



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Matthew G. Austin	Project Number J1001
Project Title Are Dogs Colorblind?	
Objectives/Goals Purpose: To determine if dogs are colorblind. Hypothesis: Dogs are able to see at least some shades of color.	
Abstract Methods/Materials 1. Take black and white pictures of an assortment of colored construction paper to determine which colors appear to have similar and dissimilar degrees of brightness and shade. 2. Cover two jars with different colored construction paper that share a similar shade when photographed with black and white film. Cover the third jar with another color whose photograph shade is distinctly different from the other two jars. 3. The dog will be trained to go to one of the similar shaded jars from the differently shaded jar. When the dog chooses the correct jar reward it with a treat. 4. Replace the different shaded jar with the similar shaded jar. The dog needs color vision to distinguish between the two jars, since with complete color blindness the two colors would appear to be the same shade. 5. Switch positions of the jars and test the dog 25 times each trial. If the dog is correct, reward him with a treat. Chart the number of correct and incorrect responses. Materials: Colored construction paper, Camera, 3 glass jars, 2 dogs any breed, sex, or age, dog treats	
Results Yellow and violet were chosen as similar colors in the black and white photos to test the dogs for color blindness. The dogs chose the correct yellow jar in 72% of the trials.	
Conclusions/Discussion In the first part of my experiment, I trained Max and Sam to recognize the yellow jar as a treat jar. The next step in my experiment tested if Max and Sam could pick the yellow jar from the red jar. In the first trials Sam chose the correct yellow jar 52% of the time while Max chose the correct yellow jar 84% of the trials. Sam was retested several days later and chose the yellow jar correctly 76% of the trials. The second half of my experiment tested if Max and Sam could distinguish between a yellow jar and a violet jar. Even though yellow and violet appear to be similar shades in black and white photos, the dogs were able to choose the correct yellow jar 72% of the trials. This data supports my hypothesis that dogs can see some shades of color.	
Summary Statement I wanted to determine if dogs are in fact completely colorblind, as many people including many veterinarians believe.	
Help Received Mother helped take pictures and record data. Dad kept one dog occupied while the other dog was being tested. My teacher, Ms. Kavern, taught me how to write the report and keep a journal.	



CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

Name(s) Katharine A. Baker	Project Number J1002
Project Title Taste Perception	
Abstract Objectives/Goals The objective of this project was to find out how different tastes (bitter, salty, sweet, minty) affect the taste that follows it. I predicted the manipulated variables (orange juice, potato chips, chocolate and toothpaste) would affect how much the participants liked the responding variable (the taste of my homemade peanut butter after tasting the above items). Methods/Materials The materials used: Homemade Peanut Butter, Tropicana Orange Juice, Lays Potato Chips, Hersheys Chocolate bars, Crest Mint Toothpaste, Arrowhead Bottled Waters, 2 oz. soufflé cups, miniature plastic spoons, 31 Questionnaires, blender, pens. These methods were followed: 1. Participants were asked if they have any food allergies 2. The items were set up in six soufflé cups, 3. Participants were told to rate how much they liked the peanut butter after tasting bitter, salty, sweet, and minty items on a Hedonic scale of 1 to 5. 4. They completed questions as they tasted items; 5. Everyone was thanked for participating. Results After 31 participants completed experiment, I inputted the data in Microsoft Excel. The following scores are the average of how much they liked the peanut butter after tasting each item: Peanut Butter: 4.2580645; Tropicana Orange Juice: 4.1290322; Lay's Potato Chips: 3.6774193; Hersheys Chocolate: 4.6129032; Crest Mint Toothpaste: 2.5806451. A Taste Perception Bar Graph shows these results. I checked the difference in tasting preferences between the 12 males and 18 female testers. A double bar graph compares their taste perception differences. The surveys are found in the back of my science notebook. Conclusions/Discussion I predicted the manipulated variables would affect how much the testers liked my homemade peanut butter. My prediction was the testers would prefer eating the sweet item before the homemade peanut butter. My hypothesis was correct! I also stated the participants would like the salty item before the peanut butter second best and the bitter item, third best. These predictions were incorrect. After conducting my project on how different tastes (bitter, salty, sweet, minty) affect the taste that follows it, I learned no two people are alike in their food preferences and some combinations are liked more than others. Finally, to answer my investigative question, different tastes do affect the taste that follows it.	
Summary Statement My project examines how different tastes (bitter, salty, sweet and minty) affect the taste that follows it.	
Help Received My mom drove me to grocery store and to participant homes. My dad showed me how to get started on Microsoft Excel.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Naomi Baxter-Rubach; Angie Young	Project Number J1003
Project Title The Power of Meditation: Will Meditation Reduce Your Stress Level?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of our project was to find out if meditation reduces stress.</p> <p>Methods/Materials We produced a guided meditation tape. We had 18 people listen to it and tested their stress indicators pre- and post- meditation. The indicators were blood pressure, heart rate and skin temperature. The materials included, a tape recorder, our meditation tape, bio- feedback stress dots, home use blood pressure cuff and heart rate monitor, data collection form, mind, body and spirit.</p> <p>Results Our results demonstrated that in fourteen out of eighteen subjects, two out of the three stress indicators showed a drop in stress level. This data supports our hypothesis that guided meditation is effective in reducing stress level.</p> <p>Conclusions/Discussion Through our project data, we found that meditation does in fact reduce stress levels. Our results show that meditation can be a very effective way to lower stress. This is good, because stress can be dangerous. Not only does stress affect you mentally but also physically. It can cause heart disease, ulcers, loss of memory, strokes, failure of immune system, and one type of obesity.</p>	
Summary Statement Our project explores the effect of meditation on stress.	
Help Received Mothers provided guidance and supervision. Adult friends helped explain blood pressure measurement and provided resource materials.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Heather G. Beeson	Project Number J1004
Project Title The Younger The Better	
Abstract Objectives/Goals The objective of this experiment is to determine at what age cats will recover from anesthetics fastest when spayed/neutered. I hypothesize that cats will recover quicker from anesthetics when spayed/neutered younger. Methods/Materials The researcher tested sixty cats, twenty cats in three different age groups. The younger group was two to four months old. The middle group was four to eight months old. The older group was eight months and older. The researcher timed how long it took for the cats to recover in each of the groups. In the first stage of recovery the cats are unconscious. The second stage is a hallucinatory stage. It is identified by vocalization, twitching, and throwing of the body. In the third stage of recovery the cats have limited motor skills. The last stage of recovery the cats are awake and moving freely. The same anesthetics were used on all the cats. Results This experiment shows that the recovery time is shorter when cats are spayed/neutered at two to four months old. Conclusions/Discussion The hypothesis was correct. Some of the cats took a little longer than expected, but over all the data supported the objective. The cats that were two to four months old recovered the fastest. The middle group took approximately thirty to sixty minutes longer than the younger group. The cats more than eight months old took the longest time to recover from the anesthetics.	
Summary Statement This project compared the anesthetic recovery of cats in different age groups that were spayed/neutered.	
Help Received The Escondido Humane Society medical staff and my parents helped me with this experiment.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Rachel Berner; Athena Teschendorf; Miranda Tubbs	Project Number J1005
Project Title Bet'cha Can't Taste the Difference	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Find out which brands of cereal taste best to children and whether those brands are the most nutritious.</p> <p>Methods/Materials Materials: Notebook, pencil, 6 different types of cereal, bowls, spoons, milk, 15 participants (ages 5-13), Nutritional facts, blindfold. Procedure: Each participant will try six brands of cereal twice - once with their eyes open, and once with their eyes closed. Participants will rate each cereal on a scale of 1-10. Scores will be recorded and evaluated.</p> <p>Results Kelloggs was favored with eyes open, but Malt-O-Meal was favored with eyes closed.</p> <p>Conclusions/Discussion Malt-O-Meal was favored by a small margin. An accidental discovery was that people liked cereal better with their eyes closed than with their eyes open.</p>	
Summary Statement Whether nutritious cereals are preferred over less nutritious cereals by children (ages 5 -13) in blind taste tests.	
