



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

Name(s) Nathan Gorzelanski	Project Number J1508
Project Title Differences between Common Fruits and Factors that Affect Their Rate of Mold Growth	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective was to find out which fruit took longest to mold and why.</p> <p>Methods Oranges, strawberries, blueberries, and grapes were tested throughout their aging process until mold growth was detected. Sugar content, pH, and skin thickness were the primary characteristics tested and evaluated using a refractometer, pH test strips, and a caliper. All the fruits were kept in lidded containers at room temperature.</p> <p>Results Sugar content, pH, and skin thickness were recorded on all fruits throughout the three trials. The oranges had the thickest skin (2mm), while the strawberries had the thinnest/no skin, the grapes had the highest sugar content (20.5% Brix), and the blueberries had the lowest pH (2.8). Out of the four fruits, oranges lasted the longest by far, as no mold growth was seen even up to Day 15 vs. mold growth at Day 3 to 5 for the other fruits.</p> <p>Conclusions My conclusion is that the oranges lasted the longest without molding due to it having the thickest skin. Of all the properties tested (pH, sugars, skin), the skin thickness appeared to play the greatest role as there was a direct correlation with the rate of mold growth. The order of thickest skin to thinnest was oranges, grapes, blueberries, and strawberries which was also the order of which the fruits lasted the longest before mold developed. Understanding this type of information can help a consumer decide which of their fruits to consume first and hopefully reduce waste.</p>	
Summary Statement Characteristics of common fruits and the factors that affect mold growth.	
Help Received My mom helped me with the data organization, and the Jack in the Box Corporate Research and Development Department provided me with materials that I used during my project.	