



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Malak J. Alamad	Project Number J1101
Project Title Stop! Don't Drink Cold Water with Your Meal!	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of the study was to find out whether drinking cold water with a meal is harmful to your health.</p> <p>Methods/Materials My experiments were the following: The first experiment included a simulation of how fat is emulsified (dissolved) in the intestines. To simulate bile or gall, I used table salt. I put a half a teaspoon of butter in each tube, and a half tea spoon of salt. I added hot water to one, and cold water to the other. After shaking them vigorously, the one with hot water emulsified, and became homogeneous. The one with cold water left the butter as it was. Second, I got two clear tubes, one inch in diameter, to simulate the small intestines. I cut them from the front with a cutter, and put adhesive felt on the inside to simulate villi. I spread them with butter, and sprinkled salt. I passed hot water through one, and cold water through the other, as if they were the intestines. Again, the one with hot water left little butter clinging to the sides, the one with cold water left the butter as it was.</p> <p>Results When you drink cold water during or right after your meal, it causes the fat to solidify, which delays the process of its emulsification. This causes the fat to cling between the villi. The villi absorb the nutrients from the intestines. When they are covered with solidified fat, it prevents them from absorbing other very important nutrients, which end up leaving the body without absorption.</p> <p>Conclusions/Discussion Drinking cold water with your meal is harmful for your health. It delays the process of emulsification of fat because it solidifies it. This causes the fat to cling to the villi for a longer time, which prevents other important nutrients from being absorbed. Some of the fat gets directly absorbed into the blood stream from the villi. When the fat clings for a longer period of time, more fat gets absorbed into the blood stream. Over time, fat builds up inside the arteries, which causes high blood pressure. This puts a person at a higher risk for a heart attack. Discussion: Avoid drinking cold water with or right after your meal! Other cold drinks are just as harmful. Diet sodas have been linked to cancer, and regular sodas and juices contain high fructose corn syrup, which has been linked to type 2 diabetes. The best thing to drink is hot green tea during your meal like the Chinese, or a hot cup of tea after your meal, like people from the Middle East.</p>	
Summary Statement My project is about healthy eating practices.	
Help Received My mother helped with cutting the plastic tubes.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Claire V. Appelmans	Project Number J1102
Project Title Musical Mutts	
Abstract Objectives/Goals My dog howls when I play viola. The objective is to find out what part of the harmonic series my dog howls to. The harmonic series is made up of two parts which are called overtones and fundamental. My null hypothesis is that my dog will respond to the overtones, fundamental, and the whole note (control) I play for her equally. My alternate hypothesis is that my dog will respond to these treatments differently. Methods/Materials Using a randomized complete blocks design, I presented three treatments in six double-blind Trials. The three treatments were a control (whole note), overtones, and fundamental. To create these treatments I used the software Sound Forge which filtered out parts of the harmonic series. To collect data I videotaped my dog's response to each treatment. Watching the video recording, I counted the seconds my dog howled. Results My dog responded to the treatments differently. She responded more to the control, which was both the fundamental note along with overtones on the viola, and the overtones, than to just the fundamental. Conclusions/Discussion My dog responds to the overtones more than the fundamental. She always responded to the recorded viola (control), overtones, but not the fundamental. Her response to the live viola was always greater than the recorded music. This could be caused by the fact that my microphone only picks up frequencies from 20-20,000 Hz and my dog can hear up to 44,000 Hz. Further study is being done with other dogs to see if they respond in the same way my dog did to the control, overtones and fundamental.	
Summary Statement Why does my dog howl when I play certain songs on my viola?	
Help Received My piano teacher introduced me to the idea of overtones. A friend who is a musical technician from Humboldt State University told me about the software Sound Forge. My father helped me come up with ideas for controlling variables, he motivated me, and he was present at Trials.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Millun Atluri	Project Number J1103
Project Title Does Music Affect Blood Pressure and Heart Rate?	
Abstract Objectives/Goals My objective was to determine if music affects blood pressure and heart rate. Methods/Materials Informed consent was obtained from 16 people ages 39-45. There were 9 women and 7 men from multiple cultural and ethnic backgrounds. Blood pressure and heart rate were measured before the experiment for each subject. An aneroid sphygmomanometer was used to measure the blood pressure and heart rate was taken manually by measuring the beats at the wrist of the subject. Each subject listened to two different types of music - tense and soothing with a break in between. Heart rate and blood pressure were measured again after each type of music was played. Results Tense music was found to have increased blood pressure in majority of the subjects. Due to tense music, 100% of the subjects experienced an increase in diastolic pressure and 94% experienced an increase in systolic pressure. Soothing music had the opposite effect. 68% experienced a decrease in diastolic pressure and 100% experienced a decrease in systolic pressure due to soothing music. The heart rate also varied in the same fashion as the blood pressure for the two types of music. It increased in 100% of the subjects due to tense music and decreased in 87.5% of the subjects due to soothing music. Conclusions/Discussion My experiment shows that music does affect the blood pressure and heart rate. Different subjects reacted similarly to both tense and soothing music. Based on the results of this experiment, music therapy can not only be used for the mental ailments, but also for physical illnesses such as hypertension.	
Summary Statement My project was about the physical effects in the body measured by blood pressure and heart rate due to different types of music.	
Help Received Dad helped choose the music. Uncle showed how to measure blood pressure and heart rate. Guidance from parents.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Adrianna N. Audenino	Project Number J1104
Project Title How Do Dairy Products Affect a Singer's Voice?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this experiment was to find out if dairy products affect a singer's voice in any way.</p> <p>Methods/Materials In this experiment, five singers recorded how many scales they could sing, starting at Middle C. Then they ate and drank mainly dairy products for one week. Every day each singer recorded how many scales he or she were able to sing, again, starting at Middle C. They did this for seven days.</p> <p>Results By the end of the experiment, each singer's range was less than his or her original wide ranges.</p> <p>Conclusions/Discussion The largest difference was four scales less than the original eight scales up. This would definitely hurt a performer, because if they weren't able to sing with their full ranges, they may not be able to perform all, if any, of their pieces.</p>	
Summary Statement My project was about the negative affect of dairy products on a singer's vocal range.	