Help Received Parents helped with setting up spreadsheets.	



CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

Name(s) Samuel A. Blaustein	Project Number J1006
Project Title Does Exercise Affect Weight?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My science project, Does Exercise Effect Weight? ,was intended to prove the hypothesis that exercise will cause living beings to lose weight. Given that all conditions of living, except for the presence of an exercise wheel, were controlled and constant for eight mice, the mice that had an exercise wheel could have been expected to lose weight while the mice without a wheel could have been expected to gain weight.</p> <p>Methods/Materials The experiment was conducted over a 30 day time period. For my experiment, I used eight, four month-old, female feeder mice that were assigned a number (# 1-# 8). Each mouse was housed in a clear, 17 liter container (41.1 x 28.1 x 25.1 cm) with a metal mesh cover made of hardware cloth. The containers were filled to a height of 5 centimeters with Carefresh small animal bedding that is made from dye-free, chemical-free, reclaimed paper pulp. All mice had a ceramic food bowl with a 30 gram dry capacity and a ¼ inch bracket watering tube to provide them with bottled spring water. Their diet was limited to Fiesta mouse and rat food (consisting of seeds and nuts) and I monitored their intake by weighing uneaten food and new food added on a daily basis. The control group, mouse #1- mouse #4, were given metal mouse exercise wheels that were 14 centimeters in diameter. The experimental group, mouse #4 # mouse #8, were not provided with a wheel. Daily, I weighed each mouse individually, using a glass container and a Chefmate battery operated, digital kitchen scale. I made daily notations in a log to record observations about their habits and activity levels.</p> <p>Results Contrary to my expectations expressed in my hypothesis, three of my control group mice gained more weight than my experimental group.</p> <p>Conclusions/Discussion I did not expect the mice with wheels to gain more weight than the mice without wheels. After further research, I have concluded that my control group mice gained more weight because they built up muscle from running on their wheels. As I found out, muscle weighs more than fat. A greater increase in muscle in the control group could account for a greater overall weight gain than the experimental group. Though my experiment did not go as planned, I learned new information about living organisms and it gave me an alternative question to explore#How does exercise effect body composition?</p>	
Summary Statement Using common feeder mice, I explored the effect of exercise, or the lack thereof, on weight gain over a 30 day period.	
Help Received Mother checked written material for spelling and grammatical errors.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Brynn Bradley; Erin Shields	Project Number J1007
Project Title Muscle Hustle: Will There Be an Increase in a Soccer Player's Calf Size and Kicking Distance after 8 Weeks of Training?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of the project was to examine whether a recreational sport such as soccer could improve a player's physical fitness by increasing muscle strength and size and kicking distance.</p> <p>Methods/Materials Our voluntary subjects were our soccer team, an AYSO Girls U12 team. Eleven of the fourteen players participated in a three-phase eight-week evaluation. Three of our friends who do not play soccer were used as control subjects. Calf measurement was determined by wrapping a tape measure around the largest part of the calf. The measurement was taken three times and the mean was reported for the initial phase, mid-season (after four weeks) and at the final phase (after eight weeks). Each player drop-kicked a ball three times and the mean distance was recorded for each phase of the experiment.</p> <p>Results The results proved the hypothesis that there would be an increase in a soccer player's calf circumference and kicking distance. The greatest increase in calf size was 1.25 inches; the average increase was 0.71 inch. Significant changes occurred in kicking distance at the end of phase 3 for ten of the fourteen players. Two players showed the greatest improvement, a 19-foot gain in kicking distance from phase 1 to phase 3. The average kicking distance was an increase of 9.5 feet. As expected, the three control subjects (non-soccer-playing eleven-year-old girls) did not have a significant change in calf size or kicking distance.</p> <p>Conclusions/Discussion Soccer is a running sport that uses many muscle groups, especially the large muscles of the leg (the gastrocnemius or commonly called the calf muscle). Over an eight-week soccer season, this experiment shows that positive changes in muscle size and strength can occur. Increasing muscle strength and size are important factors in maintaining physical fitness and endurance.</p>	
Summary Statement If an eleven-year-old girl participates in an eight-week soccer season, then she will have an increase in calf size and kicking distance.	
Help Received Mothers helped take measurements of players and helped make display board; fathers helped with computer graphs and typing.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Norma Briseno	Project Number J1008
Project Title Does Participating in Yoga Yield the Same Cardio-Respiratory Fitness Benefits as Running?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my project was to find out whether practicing yoga produces better cardio-respiratory fitness benefits than running. I believed that yoga participants would receive better cardio-respiratory fitness benefits than runners because yoga is said to expand the lungs and have positive effects on the body.</p> <p>Methods/Materials I tested volunteers who either practice yoga, train for the LA marathon, or do no physical activity for exercise. I used a spirometer to test 29 participants, 3 times each over a period of 5 weeks. I then calculated the experimental vital capacity values for each participant and compared it to their expected vital capacity. I calculated expected vital capacity by using a formula requiring gender, age, and height. I also used a blood pressure cuff to measure resting heart rates.</p> <p>Results My results showed that although none of the three groups reached their expected vital capacity values, those students who trained for the LA marathon had experimental values that were, on average, closer to their expected values. My results also showed that running also provided the participants with overall, lower resting heart rates. This did not confirm my hypothesis because I thought yoga would produce better cardio-respiratory fitness benefits than running.</p> <p>Conclusions/Discussion I have come to the conclusion that practicing yoga does not yield better cardio-respiratory fitness benefits than running. Based on my results, practicing classic exercises like running, walking, and jogging provides people with better overall cardio-respiratory fitness. Although yoga does relieve certain symptoms of stress, it is also being promoted in popular media as having better cardio-respiratory benefits than any other physical activity, which based on my results is not true.</p>	
Summary Statement My project attempts to determine whether or not yoga provides people with equal or better cardio-respiratory fitness benefits as running.	
Help Received Mr. Simonsen guided me through the project and helped me learn how to use Data Studio; Ms. Powers helped me get yoga volunteers from her class; Ms. Barajas helped me get volunteers who train for the LA marathon.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Catherine A. Brutyan	Project Number J1009
Project Title Comparison of BMI and Body Fat Content of Montclair Prep students to the National Average	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this study is to compare the BMI with assistance of % body fat of middle school students of Montclair Prep to the national average.</p> <p>Methods/Materials To get results 50 samples were used. I wrote down each sample's age, grade, gender, height, weight, nationality, % body fat, and calculated their BMI. To compare I plotted the information on BMI for age charts.</p> <p>Results My study showed that 23% of the boys and 15% of the girls were at risk of obesity, and the rest had a normal BMI. I checked the at risk samples for their % body fat, which showed that they were actually at a low body fat content.</p> <p>Conclusions/Discussion The national average is the average of the whole country and the samples I used were only from one location in Southern California. I think the way people in California live has affected my results. Many more people are worried with their appearance also we have different food and better weather so people are outside and doing more strengthening activities more than other states. One of my errors was that I didn't check the calibration of the scale. An improvement is that I could have used more samples.</p>	
Summary Statement Comparing the BMI and percent body fat of Montclair prep students to the national average.	
Help Received	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Kimberly Cain; Lauren Leach	Project Number J1010
Project Title Carbs or Protein: Who Has More Power?	
