

From Cells to Systems

Grade Level: Second Grade

Presented by: Jan Polzin and Mary Ann Mahoney

Length of Unit: 10 Lessons

I. ABSTRACT

This second grade science unit begins with the concept of cells as the basic building blocks of all living things. Students learn how cells go together to make up tissues, which make up organs, which make up organ systems. The focus is on the digestive system. Beginning with the teeth, students trace the path of food throughout the entire body with a variety of hands on activities. They learn how food enters the blood stream, travels to the cells, and then how the excretory system filters waste from the blood, eliminating the impurities as urine.

II. OVERVIEW

A. Concept Objectives

1. Students will develop an awareness of what cells are and how they join to make every living thing.
2. Students will understand how food enters the body by the mouth, provides nutrients for the cells, and then is eliminated from the body.
3. Students will gain an understanding of the function the vital organs play in the digestion process.

B. Core Knowledge Content

1. All living things are made up of cells, too small to be seen without a microscope.
 - a. Cells make up tissues.
 - b. Tissues make up organs.
 - c. Organs work in systems.
2. The digestive and excretory systems are involved in taking in food and getting rid of waste. Parts include:
 - a. Salivary glands and taste buds
 - b. Teeth: incisors, bicuspids, and molars
 - c. Esophagus, stomach, liver, small intestine, and large intestine
 - d. Kidneys, urine, bladder, urethra, anus, appendix

C. Skills

1. Students will label the parts of a cell.
2. Students will observe cells through a microscope.
3. Students will list in sequential order cells through organ systems.
4. Students will identify different types of teeth.
5. Students will compare the functions of different teeth.
6. Students will summarize the function of saliva in breaking down food.
7. Students will locate the different types of taste buds on the tongue.
8. Students will investigate the function of the esophagus and record their findings.
9. Students will locate and place the tongue, a salivary gland and the esophagus on a model of the human body.
10. Students will identify the parts that the stomach and liver play in the digestive process.
11. Students will analyze how the small intestine is able to fit into the body.
12. Students will locate and place the liver, the stomach, and the small and large intestines on a model of the human body.
13. Students will analyze the function of the kidneys in filtering blood.
14. Students will locate and label parts of the excretory system on a model of the human body.

15. Students will summarize what they have learned about the function of each organ in the digestive system.
16. Students will demonstrate what they have learned by their performance on a test.

III. BACKGROUND KNOWLEDGE

- A. For Teacher:
 1. Inside Guides: Human Body by Dr. Frances Williams
 2. Cells and Tissues by Leslie Jean LeMaster
 3. The Digestive System by Darlene R. Stille
- B. For Students:

IV. RESOURCES

- A. The Digestive System by Darlene R. Stille
- B. Eating by Anita Ganeri
- C. Cells and Tissues by Leslie Jean LeMaster
- D. The Body Book by Donald M. Silver and Patricia J. Wynne

V. LESSONS

Lesson One: Cells

- A. Objectives
 1. Lesson Content: All living things are made up of cells, and are too small to be seen without a microscope.
 2. Concept Objective: Students will develop an awareness of what cells are.
 3. Skill Objectives
 - a. Students will label the parts of a cell.
 - b. Students will observe cells through a microscope.
- B. Materials
 1. Your Growing Cells
 2. microscopes
 3. slides of different types of cells
 4. a copy of Cells (Appendix A) for each student
 5. red, yellow, and blue colored pencils
 6. a folder (folded piece of 12x18 paper) for each child
- C. Key Vocabulary
 1. cell-the basic building block of all living things
 2. nucleus, nuclei-the part of the cell that tells it what to do
 3. cell wall-the wall around the outside of a cell
 4. cytoplasm-the living substance of a cell aside from its nucleus
- D. Procedures/Activities
 1. Read the book Your Growing Cells.
 2. Discuss with students what a cell is and what the parts are.
 3. Discuss with students some different types of cells and how cells divide.
 4. Do Cell Worksheet (Appendix A). Place in folder.
 5. Optional Extension: Have children choose one of the cells or parts of cell division to draw on 9x12 paper and then hang them in the hall.
 6. If time read Greg's Microscope.
- E. Evaluation/Assessment
 1. Cell worksheet

Lesson Two: Cells to Organ Systems

- A. Objectives
 - 1. Lesson Content: Cells make up tissues, which make up organs, which make up organ systems.
 - 2. Concept Objective: Students will understand how cells join to make every living thing.
 - 3. Skill Objective: Students will list in sequential order cells through organ systems.
- B. Materials
 - 1. Cells and Tissues
 - 2. materials for Cells to Systems activity (Appendix B)
 - 3. a copy of Cells to Systems Pyramid (Appendix C) for each child
- C. Key Vocabulary
 - 1. tissue-a collection of specialized cells
 - 2. organ-part of a living body performing a vital function
 - 3. organ system-a group of organs that work together to perform a specific function
- D. Procedures/Activities
 - 1. Read the pages in Cells and Tissues pertaining to cells, tissue, organs, and organ systems.
 - 2. Do the Cells to Systems activity (Appendix B).
 - 3. Fill out the Cells to Systems Pyramid (Appendix C). Place in folder.
- E. Evaluation/Assessment
 - 1. Oral quizzing.
 - 2. Cells to Systems worksheet.

