

VISIBLE  BODY®

The Digestive System

A digestive system lab activity using Visible Body Suite

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PRE-LAB EXERCISES

Open Visible Body Suite. From the main menu, select Anatomy & Physiology. Click or tap on Unit 10. Digestive System. You can also use the Search function to find any of the modules in this lab.

You are responsible for **all bold terms** and answers..

A. Watch the video for Module 38.1 Digestive System Functions, and make the following observations.

1. Where does digestion begin?

2. What is a bolus?

3. Food is moved through the digestive system by waves of involuntary smooth muscle contractions called _____.

4. What is chyme and where is it created?

5. Where does most absorption occur?

6. Nutrients absorbed from chyme are passed into the _____.

7. Where is indigestible waste compacted?

B. Explore alimentary canal anatomy in Modules 38.2 Digestive Anatomy, 38.3 Digestive Process, and 38.4 Alimentary Canal.

1. In Module 38.2 select each of the three groupings listed on the left, then select Hide Others.
 - a. Where is the boundary between the upper and lower digestive tracts?

 - b. What are the names of the accessory digestive organs?



2. Use Module 38.3 to track the movement of food through the digestive system by selecting each of the seven structures listed on the left. List the structures in order, starting with the entry of food into the mouth through to elimination.

a. Where is most of the water absorbed?

3. Use Module 38.4 to see the alimentary canal as one long continuous tube.

a. Name the four tissue layers of the alimentary canal.

C. Watch videos 39.3 Chewing and Swallowing and 40.1 Alimentary Canal.

1. Describe the process of mechanical digestion in the mouth.

2. What involuntary movement prevents the bolus from entering the trachea?



3. Which division of the nervous system controls peristalsis?

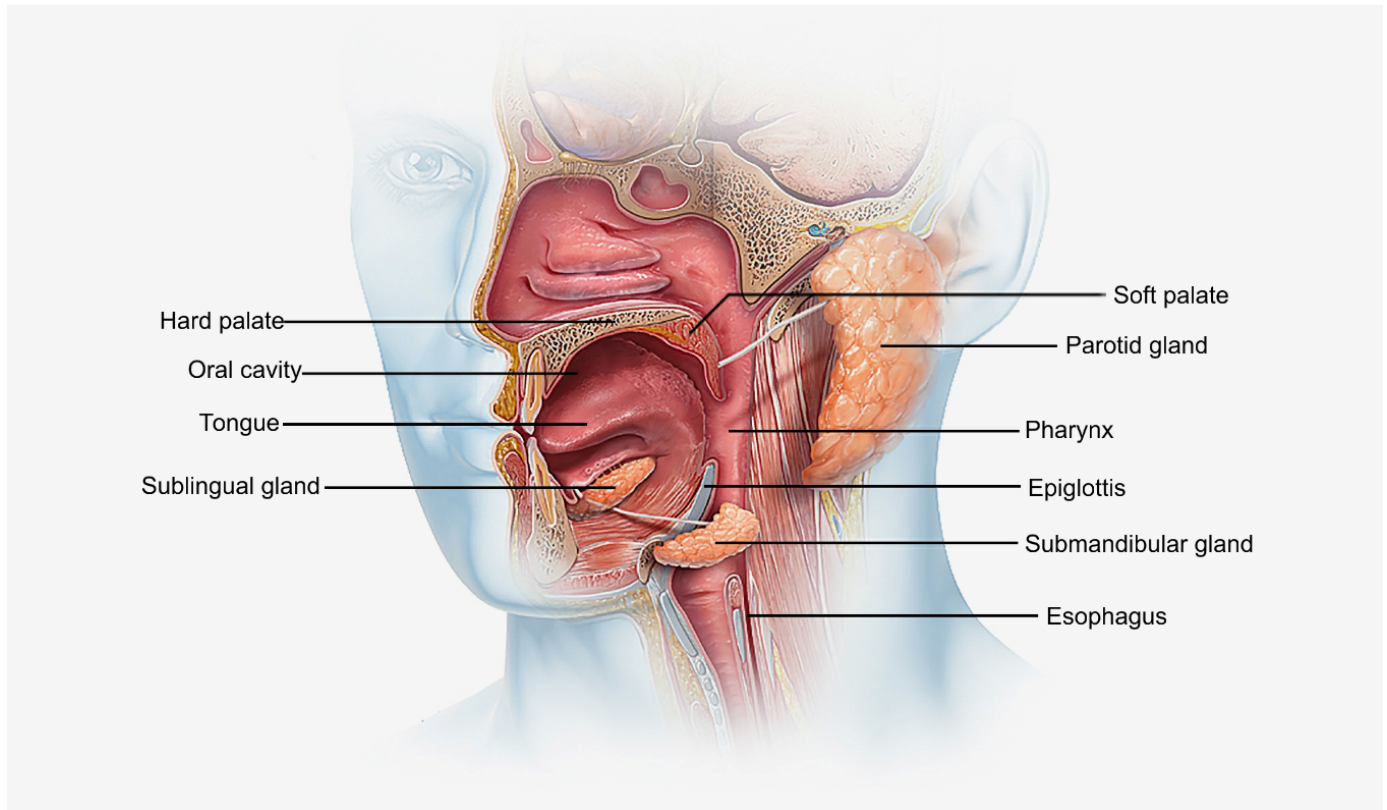
4. Which of the four layers of the alimentary canal produces the contractions of peristalsis?

IN-LAB EXERCISES

Use the following modules in the app to guide your exploration of the digestive system. You can manipulate the images to see different views and isolate each structure. Be sure to select the book icon under the structure name to read information specific to that structure.

You are responsible for the identification of **all bold terms**.

A. Go to the Digestive unit and scroll to Chapter 39. Oral Cavity.



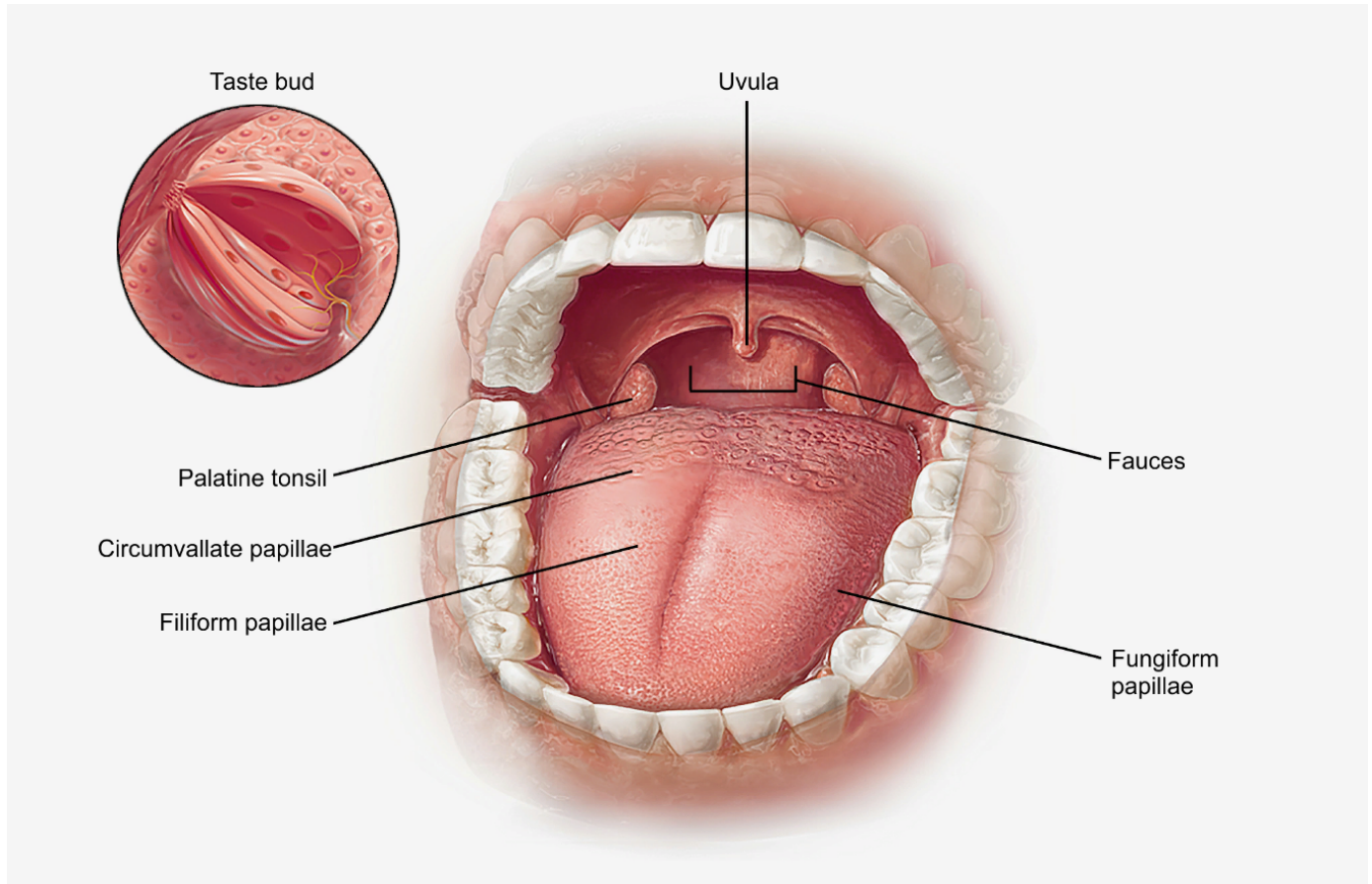
1. The oral cavity begins at the lips and ends at the pharynx. Using **Module 39.1 Structures of the Oral Cavity**, locate the following structures within the **oral cavity**:

