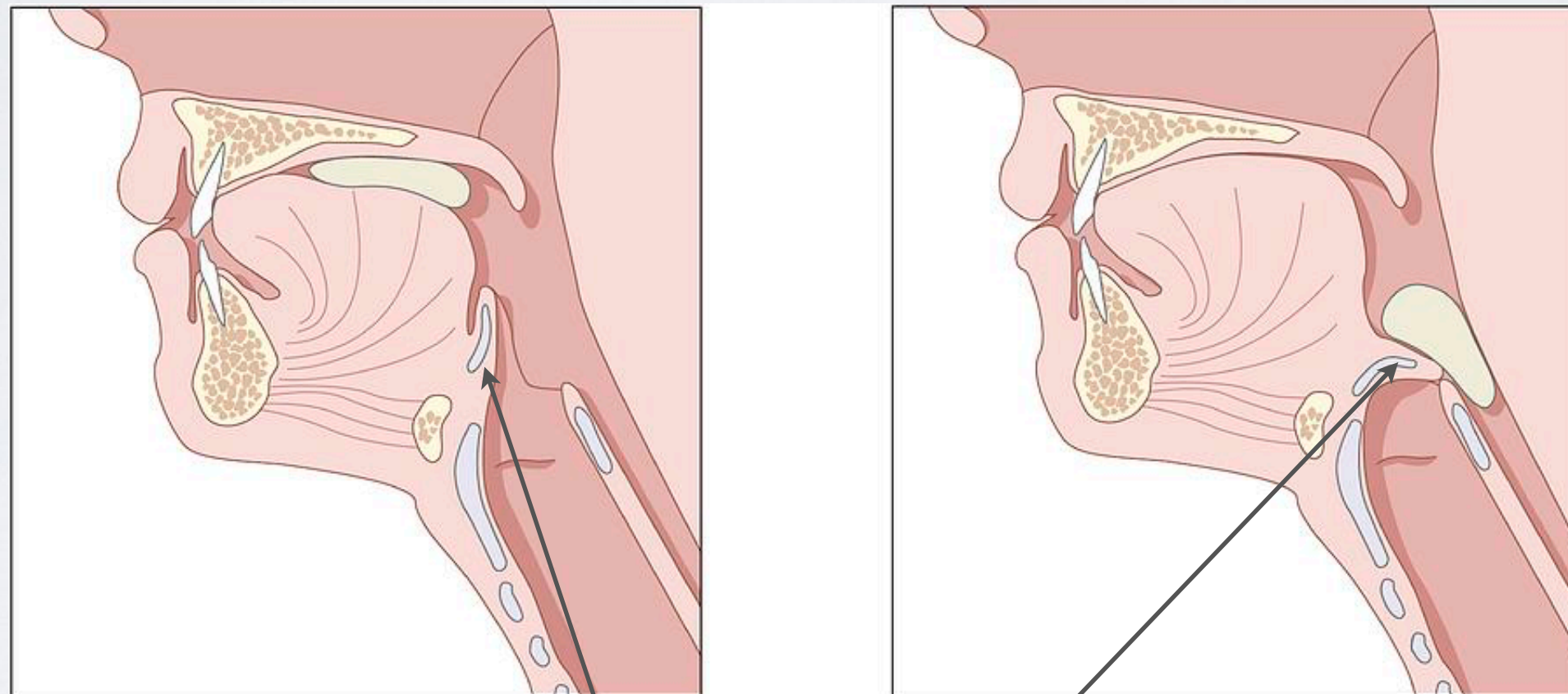
GI MACROANATOMY



MOUTH & SALIVARY GLANDS

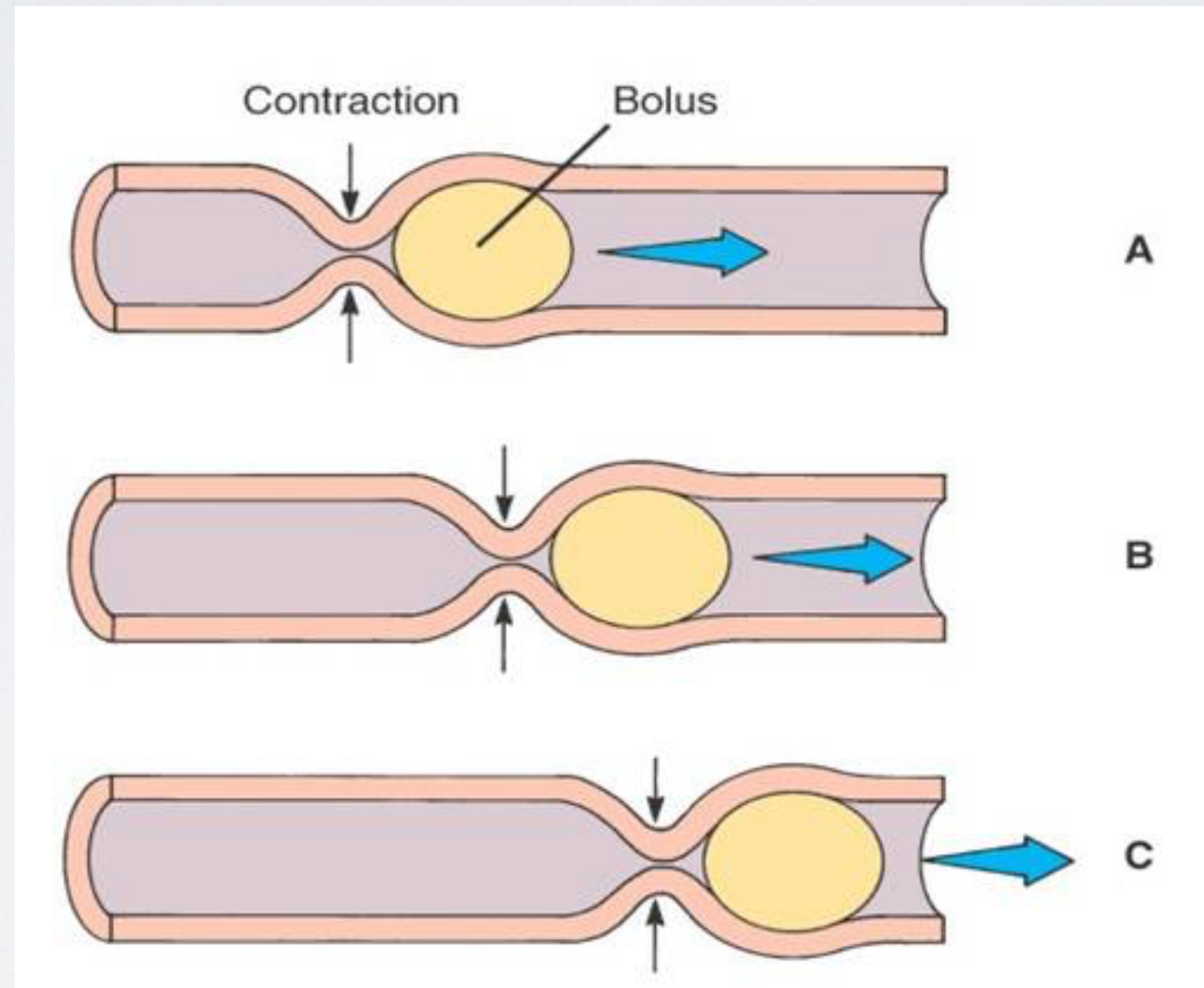


SWALLOWING

