



## 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: Using Microbes to Solve the Microplastic Problem

Finalist's Name: Taelynn Rojas

School and City: Liberty School

Sponsor's Name: Ms. Linda Fogale

Category: Earth & Environmental Sciences (EAEV)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

The purpose of this project was to determine if *Comamonas testosteroni*, a bacteria that is often known to consume plastic waste, can eliminate plastic fragments in water environments. The hypothesis was that when microplastics are introduced into an environment with *Comamonas testosteroni*, then the amount of plastic will be reduced as opposed to being with *Pseudomonas putida*, or the control bacteria. This was tested by labeling five test tubes and four of them containing either HDPE 2 plastics (milk jug) or PETE 1 (water bottle) and introducing *Comamonas testosteroni* to them. They were left in an incubator for five days, but they were massed daily to get data collected for graphs. Once the five day process was over, the tubes were filled with bleach and left for ten minutes to kill off the bacteria left in them. After ten minutes, the test tubes were dumped into an all bleach solution through the funnel to catch the plastics. The plastics were then massed. The data shows that the first experiment (*Pseudomonas putida*, or the control) had no effect on the microplastics and they all stayed at 0.2 grams. For the second trial that contained *Comamonas testosteroni*, was able to use the plastic as a food source. The lowest it got to was 0.16 grams; which is a huge jump for just a short time period. So in conclusion, the *Pseudomonas putida* which was supposed to have no effect, was supported by data and the *Comamonas testosteroni* was thought to consume the plastics, and was data supported.

*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:

*Taelynn Rojas*

Date:

*3/1/24*

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