Help Received Five singers volunteered to be tested.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Sarah K. Beard	Project Number J1105
Project Title Sound Bytes	
Abstract Objectives/Goals To understand if various animals react to high and low frequency sounds differently. Methods/Materials Procedure: 1. Observed each animal with a hidden video camera for two hours. Afterwards, replay the video and note behavior in their natural state. 2. The following day, set up a speaker ten feet away from the animal being observed. 3. Hook up a signal generator to a laptop computer, and set up the amplifier and speaker. 4. Next, set up a hidden video camera and record the reactions of the animal tested. 5. In another location, hide and wait until the animal is calm (if they had gotten excited). 6. Play each sound (303, 242, 104, 104, 18, and 11 Hertz) separately by playing one and then waiting three minutes. 7. Once tests are finished on all the animals, watch the videos and note different animal behaviors when the sound was played, such as looking toward the sound, running away from the sound or running toward the sound. 8. Repeat the procedures 2-7 the following day for each of the animals being tested. Materials: Laptop, oscilloscope, signal generator, animals (dog, pigs, chickens, and goats), speaker, amplifier, video camera, tripod, T.V Results High frequencies, such as 303Hz made most of the animals scared and agitated. Low frequencies, such as 11Hz, made the animals seem calm. The most reactive animals were the pigs, the least reactive were the goats. Conclusions/Discussion My hypothesis was correct. When the highest frequency of 303 Hz played, the animals on average were alert and scared. When the lowest frequency was played, the reaction was to be calm-or not change what they were doing. I believe they were scared of the 303Hz because it was high pitched, which could make them scared since it may have hurt their ears. The low sound could have made them calm because they were similar in frequency to the sounds that the animals use to communicate to each other in.	
Summary Statement Animals react to different sounds in different ways.	
Help Received My dad helped me set up the equipment.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Amarie C. Bremel	Project Number J1106
Project Title Blue Genes	
Abstract Objectives/Goals My project is relevant to Australian shepherd breeders because my project is about Aussie's (Australian shepherd's) color genetics. My hypothesis is: When raising Australian Shepherd dogs, there is a 50% probability of getting merle offspring if crossing heterozygous to homozygous recessive. My project is: If an Aussie breeder crosses a homozygous (two identical genes in one pair that are both recessive) merle (a modification of the solid black or red color) with a heterozygous (two different genes in one pair a dominate which is the black color and a recessive red color. In this case the dog will appear black) black, what is the probability the offspring will be merle? This is important to them because some colors are more popular and therefore they will sell easier. This is also important to me because I want to know why my Aussie is a merle.	
Methods/Materials Procedure: The first step in my project is to collect two hundred litter charts (charts that show every puppy in the litter and their color) of a heterozygous black parent and a homozygous recessive merle(to ensure correct genetic make up look at the parents parents). Then create an excel spreadsheet to track results you will get in the next step. After that insert the information you collect from one hundred of the litter charts in to the spreadsheets. To continue analyze this information and repeat this process over with the other one hundred litter charts. Finally prove your hypothesis correct or incorrect. Materials: 1. Litter charts representing two hundred puppies with homozygous recessive and heterozygous parents 2. Photographs and descriptions of color patterns 3. Excel spreadsheet for tracking results. 4. Journal to keep track of your progress	
Results In the first test, of one hundred puppies, there were 53 solids and 47 merles. The second time through, another test of one hundred puppies, there were 46 solids and 54 merles. Total there were 99 solids and 101 merles.	
Conclusions/Discussion When my experiment was over, I found that my hypothesis was correct. The number of merle and solid puppies were almost the same. In the first test, of one hundred puppies, there were 53 solids and 47 merles. The second time through, another test of one hundred puppies, there were 46 solids and 54 merles. Total there were 99 solids and 101 merles.	
Summary Statement If an Ausrailian Sheperd breeder were to cross a homozygous recessive merle to a heterozygous black, what is the probability that the offspring will be merle?	
Help Received Mother helped type; mothers friend thats a dog breeder gave copies of litter charts	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Cassidy A. Carter	Project Number J1107
Project Title Pass the Print	
Abstract Objectives/Goals My goal is to determine if there are any similarities in families' fingerprints. Methods/Materials The materials were: Ink pad (Sirchie), different families(7), paper, pencil, the internet and a magnifying glass. Results Over all I tested seven families with a total of 34 people. Every family I tested had three generations of family members. The average number of similarities with grandparents and grandchildren was 1.2. The average number of similarities with grandparents and their children was 1.0. The average number of similarities for children and grandchildren was 1.8. The most common fingerprint was the loop, second was the whorl and third was the arch. On all of my similarity graphs there was either 2, 3, or 0 similarities. The most similarities were between children and grandchildren which was 1.8. Conclusions/Discussion In conclusion, my hypothesis was partly right, even though one of my families did not have a similarity. All of my other families did have at least two similarities between the three generations. I did find a few problems collecting and analyzing my data. One error that could have affected my data was that each family did not have the same number of grandparents, parents and grandchildren. The reason that this really affected me was that it made it harder for me to compare my data between different sizes of families. Another thing that could have made a better experiment is if I had more and larger families. I am not sure how this project is significant to the community except to show how DNA affects families' fingerprints and that fingerprint patterns can be similar in families.	
Summary Statement My project is about the similarities of fingerprints in families.	
Help Received My teacher monitored my progress in the classroom.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Rachel Cornelison; Emma Liband	Project Number J1108
Project Title What Changes without Sleep?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our objective was to learn if lack of sleep affects performance.</p> <p>Methods/Materials We tested our subjects with their normal sleep and without sleep for one night in math, hand-eye coordination in a basketball shoot and catching a tennis ball, and running speed.</p> <p>Results We found that our subjects performed slower and less accurately after having no sleep.</p> <p>Conclusions/Discussion Our subjects did not perform as well without sleep and supported our hypothesis. We also found from our research that lack of sleep increases brain activity and temperature, and people are unable to think or do things as well as they normally do. We saw and felt how hard it is to stay up all night.</p>	
Summary Statement Our project is about how the lack of sleep affects a person's performance.	
Help Received Mrs. Cornelison let us host our experiment at her house, Mrs. Liband participated in an interview. Miss. Scheff and Miss. Millar for helping us with our display board.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Justin D. Davis	Project Number J1109
Project Title The Color Pattern Genetics of Polish Rabbits	
Objectives/Goals I have been raising rabbits for 2 years as a part of my 4-H breeding project. I raise Californian and Polish rabbits. This Science Fair project was a result of my interest in breeding Polish rabbits to achieve a specific color pattern. I wanted to learn how to get a specific color pattern on rabbits in my own breeding program. By learning the probability of results using a Punnett square when breeding two rabbits with particular color patterns, I could maximize the desired results in my rabbit litters.	
