Circle of Discovery
Morris Animal FOUNDATION
FINAL REPORT

Controlling the Spread of Hemangiosarcoma Cells

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RESULTS: Researchers Uncover Key Processes Involved in Early Hemangiosarcoma Tumor Formation

Hemangiosarcoma is a common and aggressive cancer that develops from the cells that normally create blood vessels. Although dogs of any breed are susceptible to hemangiosarcoma, fatalities due to this cancer are alarmingly high in such breeds as Golden Retrievers and Portuguese Water Dogs.

Unfortunately, despite being a commonly diagnosed cancer, the way normal cells transform into hemangiosarcoma cells remains poorly understood. One reason therapies fail may be the existence of cancer stem cells, a subset of cells responsible for initiating and maintaining hemangiosarcoma tumors. A Morris Animal Foundation–funded research fellow, Dr. Jong Hyuk Kim, and his co-investigators at the University of Minnesota examined the role of a cytokine, interleukin 8 (IL-8), which might play an important role in the regulation of tumor cell self-renewal via cancer stem cells. The researchers found that IL-8 influences stem cell signals and helps create a microenvironment that supports hemangiosarcoma tumor formation in the early stages of this cancer. Continuing research will investigate whether hemangiosarcoma development can be altered by interfering with the actions of IL-8 and cancer stem cell signals.

This study has provided valuable insight into the properties of cancer stem cells and how they contribute to hemangiosarcoma tumor growth. Discovery of potential therapeutic targets, such as the mechanisms of IL-8–mediated cancer stem cell regeneration, will help in the development of new treatments to slow tumor growth and to enhance sensitivity to conventional and targeted therapies.

Publications from this study include Jong-Hyuk Kim, Aric M. Frantz, Katie L. Anderson, Ashley J. Graef, Milcah C. Scott, Sally Robinson, Leslie C. Sharkey, Timothy D. O'Brien, Erin B. Dickerson, Jaime F. Modiano, Interleukin-8 Promotes Canine Hemangiosarcoma Growth by Regulating the Tumor Microenvironment. Experimental Cell Research. 2014;323(1):155–164 and Brandi H. Gorden, Jong-Hyuk Kim, Aaron L. Sarver, Aric M. Frantz, Matthew Breen, Kerstin Lindblad-Toh, Timothy D. O'Brien, Leslie C. Sharkey, Jaime F. Modiano, Erin B. Dickerson, Identification of Three Molecular and Functional Subtypes in Canine Hemangiosarcoma through Gene Expression Profiling and Progenitor Cell Characterization. American Journal of Pathology, 2014; 184(4):985–995. (D13CA-400)