Lesson Three: Investigate Your Teeth

- A. Objectives
 - 1. Lesson Content: Teeth
 - 2. Concept Objective: Students will understand how food enters the body by the mouth, provides nutrients for the cells, and then is eliminated from the body.
 - 3. Skill Objectives
 - a. Students will identify different types of teeth.
 - b. Students will compare the functions of different teeth.
- B. Materials
 - 1. Digestion Song (Appendix D)
 - 2. pictures of teeth from a book such as *What Happens to Your Food*
 - 3. tooth maze for each child from *The Body Book*
 - 4. overhead of tooth maze and four different colored overhead markers
 - 5. For homework: Investigate Your Teeth (Appendix E) for each child
- C. Key Vocabulary
 - 1. incisors-the front teeth, used for biting
 - 2. bicuspids-teeth on the side having two points, used for biting
 - 3. molars-the three back teeth on either side of the jaw, used for chewing
- D. Procedures/Activities
 - 1. Show pictures of different types of teeth.
 - 2. Discuss how teeth begin the digestive process by biting and chewing food.
 - 3. Discuss how different teeth do different work.
 - 4. Sing the teeth verse of the "Digestion Song".
 - 5. Do the tooth maze with the students using the overhead. Put in folder.
 - 6. If you cannot find the tooth maze, you can do the Investigate Your Teeth activity in the classroom, in which case each child will need to bring an apple to school.
- E. Evaluation
 - 1. Tooth maze

2. Investigate Your Teeth worksheet

Lesson Four: Investigate Your Saliva and Taste buds

- A. Objectives
1. Lesson Content: Saliva and taste buds
 2. Concept Objective: Students will understand how food enters the body by the mouth, provides nutrients for the cells, and then is eliminated from the body.
 3. Skill Objectives
 - a. Students will summarize the function of saliva in breaking down food.
 - b. Students will locate the different types of taste buds on the tongue.
- B. Materials
1. one unsalted top cracker per child
 2. one Investigate Your Saliva worksheet per child
 3. one quart of sugar water
 4. one quart of very salty water
 5. one bottle of white vinegar
 6. one pint of cold coffee or a block of unsweetened chocolate
 7. two small paper cups per child
 8. a large picture or model of the tongue showing different taste buds
- C. Key vocabulary
1. saliva-digestive fluids secreted into the mouth
 2. molecule-the smallest unit of a substance
 3. starch-what certain foods are made of
 4. taste bud-small nodules on that tongue that tell whether foods are salty, sweet, sour or bitter
- D. Procedures/Activities
1. Give each child one cracker and the worksheet.
 2. Do the Investigate Your Saliva (Appendix F) activities and fill out the worksheet. Put in folder.
 3. Tell the children they are going to be tasting different things and trying to decide what sort of taste it has and what part of the tongue is tasting it.
 4. Pass out both cups.
 5. Pour a small amount of the sweet water into their cups.
 6. Have them roll it around on their tongues to determine what the taste is and where they are tasting it, but don't let them swallow it. They should spit the rest out into their second cup.
 7. Repeat the procedure with each food.
 8. Label the taste buds on your model: sweet, sour, salty, and bitter.
 9. Sing the first two verses of the "Digestion Song".
- E. Evaluation
1. Investigate Your Saliva worksheet.

Lesson Five: Investigate Your Esophagus

- A. Objectives
1. Lesson Content: The esophagus
 2. Concept Objective: Students will gain an understanding of the role the vital organs play in the digestion process.
 3. Skill Objectives:
 - a. Students will investigate the function of the esophagus and record their findings.
 - b. Students will locate and place the tongue, a salivary gland, and the esophagus on a model of the human body.

- B. Materials
1. the legs of several pairs of tan or flesh colored panty hose
 2. a ball or orange for every pantyhose leg
 3. an Investigate Your Esophagus worksheet for every child
 4. Eating
 5. an outline of each child's body traced on white paper. **Note:** When you trace the children's bodies, be sure to have them face to the right so their esophagi will be facing the correct way. Write each child's name on the backside of the paper near the top so when you roll it up the names will be on the outside.
 6. a copy of the tongue, saliva glands, and esophagus for each child (Appendix L)
- C. Key vocabulary
1. esophagus-the muscular tube which carries food from the mouth to the stomach
- D. Procedures/Activities
1. Read pages 12 and 13 in *Eating* and discuss the function of the esophagus.
 2. Divide students into groups depending on the number of pantyhose legs you have. Be sure to cut the toes out of the pantyhose.
 3. Have them use the ball and esophagus to do the activities on the worksheet. Place in folder.
 4. Discuss how the esophagus functions.
 5. Sing the first three verses of the "Digestion Song".
 6. Have the students color, cut out, and glue the tongue, salivary gland, and esophagus on their body. Do not label body parts until all are on the body.
- E. Evaluation
1. Investigate Your Esophagus worksheet.

Lesson Six: Investigate Your Stomach and Liver

- A. Objectives
1. Lesson Content
 - a. The stomach
 - b. The liver
 2. Concept Objective: Students will gain an understanding of the role the vital organs play in the digestion process
 3. Skill Objectives
 - a. Students will investigate the function of the stomach and record their findings.
 - b. Students will list the contribution of the liver to digestion
- B. Materials
1. a Ziploc bag for each child
 2. a cracker for each child
 3. water
 4. white vinegar
 5. Investigate Your Stomach worksheets (Appendix H)
 6. The Digestive System
 7. stomach, stomach wall, and liver for each child (Appendix L)
- C. Key vocabulary
1. stomach-muscular organ that begins digestion
 2. liver-an organ, which produces bile
 3. bile-a digestive juice that breaks down fat
- D. Procedures/Activities
1. Read pages 13-17 in *The Digestive System*
 2. Pass out crackers and Ziploc bags. Have the students break the cracker into fourths, place it in the bag, and come up to you for a little water (about one teaspoon), then do

the first part of the activity on the worksheet. Next put about a tablespoon of white vinegar in each bag and have students pretend that their hands are the stomach. Have them record their observations.