- a. **Teeth**
- b. **Tongue**
- c. **Hard palate**
- d. **Soft palate**
- e. **Epiglottis**



2. Three pairs of **salivary glands** are found in the connective tissue surrounding the oral cavity. Using **Module 39.1**, locate the following structures:

- a. **Sublingual glands**
- b. **Parotid glands**
- c. **Submandibular glands**



3. Using **Module 39.10 Tongue**, locate the following structures on the tongue:

- a. **Circumvallate papillae**
- b. **Filiform papillae**
- c. **Fungiform papillae**

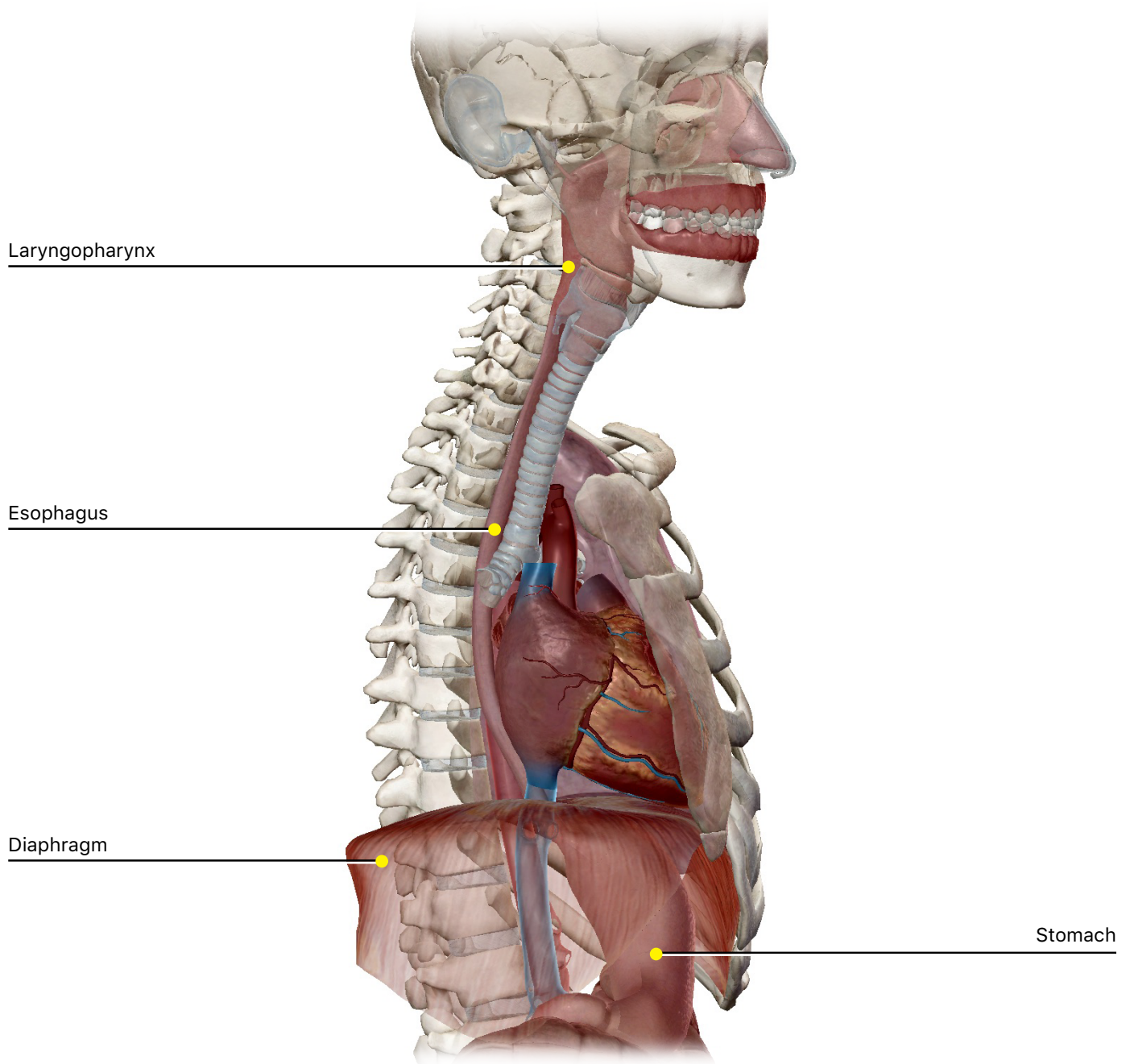
Also locate the **palatine tonsils** and the **uvula**.

TIME TO PRACTICE!

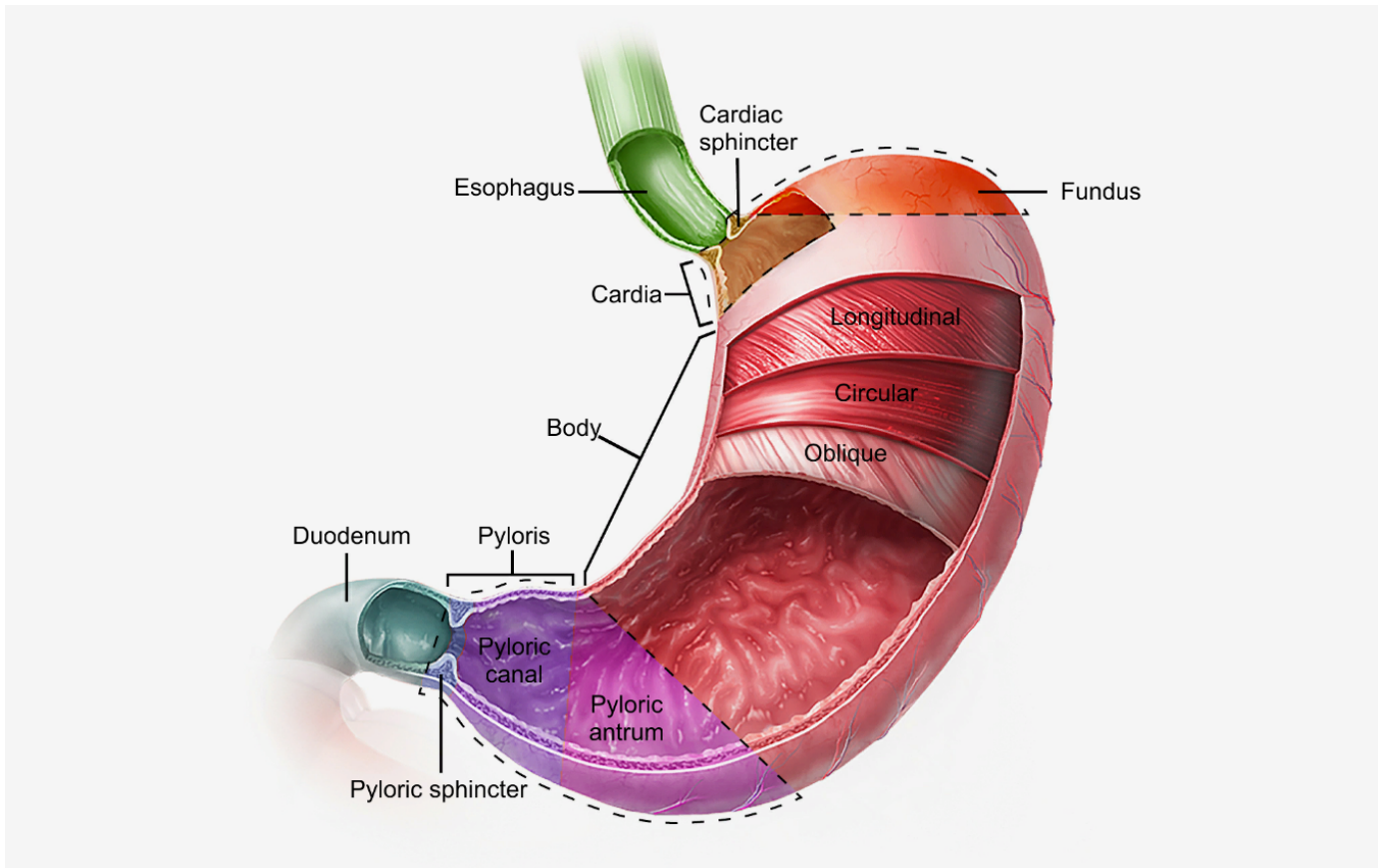
GO TO THE QUIZZES MENU AND COMPLETE QUIZZES 39A AND 39B.



B. Now, go to Chapter 40. Esophagus and Stomach.



1. The esophagus extends from the **laryngopharynx** to the stomach. Use **the 3D model in Module 40.3 Esophagus** to locate the esophagus. Trace the path of the esophagus through the **diaphragm** and note where it enters the stomach.

