

**Title: The Role of Tumor Antigens in the Immunologic Rejection
of Brain Tumors (*BTEC Pilot Study*)**

Lay Summary

We know little about the causes of glioblastoma and have few effective treatments for this devastating disease. Researchers have tried to capitalize on the capacity of a patient's own immune system to treat the tumor. It is typically thought that the branch of the immune system that fights viral illness is also the branch that fights cancer, and researchers have tried to enhance this type of immunity against glioblastoma, but with limited success. We have observed that patients who express high levels of IgE antibodies tend to live much longer. Also, glioblastoma patients report fewer allergies and have lower IgE antibody levels (the antibodies associated with allergy) than normal healthy controls. This suggests that another branch of the immune system, that branch involved in allergies, may help fight glioblastoma. This idea stands in contrast to the hypothesis that anti-glioblastoma therapy should focus on the anti-viral component of the immune system. We predict that allergic people may produce antibodies to proteins on glioblastomas that are not expressed in normal brain tissue, and that the enhancement of this antibody response may help to cure and prevent glioblastoma. We hope to test this idea in the San Francisco Bay Area Glioma Study, a large study with both epidemiologic and survival data, and a large biological repository of samples. We will develop a novel panel of assays to test whether glioblastoma patients mount an antibody-related immune reaction to glioblastoma antigens and explore the relationship of this immune reaction to survival, IgE levels, and allergies.