



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

explore the digestive system and understand the functions of the organs.



Supplies Required:

Scissors
Bowl
Fork
Funnel
Piece of bread, or banana, or
other mashable food
Water

Medium Ziploc bag
Red and green food coloring
1 leg from pair of tights
Plate
Vinegar
Jar

Video

What is the digestive system: <https://tinyurl.com/yxwc3hua>

Overview

Digestion is the process by which large pieces of food are broken down into smaller pieces which can be used by the body. Digestion starts in the mouth where food is broken into smaller pieces as people chew. Food is mixed with saliva which contains an enzyme called amylase. Amylase starts to break down carbohydrates in the food. Food then passes down the esophagus and into the stomach.

The stomach contains stomach acid and more enzymes which break up the food further. Stomach acid is actually hydrochloric acid which kills most harmful bacteria and provides the optimum pH for enzymes to get to work. As food moves into the small intestine, the liver adds bile to the mixture. This neutralises the stomach acid so as not to harm the small intestine and helps to break up fats. The pancreas makes three digestive enzymes which are also added into the food mixture. Nutrients are absorbed through the walls of the small intestine and transported to cells in the body by blood.

In the large intestine, water is absorbed from food, and undigested food is passed to the rectum as feces. Undigested food becomes feces which are excreted from the body via the rectum and anus.

Instructions

1. Place the biscuit and banana into a bowl and gently crush with a fork. This represents the food being chewed. Pour the crushed food into an empty ziploc bag and add the water. The water represents saliva.
2. Pour the vinegar into the bag (this represents stomach acid) Make sure there is no air in the bag and seal it.
3. Squeeze the bag for about a minute crushing up the contents further. This represents the food breaking down further inside the stomach.
4. Once the stomach contents feel like a thick liquid, cut a small hole in the one corner and carefully squeeze into the open leg of the tights (small intestine).
5. At this point you can add a little red and green food colouring, but this is not necessary. The red food colouring represents dead red blood cells that are being disposed of and the green represents bile which is released by the liver.
6. Hold the tights over the tray or a bowl and gently squeeze the liquid out. The liquid on the tray represents the nutrients the body absorbs and uses.
7. Keep squeezing until no more liquid comes out. If you used food colouring it might be a good idea to wear gloves for this part.
8. The food left behind in the tights represents waste products that cannot be absorbed. Cut a hole in the bottom of the tights and squeeze the contents into the jar. This is the poo!

Additional Resources

1. What are the enzymes in the digestive system? <https://tinyurl.com/yyhguf6j>
2. Learn more about the digestive system: <https://tinyurl.com/gldevc2>

Share It Out

Share on social media: Take a video of your model and explain to your friends and family how digestion works. Post to social media and use the hashtags:

#DigestiveSystem
#ProjectExploration
#StemAtHome

For more activities like this one, go to www.projectexploration.org/stemhome. If you're interested in learning more about Project Exploration and our free events, programs, and activities, please find us on social media and be sure to follow!



Call or text us for help: 312-772-6634

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