

New Study About Animal Longevity Turns Up Weird Anomaly

They found that this animal was a major exception to the rule of longevity common to the animal kingdom. But why? And how can you use this information to bond tighter and longer to your favorite 4-legged friend? Noteworthy info you're unlikely to hear elsewhere.

Analysis by Dr. Karen Shaw Becker

STORY AT-A-GLANCE

- For many species of mammals, the bigger the animal, the longer it will live
- With dogs, the opposite is true — small dogs typically have much longer lifespans than large and giant breeds
- Studies show that large dogs age much faster than smaller dogs, which is why they die younger
- A recent smaller study also suggests cell damage from excessive amounts of free radicals starts at a young age in large breed puppies

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When it comes to the lifespan of mammals, the general rule is the bigger the creature, the longer it will live. For example, elephants in their natural habitat can live into their 60s. The average lifespan of a squirrel, on the other hand, is only about six years.

Small mammals normally have lower metabolic rates than larger species, which is why larger animals with higher metabolic rates live longer. However, when it comes to domestic dog breeds, even though smaller dogs have lower metabolic rates, they live longer than large and giant breeds.

This is essentially the opposite of what occurs in other species. A **Yorkshire Terrier**, for example, can be expected to live from 13 to 16 years, whereas a Great Dane will live only about half that long.

A Big Dog's Life 'Unwinds in Fast Motion'

A 2013 study established that big dogs die younger primarily because they age quickly.¹ Study authors believe these findings can help scientists understand the biological links between growth and mortality.

Dogs were the perfect subjects for the study, because humans have bred them throughout history to be wildly variable in size.

The heaviest dog on record was probably an English Mastiff that weighed 343 pounds, while the smallest was a terrier weighing in at under a quarter-pound.² There is no other species of mammal with such tremendous size disparity.

The study looked at ages of death in 74 breeds and over 56,000 dogs that visited veterinary teaching hospitals. Researchers learned that large breeds seem to age at faster rates than smaller breeds, and the speed at which the risk of death increases with age is also greater with big dogs.

According to study authors, large dogs age at an accelerated pace, suggesting “their adult life unwinds in fast motion.”³ For a dog, every 4.4 pounds of body mass takes about a month off his life.⁴

The researchers next want to look at the growth and health histories of dogs to narrow down the leading causes of death for large breeds. For example, **bigger dogs more often acquire cancer**, which makes sense when you consider they grow more than small dogs, and cancer is the result of abnormal cell growth.

It’s possible humans have inadvertently selected for characteristics — like rapid growth — that predispose large dogs to cancer.

Other large animals like elephants that have many more cells than smaller creatures — and should therefore also be at greater risk for cancer — seem to have evolved special defense mechanisms against disease.

These mechanisms probably developed through natural selection over a very long period of time, whereas most dog breeds have evolved through selection by humans, and over a much shorter period of time.

Evolutionarily speaking, dogs have evolved in the blink of an eye, and protective mechanisms against cancer and other diseases haven’t had time to catch up.

Is There a Difference in Levels of Oxidative Stress in Large Versus Small Dogs?

Recently, two undergraduate students at Colgate University decided to investigate why smaller dogs seem to age more slowly than large ones.⁵ For their study, the undergrads wanted to look specifically at the influence of free radicals and oxidative stress on the aging process in dogs.

Oxidative stress, which is associated with aging, is defined as physiological stress on the body caused by the cumulative damage done by oxygen free radicals inadequately neutralized by antioxidants. Free radicals are unstable molecules with an uneven number of electrons.

These unstable molecules travel around the body looking to bond with stable molecules so they can steal an electron and stabilize themselves. When they are successful, they create new unstable molecules that damage cell membranes and eventually contribute to cancer and other diseases.

The researchers contacted veterinarians and collected about 80 tissue samples (removed during routine surgical procedures) from both large and small breeds of varying ages, from puppies to old dogs.

With the help of a Colgate animal physiologist, they isolated cells from the tissues, grew them in a lab dish for several weeks and then analyzed them.

Cell Damage From Free Radicals Starts Early in Large Breed Dogs

The students discovered that energy and free radical production in the cells from the adult dogs was comparable for both large and small breeds, as were the amount of antioxidants.

However, the cells from large breed puppies had excessive amounts of free radicals — too many for antioxidants to effectively neutralize.

Large breed puppies have faster metabolisms and growth rates than smaller breeds, and the results of this study suggest cellular damage starts accumulating at a young age in larger dogs. "Cell damage even at this young age can have long-lasting effects," says researcher Josh Winward.

The Colgate study results are preliminary, but if they can be replicated in future research, according to Winward, it might be possible to extend the life of large and giant breeds by supplementing antioxidants in puppies to help destroy free radicals before they can do damage.

Helping Your Big Dog Live a Long, Healthy Life

If you're the parent of a large or giant breed dog or are thinking about adding one to the family, I hope you'll watch my interview with a wonderful Newfoundland breeder, Dr. Jeff Bergin, whose dogs live into their late teens.

If you're familiar with Newfies, you know a 17-year lifespan is almost unheard of! Some of the wonderful practices Dr. Bergin follows with his dogs include:

- **Feeding exclusively raw, balanced diets** — Fresh meats and organs provide an excellent base for puppies, and vegetables and fruits provide much needed antioxidants for a growing body.
- **Breeding for health, first and foremost** — Dr. Bergin breeds his dogs only once or twice during the course of their lives, with at least six years between litters. He does not breed dogs with congenital defects, and so far only one of his dogs has had a genetic health issue, a heart problem. (Heart problems, osteosarcoma and hip dysplasia are the most common health challenges for this breed.)
- **Performing regular chiropractic adjustments** — With large and giant breed dogs, it's very important to take care of the musculoskeletal system. Dr. Bergin happens to be both a licensed animal chiropractor as well as a human chiropractor. He performs regular manual orthopedic manipulation on all his dogs, from the moment they first stand on their own through the remainder of their lives.

This practice is one of the keys to keeping a big dog's frame from degenerating with age. Dr. Bergin's dogs are typically still fully mobile even at the end of their lives.

- **Limiting vaccines and other assaults on the immune system** — Dr. Bergin only revaccinates his dogs against rabies, because the law requires it. By strictly limiting the number of vaccines they receive, he helps keep his dogs' immune systems strong and resilient.
- **Insuring litters go to the right families** — Dr. Bergin performs a mandatory home visit to families interested in his dogs. He won't release a dog without seeing the new home. He conducts in-depth interviews with prospective owners to insure the puppy will be well taken care of, and he also insists on a commitment from prospective owners to feed raw.

For most pet parents, it's the quality of their dog's life that is most important. You may have your animal companion with you for eight years or twice that long.

By focusing on what I call the three pillars of health — nutrition, maintenance of the frame and a strong, resilient immune system — you can insure you're providing your canine companion with everything she needs for an excellent quality of life for as long as she lives.

Sources and References

¹ [The American Naturalist, Vol. 181, No. 4, April 2013](#)

^{2,3,4} [LiveScience, March 6, 2013](#)

⁵ [Meeting Abstract, Society for Integrative and Comparative Biology 2017 Annual Meeting](#)
