

## Does Your Dog's Breed Put Them at Risk of Cancer?

Dive into the latest study revealing how breed size and genetics influence cancer rates, with some surprising breeds at higher risk.

Analysis by Dr. Karen Shaw Becker

### STORY AT-A-GLANCE

- A newly published study by a University of California Riverside researcher reveals that unlike other species in which larger animals are more prone to cancer than smaller ones, in canine companions, this isn't the case
- Cancer typically occurs in dogs in their senior years; sadly, large and giant breeds often don't live long enough to have this happen to them
- The study results also point to inbreeding as a potential cause of cancer in purebred dogs, since they show that mixed breed dogs live on average about 1.2 years longer than purebreds of similar size
- According to a much earlier University of California Davis study, mixed breeds aren't necessarily any healthier than purebreds, and carry many of the same genetic disorders

According to the American Veterinary Medical Association (AVMA), approximately 1 in 4 dogs will, at some stage in their life, develop neoplasia.<sup>1</sup> Almost half of dogs over the age of 10 will develop cancer, and the risk nearly doubles for purebred dogs.<sup>2</sup> Dogs get cancer at roughly the same rate as humans, and it's the leading cause of death in canine companions after old age.

The results of a new study to learn more about which dogs are most at risk for cancer reveal some surprising findings.

### Large Dogs Often Don't Live Long Enough to Develop Cancer

The study was led by Dr. Leonard Nunney in the Department of Evolution, Ecology, and Organismal Biology at the University of California Riverside, and published in the Royal Society Open Science journal.<sup>3</sup> Generally speaking, larger beings within the same species are more likely to get cancer than smaller ones.

*"As things get bigger they are expected to be more prone to cancer," Nunney told ABCNews. "I'd previously shown that in humans we see this pattern. The difference is in dogs, you have things that range in size from a Chihuahua up to a Mastiff or a Great Dane."*<sup>4</sup>

Given this assumption, it would seem the largest dog breeds would have the highest rates of cancer. But Nunney found after analyzing multiple canine mortality databases and surveys, that this isn't the case. Sadly, the reason is that large and giant breed dogs don't often live long enough to get cancer.

Small breeds like the Chihuahua often live into their teens or early 20s, but dogs the size of a Great Dane or Great Pyrenees are typically with us just 6 to 12 years. Most dogs who develop cancer are seniors, and tragically, very large dogs don't enjoy many senior years.

*"Cancer is primarily a disease of old age, so if big dogs are dying at a younger age, they're going to have less cancer than you'd otherwise expect them to have if they lived to 15, 16 years of age," says Nunney.*

## Does Inbreeding Play a Role in Canine Cancers?

Details of Nunney's study results:

- Miniature Pinschers have a cancer risk of only 4%, while Bernese Mountain Dogs have a 55% chance of dying of cancer
- Flat-Coated Retrievers have a significantly higher chance of developing cancer than other breeds
- Scottish Terriers (for whom bladder cancer is a particular problem), Bernese Mountain Dogs, and Bullmastiffs showed a "notable risk" with cancer rates 50% higher than expected
- Terriers have elevated cancer mortality rates
- No breeds showed a significantly reduced risk of cancer
- Dalmatians and Bulldogs had consistently low rates for their size
- The East Siberian Laika and the Tibetan Mastiff showed some indication of reduced cancer mortality (this needs more study, as these two breeds were only present in one dataset)
- Chihuahuas and Pomeranians had the lowest cancer mortality ( $\leq 10\%$ ), along with the Pekinese

As Nunney writes in his study abstract:

*"Some of these breed differences in cancer risk may be due to the effects of inbreeding. Inbreeding has probably occurred to varying degrees throughout the long history of dog domestication, and in the relatively recent creation of many newly distinct breeds."<sup>5</sup>*

While Nunney's study results didn't reveal an increase in cancer mortality due to inbreeding, they did show that mixed breed dogs live on average about 1.2 years longer than purebred dogs of similar size.