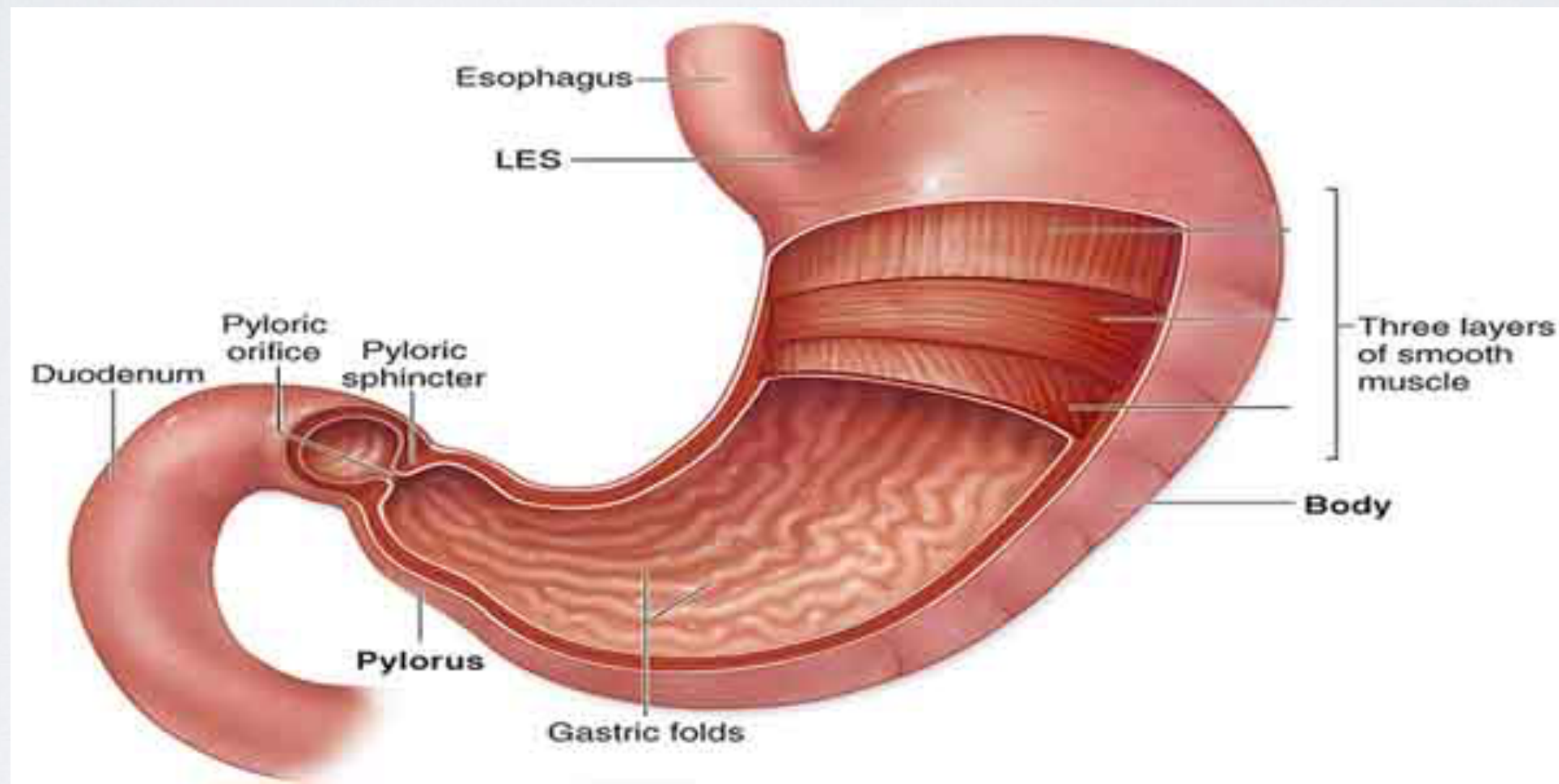


epiglottis

PERISTALSIS

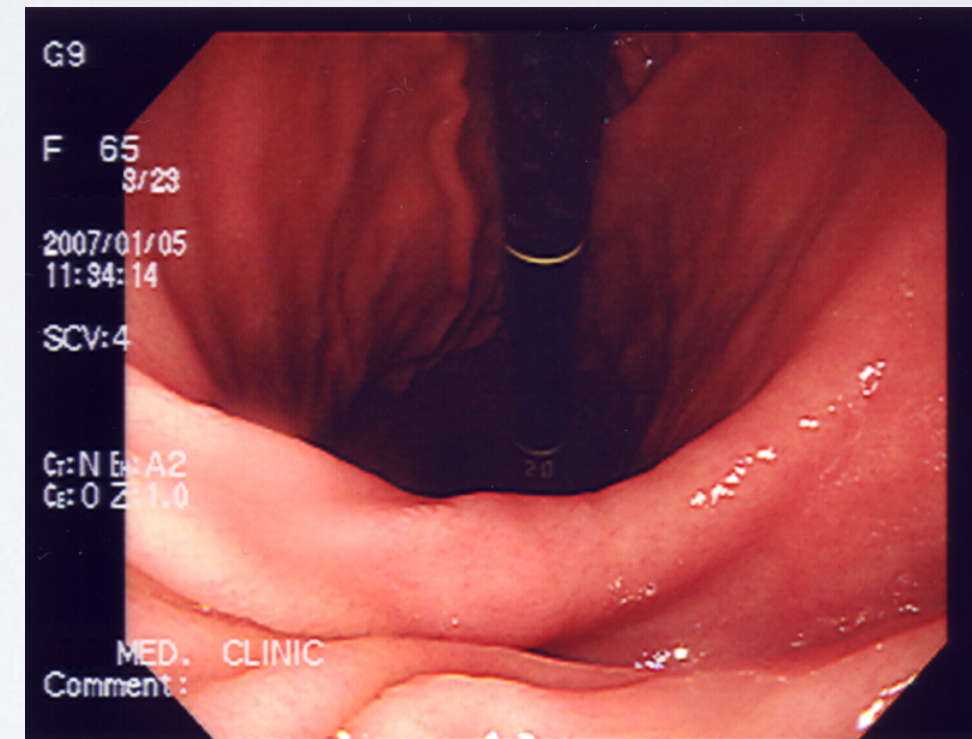
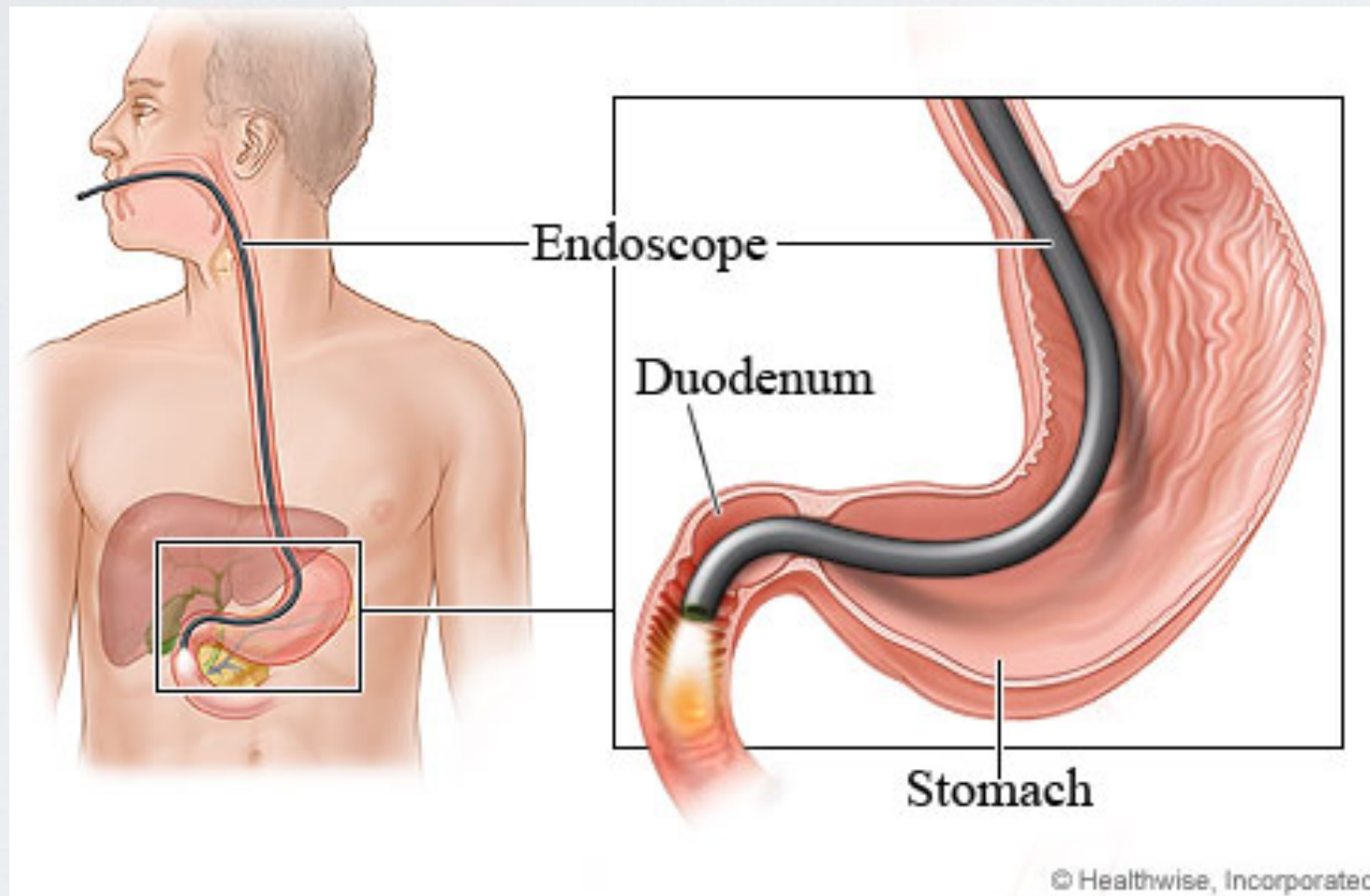


