

# Lab #11: Digestive System Lab

Name \_\_\_\_\_ Date \_\_\_\_\_

**Part 1: Color in the various parts of the Digestive System with colors of your choice.**

- ☐ Stomach
- ☐ Salivary Gland
- ☐ Liver
- ☐ Esophagus
- ☐ Pharynx
- ☐ Common Bile Duct
- ☐ Transverse Colon
- ☐ Descending Colon
- ☐ Ascending Colon
- ☐ Sigmoid Colon
- ☐ Jejunum
- ☐ Ileum
- ☐ Duodenum
- ☐ Pancreas
- ☐ Gallbladder
- ☐ Appendix
- ☐ Rectum

**COLOR USING THE  
HIGHLIGHTER TOOL!**

1. The pancreatic duct delivers chemicals to what part of the digestive system? *Breaks down with enzymes*

2. After food leaves the small intestine, where does it go?

*large intestine*

3. Name the three sections of the small intestine, starting with the section directly after the stomach:

*Jejunum, Ileum, appendix*

4. Name the sections of the large intestine starting from the cecum.

*ascending colon, transverse, descending*

5. What valve is between the small and large intestine?

*Ileum*

6. On the diagram, sketch and label the two valves found in the stomach.

*Spincter*

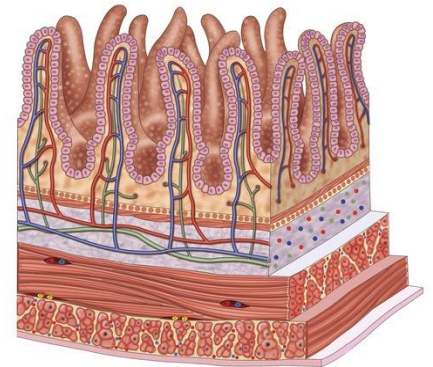


## Part 2: Investigation: How Does the Height of Villi Affect Nutrient Absorption?

### Introduction

The small intestine is the portion of the digestive tract that connects the stomach and the large intestine. The small intestine contains small finger-like projections of tissue called **villi** which increase the surface area of the intestine and contain specialized cells that transport substances into the bloodstream. Although these villi do not aid in the digestion of nutrients, they do help with nutrient absorption.

There are several conditions that can affect the villi of the small intestine. Celiac disease results in the immune system attacking the villi. The flattening of the villi or the loss of villi can make it more difficult to absorb nutrients. The same can occur in people with cystic fibrosis, where sticky mucus builds up and reduces absorption.



### Experimental Question: How Does the Height of Villi Affect Nutrient Absorption?

Simulation: Go to <https://www.openscienced.org/wp-content/uploads/2019/07/Villi-Absorption.html>

Simulation settings: Leave the initial small and large food particles # as they start (100, 10) and make the simulation end at 20 hours. Change the villi height to compare the total percent of particles absorbed in the blood after twenty hours. Use the setup/reset button to change the height variable.

### Data Collection

Height of Villi	1	2	3	4	5	6	7	8	9	10
% Particles absorbed	36.4	43.6	42.7	47.3	50.9	52.7	57.3	54.5	63.6	65.6

### Analysis:

1. How does changing the height of the villi affect absorption? Write a sentence that answers this question (CLAIM/HYPOTHESIS) and provide EVIDENCE by summarizing the trends from your data.

When the height of the villi is higher it absorbs more particles.

2. **Discuss** why someone with celiac disease or with cystic fibrosis might have trouble absorbing nutrient

Because that disease makes the villi smaller so it won't absorb a lot of particles