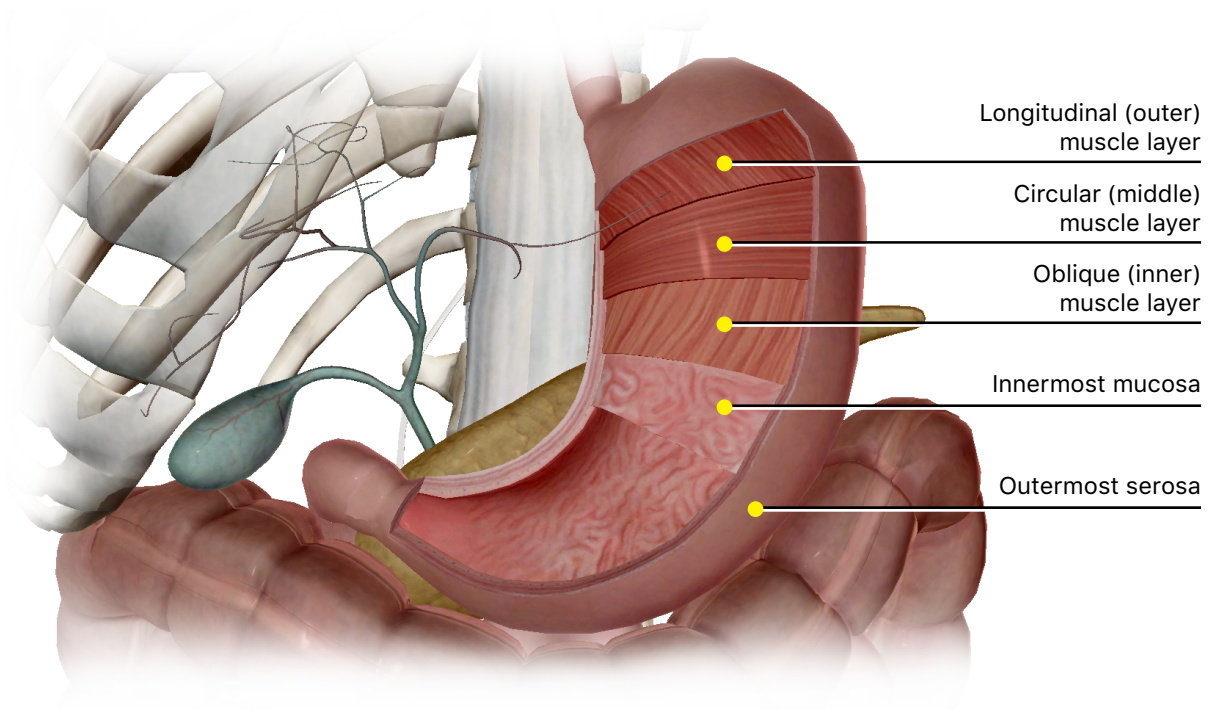


2. Using **Module 40.5 Stomach Regions** as a guide, locate the following stomach regions:

- a. **Cardiac sphincter**
- b. **Cardia**
- c. **Fundus**
- d. **Body**
- e. **Pylorus**
- f. **Pyloric sphincter**

g. Which of these structures would contribute to gastric reflux if damaged?





3. Explore **Modules 40.5 Stomach Regions** and **40.6 Stomach Wall** to locate the layers of the **stomach wall**:

- a. The outermost **serosa**
- b. The **longitudinal** (outer) **muscular layer**
- c. The **circular** (inner) **muscular layer**
- d. The **oblique** (inner) **muscular layer**
- e. The innermost mucosa
- f. Which of these layers is responsible for mucus secretion?

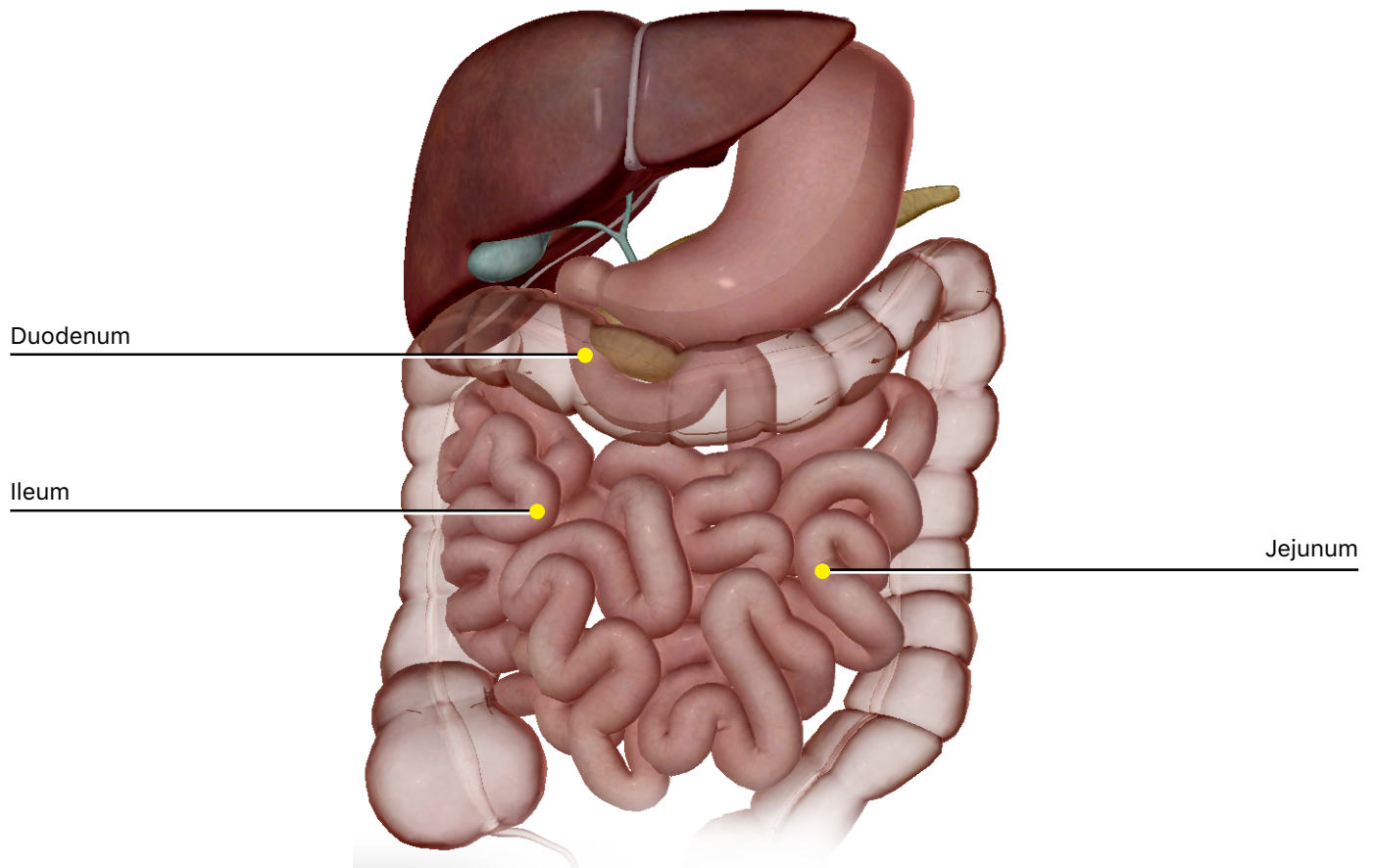
4. Using **Module 40.6 Stomach Wall** as a guide, select and hide the outer wall of the stomach to reveal the inner surface. Note the **gastric folds**, or **rugae**, which help the stomach expand when necessary.

TIME TO PRACTICE!

[GO TO THE QUIZZES MENU AND COMPLETE QUIZZES 40A AND 40B.](#)