Abstract Methods/Materials Using the bucks and does in my rabbitry, I bred different color patterns: solid to solid, solid to broken (spotted), broken to broken. I recorded the results from each litter and then compared my results to the Punnett Squares and recorded my results compared to the probable results. I sent an e-mail to rabbitries in the United States and Canada and asked for results from their breedings. Over 20 rabbitries responded with the results from over 50 separate breedings. I then compared their results to the probable results.	
Results The results when I bred solid to solid were exactly as predicted with 100% of the kits being solid. My results when breeding solid to broken was similar to the predicted result: 46% broken and 54% solid, compared to the predicted result of 50% broken and 50% solid. My result when breeding broken to broken was very different from the predicted results: 33% solid, 66% Charlie, and no broken kits, compared to the predicted result of 25% solid, 50% broken, and 25% Charlie. When I added the result from the surveyed rabbitries, the results were similar to my own results except for the results when breeding broken to broken. Those results were more like the predicted results from the Punnett square.	
Conclusions/Discussion Punnett squares can be a helpful tool in predicting the actual results in breeding over time but not necessarily in one individual litter. A single litter may have outliers that skew results. The more results that were added to the breeding statistics in my research, the closer the results were to the predicted Punnett square result.	
Summary Statement My project is about using a Punnett square to help in achieving the desired results when breeding Polish rabbits with specific color patterns.	
Help Received Over 20 rabbitries in the United States and Canada supplied results from their own breeding programs. My Mother helped me laminate my work.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Saira Delgado	Project Number J1110
Project Title The Relation between Physical Activity and Overall Fitness of Japanese and American Students	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of my project is to determine how American students score on Japanese physical fitness exam.</p> <p>Methods/Materials I am testing 42 American subjects, ages 11-12, on height, weight, body fat, body mass index (BMI), grip power, cross-armed sit-ups, toe-touch, side-step, 50-meter run, and standing long jump. I am also surveying the American subjects and 28 Japanese subjects about their daily health habits, such as eating, sleeping, and exercise.</p> <p>Results For body fitness tests, the body fat had the largest gap. Females: The Japanese had 18.6%. The Americans had 26.98%. Males: The Japanese had 17.4%, and the Americans had 27.58%. For running tests, there was the 50-meter run. Females: The Japanese had 9.12 sec. The Americans had 9.5452 sec. Males: The Japanese had 8.69 sec. The Americans had 9.5453 sec. For jumping tests, the side-step had the largest gap. Females: The Americans had 33.66 side-steps. The Japanese had 42.2 side-steps. Males: The Americans had 33.941 side-steps. The Japanese had 46.34 side-steps. For flexibility tests, there was the toe-touch. Females: The Americans had 34.15 cm. The Japanese had 36.72 cm. Males: The Americans had 32.47 cm. The Japanese had 36.72 cm. For strength tests, the grip power had the largest gap. Females: The Americans had 13.97 kg. The Japanese had 20.88 kg. Males: The Americans had 12.529 kg. The Japanese had 22.95 kg.</p> <p>Conclusions/Discussion The Japanese did better on most of the tests. They did better than even the American athletes. I found out who the athletes were from my surveys. I found that the physical activity does affect overall fitness. The Japanese exercise more on a daily basis, so they have less obesity in their population. My main message is that the American students need to exercise more and eat healthier to prevent childhood obesity.</p>	
Summary Statement My project is about how the American students will score on Japanese fitness exams and how physical activity would affect overall fitness and obesity.	
Help Received	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Matthew K. DeVogelaere	Project Number J1111
Project Title When and Where Do Harbor Seals Haul Out on Mudflats?	
Abstract Objectives/Goals In this project, I wanted to determine what causes harbor seals to haul out in different places at different times. My hypotheses were that more harbor seals would haul out: on horizontal mudflats, when there was less wind, at low tides, and at midday. Methods/Materials During the time period of September 22, 2007 to November 10, 2007, I counted harbor seals along the mudflats using the binoculars mounted on the deck of the Moss Landing Marine Laboratories. I recorded counts in different sections of the mudflats. Four times a week, on average depending on my school schedule, I made observations at most hours of daylight. I recorded counts in different sections of the mudflats and noted the time of day, tidal height, and the wind speed. At the end of the study, using a kayak at low tide, I photographed the different mudflat sections to note their shapes. Results My results indicate that the number of harbor seals on a mudflat is affected by tidal height, time of day, shape of the mudflat, but not the wind speed. Harbor seals are most abundant from noon to 4 PM, a tidal height of two to five feet, and on mudflats that are flat with a slope that goes into a deep channel. Conclusions/Discussion Every one to three years, the population of harbor seals gets estimated by scientists, and they could use my results to know when would be the best tide and time of day to count harbor seals. The Elkhorn Slough National Estuarine Research Reserve is making restoration plans that will change the mudflats around this area, so they could use the data I have collected to design the best harbor seal haul out habitat.	
Summary Statement In this project I determined where and when harbor seals haul out on mudflats in Moss Landing, California.	
Help Received Dr. James Harvey let me use the observation deck and the binoculars at the Moss Landing Marine Labs, and shared ideas with me. My dad let me use his kayak and camera.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) John Dickerson; Michael McKenna	Project Number J1112
Project Title The Butterfly Effect	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of our project is to study and test the affect of body symmetry on athletic ability.</p> <p>Methods/Materials We measured 7th and 8th grade participants using a digital caliper and recorded bilateral measurements for the ear, wrist, leg and foot. When completed, we calculated the average difference away from perfect symmetry for each person so that they could be measured on a uniform #symmetry scale#. We then put each participant through a series of athletic tests, according to the SPARQ method (Speed, Power, Agility, Reaction and Quickness). Participant results were recorded in the 40 yard dash, the vertical jump, the powerball toss, the 20 yard shuttle run, keyboard finger reaction and finally 30 second stepovers. The range of results was calculated and each participant was evaluated along the scale as well as in relation to their symmetry measurement.</p> <p>Results Those with the smallest symmetry index (the most symmetrical) indeed exhibit faster running times, longer strength tosses and quicker reaction times. Interestingly, our participant population did not have a large variation away from perfect symmetry, but there was a large range of athletic ability exhibited.</p> <p>Conclusions/Discussion Studies over time have shown that elite athletes indeed have more symmetrical bodies and exhibit superior athletic ability to those with less symmetrical bodies, and our results indicate the same. The data we gathered through the SPARQ tests shows a strong correlation between a higher degree of body symmetry and superior performance on specific SPARQ tests for athleticism. While our results speak loudly in support of our hypothesis, it should be noted that other factors seem to impact athletic talent, such as genetics, general health and academic prowess.</p>	
Summary Statement Our project investigates the correlation between body symmetry and athletic ability.	
