



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jacob M. Hershman</b>	<b>Project Number</b> <b>J1509</b>
<b>Project Title</b> <b>Does Gluten Affect the Growth of Probiotic Bacteria?</b>	
<div><div><b>Objectives/Goals</b> The objective is to find out if probiotic bacteria (lactobacillus acidophilus) grow better in a gluten environment.</div><div><b>Methods/Materials</b> Six test tubes of lactose and water, and six test tubes of lactose, water, and gluten were prepared in a sterile environment. To four of the six test tubes in each category, a bacterial solution was added. Two test tubes out of each category were kept as controls. Ph concentrations were recorded every hour. Data from the two categories was adjusted and compared.</div><div><b>Results</b> Lactic acid concentration increased at a faster rate in a gluten environment.</div><div><b>Conclusions/Discussion</b> Lactobacillus bacteria produce lactic acid as a by-product of their growth cycle. The bacteria are anaerobic, making it difficult for the bacteria to grow outside of solution. To measure population size in solution, Ph was used as an indicator. I found that the Ph levels increased faster when gluten was present in the growth environment indicating that probiotic bacteria growth is enhanced by the presence of gluten. This may point to a connection between gluten free diets and the development of lactose sensitivity.</div></div>	
<b>Summary Statement</b> My project is about the effects of gluten on the growth of probiotic bacteria.	
<b>Help Received</b> My teacher suggested building an incubator. My dad helped me build the incubator. I also discussed the project with my parents. My mom's medical condition inspired me to do this project.	