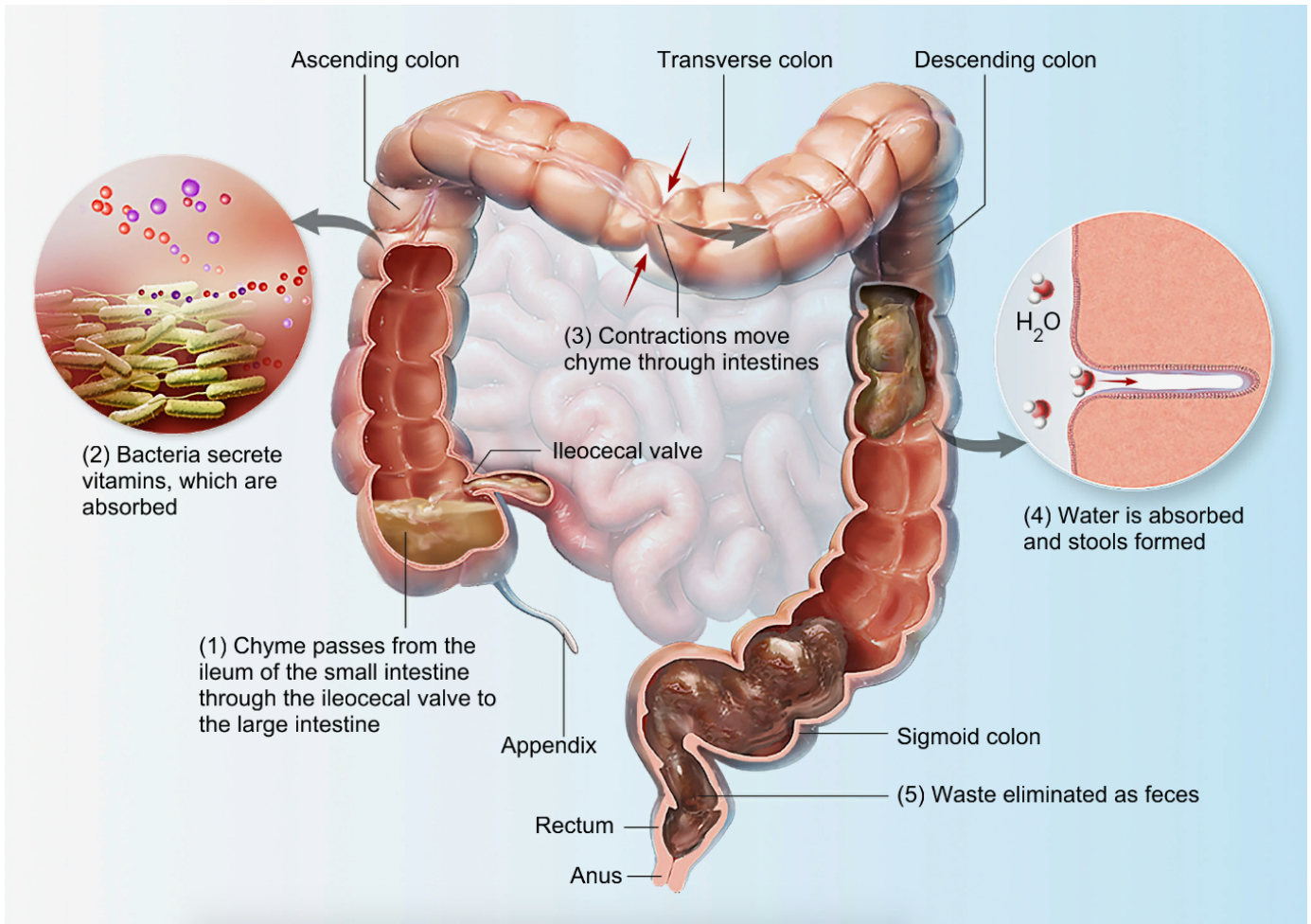
C. Scroll to Chapter 42. Small and Large Intestines.



1. Using **the 3D model in Module 42.4 Small Intestine**, locate the:

- a. **Duodenum**
- b. **Jejunum**
- c. **Ileum**





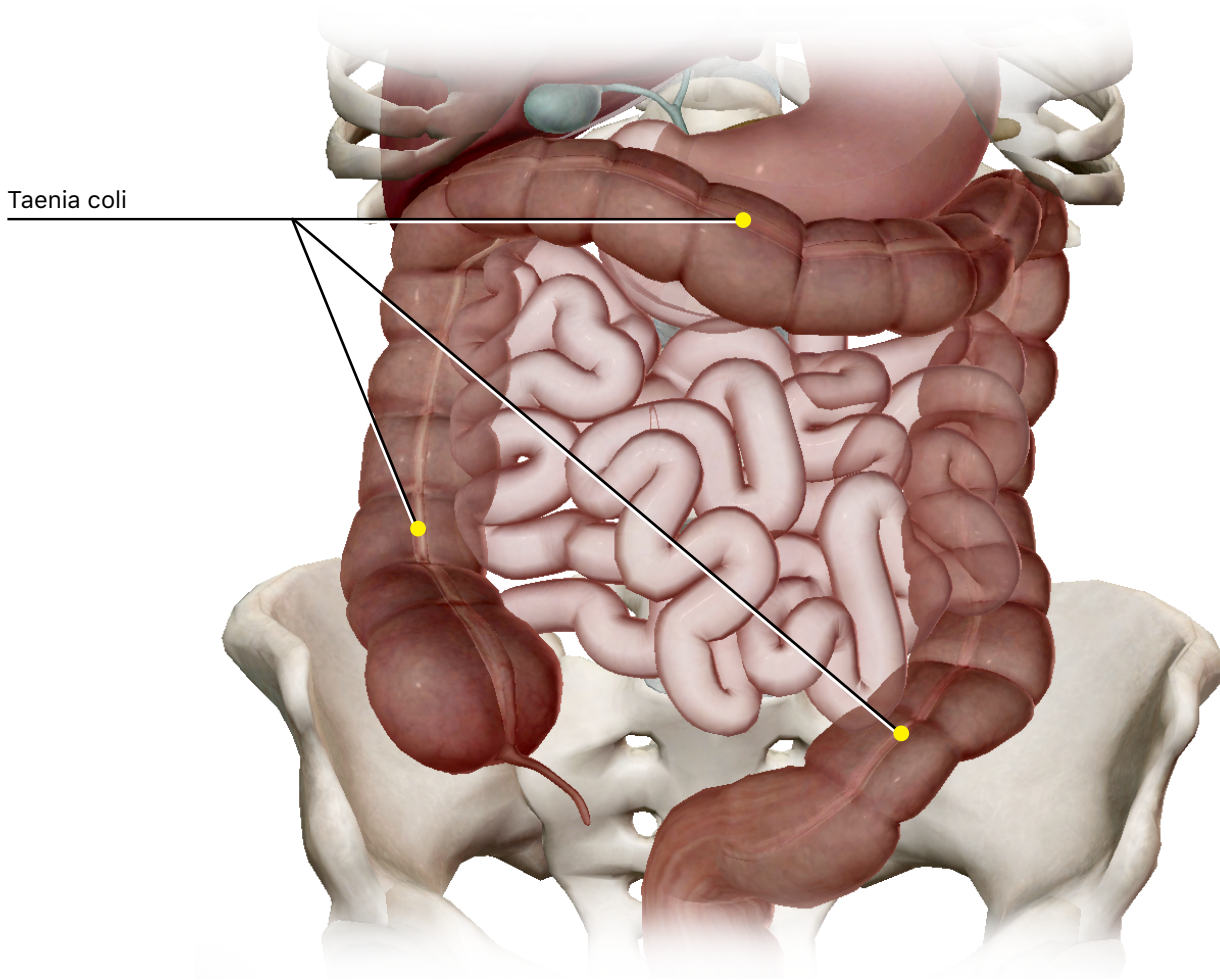
2. Using the illustration in **Module 42.9 Large Intestine**, locate the:

- Ascending colon**
- Transverse colon**
- Descending colon**
- Sigmoid colon**
- Appendix**. Why is it so easy for the appendix to become inflamed?
- Rectum**
- Anus**
- Where does most of the nutrient absorption take place?



i. Where are most of the digestive system microbiome organisms (bacteria) located?

j. Where does most water reabsorption take place?



3. Use the 3D model in **Module 42.8 Taenia Coli** to locate the taenia coli.

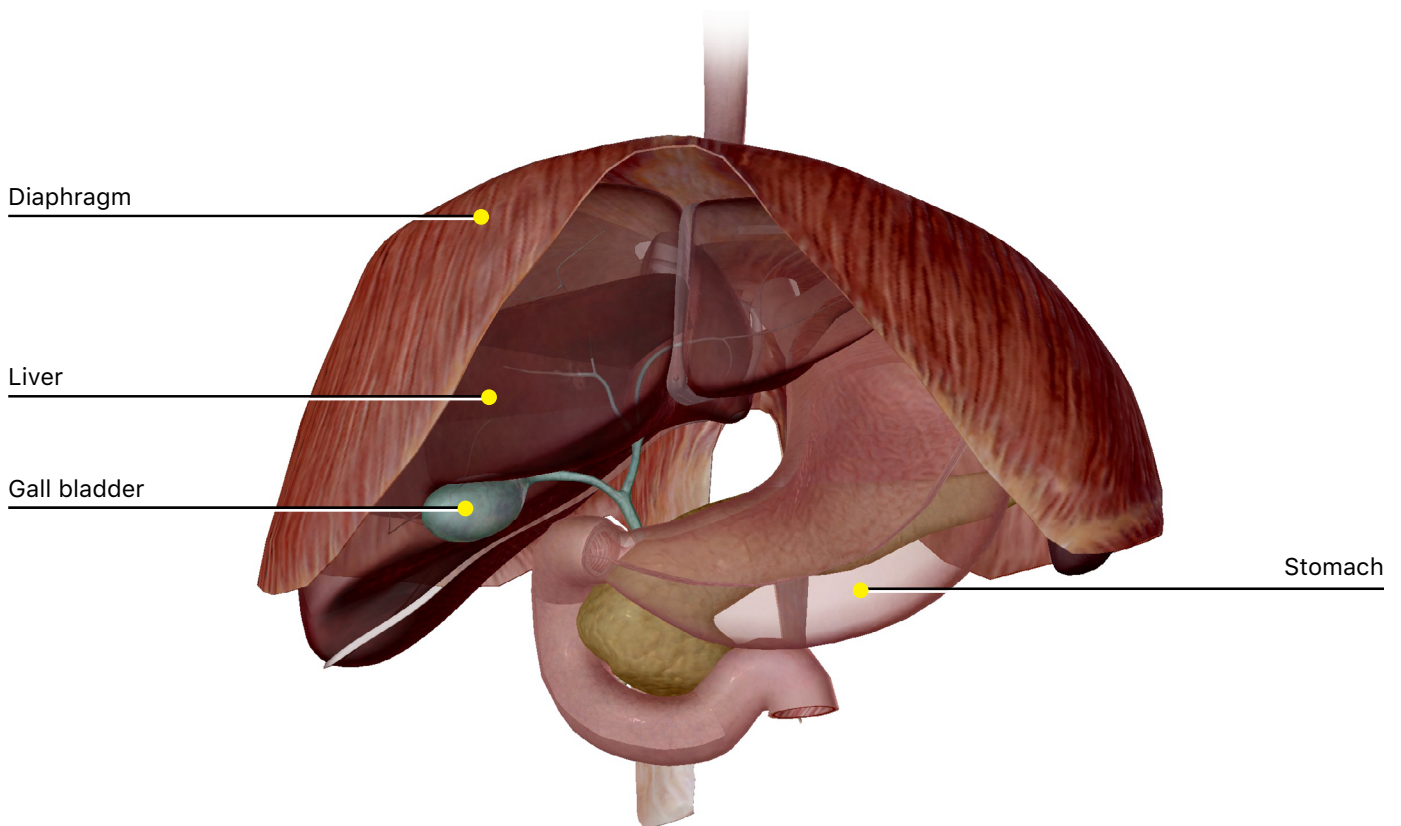
a. **Taenia coli.** What kinds of contractions help push the chyme through the colon?

