CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Kristen A. Aguanno

Project Number
S1001

Project Title
A Study Comparing the Posterior Motion of C. commersonii and O. orca

Abstract

Objectives/Goals
My goal was to find out if the up and down angles of posterior end motion of C. commersonii differ from the up and down angles of posterior end motion of O. orca.

Methods/Materials
I went to Sea World, San Diego and video taped at least five cycles of up and down posterior end motion for four C. commersonii and four O. orca. Then I played the footage on the computer and measured the maximum up and down posterior end angles by holding a transparent protractor up to the computer screen. I did five trials for four C. commersonii and five trials for O. orca for a total of twenty trials.

Results
My results were the total average up angle of posterior end motion for O. orca was 30 degrees and the total average down angle was 29 degrees. The total average up angle of posterior end motion for C. commersonii was 29 degrees and the total average down angle was 32 degrees.

Conclusions/Discussion
My hypothesis was wrong. The up and down angles of posterior end motion of C. commersonii differed (my hypothesis was that the angles would be the same) from the up and down angles of the posterior end motion of O. orca. Although the angle were close, I still consider them different. Comparing this data between these two animals help scientists to understand their predator/prey and evolutionary relationships.

Summary Statement
My project compared the up and down angles of the posterior end motion of C. commersonii and O. orca.

Help Received
Parents provided transportation to Sea World, San Diego and video recording equipment.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Tierney R. Burke

Project Number
S1002

Project Title
Nail-Patella Syndrome Phenotype Expression and Inheritance of LMX1B Gene Mutation

Abstract

Objectives/Goals
Nail-Patella Syndrome (NPS) is a rare genetic disorder involving the bones, joints, and connective tissue (loss of patterning across the dorso-ventral axis of the limb). NPS is caused by mutations in the transcription factor LMX1B gene on chromosome 9q34. This project examines the gene mutation inheritance pattern, and the variability and severity of the NPS phenotype in my family compared to national incidence.

Methods/Materials
NPS phenotype expression in 102 family members was evaluated by observation of nails, knees, elbows, feet, back, and glaucoma eye exam records. Buccal cell samples from 15 individuals were collected with Omni Swabs, and DNA extracted with QIAamp spin columns per manufacturer's instruction. PCR was performed with primers based on genomic sequence of LMX1B gene. The products were sequenced to identify the mutation. A pedigree chart was prepared to trace mutation inheritance.

Results
Twenty-two individuals in my family were found to express the NPS phenotype. Fingernail dysplasia was present in all affected subjects. Triangular moons were observed in 79%. Toenail dysplasia was identified in 80%. Kneecap dysplasia was detected in 56%. Reduced elbow extension was found in 55%; lumbar lordosis in 57%; glaucoma in 14%; hip/pelvis involvement in 38%; talipes in 9%; and nephropathy in 6%. The specific mutation in the LMX1B gene was detected by PCR amplification and sequencing of extracted DNA from an affected individual with NPS. A mutation of C>T at nucleotide 175 in exon 2 was identified.

Conclusions/Discussion
The study supported the hypothesis that NPS is a pleiotropic disorder exhibiting autosomal dominant inheritance of a LMX1B gene mutation in my family. On the average, 50% of the offspring from affected individuals were affected (with no skips in generations). The range and severity of symptoms varied within my family. The subject's phenotype manifestations presented in nails, knees, and elbows compared with national incidence expression. The mutation was located in the LIM-A domain causing a nonsense mutation at amino acid residue 59 (glutamine to a premature stop codon). For further study, it would be important to learn what other transcription factors regulate and cooperate with LMX1B function since potentially this understanding could lead to strategies for treating conditions such as neurological disorders.

Summary Statement
The LMX1B gene mutation producing the rare genetic disorder, Nail-Patella Syndrome in my family follows an autosomal dominant inheritance pattern with complete penetrance and wide variation in phenotype expression.

Help Received
Used laboratory equipment at BioSource; Dr. Geoffrey Routh provided training and guidance in performing PCR testing.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Jason R. Castillo

Project Number
S1003

Project Title
Blood Pressure: What Impact Does the Common Method of Measuring Blood Pressure Have on the Accuracy of B.P. Readings?

