



*We explore how Dalmatians get their spots—and other mysteries of the canine coat.*

**C**ertain breed enthusiasts point out that some dogs, such as Poodles, grow hair, but other breeds grow fur. The only real differences, however, stem from:

- Growth cycles, with hair growing longer
- Texture, with hair being finer or wavier
- Shedding, with fur falling off and hair getting trapped by the coat

Otherwise, Adam P. Patterson, DVM, board-certified veterinary dermatologist and clinical associate professor and chief of dermatology at Texas A&M University, says, “There is nothing different between hair and fur in and of itself, but rather who it is on. Humans are said to have hair, while the hair of dogs (and non-human mammals) is called fur. Some people reserve ‘fur’ for dogs with double coats, but basically all this is semantics.”

Jessica Kania, DVM, a relief veterinarian in the Chicago suburbs, suspects the colloquialism is a holdover from “the belief that humans are not the same as animals.” However, microscopes reveal the same hair and follicle structures across all mammals. She jokes, though, about “furry friends” sounding better than “hairy friends.”

#### COAT TIMELINE

The average canine pregnancy lasts 8 1/2 weeks, says Kania, while hair follicles and hair develop in week five. Higher body temperature in puppies also plays an important role in breeds that change color after birth, such as Dalmatians, who are born entirely white.

“Once the puppies are mobile and exploring (around three weeks), the average temperature of the skin starts to drop, and cells that couldn’t produce pigment at a higher temperature begin to produce it now,” she says.

The transition from puppy coat to adult coat varies by breed—anywhere from 4 to 6 months to more than a year.

“An adult coat is made up of primary fine to coarse guard hairs and secondary fine undercoat hairs,” Patterson says. “Depending on the breed, and hence genetics, the proportion of primary versus secondary hairs is different.”

#### JUST THREE GENES

In 2009, researchers at the National Institutes of Health “identified distinct mutations in three genes, *RSPO2*, *FGF5*, and *KRT71*, that together account for most coat phenotypes in purebred dogs in the United States.”

They looked for genes responsible for:

- Furnishings such as mustaches and eyebrows, often seen in wirehaired dogs
- Hair length
- Presence or absence of curls

They also found that shorthaired breeds display the “ancestral state in all three genes” like gray wolves, whereas other breeds carry one or more mutation.

#### SHAVING AND REGROWTH DEBATE

Dogs’ coats provide physical protection and temperature regulation. Yet some believe dogs with double coats feel cooler shaved. Others swear shaving ruins the coat. What’s true?

“The best thing you can do for a double-coated breed, especially during warm months, is keep the undercoat well-groomed to ensure air circulates properly to their skin,” Kania says.

However, sometimes veterinarians need to shave areas to prevent infection following injury or surgery. Regrowth timelines depend on coat type. Patterson estimates four months for breeds such as German Shepherd Dogs, terriers, and Dachshunds, but in breeds like Chow Chow, it

## Common Causes of Bald Patches

Adam P. Patterson, DVM, a board-certified veterinary dermatologist and clinical associate professor and chief of dermatology at Texas A&M University, lists these common reasons dogs may develop bald patches (alopecia):

- Infections
- Parasitic mange
- Self-inflicted hair loss because of itch (allergies)
- Hormonal or endocrine disorders
- Diluted coat colors (blue, silver, fawn)
- Too tight barrette or bow on the top of a dog's head
- Injection-site reactions

“If it doesn’t grow back, often it’s because of a scarring disease (hair follicles replaced with scar tissue),” Patterson says. “Usually, hair will grow back with most forms of hair loss if the underlying cause is identified and managed.”

might take as much as 18 months. “Depending on the stage of the hair growth cycle at the time of clipping, as well as the breed of the dog, some-

times hair growth may not be seen for up to two years,” Patterson says. Kania compares coat regrowth to a forest, after a section gets clear cut.

Just like tree seedlings, some hair “can’t grow there yet and won’t for a while, not until there’s more shade and protection.”

### SOME FUZZY FACTS

Extra thanks to Patterson and Kania for these additional fur facts:

- Sometimes dogs’ coats grow back a different color (temporarily) after shaving.
- Shape of hair follicles determines shape of the hair shaft (curly or straight).
- Tiny arrector pili muscles allow dogs to move individual hairs or whiskers (raising hackles or increasing coat insulation with more air pockets). **FD**

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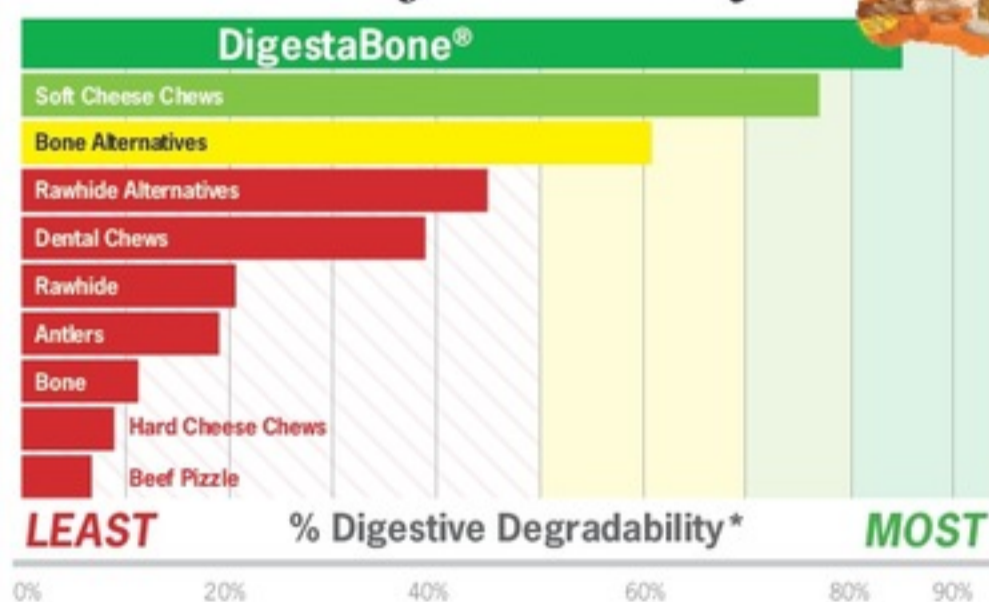
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