Abstract Objectives/Goals Our object was to learn if a hamster could produce more energy on a complex carbohydrate diet or a protein diet. Methods/Materials We mounted a laser cut disk to a plastic exercise hamster wheel. We then attached a digital electrical meter to the exercise wheel. We purchased 2 hamsters of the same size and from the same litter. We fed the hamster a complex carbohydrate diet for four days. We fed the hamsters a vegetarian diet for one day to cleanse their system and then fed them a protein diet for another four days. We repeated this process for eight weeks. We fed them every night at 8 PM and took a reading of the energy they produced every night at 9 PM. Results We found that the hamsters consistently produced more energy on a complex carbohydrate diet than with a protein diet. Conclusions/Discussion Our conclusion is that a complex carbohydrate diet generates more energy and endurance for a hamster. Through our research and carb/protein experiment we believe this proves true for an athlete as well.	
Summary Statement This project is about what type of diet , complex carbohydrate or protein, produces more energy.	
Help Received Father helped assemble the exercise wheel. Mother helped type the report.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Emma P. Clink	Project Number J1011
Project Title Inherited Fingerprint Patterns	
Abstract Objectives/Goals Determine if related family members have similar fingerprint patterns. Test related family members to see if fingerprint types are genetically inherited. I posed the question, "Do related family members have similar types of fingerprints?" Methods/Materials Study and learn to identify types of fingerprint patterns called dermatoglyphics. Acquired a Touch Signature ink pad from a local bank. Researched how to fingerprint and discovered that black ink and semi-glossy paper provides the best prints. I purchased a quality magnifying glass and practiced identifying the nine most common print patterns. I then chose four large families, including parents and children for thumbprints. I also set up a control group of ten random, unrelated people for fingerprinting. Results The complete spreadsheet of all people fingerprinted is compared and posted on my board. Offspring do have the same type of fingerprint patterns as one or both of their parents. Siblings are much more likely to have shared patterns than unrelated people. Conclusions/Discussion I concluded that members of the same family have similar types of fingerprints. My hypothesis was correct. The unrelated group varied in type more often than related families. I hypothesized that related family members have similar types of fingerprints. Like other genetic traits such as hair, eye and skin color, fingerprint types get passed down from parent to offspring.	
Summary Statement My project examines fingerprint patterns and proves that they are genetically inherited.	
Help Received Miss Connelly, my teacher, helped with filing of human specimen's form and guiding me with a timetable. I visited CSUN library to find articles about dermatoglyphics patterns and a librarian, Gina Hsuing, helped me find articles.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Nik Alan Crain	Project Number J1012
Project Title Is Our Sense of Smell Sensible?	
Abstract Objectives/Goals Our perceptions of our world are based on information received from our five senses. I often wonder about the accuracy of our sensory ability. Considering the vast amount of input our minds receive, it seems reasonable that our senses can be fooled. I believe our sense of smell would be the least reliable and prove to be influenced by our expectations. More importantly, I plan to discover if our sense of smell is really sensible. Methods/Materials To obtain accurate results, I tested a group of 100 people and used the following three scents: wintergreen lifesavers, cinnamon sticks, and granola. I constructed nine boxes, applying a negative, neutral, and positive label on each box. Students were told to read each label, smell each scent, and rate it on a scale from one to five. Without students knowing the reason for secrecy of the scents, the ratings are in fact more truthful and precise. Results Based on my research, I found that expectations exert a strong influence on our sense of smell. Positive and negative labels assigned to the same scent clearly affected the preference of the scent. My hypothesis proved to be accurate, and the positive labels received nearly double the scores than those of the negative labels. Conclusions/Discussion By conducting this experiment, I was able to conclude that our sense of smell is not reliable and gives credence to the belief that a rose would not smell as sweet if it were given another name.	
Summary Statement The purpose of my experiment was to discover if expectations influenced the perception of smell.	
Help Received College Student helped gather materials for project	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Emily Donnelly	Project Number J1013
Project Title It Brings Tears to My Eyes	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective is to determine which variable suppresses the pain and irritation in the eyes for the longest time.</p> <p>Methods/Materials 30 onions; 30 subjects; knives; cutting boards; bread, gum, and ice water.</p> <p>Results Holding bread in the mouth suppressed the irritation in the eyes for the longest time. Chewing gum followed closely behind in the suppressing of the irritation. Soaking the onion in ice water helped the least in suppressing the irritation in the eyes.</p> <p>Conclusions/Discussion For this experiment, bread proved to help the best with the irritation in the eyes. The bread did not completely eliminate the irritation. However, the bread absorbed the onion gas before it reached the eyes, making the pain and irritation less severe. My hypothesis was that chewing gum would be best. This proved to be incorrect.</p>	
Summary Statement I conducted an experimental comparison of commonly used tips for suppressing eye irritation while cutting onions.	
Help Received Mom bought supplies; Dad helped with graphs; Teacher provided space and knowledge; My friends and family who supported me	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Lugene El-Harazi	Project Number J1014
Project Title Can You See Me Now? Good	
Abstract Objectives/Goals The objective of my project was to find out if it is possible to train people between the ages of 40-65, to be able to read clearly without the help of reading glasses. Methods/Materials 40 persons between the ages of 40-65 were included in the study. 20 persons were included in the study group, and the other 20 were controls. Each person was given a reading card, and asked to hold it at the nearest distance at which they could read the 20/40 line clearly. The distance from that point to the middle of the nose was measured, and recorded. Persons in the study group were asked to perform the following reading exercise: 1) Hold the reading card at the point at which they could read the 20/40 line clearly. 2) Have the individual move the reading card forwards until the 20/40 line starts to blur. 3) Have the individual move the card backwards slowly, until vision starts to clear, and ask him/her to read the 20/40 line. 4) Tell the individual to repeat those steps 3 times a day, for 5 minutes each, for 10 days. After 10 days, the distance at which the individual could read the 20/40 line clearly was measured and recorded in both the study and the control group. Results In the study group, the reading distance improved in 95% of the study population. In the control group, none of the individuals showed any improvement in the reading distance. Conclusions/Discussion My experiment shows that it is probably possible, with more time and consistency, for people over the age of 40 to be able to read clearly without reading glasses by doing reading exercises. However, a larger study group, and study is needed to prove or disprove my theory.	
Summary Statement Problems in reading after the age of 40 and the possibility of correcting this problem.	
Help Received None	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Alexandra L. Giacoletti	Project Number J1015
Project Title The Sense of Touch	
Objectives/Goals Does a person's age affect his/her sensitivity to touch? If a person is younger, I believe he/she will be more sensitive to touch.	
Abstract Methods/Materials 1. Use a ruler & compass to draw 3 circles on cardboard, one inside the other. The circles should be 1.5 cm apart. 2. Cut out the 3 "testers" and color the 3 zones. 3. Stick some straight pins in one of the 3 zones (outer, middle, or central) on each of the testers. 4. Blindfold a person with a cloth. 5. Press the pin heads of the tester with the pins in the central zone, gently against the forearm. How many pins can the person feel? Record the answer. Try again with the pins stuck in the middle and outer zones. Also test the palm and fingers with each of the 3 testers. 6. Repeat the test on people of all different ages. 7. Record everyone's answers using a chart showing the 3 zones and the 3 parts of the arm that were tested (forearm, palm, & fingers). 8. Using the information from the chart, find out which of the 3 age groups had the highest percentage of correct answers.	
Results My results showed that participants ranging in age from 6-15 guessed the correct number of pins 60% of the time. Participants ranging in age from 31-44 years old were accurate 61% of the time. The last group which ranged in age from 52-72 years old were only right 38% of the time.	