Help Received Parents helped to "glue" paper to board.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Rachel A. Dupont	Project Number J1113
Project Title To the Beat of Your Heart	
Abstract Objectives/Goals How does music affect the pulse and blood pressure of Alzheimer's patients? I predict that the classical music of Mozart will lower the blood pressure and pulse rate of older adults with Alzheimer's disease. I also predict that rock music of Van Halen will make the blood pressure and pulse rate increase in older adults with Alzheimer's disease. Finally, I predict that the swing music of Glenn Miller will increase pulse and blood pressure due to excitement.	
Methods/Materials 4 mild stage Alzheimer's patients A blood pressure/pulse machine Ipod Headphones a timer Notepad/journal and pen for note taking 1. Take blood pressure and pulse before playing the music. 2. Play one of three of the music. 3. Stop music and take blood pressure and pulse. 4. Repeat for all three music types.	
Results The classical music of Mozart made everyone's pulse and blood pressure go down. The rock music of Van Halen made everyone's blood pressure drop and all but one patient's pulse increased. The swing music of Glenn Miller excited everyone's pulse and made it increase. However, half of the patient's blood pressure went up and half went down after hearing the swing music of Glenn Miller.	
Conclusions/Discussion The research I did explained that the Music of Mozart and other classical music is very helpful and comforting to older adults with Alzheimer's disease. In my journal I keep careful notes on each patient's responses. The classical music really calmed and comforted each patient. Their comments were all positive. However, the rock music seemed to stimulate their memory. Classical music calmed their blood pressure and pulse and it lowered it as much as medication could. Nurses and professionals should also make sure that they are not playing their favorite music but music that is stimulating and calming for their patients.	
Summary Statement I tested the blood pressure and pulse of Alzheimer's patients after hearing 3 types of music.	
Help Received Mother helped with the patients; Nany and her friend helped with the graphs and typing.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Taryn T. Frazier	Project Number J1114
Project Title What Type of Music Affects My Dog's Mood?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I wanted to know how my dog reacted to all the different types of music. He seemed like kind of an old soul dog and I wanted to know if he really was.</p> <p>Methods/Materials First I took Max onto the porch of my grandma's house and calmed him down. Next, I took the music I had downloaded on my Ipod 2 weeks before the project and played 1 different type of music everyday. After each day I recorded the data.</p> <p>Results Max reacted best to Heavy-Metal,Jazz,and Country.</p> <p>Conclusions/Discussion In conclusion, I learned alot from my project/expirement and I was completely wrong in my hypothesis. I really liked the concept of this project and am definetely going to try something similar to it next year.</p>	
Summary Statement To find out what affected my dog's mood.	
Help Received My dad helped with the set-up of my display board.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Katherine W. Glockner	Project Number J1115
Project Title Firestorm Fallout: Effects of Particulate Exposure on Peak Flow Rate	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this project was to determine if poor air quality during a week of extensive wildfires negatively affected children's lungs according to tests using peak flow meters. To get a peak flow rate, a subject blows as fast and hard as possible. Peak flow rate is a fairly accurate measure of lung capacity. I hypothesized that all of the subjects' peak flow rates would improve over time, but that depending on protective measures taken and proximity to the fire, the rates of improvement might vary.</p> <p>Methods/Materials I performed a total of 895 tests in my experiment. I tested 149 students in grades 4 through 8 a total of six times, spanning from one to seven weeks after the fire reached the north coast of San Diego County. On my first day of testing, I distributed a questionnaire to gather information about each student's activities during the week of the fires. On both the first day and all subsequent test days, I entered the classrooms, distributed peak flow meters, briefly explained how to use them, and collected the highest reading for each student. Before going to the next class, I wore gloves and goggles to thoroughly wash each peak flow meter using alcohol. To keep the meters as sterile as possible, I used disposable mouthpieces as well.</p> <p>Results Unexpectedly, the peak flow rates were always within the normal ranges during the test period. However, some distinct patterns emerged. Those subjects who received either mandatory or voluntary evacuation calls (those who lived closer to the fires) had consistently lower maximum peak flow rates than students who did not live in an evacuation zone. This suggested that proximity to the fire, and thus greater exposure to particulates, impacted peak flow rates. Also, the lower the daily air quality index (indicating better air quality), the higher the peak flow rates.</p> <p>Conclusions/Discussion My results showed a significant inverse correlation between the air quality index levels for each day and the peak flow rates. Peak flow rates appeared to be influenced more by the daily air quality index level than by the length of time after the fire. Proximity to the fire also seemed to be a factor since it impacted maximum peak flow rate.</p>	
Summary Statement This project uses peak flow rate in an attempt to measure the effects of particulate exposure on children's lungs one to seven weeks after a wildfire.	
Help Received My mother, father, and science teacher supported and advised me; my math teacher and statistician John Polich explained linear regression; Dr. Amy Oro, a pediatric allergist, supplied charts of normal peak flow rates; North Coast Family Medical Group demonstrated peak flow meter cleaning procedures.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Sam V. Heinz	Project Number J1116
Project Title Don't Blink: A Study of How Focus Affects Blinking	
Abstract Objectives/Goals The objective is to find out how focus affects the semi-voluntary function of blinking. Methods/Materials I obtained informed consent from all my subjects. I created a program to record how often each subjects blinked. I tested and reviewed each subject for a set length of time for each activity while recording how often they blinked. The activities were playing a 3D videogame, playing a 2D videogame, reading a book, and staring at a blank wall. Results My results show that being focused can reduce blinking down to only two blinks a minute. Being bored can make you blink up to once every 5 seconds. Conclusions/Discussion My conclusion is that my subjects blink less when they are focused. On the other hand when my subjects were unfocused or not interested, they blinked much more frequently.	
Summary Statement My project was to test how focus affects how often a subject blinks.	
