Name: ___

Hide & Go Cecum

Working in the Research & Development Department of a digital imaging company, you have developed a new instrument that can be used to collect information about animals using a non-invasive technique (that is, can be conducted from outside the body and does not harm the animal). You have collected a series of images from a variety of animals. How could you market this product to researchers?

Background

Vertebrate digestive tracts tend to be the shortest and simplest in carnivores, and longer in omnivores. Due to the high levels of cellulose in the walls of plant cells, the digestive tracts of herbivores are more complex, and include a system for the additional digestion of plant material.

The midgut, which includes the small intestine, is the principal site of digestion and nutrient absorption in all vertebrates. It is separated from the large intestine, or hindgut, by a valve. The hindgut is the site of water reabsorption. The cecum is a blind sac located at the junction between the midgut and hindgut. It is the structure utilized for additional digestion of plant material.

Purpose

Develop a feeding hypothesis for each organism in the diagrams provided, including the type of animal and its feeding strategy.

Hypothesis: My animal is a(n) ______ which is a(n) herbivore carnivore omnivore.

Methods

- 1) Each lab group will have 4 specimens to measure and compare. Each student should select one diagram to measure.
- 2) Record the ID number for each diagram on your data sheet.
- 3) Record scale conversion factor for each diagram in the chart. This value may vary between diagrams.
- 4) Determine the length, in centimeters, of each section of the small intestine, hindgut, and cecum if present. Record your data on the chart included in this lab.
 - a) Using a piece of string, overlay the string along the length of each section of the gut. The small intestine is located between the solid arrows. The hindgut is located between the dashed arrows. If present, the cecum will be located between the small intestine and hindgut. Remember not all animals have a cecum! Additional note: if your animal has more than one cecum, you must measure both and add the value together.
 - **b**) Use a meter stick or ruler to find the metric measurements of the length of each string.
 - c) Record this information on your data sheet.
- Open the MS Excel table titled "Cecum Lab Data Collection" form found at http://xy-zoo.com/files/Cecum%20Lab%20Key.xls You will enter data into the colored blocks ONLY.
 - a) Enter the data from each lab partner on the same Excel spreadsheet.
 - **b**) The percentages will be calculated for you if values have been placed in the correct boxes.
- 6) Graph your data in order to compare your species. If you have placed your data in the highlighted boxes, the graph should automatically be generated. Be sure a title, labels for the X axis and Y axis, and a key are included by following these instructions:
 - **a)** Select chart by clicking anywhere on the white chart border.
 - **b)** Click on the + sign that appears in the upper right corner of graph.
 - **c)** Select items you want to add or change.
 - d) Chart title should be provided or may be changed to better reflect the data represented.
 - e) Be sure to check that labels for each axis are correct and fully visible

Printing your report:

On the main menu bar, select "File", then "Print." Your report should include the 4 data tables and your graph. When complete, staple your data sheet with summary questions and MS Excel spreadsheet together and submit.

Summary Questions:	Species ID#	Name:		
Hypothesis: My animal is a(r	n)	which is a(n)	herbivore carr	livore omnivore.
1) Does your data support or n	egate your hypothesis? W	hy?		
2) What conclusions about feed	ding niches (carnivore vs o	mnivore vs herbivore)	can you draw fro	om the data?
3) Why did we use percentages	to make predictions rathe	r than actual measure	ments? Use the w	ord 'scale' in your answer.
4) What similarities and differe your group?	ences in the digestive tract	do you observe betwe	en animals with d	ifferent feeding niches in
5) At your lab table, which anim	mal had the most develope	ed cecum? Why?		
6) At your lab table, which anim	mal had the least develope	d cecum? Why?		
Extension: If time permits, use hypothesis. Explain here:	the Internet to researchthe	e exact diet of your ow	vn animal and det	ermine if it fits with your
Diet:				
Adaptation(s) for this diet:				

Data Sheet	Species ID#		Name:			
Specimen ID #		Scale conversion value				
	Length	Actual size	% of tract			
small intestine				Feeding	g Strategy Prec	liction:
cecum				Herbivore	Carnivore	Omnivore
large intestine						
total					(circle one)	

Specimen ID #		Scale conversion value			
	Length	Actual size	% of tract		
small intestine				Feeding Strategy Prediction:	
cecum				Herbivore Carnivore Omnivore	
large intestine					
total				(circle one)	

Specimen ID #		Scale conversion value		
	Length	Actual size	% of tract	
small intestine				Feeding Strategy Prediction:
cecum				Herbivore Carnivore Omnivore
large intestine				
total				(circle one)

Specimen ID #		Scale conversion value		
	Length	Actual size	% of tract	
small intestine				Feeding Strategy Prediction:
cecum				Herbivore Carnivore Omnivore
large intestine				
total				(circle one)





















































