a WOW Lab BLUEPRINT

The Glovely Digestion Model

Activity Instructions

The following items will be needed for this activity:

- *Glovely Digestion* model (see *Prep Instructions*)
- prepared cookie sandwiches (see *Prep Instructions*)

Step 1

Open the mouth by separating the magnetic pieces of the glove's pinky opening. Take one or two of the prepared cookie sandwiches and place them in the mouth (**Figure 1**). Close the mouth.

Figure 1

Step 2

Squeeze the small balloon (salivary gland) to secrete water (salivary amylase), as shown in **figure 2**.

Figure 2

Step 3

Press the cookie sandwich against the back of the Plexiglas to crush it, mimicking chewing (**Figure 3**).

Figure 3

Step 4

Once the cookies are saturated with water (salivary amylase) and fully broken down, open the bag clip (upper sphincter) and squeeze the cookies into the arm of the OB glove (esophagus). Replace the chip bag clip.

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Step 5

Manually squeeze the cookies down the arm of the OB glove to mimic peristaltic contractions.

Figure 4

Step 6

Once the cookie mixture reaches the bottom of the OB glove (esophagus), remove the chip bag clip (lower sphincter), as shown in **figure 4**.

Step 7

Squeeze the cookie mixture down into the PVC fittings. Ensure that all the food enters the large balloon and quickly replace the chip bag clip. The chip bag clip must completely seal the esophagus to prevent the gas produced from the baking soda-vinegar reaction from escaping via the esophagus.

Step 8

The baking soda in the cookies and the vinegar in the larger balloon (stomach) will react to produce carbon dioxide. Wait for the gas to expand the large balloon (stomach). At this point, students can further agitate the large balloon (stomach) to help the reaction take place, mimicking muscular stomach contractions which assist in mechanical digestion.

Figure 5

Step 9

The reaction is complete once the fizzing sound and balloon expansion stop. At this point, open the ball valve, taking care not to pull off the large balloon (**Figure 5**). The students should be able to hear a noise (a burp) coming from the party blower at the end of the plastic tubing. Students can squeeze the stomach to force more air through the tubing (**Figure 6**).

Figure 6