Help Received Mother helped glue papers to the posterboard.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Matthew L. Honig	Project Number J1117
Project Title Motor Mouth vs. Motor Skills	
Abstract Objectives/Goals The objective of my project was to inform people of the dangers of talking on a cell phone while driving or performing other potentially harmful activities. I wanted to find out if talking on a cell phone impairs your ability to access other basic motor skills. The goal of my project was to provide the world safer road ways by informing young drivers of the dangers of talking on a cell phone while driving. Methods/Materials My materials consisted of student consent forms, 3 tennis balls, 2 cell phones, and a scripted conversation. After filling out consent forms, 98 6th, 7th and 8th grade students tried to catch 10 tennis balls with their favored hand. They then had to catch the same number of balls while talking on a cell phone with their other hand. Results I found that on the average all students caught 10% fewer balls while talking on a cell phone. My two variables were gender and sports players. Girls performed at an average of 20% less than boys, while children who participated in league sports caught 10% better than those who did not. I did not find any correlation between playing an instrument and being able to catch ball. Conclusions/Discussion My project found that talking on a cell phone directly impairs your ability to perform simple motor skills. While males and sports players were able to catch more balls, they were still adversely affected. Current studies show that talking on a cell phone while driving is more dangerous than driving moderately drunk yet cell phone related accidents continue to spiral upwards. In the future I would like to continue my research using a hands free head set, which will be required by law starting July, 2008. I also think it would be helpful for our school P.E programs to teach more hand eye coordination related skills.	
Summary Statement My project tests middle school students ability to talk on a cell phone while performing basic motor skills.	
Help Received this was an optional project for 7th graders at my school that was conducted under minimal teacher supervision.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Victoria N. Hutchins	Project Number J1118
Project Title Rat Intelligence: Does Gender Affect Learning Ability?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The object of this experiment was to study rats' intelligence that can be measured by speed of learning and if gender makes a difference.</p> <p>Methods/Materials I observed six rats (three females and three males) behavior for eight weeks. I tested the rats for left/right handedness. I built four different types of mazes: Classic, Reverse Classic, Y and T. I used foam board, scotch tape, hot glue, T pins, and colored tape.</p> <p>Results Through my experiment I observed out that female and male rats' behavior was different. All female rats were right handed. Two male rats were left handed and one male rat was ambidextrous. Female rats were faster than male rats in three mazes, but they were slightly slower than the males only in the T maze. The average time for female rats was 85seconds and for male rats was 126seconds. The ratio of the female rats' average time to the male rats' average time was 0.65</p> <p>Conclusions/Discussion The results from the experiment support my hypothesis that female rats learn the maze pathways faster than the male rats. I found out that rats are left or right handed. My experiment can help to uncover general principles about the learning process and it can be applied to many species, including humans. Understanding how animal intelligence works helps me understand how my intelligence works and how I could relate my experiment to girl's and boy's behavior and learning process.</p>	
Summary Statement Through my experiment and observations, my results demonstrated that female rats learn the pathway of the mazes faster than the males. I also observed out that the rats are left or right handed.	
Help Received Mrs. Sean Senechal provided support with my research and experiment. My parents provided transportation.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Alexandra S. Kokka	Project Number J1119
Project Title Determining the Effects of Environmental Conditions on the Feeding and Growth Rate of Mice	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to determine if mice that are placed in different environmental conditions (light, dark) (regular feeding times) will have an effect on their growth rate.</p> <p>Methods/Materials I first placed 5 feeder mice into 5 different cages. (cages had bedding, water). I then placed a cage into different environments. Cage 1 had 24 hour light, and was given food for 24 hours. Cage 2 had 24 hours light, but was given limited food. (regular feeding times) Cage 3 was placed in a 24 hour dark environment with 24 hour food. Cage 4 was placed in a 24 hour dark environment with regular feeding times. Cage 5 was the control group - Normal environment with 24 hour food. My experiment lasted 13 days. I took a beginning weight on each mouse on day one, and weighed again every 4 days. I used a triple beam scale for the measuring. i then compared the growth rates. I obtained a letter from a veterinarian saying it was safe for the mice. After the experiment, the mice were given to Sanger High School biology dept.</p> <p>Results Mice that were in the Dark environment with limited food grew the most. A difference of 53.9 grams Light environment with limited food grew the 2nd most. Light with 24 hour food was next, with Dark and 24 hour food following that. The control group had the least amount of growth. 35.9 grams of growth. The Limited food groups grew more than the 24 hour food groups.</p> <p>Conclusions/Discussion I think the mice are like humans in that when they are stressed they tend to eat more. The limited food groups had eight hours between feeding times. This could have caused more hunger sensations. People tend to also eat more when they feel very hungry. The same thing probably occurred with the mice.</p>	
Summary Statement I wanted to see if different environmental conditions would effect the growth rate of mice.	
Help Received Parents supervised and helped handle the mice. Teacher taught scientific method. Parent helped put board together.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Grace A. Kumaishi	Project Number J1120
Project Title Take a Deep Breath: Lung Capacity, Age, and Exercise	
Abstract Objectives/Goals The purpose of this project is to see what effects age and exercise have on lung capacity. Methods/Materials My apparatus was made with a 1 gallon water bottle, plastic tubing, and a plastic tub. I filled the container with water, flipped it over into a tub of water (without spilling any) and put the tube into the opening of the bottle. Volunteers, ranging in age from 5-72, filled their lungs and blew into the tube, displacing water in the bottle. The amount displaced was their lung capacity. Results I found that people ages 18-49 had the greatest lung capacity and at around the age of 50, it began to decrease. Exercise doesn't seem to be as closely related to lung capacity as age. Conclusions/Discussion My conclusion is that age has a significant effect on lung capacity, while exercise doesn't have as much of an effect.	
Summary Statement The purpose is to see what effects age and exercise have on lung capacity.	
Help Received Parents helped get materials; Mother helped to proofread writing.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Jennifer A. Laird	Project Number J1121
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Project Title
Males or Females: Who Rules and Who Drools in (Dog) Intelligence?

Objectives/Goals
The purpose for this project is to see which gender of dog is the smartest. With this knowledge, future dog owners who wanted a specific gender of dog may choose the other because of more potential intelligence.

Abstract
I think that more female dogs will get high I.Q. scores than will male dogs because my research verifies that females tend to be more alert than males.

Methods/Materials
With the help of many resources, I created a dog I.Q. test consisting of 14 problem solving activities: Couch Play, Obstacle Course, Canny, Follow the Leader, Hide-and-Seek, Cover Up, Follow the Leader: Tugboat Style, No Balloon On Me!, Get it Outta Here, House Remodeling, Smile!, Just Smarts, Jjuusstt Ssmmaarrttss (a longer version of Just Smarts), Fridges and Videos, and Big Puppy Towelie. The tests were a mixture of hard, medium, and easy activities. I tested 23 dogs, recorded their scores, and calculated the I.Q. from the mental ages of the dogs.

