



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2019 PROJECT SUMMARY**

<b>Name(s)</b> <b>Bethany Ray</b>	<b>Project Number</b> <b>J1516</b>
<b>Project Title</b> <b>Does the Amount of Time Food Is on a Surface Affect Its Bacterial Growth?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> My project aims to discover if the amount of time food is in contact with various surfaces affect the amount of bacteria it collects.</p> <p><b>Methods</b> I used many materials to conduct my study including petri dishes, nutrient agar gel, cotton swabs, plastic bags, safety equipment, an autoclave, food, and an incubator. Before you do anything you want to sterilize your equipment and prep your petri dishes. Next, label your bags and petri dishes with all the variables. Drop the food on the surface for a given amount of time then rub a cotton swab on the food. Put your cotton swab inside of a plastic bag and do so with the rest of the cotton swabs, testing all surfaces, foods, and times. Rub the cotton swabs onto the agar in the petri dishes. Let the bacteria grow for two days in an incubator and once all of the bacteria has had time to grow, count the colonies the samples grew.</p> <p><b>Results</b> The apple samples showed no connection to time when it came to the quantity of bacteria colonies. When testing the apples, only one surface showed the bacteria colonies following the time. This is more than likely due to the pH and acidity levels inside of an apple. The bologna, however, has showed a clear correlation to time in all but one of the surfaces. Counting bacteria carpets was a difficult situation because it was still technically only one colony but it was much larger than any others. I still counted them as only one colony so it wouldn't disrupt my results. One of the graduate students at the university warned me that in two of my grass samples he found what appeared to be anthrax relatives.</p> <p><b>Conclusions</b> The results show that in the bologna samples there was a clear connection to time but the apples showed none. With the appearance of an anthrax relative, a potentially deadly disease, it shows the importance of raising awareness of the damage contaminated food could do to a human. Having clarification that in some cases time will affect the amount of bacteria that is transferred to the food, people can be more alert about whether it is worth eating food off the ground. I hope this project can also publicize the importance of advancements in our knowledge of microbiology.</p>	
<b>Summary Statement</b> My project aims to determine if the amount of time food is on a surface affects the amount of bacteria it collects and the results prove that for bologna that is true, but for apples it appears to show no correlation.	
<b>Help Received</b> Dr. Tricia Van Laar, Erik Arteaga, Manny Flores, Mike Ray, CSU Fresno	