

Pass It Along Instructions

The purpose of this activity is for students to have a hands-on experience with how the digestive system works. Students will be using saltine crackers to represent food as it passes through the various organs and processes of the digestive system.

1. All students should have an active role in this model of the digestive system. Jobs and number of students needed is as follows:

Mouth – 1	Small intestines – 8
Teeth - 1	Liver – 1
Tongue – 1 (holding the water)	Blood vessel – 1
Esophagus – 1	Artery – 1
Pancreas – 1 (holding the tea)	Large intestines – 2
Gall bladder – 1 (holding the orange soda)	Rectum – 1
	Anus – 1

Stomach –

The number of students who model the stomach will vary according to the number of students in the class. All students who do not have another job will be part of the stomach.

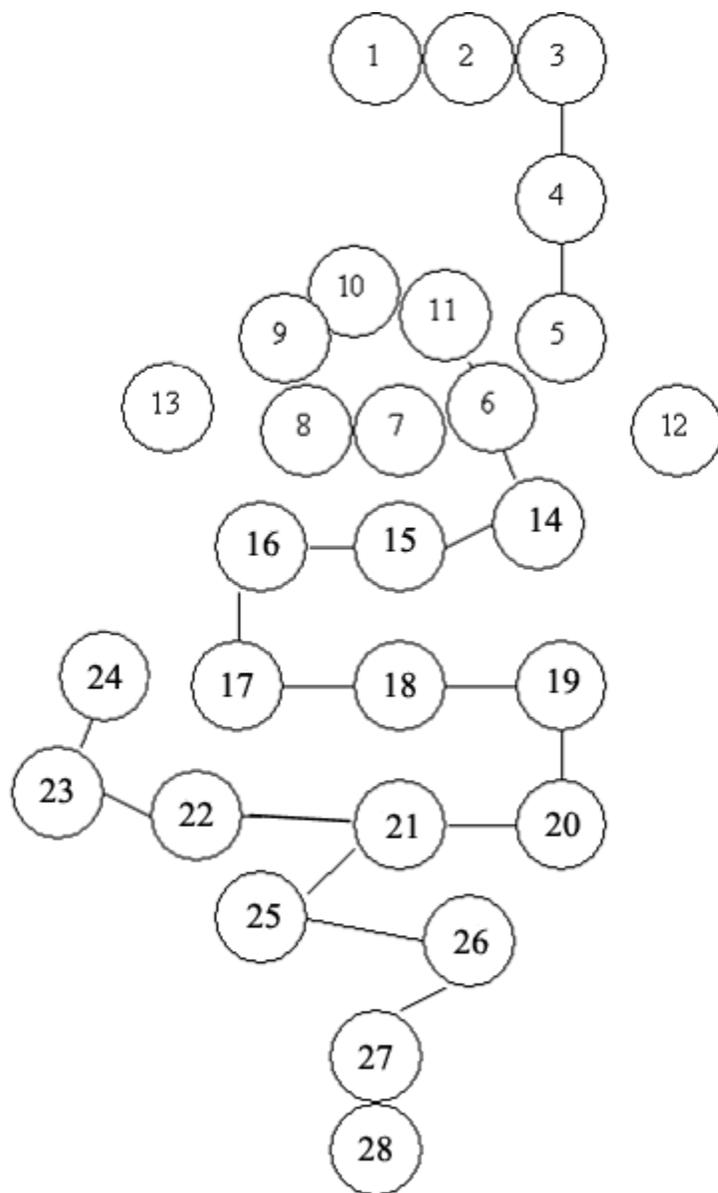
2. When selecting students for the various roles, write students' names on pieces of paper and put them in a bag. Blindly select students for the roles, however, care should be taken when selecting students to be the rectum and anus. If you think being selected for these organs may cause some problems, you may need to consider “selecting” students who are the class leaders, ones the class members look up to and won't tease.