Conclusions/Discussion I found that my hypothesis was almost totally correct. The younger groups were able to correctly sense the number of pin heads better than the oldest group. The part that I did not expect was that the middle group (31-44 years old) was actually a little better at sensing the number of pin heads. They "out-sensed" the younger group by 1%. I was also able to conclude from my data which part of the arm was most sensitive and which grouping of pins was easier to detect. The fingers were the most sensitive part of the arm. The outer zone, where the pins were furthest apart, was the easiest to feel. My findings can help others learn more about one of our most important senses, the sense of touch.	
Summary Statement A person's age affects his/her sensitivity to touch.	
Help Received Mark Giacoletti helped type my report, and both Mark and Heidi Giacoletti helped me compile my statistics.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Horacio Herrera	Project Number J1016
Project Title The Sense of Taste	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I wanted to do this experiment; because it is my interest to see if there is a difference between genders and age groups for detecting flavors. I wanted also to find out what the most detectable flavor was for humans and which was the hardest to detect among salt, sour, sweet, bitter, and sweet and sour</p> <p>Methods/Materials Water, parsley, ginger, star fruit (Carambola), apple, lemon, blender, cups, scarf, empty water bottles, and salt. I started my process when I created taste samples for my experiment. When I was done I would take my samples outside so people could test them. I would cover my samples and ask people if they would like to take a test to sense different flavors. If they accepted I would sit them down and ask them complete a questioner with name, age, sex, and date. I would then cover their eyes and nose with a scarf, (the scarf had been perfumed to block smells). I would keep record of how many they got right, and then create a table of data.</p> <p>Results After applying a test to 200 people, where 100 were males and 100 were females. The difference of the genders with the variable of salt; both sexes had the same percent, for the variable sour; it is 1.0 % greater in males, for the variable sweet; the difference is 0.40 % greater in males, for the variable bitter; the difference is 2.0 % greater in males, and last the result with the variable sweet and sour; it is 1.20 % greater in females. In my experiment I found out that the best age range to detect flavors in the sample of males is from 05-15 years old; where as in the sample of females the best age group to detect flavor is 36-45 years old.</p> <p>Conclusions/Discussion Finally I can conclude that my hypothesis was incorrect because the male gender was better in detecting flavors than females, and the sample group of 16-25 years old is not the most reliable to detect flavors, because there is a different age group for each gender. After I did this experiment I can see than both sexes are able to distinguish all the flavors. The difference in their results is minimal. I can conclude that the most detectable flavor for humans is different for males and females but the hardest to detect was the combination of sweet and sour. I can conclude that both sexes have the same capacity to detect both flavors.</p>	
Summary Statement My project id about: if their is a difference in age group and gender at detecting a flavor, without using you smelling ability and eye sight.	
Help Received Dr. Humberto Luna helped me as a resource, Mother Tania Herrera helped me by taking me places to test people, Father Horacio Herrera helped me in putting my poster together.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Joanna S. Jacobs	Project Number J1017
Project Title Music to Your Ears	
Abstract Objectives/Goals The goal of my experiment was to determine the average volume at which preadolescent and adolescent students listen to digital music using earbuds. My hypothesis was that students listen to "mp3" players at a volume that may eventually cause hearing loss. According to one researcher, "Most people are listening to their iPods on public transport to drown out the noise of traffic, but to do this they turn them up to quite dangerous levels." This experiment was conducted to see if students listen to mp3 players at a volume that might damage their hearing. Methods/Materials A total of 141 subjects in kindergarten and fourth through eighth grades were given an mp3 player and allowed to place the volume at the level they desired, as they listened to the song "We are the Champions." The volume of the mp3 player was initially set at 0, and each subject changed the volume to a comfortable level. I recorded the decibel levels they listened to throughout the song and calculated the average decibel level for each subject. Results According to the results, the kindergarteners listened at an average level of 77.7 decibels. The fourth graders averaged 79 decibels. The fifth graders averaged 80.2 decibels. The sixth graders averaged 81.2 decibels. The seventh graders averaged 80.6 decibels, and the eighth graders averaged 80.5 decibels. Males in all grades averaged 81.1 decibels while females averaged 79.1. Overall, the subjects listened at an average of 80.1 decibels which is approximately 10 times greater than the normal speaking level of 65-70 decibels. Conclusions/Discussion My hypothesis was supported by my results which showed that subjects listened to music at a level that could damage their hearing over time. Furthermore, the male subjects listened to music at a slightly higher decibel level than the females, which may be a significant difference since decibel levels are logarithmic.	
Summary Statement This experiment was conducted to determine if students listen to digital music at a volume that may eventually cause hearing loss.	
Help Received Father for general help; Mother helped edit and proofread; Audiologist provided the decibel meter; Science teacher helped me with the testing process; Danielle Frasier was the scribe during the test	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Rona Rae Jergenson	Project Number J1018
Project Title Quick, Grab It!	
Abstract Objectives/Goals The objective is to see who has the fastest reflexes Boys or Girls Methods/Materials Gridbeam building material, a magnet, plexiglas,nuts and bolts, and a dowel. I'm trying to eliminate humman error. Results The boys have the fastest reflexes and their average was 6.7 and the Girls reflexes were 8.10 Conclusions/Discussion My hypothesis was correct, because boy's concentrated and the girl's just started to laugh	
Summary Statement My project tests who has the fastest reaction time, Boys or Girls	
Help Received Dad helped build reflexe tester	



CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

Name(s) Katherine A. Kavetsky	Project Number J1019
Project Title Chow Time	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Chow Time is an experiment about dog's food preferences. I have always wondered why some types of dog food are more popular than the rest. Is it because the popular dog foods are better tasting, is it because they are healthier for dogs, or is it just because they are the cheapest?</p> <p>The goal of this experiment is to find out if dogs prefer doggy junk food over healthy dog food.</p> <p>Hypothesis: If dogs prefer one type of dry dog food over another, then at least 60% of dogs will choose unhealthy dog food over healthy dog food.</p> <p>Methods/Materials Ten adult dogs were tested to see which of six dry dog food brands they preferred. The brands that were tested (Beneful, Natural Balance, Nutro, Pedigree, Royal Canin, and Science Diet) are top sellers and represent a nutritional range from high to low end. Six identical bowls with ten kibbles of each dog food were set up ten feet away from the dog's release point. The dog was then released and monitored while eating. This procedure was repeated ten times for each dog, shuffling the bowls in a preset order after each sampling.</p> <p>Results I found that although in some cases the canine subjects chose higher end dog foods, most of the dogs chose the lower end dog foods over the higher. The more popular (top selling) dog food, Beneful just happens to be most preferred by dogs in my study. In addition, it's the cheapest, but the least healthy of the six brands tested.</p> <p>Conclusions/Discussion My hypothesis was correct, 60% of the dogs tested preferred Beneful, Pedigree, and Science Diet, which are all junk, and 40% of them preferred Natural Balance, Royal Canin, and Nutro, the healthier foods. By doing this experiment, I have learned that while some brands of dog food say that dogs prefer their dog food over others, that they provide the most nutrition possible, or that they are the best for your dog, their claims are not always accurate. It is important to read nutrition labels, compare ingredients, and make informed decisions for your dog. Although you may be tempted to buy an economy dog food, remember it is mainly undigestible junk food; it will not give your dog as much nutritional value as a higher end dog food and that you will have to feed them up to twice as much to make up for that loss.</p>	
Summary Statement Chow Time is an experiment about dog's food preferences and attempts to answer the question "Do dogs prefer doggy junk food over healthy dog food?"	
