



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Katherine N. Kurz	Project Number J1711
Project Title How Does Breast Milk Location Affect Bacteria Formation?	
Abstract Objectives/Goals This project researches under which conditions bacterial growth in milk is strongest, and what the rate of growth is. I am doing this project so that I could find out how long milk can be stored and where is the best place to keep it. Many mothers need to know how long they can keep their breast milk before it goes bad, and they can't feed it to their babies. Methods/Materials I used fresh breast milk, and left a sample at room temperature, and the others in the refrigerator and freezer. I tested the milk, in fixed time intervals, for bacteria. I also used formula as reference. Results The test showed a higher bacteria count for the milk stored frozen than the milk stored just cold, both initially as well as after 30 minutes and two hours. The colder the milk was kept, the lower the bacteria count was. For fresh milk, left at room temperature, the bacteria count increased initially, but unexpectedly dropped after 2 hours, and grew again after 3 hours. The milk left on the counter showed the most bacterial growth. For milk left on the counter for 2, 4 and 6 hours, the bacteria count grew for the first two hours, and then reduced irregularly thereafter. Conclusions/Discussion I was able to prove that the colder you keep the breast milk, the less bacteria can grow. I was also able to show and reproduce the surprising fact that the bacteria count in breast milk at room temperature first grows, but then declines. This shows evidence that breast milk can protect itself to some extent from bacterial growth	
Summary Statement The project investigates bacterial growth in breast milk for different storage conditions, and indicates antibacterial properties of breast milk.	
Help Received Mrs. Marcarelli helped with general advice, Dr. Anna helped with the lab equipment, Mrs. Benson gave me a fresh supply of breast milk. Mr. Negas helped me figure out what to research when we needed to have all those pages of notes. I would like to thank are the other microbiology kids (from all Mrs.	