

Evolution of Multi-Chambered Stomachs in Ruminants



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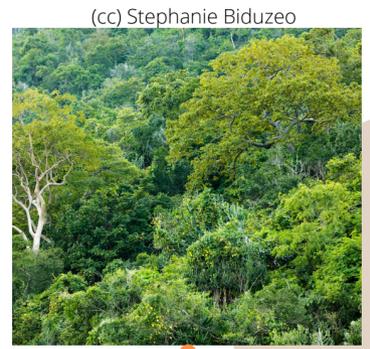


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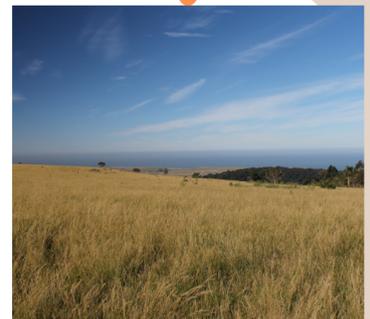
All ruminants (suborder Ruminantia) have specialized multi-chambered stomachs consisting of the rumen, the reticulum, the omasum, and the abomasum. This unique system is designed to utilize otherwise indigestible plant fiber. **So how did ruminants evolve to have multi-chambered stomachs?**

History of Ruminantia

It is theorized that the oldest common ancestor of ruminants appeared in the tropical forests in Southeast Asia around 50 million years ago. They ate fruits, shoots, and insects. Surprisingly, the first ruminants did not ruminant. As the climate changed, ruminants moved from forests to grasslands, which also changed their primary diet. The grass was now their main source of food. As time went on the ruminant stomach became more specialized for optimal digestion of plant matter.



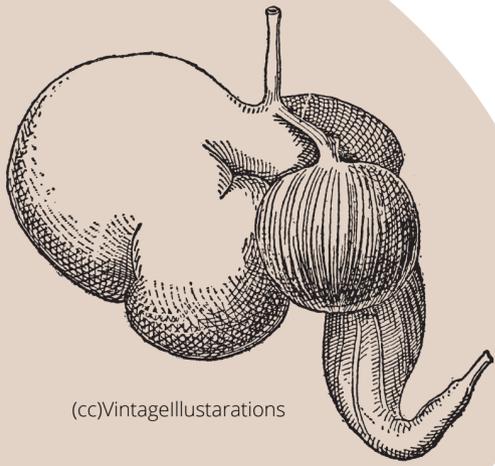
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Specialized Digestive System...

When genomic data from sheep were compared, it suggests that the origin of the rumen, reticulum, and omasum are from the esophagus. While the abomasum was found to originate closer to the intestines. Seven newly evolved genes were discovered within the rumen can be traced back to the ancestors of ruminants. Among those were structural genes, PRD-SPRR11 and TCHHL2



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The End to the Evolution

The evolution of ruminant stomachs is ongoing and has been getting more efficient at each evolutionary stage. However, this is threatened by the human impact on the ruminant diet. By altering domestic ruminants' diets from grass to cheaper cornmeal, these animals are altering the way their stomach have functioned for millions of years.

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