Help Received Friends and neighbors helped by letting me use their dogs as test subjects, Petco donated some of the dog food used, my mother drove me to pet stores and homes of the test subjects, and my science teacher, Mr. Dilworth helped me overcome problems through the research and experimentation phases of my project.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Harmony Latham	Project Number J1020
Project Title Got Sand?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The large colon is where a majority of sand is accumulated; the weight of the sand weighs down the horse and causes the colon to impact and not allow feces to pass causing excruciating pain and death. I compared 3 horses against a control horse for 7 days to determine the amount of sand they had in their colon. This testing method is used by veterinarians for quick ER assessments. My goals were to determine if the method is reliable by checking it against a control horse that was just seen by a vet, and determine if any of the other 3 horses had dangerous amounts of sand in the colon. I want to educate horse owners how to monitor their horses for sand and keep them healthy.</p> <p>Methods/Materials Collect 3 fecal apples, place into bag with water, mix into slurry, hang sideways for 1 hour, use water stream to flush debris, add more water, settle for 15 mins, pinch sand in corner, gently pour out water, measure sand, record results. horses, baggies, gloves, Marker, Water, Clips, Magnifier</p> <p>Results 3 of 4 horse stools tested acceptable. The 4th horse had very high amount of sand in the colon. Ranger had from ½ tsp to 1 ¼ tsp of sand per 3 fecal apples. The allowable amount is ¼ tsp per 3 fecal apples. Immediate care needed to be taken of this animal so I took my project 1 step further and continued to measure the amount of sand in his stool while feeding him a special diet designed to eliminate sand in the colon. The diet consisted of feeding 3lbs bran, 2 cups psyllium, 2 cups vegetable oil and 2 TBS salt added to his feed twice daily for 4 days.</p> <p>While on the sand reducing diet, I continued to monitor Ranger's progress and record his sand output. He was excreting large amounts of sand, which meant that my special diet was working. Within 4 days, Ranger's sand level seemed to level off, I monitored it for another 4 days and it was at an acceptable level of ½ tsp to ¼ tsp of sand per 3 fecal apples.</p> <p>Conclusions/Discussion My hypothesis was incorrect; all horses had sand. Oldest horse had most sand, was at dangerously high colic risk. I learned all horses have sand in their intestine. I also learned if you don't treat sand colic quickly they are liable to need surgery or die. The best thing about my experiment is knowing that by testing horses and treating them I might have saved a life. My project helped humanity by making horses' lives better. Just knowing I could make an animal's life better is a great feeling!</p>	
Summary Statement Test horse stool samples to determine if there are dangerous amounts of sand in their large intestines that could cause them to colic and die, and apply and test remedy.	
Help Received My mom helped me with some typing and with some gluing on my project board.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Hannah R. Levine	Project Number J1021
Project Title Does Rock and Roll Really Move Your Soul? The Effect of Music on Heart Rate	
Objectives/Goals The objective of this project is to determine if and how much the heart rate of twelve to thirteen year old females changes when listening to four different types of music; Hard Rock, Country, Classical and Meditative music.	
Abstract Methods/Materials Five minutes of music that represented each type of music to be tested were selected. A heart rate monitor was placed on twelve females between the ages of 12 and 13 years. As each participant listened to the different types of music by headphone, their heart rate was recorded at one minute intervals. For each type of music the change in heart rate after five minutes, the maximum increase/decrease in heart during the five minutes, and the average change in heart rate were calculated and then averaged for all participants. The averages by music type were then compared.	
Results Although each participant had varying degrees of response to each type of music, the average heart rate of the participants after listening to five minutes of each type of music changed as follows: Hard Rock increased the heart rate by 9.88%, while Country music increased the heart rate by 5.79%. Both Classical and Meditative music decreased the heart rate. The decrease with Classical music was .6% and the decrease in the heart rate with Meditative music was 2.23%. There were the same levels of increase or decrease in both the average heart rate over five minutes and the maximum change in heart rate during the five minutes.	
Conclusions/Discussion These days it is not unusual to see teenagers with headphones plugging their ears, nodding along to the music. Music is a constant in their lives, but how is this music affecting them? This experiment demonstrated that the different types of music affects heart rate differently. Music with faster rhythm increased the heart rate and music with slower rhythm decreased the heart rate. The data suggests that certain types of music may be better suited to different activities. Perhaps try Hard Rock to get your teenager moving in the morning or some Country music while studying, as it would keep them alert but not over-stimulated.	
Summary Statement This project determines the effect of four different types of music; Hard Rock, Country, Classical and Meditative, on the heart rates of 12 to 13 year old females.	
Help Received Mother helped with typing and finding research material.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Christian V. Lucero	Project Number J1022
Project Title Blinded by the Light?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals One day I was outside in the pool and I came inside to get a snack out of the pantry. It took some time for my eyes to adjust. This made me curious as to the why the eye takes so long to adjust in the darkness when it adjusts to light in an instant. My experiment tested the adjustment time of the human eye when coming from sunlight to a dark room compared to the adjustment time when coming from artificial lighting to a dark room. I believed that when coming from outside and being in the sun the human eye would take longer to adjust to the darkness compared to coming from dimmer artificial lighting. I also hypothesized that age would be a factor in the adjustment time. I speculated that it would take older subjects longer for their eyes to adjust to the darkness.</p> <p>Methods/Materials I tested two different age groups of participants: fifteen years old and younger and forty years old and older. I used a light meter to measure the brightness of daylight (outdoor light), artificial light (indoor light), and the dark room. I recorded the time it took subjects to identify a letter in the dark. I used four letters; G, W, R, and B.</p> <p>Results The results of my testing were that it took three times longer for the eye to adjust when coming from the sunlight to a dark room than when coming in from artificial lighting. The time to adjust for subjects 40 years and older was on average 36% longer than for the younger subjects.</p> <p>Conclusions/Discussion According to my tests, it took much longer to adapt to darkness when transitioning from outside light (a sunlit environment) than when coming in from artificial lighting (indoor lighting). Older subjects took significantly longer to adjust to darkness than younger subjects, but the impact of bright light (sunlight) affected adaptation time to darkness far more than age.</p>	
Summary Statement My project compared the time subjects took to adapt to darkness for older versus younger subjects when transitioning from sunlight versus transitioning from indoor lighting.	
Help Received My parents and teacher who helped with all of their wonderful help, support, and input; The test subjects for allowing me to test them	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Laura J. McKinstry	Project Number J1023
Project Title Social Cognition in Mice	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Mice have been a popular study topic ever since scientists began to try to comprehend the human brain. In this experiment, I have begun to answer the question, #Can mice learn by observing one another?#</p> <p>Methods/Materials I set up an arena with a paneled wall and had one panel become a door in which a mouse could go through. Then I had 10 mice observe a mouse go through that door and I tested each mouse that had observed the one mouse to see if they learned by observing. I recorded the time it took each mouse to poke its nose at the hidden door. These times were compared to a control group of 10 mice that watched a teacher for the same amount of time. In the control group the teacher mouse never went through the door.</p> <p>Results My results were that the control group#s time average was 346.8 seconds and the manipulated group#s time was only 284.2 seconds. The four lowest times among the twenty mice belonged to the manipulated group.</p> <p>Conclusions/Discussion Even though the average times indicate that the mice learn by observation, the data range for the manipulated group was large and therefore the data is less certain. However, the four lowest times among the twenty mice belonged to the manipulated group. There is less than a 5% chance that the four lowest times would be assigned to one group if the times were chosen randomly from the same range. According to the data, mice may be able to learn from each other by just watching one another.</p> <p>My results are important because they support the fact that even one of the simpler rodents can learn from each other. Scientists can now use this method to train mice in large numbers.</p>	
Summary Statement This project is about finding out if social cognition exists in mice by asking the following question: are mice able to learn from one another by observation?	
Help Received Dad helped with statistical test, and guidance in building the door apparatus. Mom provided moral support, and helped with poster construction. Doug Nitz of the Neurosciences Institute provided plexiglass container.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Rowlynda J. Moretti	Project Number J1024
Project Title Color through the Eyes of a Goat: Do Goats See and Prefer Color?	