3. Read pages 28-31 in *The Digestive System*.
 4. Discuss the part the liver plays in digestion and fill out the rest of the worksheet. Put it in folder.
 5. Sing the first five verses of the “Digestion Song”.
 6. Have students color and cut out body parts but do not put on the body yet.
- E. Evaluation
1. Investigate Your Stomach and Liver worksheet

Lesson Seven: Investigate Your Small and Large Intestines

A. Objectives

1. Lesson Content:
 - a. The small intestine
 - b. The large intestine
2. Concept Objectives
 - a. Students will gain an understanding of the role the vital organs play in the digestion process.
 - b. Students will recognize the importance of the large intestine in eliminating solid waste from the body.
3. Skill Objectives
 - a. Students will analyze how the small intestine is able to fit into the body.
 - b. Students will locate and place the liver, the stomach, and the large and small intestines on a model of the body

B. Materials

1. The Digestive System
2. 20 feet of yarn for each child
3. glue sticks (not bottles of glue)
4. Investigate Your Intestines (Appendix I) worksheets
5. a small intestine, villi, and large intestine for each child (Appendix L)

C. Key vocabulary

1. intestine-the tube after the stomach in which most digestion takes place
2. villi-small structures in the lining of the small intestine through which food is absorbed into the blood stream

D. Procedures/Activities

1. Read pages 18-27 in The Digestive System. Be sure to show the picture of villi on page 19.
2. Give students yarn, a glue stick, and the intestine worksheet.
3. Have them glue the yarn in the square without stacking it or going outside the lines. Then answer the question on the worksheet.
4. Have students color and cut out body parts.
5. Glue stomach, small intestine, large intestine, then liver on body. Label all body parts including the appendix. Title the body “The Digestive System.”
6. Sing all the verses of the “Digestive Song”.

E. Evaluation

1. Investigate Your Intestines worksheet
2. human body model

Lesson Eight: Investigate Your Kidneys

- A. Objectives
 - 1. Lesson Content: The excretory system
 - 2. Concept Objective: Students will gain an understanding of the role the vital organs play in the digestion process.
 - 3. Skill Objectives
 - a. Students will analyze the function of the kidneys in filtering the blood.
 - b. Students will locate and label parts of the excretory system on a model.
- B. Materials
 - 1. one cup of sand
 - 2. two glass jars
 - 3. water
 - 4. a coffee filter
 - 5. Investigate Your Kidneys worksheets (Appendix J)
 - 6. Eating
- C. Key vocabulary
 - 1. kidney-the organ of the body which filters impurities out of the blood
 - 2. bladder-an organ for storing urine
 - 3. urine-amber colored waste fluid excreted by the kidneys
 - 4. excretory-system that removes fluid wastes from the body
 - 5. filter-to strain and purify a liquid
- D. Procedures/Activities
 - 1. Demonstrate how the kidneys filter impurities from the blood by mixing the sand into the water and pouring it through the filter into the other jar.
 - 2. Show students how the sand remains in the filter.
 - 3. Have them answer the questions on the worksheet.
 - 4. Read pages 22 and 23 in Eating.
 - 5. Label the parts of the excretory system on the diagram.
- E. Evaluation
 - 1. Investigate Your Kidneys worksheet

Lesson Nine: Mr. Blender's Lunch

- A. Objectives
 - 1. Lesson Content: The parts of the digestive system
 - 2. Concept Objective: Students will gain an understanding of the role the vital organs play in the digestive system.
 - 3. Skill Objective: Students will summarize what they have learned about the function of each organ in the digestive system.
- B. Materials
 - 1. a blender
 - 2. the leg cut from a pair of pantyhose
 - 3. a pair of rubber gloves
 - 4. a large plastic pan
 - 5. food such as several pieces of milk, some orange juice, a piece of cheese, some carrots, and a cookie.
 - 6. some water dyed green
 - 7. white vinegar
 - 8. For homework: a copy of the mini-book Eater's Digest from 25 Science Mini-Books for each child
- C. Key Vocabulary
 - 1. None

- D. Procedures/Activities
1. Tell the students that Mr. Blender is hungry and needs his lunch.
 2. Place the food in the blender and chop it coarsely.
 3. Have the students explain that this is like the way food is chewed in the mouth.
 4. Have them imagine that the food has been swallowed. Add some vinegar.
 5. Tell the students that digestive juices have been added.
 6. Blend thoroughly. Add some green water to be bile to digest the fat.
 7. Put on the gloves; this is going to be messy!
 8. Pour the mixture from the blender into the top of the pantyhose leg. Explain to the students that the liquid that is going out through the leg is food going into the blood stream through the walls of the small intestine.
 9. Squeeze the solid mixture inside the pantyhose through it and into the large plastic pan. Have the students explain that this is the food the body cannot use passing out of the body through the large intestine into the toilet.
 10. Send home a copy of Eater's Digest for students to make as homework and review.
- E. Evaluation
1. Classroom observation and discussion during the demonstration.
 2. Eater's Digest

Lesson Ten: Test

- A. Objectives
1. Lesson Content: Human body test
 2. Concept Objective: Students will understand how food enters the body by the mouth, provides nutrients to the cells, and then is eliminated from the body.
 3. Skill Objective: Students will demonstrate what they have learned by their performance on the test.
- B. Materials
1. a copy of the test for each student (Appendix K)
- C. Key vocabulary
1. None
- D. Procedures/Activities
1. Give test to students.
 2. Sing the "Digestion Song" one last time.
 3. Read What Happens to a Hamburger if time.
- E. Evaluation
1. Human body test
 2. Collect and grade folders.
 3. Grade student's digestive system models.