STOMACH

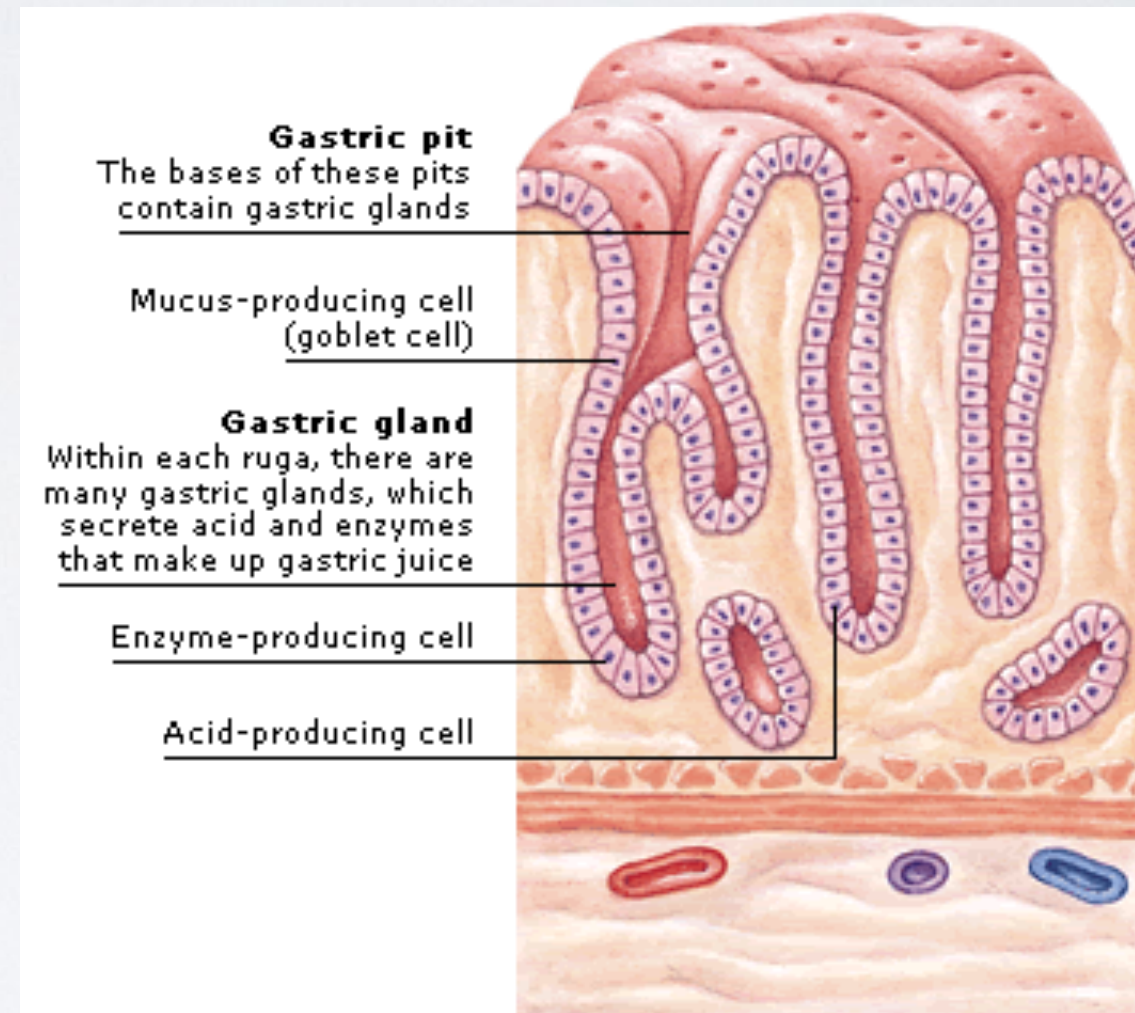


LES: Lower Esophageal Sphincter

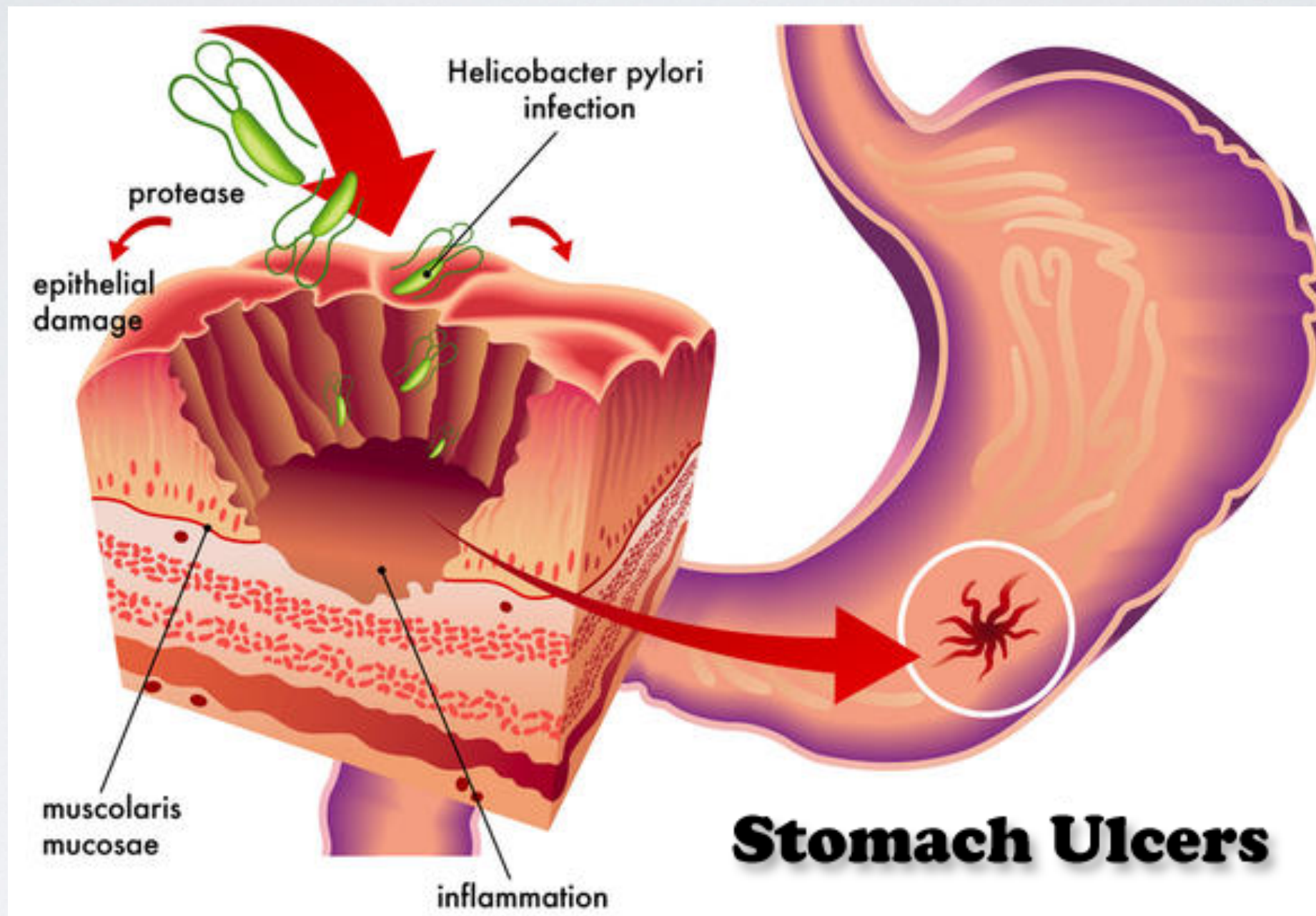
ENDOSCOPY



GASTRIC JUICES

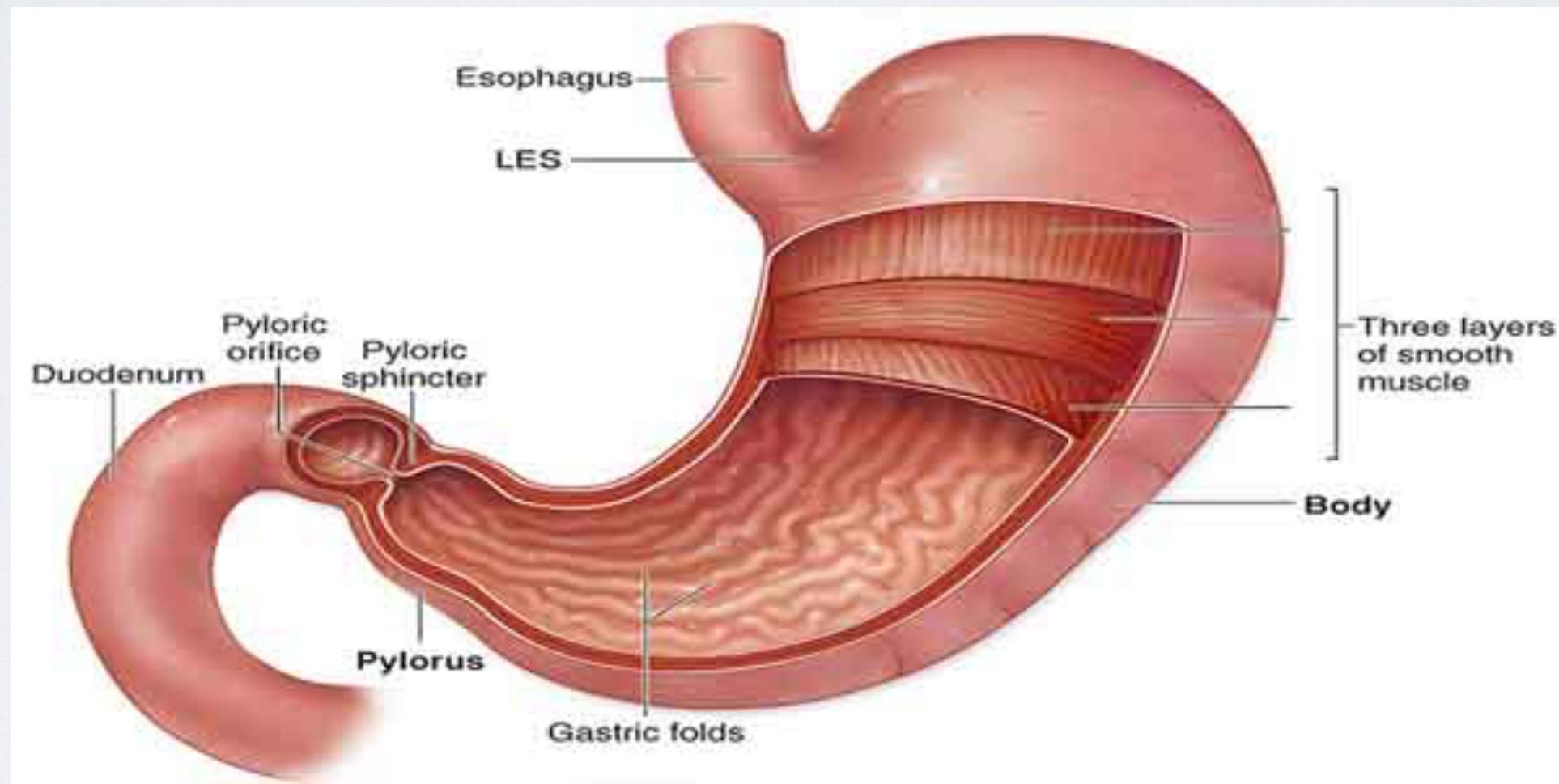


ULCERS



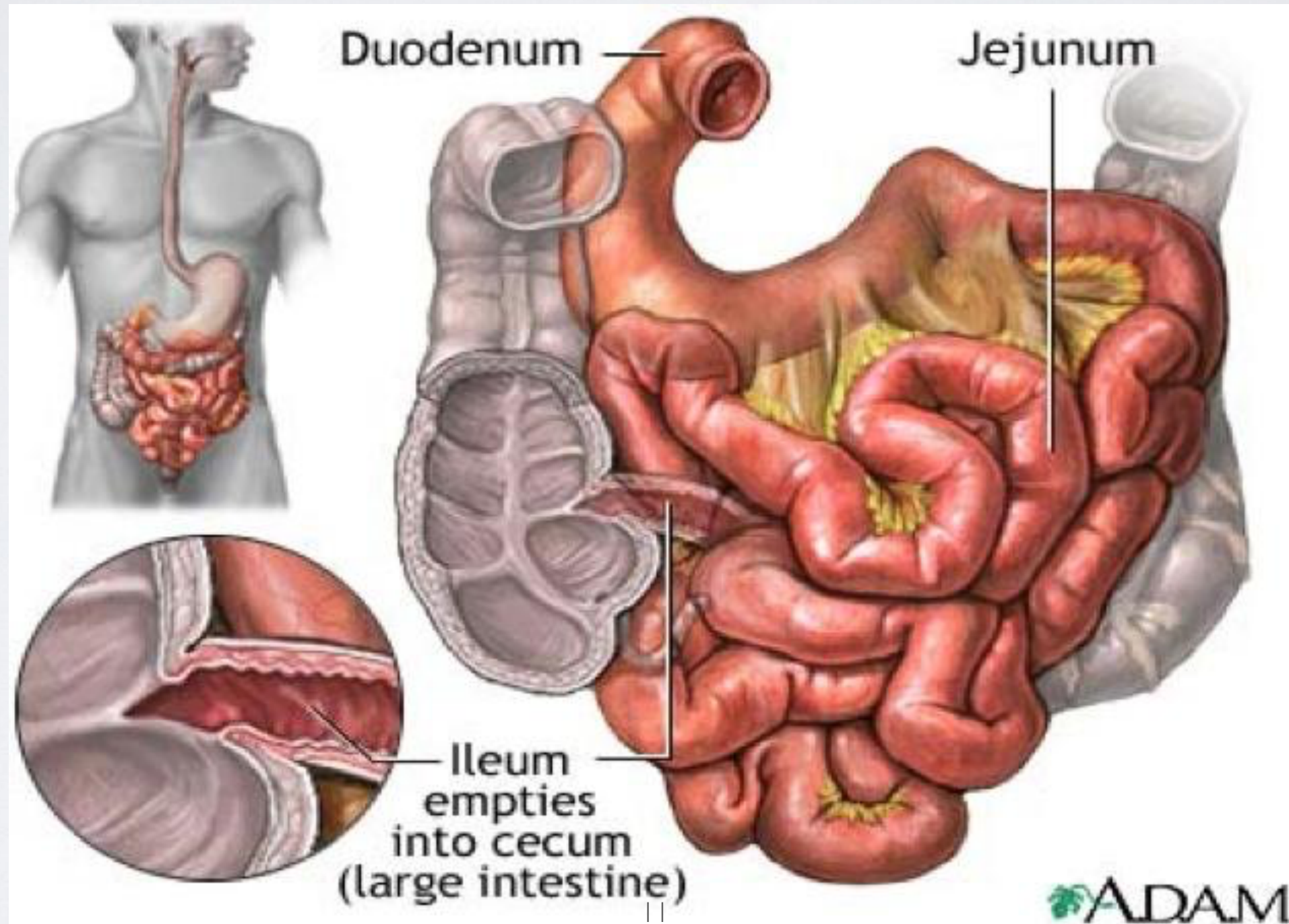
Barry Marshall & Robin Warren
2005 Nobel Prize in Medicine