1 bath towel, 1 container of 550 dog treats, 1 couch per house, 1 digital camera, 1 dishtowel, 1 #Mental Age# sheet, 1 pen, 1 #raw data# sheet per dog, 1 roll of yellow string, 1 small trash bucket, 1 stopwatch, 23 dogs (sample size), 3 balloons, 2 chairs per house, 2 treat footballs (diff. sizes).

Results
The test Couch Play, involving dogs to reach under a couch or other large object displayed difficulty. Eleven dogs used their paw. Get it Outta Here!, Just Smarts, and Jjuusstt Ssmmaarrttss were harder activities. The tests Obstacle Course, Follow the Leader - Tugboat Style, Cover Up, No Balloon On Me!, House Remodeling, and Smile! were relatively easier. Only one dog did not receive credit for Obstacle Course. As for Follow the Leader - Tugboat Style, 12 dogs obtained the treat in 15 seconds or less. 18 dogs triumphed in No Balloon On Me!. 18 dogs put their nose to the ground in House Remodeling. The three medium activities were Smile!, Fridges and Videos, and Big Puppy Towelie. Nine dogs succeeded in Smile!. The other 14 dogs were divided up: 4 dogs came close to getting full credit, 3 dogs hardly understood the concept, and 7 dogs clearly did not understand. Twelve dogs failed the Fridges and Videos activity, and 11 dogs passed it. Sixteen dogs did well on the activity Big Puppy Towelie.

Conclusions/Discussion
I have found that there were more high female I.Q. scores than male high scores. Therefore, female dogs are smarter than male dogs.

Summary Statement
My project is about determining which gender of dog is most intelligent (males or females).

Help Received
Parents drove me to homes of dogs to carry out I.Q. tests.



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Siegen A. McKellar	Project Number J1122
Project Title To Breathe or Not to Breathe: Is Swim Sprint Time Faster with Normal or Reduced Breathing?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This study investigated whether the time saved by reducing the number of breaths in a 100 yard freestyle sprint is offset by the physiological effects of the reduced oxygen available for energy production and the clearing of anaerobically produced lactic acid in the aerobic energy producing system.</p> <p>Methods/Materials Eight A-B level competitive swimmers between ten and twelve years of age were randomly selected. Each swam four 100 yard freestyle sets at race pace with a uniform reduction in the number of breaths taken. Swimmers rested three minutes after each set so fatigue would not be a factor. The results were then compared to their personal best times from 100 yard freestyle races breathing normally.</p> <p>Results The results showed that none of the swimmers beat their personal best time, adding an average of 4.77 seconds. This indicates that normal breathing provides faster times, and that the number of breaths in a 100 yd. freestyle race is offset by the physiological effects of the reduced oxygen available for energy production and lactate clearance in the aerobic energy producing system.</p> <p>Conclusions/Discussion A closer look, however, shows that four of the swimmers got consistently faster across all four trials with reduced breathing. This suggests that, with training, further physiological adaptation and times faster than their best normal breathing times might be possible.</p> <p>To test this, I would use a larger number of swimmers, categorize the swimmers by size, speed, age, gender, and VO₂ max, and make the training period longer. This would show whether certain groups better adapt to reduced breathing, and would explain the variability in my current experiment. If reduced breathing is faster, it could be a deciding factor for whether elite swimmers, when fractions of a second make a difference, win first place.</p>	
Summary Statement Whether the time saved by reducing the number of breaths in a freestyle sprint is offset by the effects of the reduced oxygen available for energy production and clearing of anaerobically produced lactic acid in the aerobic energy system.	
Help Received Assistants helped me time swimmers and monitor breathing patterns. My swim coach confirmed that the reduced breathing patterns were doable and that the rest time was adequate. Dr. George Brooks at Berkeley clarified a question on the processing of lactic acid. My parents drove me to the research library.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Lacey L. Nelson	Project Number J1123
Project Title The Physics of the Front Handspring Vault	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to find out how kinetic energy affects the quality of a front handspring vault—a move in gymnastics where you run, punch a springboard, flip to a handstand on top of the vault table, and then immediately "pop" off the vault table to return to your feet on the ground. The quality of the vault was measured by looking at air time, the time from which your hands leave the vault table to when your feet touch the ground. My objective was to also look for any relationship between the board-vault time (the time from when your feet touch the springboard to when your hands touch the vault) and the air time.</p> <p>Methods/Materials Gymnasts were weighed then video-taped as they performed vaults. After, I digitized all the video footage and broke down the videos into stop frames of 1/30th of a second. By counting the number of stop frames from different start and end points during the vault, I determined the final velocity, board-vault time, and air time for every vault video taped, and I also converted the number of frames into units of time. In order to find out every gymnast's kinetic energy I used the kinetic energy equation ($\frac{1}{2}mv^2$) and plugged in their weight and velocity. To get my final results, I graphed board-vault time and kinetic energy against air time to determine the linear relationships between these variables.</p> <p>Results My results showed that the more kinetic energy you had, the longer your air time would be and the better the quality of your vault would be. Also, the linear relationship between board-vault time and air time was negative, showing that the shorter the board-vault time, the longer your air time would be, improving the quality of the vault.</p> <p>Conclusions/Discussion All my results supported my hypothesis. The information from this experiment helps break down the important aspects of the front handspring vault, and also will help gymnasts understand how to improve the quality of their front handspring vault and why those specific corrections work. A key point such as increasing your kinetic energy increases your air time, suggests to gymnasts performing the move that they would need to run faster in order to perform a better vault because having a higher velocity would mean having more kinetic energy, which results in a longer air time and a better vault.</p>	
Summary Statement My project was about looking at the physics of how kinetic energy affects the quality of a front handspring vault.	
Help Received Mom proofread report; Used Gymtowne Gymnastics facility and video-taped gymnasts working out there; Neighbor taught me how to use digitizing software	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Amanda D. Parrill	Project Number J1124
Project Title Mighty Mouse	
Abstract Objectives/Goals My main goal was to determine if the food made to keep mice healthy would make them gain mor weight, or if the really, really cheap food would make them gain more weight. Methods/Materials First I went to the pet store and picked out six different colored mice and got their cages, food (1 basic food, and 1 with lots of nutrients in it), water bottles, etc. Once at home I put their cages together and split them into two different groups (two cages) to distinguish which mouse would get whick food. Every three days I weighed them and put my data in my logbook. about three times a day, I had to refill the food, and about every three days, i had to refill the water. *Materials* six different colored mice, two 10 gallon tanks, digital scale, mouse food that contains vitamins, basic mice food with only basic nutrients, two turn wheels, two water bottles and holders, bedding, chew toys, bucket to place mice in while weighing them, and bowls for the food. Results I found out that the mice that ate the basic food gained more weight than the mice that ate the nutritional food. this happened because the basic food had more fat in it. I also realized that the mice that ate the nutritional food ran in the wheel more. Conclusions/Discussion In the end, my hypothesis was wrong. I thought that the mice who ate the nutritional food would gain more weight. the mice that ate the basic food ended gaining more weight. This is because the basic food had more fat in it.	
