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[00:00:15] **Jordan:** Hi, I'm Jordan.

[00:00:17] **Kit:** And I'm Kit.

[00:00:18] **Jordan:** Welcome to *Starry Time*.

[00:00:21] **Kit:** *Asterisms Edition*.

[00:00:24] **Jordan:** Where stars plus lines equals stories.

[00:00:28] **Kit:** With an asterisk.

[00:00:31] **Jordan:** In these episodes, we'll explore ideas, concepts, or people that didn't make it into the main show or that we just want to talk about a little bit more.

[00:00:41] **Kit:** This week, we're headed into Creature Corner to talk all about giraffes.

[00:00:46] **Jordan:** All right, Kit, so usually we start off Creature Corner. I just get a baseline. What do you know about this creature? Kit, what do you know about giraffes?

[00:00:55] **Kit:** I know giraffes are tall. They're very tall, and that a lot of that tall-- They do have long legs, but their neck is very long, but there's fewer neck bones than you would expect. I don't know how many, but I know that they're big, and there's less than you would think, considering how tall the neck is. I know that they tend to be spotted and to be yellow and brown. They're found in parts of Africa.

[00:01:26] **Jordan:** Yes.

[00:01:27] **Kit:** Their tongues are really long. They eat plants that are high. I think I've seen something about maybe their babies are born standing. They can walk when they're born, babies, is, I think, true, but I'm not sure about that. That's what I know about giraffes. I'm excited to learn more. I'm excited to find out if anything I know is untrue.

[00:01:51] **Jordan:** Kit, I think this is probably your most well-versed creature.

[00:01:57] **Kit:** Wow, okay.

[00:01:59] **Jordan:** Yes. A lot of the facts we're going to discuss today are just things that you've already brought up, but with a little bit more depth. Yes, you're absolutely right, five for five on all these facts that you've brought up.

[00:02:12] **Kit:** They're some of my favorite animals to see in Animal Kingdom. You see a giraffe and you're like, "That's cool."

[00:02:19] **Jordan:** The most important thing that I learned about giraffes is that they have changed since when you and I were growing up. Up until the past decade or so, zoologists thought all giraffes were a single species, which of course was our

giraffe, *Camelopardalis* of the constellation. Then there, of course, there are different subspecies that had different patterns, as you noted.

Within the past decade or so, they've done some genetic sequencing, and they've realized there are actually four genetically distinct species of giraffe. The northern, the Maasai, the reticulated, and the southern giraffe. There are eight recognized subspecies. Their DNA differences are deep enough that these lineages may have diverged right around when humans started evolving, between 0.4 and 2 million years ago. It's as big enough of a split as the one between polar bears and brown bears. In our life, we have gone from thinking that there were a bunch of different subspecies of one giraffe to now four species of giraffe with a couple subspecies each. Another cool fact about the giraffe is about their heart. Their heart weighs about 25 pounds-

[00:03:48] Kit: Woo.

[00:03:48] Jordan: -which is pretty big. What makes it actually really cool is less so the size itself, but the extraordinary force that it's able to push throughout the body. Of course, we got this long neck, but it generates double the blood pressure of a human heart. Not only is it way bigger than our heart, it's also pumping way, way, way, way harder. It's bigger, stronger, harder.

Then it also has this whole other thing that the heart has, like a system of valved veins and elastic walls which create this fine network of vessels at the base of the brain, that buffer sudden pressure changes, which is called the rete mirabile. This network of fine blood vessels in their brain is the only thing that allows them to bend over when lowering its head without being able to faint. Without this--

[00:05:00] Kit: That does make sense.

[00:05:01] Jordan: Without this wonderful, literally, miracle vessel, every time it tried to bend down and-

[00:05:10] Kit: Just pass out.

[00:05:10] Jordan: -take a drink, it was going to pass out. It's got extraordinary force, and then a very complex system of valve veins and artery walls in order to make sure it doesn't pass out.

[00:05:24] Kit: It better be really careful that it's not targeted for the next heart disease treatment. I hear if you just find a really big heart, that's where the answers lie.

[00:05:37] Jordan: In the hit movie *Jurassic World Rebirth*, our scientists are sent to Isla. Can you remember the name of the Is--

[00:05:48] Kit: No. Isla something. Isla Terror. It's something, but Isla, nobody comes here.