STOMACH

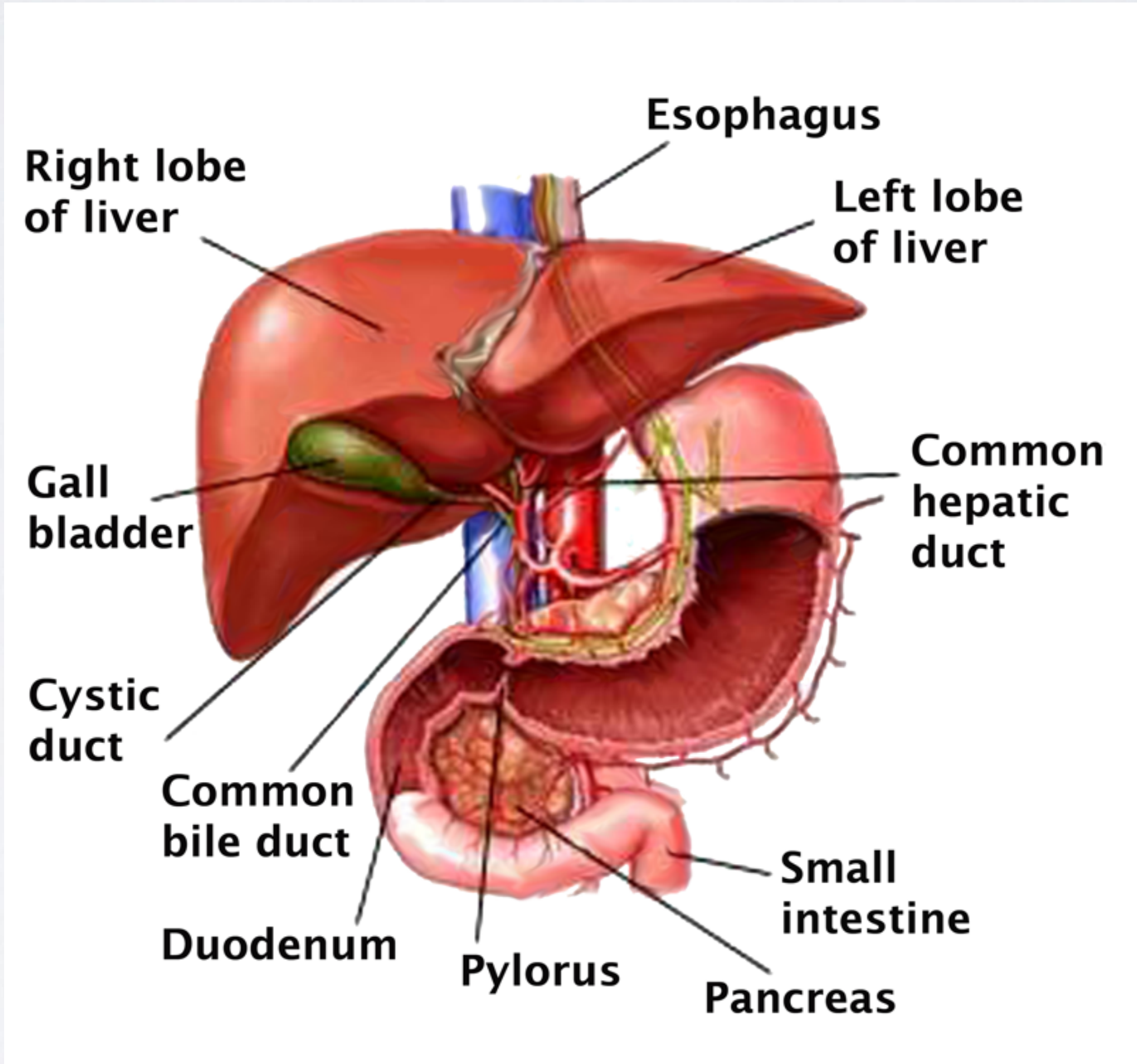


LES: Lower Esophageal Sphincter

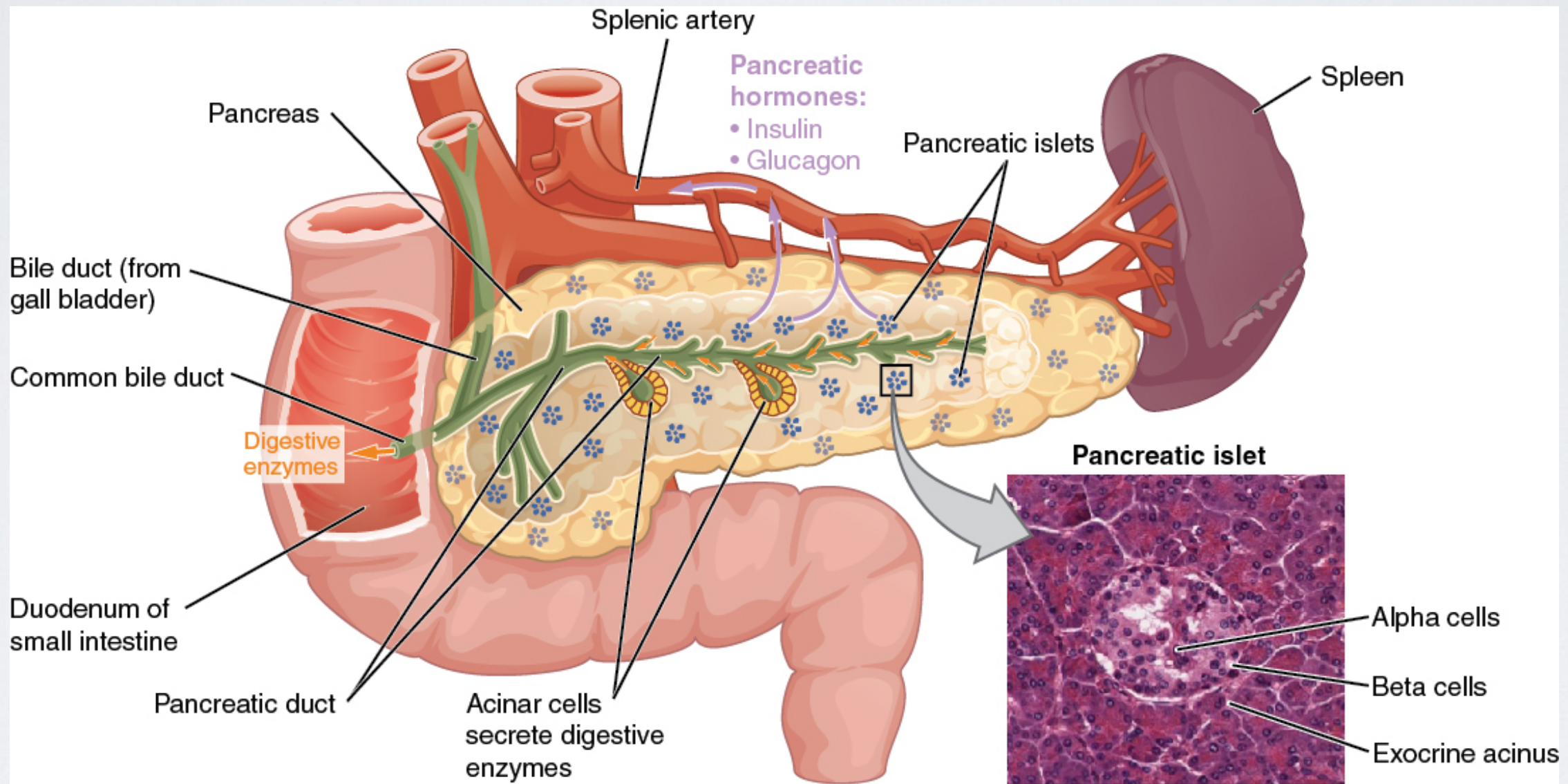
SMALL INTESTINE



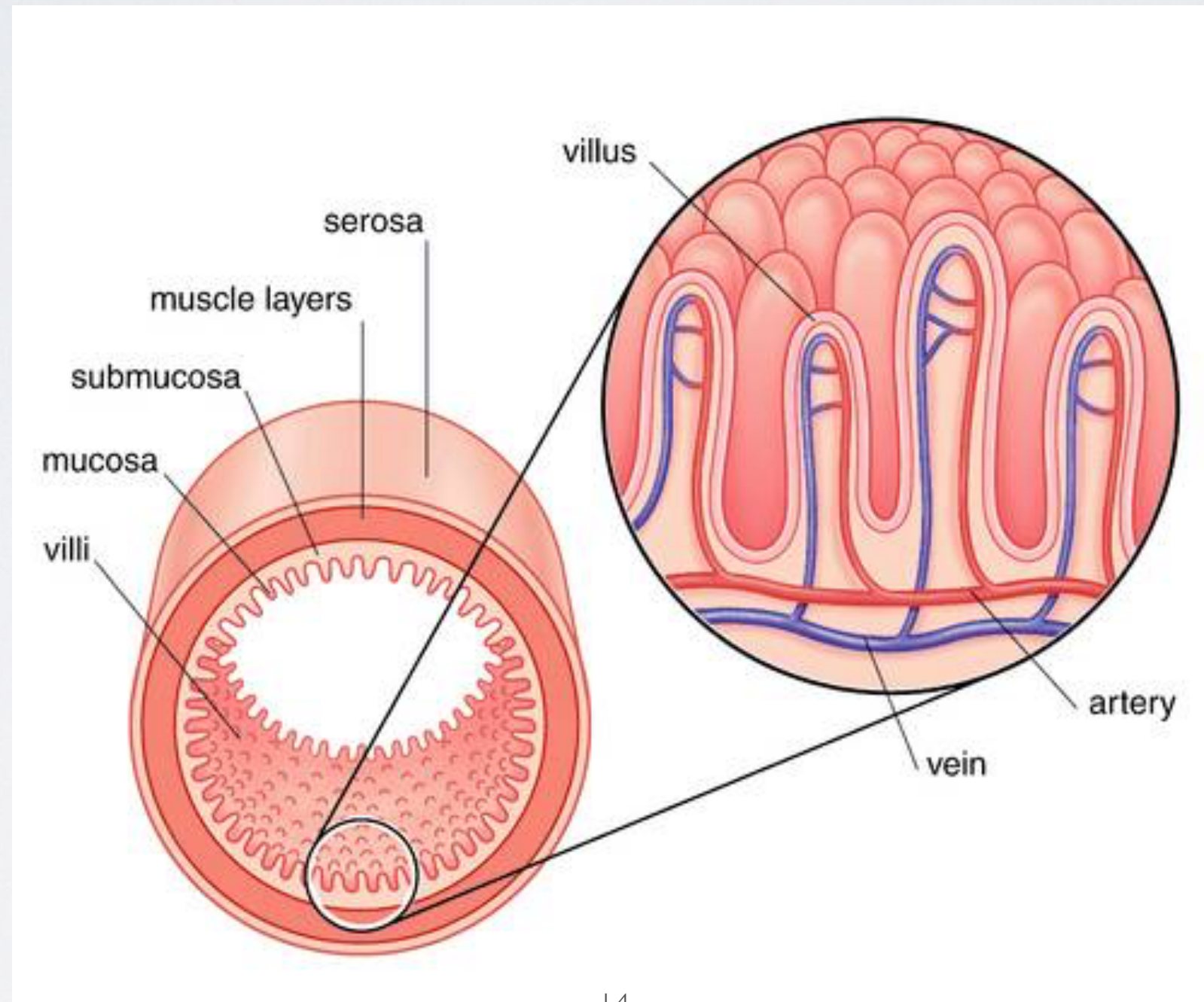
LIVER AND GALL BLADDER



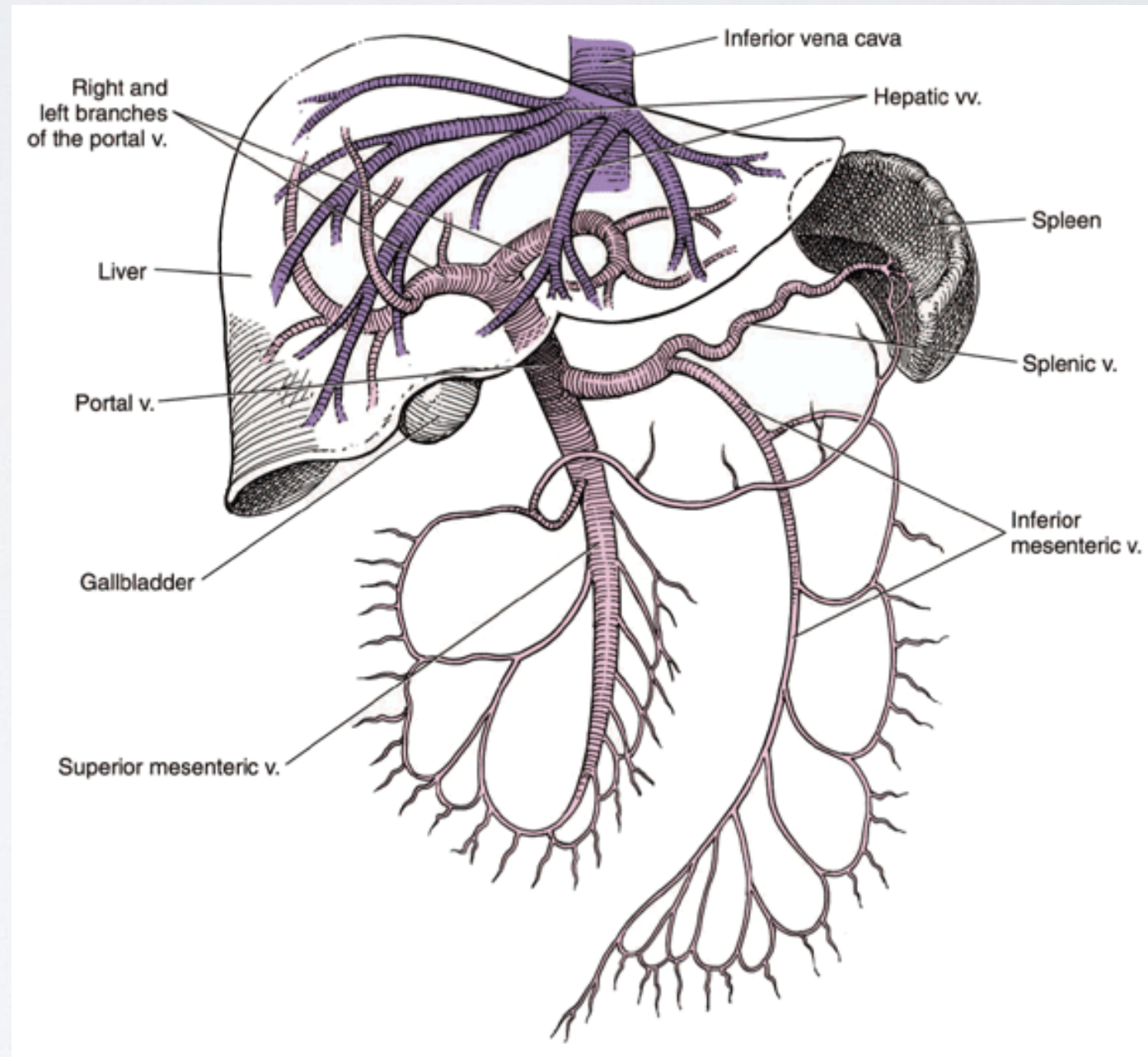
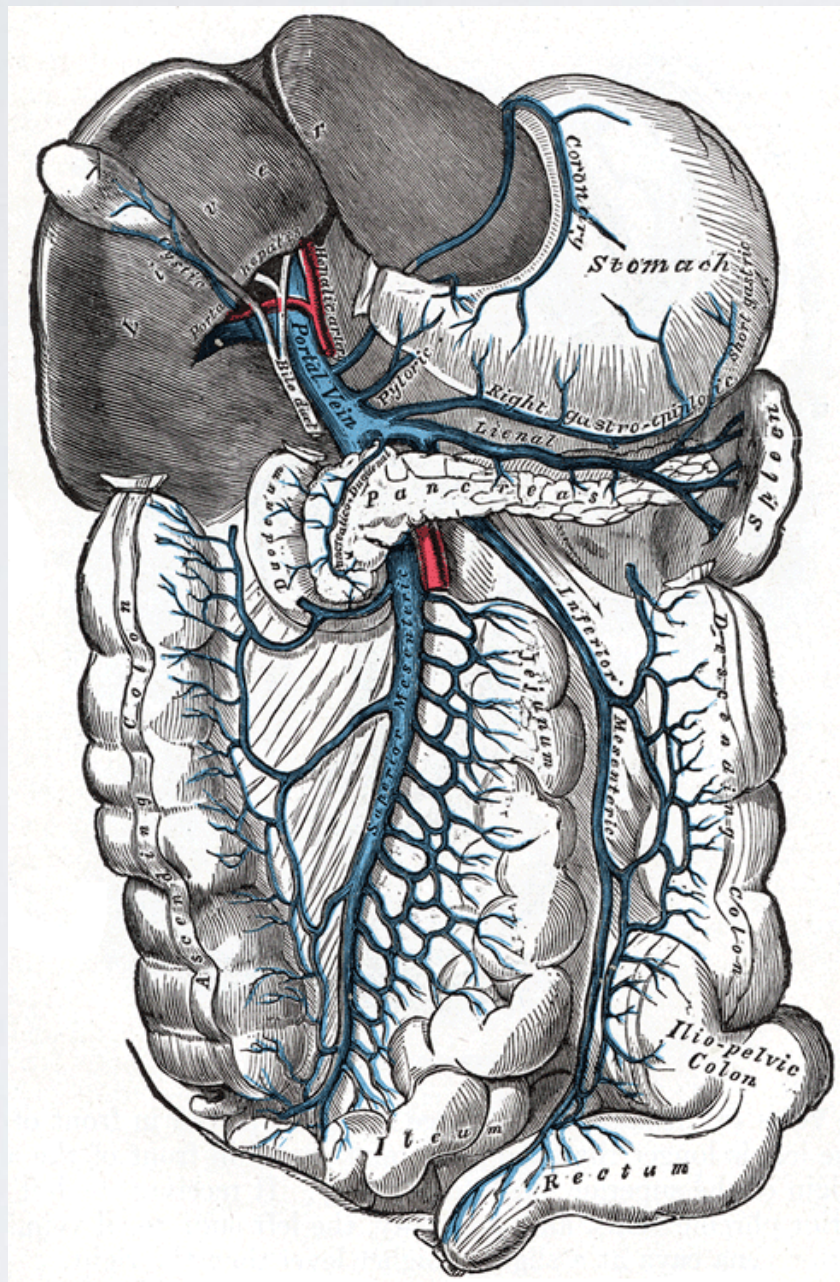
PANCREAS



SMALL INTESTINE



LIVER & PORTAL VEIN



SUGARS

Glucose

- The primary form of circulating sugar
- Glucose is absorbed by the liver and stored in a polymeric form called glycogen
- Glucose is also stored in the fat cells as triglyceride

Fructose

- A type of sugar found in fruit
- Gives fruit its 'sweet' taste

Sucrose

- A sugar molecule made of glucose and fructose

INSULIN AND GLUCAGON

Insulin

- A polypeptide circulating hormone
- Signals muscle and fat cells to absorb glucose (but not brain)

High Insulin: Anabolic (building up) processes

