Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Ruminant Digestion

**Purpose**

The purpose of this exercise is to evaluate the ruminant digestive system and familiarize students with the digestive process.[[1]](#endnote-1)

**Procedure:**

 **Materials**

1. Ruminant digestive systems 4. Jars
2. Sharp knife 5. Dissecting microscope
3. Pins & labels 6. Books with pictures of digestive system

**Sequence of Steps**

*Spread the digestive tract out, so that all parts can be seen easily. Using the pins and tags, read through these steps labeling the digestive parts that are underlined in this lab.*

1. The **esophagus** is the tube that carries food stuff from mouth to stomach.
2. There are four parts to the ruminant stomach.
	1. The **rumen** makes up 80% of the stomach. High fiber feed is broken down in the rumen through fermentation.
	2. The **reticulum** makes up approximately 5% of the stomach. The honeycomb shape of the reticulum catches unwanted objects.
	3. The **omasum** makes up 8% of the stomach. Feed passes through the omasum after it leaves the reticulum and rumen. The omasum acts as a filter and a pump.
	4. The **abomasum** makes up 7% of the stomach. This is considered the true stomach and the only part of the ruminant stomach which produces gastric juices. [[2]](#endnote-2)

*Show the digestion that takes place in each stomach.*

1. Cut the stomach open and take out some of the contents.
2. Place the contents in a jar and allow classmates to view.
3. Evaluate how much digestion has taken place in each stomach.
4. ![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()Obtain a section of the inner lining of each compartment in the stomach and observe under a dissecting microscope. Write your information under observations.

**![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()**

**Observations**

1. Describe, in your own words, the inner lining of each compartment of the stomach.

**Conclusions**

1. In which stomach was the food most digested? In which stomach was the food least digested?
2. Using the table below, explain the function of each part of the stomach.

|  |  |
| --- | --- |
| Stomach Compartment | Function |
| Rumen |  |
| Reticulum |  |
| Omasum |  |
| Abomasum |  |

1. How does this digestive system compare to that of a pig or human?
2. Explain how the ruminant digestive system provides cells with nutrients while removing toxic waste.
3. How does the diet of ruminant livestock differ from the diet of monogastric livestock? Why?

1. Agricultural Biology Curriculum Lesson Plans. Sacramento: California State Department of Education, Agriculture Education Unit, 1990. [↑](#endnote-ref-1)
2. "The Digestive System of the Ruminant". Natural Resources, Government of Newfoundland and Labrador Canada. September 27, 2008 <http://www.nr.gov.nl.ca/agric/fact\_pubs/pdf/livestock/ruminant/digestivesys.pdf>. [↑](#endnote-ref-2)