



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Kaitlin R. Spencer	Project Number 31032
Project Title Music to My Ears	
Abstract Objectives/Goals This Science Fair project was conducted to see how water affects the amplitude, frequency, and magnitude, of different monotone notes. Originally, it was thought that the higher the frequency, the more a notes# frequency would decrease when going through water. Methods/Materials When conducting the experiment, three monotone notes (100, 500, and 1000 Hz) were played through both water and air. The notes were recorded, and analyzed using MATLAB computer software. Results The data showed that none of the notes# frequencies were affected by either the air or water mediums, proving the original hypothesis incorrect. Along with frequency, the notes# magnitude did not show any noticeable differences. The amplitude decreased in all circumstances. Conclusions/Discussion Based on my data, I conclude that sound travels better in water than in air. I realized that humans simply perceive sound differently in water, or other mediums, than in air because of our ears. Since sound travels faster in water than in air, and the sound#s frequency did not change, it can be deduced that the wavelength changes when going through water. These discoveries encourage future related studies.	
Summary Statement This Science Fair project illustrates the science of music and sound, and was conducted to see how water affects the amplitude, frequency, and magnitude, of different monotone notes.	
Help Received I received help from my Dad in programming MATLAB software, and my Mom when organizing my display board. I received advice and direction from Ms. Orsi, Mr. Schofield, Mr. Smalley, and Dr. Oliver. I used equipment from Mr. Smalley, and Jefferson Middle School, under the direction of Ms. Gilmore.	