

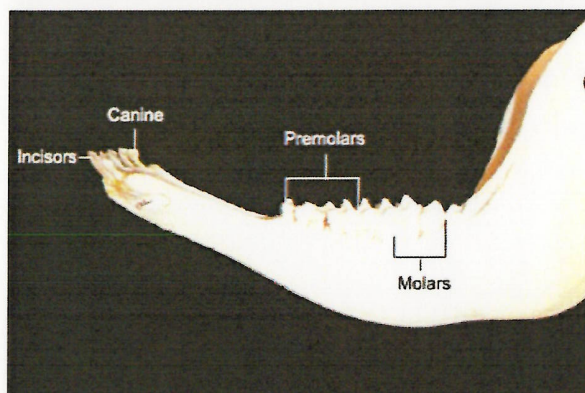
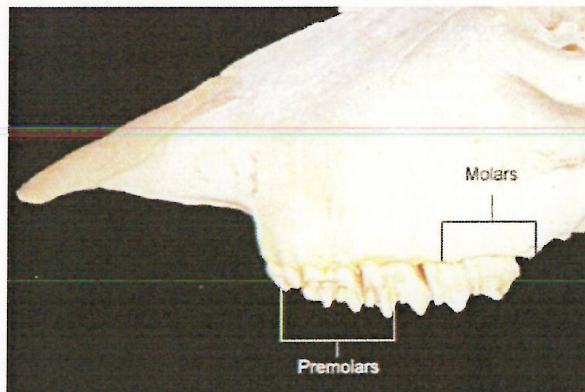
Digestive anatomy in Ruminants

今回から牛の解剖・生理について海外からの研修生に向けて書いてみたいと思います。

[Mouth and Esophagus]

The cow's digestive tract consists of the mouth, esophagus, a complex four-compartment stomach, small intestine and large intestine.

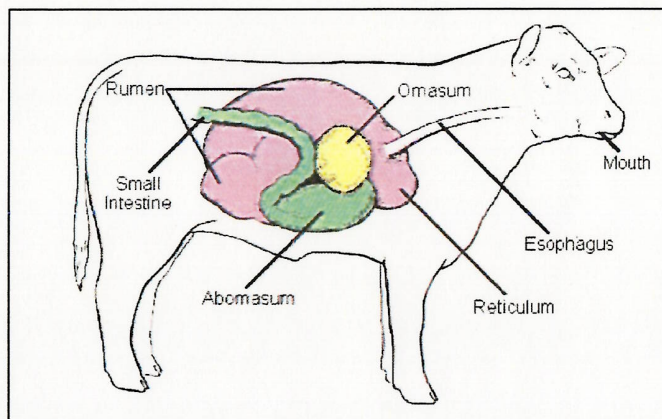
Cows have distinctive structure of teeth. Now I have questions for you, "How many teeth do cows have?" "Do cows have top teeth?" Adult cows have 8 incisors on the bottom front of the mouth and 6 molars on the top and bottom on each side of the mouth. Thus cows don't have top teeth in the front of mouth. They use their bottom teeth, top dental pads and tongues to eat grass into their mouths for feeding.



Esophagus (food pipe or gullet) is a tube extending from the pharynx to the rumen.

[Rumen, Reticulum and Omasum]

We call the first three compartments of the ruminant stomach (Rumen, Reticulum, Omasum) forestomach. The rumen is the largest of the compartments of the forestomach



that serves as a fermentation vat. The total capacity of the rumen may be about 125 L in an adult cow. A microbial population in the rumen digests or ferments feed eaten by the cow. Conditions within the rumen depend on the growth of microbes. The rumen absorbs most of the VFA (volatile fatty acid) produced from fermentation of feedstuffs by rumen microbes.

The reticulum is known as the honeycomb. Collectively we call the rumino-reticulum because their function is similar. The reticulum moves ingesta into the rumen and then some of the rumen's contents into omasum.

Rumination is the regurgitation of fibrous matter from the rumen to mouth and the return back to the rumen. Rumination plays a role in dietary fiber form and digestibility. A lot of saliva can be produced by salivary glands and added to the rumen by rumination each day. Saliva is the major buffer for helping to maintain a rumen pH.

The omasum absorbs water and other substances from digestive contents. Feed material between the omasum will be drier than that found in the other compartments.

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