3. Collect these materials:

- One tube of saltine crackers = food
- One gallon, one quart, and one pint resealable bags
- One cup water = saliva
- One cup tea = chemicals from the pancreas
- One cup orange soda = bile
- One leg of a pair of panty hose (about ankle to toe)

4. Arrange students as shown in the diagram below.

- 1 = mouth
- 2 = teeth
- 3 = tongue (has one cup water)
- 4 = esophagus (lines are outstretched arms)
- 5 – 11 = stomach (more or less students can be used to accommodate the number of students in the class)
- 12 = pancreas (has one cup tea)
- 13 = gall bladder (has one cup orange soda)
- 14 - 19 = small intestines (lines are outstretched arms)
- 20 – 21 = small intestines serving as villi (has leg of panty hose and quart bag)
- 22 = blood vessels
- 23 = liver
- 24 = arteries
- 25 – 26 = large intestines (has pint bag)
- 27 = rectum
- 28 = anus



5. Place all the saltine crackers in the gallon bag and hand the bag to the mouth. The bag of food follows this process as you orally describe the digestive process.

- The **mouth** receives the food and passes it to the **teeth** that begin the digestive process by breaking the food particles into small pieces. Give the teeth about 15 seconds to carefully break the saltine crackers without taking them out of the bag. Talk about the importance of chewing well so that our food is well broken down before it is swallowed. Pass the bag to the tongue.
- The **tongue** adds the saliva (one cup water) into the baggie. Tell students that the job of the tongue is to mix the food with the saliva to make it wet enough to swallow. Allow about 15 seconds for the tongue to mix the saliva with the food in the bag. Pass the bag to the esophagus.
- Food passes down the **esophagus** to the stomach. Pass the bag to the stomach.
- The muscles of the **stomach** are constantly moving the food around, mixing the food with the different liquids that are working to break the food down. The bag is to be passed from student to student, each giving the bag one fast squeeze to add to the mixing.
- After a couple of stomach students have passed the bag, the **pancreas** should reach into the stomach and add the chemicals called pancreatic juices (one cup tea) to the bag. Be sure to reseal the bag. The chemicals from the pancreas aid in breaking down the food. Pass the bag to a couple more stomach students.
- After about half of the stomach students have had a turn to mix and mash the food and liquids in the bag, the **gall bladder** adds the bile (one cup orange soda). At this point the bag should continue around the stomach until the crackers and liquids are well mixed and the crackers are a thin paste. Pass the bag to the small intestines.
- The **small intestines** (8 students with their arms out stretched should be about 24 feet long) continue to mash and mix the bag as it is passed down the “tube” of students. The last two small intestine students hold the leg of the panty hose and serve as the villi. They filter the contents of the bag by pouring the contents of the gallon bag into the leg of the panty hose, which is inside the quart bag. Passing into the quart bag is food that has been broken down to the point that it can pass through the villi (panty hose) into the blood vessel. The panty

hose with the cracker mixture still inside (there should be a very wet saltine crackers goo left) are placed into the gallon bag and it is resealed.

- Pass the quart bag to the **blood vessel** that then passes it to the **liver** for cleansing. The liver holds the bag for a couple of seconds, then passes it to the **arteries** the small vessels that carry the food and oxygen rich blood, where the food is transported to all the cells. This bag of usable food for the cells has completed the digestive process and can be held by the artery.
- The gallon bag is passed from the small intestines to the **large intestines** (2 students with their arms out stretched should be about 6 feet long). These two students must get as much of the liquid as possible out of the remaining food (gallon bag) by squeezing the saltine cracker goo in the panty hose forcing as much liquid as possible into the gallon bag, then opening just a corner of the bag and allowing the remaining liquid to run into the pint bag. Reseal both bags. This liquid (pint bag) is passed to the blood vessel, liver, and artery. The final remains of the saltine cracker are waste that cannot be used by the body and must be passed from the body.
- Pass the waste (gallon bag) to the **rectum** where it is held for 15 seconds.
- Finally pass the waste (gallon bag) to the **anus** that takes it to the restroom and dumps the contents of the panty hose into the toilet and flushes it away. Be sure to pour the waste out of the hose and bag and not flush the hose or bag to stop up the toilet. The hose and bag go in the garbage. If no restroom is present in the classroom, the gallon bag of waste can be placed in the trashcan.