- Protein synthesis
- Cell growth
- Fat storage in adipocytes (fat cells)

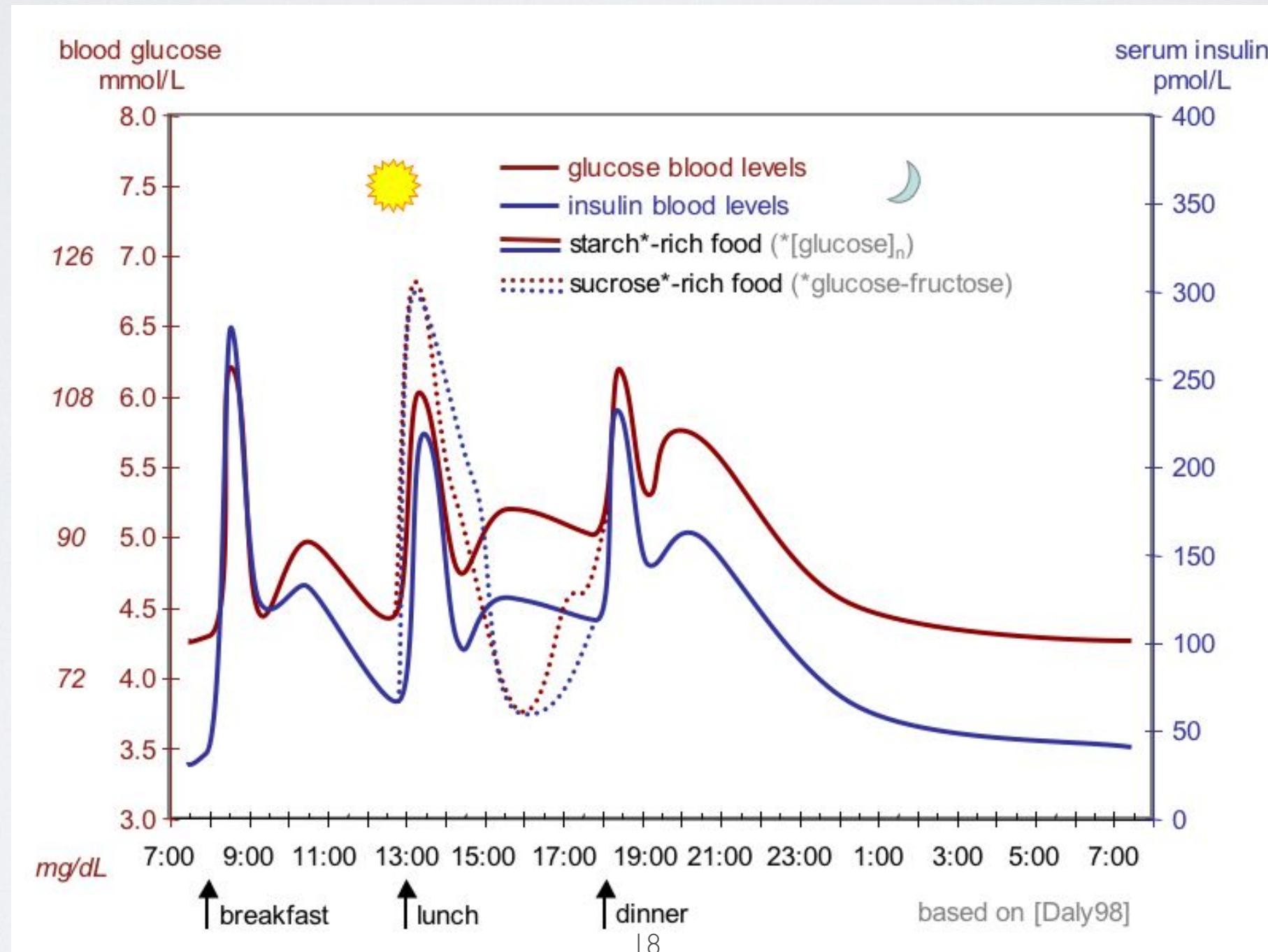
Low Insulin: Catabolic (breaking down) processes

- Protein degradation
- Lipid metabolism (Ketosis)

Glucagon

- A polypeptide hormone that induces releases of glucose stored in the liver
- Counterbalances the activity of insulin

GLUCOSE AND INSULIN LEVELS



DIABETES MELLITUS

High blood glucose (sugar)

- Insufficient blood insulin
- Peripheral cells are unresponsive to insulin

Symptoms

- Polyuria (frequent urination)
- Polydipsia (increased thirst)
- Polyphagia (increased hunger)
- Hypoglycemia (low blood glucose)
- Hyperglycemia (high blood glucose)
- Diabetic ketoacidosis
- Nonketotic hyperosmolar coma

Type 1 diabetes (insulin-dependent diabetes mellitus, IDDM, juvenile diabetes.)

