RESEARCH PROGRESS REPORT SUMMARY

Grant 02758: Optical Coherence Tomography for Margin Evaluation of Canine Skin and Subcutaneous Neoplasms

Principal Investigator: Laura Selmic, BVetMed, MPH

Research Institution: The Ohio State University

Grant Amount: $43,443

Start Date: 3/1/2020 **End Date:** 2/28/2022

Progress Report: End-Year 1

Report Due: 2/28/2021 **Report Received:** 2/28/2021

(The content of this report is not confidential and may be used in communications with your organization.)

Original Project Description:

Skin cancer is common in older dogs and often requires surgery to treat. For these tumors, the best chance of cure is offered if the surgeon can fully remove both visible and microscopic traces of the tumor. Currently surgeons must rely on pathologist's assessment of tissues after surgery and the success of the procedure will not be known until several days later. This result is important as residual cancer may need further surgery or other treatments like radiation therapy. Additional treatments such as these can result in further risk and discomfort for dogs as well as be an emotional and financial cost for owners. Optical coherence tomography is an emerging diagnostic imaging tool that uses light waves to generate real-time, high-resolution images of tissue at a microscopic level. These images can be used to evaluate for residual disease at the time of surgery giving immediate feedback to the surgeon. This study will focus on validating this technology for the imaging of surgical margins of canine skin and subcutaneous tumors. If successful, this technology could be used to assess for residual cancer intra-operatively to benefit patients by guiding accurate treatment recommendations.

Publications: None at this time.

Presentations: None at this time

Report to Grant Sponsor from Investigator:

Thank you for supporting our project titled “Optical coherence tomography for margin evaluation of skin and subcutaneous neoplasms”. This project is investigating an emerging diagnostic imaging tool, optical coherence tomography that uses light waves to generate real time high-resolution images of tissues for detection of residual cancer cells immediately following surgical removal. Our team involves collaboration between veterinary medicine and pathology at the Ohio State University. We have had excellent progress in our patient enrollment, we completed enrollment of the 80 cases planned already! We completed the first phase of this project where we are looking at imaging skin tumors after surgical removal in dogs. In this first phase we performed initial comparisons between the images from optical coherence tomography with biopsy slides of these areas. This phase allowed us to identify features of the tissues and helped to train our imaging operators for the second phase of the project. To date, our assessments have been encouraging and we are seeing correlation between optical coherence tomography imaging features seen and biopsy results in the second phase of our study. We are currently evaluating the images and preparing the training and test sets of images for observers to assess. The next phase of the project will involve the observers looking at these images for evidence of residual cancer.

We are very grateful for your support. Our team will continue to work hard to perform the evaluation of this cutting-edge and promising technology for detection of residual cancer cells following surgery. Advancement of our knowledge of residual cancer cells at the time of surgery will help to improve options and outcome for dogs.