



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

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| Name(s) Andrew T. Ostrom | Project Number J0612 |
| Project Title Bio-Rusting: The Effect of Bacteria on Corrosion | |
| Objectives/Goals The purpose of this project was to determine the effect of bacteria on rusting by adding different samples of bacteria to iron nails in water. My hypothesis is that adding bacteria to water will slow down or prevent the rusting of the nails because the bacteria will use up the available oxygen needed to cause the nails to rust. | |
| Abstract Methods/Materials Three samples of bacteria (yeast, yogurt, and soil) were added to two pre-weighed iron nails immersed in 100 ml of deionized water in a closed jar and observed for the formation of rust. Two nails in a closed jar were the control. Using a straw, bubbles were blown through a final sample to displace dissolved oxygen in the water. All samples were prepared in duplicate. Observations were made every other day for two weeks before the nails were removed, dried, and re-weighed. | |
| Results The nails in the water alone (the control samples) had a lot of rust sediment and a significant weight loss. The weight loss was from the rust falling off the nails. The color of the rust was brown, but the solution was clear. The samples that had bubbles blown into it also had appreciable rust sediment and a similar weight loss to the control. However, the color of the sediment and the water was orange. The jars with soil and yeast had very little weight loss and very little visible rust. Although the jar with yogurt had no rust sediment, it had a significant weight loss. | |
| Conclusions/Discussion Based on my measurements and observations, I concluded that the jars with bacteria prevented or limited the formation of rust, which was my hypothesis. My research for this project determined that some bacteria need iron to live, which is found in the nails. I think that this caused the weight loss for the yogurt samples without generating the rust. | |
| Summary Statement The purpose of this project is to determine the effect of bacteria on rusting by adding different samples of bacteria to iron nails immersed in water and observing the nails for the formation or rust. | |
| Help Received My father supervised the experiments and helped me fill out this form. My mother helped me assemble the project board. | |