VI. CULMINATING ACTIVITY

VII. HANDOUTS/WORKSHEETS

Appendix A-Cells
 Appendix B-Cells to Systems Activity Description
 Appendix C-Cells to Systems Pyramid
 Appendix D-Digestion Song
 Appendix E-Investigate Your Teeth
 Appendix F-Investigate Your Saliva
 Appendix G-Investigate Your Esophagus
 Appendix H-Investigate Your Stomach
 Appendix I-Investigate Your Intestines

Appendix J-Investigate Your Kidneys
Appendix K-Human Body Test
Appendix L-Human Body Parts

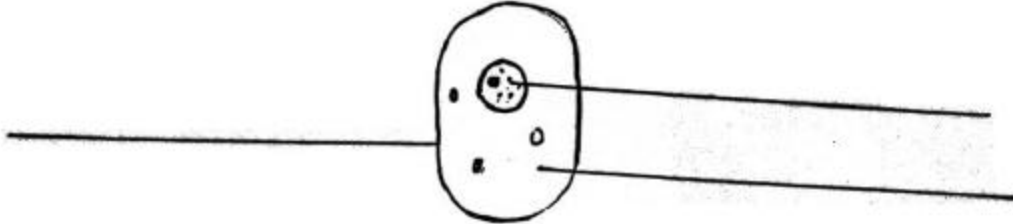
VIII. BIBLIOGRAPHY

- Ganeri, Anita. Eating. Austin, Texas: Raintree Steck-Vaughn Publishers, 1995. ISBN#0-81147992-7.
- LeMaster, Leslie Jean. Cells and Tissues: A New True Book. Chicago: Children's Press, 1985. ISBN#0-516-01266-5.
- Selsam, Millicent E. Greg's Microscope. New York: Harper Trophy, 1991. ISBN#0-06-444144-X.
- Showers, Paul. What Happens to a Hamburger. New York: Harper Trophy, 1985. ISBN#0-06-4450139.
- Silver, Donald M. & Wynne, Patricia J. The Body Book. New York: Scholastic Professional Books, 1993. ISBN#0-59049239-X.
- Smith, Alstair. What Happens to Your Food? New York: Scholastic Inc., 1997. ISBN#0-590-97321-5.
- Stille, Darlene R. The Digestive System: A True Book. New York: Children's Press, 1997. ISBN#0-516-26262-9.
- Weiner, Esther. 25 Science Mini-Books. New York: Scholastic Professional Books, 1994. ISBN#0-590-49507-0.
- Williams, Dr. Frances. Inside Guides: Human Body. New York: DK Publishing, Inc., 1997. ISBN#0-7894-1506-2.
- Wyse, Liz. Make It Work! Body. New York: Scholastic Inc., 1994. ISBN#0-590-00470-0.

CELLS

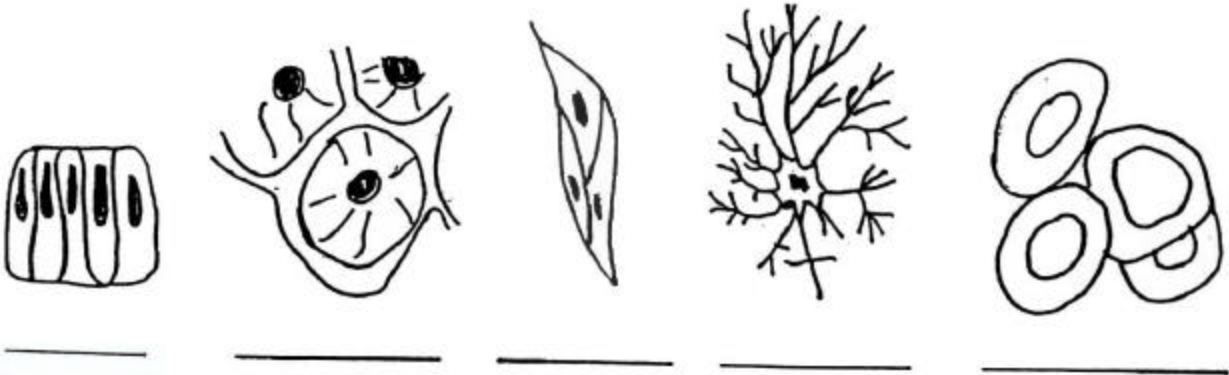
Parts of a Cell

Color the cell wall red. Color the nucleus blue. Color the cytoplasm yellow.
Label each part.



Kinds of Cells

Write the name of each kind of cell on the blank.



A Cell Divides to Make Two Cells

Color the cell walls red. Color the nuclei blue. Color the cytoplasm yellow.



Appendix B

CELLS TO SYSTEMS ACTIVITY DESCRIPTION

This activity is designed to show children the progression from cells to tissues to organs to organ systems.

You will need a 3x5 card for each child.

Red, blue, purple, and green felt-tipped markers

Nine 4x6 cards

Four 9x12 pieces of construction paper the same colors as the markers.

Pictures of the tongue (blue), liver (red), stomach (green), and small intestine (purple) each glued to the appropriate color of construction paper.

A long piece of white butcher paper around 12"x4' labeled ORGAN SYSTEM with Digestive System written underneath.

