Chloroquine and Avastin would be tested together to determine if they make an effective combination therapy and to determine their mechanism of action. This project is done in a laboratory at the University of Colorado at Colorado Springs, the lab is called the CU Institute of Bioenergetics. The experiments are performed on established mouse and rat cell lines using sterile cell culture techniques. To determine the molecular mechanism multiple different stains and procedures are used, such as the dye lysosensor. The effect of these procedures is determined by a flow cytometer. The effect of these trials was then tested on a live animal model. These studies show that chloroquine works through blocking lysosomal activity and avastin works through blocking growth. Together the two drugs are an effective combination cancer therapy both in in vitro studies and in the in vivo studies. Together the two drugs induce apoptosis in the cancer cells. In the mice it was shown that the lymph nodes had less cells with the treatment and the spleen had more cells with the treatments. The results of these studies may lead eventually to a less harmful and more effective treatment for many cancers such as melanoma, glioblastoma multiforme, ovarian, pancreatic, and breast cancers. Given that the lymphocytes leave the lymph nodes and number of cells in the spleen increase suggests that the mouse may be mounting an immune response. These results suggest that together chloroquine and avastin may work together to mount an effective immune response against tumors.