

\$2,500 has been donated by the TTHWF to Oak Grant # 1113:

*Canine Non-Hodgkin Lymphoma:
Characterization and Prognostic Value of Cancer Stem Cells;*
Timothy D. O'Brien, DVM, PhD, University of Minnesota
Start Date: 1/1/2009 Grant Amount: \$150,071.40

Abstract: Stem cells are cells which, in general, have the ability to give rise to multiple different (differentiated) cell types while at the same time maintaining their own population of undifferentiated stem cells. Embryonic stem cells are the quintessential stem cell and have the ability to form any tissue of the embryo, fetus, and adult. However, in the adult animal, most tissues or organs also have a stem cell population (adult stem cells) with a more limited repertoire, which can give rise to any of the mature cell types of that organ or tissue (e.g. skin, brain, liver, or blood and lymphocyte stem cells). Recently, cells have also been identified in several human and animal cancers that have the essential features of stem cells (cancer stem cells) and which are thought to be responsible for the growth and spread of the tumor. We have identified cells within dog lymphomas that have features highly suggestive of a cancer stem cell. We have also found evidence that increased numbers of these cells tend to correlate with worsening prognosis. In this study we propose 1) to evaluate the numbers of these suspected cancer stem cells in various subtypes of lymphoma to firmly establish whether increasing numbers of these cells do correlate with worsening prognosis across all forms of canine lymphoma, and 2) to obtain key information regarding which genes are characteristically expressed in the cancer stem cells in contrast to those expressed in the remainder of the tumor cells. Thus, this study will potentially give us a new tool to diagnose canine lymphoma and assess prognosis, and secondly, give us a detailed look into the biology of the cancer stem cells, revealing much about their origin and functions and possibly indicating new methods to eliminate these common and lethal cancers.