



Examining the Role of Stem Cells and Genes in Mammary Tumor Development Gerlinde Van de Walle, DVM, PhD, Cornell University (Transferred from Ghent University)

Mammary tumors are among the most common cancers in female dogs and cats. Currently, surgery to remove mammary tumors is the most widely accepted treatment option for small companion animals, but the tumors often recur and spread, causing metastatic disease. To better understand what triggers mammary cancer formation in dogs and cats, Morris Animal Foundation–funded researchers from Cornell University are studying 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 is focusing on the role of SYK in these cells.

In the first phase of the study, the researchers created the tools needed to study the SYK tumor suppressor gene and its relevant protein. These tools included sequencing the canine and feline SYK genes and isolating mammary stem cells from healthy and diseased mammary gland tissue. However, in contrast to human breast cancer data, preliminary data in this study does not reveal a large difference in SYK expression between healthy and tumor stem cells in dogs and cats. To investigate whether this trend suggests that SYK does not play a role in this disease in dogs and cats, the research team has added a human mammary cell line to compare with the dog and cat cells. Including these additional human cells will ensure that the experimental techniques developed for this study are sound and that the results are valid.

If the researchers are successful in describing the mechanisms involved in mammary tumor formation in companion animals, scientists may be able to develop new and more efficient therapies for this common and frequently malignant cancer. (D12MS-002)