

But Why: A Podcast for Curious Kids

Why Do Dogs Have Whiskers?

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[Jane] This is *But Why: A Podcast for Curious Kids* from Vermont Public Radio. I'm Jane Lindholm. On this podcast, you ask the questions and it's our job to find interesting people to answer them.

In this episode we're talking all about dogs.

Now if you want to learn about cats, check out our companion episode. That episode includes some amazing facts about how cats communicate with humans in a special language they make up with their own individual human family.

But in this episode we're going to stick to barks instead of meows.

Lots of your dog questions had a common theme, you want to know about some of the ways that dogs are different from humans. Jessica Hekman is a veterinarian and a dog researcher and she has a blog called "The Dog Zombie" because she's obsessed with dog brains, studying them, not eating them.

Anyway, I guess you could say she's a dog scientist and she's here to answer your dog questions. Our first one comes from Margo who is 5 and lives in Amherst Massachusetts.

[Margo] Why do dogs have tails and we don't?

[Jessica] That's a great question, Margo. Whenever someone asks a question about why does one type of animal look one way and is set up one way and why is another type of animal built a different way, the way I like to think about it is talking about that difference why, what do we use it for?. So dogs' ancestors, wolves, ancient wolves had to run to catch their dinner and tails helps them balance when they ran. So that was why they had them back then. And dogs, some dogs, still do have to run as part of their job, right, like sheep herding dogs have to do a fair amount of running. But dogs also use their tails to communicate. That's another good reason they have tails. They don't use noises quite as much to communicate as humans do, but they use body language a lot more than humans do.

So with dogs, a tail that's held up really high means, 'hi, I'm confident.' A tail that's held low means 'I'm nervous.' A tail that's really clamped right underneath their butt means 'please don't smell my butt right now' and also 'I'm really scared.' And then a wagging tail something we're all really familiar with because it can mean that the dog is happy

but also you can sometimes see it in angry dogs. So I would just caution you to be really careful when you see a wagging tail.

Overall we try to look at the whole dog not just the tail to interpret body language but the tail is definitely a very important part of the dog's tools for speaking.

[Jane] Why might a dog wag its tail when it's happy or when it's mad? Why would it wag its tail for both possibilities?

[Jessica] I think from the dog's perception that they might be seeing something different from a wagging tail than we do they have this very complex set of tools that they use in body language. And we as humans, because we're not dogs, we just have trouble fully interpreting that. And so I think that you know a wagging tail, it might look a little bit different to them that the dog is happy than if the dog is angry. And we as humans might just not be able to perceive those differences. And sometimes I think a dog who is angry or alarmed or considering that they might possibly bite you will wag its tail almost as an appeasement gesture to say like 'hey I'm not a threat. I'm not. Don't hurt me.'

But they might still be thinking 'I'm kind of scared of you and I'm prepared to bite if you come any closer,' so it's just it's just always important to look at the whole dog. Look at his face and his eyes and you know how he's holding the rest of his body and not just the tail.

[Alex] Hello, my name is Alex. I'm six years old. I live in Falls Church, Virginia and my question is why are dogs thumbs up high on their paw?

[Jessica] Hi, Alex. Well, I think dogs have their thumbs high up on their paws to keep them out of their way because they are basically walking on their hands, right. So they're using their fore limbs for something differently than what we are. Horses, by the way, have taken this to an extreme. They walk just on the tips of their middle three fingers which have evolved into hooves. So I almost feel like it might be a better question to say why are human thumbs so far forward, rather than why are dog thumbs so far back. We're actually the ones that are unusual because humans and other primates like monkeys and apes we have this unusual hand that we use to hold things because we evolved to climb, right. And so we would use our hands to climb up a tree and then humans, our thumbs are even more different than in other primates because we have these very complex hands that are good for really delicate work like holding a pencil and things like that. So we're actually the unusual one.

But yeah they walk around on their paws obviously and they don't want their thumbs to get in the way.

[Jane] So why do they have a thumb at all then?

