



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Neena Mohan	Project Number J1314
Project Title Aahhh! I Put My Cells Through That?!?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Based on the theories of osmosis and diffusion, my project is about testing which drink will dehydrate human cells the most: Coffee, Soda, or an Energy Drink. I believe that Pepsi (the soda) will go into a deeper state of hypertonicity and dehydrate the cells more. This is because it contains less water than black coffee and Monster Energy (the energy drink). Also, since Pepsi is more chemically manipulated and engineered, its particle size is bigger and probably won't be able to pass through the selective semi-permeable membrane of a cell and reach its balanced isotonic state.</p> <p>Methods/Materials I used dialysis tubing to represent a human cell because it acts like a cell membrane and liquids are able to pass through it as well. I took four equal pieces of dialysis tubing which I cut with scissors, and filled with equal amounts of water. I then took dental floss and medical clamps and tied the ends of the tubing tightly so that none of the water would leak out. Next, I put one piece of tubing each into bowls containing black coffee, Pepsi, Monster Energy, and water (my control). After regular intervals, I used a nylon measuring tape to measure the circumference of each cell and recorded my data. How much the cells shrink will determine how dehydrated they are. I also took notice of the color difference inside and outside of the cell.</p> <p>Results The results of my project were this: The Coffee shrunk a total difference of 8 millimeters, the Soda shrunk 10 millimeters, the Energy drink 5 millimeters, and the water stayed the same. This shows that the "cell" with Pepsi outside of it shrank the most. Also, the color of the cell placed in the soda did not change like the the cells placed in coffee and the energy drink. This proves that soda dehydrates human cells more.</p> <p>Conclusions/Discussion My hypothesis was correct; the Pepsi did cause the circumference of the cell to shrink the most. The soda didn't pass through the dialysis tubing as much as the coffee and the energy drink did. This happened because the molecules in the soda could not pass through the semi-permeable membrane of the dialysis tubing and couldn't balance out and reach equilibrium. If I were to do this project again, I would test a different liquid like a stronger energy booster drink. I would also weigh the "cells", to get a more accurate measurement and try to find a way to determine specifically which cells are being dehydrated by these drinks.</p>	
Summary Statement My project, "Aahhhh!! I Put My Cells Through That?!?", is about testing which of these drinks will dehydrate human cells the most: Coffee, Soda, or an Energy Drink?	
Help Received	