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About the Author

Rhonda Hovan has been a breeder and owner-handler of Golden Retrievers for more than 30 years. As a freelance writer, she has won both the Veterinary Information Network Health Education Award and the Eukanuba Canine Health Award.

Ms. Hovan is the research facilitator for the Golden Retriever Club of America and founded the Starlight Fund at the AKC Canine Health Foundation to support Golden Retriever health research. She also serves on the advisory board of the National Canine Cancer Foundation, and is an emeritus director of the Orthopedic Foundation for Animals. She lives in Akron, Ohio, with five Golden Retrievers and two rescued raccoons. She can be reached at RhondaHovan@aol.com.

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Special Report: Understanding Canine Cancer

By Rhonda Hovan

Just as it is in people, cancer is one of the leading causes of death in dogs. It's estimated that approximately one in three dogs will get cancer, which is very similar to the rate of cancer in humans. This increases to about one in two dogs over the age of ten. Clearly, cancer is a major concern to all who love and care for dogs.

Any dog can develop cancer, but some dogs are at greater risk of doing so than others. Sometimes this elevated risk is related to the breed of dog, and sometimes lifestyle factors can modify a dog's cancer risk. By learning more about canine cancer, owners may be able to assess whether their dog could be at risk, and what they might be able to do to reduce the chances that their dog will be affected.

Defining Cancer

First, it is important to understand that cancer is not a single disease, but many diseases that share certain characteristics. The predominant characteristics are that cancers contain cells that don't stop multiplying when they are supposed to and cells that don't die when they are supposed to.

Cancer can arise from many different types of cells, and its cell of origin gives a cancer its identity and unique characteristics. For example, one of the most common canine cancers, lymphoma (also called lymphosarcoma), arises in a type of white blood cell called a lymphocyte. A cancer that usually occurs in larger breeds, osteosarcoma, begins in bone cells; and as the name implies, mast cell tumors—common tumors that usually appear on the skin—arise from mast cells.

One cancer that is often confusing is hemangiosarcoma. This cancer forms from cells called endothelial cells that line blood vessels. Typically, hemangiosarcoma tumors form in very vascular organs such as the spleen, liver, right atrium of the heart, and lungs; but they can form in almost any organ, including the brain and skin. However, no matter where the primary tumor is found, it is not a "spleen cancer" or "liver cancer" or "lung cancer" if the tumor cells are endothelial cells. Attending veterinarians usually rely on a pathologist to examine cells from the tumor to identify the type of cancer.

Cancer as a Genetic Disease

So what causes a cancer to form? Veterinarians and scientists know that cancer is a genetic disease. But to dog owners and breeders, the word "genetic" does not necessarily mean the same thing that it means to cancer researchers. When scientists use the word genetic, they mean that they always need to look at genes to understand what has gone wrong to cause a cancer to form, because it is errors in genes that allow cells to multiply without normal controls.

But just because cancer is a genetic disease does not mean that it is strictly an inherited disease. So how can it be genetic and not be inherited? This is because genes are found in two kinds of cells, and one kind is inherited and the other kind is not. The kinds of genes most owners and breeders are used to considering are found in germ line cells, which are the sperm and the egg. These are the cells that contain genes that are passed on to the next generation. All other cells of the body are