Summary Statement My project is about determining whether the nutritional food or the cheap, basic food would make a mouse gain more weight.	
Help Received Dad help print graphs	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Mitzi H. Pierson	Project Number J1125
Project Title Follow the Beat	
Abstract Objectives/Goals The objective of my experiment is to determine how much different types of music affect the heart rate of different age groups. Methods/Materials Informed consent was obtained from eighteen participants, ranging from age 5 to 60 years. I conducted the experiment by measuring the resting heart rate of my participant. Then he/she listened to music for three minutes. The heart rate was measured immediately after the music was stopped. After his/her heart rate returned to its original resting rate, I began to play the second song, followed by the third and fourth. This same procedure was conducted on all my participants. Results On average, punk rock affected the kindergartener's heart rate the most. For teenagers and adults jazz was the most effective music. Kindergarteners and teenagers were not affected by classical. The heart rate of the adults decreased after listening to classical music. Conclusions/Discussion I discovered that a subject was not affected by certain types of music if he/she did not enjoy it. For example, adults were much less affected by hip-hop than kindergarteners and teenagers were. During my experiment, I perceived one element that played a role in changing the heart rate: body mass. I discovered that the more body mass a person possessed, the more change in his/her heart rate.	
Summary Statement How music affects a person's heart rate.	
Help Received Mother helped me to narrow down on a topic.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Brittany M. Pikula	Project Number J1126
Project Title Can You See "E"?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals What will affect your distance eyesight more, video games played on the television for one hour at a distance of twelve feet or using the computer for one hour at a distance of two feet?</p> <p>Methods/Materials Materials: Snellen chart, Ten subjects to test ages 12-18 years old, Television, Computer, Journal, Pen/pencil, Camera, Measuring tape, Video game, and system Procedure: 1. Position all subjects 20 feet away for a normal vision reading. 2. Have subject cover right eye. 3. Start at the top of the Snellen chart and have subject read each line. 4. Subjects are allowed to miss two letters and still be able to pass that line. 5. Now cover left eye. 6. Record their vision for a normal base reading. 7. Next have the same ten subjects play video games on the television for an hour from a distance of twelve feet. 8. Record their vision for each eye immediately following one hour of playing video games on television. 9. Have them come back the next day and go on the computer for an hour at a distance of two feet away. 10. Test vision immediately following computer use and record scores. 11. Subjects were tested two days because their vision could still be temporarily changed from the television.</p> <p>Results In my results every one of my subjects' vision was affected with the computer and television, but it also states that using a computer affected every subjects' distance vision more than playing video games on a television. The differences are how the subjects' distance vision worsened after using a computer for an hour two feet away. Most of my subjects' distance vision only worsened by one or two lines.</p> <p>Conclusions/Discussion My hypothesis was supported by my results. All the subjects' vision became worse after going on the computer and playing video games on the computer for an hour, the worse being the computer. I believed this happened because with a computer you are closer and there is less movement on the screen than with the television. According to my research, computer use causes eye strain that will make your eyes fatigue, and can even change the construction of the eyeball, causing nearsightedness. We were born to have "hunters" eyes and see at a distance. Our modern world technology has us focusing with our vision up close. We need to consider these things to avoid eye troubles.</p>	
Summary Statement What will affect your distance eyesight more, video games played on the television for one hour at a distance of twelve feet or using the computer for one hour at a distance of two feet?	
Help Received Dr. Henslick, optometrist	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Ashton W. Pomrehn	Project Number J1127
Project Title Crossed Hand-Eye Dominance: How Does It Affect Free-Throw Shooting?	
Abstract Objectives/Goals My project was to determine whether crossed hand-eye dominance has an effect on free-throw shooting. Methods/Materials I received the help of three subject groups with different levels of free-throw shooting experience: highly skilled, medium-skilled, and unskilled. For each participant I tested which eye was dominant, which hand was dominant, and the number of free throws made out of 15 tries. I calculated the average free-throw shooting percentage for each participant, separated the crossed hand-eye from the congruent hand-eye dominant participants, then calculated the average free-throw shooting percentage for each group by adding the percentages together and dividing by the number of participants in the group. Results My hypothesis was proven correct in the highly skilled and medium-skilled groups. In the lowest skilled group, the congruent (same-sided) hand-eye dominant participants had the higher average free-throw shooting percentage. Conclusions/Discussion First, I found that crossed hand-eye dominance is not very common. For example, in two of the groups only 6 out of 27 tested were crossed hand-eye dominant. In conclusion, crossed hand-eye dominance seems to have a positive effect on free-throw shooting. However, even where my hypothesis was proven correct, the difference between the groups was not as great as I expected.	
Summary Statement My project explores the effect of crossed hand-eye dominance on shooting free throws.	
Help Received Support from Humboldt State University and Sunny Brae Middle School; Mom helped type, format spreadsheet, and design backboard	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Sharona A. Silverstein	Project Number J1128
Project Title Does Viewing Animal Pictures Positively Affect Cardiovascular Health?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Cardiovascular health is shown by heart rate and blood pressure. Interaction with pets and the presence of animals lowers blood pressure, heart rate and responses to stress. The objective of this project is to determine if viewing animal pictures can positively affect cardiovascular health. It is hypothesized that blood pressure and heart rate in stressed subjects will decrease after viewing animal pictures, but there will be no differences in control subjects.</p> <p>Methods/Materials 73 pre-dental college students were randomly assigned to Experimental and Control groups. Subjects were given a math activity as a stressor, then shown a 2.5 minute PowerPoint slide show. The Experimental group saw pictures of animals on green backgrounds. The Control group saw only the green backgrounds. Blood pressure and heart rate were measured at baseline (Time 1), after the stressor (Time 2) and after the slide show (Time 3).</p> <p>Results Subjects ranged from 18-32 years (mean=23.0). Compared with baseline, systolic and diastolic blood pressures and heart rate were significantly increased after the stressor ($t=-3.00$, $p=.002$; $t=-1.68$, $p=.003$; and $t=-3.28$, $p=.0008$). In the Experimental group, systolic and diastolic blood pressure and heart rate were significantly lower after as compared to before viewing the slide show (decreases=7.8mmHg, $t=6.73$; 5.4mmHg, $t=5.05$; 3.0bpm, $t=5.59$; $p\#s<.0001$). In the Control group, there were no significant differences in blood pressure or heart rate after viewing the slide show.</p> <p>Conclusions/Discussion My hypothesis was confirmed. Blood pressure and heart rate in stressed subjects were lower after viewing animal pictures, but there were no differences in the Control group. Viewing animal pictures can positively affect cardiovascular health.</p>	
Summary Statement This project examines whether viewing animal pictures can lower blood pressure and heart rate.	
