



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2018 PROJECT SUMMARY**

<b>Name(s)</b> Miles O. Kennedy	<b>Project Number</b>  38373
<b>Project Title</b> How Red Is Your Sports Drink?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of my project is to show how much red dye we ingest by consuming a common sports drink or soda. I also want to learn which drink has the most red dye, so if you are to buy and consume one of the drinks in my experiment, you can make an informed decision and choose the drink that is least harmful. I also want to call attention to the health dangers caused or associated by with red dye. In all, my goal is to help people become aware of the consequences of red dye and how much someone ingests on a regular basis.</p> <p><b>Methods/Materials</b> Made a simple circuit that consisted of a photoresistor and an LED, used a multimeter, obtained a commercial Thermo Scientific Genesys 20 spectrophotometer, used both to test the relative concentrations of dye present in several liquids, compared results to a calibration curve.</p> <p><b>Results</b> The commercial spectrophotometer was a very sensitive measurement tool while the homemade photoresistor was not as sensitive. Each sample tested had large amounts of red dye in them.</p> <p><b>Conclusions/Discussion</b> My prediction that the drink with the darkest red color would have the most dye was confirmed. Making a homemade spectrophotometer is relatively easy and although not as sensitive as a commercial grade spectrophotometer, it was able to detect the amount of dye in a sample. Current research links red dye to hyperactivity, allergies and cancer.</p>	
<b>Summary Statement</b> I built a homemade spectrophotometer and use a commercial grade spectrophotometer to measure the amount of red dye in various sports drinks.	
<b>Help Received</b> Dr. Justen Whittal loaned me and taught me how to use the ThermoFisher Genesys 20 spectrophotometer.	