



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> <b>LeeAnn A. Patrick</b>	<b>Project Number</b> <b>J1220</b>
<b>Project Title</b> <b>Wood It Matter? A Comparison of Solid Body Electric Guitars</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this experiment was to see if the myths behind guitar tonality were true. According to these myths, the sound of a solid body electric guitar can be determined by what type of wood is used to make the body. <b>Methods/Materials</b> Four guitars were built from identical kits, but with different types of wood for bodies. The tested woods were basswood, mahogany, and alder. Two of the guitars were made with basswood, as a control. There were two parts in testing, one subjective, and one objective. For the subjective test, a survey was created that used words commonly used to describe guitar tonality. Guitarists with 5+ years experience took the survey and rated each word on a scale of 1 to 5 on how well the word described the guitar. In the objective test, each guitar was hooked up to a computer. A string-picking device struck the low "E" string and a computer recorded the results in mV. <b>Results</b> When all the results of the surveys had been averaged, there was not a significant difference between guitars. The results were so varied that each guitar's mean, mode, median and standard deviation all showed a central tendency. The objective test showed a slight difference in the shape of the graphs, but not enough to draw significant conclusions. <b>Conclusions/Discussion</b> The conclusions drawn from this experiment are that the presumed tonality of a guitar cannot be based on the wood used for the body. The subjective results show that the response of each guitarist is as individual as people are varied. There is a difference, but it cannot be described with everyday words. The objective results show that there is, in fact, a slight difference in mechanical measurement.	
<b>Summary Statement</b> The focus of my project was to determined if the type of wood used to build a solid body electric guitar makes a noticeable difference in the guitar's tonality.	
<b>Help Received</b> My father supervised my use of power tools and helped edit my write-up; My mother helped edit my work and helped me put together the display; A few friends helped me acquire test subjects who met my requirements and lent me identical amplifiers for testing.	