- Failure to produce insulin
- Requires daily insulin injections

Type 2 diabetes

- Frequent complication of obesity
- Insulin resistance in muscle and fat cells
- Often progresses to insulin deficiency

Gestational diabetes (high blood glucose during pregnancy)

DIABETES MELLITUS

Management

- All forms of diabetes have been treatable since insulin became available in 1921
- Type 2 diabetes may be controlled with oral hypoglycemic medications

2000 incidence

- 171 million people (2.8% of the population)
- 90-95% of the US diabetes population has type 2

2010 Projections by the US Centers Disease Control and Prevention

- By 2050 1 in 3 US adults could have diabetes
- Aging population
- Increasing obesity

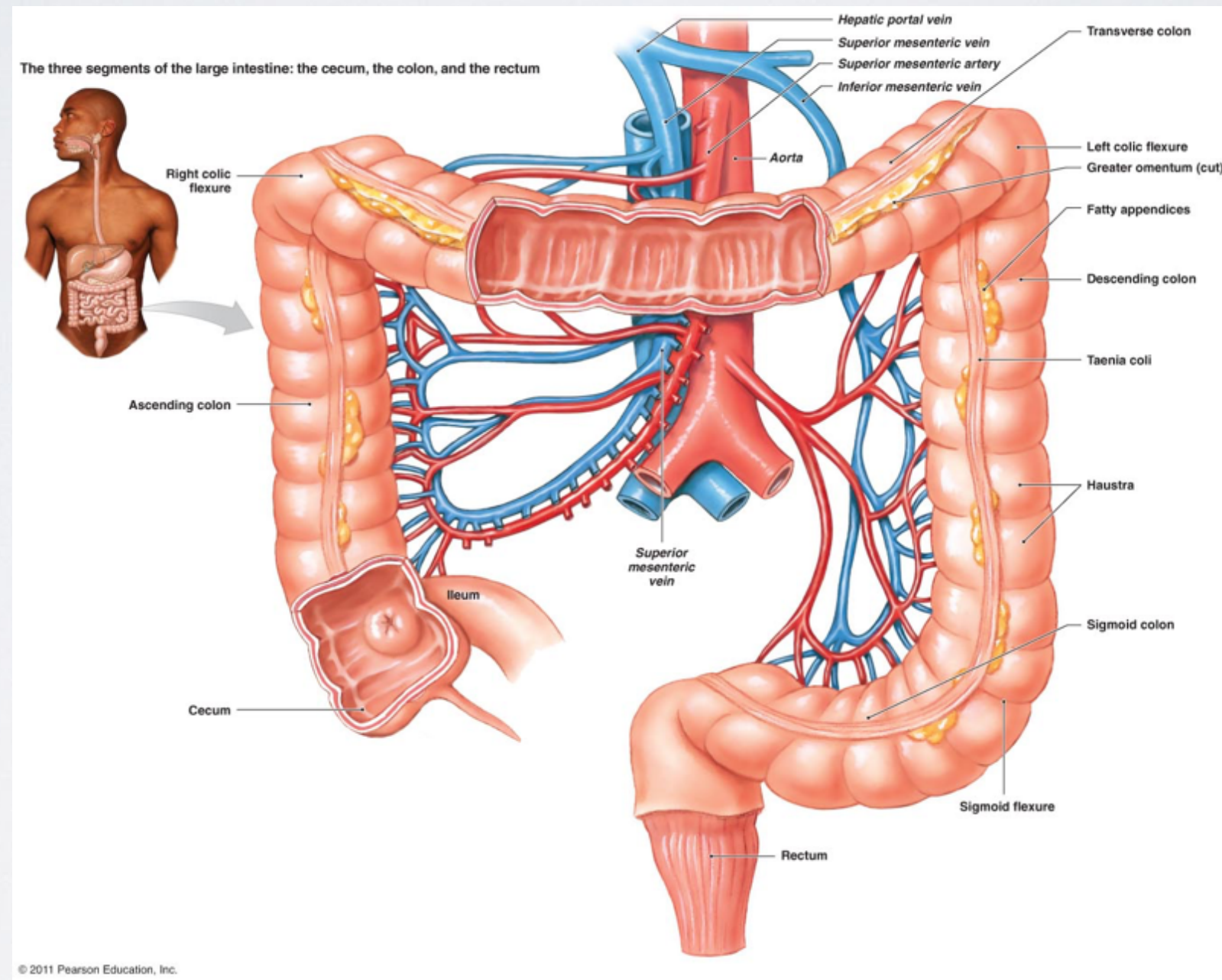
TYPE I DIABETES MELLITUS

- "Juvenile diabetes" because it represents a majority of the diabetes cases in children.
- Loss of the insulin-producing beta cells of the islets of Langerhans in the pancreas leading to insulin deficiency.
- Immune-mediated
- Idiopathic

TYPE 2 DIABETES MELLITUS

- Insulin resistance
- Believed to involve the insulin receptor on muscle and fat cells
- Early stage reduced insulin sensitivity
- Later stage reduced insulin levels

LARGE INTESTINE



GI IMAGING

RADIOGRAPHY WITH BARIUM CONTRAST

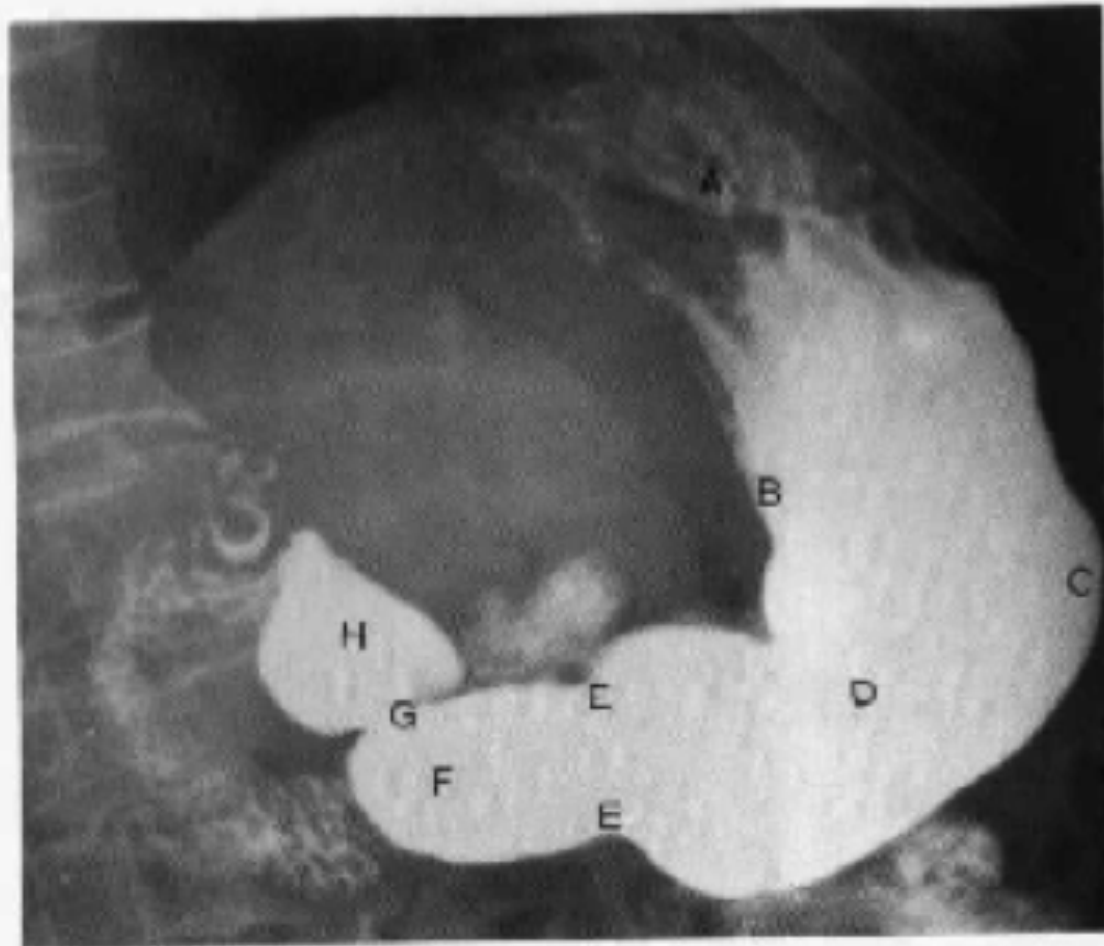
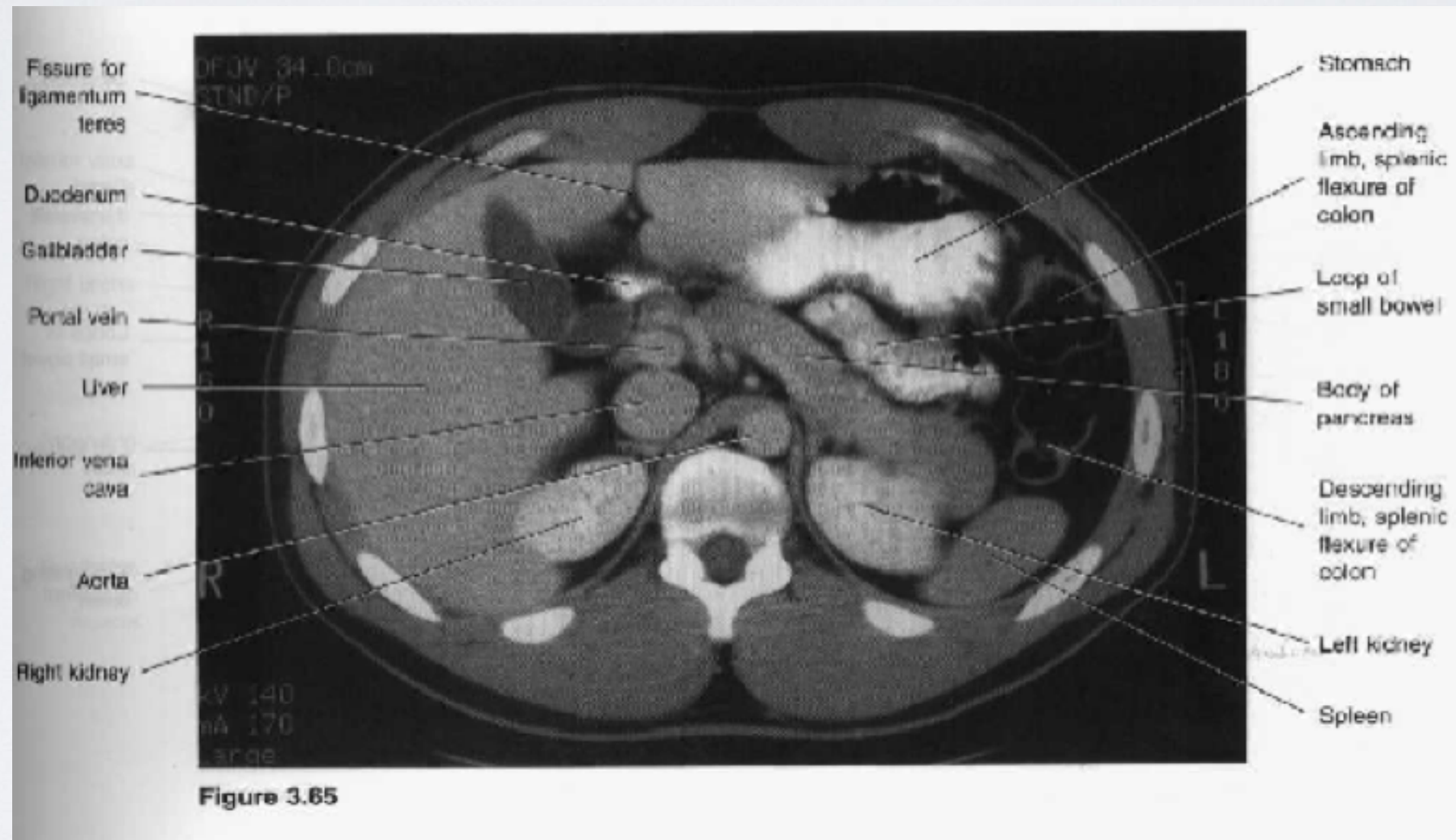