Label the 3x5 cards as follows adjusting them to the number of students in your class:

<u>Purple</u>	<u>Red</u>	<u>Blue</u>	<u>Green</u>
Blood cell (2)	Fat cell (4)	Nerve cell (4)	Muscle cell (4)
Nerve cell (2)	Blood cell (3)	Muscle cell (2)	Epithelial cell (2)
Muscle cell (2)			

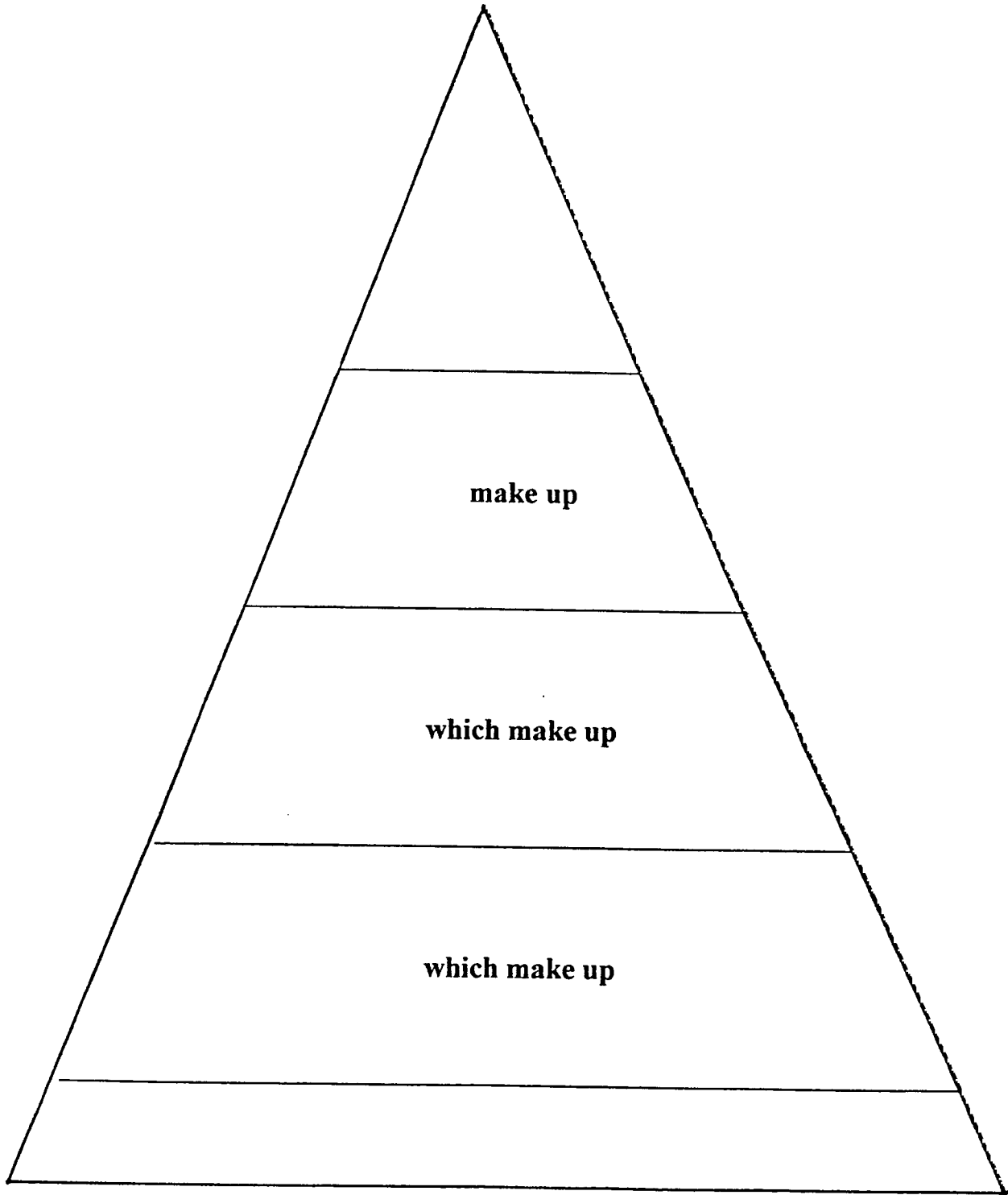
Label the 4x6 cards as follows:

<u>Purple</u>	<u>Red</u>	<u>Blue</u>	<u>Green</u>
Blood tissue	Blood tissue	Nerve tissue	Epithelial tissue
Nerve tissue	Fat (connective) tissue	Muscle tissue	Smooth muscle tissue
Smooth muscle tissue			

Give each child a 3x5 card and instruct them to find other students who are the same kind and color of cell as they are. Discuss with them that the same kinds of cells join together to make a tissue. Give them the color and type of tissue card they are. For example: you would give the four green muscle cells the green card reading smooth muscle tissue. Next have all the tissues that are the same color join together. Discuss with them that different types of tissues join together to make an organ. Give each group the picture of their organ. For example: all of the blue tissues would be given the picture of the tongue on blue paper. Put the organs in order with all of their surrounding cells and tissues and over the whole group spread the banner saying ORGAN SYSTEM. Discuss with the students that all of the organs that aid in a particular function make up an organ system, in this case the digestive system.

CELLS TO SYSTEMS PYRAMID

Fill in the correct words to complete the pyramid.



DIGESTION SONG

With my head on my shoulders now what have we here?
These are my **teeth** now my sister dear.
For biting and chewing the food that we eat.
That's what we learn in our school.

With my head on my shoulders now what have we here?
This is my **saliva** now my sister dear.
For moistening and breaking down the food that we eat.
That's what we learn in our school.

With my head on my shoulders now what have we here?
This is my **esophagus** my sister dear.
Pushing from the mouth to the stomach the food that we eat.
That's what we learn in our school.

With my head on my shoulders now what have we here?
This is my **liver** now my sister dear.
It makes bile to break up the fat that we eat.
That's what we learn in our school.

With my head on my shoulders now what have we here?
This is my **stomach** now my sister dear.
For mashing and squashing the food that we eat.
That's we learn in our school.

