



Examining the Role of Stem Cells and Genes in Mammary Tumor Development *Gerlinde R. Van de Walle, DVM, PhD, Cornell University*

RESULTS: Human anticancer drug shows promise as mammary cancer treatment in dogs and cats

Mammary tumors are among the most common cancers in female dogs and cats. Although surgical removal of tumors remains the most widely accepted treatment in small companion animals, tumors often recur and spread, highlighting the need to find better prevention and treatment strategies.

To better understand what triggers mammary cancer formation in dogs and cats and explore new treatments, Morris Animal Foundation–funded researchers from Cornell University studied SYK, a tumor-suppressor gene linked to tumor development and aggressiveness in human breast cancer. Because there is growing evidence that mammary stem cells are involved in cancer development, the research team focused on the role and expression of SYK in mammary tumor cells cultured from dogs and cats.

Researchers found that SYK expression levels are significantly lower in tumoral mammary cells than in healthy cells in dogs and cats. This is significant because reduced SYK expression has been associated with increased metastasis in people with breast cancer.

The team also found that treatment with a promising human anticancer drug, 5-azacytidine (5-Aza-C), effectively killed canine and feline tumor cells without affecting healthy mammary cells. This suggests that 5-Aza-C shows specificity for cancer cells while sparing healthy cells and may hold promise as a treatment for mammary cancer in small companion animals.

Researchers will use results of this study to develop new and more efficient therapies for mammary cancer in dogs and cats. The next research step will be to evaluate the anticancer drug's safety in companion animals as a precursor to clinical trials with patients affected by this common and frequently malignant cancer. (D12MS-002)