

James & Esther King Biomedical Research Program

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*Microbiology and Immunology
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*2009 Program
Technology Transfer/Commercialization Project
(1-year project)*

Project Title: Novel Treatment Modality for Asthma

Project Summary: Tobacco smoke is directly responsible for chronic lung inflammation and asthma and aggravates pre-existing allergic reaction predisposing to asthma. Asthma is a chronic, progressive disease for which there is no cure, although treatment to alleviate symptoms is available in most but not all cases. Asthma is a major and increasing health problem in about 7 percent of the American population causing enormous suffering and health-related expenses. In our model studies of lung inflammation and asthma in mice, we have identified the earliest step in the chain of events leading to allergic lung inflammation and asthma, which is associated with excessive mucus production and difficulty of breathing. We also have identified an antibody that can completely block allergic lung inflammation and asthma even when given at a time when inflammation has already initiated. Since the antibody is interrupting the very early steps in the disease process, it has great promise as an effective treatment of asthma. In this grant, the mouse model for asthma will be further studied to determine whether the antibody can also reverse anatomical changes in the lung that occur in chronic asthmatic patients. In addition, the antibody will be engineered by DNA technology to develop a novel treatment modality for patients. The construction of humanized antibodies for the treatment of asthma is the first step in the design of clinical trials, which will be carried out in the following years.