Objectives/Goals I run my own herd of goats on my families ranch in the small mountain community of Santa Ysabel, in the San Diego County. I basically use my goats for blackberry control in our creeks, and I also sell my goats to many 4H and FFA Clubs in San Diego County for show and fair animals. I was intrested in investigating the sight of goats. This science fair project is basically an experiment to find out if goats see and prefer color and what colors do they prefer? I really wanted to understand more about my goats. As goats breed quite, often, i wondered if their changing hormones would effect their preference due to pregnancy.	
Abstract Methods/Materials I bought red, blue green and black buckets. I used goat grain, which is somewhat of a treat for them, to test them. I let one goat out at a time about 50 feet away from the buckets. I then put a check by the color that it went to. You must be careful to keep each goat in it's category, pregnant or nonpregnant. Their must be the same amount of feed in each bucket each time. I used a corral with a catch pen inside of it so that you could release only one goat at a time. I used four different goats. The variable is the order of the buckets because you switch them every time.	
Results During the experiment, I found that nonpregnant goats went to blue and green the most. The nonpregnant goats went to both blue and green eight times (31%). The second colors they went to are red and black. The nonpregnant goats went to both red and black five times (19%). I found that pregnant goats went to green the most. They went to green ten times (38%). The next color can see is red. They went to red eight times (31%). Then they went to black six times (23%). The last color is blue, and they went to it two times (8%).	
Conclusions/Discussion In conclusion, the goat cas see color, they aren't color blind. My hypotheses for nonpregnant goats was partly correct. Instead of preferring black and green as my hypotheses states, they preferred green and blue, the same exact amount, 31%. Their second choice was black and red at the same exact amount 19%. My hypotheses was not correct for pregnant goats. Instead of preferring red and blue as my hypotheses stated, they preferred green the most at 38%. Their second choice was red at 31%. Their third choice was black at 23%. Their fourth choice was blue at 8%. Goats do see color and they do prefer color! I now understand my goat herd better.	
Summary Statement This science fair project is basically on the goats eye and the questions , are goats color blind, do they prefer color and if so what colors do they prefer?	
Help Received Dad & Grandpa helped move goats, Mom helped with writing procedures & pictures, Kathy Cauzza helped with advice, All my different teachers helped me with a lot of guidance, and thanks to my four goats.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Christine M. Pittman	Project Number J1025
Project Title How Can You Estimate an Animal's Weight?	
Abstract Objectives/Goals Using an animal's body measurements to determine its weight. Methods/Materials Materials: Tape measure, livestock scale, animals, calculator Methods: 1. Measure the heart girth from slightly behind the shoulder blade, down over the fore ribs and under the body to behind the elbow. 2. Measure the length of the animal's body from the shoulder to the pin-bone of the rump. 3. Take measurements obtained in steps one and two and apply the following formula to determine the animal's body weight: heart girth times heart girth times body length divided by 300 equals estimated weight of the animal. 4. Weigh the animal on a livestock scale. 5. Record results. Do steps 1-5 for each animal. Results I tested the formula on eighteen different animals and charted the results. I then computed the difference between the estimated weight and the scaled weight of each animal and averaged the differences into percentages. I found out that you can determine the weight of the healthy animal within 5 pounds of the animal's actual weight. Conclusions/Discussion I learned that I can estimate an animal's weight within 5 pound of its actual weight using the formula stated earlier. The formula appears to work on only healthy animals. I even tried to adjust this formula to see if it would work on humans but have not been successful yet.	
Summary Statement I will use body measurements of an animal to estimate its weight.	
Help Received Mom helped me organize and edit the data and took pictures of the animals. Dad sprayed my display board black. A friend in my 4-H group helped me by holding the animals while I measured them.	



CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

Name(s) Daniel C. Roholt	Project Number J1026
Project Title Muscles: Scrawny or Brawny?	
Objectives/Goals My objective is to determine the relationship between the bicep muscle size, forearm length, and the ability to develop force, by calculating the amount of torque created. My hypothesis states that the subject#s strength will be in proportion to the size of their muscle.	
Abstract	
Methods/Materials Step 1: Measure the subject#s forearm length in meters. Step 2: Measure the circumference of the subject#s bicep size (when contracted) in meters. Step 3: Measure the force a subject can develop by pulling upward on the handle of the measurement scale while stepping on the opposing end to create an anchor point. The subject will use a lever-like motion to produce force. Each subject will be tested three times. Step 4: Bicep circumference, forearm length, and force developed will be recorded in a log book. Torque will be calculated for each subject. The subjects measurements will be separated by gender and graphed for analysis. and calculations List of Materials: 1. Measurement tape in meters, 2. Force measuring device, 3. Data log, 4. 24 subjects. I designed my experiment by taking a fish scale (up to 25 kg) and attaching it to a rope with variable lengths (to allow subjects four various heights to establish a 90 degree angle between their upper arm [bicep] and forearm). I then attached two handles; one to the rope, and one to the end of the fish scale.	
Results The results show bicep size is independent of the torque developed. For example: 3 subjects had similar torque (2.92-2.98 NM); however, the bicep size ranged between .216-.280M. This suggests there is no direct relationship between bicep size and the torque developed. In addition, the majority of boys and girls fell into the same range of torque (from approximately 2.7-4.7 NM), regardless of gender or bicep size. There were three exceptions. These were boys who developed significantly more torque. Their bicep size was not a factor.	
Conclusions/Discussion My initial hypothesis was incorrect. Muscle size was not a factor. There may be other components involved. It would be interesting to conduct further research on muscle makeup and how slow or fast twitch muscles affect strength.	
Summary Statement My project is about testing the relationship between a subject's bicep muscle circumference, and the amount of torque they are able to develop.	
Help Received Father helped me create display model, and provided some research books. Mother helped me design and construct display board.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Chelsea A. Rosendahl	Project Number J1027
Project Title The Amazing Equus Eye	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to determine the peripheral vision of horses.</p> <p>Methods/Materials Using a true angle tool and straight edge, I set up a chalk configuration on flat ground where I had the horses stand while I tested them, waving a flag at different marked degrees. I had three other people assisting me to determine whether the horse could see the flag or not by closely examining eye movement and determining where the pupil was directed when the sunlight shown through it. Another way of determining if the horse could see the flag was by observing the whites of their eyes as their vision directed from front to back. I was standing at each marked degree waving the flag. The second person was making sure that the horse's head was straight and their feet were aligned correctly. The third person was photographing the experiment, and the fourth was recording data, while all were observing the horse's eyes. Four different horses were selected. Two were three years old, one was fifteen and one was seventeen. The two older horses are owned by my family and the other two belong to friends. All horses were tested twice in their normal environment to ensure accurate results.</p> <p>Results Three of the four horses tested demonstrated a range of peripheral vision from 0°- 157.5° on right and left sides during both tests. The fourth horse's peripheral vision (the seventeen year old) measured from 0°-157.5° on the right side and slightly less from 0°-135° on the left on both of the two tests.</p> <p>Conclusions/Discussion My conclusion is that horses have near 360° vision (from 0°-157.5° on both sides) except for directly behind them (180°). This proves why it isn't safe to walk up directly behind a horse. They might kick a person if they are startled because they are out of their range of vision.</p>	
Summary Statement My experiment was conducted to determine the range of equine vision.	