Figure 11.4. The stomach is visible here because it is filled with barium sulfate contrast material. *A*, fundus; *B*, lesser curvature; *C*, greater curvature; *D*, body; *E-E*, indentation of a peristaltic wave; *F*, pyloric antrum; *G*, pyloric canal; *H*, first portion of the duodenum (the duodenal cap or bulb).

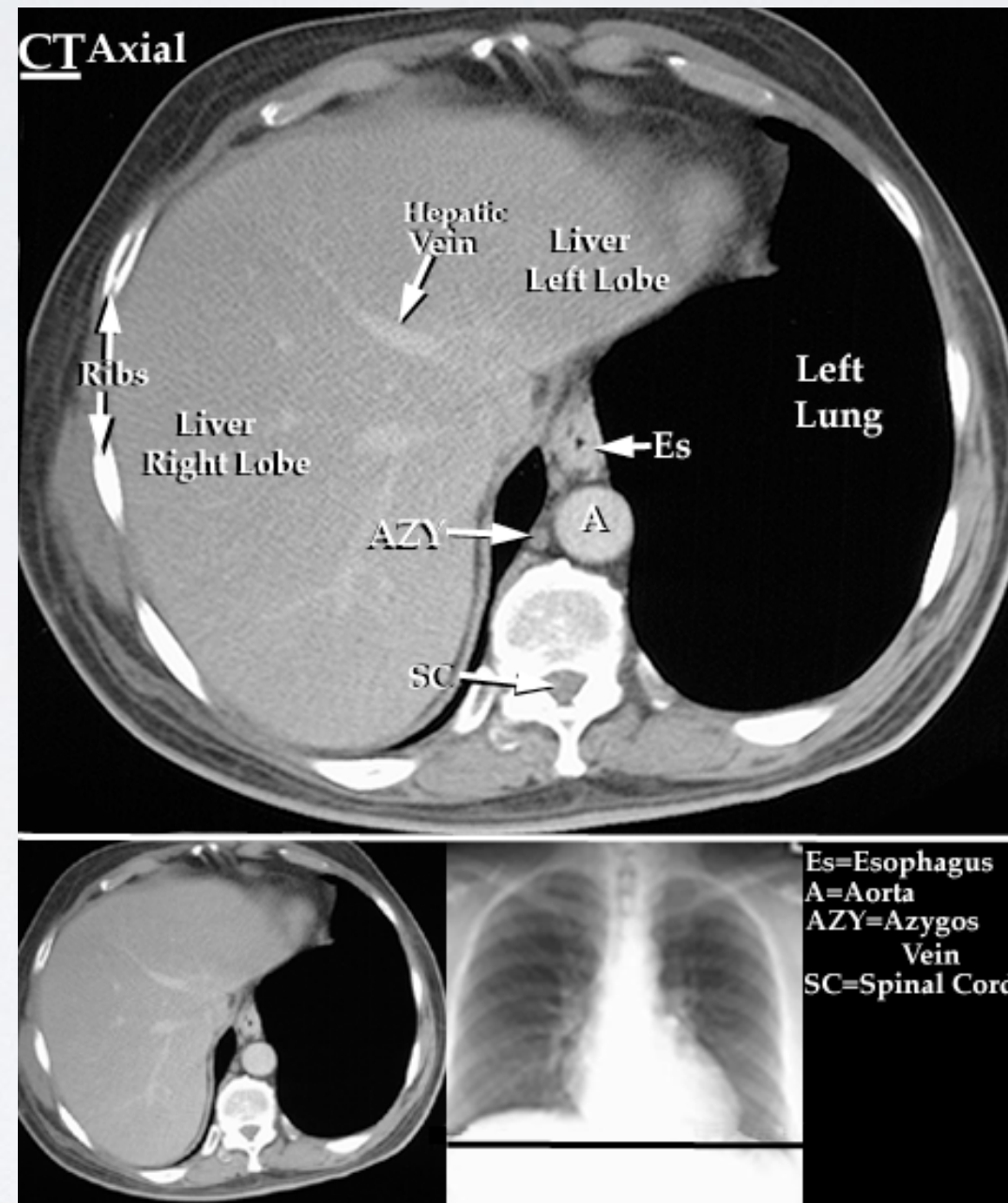