[00:05:53] Jordan: It was something new. It was something like French, I thought. As you said about the neck bones, it does have the same amount of bones in its neck as you and me. In fact, there are seven bones in the giraffe's neck.

[00:06:09] Kit: Seven?

[00:06:10] Jordan: Just seven.

[00:06:11] Kit: Wow. I knew there weren't a lot, but seven? What? How? Why? They must be so big.

[00:06:21] Jordan: They are. The same seven that you and me have. In fact, they're just way, way bigger. When we do see some of the creatures from *Jurassic World*, this is not the case. They, in fact, have a lot, a lot, a lot more neck bones.

[00:06:40] Kit: I have seen skeletons of Diplodocus and Brachiosaurus. I know they got a lot more bones in there.

[00:06:50] Jordan: Not our friends giraffe. They have the same seven cervical vertebrae. It's just that each one's about 10 inches long, foot long. That's all.

[00:07:01] Kit: Wow. That's wild.

[00:07:03] Jordan: It does the job.

[00:07:05] Kit: Yes.

[00:07:05] Jordan: They also use these necks not just to reach acacia trees. They also use their necks as a form of mating battle ritual. There's a type of jousting that goes along called necking, in which they use both their necks and the little ossicones on the top of their heads to duel with each other. They "swing their necks like pendulums, using their heavy skulls as hammers. These contests can last for hours and often end without injury. Though occasional blows fracture ribs or vertebrae."

[00:07:55] Kit: Oh, no.

[00:07:58] Jordan: This is from *The Journal of Mammalogy* in 2022. The victor earns mating rights, of course. Occasionally, if you're a real goat of necking, lifelong social rank.

[00:08:12] Kit: Wow. Clout can last for a long time, I guess. Okay. Wow. Huh. Do all giraffes have the little horns or just males?

[00:08:22] Jordan: That is a great question. Their horns are actually kind of special. What the giraffe has is what's called an ossicone, which isn't a horn or an antler. It's like a bony growth that's covered in skin and hair. Actually, both sexes do have them, though males' ossicones grow thicker with age and, "May lose fur at the tips after years of sparring."

[00:09:00] Kit: Wow.

[00:09:00] Jordan: Let me see a bald ossicone. You have to imagine, it's--

[00:09:04] Kit: To fight.

[00:09:05] Jordan: Yes. A lover and a fighter.

[00:09:08] Kit: This is so wild. It's hard to imagine. I feel like every time I see images of giraffes, they're just eating and looking regal. It's hard to imagine them engaging in fighting behavior. But, hmm. If I were to imagine it, I wouldn't imagine just like, let's flop our necks at each other, but okay, I'm learning. I'm learning.

[00:09:32] Jordan: Next time we watch a prehistoric planet or one of these documentaries where we see sauropods neck attacking, we have to assume that it's being based upon some crazy real world behavior. Anyways, speaking of which, the legs and the neck of the giraffe evolved in tandem. It would have toppled the circulation system if just the legs had stayed really small, the neck growing big, or vice versa.

[00:10:03] Kit: That makes sense.

[00:10:05] Jordan: Another cool adaptation that it has that goes back to its diet with these acacia leaves is, of course, that it has this giant tongue that's like 18, 20 inches long.

[00:10:22] Kit: Wow.

[00:10:23] Jordan: It's thick and it's like a dark black purplish color. It's prehensile, much like the elephant's trunk. The giraffe has a lot of ability to manipulate it. That is because its favorite food, these acacia leaves are surrounded by thorns, of course. It loves a good, thorny acacia leaf. It's develop these super tongues in order to avoid the thorns and get to the good, good stuff. Then this color, of course, to block it from sunlight. This is a darkly pigmented protection from UV exposure, because apparently, their tongues are out most of the day.

[laughter]

[00:11:14] Kit: They got to eat a lot, I think. Right? They're really big. Got to feel that heart. They have this natural sunscreen on their tongue.

[00:11:23] Jordan: Also, they also have-- the spots are more than just like decoration, of course, or camouflage. They also can regulate heat. Each dark patch has a network of sweat glands and blood vessels that are like little miniature radiators. They're like natural cooling zones as well. All these patches and the complexity and shape of them are entirely different.