TIME TO PRACTICE!

GO TO THE QUIZZES MENU AND COMPLETE QUIZZES 42A AND 42B.

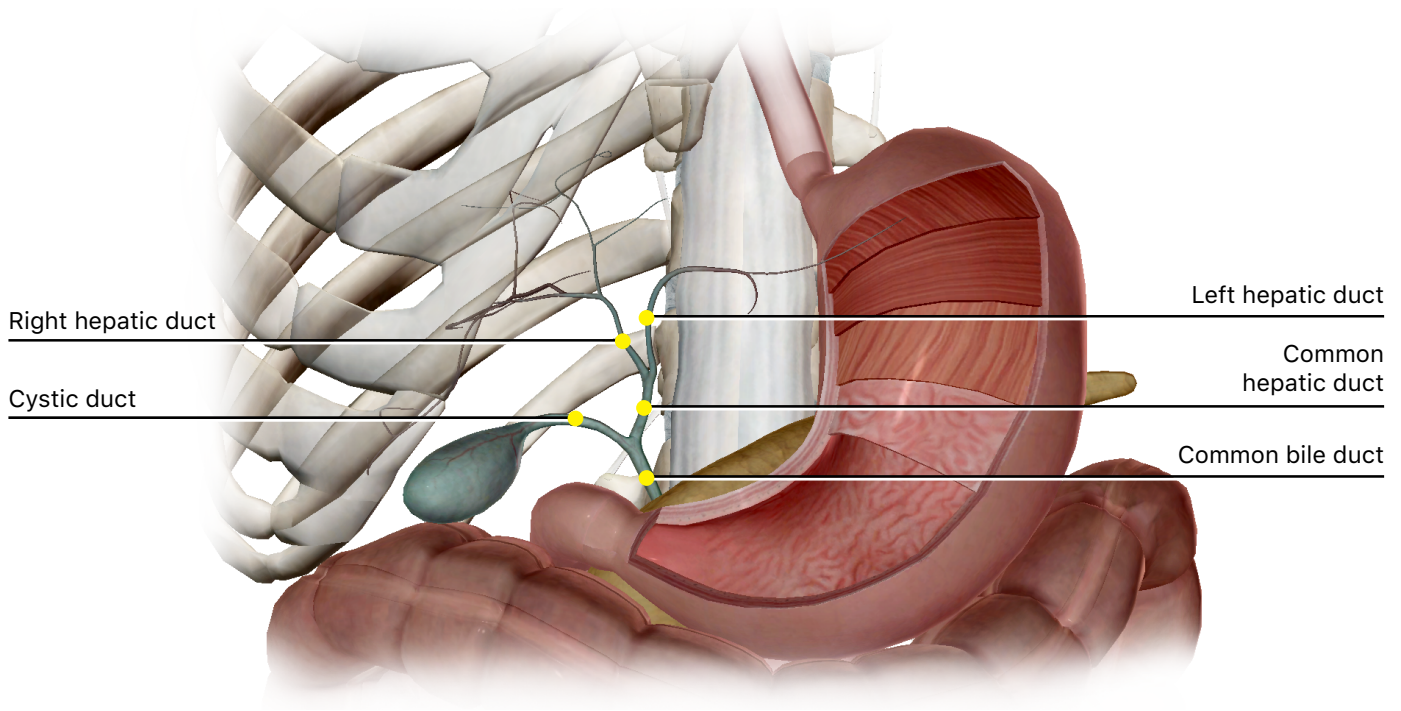


D. Scroll to Chapter 41. Accessory Organs of Digestion.



1. Use the 3D model in **Module 41.1 Accessory Organs** to identify the accessory organs of digestion and understand where they connect with the alimentary canal.
 - a. Select the **liver** and select Fade Others. Rotate the model in order to see the lobes of the liver and its position under the diaphragm and to the right of the stomach.
 - b. Select the **gall bladder** and select Fade Others. Rotate the model in order to see ducts that bring bile from the liver to the gall bladder. Locate the gall bladder in your model.





2. Use the 3D model in **Module 41.6 Bile Ducts** to understand the flow of bile from the liver to the gall bladder and to the small intestine. Locate the following and give a brief description of the function of each:

a. **Right hepatic duct**

b. **Left hepatic duct**

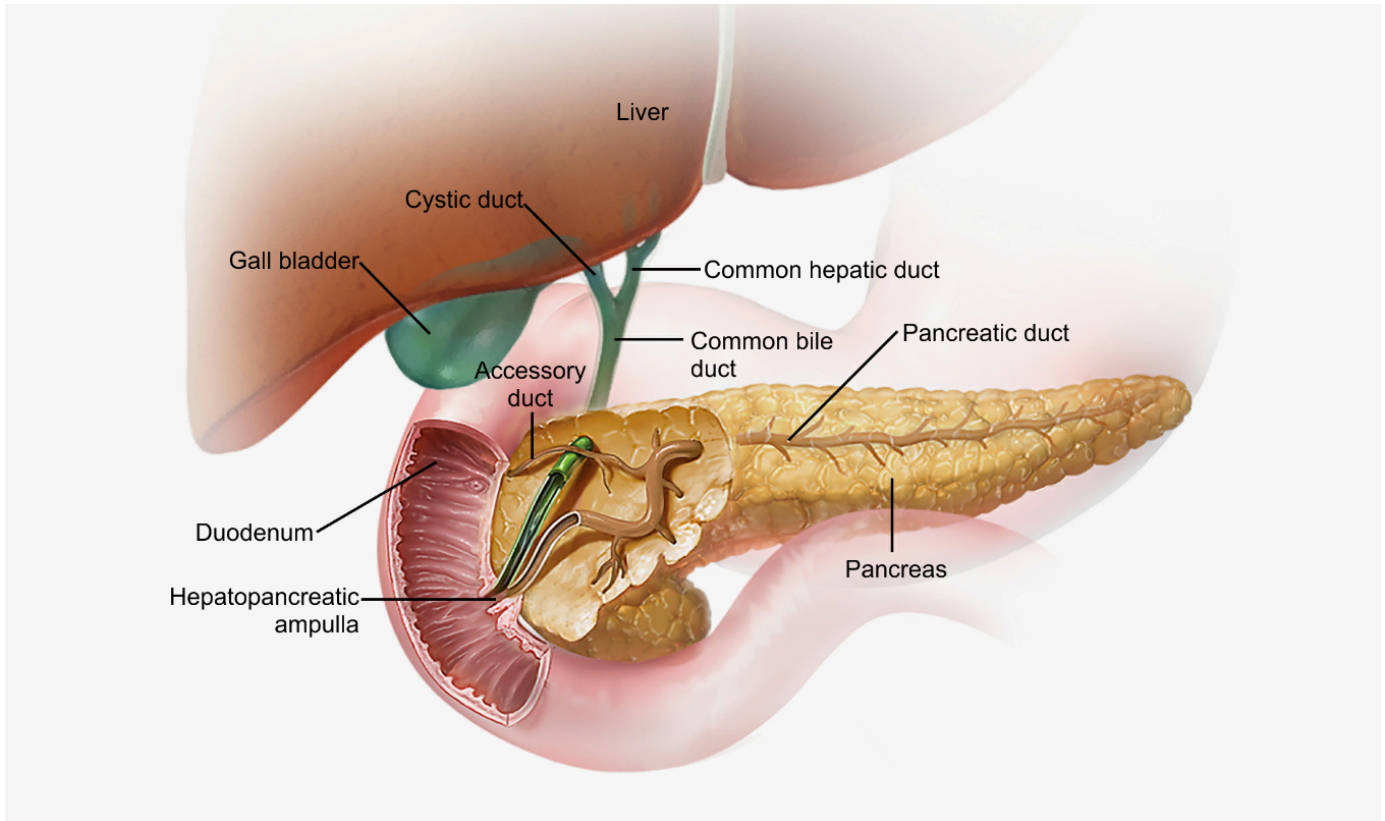
c. **Common hepatic duct**

d. **Cystic duct**

e. **Common bile duct**

f. Select the term "Liver" in the list on the left. Then select the gall bladder in the model and select Hide Others. Rotate the model to see how the ducts bring bile from the liver to the gall bladder for storage and to the small intestine.