DOUBLE CONTRAST BARIUM ENEMA



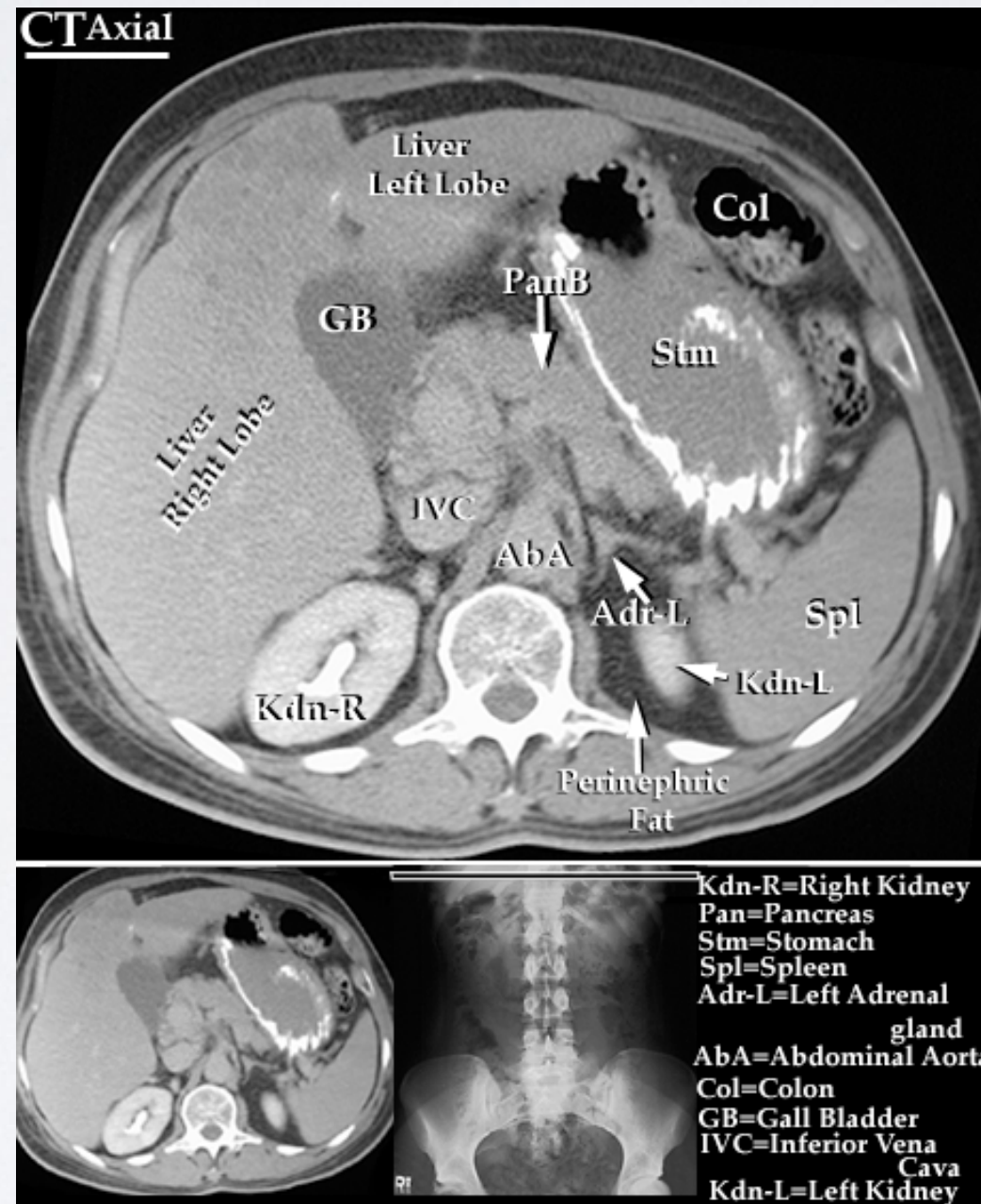
CT NORMAL ANATOMY



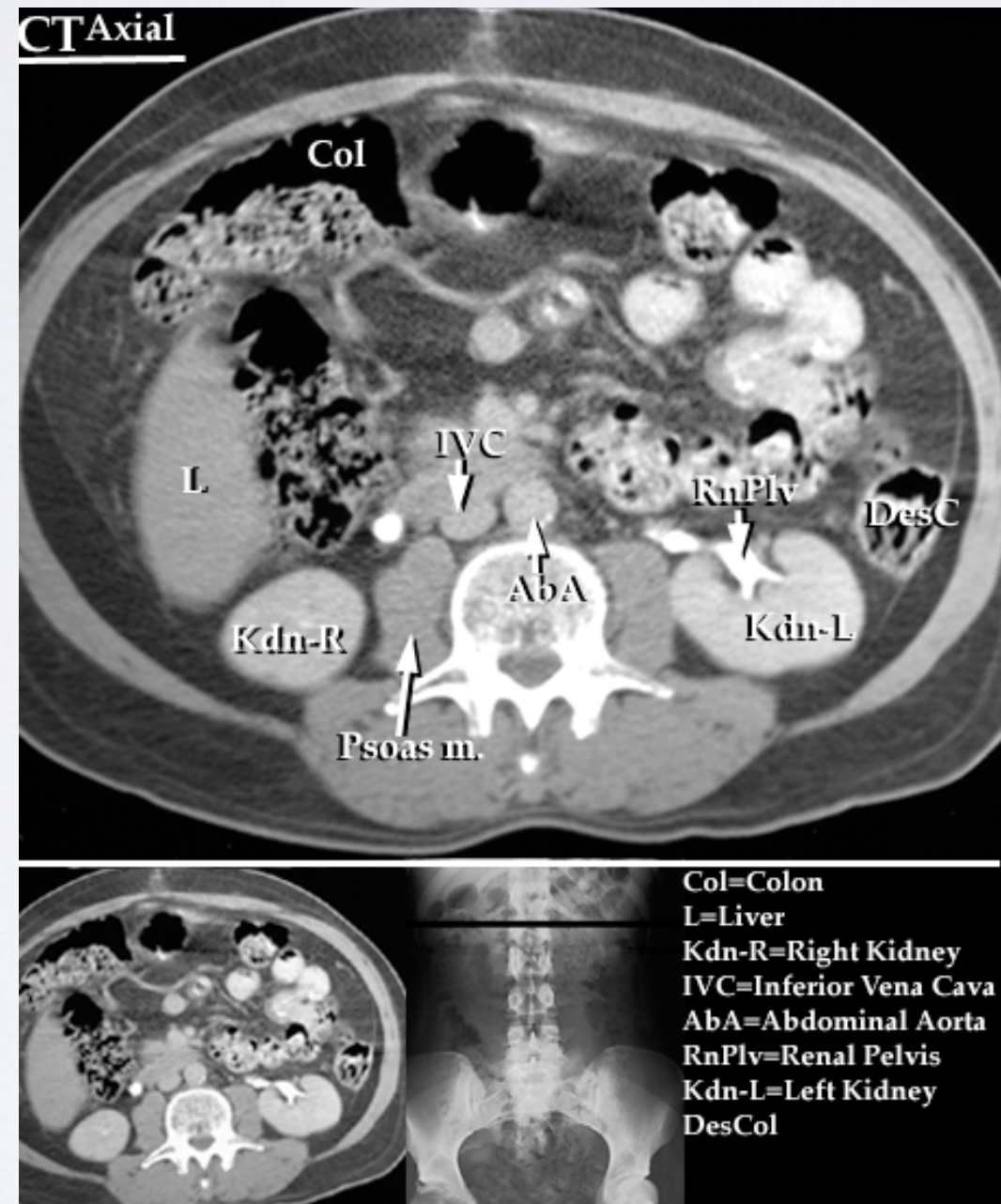
CT NORMAL ANATOMY



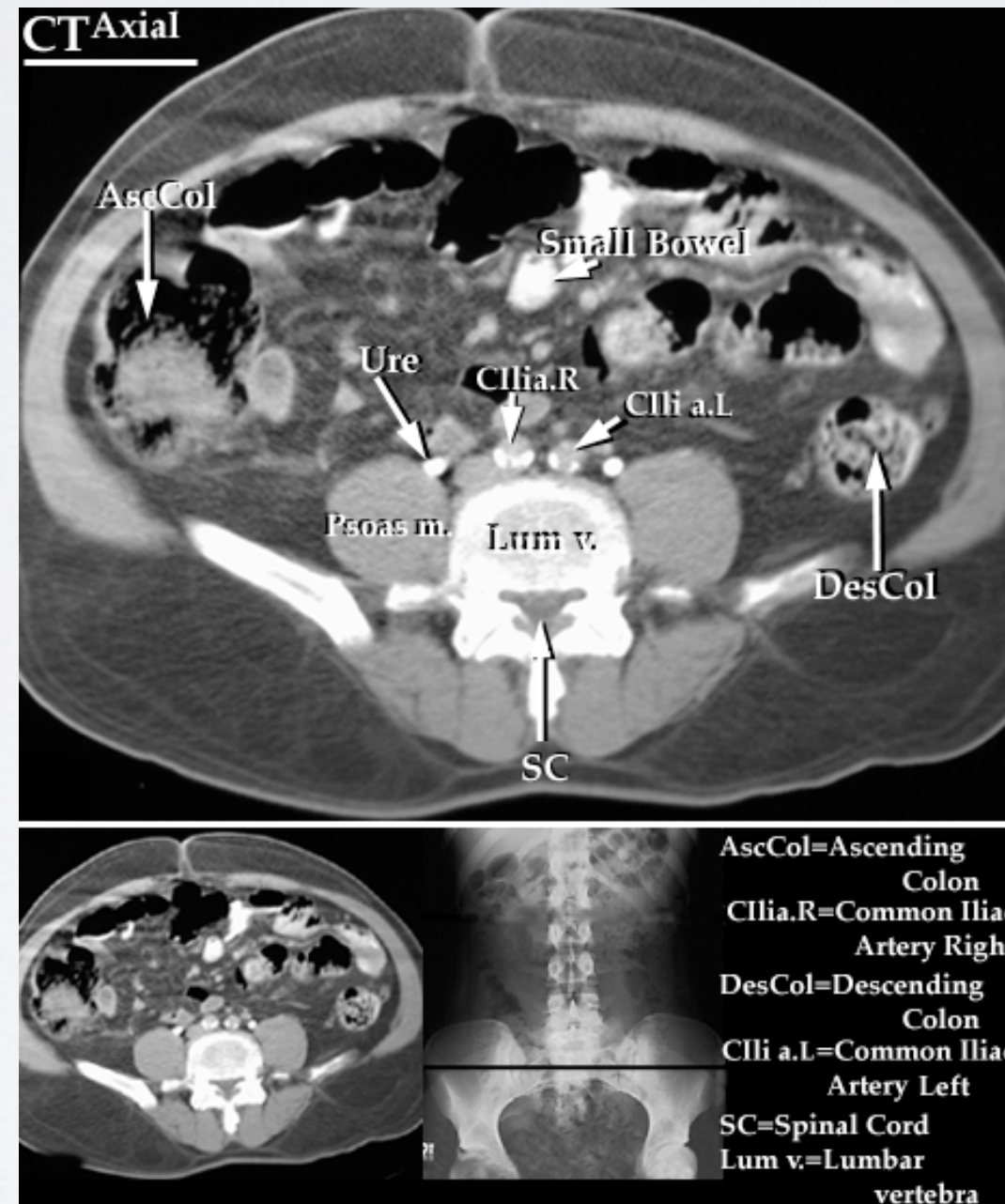
CT NORMAL ANATOMY



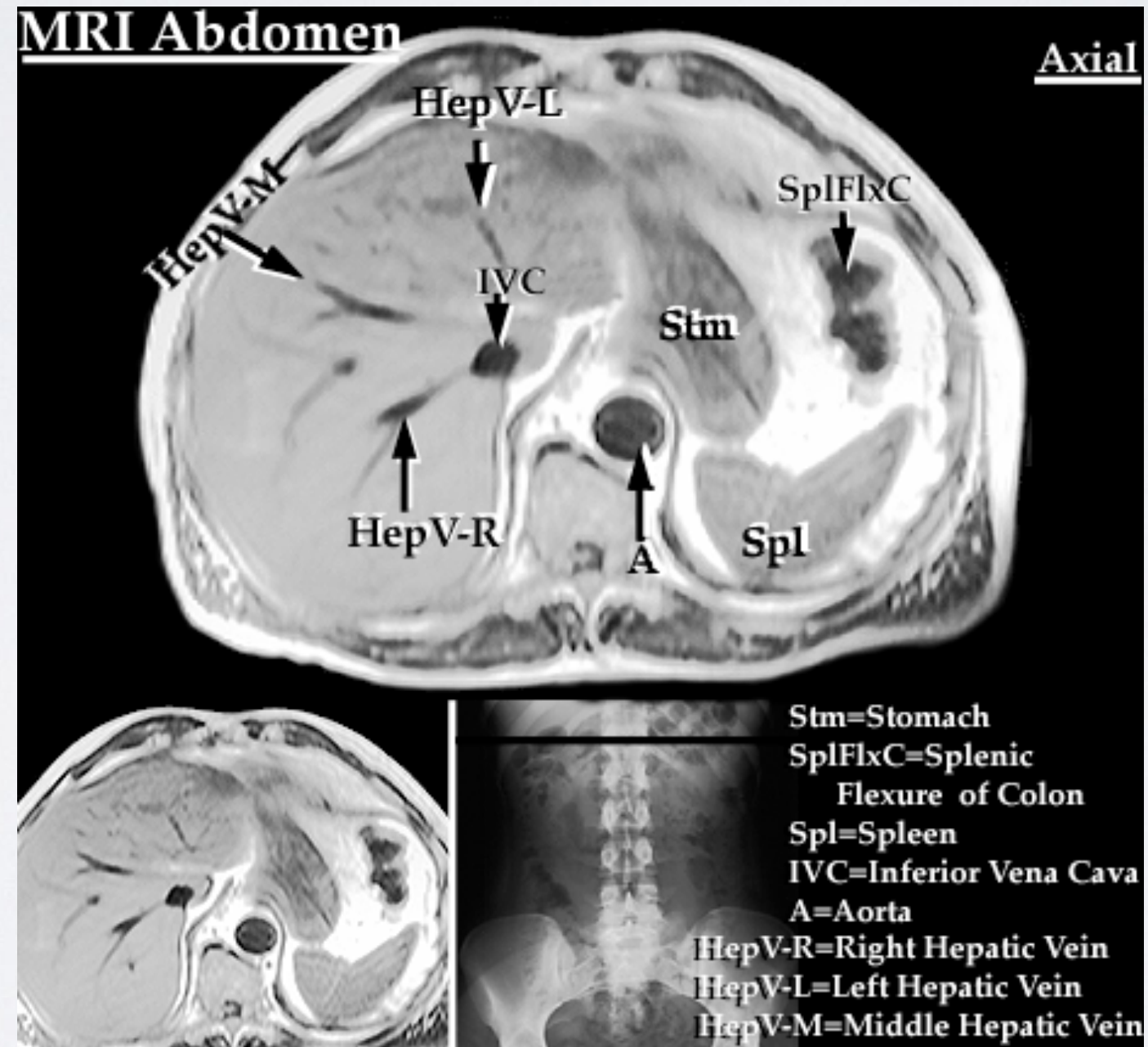
CT NORMAL ANATOMY



CT NORMAL ANATOMY



MRI NORMAL ANATOMY



MRI NORMAL ANATOMY