Abstract

Objectives/Goals
The objective of my Science Fair project is to determine the accuracy of the common method (community standard) of taking blood pressure readings when compared to the ideal method. I also want this experiment to be informative as patients need to realize that they are also responsible for their part in allowing the blood pressure test to be performed to the highest degree possible. It is also my intent to bring more attention to the importance as it can lead to stroke, kidney failure, and early death.

Methods/Materials
The materials for my science fair project included a mercury based Sphygmomanometer, a stethoscope, camera, computer, calculator, test subjects, gum, timer, permission forms for signatures, and use of a medical office. The survey required 200 envelopes, stamps, and surveys. The method of my experiment began by my speaking to a few medical professionals to determine a few factors that occur during the taking of blood pressure readings to assist in preparing the survey. I then used the completed surveys to create the experiment to test the common method (community standard) of having the blood pressure taken while the test subject was chewing gum, crossing their legs, tensing their testing arm, sitting on the exam table, and talking as well as taking their blood pressure under the ideal method.

Results
All common methods caused an increase in blood pressure over ideal conditions. The blood pressure while the test subjects sat on the exam table was lowest with an average increase of 2.38mm Hg systolic and 1.95mmHg diastolic. Tensing the testing arm caused an increase of 3.9mm Hg systolic and 3.71mm Hg diastolic while crossing the legs caused an increase of 4.71mm Hg systolic and 3.38mm Hg diastolic. Chewing gum caused an increase of 5.95 systolic and 3.95 diastolic. The highest increase occurred when the test subject was talking. The mean showed an increase of 5.62 mm Hg systolic and 5.0mm Hg diastolic.

Conclusions/Discussion
Overall my survey and test subject data showed that there are external events that are occurring during the testing of blood pressure and that these events do have an effect on the blood pressure measurement. This does have an impact as an incorrect value could misdiagnose or improperly treat a possible blood pressure condition. The best option is to take blood pressures in the ideal method and for patients to be educated and prepared to do their part.

Summary Statement
My project is to determine if the common method (community standard) for taking blood pressure measurements is accurate when compared to the readings taken using the ideal method for taking blood pressure measurements.

Help Received

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Paul M. Cooper

Project Number
S1004

Project Title
Do You Hear What I Hear?

Abstract

Objectives/Goals
My project was to determine how accurately a test subject can determine the direction of sound. I believe that sound sources placed to the sides of the subject will be determined more accurately than those placed directly in front or behind the subject. The slight time differences of the sounds reaching the ear depending on where the source of the sound is located can make the determination of the location of the sound more difficult.

Methods/Materials
Informed consent was obtained from 32 randomly selected people. I recorded a tone from my keyboard on a cassette tape with a tape recorder. I blindfolded each test subject, then stood a distance of 10 feet from the subject. I played the tone while standing directly in front, behind, to the left, to the right, and at the midpoints between all these extremes and instructed the subject to point in the direction he thinks the source of the sound is. The distance between where the subject pointed and the actual sound source location was measured and recorded for each location. The accuracy of each individual's binaural hearing was determined and analyzed.

Results
The overall accuracy of binural hearing (average) is 84%. The accuracy in locating the sound sources in each location are as follows: Directly in front -94%; Directly behind - 91%; Directly to the left - 89%; Directly to the right - 85%; Midpoint between front and right - 80%; Midpoint between front and left - 76%; Midpoint between behind and right - 75%; Midpoint between behind and left - 79%.

Conclusions/Discussion
The data collected disproved my hypothesis that sound sources placed directly to the sides would be more accurately located than those directly in front or behind. The sound sources placed directly in front or behind the subject were more accurately located. All subjects had moderate difficulty locating the sources placed at the midpoints.

Summary Statement
Determining the accuracy of binaural hearing.

Help Received
Teacher loaned books on sound and sound experiments.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Danica A. Frye

Project Number
S1005

Project Title
Got Stamina?

Abstract

Objectives/Goals
The original question for this project was what would be the most effective form of extra exercise to build up stamina for competitive Irish dancing. I hypothesized that jump roping would be the most efficient type of exercise.