3. Use the illustration in **Module 41.5 Pancreas, Liver, Gallbladder** to view the pancreas and to understand how it contributes to digestion.

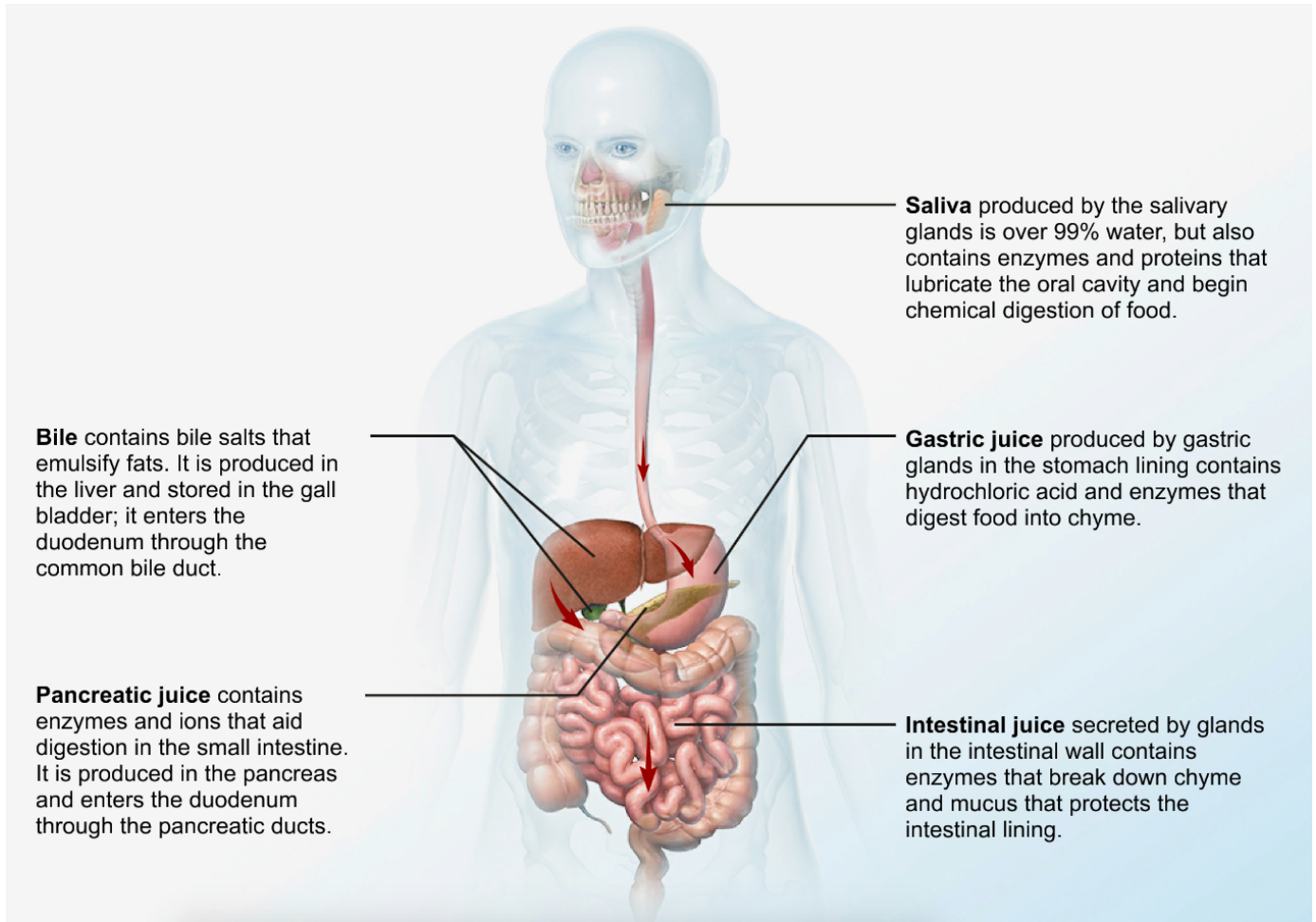
- a. **Pancreas**
- b. **Pancreatic duct**
- c. **Hepatopancreatic ampulla**
- d. **Accessory duct**
- e. What are the products of the pancreas that are secreted into the intestine?
- f. What is the other (endocrine) role of the pancreas?

TIME TO PRACTICE!

GO TO THE QUIZZES MENU AND COMPLETE QUIZZES 41A AND 41B.



PUTTING IT ALL TOGETHER



1. Use the illustration in **Module 38.5 Digestive Juices** to list all the parts of the digestive system that produce secretions contributing to digestion. What is the function of each secretion?
2. Trace the path of food from its entry into the digestive system via the mouth all the way to its exit as feces.
3. List the accessory organs and state what each contributes to digestion.



4. Draw a cross-section of the small intestine and label the four layers of the alimentary canal. (Hint: refer to **Module 38.4 Alimentary Canal**).

5. What role does peristalsis play in digestion?

6. What roles do valves play in the movement of food through the alimentary canal?

7. Which region of the small intestine receives ducts from the pancreas and the liver?

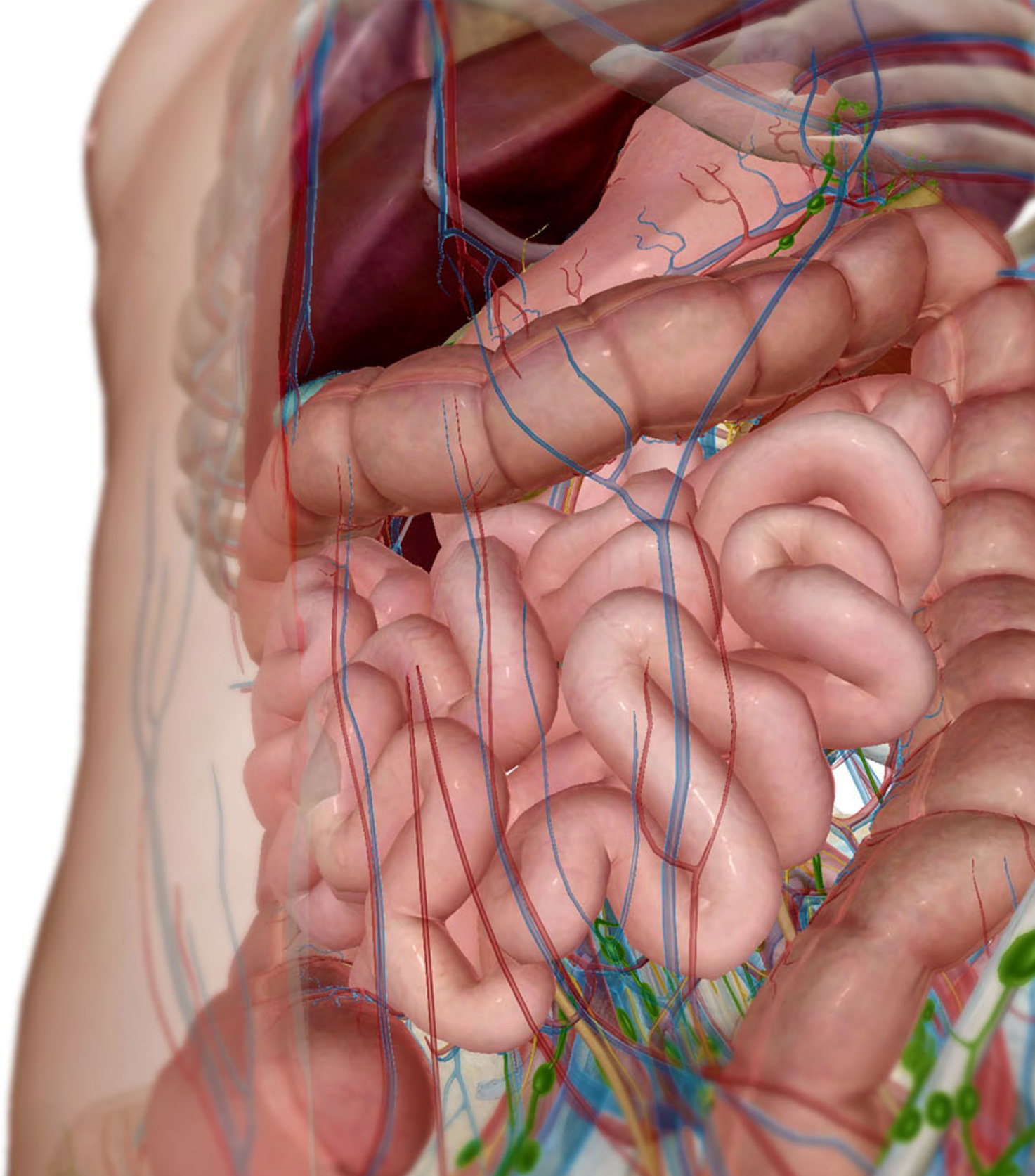
8. Watch the video for **Module 38.1 Digestive System Functions**, and fill in the following blanks:

a. The walls of the _____ are lined with structures that absorb nutrients from chyme.

b. Stool compaction occurs in the _____.

c. Digestion includes both chemical and _____ processes.