[Jessica] Well, I think that's the basic structure of mammals is to have five fingers on a hand or a foot or a paw or a flipper however you want to think about it. And so every mammal was sort of set up with that structure and then they all just use it in different ways so dogs ended up saying 'well this isn't a very important one of my fingers so I'm going to get it back out of the way.' And you know horses said even more of those fingers are not important we'll get them back out of the way. But they were useful for other mammals, right. So like think about whales or dolphins definitely use all five fingers to have a nice big flipper for guiding themselves around in the water with so it just all comes back to what the original mammals looked like many millions of years ago they had those five fingers, those five digits and it's just what we've done with them since then.

[Hazel] Hi. I'm Hazel. I live in Duxbury, Vermont and I'm seven years old. I want to know why dogs have whiskers?

[Jessica] Hey, Hazel. Dogs don't actually rely on eyesight as much as we do, which you know right, that their noses are really, really good. And so they have these other extra good senses that help them out more than ours. So on just as their noses are better than ours and they use them to explore the world more, they also have whiskers to help them feel their way around in low light.

So if you were walking around and you couldn't see very well and you were coming close to bumping up against a wall your whiskers would warn you before you bumped up against the wall. So that's why dogs and cats have whiskers. That's just another way, another sensory input system that they use that we don't really need partly because our eyes are so much better, but also partly because we aren't as interested in moving around in the twilight as they are because they're predators and that's a really good time for them to hunt.

[Jane] I don't know. I mean I like moving around in twilight I kind of wish I had whiskers that might be kind of cool.

[Jessica] You probably have a flashlight though, right, for when you need it.

[Jane] That's true and dogs don't have thumbs so they can't hold a flashlight we already established that.

[Jessica] Right, exactly. It all ties together.

[Lola] My name is Lola. I am seven from Oakland, California. My question is why are dogs' eyesight black and white?

[Jessica] Hi Lola. One of my best dog friends actually is named Lola. So it's nice to meet you. Actually dogs can see some colors, they don't actually just see black and white. They see fewer colors than we do. So they don't actually see red, but they can see blue and green and yellow. And by the way if you have a smartphone you can look for dog vision apps that will let you use your phone to see the world in the same colors that dogs see. I checked that out and they have them both for Android and iPhone and they're super cool.

So then the question I think is really why humans can see red, right? And the answer is probably that our ancestors evolved that ability so that they could see brightly colored fruit like red or orange fruit, which was probably an important part of our diet millions of years ago. So if you look at other animals who can see reds, other primates who are very interested in fruit and also birds who are very interested in fruit can also see red. And again just like with the whiskers question, dogs don't rely on vision as much as we do so that could be another part of the story, that having detailed color vision is just not as important for them.

But a funny thing about this is that lots and lots of dog toys are red. My golden retriever's favorite toy was his red ball, but it's really hard for dogs to see red toys on green grass because again they don't differentiate between red and green. They do differentiate between green and blue. So a blue toy or a yellow toy can be a lot easier for them to see. But if you notice sometimes you throw your dog's red ball it lands on the green grass and when it stops moving your dog has trouble seeing it, that is actually probably because they have that trouble with the red-green color blindness.

So look for a good dog toys in blue or yellow. But of course humans really like red and we're the ones who pay for the toys, so the toy industry makes a lot of red toys.

[Sophie] My name is Sophie. I'm eight years old. I live in Hinesburg, Vermont. My question is why do dogs have more babies than humans do?

[Jessica] Hey, Sophie. Yeah, so right, different kinds of animals have different litter sizes and dogs definitely do have larger litter sizes than humans.

So some species have really, really large litter sizes and as a result they kind of don't expect many of the babies to make it all the way to adulthood. So sea turtles are a really great example of this. They can lay dozens or hundreds of eggs in one nest. But often from that one nest you only see one or two babies growing all the way up and sea turtle parents don't really stick around all that much to help out. They lay the eggs and they're out of there and the babies are on their own and so to increase the odds of a couple of them making it they have a whole bunch. So then humans and elephants are on the opposite extreme, right? Both of us, our species have very few just one or two babies at a time but almost all of our babies get all the way to adulthood and then our parents

take really good care of us. Your parents are probably going to take care of you for about 18 years, which is very different commitment from a sea turtle laying an egg and leaving, right?

So dogs are somewhere in the middle. And if you talk to a dog breeder you will find out that in a litter of puppies, it's not that uncommon for one or two to not make it. But on the whole most of them do.

[Jane] Sophie's sister, Eva, also has a question about dogs.

