

Bankhead-Coley Cancer Research Program

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*Microbiology and Immunology
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*2010 Program
Postdoctoral Research Fellowship
(1-year project)*

Project Title: TNFRSF25 Agonists as Multifunctional Cancer Vaccine Adjuvants

Project Summary: Cancer is a genetic disease that arises when our cells acquire DNA mutations, which enable them to escape normal restrictions on their growth and death. Fortunately, humans have evolved many defenses against cancer, one of which is our immune system. Over the past decade, the secrets to how the immune system identifies and destroys tumor cells have begun to be uncovered. These important discoveries have enabled the design of a new class of cancer drugs, called immunotherapies that are quickly becoming an important addition to traditional surgical, chemo-, and radiotherapies. Because cancer cells are so similar to our own cells, precautions must be taken when using immunotherapies to guard against the induction of autoimmune disease. The Podack laboratory has previously developed a cancer immunotherapy based on a heat shock protein that is being tested in Phase I clinical trials and that can cure some cancers in animals. Our laboratory has also developed a second immunotherapy that both increases the activity of the heat shock protein therapy and induces a type of immune cell, called a regulatory T cell, that can prevent autoimmune disease. This project will test whether combining both of these therapies enhances the rejection of experimental tumors in mice, while simultaneously inducing regulatory T cells that may prevent the potential for autoimmune disease during cancer immunotherapy.