



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Henry P. Tung	Project Number J1537
Project Title Can You Resist the Heat?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project examines the relationship between the temperature of a sodium chloride solution and the solution's electrical resistance. I carried out this project to learn about solutions, how electricity conducts through them, and how outside influences like temperature affect the process.</p> <p>Methods/Materials To find the relationship between the temperature and the resistance, an apparatus was constructed consisting of a sealed plastic container containing a salt solution, copper electrodes, a thermometer, a power source, and an ammeter. For each trial, the container was placed in an ice water bath to cool it below 16°C. It was then removed and allowed to warm up in the air. At 16°C, and at 2° intervals after that, readings were taken of the amount of electrical current flowing through the solution. The resulting data was entered into multiple formulas to calculate the actual resistance values of the solution itself. These values were then examined in an attempt to find a suitable mathematical relationship associating them with their corresponding temperatures.</p> <p>Results The sets of data obtained were all very similar, confirming their accuracy. An inverse variation between the resistance and the 0.32 power of the temperature was approximated with the aid of a calculator.</p> <p>Conclusions/Discussion Thus, it can be concluded that the electrical resistance of a salt solution decreases with an increase in temperature.</p>	
Summary Statement This project examines the relationship between the temperature of a sodium chloride solution and the solution's electrical resistance.	
Help Received Father supervised apparatus construction; Family members helped to proofread parts of report.	