Breeding practices would certainly seem to play a role in increasing the risk for specific types of cancer. According to the study, for example, many large breeds develop osteosarcoma (bone cancer), perhaps as a result of the extended period of bone growth experienced by big dogs.

## Are Mixed Breeds Healthier Than Purebred Dogs?

Many people feel mixed breeds are healthier than purebreds. One of the reasons for this notion is that when two or more breeds are blended together, there's less risk a dog will inherit breed-specific diseases.

The idea that mutts are healthier makes a certain amount of sense when you consider the poor breeding practices of puppy mill operators and many AKC associated breeders as well. There's excessive focus on breeding animals for certain physical characteristics, and entirely too little attention paid to selecting dogs for health and longevity.

The belief that breed-blending creates healthier dogs is part of the reason “designer dogs” like Goldendoodles, Morkies and Puggles have become so popular. It’s also why breeders are able to ask inflated prices for dogs that aren’t purebred.

But are mixed and designer breeds really healthier? Not according to what many veterinarians see in their practices, and not according to a multi-year study of veterinary cases at the University of California, Davis that indicates mixed breeds don't automatically have an advantage when it comes to genetic disorders.<sup>6</sup>

## Genetic Disorders Also Occur in Mixed Breeds

The UC Davis researchers looked at the records of over 90,000 purebred and mixed breed dogs that had been patients at the university’s veterinary medical teaching hospital between 1995 and 2010. Designer dogs were included in the study, since crossbreeding is presumed to reduce or eliminate genetic disorders like **hypothyroidism**, epilepsy, hip dysplasia and cancer.

Of the 90,000 records reviewed, 27,254 involved dogs with at least one of 24 genetic disorders, including various types of cancers, heart disease, endocrine system dysfunction, orthopedic conditions, allergies, bloat, cataracts, eye lens problems, epilepsy, and liver disease.

According to the study, the prevalence of 13 of the 24 genetic disorders was about the same for purebreds as mixed breeds. Some of those disorders were hip dysplasia, hyper- and hypoadrenocorticism, cancers, lens luxation and patellar luxation.

Ten conditions were found more frequently among purebred dogs, including dilated cardiomyopathy, elbow dysplasia, cataracts, and hypothyroidism. One disorder was actually more common in mixed-breeds — **cranial cruciate ligament ruptures**.

The researchers concluded that overall, the prevalence of genetic disorders among purebred and mixed-breed dogs depends on the specific condition.

The UC Davis study data also suggests breeds that share a similar lineage are more prone to certain inherited disorders. Four of the five breeds most commonly affected with elbow dysplasia were the Bernese Mountain Dog, the Newfoundland, the Mastiff, and the Rottweiler, which are all from mastiff-like lineage.

This suggests these breeds share gene mutations for elbow dysplasia as the result of having a common ancestor.

The flip side of the coin is that disorders that occur in both mixed breeds and purebreds seem to originate from well-established gene mutations that have spread throughout the dog population. These disorders include hip dysplasia, tumor-causing cancers, and hypertrophic cardiomyopathy.

## Is a Purebred Dog in Your Future?

If you’re thinking about purchasing a purebred puppy, I’ve developed a method to help you determine how healthy your new pet may be. Investigating the lifestyle of your prospective puppy’s parents through questions posed to the breeder can give you excellent insight into the health of your pup and his littermates.

You can find the questionnaire [here](#). These questions are intended to determine how committed the breeder is to the well-being of his or her dogs and their litters. If a breeder can't or won't answer these questions about the parents of the puppy you're considering, I recommend you find another breeder.

## Sources and References

[The Wildest, February 6, 2024](#)

<sup>1</sup> [American Veterinary Medical Association \(AVMA\), Cancer in Pets](#)

<sup>2</sup> [Nationwide Newsroom](#)

<sup>3,5</sup> [Nunney, L. Royal Society Open Science, January 2024, Volume 11, Issue 1](#)

<sup>4</sup> [ABCNews, January 30, 2024](#)

<sup>6</sup> [Bellumori, T.P. et al. JAVMA, 2013 Jun 1;242\(11\):1549-55](#)

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