[00:11:50] Kit: I'm looking at pictures here. I guess I've only ever seen maybe like the West African or Nubian giraffes, but some of these look like fractals. These are cool. I don't think I've ever seen a giraffe with anything other than the more spot-like patterns. Whoa. These are neat.

[00:12:11] Jordan: They're kind of like the-- I hate to keep making dinosaur metaphors, but you came here for a reason. They're a lot like the sails or the plates of the stegosaurus, for sure.

[00:12:22] Kit: That's cool. Yes, I did not know that.

[00:12:26] Jordan: They have these long prehensile tongues. They have these thermoregulating spots. They have seven cervical bones in their neck, just like you

and me. They have a extraordinary force-pushing heart. Two last things that they have that are super exciting. First, as you said, when they're born, they are born standing. The first event of their life is that six foot drop to the ground that breaks the umbilical cord and stimulates breathing.

[00:13:03] Kit: Oh my gosh. Wow. I hadn't thought-- I thought that the giraffe baby could walk. I didn't think about how high up off the ground the giraffe giving birth would be. Wow. Okay, well, just like, "Good luck."

[00:13:27] Jordan: Good luck. Within one hour, it can walk. Takes it about five hours to learn how to run. Great way to start life.

[00:13:37] Kit: Hit the ground running-- or walking, then running.

[00:13:41] Jordan: Hit the ground hard. That part we know, for sure.

[00:13:47] Kit: How many giraffes are usually born at once? Just one giraffe at a time. Is that how big the--

[00:13:52] Jordan: Yes.

[00:13:53] Kit: Okay, that makes sense.

[00:13:54] Jordan: I can tell you about their gestation period if you'd like as well.

[00:13:59] Kit: Sure.

[00:14:01] Jordan: Sure. Generally, one giraffe--

[00:14:03] Kit: While we're here.

[00:14:04] Jordan: Yes, while we're here. Generally, their gestation period is like a year-and-a-half.

[00:14:10] Kit: What?

[00:14:11] Jordan: Yes. Takes a long time to bake a giraffe.

[00:14:16] Kit: They do have to survive a 6-foot fall. I guess they got to be a little sturdy.

[00:14:23] Jordan: Once it is born, it has a very low upkeep because giraffes actually sleep less than any other mammal. They sleep for an average of 30 minutes a day, usually in little bursts of like 3 to 5 minutes.

[00:14:45] Kit: Wow. 30 minutes a day. I'm like, do they sleep laying down? Or they just close their eyes and then open them again? They're awake?

[00:14:55] Jordan: Yes, most of the time it occurs standing. Only in rare, rare moments do they fold their legs and curl their necks back to rest their head and sleep that way. Actually, I should probably say this. They're not ungainly. They're actually extremely fast. We think some giraffes might be able to run as fast as like 35

or 40 miles an hour.

[00:15:22] Kit: Wow.

[00:15:23] Jordan: For short bursts, of course.

[00:15:25] Kit: Yes. They're not doing a marathon, but they are fleeing the lion.

[00:15:30] Jordan: One last fact before I leave you here on Creature Corner. Despite its iconic status, *Camelopardalis*, our friend the giraffe, their population has fallen by over 30% in the past 30 years. In some places, it's gone down by over 90% depending on the species or subspecies. We had about 155,000 individuals in the 1980s and only about 100,000 today. They are critically endangered. We don't think of them when we think of all the endangered creatures out there, but between its hydraulic heart and its fractal coat, it's got balance, it's got pressure, it's got grace. It's truly bioengineered to be one of one. We love you, *Camelopardalis*, and we hope we can protect you.

[00:16:29] Kit: Absolutely. I feel like I learned so much more about giraffes than I knew before. I feel like I had a very surface-level understanding. The more that I learn, just the more amazing and remarkable these creatures are. Let's do our best to protect them. I'll look into and post any information I can find about how folks could contribute to that on our socials.

[music]

[00:16:56] Jordan: This has been Jordan.

[00:16:58] Kit: And Kit, sisters who love stars and stories.

[00:17:03] Jordan: We'll see you next time--

[00:17:05] Kit: On *Starry Time*.

[music]

[00:17:28] [END OF AUDIO]