Methods/Materials
I chose twelve girls of the age 14 who were similar in body types and all Irish danced, to be part of my testing. I broke them off into four groups, three girls would jump rope, three would run, three would walk, and three would be the control group and would do no exercise. The girls exercised for four weeks, and they measured their heart rates each Sunday. Resting rates were measured when they first woke up, and working rates were measured after they did a minute and a half long dance that afternoon. Including a measurement before the exercise period began, there were 5 measurements of each type for each girl.

Results
After doing some basic calculations, results proved that jump roping was indeed the most effective form of exercise for building up stamina. Walking was second, and running was third. The control group's stamina did not improve at all.

Conclusions/Discussion
All three types of exercise did increase stamina for the girls tested. Running boosted stamina 28.3%, and walking improve stamina 28.6%. Jump roping was the most efficient, increasing stamina by 32.3%. The control group's stamina remained the same, further proving that jump roping is the most effective form of exercise to build up stamina.

Summary Statement
My project is about finding the form of exercise that most efficiently builds up stamina for competitive Irish dancing.

Help Received
My grandmother took me to Staples and drove me to my dance classes where I measured the girls' working heart rates; my dance teacher, Bella Yerina, helped me think of what types of exercise to use for the testing and allowed me to interrupt the flow or class to get the girls' heart rate measurements; the girls

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)

Miriam C. Glicksberg

Project Number

S1006

Project Title

Do the Right and Left Ears Hear Notes Differently in Atonal Individuals?

Abstract

Objectives/Goals

Relative pitch, the ability to sing in tune, relies on hearing notes correctly, measuring their intervals, storing the information in memory, and producing the tones. I am trying to understand what leads to atonality, the inability to carry a tune. It is possible that the Atonal individual does not hear notes correctly or even that the two ears hear conflicting notes. In this case, one ear could be dominant, or the resulting sound could be a blend of what the individual ears hear. By testing the ears separately and together in a tone matching test, I can discover whether Atonal individuals have a defect in one or both ears that affects how they sing.

Methods/Materials

I obtained informed consent from 62 participants, including 25 males and 37 females, ranging in age from 13 to 76 years. I collected information, including handedness, musical training, self-evaluation of singing ability, eye dominance, and hair whorl direction. I measured relative pitch capability with a chromatic tuner while subjects sang a simple melody (measuring 10 notes x 3 replicas). Next, I tested their tone matching ability using a test CD played with a splitter jack, so that the earphones could play the tones for individual ears or both at once. I again measured their vocalized tones (5 notes x 3 replicas x 3 sets). Notes were converted into numbers and graphed to determine phenotypes.

Results

Most Atonal subjects scored poorly in tone matching. Surprisingly, however, more than one third had excellent scores in the Tone Matching Test. This means that hearing tones well is not enough to carry a tune. Left and right ears differed in more than one third of the participants, mostly in those with poor tone matching ability. I found ear dominance in approximately 30% (7 of 24) of those with poor tone matching ability, but in less than 10% of those with excellent tone matching skill. The sidedness of ear dominance (left vs. right) did not correlate with hair whorl, eye dominance, or hand dominance.

Conclusions/Discussion

My hypothesis is partially correct. Hearing conflicts and ear dominance may influence the perceived tone in a significant portion of Atonal individuals. Since more than one third of the Atonal subjects have excellent tonal hearing, I conclude that tone matching and interval measuring are independent skills.

Summary Statement

I discovered that there is often an apparent difference in what the right and left ears hear in Atonal individuals.

