



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

| | |
|--|---------------------------------------|
| Name(s) Ebony L. Held | Project Number J0612 |
| Project Title The Power of Fruit | |
| Abstract Objectives/Goals The initial objective of my experiment was to find out which fruit or fruit/liquid mixture can charge my iPhone faster. After failing many times, my objective evolved into a more specific purpose. This was to figure out if it is possible to charge a phone using fruit at all. Methods/Materials My first list of materials included an apple, a pear, an orange, ginger ale, sprite, a phone charger and an iPhone. I cut a hole on the top of the fruit and poured the different liquids in the hole. I then inserted a penny and the phone charger. For the second part of the experiment I obtained a multimeter, copper wire, nails, alligator clips, pliers and a variety of different fruits. I built wet cell batteries with the fruit. I connected, measured the voltage and tested the phone and charger with different combinations and quantities of fruit. Results My attempts to charge the phone with only the fruit and soda were unsuccessful. My phone did not turn on. However, by triggering a chemical reaction within the fruit by inserting both the copper wire and the zinc coated nail into the acid already present in the fruit juice, it is possible to create energy. By making and connecting the wet cell batteries I was able to create and maintain a stable electric current which measured at its highest point 14.2 volts. Even at its highest voltage, the fruit batteries were not capable of powering up my phone. Conclusions/Discussion Opposed to the popular belief that it is easy to charge an iPhone with a piece of fruit, it is much more complicated that it seems. Fruit alone does not contain electricity; this is why you cannot charge anything with it. On the other hand, the cell batteries did contain electricity according to the multimeter. After countless hours of testing different variations and quantities of fruit, I was still unable to bring my phone to turn on when I connected the charger. It is very disappointing when you don't achieve the results you are looking for, but it is another lesson learned. | |
| Summary Statement This project studies fruit's capability to produce electricity to power a common electronic device, a cell phone. | |
| Help Received Mother helped take pictures, sister video taped, dad helped cut wire. | |