With my head on my shoulders now what have we here?
This is my **small intestine** my sister dear.
For digesting and giving cells the food that we eat.
That's what we learn in our school.

With my head on my shoulders now what have we here?
This is my **large intestine** my sister dear.
It gets rid of what's left of the food that we eat.
That's what we learn in our school.

(To the tune of "With My Head on My Shoulders")


INVESTIGATE...YOUR TEETH


Digestion begins in your mouth as your teeth break up food into smaller pieces. Investigate how.


 Take a bite of an apple in front of a mirror.

Which teeth did you use to bite? _____

Which teeth did you use to chew? _____

 Switch it around. Try to take a bite of the apple using only your back teeth (molars). Record what happened. _____


 Take another bite of the apple. Try to chew it using only your front teeth (incisors). Record what happened. _____


 Which teeth do you use the most when eating? Why? _____


INVESTIGATE. . .YOUR SALIVA


In your mouth, your saliva begins to break down your food using chemicals.

Investigate how.

 Take a bite of cracker. Hold it in your mouth but do not chew it or swallow it. What happens to the piece of cracker? _____

 Saliva has chemicals that break down starch molecules into simpler sugar molecules. Take another bite of cracker and hold it in your mouth. What happens to the taste? _____

 What does saliva do to starch in your mouth? _____


 Take another bite of cracker. Swallow it without chewing it. Was it easy or hard to swallow? Why? _____


 How does saliva affect swallowing? Why? _____

INVESTIGATE. . .YOUR ESOPHAGUS


Your esophagus moves food from your mouth to your stomach.

Let's investigate how.

 Cut off the leg of a pair of pantyhose to use as an esophagus. Use a ball as a piece of food. Put the ball in the top. Can it get to the bottom by itself? _____

 Now use your hands to move the ball along the stocking. How are they like the muscles in your esophagus? _____


BRAIN TEASER

 If you are standing on your head, what will happen when you swallow food?

INVESTIGATE ... YOUR STOMACH

When your food reaches your stomach it is broken down into smaller and smaller molecules.

Investigate how.

 Break up a cracker into fourths and put it in a Ziploc bag. Add a small amount of water. Use two fingers to squeeze the cracker mixture. This is similar to what happens in your mouth. Now add some vinegar (pretend digestive juice) to the bag. Seal it tightly then mash it with your hands. Describe what happened.

 What does the cracker mixture look like now? _____

The stomach uses powerful muscles and digestive juices to break food down until it looks like thick soup.

INVESTIGATE ... YOUR LIVER

The liver is a very important part of digestion because it manufactures bile which is necessary to break down fat.


 Let's remember:

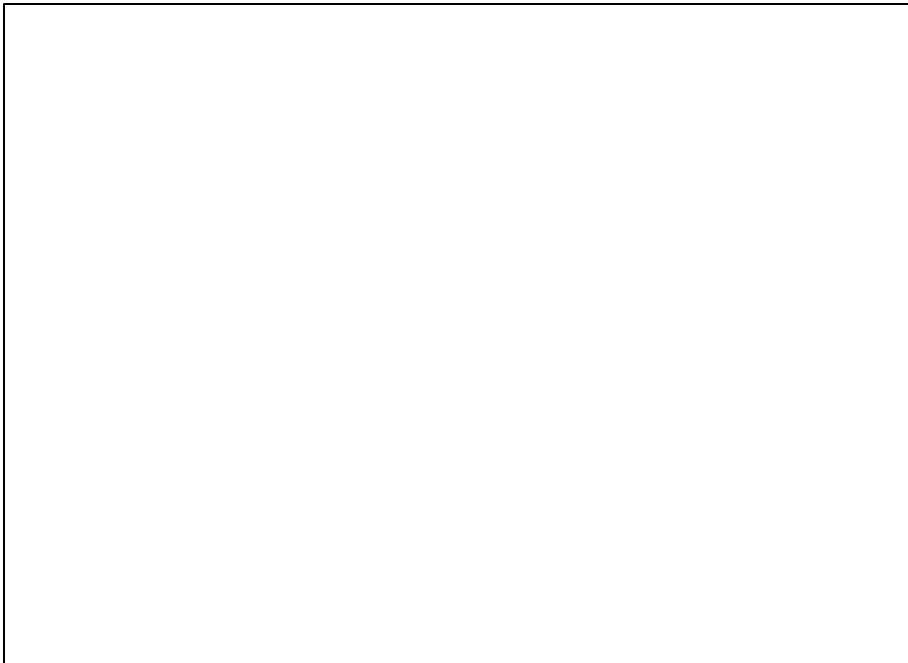
In the mouth _____ breaks down _____ into sugar.


The liver makes _____ to break down _____.

INVESTIGATE ... YOUR INTESTINES

In the small intestine, the food is completely digested and passes through the villi in its walls into the blood stream where it is carried to all the cells in the body. Investigate your small intestine.

 Your small intestine is almost 20 feet long. Take a 20 foot piece of yarn. Have a friend hold one end while you hold the other to see how long it is. How can something that long fit inside your body? Imagine that the box below is the area where your small intestine goes. Fit your piece of yarn into the box in a single layer and glue it down with a glue stick.



 How do you think 20 feet of small intestine fit into your body?