Help Received

I thank my participants, my Science Fair advisor for providing a testing room at school, my parents for driving me to participants' homes, my mother for help with typing and teaching me how to use Microsoft Excel, my brother for help with the randomizer program, and my family for useful discussions.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Megan M. Lee

Project Number
S1007

Project Title
Ammonia: The Passed Gas, Part II

Abstract

Objectives/Goals
My project was to determine if a horse's diet can be altered so that the ammonia level in the manure will be equal to that of cow manure. I believe that when the horse's diet is altered with a fiber supplement, the ammonia level in the manure will be equal to that of the cow manure samples

Methods/Materials
A horse's diet was altered with a daily fiber supplement equal to 195g per day for 5 days. Manure samples from a horse and a cow were collected. 10g of manure was measured, placed in a clean flask, and then filled with 200mL of deinoized water. The pH level of the water/manure mixture was measured. A beaker was then filled with 500mL of deionized water and its pH level was measured. A hole was made through a cork stopper. One end of a U-shaped piece of glass tubing was inserted into the stopper. The stopper was placed in the flask. The other end of the tubing was placed over the beaker. The flask was placed directly on the hot plate/griddle while the beaker of water was set to the side away from the heat. The hot plate/griddle temperature was set to 5 and I waited for the manure/water mixture to boil. The mixture continued to boil until the water moved through the tubing into the beaker. Once the water had moved through the tubing, I turned off the hot plate/griddle. The pH level of the water in the beaker was measured a second time. This process was repeated for all manure samples. The pH levels were recorded and compared. The second pH level of the beaker water was plugged into the pOH formula. I then solved the equation to determine the ammonia content and compared the findings.

Results
After the horse's diet had been altered, it's manure proved not only to have the same ammonia level of that of a cow, but was in fact actually lower than the cow's.

Conclusions/Discussion
My conclusion supported the project's hypothesis. By altering the horse's diet with a fiber supplement, the ammonia level in its manure was equal to as well as lower than that of the cow. This was concluded by a testing method using a beaker and tubing system to extract ammonia from each manure sample.

Summary Statement
To determine if by altering a horse's diet it is possible to lower the ammonia level of manure to be equal to that of a cow's manure ammonia level.

Help Received
I used lab equipment from my school, my horse for the test horse, steer from the Beef Unit of Cal Poly San Luis Obispo, my grandparents for continued use of their home, and my mother for driving me and my project to where I needed to be.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Gina M. Little

Project Number
S1008

Project Title
The Effects of Diet on Blood Glucose

Abstract

Objectives/Goals
The purpose of this project is to investigate the relationship between blood glucose and diet in non-diabetic humans. It is believed that after one consumes a high carbohydrate meal,his or her blood glucose will be high. It is also believed that after one consumes a low carbohydrate meal, his or her blood glucose will be low.

Methods/Materials
Blood glucose was measured using a finger prick and a glucometer on four non-diabetic human subjects prior to meals and then again one half hour, one hour, two hours, and three hours after eating. The meals consumed were following specific diet types: the subjects' usual eating patterns, the food pyramid diet, a low carbohydrate diet, and a high carbohydrate diet.

Results
Results show that the high carbohydrate diet, the food pyramid diet, and the usual eating patterns diet resulted in a greater flucuation of blood glucose, including a drop in glucose seen one half hour and one hour after eating rather than the anticipated increase in glucose. Two older subjects had greater highs and lows than the two younger subjects. Blood glucose after the low carbohydrate meals showed the least flucuation, both initially and several hours after.

Conclusions/Discussion
Results of this experiment suggest that a low carbohydrate diet does keep the blood glucose steady with the least flucuation. On the other hand, when diets with higher amounts of carbohydrates are consumed, greater flucuations in blood glucose are seen. Further research could be done to study the effects of different types of carbohydrates(monosaccharides, disaccharides, and polysaccharides) would have on blood glucose levels. It would also be interesting to study the effects that age has on blood glucose levels.

Summary Statement
This project investigated the relationship between diet and blood glucose in non-diabetic humans.

Help Received
Mother, a registered nurse, assisted with obtaining blood specimens for testing and proper disposal of materials.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
David E. Lluncor

Project Number
S1009

Project Title
Maintaining Correct Balance: Spatial Coding and Its Dependence on Natural Stimuli

Abstract

Objectives/Goals
The vestibular system in the inner ear decodes motion and acceleration. The utricle otoconia deflect hair-like protrusions in ascending order, called the morphological polarization vector (MPV). MPVs are essential for spatial coding. The project examined what effect natural stimuli have upon MPV maintenance and development.