[Sophie] I'm five. Why do dogs like to roll around in the grass?

[Jessica] Lovely question! And for that I don't really have a great answer for you I don't think we really know I think it they just find it fun, right? And so you know they might be itchy is one thing and they don't have thumbs and it can be hard for them to reach particular areas of their body to itch.

My golden retriever Jack used to use his red ball which I talked about before as his favorite massage tool so he would put the ball down in the grass and then he would roll on top of the ball. But I think it's just fun, honestly. You like rolling in the snow and maybe you would like rolling in the grass if you tried it.

[Jane] OK. So grass may be one thing and Eva is too nice to ask the question that I'm going to ask, but my dog Oliver prefers to roll in poop or raccoon pee or any gross, dead thing he can find in the forest. So it's not just lovely grass that they're rolling in.

[Jessica] Yeah, that's true. And unfortunately I don't have a good answer for you. Scientists really want to know actually and wolves do it too. And we don't know. We have a lot of theories: is it that maybe the animal is putting the smell on his own body in order to take it to show it to his friends? So maybe with wolves it would maybe be that a wolf goes out and finds a good kill and wants to roll in it to bring it back to show the other wolves, 'oh there's something tasty out here.' Or maybe he wants to roll in the pee from an invading wolf that really shouldn't be in his territory to bring it back and show the other wolves. But we just don't know for sure. We can't ask them. And it's really hard to do studies about that.

I was very lucky to be at Wolf Park one week when a dog scientist who does olfaction research so he studies about smell and how dogs smell and what kinds of smells they're good at smelling.

And he did this study where he put different smells out there on the ground for wolves to smell and then they would roll on them and then he would test to see if when they went back to see their other friends if their other friends would sniff them more or less and he just didn't find any good solid answers from that study. We were all really sad because

we were hopeful that it would have told us something so we just we don't know. It's a great question.

[Jane] By the way Wolf Park is a place in Indiana where people can see wolves and where researchers can study them. Earlier in this episode, we heard from Alex in Virginia. He has another question about his own dog specifically.

[Alex] Why does my dogs belly turn purple in the sun?

[Jessica] I think that probably sounds like it's a bad sunburn, honestly.

If it is, you know, if your dog is lying out in the sun on his back and then his belly turns purple, I would try to keep him out of being in that much sun. You know either way it might be worth talking to your veterinarian about it to see exactly what's going on. It's not, the sunburn is the only thing I can come up with.

[Jane] But it is possible for dogs to get sunburned?

[Jessica] Oh sure. Yeah. There's the Chinese-Crested breed is mostly hairless and they have to wear suntan lotion just like the rest of us. They just, just like you don't get sunburned on your scalp where you have hair, they don't tend to get sunburned where they have fur. But if you expose them to a lot of sun and they don't have fur protecting them absolutely they'll get sunburned.

[Auden] Hi my name is Auden. I'm six years old. I'm from Rumsen, New Jersey and my question is why do dogs don't sweat?

[Jessica] Hey Auden. Dogs actually do sweat. They sweat in a different place than you do, they sweat on the pads of their feet. So if your dog if it's a really hot day you might notice that your dog leaves little footprints when he walks around and that would be the sweat coming off of the pads of his feet. But they also, unlike us, blow off heat through their tongues. So when it's really hot out and your dog pants that's sort of like sweating he's doing the same kind of thing is sweating trying to get rid of that excess heat. So you'll see as he gets hotter that he'll hang his tongue longer and longer and longer and then as it gets really hot out he will actually spread out the tip of his tongue into what we call a shovel shape. So if your dog starts getting what we call the long tongue then he definitely needs to take a break from any exercise that he's having, and needs to have some water and he needs to get either into some shade or into the AC because he's getting too hot and you need to take care of him.

[Jane] We've had a lot of science questions about dogs' bodies and why their bodies do the things that they do. But my son asked this question.

[Dylan] My name is Dylan. I live in Monkton, Vermont. I'm three years old. My question is why are dogs not friends with cats?

