**Station #2**

**Mapping the Human Body**

What you need to do:

* Name that system
* List and describe Organs and structures of the system
* How does this system function to maintain homeostasis?
* Describe two diseases that disrupt homeostasis of the system.
* Give three fun facts about the system
* Add system drawings and note cards to the body model in the appropriate place.
* Add string from the description to the organ or structure.

**Station #3**

**Getting to the Guts of it: Munching mouth.**

Chew your food:

Chewing Flattens out your food and grinds it into lots of small pieces. Chewing also mixes food with spit so that it slides down your throat and into your stomach easily.

What you need to do:

Use a knife to cut a small piece of apple into pieces. Do the same thing with a small piece of meat.

Which of your teeth do this when you are eating food?

Mash the apple pieces with a mortar and pestle. See if you can flatten it out or break it into smaller pieces. Do the same thing with a piece of meat. (not too much we need the meat for station #5)

Which of your teeth do this job?

**Station #4**

**Getting to the guts of it: Mixing with Saliva**

Saliva is the scientific name for spit. In Saliva there are special chemicals called enzymes that break down food, such as bread, potatoes and rice into very tiny pieces. As the pieces get smaller they taste sweeter and sweeter.

What you need to do:

Put a piece of white bread on your tongue.

Record the sweetness that you can taste, (use a scale of 0-4 ticks: 4 being very sweet).

1. Before you chew
2. After 5 chews
3. After 15 chews
4. After 30 chews

Try to swallow some dry bread without chewing.

Question: Is it easy?

Let the bread soak in your mouth for 1 minute and swallow it.

Question: Is it harder, or easier?

**Station #5**

**Getting to the Guts of it: The mixing and Mushing Stomach**

Acid Attack:

Your stomach mixes the mushed up food with strong acid and breaks down food such as meat, eggs, and nuts.

Tie the piece of meat that you mashed with the mortar and pestle to a piece of string (20 cm). and suspend it in half a glass of coke (acid).

Question: Check the meat next period and write down what you see.

**Station #6**

**Getting to the guts of it: Squish and squeeze.**

Muscles in your stomach squeeze and grind up the food with the acid juices until it all looks like smooth porridge. This smooth mashed up food is called chyme and it is ready to pass through a small valve at the bottom of your stomach called the pyloric sphincter, into the small intestines.

What you need to do:

Use a funnel to fill a balloon with flour. Slowly add small amounts of water and knead the outside of the balloon until the flour and water are mixed well. You can make several of these balloons with different consistencies to represent the stomach contents as they change over time. The smoothest one resembles the consistency of chyme that passes into the small intestines.

Question: What does the stomach look like? Draw it on your lab paper.

Question: What are the structures of the stomach, color and label the picture that you drew.

**Station #7**

**Getting to the Guts of it: Long skinny Guts.**

Part 1

Getting the goodness out of food:

Different chemicals are squirted into the small intestines and mixed into the mushed up food. They break the food into smaller pieces and extract the nutrients out of it so they can move into the body.

Put 25 mL of warm water into three different glasses (beakers) and add 5 mL of each enzyme (pepsin, Pectinase) to each beaker. Put some bread in one beaker, mashed meat into the second, and a tablespoon of oil into the third. Observe what happens to these foods over two class periods. Make sure they are stored in a warm place.

Question: Describe what you see before and after. What do you think the enzymes do?

Part 2

Fatty Food:

The small intestines squirt another chemical that acts like detergent, into the food mixture. This chemical is called bile and breaks down the fat into tiny bits.

What you need to do:

Put a teaspoon of oil into 50 mL of water.

Question: What do you notice?

Gently stir the mixture with a stirring rod.

Question: Describe what you see:

* Immediately
* After 1 minute
* After 5 minutes

Add ¼ teaspoon of dishwashing detergent to the mixture and stir it in.

Question: Describe what you see:

* Immediately
* After 1 minute
* After 5 minutes.

**Station #8**

**Smooth Muscles: Moving Muscles**

The long tubular intestine in the picture are surrounded by muscles. These muscles squeeze the tube in a regular rhythm called peristalsis. This rhythm forces food along the digestive tract.

Smelly business:

Feces is the scientific name for pooh. Pooh is the left over food with most of the nutrients taken out of it. It is forced out the end of the large intestine, through the anus and ends up in the toilet.

What you need to do:

Two students should hold each end of a long stocking. Put a small smooth ball into one end of it and move the ball along with a hand-over-hand action. You may like to do this in teams and have a race.

Question: What happens when food moves too slowly down the digestive tract?

 What happens when food moves too quickly down the digestive tract?

**Station #9**

**Solid structure images:**

Just over a hundred years ago, in 1895, Wilhelm Roentgen noticed an unusual glow on a florescent screen that was sitting beside a cathode tube. This tube emitted a ray that was able to pass through solid objects and was only slowed down by very dense materials like bone and lead. Quite by accident Roentgen had discovered a new form of radiation, called X-ray. If objects were put in front of X-rays their shadows could be recorded permanently on photographic plates.

What you need to do:

Observe the X-rays and cat scans.

Questions: what do they look like?

 How are they different?

Work with your group to explore the history and use of X-ray technology and subsequent medical imaging technology and the relevance of these fields of science to people’s lives. Answer the following questions on a separate piece of paper. Each answer should be at least 4 sentences.

* Imagine that you are Wilhelm Roentgen in 1895. You have just discovered the glow fro the x-ray and the cathode tube. Research and describe the science of x-ray technology.
* What is the world of Wilhelm Roentgen like, in 1895? What attitudes and beliefs do people have about themselves, society, medicine, the human body?
* What effect has x-ray technology had on medicine and disease diagnosis? How has x-ray technology changed over the last 100 years? How is it used to diagnose different medical conditions?
* What other medical imaging techniques and technologies are available today? How are they different to x-ray technology? Describe how these technologies work. How have these imaging tools changed medical practices?

**Station #1**

**Make a lung:**

Make a model of a lung to discover the relationship between the action o the diaphragm and the movement of air into and out of the lungs. Apply the terms *models* and *systems* appropriately to anatomical structures of the respiratory system. Identify and explain the connection between the respiratory system and other systems of the human body and their various functions (Science – knowledge and understanding). Use diagrams and symbols to explain procedures (Science at work). Ask clarifying questions about ideas and information listened to and viewed. Develop interpretations about observations and provide reasons for them (Communication – Listening, viewing, and responding)

What you need:

 Plastic bottles with narrow opening at the top ( large soft drink bottles

 Supermarket shopping bags

 Masking tape

 Scissors

 Saucers with bubble mixture – water and strong detergent.

 (Supervision will be required to cut out the bottom of the plastic bottles)

What to do

* Cut the bottom of a plastic bottle and take a large plastic bag around this hole
* Make sure that there are no leaks from this end of the bottle
* Blow into the top of the bottle until the bad at the end is fully blown up
* This is your model lung
* Hold the top of the bottle very close to your cheek so that the flow of air may be felt moving in or our of the model lung.

Imagine that your hand is the muscular diaphragm below the in and the gentle push on the blown up bag.

Q: What happens to the air in the model lung?

Q: What happens to the bubble?