



# Colorado Science and Engineering Fair

## 2024 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: How Does A Cow's Digestive System Work?

Finalist's Name: Hayden Forst

School and City: Dove Creek Middle School, Dove Creek, Colorado

Sponsor's Name: Becky Short

Category: Animal Sciences (ANIM)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

I tested how a cow's digestive system works. My hypothesis was: If I test the difference between ruminant digestion of ground-up hay and regular hay the ground hay will digest the easiest. My theory was that the chopped hay would digest better because there is more surface area on the chopped hay.

There are four compartments in the stomach of a cow: the rumen, reticulum, omasum, and abomasum. After my experiment, I was able to conclude that my hypothesis was correct. The chopped hay was better to digest. This could help ranchers. Ranchers like my family and I could chop our hay and our cows would get more nutrition out of less hay. This could save money and could help our farm and ranch financially. However, the time/labor requirement required to chop hay would have to be less financially than the savings from buying less hay to get the financial benefit.

Though I might have had success with my hypothesis, not every trial turned out the way I suspect it should have. Twice the results between the ground and unground hay were the same. I suspect this is because the original experiment I found online was with grass instead of hay. I also suspect two minutes in each compartment was not enough time. Because of this if I were to try this experiment again I would try it the same way with grass instead of hay or try it with hay for a longer period in each baggie.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature: *Hayden Forst*

Date: *2/25/24*

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.