[Jessica] Well, some dogs are. Some dogs like cats and so I used to have dogs and cats who live together very nicely. So there's a couple of things going on with dogs who don't like cats. One thing is that cats tend to be smaller than dogs and dogs their ancestors are predators so even though we feed dogs and they don't have to go hunt they still have some of those instincts, some of them more than others, to chase small things. And so they have those instincts that this is a you know a little thing maybe I want to see if I want to chase it. And that can obviously go wrong either if the cat runs away then the dog learns to chase cats or if the cat turns around and defends herself then the dog might learn that cats are scary and might in the future either be afraid of them or bark at them or be aggressive towards them.

But the other thing that's going on is that you know why do some dogs learn that cats aren't prey and that we shouldn't act like predators towards them? And that generally is because those dogs have met cats when they were very young. So when animals are really little and this is true of humans to whatever we learn that is around us that's normal we assume as we grow up that that's what's normal. So if when you have a little puppy you expose him to cats and he learns these are nice friendly things that I shouldn't chase and I should be friends with them as he's an adult it will be very easy for him to meet new cats and be friends with him as well. And that's not just cats right. That's strange people, strange things. You know people who are dressed funny like the mailmen, funny things like bicycles and skateboards, those are all things that dogs should meet when they're really little so that they are not surprising and scary as they grow up.

[Jane] So is that kind of also where the phrase 'old dogs can't learn new tricks' comes from, that new things are going to be scary or confusing to an older dog who wasn't exposed to it as a puppy?

[Jessica] Yeah, I think definitely it's easier for a really young dog to learn new things about the environment. Of course the 'old dogs can't learn new tricks,' phrasing is a bit wrong because old dogs certainly can be trained and they certainly can be trained to learn new tricks but it is a little harder for them to learn that's something that they've always thought is scary is actually not scary. It can be done it just takes a lot more work with an adult dog than with a baby dog.

[Jane] Jessica says we love our dogs but she has spent a lot of time thinking about how dogs behave and what might be going on inside their brains. And she has one final thing she wants us to keep in mind when we're interacting with our dogs.

[Jessica] Sometimes we think that our dogs, I mean I don't I don't want to say that we treat them quite like a stuffed animal, but I am definitely fall prey to this feeling of like well I want to pet my dog right now. And so clearly it's time for me to pet my dog and obviously my dog will want to be petted because he's a dog and he always loves to be petted. But it's, you know, they don't want to cuddle with us every moment of every day just like if you were out playing and having fun with your friends and your mom said come over and sit with me right now, come sit on my lap and let's cuddle. You'd say 'that's crazy. I'm doing something else. I'm not interested in cuddling right now.' And dogs have that same perception of the world that they have their own stuff going on and they love us and they love cuddling with us. And most of them love being petted but not necessarily every time. And so trying to think about the dog's perception can be really useful and just saying you know if I'm going to pet him and he's not really into it then maybe I'll pet him in an hour. And just thinking about him as a little creature with his own perception in his own world can be really useful and is hard for all of us not just kids but adults too.

[Jane] Remember, never approach a dog you don't know and pay attention to what your dog's body language is trying to tell you. As Jessica told us at the very beginning of this episode just because a dog is wagging its tail doesn't mean it's feeling happy or that it wants a hug. I mentioned my dog Oliver earlier and his love for rolling around in anything that smells particularly disgusting to me. I may not love that behavior but having a dog in our life has been so much fun for my family. We get out into the woods with him every day and we get to run around and sniff things with him and try to figure out what he's pointing at when he sees something in the bushes and we sleep with him at night and he's really just a big furry part of our family.

Tell me about the dogs in your life, or the cats. Remember we have a whole episode about cats that we're releasing at the very same time as this one all about our feline friends so make sure you listen to that one too. And then tell me about your dogs and cats and maybe you have other questions or you want to draw us a picture, take a photo of it and we'll put it up on our Facebook page.

Now as always if you have a question about the world around you or about history or politics or friendship or well anything send it to us. Have an adult record you using a smartphone. Tell us your first name where you live and how old you are and what your question is, then have your adults send it to questions@butwhykids.org. We will do our best to get an answer for you.

But Why is produced by Melody Bodette, and me, Jane Lindholm from Vermont Public Radio. Our theme music is by Luke Reynolds. We'll be back in two weeks with an episode that takes this idea of pets and runs with it.

We'll talk to a guy named Hal Herzog who tries to figure out how animals and humans interact. So be sure to tune in for that one. And until then, Stay Curious!