



Colorado Science and Engineering Fair

2025 Team 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: The Effect of Pet Toothpaste on the Canine Oral Microbiome

Team Leader's Name: Eli Harrison

Team Member 1: Jagadish White

Team Member 2:

School and City: homeschool (Erie and Westminster)

Sponsor's Name: Danielle Harrison

Category: Micro & Molecular Biology

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

This project aimed to find pet toothpaste's effect on the canine oral microbiome. We hypothesized that the toothpaste would decrease the bacteria in a dog's mouth.

For this experiment, each dog's fourth premolar was swabbed at different intervals, at weeks 0, 1, and 2. We then cultured the samples to see if there was any bacterial change. At week 0, the participants had not been brushing their dog's teeth before swabbing. For weeks 1 and 2, they had been brushing their dog's teeth daily. After collecting the swabs, we plated the samples on Luria broth agar and incubated them at 37 degrees Celsius for 2 days. We then analyzed the bacterial growth for size, shape, color, texture, and margins. We documented how much and how many types of bacteria were on each plate.

Our data showed that by week three, 82% (32 of 39) of the plates with a bacterial lawn showed a decrease in the percentage of lawn coverage. 10% showed an increase, while 8% of the plates showed no change. We also found that 36% (14 of 39) of the plates showed a decrease in the number of species. 51% (20 of 39) of the plates did not show a change in the number of species. 13% (5 of 39) of the plates showed increased species.

Our hypothesis was partially supported because most dogs showed a decrease in the amount of bacteria that grew but not the amount of species in the dogs' oral microbiome.

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

Team Leader's Signature: _____

Date: _____

Team Member 1's Signature: _____

Date: _____

Team Member 2's Signature: _____

Date: _____

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 your Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**