Methods/Materials
Otoconia deficient HET/HET, and otoconia producing HET/+ mice utricles were used. Thus, otoconia was the sole variable. The tissue was prepared with phaloidin fluorescence and was imaged with a confocal microscope. The angle was calculated using the kinocilium center and hair cell center.

Results
In data quantification, three similar utricle areas that were compared yielded a HET/+ to HET/HET average angle of 93.3 degrees to 105.5 degrees, 114 degrees to 137.5 degrees, and 91 degrees to 100 degrees respectively.

Conclusions/Discussion
The compared MPV angles showed similarity, which suggests that spatial coding is not stimuli dependent. This experiment deductively narrows the factors contributing to MPV maintenance, so that non-stimuli factors can be explored.

Summary Statement
The focus of the project is to determine whether morphological polarization vectors in utricle hair cells depend on natural stimuli for its development and maintenance.

Help Received
Used lab equipment at University of Los Angeles California under the supervision of Dr. Hoffman.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Katherine S. Sengoba

Project Number
S1010

Project Title
The Effects on the Flow Rate, as a Representation of Stroke Volume and Cardiac Output, and Pressure on a Model Heart wit

Abstract

Objectives/Goals
the effects on the flow rate, as a representation of stroke volume and cardiac output, and pressure on a model heart with progressive atherosclerosis in comparison to that of a normal heart.

Methods/Materials
To test this experiment, a model heart was designed. A peristaltic pump was used as the main pump to circulate the blood through the tubing connected to the water bottles, and the chambers. In this model heart, the left side of the heart, the left atrium and ventricle, was the primary focus, in that this side of the heart is responsible for systemic circulation and therefore any atherosclerosis in the arteries connecting it to other parts of the body would affect the blood pressure and flow rate the most. As the water was circulated through the system a pressure meter recorded the pressure of the water exiting the tube. The water exiting the tube per minute was recorded from the reading on a graduated cylinder. To represent progressive atherosclerosis, four different orifice diameters were used.

Results
The results from the experiment the experiment supported most of what was hypothesized. The mean flow rate (mL/min) was 371±2.33mL/min for the original tubing that represented a normal heart and decreased only about 1.09% to the pinhole diameter opening. The average percent increase for the pressure of water exiting the system from the original diameter to the pinhole diameter was 143%. The results were fairly precise, with an average percent deviation for the flow rate of about 0.454% and an average percent deviation for the pressure to be about 0.480%.

Conclusions/Discussion
The results correlated with background research in the sense that the slow decrease in the flow rate could be supported by the design of peristaltic pump to be similar to way the heart functions. The heart has a strong ability to overcome up to about 40-50% occlusion in the arteries, by enlarging, to pump the same amount of blood. The pressure of someone with progressive atherosclerotic heart disease is on average higher than those with mild to no atherosclerosis.

Summary Statement
A model heart was designed to better understand how progressive atherosclerosis affects the blood pressure and heart rate

Help Received
Mr. Sorenson provided me with equipment to test my experiments

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)

Karis R. Tang-Quan

Project Number

S1011

Project Title

Bioartificial Engineered Heart Tissue: in vitro Construction of Contractile Cardiomyocytes for Tissue Replacement Therap

Abstract

Objectives/Goals

Engineered heart tissue (EHT) is needed in tissue replacement therapy for infarcts, which form in the heart and do not contract with the rest of the organ. The objective was to tissue engineer spontaneously beating heart tissue from neonatal rat cardiomyocytes. This study aimed to refine the technique and shorten the process of creating contractile constructs from 14 days to 7 days. EHT was created to be biologically and functionally similar to heart tissue. Immunohistochemistry, gene expression, and protein production were studied to verify that the constructs were biologically similar to heart tissue. The spontaneous contractions were an indicator as to whether the tissue functioned like heart tissue.

Methods/Materials

Gel rings were made from neonatal rat cardiomyocytes cultured in a reconstitution mixture. Rings were taken off the molds and observed to determine if they would spontaneously contract. Rings were studied by means of (1) immunohistochemistry, (2) Agarose gel electrophoresis for gene expression, and (3) Western blot for protein production.