Help Received Parents bought supplies used for this project, mother drove me to UCSD to collect data.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Ryan M. Street	Project Number J1129
Project Title Who Done It? Identifying a Cat from Its Paw Prints	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is that if cat paw prints are unique, then I will be able to identify a cat from its paw prints.</p> <p>Methods/Materials In my procedure, I used six cats in this experiment. My parents let one of them walk across a piece of glass and eat some salmon. I did not know which cat it was. I lifted this cat's paw prints using magnetic fingerprint powder, tape and a 5x7 card. I picked out the best paw print and drew a chart of the lines, marks & ridges on it paw. Using ink and 5x7 cards, my mother and I then got paw prints from each suspect cat. I blew up each paw print on our copier and drew charts of the lines, marks & ridges for each cat. I now had something to compare.</p> <p>Results I used a magnifying glass to visually compare the lines, marks & ridges of the Crime Scene Paw Print to each of the Suspect Cat Paw Prints. It matched Suspect Cat-A's paw print exactly. To double check this result, I drew the lines, marks & ridges of the Crime Scene Paw Print onto a transparency. I laid the transparency on top of each Suspect Cat Paw Print and again Suspect Cat-A's paw print was an exact match.</p> <p>Conclusions/Discussion In conclusion, I proved that of the six cats in this experiment, it was Suspect Cat-A who ate the salmon. This shows that cats do have unique paw prints. In future research, I wonder what would happen if I used a larger cat population? Also, are the lines, marks & groves in cat paw prints are like the minutiae of human fingerprints? Can human minutiae be used for identifying cat paw prints?</p>	
Summary Statement Can a cat be positively identified from its paw prints.	
Help Received My mother helped me get inked paw prints from each cat. My father helped me research this topic. They both helped set up the scenario so I wouldn't know which cat left its paw prints at the crime scene.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Matthew D. Thompson	Project Number J1130
Project Title Cartilage Replacement: A Technique to Prevent Traumatic Arthritis	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Injury to cartilage may lead to a crippling disease called arthritis. It is one of the leading causes of disability in the U.S. Traumatic arthritis is a form of arthritis caused by injury or damage to cartilage. Cartilage is very difficult to rejuvenate and a cure has not yet been found. This experimental model was designed to test cartilage replacement to improve integration (healing) of the donor-recipient interface(common boundary).</p> <p>Methods/Materials Two models were tested: loose-fit(loose touching interface)and line-to-line fit (close touching interface)in order to see which would have the greatest integration and strongest interface after a period of healing. Hyaline cartilage was substituted in 2 bovine specimens. An osteochondral perimeter was made in the femoral condyle of the bovine knee at 2 locations to create a core. An osteochondral plug was taken from another portion of the bovine knee. It was inserted loosely and line-to-line into the region where the core was created. Once cartilage replacement was performed, the perimeter with the new donor plug inside was removed and placed in cell culture in an incubator until histological integration and mechanical tensile strength tests were performed.</p> <p>Results At 3 weeks, a line-to-line model resisted a mean of 2.31 grams of force. The loose-fit model was unable to resist any force. At 6 weeks, the line-to-line model resisted 2.05 grams of force. The loose fit model resisted 1.30 grams of force without breaking. The histological results for integration showed that the line-to-line model was 35% integrated and the loose fit model was 0% integrated at 3 weeks. At 6 weeks the line-to-line model was 99% integrated and the loose-fit model was 7% integrated. Data for mechanical tensile strength were analyzed using SPSS. Independent sample t-tests were used to compare the mean grams of mechanical force resistance between the 2 models at each measurement time(3 weeks and 6 weeks). A calculation was performed to obtain percent of histological integration.</p> <p>Conclusions/Discussion The line-to-line model resisted the greatest tensile forces and demonstrated the highest percent of integration. The line-to-line model was proven to be a more appropriate technique for cartilage replacement by demonstrating improved integration over a 6 week period. This may improve the long term survival of the graft and possibly prolong the time of progression to arthritis.</p>	
Summary Statement This procedure was designed to test which model of cartilage integration would promote the greatest healing and resist the greatest mechanical forces as a technique to replace damaged cartilage which could prolong progression of arthritis.	
Help Received Research was performed at the Shiley Center for Orthopaedic Research and Education at Scripps Clinic (SCORE) directed by Clifford W. Colwell Jr., MD under the supervision of my mentor, Chris Verioti DO, a research scientist. My mother and science teacher, Mr. Chris Kuhn.	



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Laura A. Vajcovec	Project Number J1131
Project Title Can Color Affect Your Blood Pressure?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My experiment was to find out if certain colors could bring about a change in human blood pressure.</p> <p>Methods/Materials I assembled a group of subjects, all different ages, and tested them individually using a blood pressure cuff and monitor. They were seated in a quiet room and then asked to stare at a colored board for 2 minutes, starting with a white board, considered a neutral starting point, a blue board, a green board, a red board and then ending with a yellow board. Their blood pressure was then taken and recorded after each color. A two-minute break was given between each color board to allow for a rest period. The results were compiled and then charted on graphs for each color used in the experiment.</p> <p>Results The blue and green boards show the average blood pressure dropping. The red and yellow boards show the average blood pressure rising. This showed me that the average blood pressure began to rise with the introduction of the red and yellow boards even after the subjects had been seated and resting for a longer time.</p> <p>Conclusions/Discussion My hypothesis was correct, that color can affect a person's blood pressure.</p> <p>This experiment was very exciting for me to show that color does have the ability to affect our blood pressure and health. Perhaps we should consider what colors we surround ourselves with, at home and at work, so we can live healthier and longer lives.</p>	
Summary Statement If certain colors can have the ability to raise or decrease blood pressure in humans.	
Help Received Mother supervised the layout of the board. Teachers guidance with the correct writing of reports and graphs.	