

5th Grade Activity: Digestion

*All living systems need energy and matter. The digestive system converts food into energy for animals and humans.
(NGSS Disciplinary Core Ideas 5-LS2.B: Cycles of Matter and Energy Transfer in Ecosystems;
5-LS1.C: Organization for Matter and Energy Flow in Organisms)*

Pre-Activity Questions

- What does digestion mean?
- Why is digestion important?

Digestion Activity

- Digestion is the process of breaking down food and converting it to energy.
 - **MOUTH** (teeth and saliva): both mechanical (chewing) and chemical (saliva) processes start to break down food just as it enters the body. Even before the food enters your mouth, the anticipation of eating stimulates glands in the mouth to produce saliva.
 - **ESOPHAGUS** moves the chewed food down to the stomach with a wave-like contraction and relaxation of muscles (peristalsis).
 - **STOMACH** mixes the food and breaks it down with stomach acid and enzymes.
 - **PANCREAS** releases enzymes to aid in digestion.
 - **LIVER** creates bile, and the **GALLBLADDER** stores it and, as necessary, releases it into the small intestine to break down fats. The liver also removes toxins, and stores vitamins and minerals.
 - **SMALL** and **LARGE INTESTINES**, and **RECTUM** complete the process, absorbs the elements into the bloodstream, removes any extra water, and prepares the feces.

Digestion Activity

Materials

- 2 spray bottles – (1 labeled Saliva, 1 labeled Acid)
- Masking Tape
- 1 Large Car Sponge (or 2 smaller kitchen sponges)
- 2 Garbage Bags
- Newspaper
- 4-5 Paper Lunch Bags
- 4-5 Ziploc Snack Baggies
- M&M's

Instructions

1. If possible, go outside and place two long lines on the ground with **masking tape** about 3-4 feet apart.
2. Create 4-5 food particles: Place 1 bag of **M&M's** in each **lunch bag** and then fill the rest of the lunch bag with **newspaper**. Take the lunch bags and place inside a double plastic **garbage bag**.
3. Line-up on the lines facing one another. The path between you is the digestive tract.
4. Work together as “peristalsis” to move the food down the tract. You can take turns doing each “job” along the tract/line or all work together at each step. Before you start, go through each role of the system and explain.
 - a. **Molars** – Chewing food. First you will be the molars that rip open the top of the plastic bags.
 - b. **Saliva** – Moistening the food. Next you will spray the paper bags inside the plastic garbage bags with “**Saliva**” to moisten the food.
 - c. **Stomach & Pancreas** – Break down food. Then you’ll open and spray the paper bags and the newspaper with “**Acid**”.
 - d. **Small Intestine** – Absorbs nutrients. From there, you’ll rip open the plastic bag and paper bags to find the nutrients (bags of M&M's) and pass them to the blood.
 - e. **Blood** – Distributes nutrients. This role/person is responsible for storing and distributing the nutrients to everyone at the end of the activity. (Have them hold onto them and wait till the end of the activity to hand out M&M's for eating)
 - f. **Large Intestine** – Water absorption. At this stage, you’ll soak up all the water on the ground with the **sponge**.
 - g. **Rectum** – Waste removal. Finally, you’ll make sure all the waste from the food particles end up in the trash can.

NOTE: This activity can be adapted to a single person who does each role one after the other, but it works best with siblings and adults working together.

Post-Discussion Questions and Resources

- Explain what it was like doing your specific job.
- What would happen if we lost one of the jobs?
- Which of the jobs do you think is the most important and why?
- Explain what would happen if we ate foods with no nutrients.
- Make sure whoever was the blood distributes the nutrients (M&M's) for eating!
- For another interactive digestive experience, check out the [Magic School Bus Digestion](#) episode.