INVESTIGATE... YOUR KIDNEYS



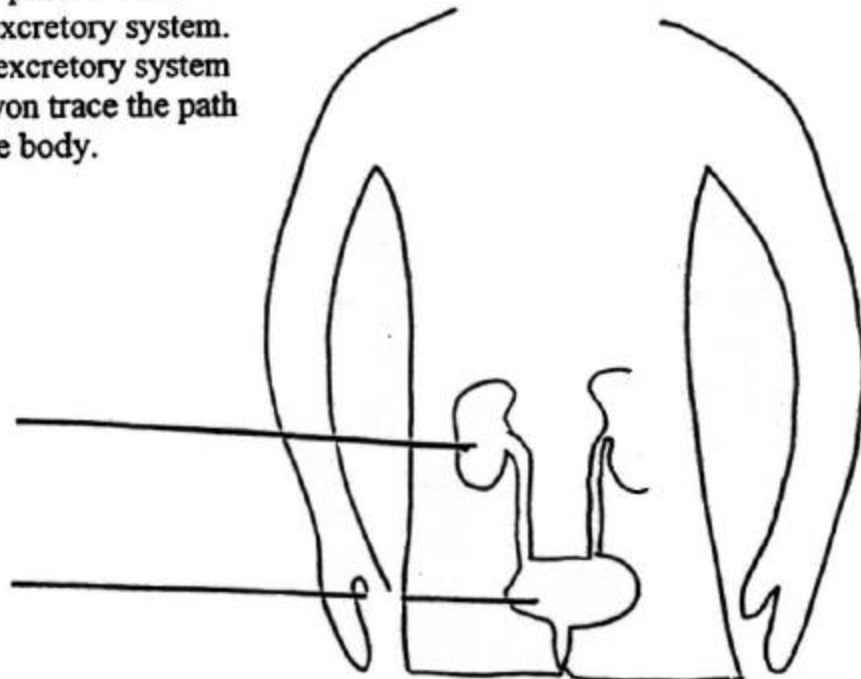
Your kidneys filter impurities out of your blood and help pass them out of the body as urine. Investigate how.

🔑 Put some sand in a glass of water and mix it up. Put a coffee filter over a jar. Pour the water through the filter into the glass. Describe what happens to the sand.

🔑 Look at the water in the glass now. What has happened to it? _____

In much the same way, the kidneys clean impurities from the blood.

🔑 Once the kidneys have filtered the blood, the waste is passed out of the body through the excretory system. Label the parts of the excretory system and with a yellow crayon trace the path of urine as it leaves the body.



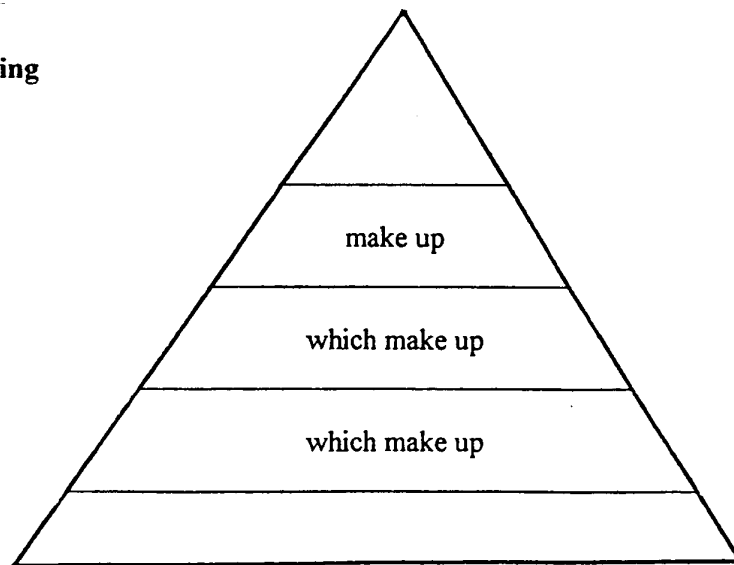
HUMAN BODY TEST

Chose the correct word to fill in each blank. You will use each word only one time and there will be two left over.

bicuspid	tissue	organs	microscope	incisors	digestive
saliva	molars	organ system	small intestine	salty	bitter

1. Cells are so small they cannot be seen without a _____.
2. _____ are the teeth used for biting.
3. The teeth used for chewing are the _____ and _____.
4. The moisture that softens food in our mouth is _____.
5. A group of the same kind of cells makes up _____.
6. Organs that work together are called an _____.
7. We taste _____ things on the fronts of our tongues.
8. The esophagus, stomach, and liver are part of the _____ system.
9. Food molecules pass into the blood stream through the walls of the _____.

Fill in the missing words in the pyramid.