Help Received Mother and sister helped hold horses, father helped set up chalk configuration, Dr. B, DVM gave equine vision advise.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Brooke J. Rothschild-Mancinelli	Project Number J1028
Project Title Viability of Cheek Cells Due to Osmosis	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To determine whether cheek cells do osmosis and if they are alive or dead as a result of different food salinities.</p> <p>Methods/Materials To test my hypothesis I did in vivo and in vitro experiments. For the in vitro experiments, I mixed my cells with NaCl on a microscope slide and then measured the size of the cells. For the in vivo experiments, I did a control of my cheek cells, I ate fritos for the salt, and I drank water as no salt. To measure the salinity of my saliva I used a refractometer. I mixed my cheek cells with Live/Dead stain to determine viability.</p> <p>Results Using microscopy, my cells did change in size depending on the salt concentration. I found that with the fritos the cells wrinkle and get smaller then the control. The water treatment cells expanded and most of them lysed (exploded). I used fluorescence microscopy to see whether the cells were alive or dead. The largest percentage of injured and alive cells was after eating fritos. The largest percentage of dead cells was after drinking water. The fritos had a little more then the control on the percentage injured.</p> <p>Conclusions/Discussion I conclude cheek cells do undergo osmosis and water is good for us but not cheek cells because water makes the cheek cells lyse.</p>	
Summary Statement To determine whether cheek cells respond to food by undergoing osmosis and whether they are alive or dead.	
Help Received Mother discussed project with me and taught me how to use the equipment in her lab.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) John A. Selberg	Project Number J1029
Project Title Migaine Headaches in Teens	
Abstract Objectives/Goals The project was designed to collect and analyze information about the incidence and impact of headaches on teens. The goal is to determine if migraines and other headaches are under-reported and under-treated and therefore lead to unneeded pain and loss of activities in teens. Methods/Materials A survey form captured information about the study with variables such as headache type, frequency, duration, symptoms, and if medications or medical treatment was used. 600 middle school students took the survey. The survey was manually tallied and a calculator was used to convert raw data to percentages for comparisons. Results Teen headaches, including migraine, are much more frequent than was known. Here, 25 percent of teens suffer migraines, 44 percent have tension headaches, 8 percent get cluster headaches, 23 percent reported no headaches. Of teens that get headaches, 33 percent are migraines, 57 percent tension, and 10 percent cluster type. However, headaches and worry about headaches don't greatly impair teen's lives. Most, 63 percent, did not get medical care with 73 percent self-treating with aspirin, acetaminophen or ibuprofen. Twenty percent said treatment was ineffective correlating with the low rate of doctor visits at 3 percent, and prescription medications at 6 percent. Conclusions/Discussion Unexpectedly high numbers of teens suffer from headaches, including migraines at 25 percent. Prior research showed only a 4.5 percent rate of migraine headaches in children less than 18 years old. This study proves the hypothesis that teen headaches are under-reported and under-treated leading to pain and suffering.	
Summary Statement This experiment is to determine the frequency, duration, symptoms and treatment of headaches, including migraines, in teens.	
Help Received Parents helped copy, distribute and tally survey forms and proof read reports and poster.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Vladimir N. Sepetov	Project Number J1030
Project Title Understanding Musical Therapy: Does Periodic Sound Affect the Difficulty of Walking in Parkinson Disease Patients?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to find out if there is an immediate effect of a metronome tempo on the walking of a Parkinson Disease patient. My hypothesis was that if a periodic sound of 60 beats per minute is played while a Parkinson Disease patient is walking, then the patient will walk faster and be able to turn easier.</p> <p>Methods/Materials This project was a within subject study and was performed only on one subject, a Parkinson Disease patient who has had the disease for 12 years. In my experiments I measured the time it took for the subject to walk across a 7 meter hallway two times back and forth with and without a metronome. The following metronome tempos were used: 60 beats per minute; 100 beats per minute; 120 beats per minute; 140 beats per minute; 160 beats per minute; 200 beats per minute. A rest break was included after each experiment with the duration of approximately 1 minute. A control walk was done before each walk with a metronome, and metronome frequencies were randomized within each day of experimenting. Experimenting continued for 15 days.</p> <p>Results 140 beats per minute proved to be the best tempo for walking for the Parkinson Disease patient. 60 beats per minute was the worst tempo for walking and actually had a negative effect on the subject's walking. The effect of the metronome on the subject was most noticeable when the subject was feeling good (up to 25% improvement).</p> <p>Conclusions/Discussion From my results I concluded that the metronome helped the subject walk when the tempo was greater than 60 beats per minute. The most interesting result was that there is an optimum tempo for my subject (140 beats per minute), which is close to the subject's number of steps per minute (129 steps per minute). The importance of this finding is that millions of people with Parkinson Disease struggle everyday because they have a hard time walking, and that something as small as a metronome could help them.</p>	
Summary Statement My project is about the effects of periodic sound on a Parkinson Disease patient's walking.	
Help Received Dr. Olga Issakova supervised the project, and my father helped me to interpret the data.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Chaya M. Turrow	Project Number J1031
Project Title Can You Board? An Experiment of Balancing vs. Boarding Attributes	
Abstract Objectives/Goals Do physiological attributes matter when wakeboarding or snowboarding? Or is it all experience? Can I test these variables to determine what makes the best boarder? Methods/Materials I used a Pivot balance board on 45 participants. After I gave the participant eight tries to get to a minimum of 20 seconds, I had them fill out a questionnaire. This questionnaire included questions about their height, weight, age and other physical experiences they have had. Most of the results on each variable was classified into smaller relating categories so it would be easier to read the graph (Ex. Participant's age as classified into 5 categories...young, teen, young adult, adult, experienced adult). Then I made five different tables, the five variables against "Time Value" (the highest of the eight individual times recorded for each person). I also separated males and females into different graphs. Results My results did not fully support my hypothesis. I found out that the height and weight does not matter. The variable that matters most is the overall experiences on boards the participants have already had. The next variable after that, that matters is the age. The older males did the best, while the older females didn't do as well. With that said, the teenage females did better than the teenage boys. Conclusions/Discussion My conclusion for this project is that younger males are not the best boarders, while the older males would be the best, but the younger females would be better than the older females. I think this is because the older males stay active by playing other sports which helps with their balance. Since I had many variables I could further research those individual variables and not as a whole.	
Summary Statement I wanted to test different attributes to see what mattered most when learning to board, by using a balance board and a questionnaire.	
Help Received I didn't have any help other than the participants.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Samantha A. Wopat	Project Number J1032
Project Title Can You See in Stereo? Lasik vs. Non-Lasik/Perfect Vision	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose for my project was to find if lasik surgery has an effect on one's ability to see a stereogram.</p> <p>Methods/Materials I collected some stereograms, and then started to test subjects who had lasik surgery and others who have perfect vision (have not had the surgery). After one week, I had tested all twenty of the perfect vision subjects, but was having trouble finding people who have had lasik surgery. After sending out many e-mails and talking to people, I managed to find and test ten lasik subjects. Some other materials I collected were a timer, and a recording chart.</p> <p>Results In my graph, I noticed a pattern of decreasing times to see the stereograms for both groups. There was a steeper learning curve for perfect vision subjects than lasik subjects. The first stereogram took the longest to decipher. After that, perfect vision subjects# times got a lot faster, while lasik subjects# times got quicker at a slower rate. I also noticed a big difference of the median bars on my graph. 80% of the median bars for perfect vision subjects were lower than lasik subjects, which suggests that perfect vision subjects could see in stereo quicker. There was a lot of variation of the median for lasik subjects, while perfect vision subjects# medians consistently declined. Another observation is that 40% of stereograms were not deciphered in the lasik group within the two minute time limit, whereas, 29% of the stereograms were not deciphered in the perfect vision group.</p> <p>Conclusions/Discussion Many subjects had trouble with the first stereogram. This is because they did not yet know how to use stereopsis (using both eyes to fuse an image). The steeper learning curve and my evidence of medians suggests that perfect vision subjects could learn to see stereograms quicker than lasik subjects and had more success overall. This shows that perfect vision subjects improved as I kept testing them, while lasik subjects did not. Only 29% of the stereograms were not deciphered by perfect vision subjects, while 40% of the stereograms were not deciphered by lasik subjects. This also helps provide more evidence to support my hypothesis that lasik subjects would have more difficulty utilizing stereopsis.</p>	
Summary Statement My project is about lasik surgery and how it may effect one's ability to see stereograms.	
