

## Bankhead-Coley Cancer Research Program

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*2010 Program  
Team Science Project  
(3-year project)*

**Project Title:** Combination Immunotherapy for Soft Tissue Sarcomas

**Project Summary:** Soft tissue sarcomas are relatively rare tumors that affect all age groups (15 percent < 15 years old, 40 percent > 55 years old). In 2009, 10,660 new cases will be diagnosed, and 3,800 deaths are expected in the United States. With few exceptions, traditional treatments (surgery, radiotherapy, and chemotherapy), have little impact on the disease. Cancer cells produce new, unfamiliar, tumor-associated antigens (TAAs). When recognized as foreign, the immune system mounts a full-fledged attack that directly targets them to eradicate the cancer cells. Thus, immunizing patients against their tumors (immunotherapy) has obvious appeal and represents a dramatic shift in anticancer therapy that does not replace traditional treatments but rather, complements them. Our focus is on dendritic cell (DC)-based immunotherapy because DCs represent the most potent antigen-presenting cells, are involved in mechanisms of immune escape and tolerance, and are easy to manufacture. Our research includes two clinical projects. In the first project, DC-based vaccines are used in localized and advanced disease to induce an antitumor immune response capable of systemic effects to achieve the primary, long-term objective of improving disease treatment and prognosis. In the second project, which is pre-clinical research, we plan to modify the DCs genetically to express additional TAAs and enhance the known antitumor immune response induced by our vaccines.