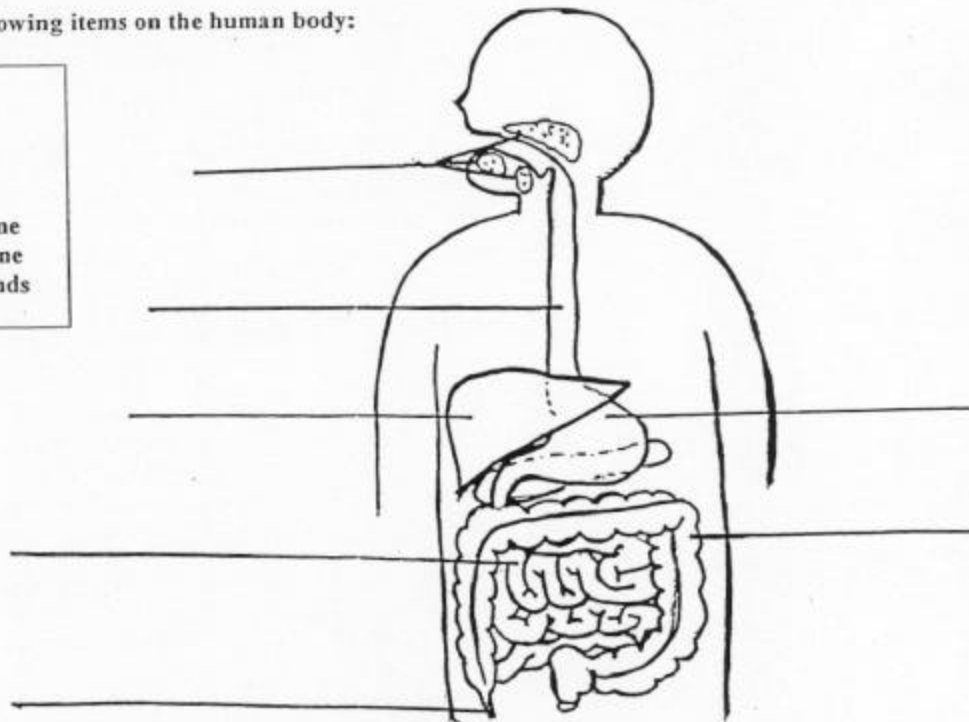


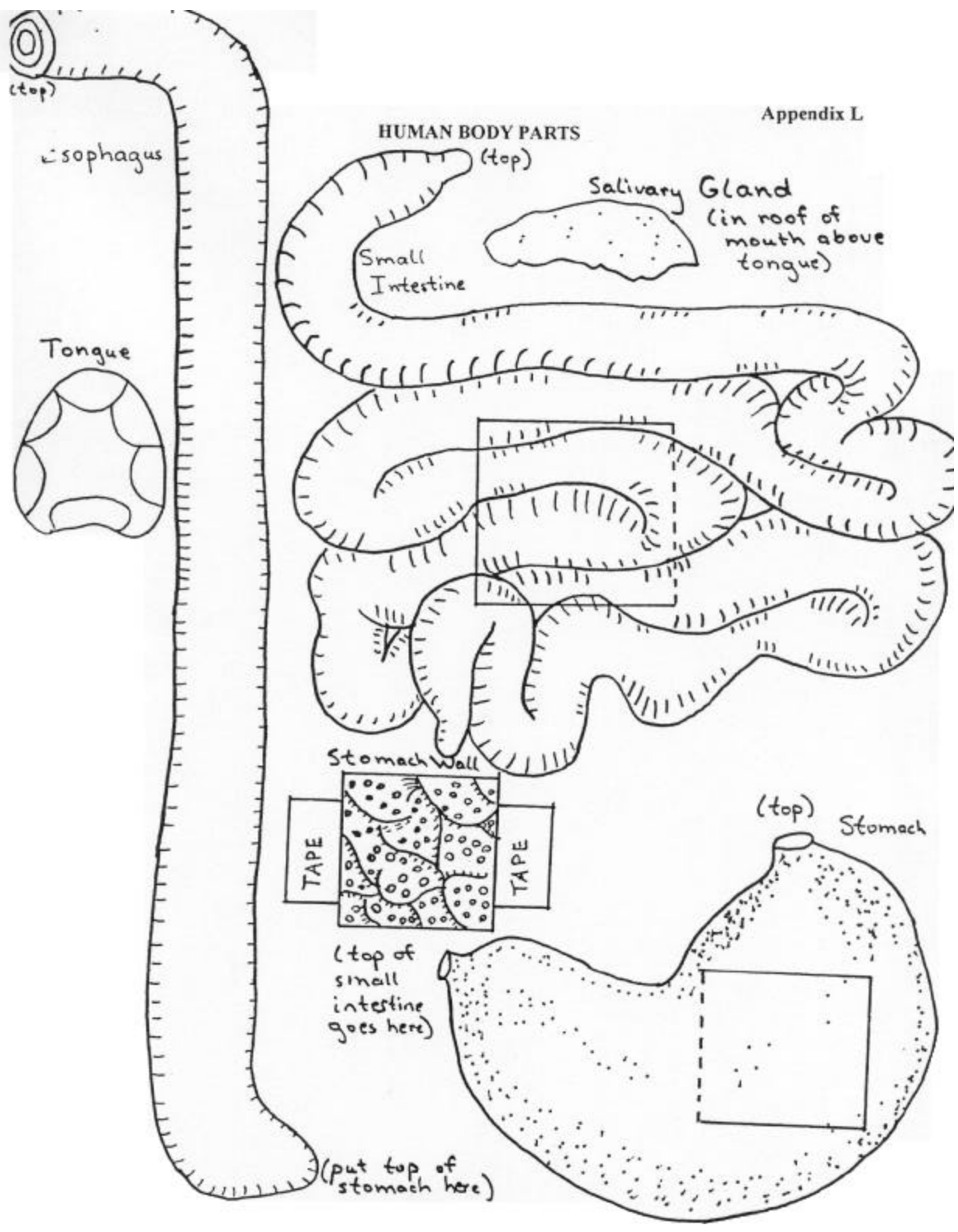
Write the letter on the line that describes the word in the first column.

- | | |
|---------------------|---|
| ___ taste buds | a. are made up of tissues |
| ___ liver | b. the part of the cell that tells it what to do |
| ___ esophagus | c. a small sac attached to the large intestine |
| ___ nucleus | d. organ that removes waste from the blood |
| ___ appendix | e. carries food from the mouth to the stomach |
| ___ kidney | f. tell whether food is salty, bitter, sweet, or sour |
| ___ organs | g. make saliva |
| ___ bladder | h. makes bile to digest fat |
| ___ salivary glands | i. permanent teeth that chew food |
| ___ molars | j. organ that holds urine |

Label the following items on the human body:

- esophagus
 - appendix
 - stomach
 - liver
 - large intestine
 - small intestine
 - salivary glands





HUMAN BODY PARTS TWO

Large Intestine

