



RESEARCH PROGRESS REPORT SUMMARY

Grant 01806: A Novel Virus-Based Anti-Tumor Treatment for Canine Osteosarcoma

Principal Investigator: Dr. Bruce F Smith, VMD PhD

Research Institution: Auburn University

Grant Amount: \$118,848.00

Start Date: 3/1/2013 **End Date:** 8/31/2015

Progress Report: Mid-Year 3 (Final)

Report Due: 8/31/2015 **Report Received:** 9/28/2015

Recommended for Approval: Approved

(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)

Original Project Description:

Osteosarcoma is an aggressive canine bone cancer, accounting for around 6% of all canine cancers. Even with the standard-of-care therapy of amputation and chemotherapy, the prognosis is poor, with most dogs dying due to tumor spread (metastasis) within one year, and less than 20% surviving to 2 years following diagnosis. Therefore, improved strategies to treat metastatic disease are needed. In this respect, viruses can be engineered to multiply in, and kill, tumor cells and yet spare normal cells. We have developed a virus and have demonstrated that it can be both safely administered to patient dogs and have potential efficacy in treating osteosarcoma. While this virus was hypothesized to kill osteosarcoma cells through its replication, we have recently recognized the possibility that the virus stimulates an immune response to tumor, in addition to itself. In this study, we propose to examine the interaction of this virus with the immune system of dogs, including assessing any potential increase in immune response to the tumor. Patient dogs with a confirmed diagnosis of osteosarcoma will be treated with the virus following limb amputation, which will then be followed by 4-6 cycles of carboplatin chemotherapy. The dogs will be assessed for immune-responses to the virus and tumor, viral levels, and survival time.



Grant Objectives:

In this study, we propose to examine the interaction of this virus with the immune system of dogs, including assessing any potential increase in immune response to the tumor.

Publications:

None at this time.

Report to Grant Sponsor from Investigator:

We have enrolled twelve patient dogs in the clinical trial, with 11 of those dogs generating useful data. All of the dogs enrolled have now died with a 1-year survival rate of 18% (20% overall for both of our trials). Sample analysis is continuing, however preliminary results for anti-tumor antibodies in the trial dogs show that these dogs have pre-existing antibodies to the tumor and that additional antibodies appear to be produced subsequent to treatment. Quantitatively, the amount of antibodies does not appear to change dramatically. Interestingly, some proteins appear to be recognized across all of the patient's osteosarcomas, and some are even recognized by patient serum in canine melanoma cell lines. Cytotoxic T-cell assays are now underway to determine if cellular immunity has been enhanced.