Help Received Mentor helped get stereograms and check board, parents helped proofread project	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Rachelle M. Yellin	Project Number J1033
Project Title Sand Content in Equine Feces within Santa Cruz County	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I wanted to do a project about horses since they're my favorite animal. I talked with a few horse owners and they said I could do a project about Sand Colic. Sand Colic is when sand is stuck in the horses' large intestines. This can seriously hurt or possibly kill the horse. With my project I can help horse owners to see what type of treatment is best to prevent Sand Colic.</p> <p>Methods/Materials Method: 30, 1 quart canning jars with lids; 1 cup stool; water; hose; gloves; poop picker upper; labels; stirrer; measuring cup.</p> <p>Procedure: 1. Place 1 cup stool in a 4 quart canning jar; 2. Add 3 cups of water in jar; 3. Stir for 50 seconds. Mixture should break apart; 4. Wait 5 minutes; 5. Turn hose on medium and place in jar. Allow contents to drain out. Turn off hose and slowly pour out extra water. Sand should have settled to the bottom. Let contents dry, then measure.</p> <p>Results I sent letters out to 15 barns however only 5 responded. Of those barns I collected 25 samples from the Watsonville, Soquel, Aptos, and Scotts Valley area. I collected the stool samples and processed them in a two-week period of time. I evaluated the residual sand contents by using the measure of centerawl tendency. The data was arranged in three categories by the type of treatment they received: Nothing, Psyllium and Other.</p> <p>Conclusions/Discussion There was a low response from the barns. I wonder if they feared the results of their horses and/or how the information was to be used. Before I started testing it rained. The grounds became wet and the sand became heavier. It was more difficult to collect the sand off the ground. If I were to do this project again I would do it at a different time of the year to see if the ground changes the final result. I would also like more barns in the Santa Cruz County to be involved to see if the location affects the outcome of the results.</p>	
Summary Statement Ingestion of sand as a cause of equine colic within the Santa Cruz County.	
Help Received Anne Phipps for giving me the idea; mom and dad for taking me to the barns, helping with word processing, and collecting the samples while I ask the owners the history of each horse.	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Sara M. Yusufaly	Project Number J1034
Project Title The Effects of Temperature on Nerve Conduction Velocity	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment was to explore if there is a recognizable difference in nerve velocity and reaction rate at different temperatures.</p> <p>Methods/Materials</p> <ul style="list-style-type: none">· Using an electromyography machine, the nerves on my 7 subjects' wrists were tested in cold, and normal temperatures (three times for each temperature).· The nerve temperatures of the subjects were changed by having all subjects place their hands in ice-cold water for 20 seconds.· Their reaction rate was also tested, by having them catch a falling, vertical yardstick from above, and checking the point at which they caught it. <p>Results After gathering all the data, my hypothesis was proved correct. The nerve velocity is affected, as it dropped when the subject's wrists were in a colder temperature. This was shown when the electromyography machine measured a slower velocity at a colder temperature, and the yardstick was also caught later. Thus, the nerve reaction had dropped when temperature decreased.</p> <p>Conclusions/Discussion In conclusion, the lower temperatures decreased nerve velocity and reaction rate. For example, Subject A's regular temperature average was 16.3 inches, and in cold temperature was 17.83 inches. Thus, subject A reacted slower in the colder environment. To expand on this experiment, one could test many different temperatures, with intervals in between. Also, instead of only testing adult males, one could also test adult females too. Compare to see if all adults velocities drop, versus only men/only women. Lastly, one could control height. Instead of saying male adults in general, set a requirement of height.</p>	
Summary Statement My project tested the effects of temperature on the nerve velocity, and the reaction rate of 7 male, healthy, adult subjects.	
Help Received Father monitored the electromyography machine; Mother edited the information; Science teacher gave me advice and told me areas that I needed to improve upon; Language Arts teacher showed me the steps of writing a research report; A friend peer-edited my research report; Brother guided me and edited my	



CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

Name(s) B. Shayna Zeigen	Project Number J1035
Project Title Black vs. Tawny	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment was designed to find out which leopard coat color provided it more protection, black or tawny. My hypothesis was the standard leopard (tawny with black spots) would have better camouflage than that of the black leopard (dark brown with black spots).</p> <p>Methods/Materials To test this experiment, I set up two habitats, one similar to the one a standard leopard would be found in out in the wild and one that a black leopard would be found in in the wild. Testing seven participants, I asked them to find six standard leopard in five seconds for ten trials and then do the same with the black leopards in their habitat. I know because of dominant and recessive genes, that a black leopard could be found in the savannah and that a standard leopard could occasionally be found in the jungle. Because of this knowledge, I put the six standard leopards in the jungle (black leopard) habitat and the six black leopards in the savannah (standard leopard) habitat. The participants now had to find the standard and black leopards, but in switched habitats.</p> <p>Results The standard leopard proved much more protected by its coat in its most common habitat than the black leopard did in its. While the black leopard was being found over 50% of the time, the standard leopard stayed hidden and protected. Suprisingly, the black leopard was more successful when the habitats were switched, but by a much smaller margin.</p> <p>Conclusions/Discussion When the leopards were in their natural habitat, the standard leopard was clearly more successful at staying hidden. But, when they were in switched habitats, the black leopard proved more camouflaged at hiding. Although the black leopard and standard leopard were in a way more successful, the standard leopard stayed protected by a much larger difference than when the black leopard was protected. Since my question was which leopards' coat provided more protection in its own environment, my true conclusion is that the standard leopard and its coat are adapt its habitat than that of the black.</p>	
Summary Statement This project was meant to discover which leopard coat color provided it with more camouflage and protection.	
Help Received Mrs. Taylor helped me develop a working project idea; Mother, Father, and Randy helped by volunteering and buying supplies; Sharon, Janan, Jasmin, and Nicole helped by volunteering; Alex helped by giving my Zoo Tycoon; Mr. Whitaker helped by showing me how to do a graph; San Diego Zoo and RSD	



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Casey G. Zucco	Project Number J1036
Project Title Which Sweetener Tastes Best? Which Is Best for You? A Comparison of Five Sweeteners	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My purpose was to see which of five sweeteners were preferred by children and adults, and compare those results with research on the health benefits and risks of the sweeteners: Table sugar, Xylitol, Sucanat, Honey and Splenda</p> <p>Methods/Materials I made five bottles of Kool-Aid with the different sweeteners. Subjects were seven children, ages seven to 12, and 12 adults. Subjects tasted samples of the five drinks, and ranked them according to what they liked best to least from 1- 5. I added up the scores for each sweetener for both children and adults, and for all subjects combined.</p> <p>Results The results were very close between table sugar and Xylitol for adults and all subjects combined, as the best liked sweetener. The children preferred table sugar most, with Xylitol a close second. The least liked sweetener for both children and adults was Sucanat. Children preferred Honey to Splenda, and the reverse for adults.</p> <p>Conclusions/Discussion My research showed that Xylitol is the healthiest sweetener tested, because it does not promote sugar highs, diabetics can use it, and it does not promote cavities, and actually helps prevent them. The taste test showed that it tastes very much like table sugar. Xylitol may have a slight laxative effect if taken in large amounts. I conclude that it is better to use Xylitol than table sugar. Splenda is not as popular tasting and it is made with chlorine, so I wouldn't recommend it.</p>	
Summary Statement Five sweeteners were compared for taste preferences of children and adults, and health benefits and risks.	
Help Received Mother helped with spelling and some of the typing.	