**Ruminant Digestive Systems Notes**

**Functions of the digestive system of animals include:**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (eating)
* chewing (mastication)
* swallowing (deglutition)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* elimination of solid wastes (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

**Ruminant Digestive Systems**

* The digestive system changes food \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into compounds that are easily absorbed into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Ruminants are those animals that contain a multi-chambered digestive system (***polygastric***) that allows the animal to gain the majority of their nutritional needs from ***forages*** and other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ cattle, sheep/goats, \_\_\_\_\_\_\_\_\_\_\_\_ and elk
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ refers to grasses, roughages refers to other high-fiber food sources.

**Ruminant Digestive Systems:**

* The digestive tract extends from the \_\_\_\_\_\_\_\_\_\_ to the anus. It includes the mouth, pharynx, esophagus, stomach, and the small and large intestines.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ include the salivary glands, the liver, and the pancreas.
* The digestive system of ruminant animals includes the :
	+ \_\_\_\_\_\_\_\_\_\_\_\_ - grasps the food
	+ Teeth - grind the food
		- Ruminants have \_\_\_\_\_\_\_\_\_\_\_\_\_ set of teeth in the front of the mouth (incisors), and two sets in the back (molars).
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - covered with finger-like projections (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) that contain taste buds.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - secrete saliva, that moistens food and is mixed with the food material to aid in swallowing.
* Ruminant Digestive Systems
	+ Pharynx - funnels food into the esophagus, preventing food material from entering the lungs.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - food tube that leads from the mouth to the stomach.

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**Compartment Capacity**

* Reticulum \_\_\_\_\_\_\_ of capacity
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 80% of capacity
* Omasum 7% of capacity
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8% of capacity

**Ruminant Digestive Systems**

* At this point, ruminant animals have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ***“stomach”***
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - honeycomb-like interior surface, this part helps to remove foreign matter from the food material.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ empties here
* Prone to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:
	+ Cattle swallow small pieces of metal
	+ Can irritate or pierce the lining
	+ Helped by putting a small magnet into the reticulum
* Holding area for food; also site of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Ruminant Digestive Systems
* Ruminant animals grasp mouthfuls of food and swallow it before it is chewed.
	+ They wrap their tongue around a mouthful of grass, clamp down their teeth, and pull to break the grass at its weakest point, and swallow.
	+ Ruminants will “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” (regurgitate) their food material and then grind it with their molars at a time when the animal is resting.
	+ This is done until the food particles are small enough to pass through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the rumen.

**Components of Ruminant Digestive System**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ - the organ that allows for bacterial and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ breakdown of fiber.
	+ The rumen has a very thick, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ wall
	+ It fills most of the left-side of the abdomen
* Looks like \_\_\_\_\_\_\_\_\_\_\_\_\_ due to papillae lining it
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Primary digestion site for ruminants
	+ Microbial digestion takes place here
	+ Breakdown \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, simple sugars, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ containing compounds like protein
* Physical \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and breakdown
* Not active in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of life
	+ - Ruminant Digestive Systems
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - section that is round and muscular.
	+ - “\_\_\_\_\_\_\_\_\_\_\_\_\_” the food material and prepares the food material for chemical breakdown.
* Has many folds in its lining, often said to look like the pages of a book
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ particle size of digesta even further
* Some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ starts to take place here

**Ruminant Digestive Systems**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - very similar to the stomach of non-ruminants.
	+ - this is where the majority of chemical breakdown of food material occurs.
* The “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” of the ruminant animal
* Enzyme secretion takes place here
* Acts like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_stomach
* Produces \_\_\_\_\_\_\_\_\_, Pepsinogen/pepsin for digestion
	+ Also produces \_\_\_\_\_\_\_\_\_\_\_\_ in early stages of life
* Also produces mucus for protection
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - where most of the food material is absorbed into the bloodstream
		- Contains three sections:
			* ***duodenum***
			* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
			* ***ileum***
* Ruminant Digestive Systems
	+ - The food material is continually squeezed as it is moved through the small intestine, becoming more solid.
		- The majority of the food material absorption occurs in the duodenum and the jejunum.
* Ruminant Digestive Systems
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - begins to prepare unused food material for removal from the body
		- a portion of the large intestine in some animals contain pouches that may contain enzymes for further species-specific digestion (horses and rabbits (\_\_\_\_\_\_\_\_\_\_\_\_\_ )).
* Ruminant Digestive Systems
	+ Colon - collects the unused food material that is to be removed from the body
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ - “poop chute”
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ - opening through which the waste is removed.
		- Controlled by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ muscles, that also help protect the opening.