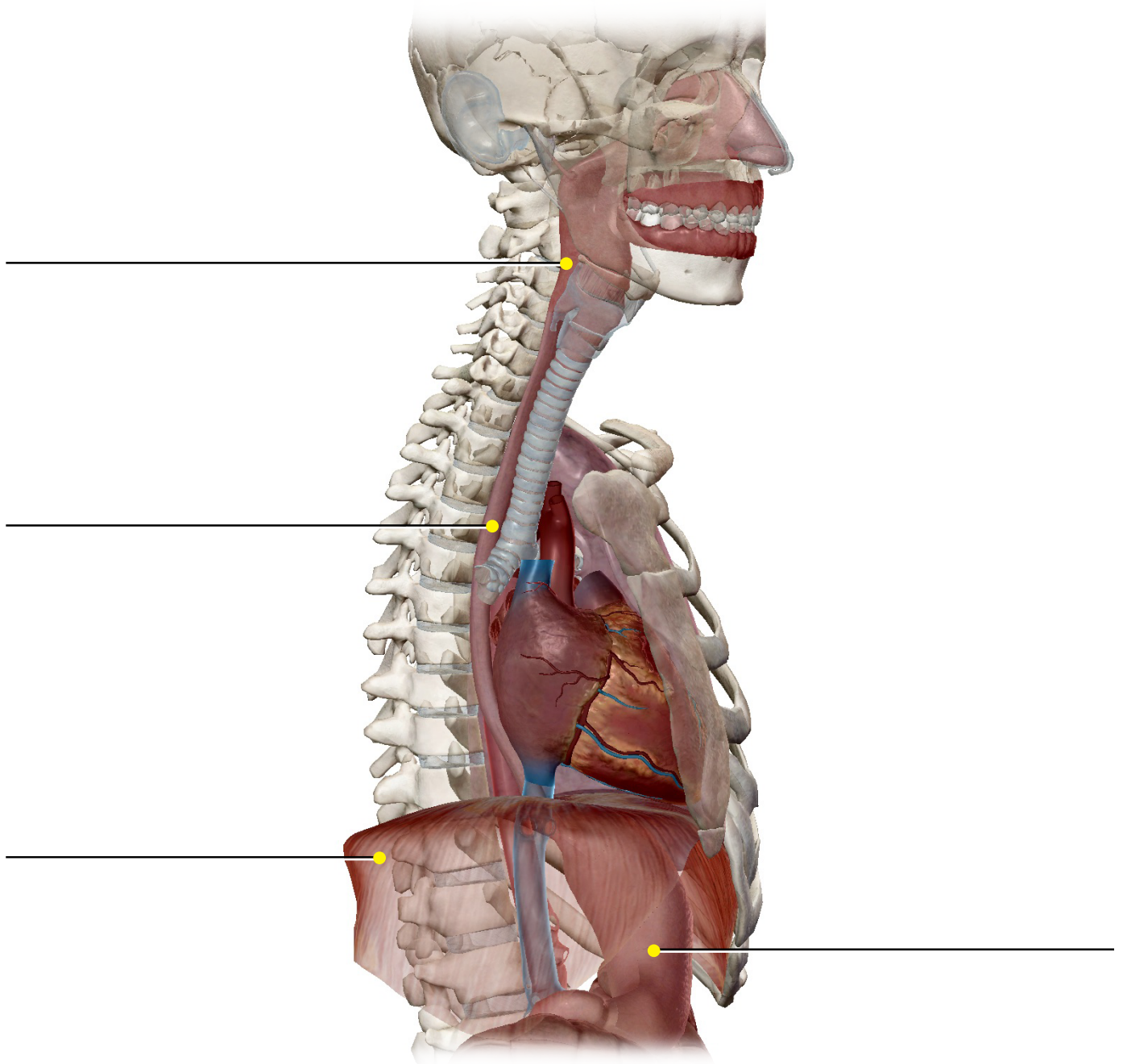


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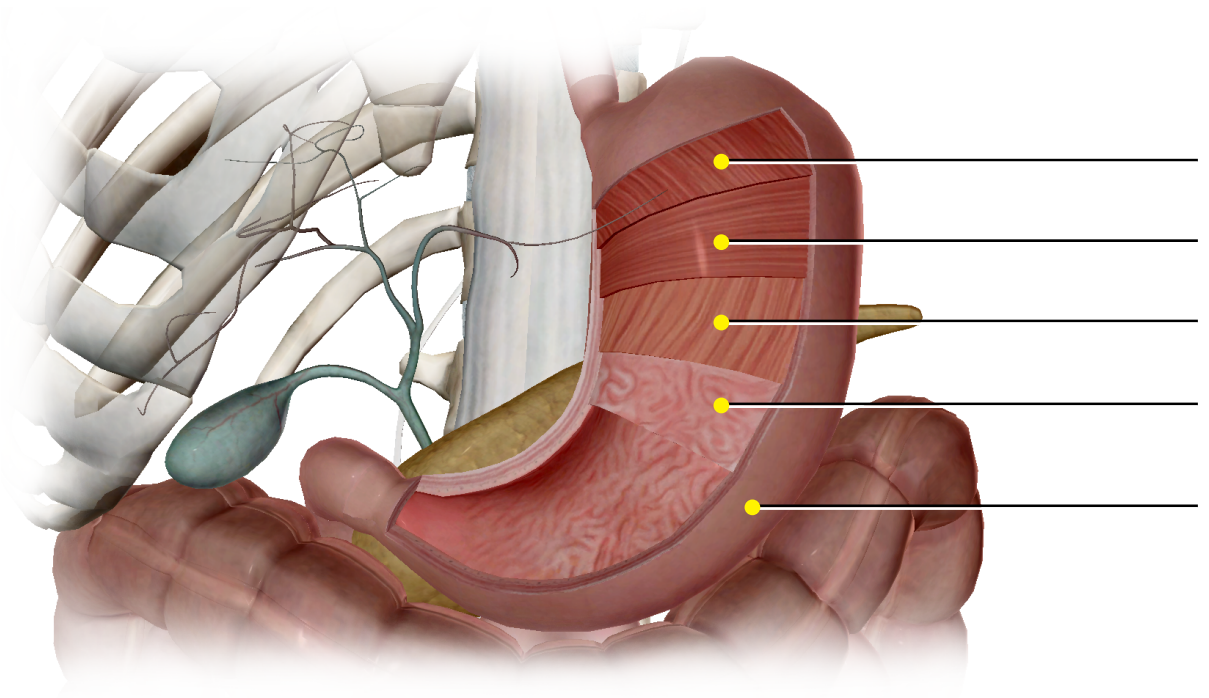
Student Practice

Label the structures in the following figures.

