



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Madeline L. Karnes	Project Number J2007
Project Title Surviving the Arctic: Which Substance Makes the Best Insulator?	
Abstract Objectives/Goals Objective and Goals- A mammal living in the Arctic can survive the freezing temperatures because of their blubber, or fat layer. I wanted to test and see which substance, lard, an animal fat, Crisco, a vegetable fat, or Vaseline, a petroleum oil product, would be the best insulator in an ice water bath. From my data, I will conclude which insulator humans could use to survive longer in freezing water. Methods/Materials Material and Methods - I made four double-layered pouches out of plastic, quart-size Ziploc bags, and placed 386.0 grams of either the lard, Crisco, or Vaseline in three of them, evenly distributing the "fat" around all sides of the pouch, leaving the fourth pouch as my control with no insulator. My hypothesis was that Vaseline would be the best insulator against frigid temperatures. I then placed them into an ice water bath and took the inside temperatures of the pouches at 30 seconds, and from 1 - 5 minute intervals. Results Results - After repeated trials, the control pouch had a percent of decrease of 98%. The pouch containing lard decreased 47%, the one with Crisco decreased 39% and the lowest was Vaseline, with a percent of decrease of just 21% after 5 minutes. Conclusions/Discussion Conclusion - These findings proved my hypothesis to be correct. My experiment showed that Vaseline is an insulator a person could use to survive longer in frigid water temperatures.	
Summary Statement After studying the survival of mammals in the Arctic, I wanted to test and see which substance would be the best insulator in a freezing water bath, lard, an animal fat, Crisco, a vegetable fat, or Vaseline, a petroleum oil product.	
Help Received Parents helped purchase supplies	