CANINE T-REGULATORY CELLS IN AGING AND CANCER:

QUANTIFYING A UNIQUE T CELL SUBSET

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ABSTRACT

T regulatory lymphocytes (Tregs), identified by the markers CD4, CD25, and FoxP3, are an essential part of the immune system and promote tolerance with the purpose of minimizing auto-immune disease. However, if Tregs are overactive, they allow host susceptibility to infectious diseases and cancer, allowing these disease processes to escape normal immune surveillance. There are numerous human studies documenting not only an increase %Tregs in cancer patients, but also correlation with negative prognostic factors and overall survival time. At the time that this research was generated, there were only three veterinary papers examining Tregs in canine cancer patients and they only evaluated CD4+FoxP3+ Tregs because, until recently, there was no commercially available anti-canine CD25 antibody.

By cloning and transfecting canine CD25 into CD25 negative HeLa cells, we definitively validated the anti-human CD25 antibody for use in the dog and then quantified CD4+CD25+FoxP3+ Tregs in healthy dogs and dogs with osteosarcoma. Our data revealed no major differences in %Treg between healthy dogs and those with bone cancer. However, by definitively validating the use of the anti-human CD25 antibody, we now have a more specific way to identify this unique T cell subset and evaluate these cells in a variety of different diseases.