



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Sarah Waliany	Project Number S1431
Project Title Effect of Selective vs. Nonselective COX Inhibitors on Mesothelial and Malignant Cells in Pleural and Ascitic Fluids	
Abstract Objectives/Goals This study was undertaken to determine if application of non-steroidal inflammatory drugs (NSAIDs) and steroidal drugs to the pleural and ascitic fluids can cause cell death of viable malignant cells, mesothelial cells, and lymphocytes found in fluids. Methods/Materials Thirty-eight fluids were selected and spun down. The supernatant was discarded. Drugs (Celebrex, Bextra, Ibuprofen, and Prednisone) were added to the cell sediments except the control group. The smears were stained with a pap stain. During microscopic evaluation, the drugs' names were covered, and the cells were studied blindly. Results Bextra, Celebrex, and Ibuprofen caused cell death in 67%, 67%, and 53% of the malignant cases, respectively. Out of the 15 malignant cases, NSAIDs caused cell death in 100% of the breast carcinomas and 60% of the ovarian carcinomas. Celebrex and Ibuprofen caused cell death in 50% of adenocarcinomas. Prednisone was the most effective in causing cell death in the lymphoma case and the five cases diagnosed as lymphocytosis. Conclusions/Discussion This study showed that the direct application of NSAIDs (Bextra, Celebrex, and Ibuprofen) and Prednisone can cause cell death of viable malignant cells, mesothelial cells, and lymphocytes in the ascitic and pleural fluids. This is a new, simple, and inexpensive study testing the effectiveness of NSAIDs in treating different cancer types. This test has a significant prognostic value as to whether NSAID treatment is likely to be of value in specific cancer patients as an adjuvant to the presently accepted treatment protocols. In the future, other NSAIDs and steroids need to be tested for their cell death capabilities in a multitude of different cancer cells found in the Fine Needle Aspiration (FNA) for cytological evaluation. Further studies should also be conducted to elucidate the exact mechanisms of actions of NSAIDs and steroids as modes of treatment of cancer since these drugs can cause cell death and can prevent further proliferation of malignant cells.	
Summary Statement My project demonstrated that NSAIDs and steroids can cause cell death in malignant cells, mesothelial cells, and lymphocytes in pleural and ascitic fluids.	
Help Received Used lab equipment under the supervision of Dr. Shirley Shen in USC Pathology Lab.	