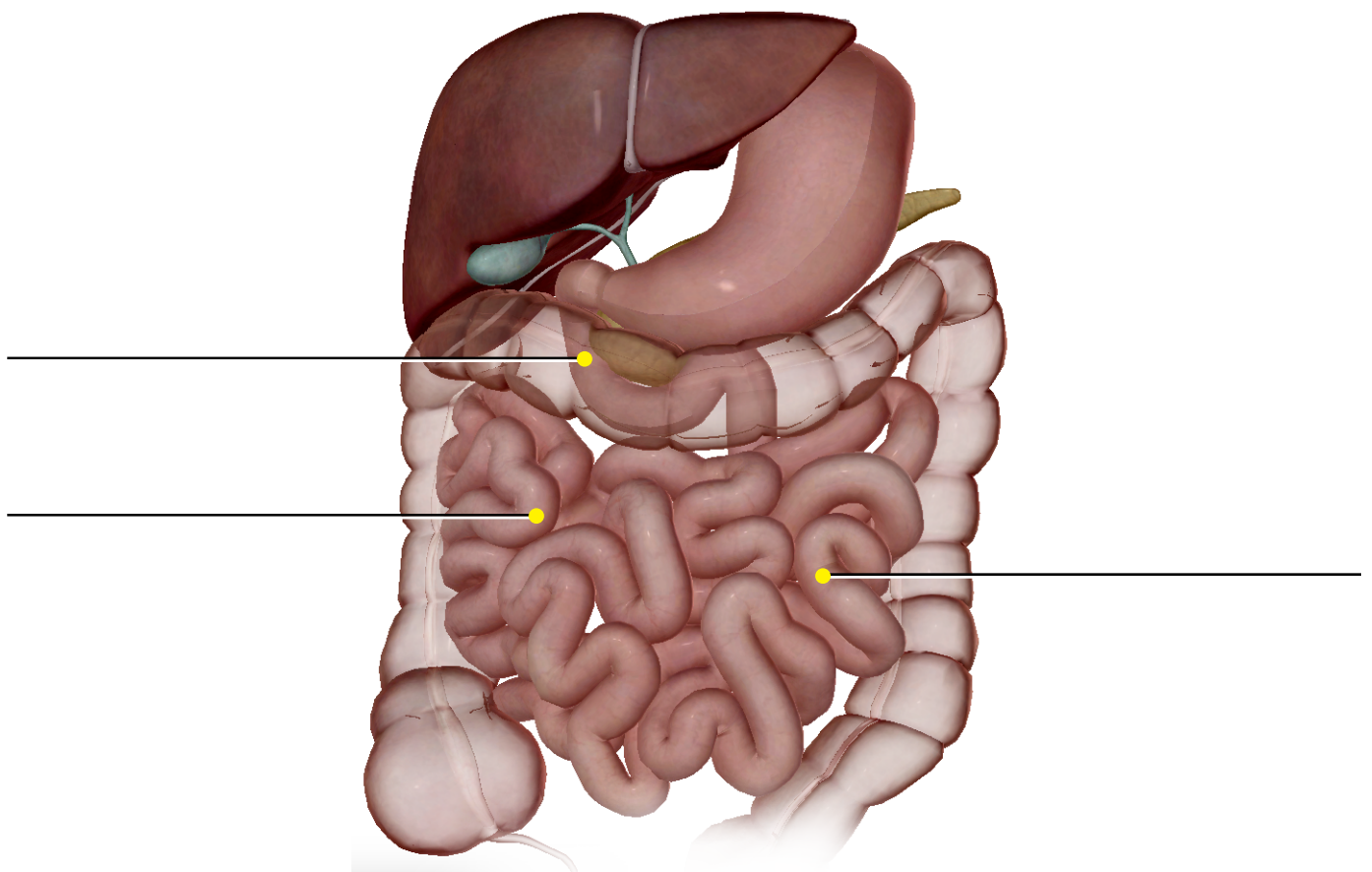
Module 40.3 Esophagus



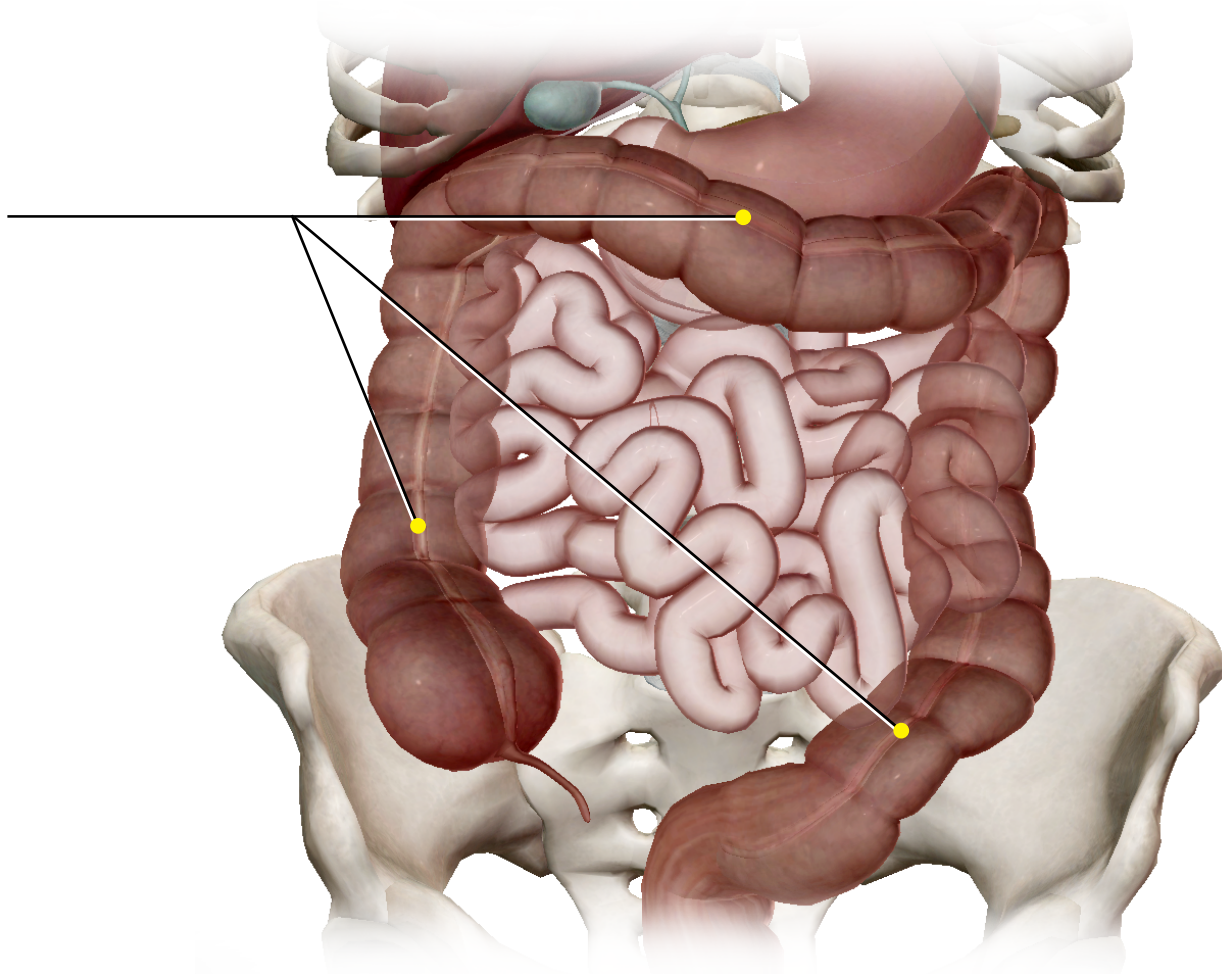
Module 40.6 Stomach Wall



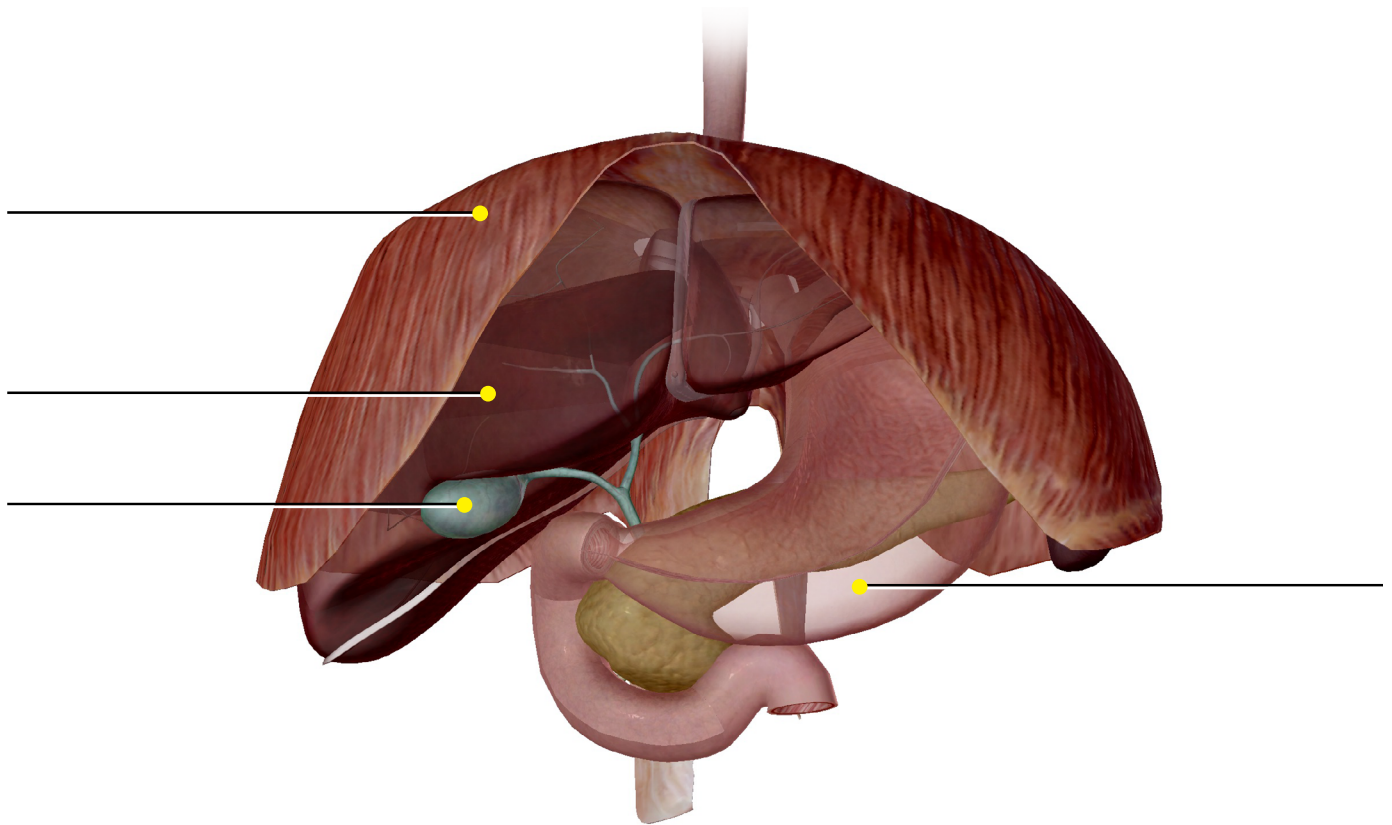
Module 42.4 Small Intestine



Module 42.8 Taenia Coli



Module 41.1 Accessory Organs



Module 41.6 Bile Ducts

