

## Golden Retrievers Have a Higher Risk for Cancer but It's Not Inevitable, Here's Why

Despite what appears to be a genetic predisposition to cancer, some goldens live to be 16 years old. Researchers set out to determine if a longevity gene exists and this is what they found.

Analysis by [Dr. Karen Shaw Becker](#)

### STORY AT-A-GLANCE

- Golden retrievers have a high risk of cancer, with up to 65% dying from the disease
- Researchers compared DNA from golden retrievers at the age of 14 with DNA from dogs who died before 12 years
- Dogs with certain variants of the HER4 gene lived longer — an average of 13.5 years compared to 11.6 years
- HER4 belongs to the same family as HER2 in humans, which is known to accelerate cancer growth; but it may also play a role in longevity
- Cancer isn't an inevitable outcome for any dog, including golden retrievers; team up with an integrative or holistic veterinarian and/or an integrative veterinary oncologist who can guide you on healthy lifestyle choices to minimize cancer risk

Golden retrievers have a high risk of cancer, with up to 65% dying from the disease. Yet, despite what appears to be a genetic predisposition to cancer, some goldens live to be 16 years old. University of California, Davis researchers set out to determine if the breed has a longevity gene that could be helping some dogs to live longer, and discovered an intriguing finding.<sup>1</sup>

HER4, a gene that's in the family as HER2 in humans, which is known to accelerate cancer growth, may also play a role in longevity.

### Goldens With Certain Longevity Gene Variants Live Longer

The study involved 304 golden retrievers, whose DNA was analyzed. The team compared DNA from golden retrievers at the age of 14 with DNA from dogs who died before 12 years. Those with certain variants of HER4 lived longer — an average of 13.5 years compared to 11.6 years.

"Almost two years is a significant difference in a dog's life," study author Danika Bannasch explained in a news release. "Wouldn't we all want our beloved pets to live another two years? Two years in goldens is about a 15% - 20% increase in lifespan, the equivalent of 12-14 years in humans."<sup>2</sup>

HER4 interacts with estrogen and other hormones, and the variant was found to have a particularly strong effect on longevity in female dogs. It's also known to be involved in processing environmental toxins. "There are going to be many genes involved," Bannasch said, "but the fact that the gene associated with longevity is also a gene involved in cancer was really interesting to us."<sup>3</sup>

Dogs and humans have more than 80% genetic similarity. Meanwhile, cancer rates are on the rise in both species and, when viewed under a microscope, a dog's tumor is indistinguishable from a human's.<sup>4</sup>

Even the genetic mutations that may be a result of abnormal cellular respiration and turn on oncogenes that trigger cancer are often the same in dogs and people. Taken together, this makes dogs an ideal model for studying cancer in humans. Study author Robert Rebhun explained:<sup>5</sup>

*"We assume that the majority of golden retrievers have a genetic predisposition to cancer, but if some of them are living to be 14, 15 or 16, we thought there could be another genetic factor that is helping to mitigate the bad genes, and the gene that popped out for us is HER4 ...*

*If we find that this variant in HER4 is important either in the formation or progression of cancer in golden retrievers, or if it can actually modify a cancer risk in this cancer predisposed population, that may be something that can be used in future cancer studies in humans."*

## **Golden Retriever Lifetime Study Looks for Cancer Risk Factors**

Morris Animal Foundation's Golden Retriever Lifetime Study is one of the largest canine health studies in the U.S. Launched in 2012, its goal is to identify nutritional, environmental, lifestyle and genetic risk factors for cancer and other health conditions by following a cohort of 3,044 dogs for a lifetime. There are now 1,653 dogs in the study, and 500 diagnoses of four major **cancers in dogs** have been made.

"We have recorded over 500 cases of hemangiosarcoma, lymphoma, high-grade mast cell tumor and osteosarcoma in this group of golden retrievers. This is a sobering and significant finding for the study," said Kathy Tietje, chief program officer at Morris Animal Foundation. "We are grateful to the dogs and their owners who contributed, and continue to contribute data, specimens, time and resources to the study."<sup>6</sup>

The study uncovered a higher-than-expected prevalence of hemangiosarcoma and launched the Hemangiosarcoma Initiative in response. In the study, 75% of dog deaths have been due to cancer. Among them, nearly 70% are hemangiosarcoma, a deadly form of canine cancer that often causes sudden internal bleeding.

The Initiative is trying to uncover tools for early disease diagnosis, new therapeutic approaches and genomic prediction of breeding values. "The new initiative is a multiyear, multimillion-dollar endeavor to dramatically change the story of hemangiosarcoma from one with an ending of almost certain death to one with a new beginning," Morris Animal Foundation reported.<sup>7</sup>

## **5 Ways to Reduce Your Dog's Cancer Risk**

Regular wellness visits are essential so your pet can get **screened for cancer** at least annually — and twice a year if your dog is a senior. However, the following five steps are also important to reducing your dog's cancer risk. Following these throughout your pet's life can help keep him healthy and reduce disease potential:

1. **Maintain a healthy weight** and exercise regularly
2. Feed a minimally processed, whole food, anti-inflammatory diet, avoiding highly processed pet foods with large quantities of starch (grains, legumes, corn, etc.)
3. Reduce exposure to environmental toxins, such as pesticides and chemical lawn treatments
4. Wait to spay or neuter your pet until the age of 18 months to 2 years, especially for large or giant breeds; better yet, **sterilize your pet without desexing**
5. Refuse unnecessary vaccinations (ask your vet to check vaccine antibody titers before automatically giving more vaccines)

## Sources and References

<sup>1</sup> [GeroScience October 19, 2023](#)

<sup>2,3,5</sup> [UC Davis October 19, 2023](#)

<sup>4</sup> [STAT News February 4, 2017](#)

<sup>6</sup> [Morris Animal Foundation July 26, 2023](#)

<sup>7</sup> [Morris Animal Foundation, Hemangiosarcoma Initiative January 12, 2023](#)

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