



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

<b>Name(s)</b> <b>Leslie Almaraz; Aliza Arya; Mckayla Vargas</b>	<b>Project Number</b> <b>S0601</b>
<b>Project Title</b> <b>Sustaining a Biodegradable Environment through the Use of Polylactic Acid and Compost</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> Creating a sustainable, biodegradable plastic six-pack ring made from polylactic acid with an added plasticizer and an alternate form made of compost.</p> <p><b>Methods</b> Hydrochloric acid, Lactic acid, a plasticizer called Triethyl Citrate, compost, and multiple beakers. Multiple trials were conducted to see if varying the concentration or time would affect the results.</p> <p><b>Results</b> Several trials were conducted at various times and concentrations in order to obtain the best type of plastic six-pack ring. Repeated trials were run to determine if an added plasticizer or ingredient affected the results. This difference in trials was used to eliminate methods that were not successful.</p> <p><b>Conclusions</b> Repeated trials revealed that an added plasticizer created the most pliable plastic. Improvements in time of boiling the solution contributed to a plastic that was less tacky and more pliable. It is concluded that the type of plastic created can be used to create a six-pack ring. A six-pack ring was also created out of compost to propose an eco-friendly alternative.</p>	
<b>Summary Statement</b> Through a series of trials conducted, it can be concluded that a biodegradable plastic as well as a compost packed cardboard can create a biodegradable six-pack ring.	
<b>Help Received</b> Our chemistry teacher guided us when we conducted our experiments and helped us formulate a procedure that produced results. Archer School for girls gave us a research grant and funded our research.	