



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Morgan A. McLeod	<b>Project Number</b> <b>J1015</b>
<b>Project Title</b> <b>Chew On This: A Study of Rats' Gnawing Behaviors on Electrical Wires</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Rats and other rodents do a considerable amount of damage worldwide by gnawing on electrical lines. The purpose of this project was to determine if rats showed a preference to gnaw on certain types of wires commonly found in the home.</p> <p><b>Methods/Materials</b> An experiment was designed in two phases. Phase 1 trials were done to determine if a preference for a wire type could be demonstrated. Six wire types were run through the bottom of a domestic pet rat cage. The wires included a gray telephone wire, a red category 5 wire, a gray category 5 wire, a black coaxial wire, a white romex 110-volt wire, and a copper speaker wire. Gnawed wires were changed daily for 30 days and results were recorded. Phase 2 trials were designed to determine if the presence of electrical current in the wires influenced the gnawing behavior. Telephone wires and Category 5 wires were connected to appropriate electrical sources and another 6 days of trials were run.</p> <p><b>Results</b> Phase 1 showed a preference for the gray telephone wire and the red category 5 wire. Phase 2 results revealed a strong preference to gnaw on telephone wires that were connected to a working phone but failed to show any preference for Category 5 wire connected to an active computer network.</p> <p><b>Conclusions/Discussion</b> This limited study supports the hypothesis that there are certain characteristics to electrical lines that may encourage gnawing by rats. Further experiments could be designed to determine which properties attract gnawing behavior by controlling the variables of size, shape and stiffness of the wire; color, composition and texture of coatings; and the properties of electrical currents running through them.</p>	
<b>Summary Statement</b> This project was a study of rats' gnawing behaviors as related to electrical wires with certain characteristics.	
<b>Help Received</b> Mother helped change wires, Father helped type report and choose wires to test	