Results

Six rings were successfully created, beating spontaneously with the familiar "lub-dub" contractions of a functioning heart. A video of the beating engineered heart tissue constructed in vitro was recorded. Contractile-related genes and proteins were found in the beating rings; immunohistochemistry showed presence of nuclei and actin filaments. Early trials produced rings with contractile properties, but no beating action, requiring a refining of the engineering process.

Conclusions/Discussion

This study on heart tissue engineering provides a foundation for generating working heart muscle in a lab. Short culture times are feasible for developing EHT that is biologically and functionally similar to the heart. Cardiomyocyte-specific RNA and protein were confirmed to have been produced in the cardiomyocyte constructs. The spontaneously beating rings showed that the constructs could perform heart tissue functions. EHT can be used for in vivo implantations as a tissue replacement therapy.

Summary Statement

Contractile heart tissue was engineered in vitro using neonatal rat cardiomyocytes, providing a basis for organ tissue implantation in the future.

Help Received

Used lab facilities at the University of California, Los Angeles under the supervision of Dr. Ben Wu

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Matthew R. Taulbee

Project Number
S1012

Project Title
Are Mice Territorial?

Abstract

Objectives/Goals
My goal was to show that mice will establish a territory over a certain time, and I plan to take random snapshots of their positions in order to show a perferred area where mice spend their time.

Methods/Materials
wood for cages, 20 - mice(10 male and 10 female), 2 - exercise wheels, 20 - shelters, 12 dishes for food and water

Results
The mice didn't establish a territory, but they did establish dominance. There were 2 main leaders of groups within the mice, and they both often fought with each other over the exercise wheel, and females. One day I found 1 of the leaders buried in the main room with his intestines hanging out, I assumed that he was killed by the other leader. From that point on all the mice followed the remaining leader. Also the mice spent most of their time in the smallest rooms.

Conclusions/Discussion
Mice aren't territorial when it comes to land, but they will fight over items(such as the exercise wheel) and also females. Often times mice will display open violence in order to scare the other mice into following them.

Summary Statement
Are Mice Territorial?

Help Received
My dada helped build cages.

CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Samantha M. Williams

Project Number
S1013

Project Title
Does Varying Feed Affect the Milk of Lactating Caprines?

Abstract

Objectives/Goals
The objective of this project is to see that if we add protein or fiber to the diets of dairy goats if it will affect the pH level of the milk. All of the diary goats will still be eating the same hay, grain and water. One of the goats will be fed black eye peas with the grain, another will be feed beat pulp with the grain and the last goat will be the standard, fed just straight grain. I hope to learn that if you add fiber or protein to the diets of dairy goats the pH level will change. This information can be used by the dairy farmers to help them make the by-products of milk.

Methods/Materials
pH meter, Milking stand, Beet pulp, Black eye peas, Nutrina Dairy Goat Feed, 3 dairy goats, Pencil, Paper, Titration tube, Titration tube stand, NaOH solution .1 mole, Distilled water, Rinse Water, Universal pH indicator, Glass jars for storage of milk
Procedure: After sufficient time for the test subjects to adjust to the change in feed, collect milk samples. These samples are then tested for pH, and buffering changes against the control animal.

Results
Results from the pH tests on the treated goats showed a decrease in pH 72 hours after the feed was adjusted. The milk from the goat with protein added to her feed dropped .3 pH in 72 hours, but within another 72 hours the pH had returned to the level of pre-feed adjustment. The milk for the goat with sugar added to her feed dropped .6 pH in the first 72 hours, but in the next 72 hours there was some rebounding of the pH. However the pH of the milk only rebounded .2 pH from the .6 pH drop. The pH continued at a somewhat lower pH for the remainder of the test for the goat with the sugar added.

Conclusions/Discussion
The hypothesis was incorrect. Both of the treated goats, one with higher protein and one with higher fiber, had the acidity of their milk raise. However after 3 days the goat that was feed higher protein had the acidity of her milk return to pre treatment levels. The goat that was fed the added fiber showed a lower pH through out the test.

Summary Statement
In dairy goats, can the affects of changing different feed components be shown in either the pH or the buffering ability of their milk?

Help Received
Dr. Jim Selgrath supplied the equipment and supervised the titration of the milk.