



# CALIFORNIA STATE SCIENCE FAIR 2004 PROJECT SUMMARY

<b>Name(s)</b> <b>Melissa A. Ward</b>	<b>Project Number</b> <b>S1327</b>
<b>Project Title</b> <b>Identifying and Treating Bovine Mastitis</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I grew bovine mastitis bacteria on tryptic soy agar. I put the bacteria on slides and identified them. I used nine different antibiotics and tried to see which one worked the best. The majority of the bacteria were gram-negative, and rod-shaped, and some were in coccus. Nuflox antibiotic prevented and stopped the growth of the bacteria.</p> <p><b>Methods/Materials</b> I used fifty petri-dishes with tryptic soy agar, one-hundred sterile individually wrapped cotton swabs, five ounces of bovine mastitis milk, sterile jar, permanent marker, table, sterile slides, microscope, 5cc of different antibiotics, stickers, and stains, optical lens paper, alcohol, camera, plastic gloves, and a tablecloth. I dipped one cotton swab in the milk and plated each petri dish. I took six petri dishes to school to try and identify the bacteria. I used the gram stain. I lightly smeared the bacteria on the center of a clean, blank microscope slide. I allowed the smear to air dry for about three minutes. After the smears had dried, I covered them with several drops of a crystal violet solution and I let it stand for one minute. I carefully rinsed the slide in tap water. I applied Gram's Iodine Stain for one minute. I held the slide over the sink and allowed the acetone/alcohol solution to flow across the stained area until no more stain was coming off of the slide. I counterstained the bacteria with safranin for fifteen seconds. I carefully rinsed it with tap water. I dried the slide with optical lens paper. I looked at the bacteria under a microscope. I then placed two drops of the different antibiotics on two spots on the petri dishes. For every five petri dishes that I plated with the milk and the antibiotic, I put a labeling sticker on.</p> <p><b>Results</b> The Nuflox antibiotic worked the best. My control were the petri dishes #46-#50. The most dominant bacteria were the beige ones. They were smaller and mostly gram-negative which meant that they were e.coli. The next were the orange bacteria which had both. The yellow had mostly gram positive which meant that they were either streptococcus or staphylococcus.</p> <p><b>Conclusions/Discussion</b> My hypothesis was refuted because the penicillin did not work the best. This is because some bacteria build up immunity against Penicillin by producing penicillinase. I could have let too much of the bacteria in the air in the petri dishes when I was plating them.</p>	
<b>Summary Statement</b> My project is how to treat and identify bovine mastitis bacteria.	
<b>Help Received</b> used lab equipment at Notre Dame High School, Mr. Rob and Ms. Elder helped with any questions I had, Robbie Gilroy gave me the antibiotics.	