Healthy teeth thanks to the 'washing machine effect': Research explains tooth abrasion in cows

May 12 2023

The skull of a cow shows that its teeth have relatively low crowns compared to other herbivores who haven't evolved the same method of digestion. Credit: Jürgen Hummel

For the researchers, this observation makes sense because the teeth of ruminants have comparatively low crowns. The method of digestion means the teeth remain functional for longer. It explains the distinctive shape of ruminant's teeth: there has been no evolutionary pressure to form more tooth material.

"Our research explains a fundamental but little-studied aspect of food grinding in large herbivores, which contributes to the understanding of the function and evolution of teeth," explains Professor Jürgen Hummel, the University of Göttingen's Ruminant Nutrition Group.

In addition to understanding the physiology of digestion, the result is interesting for paleontology: teeth are well preserved as fossils and often provide the most important clues in reconstructing early herbivores and their environment.

More information: Sarah O. Valerio et al, The Ruminant sorting mechanism protects teeth from abrasives, *Proceedings of the National Academy of Sciences* (2022). DOI: 10.1073/pnas.2212447119

Gordon D. Sanson, Reassessing assumptions about the evolution of herbivore teeth, *Proceedings of the National Academy of Sciences* (2023). DOI: 10.1073/pnas.2219060120

Provided by University of Göttingen