Podcast**:** Imagine This

Episode Title: Why do animals have spots, stripes and scales?

Duration: 14’ 03”

[ABC Kids podcast sting – This is an ABC podcast]

**Nij:** Hello, my name is Nij, and today on Imagine this, we’re going… to the zoo!

*[Monkeys howling]*

**Kid 1:** I’ve been to the zoo many times…

*[Seals barking and a splash of water]*

**Kid 2:** I saw lots of animals there… we saw an elephant

*[Elephant trumpets]*

**Kid 1:** My favourite was the snakes

*[Rattlesnake quivers its tail]*

**Kid 2:** We saw tigers, giraffes, oh and koalas… and even jaguars!

*[Tiger snarls before playful classical music starts]*

**Nij:** Today we’re looking at the stripes and spots and scales of different animals…

**Kid 1:** Hi Imagine This, I want to know why giraffes have spots… Why do zebras have stripes?... And how does a chameleon change colour?

**Nij:** We’re going to answer each of these questions today because they’re all asking something similar. Why do all these animals look the way they do?

**Kid 2:** Because they’re all different… but scientists don’t really know the answer to that, they need to find clues of the animals’ DNA and see why

**Nij:** You know who we should talk to about this?

**Kid 1:** Who?

**Nij:** Dr Ann Jones – she has a podcast called Noisy by Nature and she knows lots about animals. C’mon I reckon we can find her at the aviary

*[Classical music ends with a flourish as a flock of birds takes flight. The scene changes to the inside of an aviary. Lots of different birds are calling to each other and flapping their wings]*

**Nij:** Hmm, I can’t see her. Can you?

**Kid 2:** Ann! … Where are you? … Where are you?

**Ann:** Psst!

*[A nearby bush rustles its leaves]*

**Ann:** I’m over here

**Nij:** Ann! What are you doing in that bush?

**Kid 1:** *giggle*

**Ann:** I’m watching the birds. It helps when the birds can’t see me. They just see a bush!

*[Another rustle of leaves]*

**Ann:** It’s my camouflage.

**Kid 2:** Camouflage is where you have something that is the same colour as something … it helps animals blend into the environment … Camouflage!

**Ann:** It’s a great word, isn’t it? Camouflage. It comes from a French word – *camoufler* – that means to disguise

**Kid 1:** A bush disguise!

**Ann:** It’s perfect for bird watching.

**Nij:** And you’re perfect for all our animal questions today!

**Ann:** Aw thanks, Nij. I’d love to help out

**Kid 2:** We want to know why zebras have stripes? ... Giraffes have spots … And how chameleons change colour?

**Ann:** Hmm zebras, giraffes, and chameleons, hey? Well, we could go around and look at them here at the zoo, or we could use our imaginations and go on a little adventure together?

**Kid 1:** ADVENTURE!

*[Ann and Nij laugh]*

**Nij:** Adventure, for sure

**Ann:** Alrighty, it looks like we’re off to East Africa. To a country call Tanzania. You can find lots of stripy, spotty, and scaly creatures there. Let’s hit the frog and toad!

*[Cheery South African music starts]*

**Kid 2:** What!?

**Ann:** Don’t worry, it’s just an expression! I love frogs. And toads.

*[Plane lands overhead and tyres screech onto the tarmac, keys jingle, seatbelts click, and the ignition of a car turns over. The car pulls away and drives through the Tanzanian savannah. There are zebras braying, crickets chirping]*

**Ann:** This is the Tanzanian savannah. It’s one of the places in the world where you’ll find zebras, giraffes, and chameleons.

*[Lion roar, cheetah growls, elephants trumpet and monkeys screech]*

**Ann:** As well as lions, cheetahs, leopards, elephants, ostriches, and lots of monkeys

*[Music ends]*

**Nij:** Lions!? Are we safe? Should we hide?

**Ann:** Oh, don’t worry, Nij. I brought my Compact Camouflage Kit.

*[Ann drags over a heavy bag with a loud clank]*

**Kid 1:** *giggle*

**Ann:** I’ve got everything we need here. Tell me what’s a good disguise for a grassy savannah like this one?

**Kid 2:** We should paint ourselves brown and green … cos there’s so much green

*[Curious, plucking violin strings]*

**Ann:** Oh, love that, here you go!

*[Paint splats onto kids]*

**Kid 1:** And a green towel?

**Ann:** Good thinking, wrap up in this

*[Ann shakes out a towel]*

**Kid 2:** Oh no, a brown towel

**Ann:** Got it

*[Ann shakes out another towel]*

**Kid 1:** We can make ourselves the same shape as a leaf

*[Leaves rustle out of the kit]*

**Ann:** I love it!

**Kid 2:** Ready! … Ready!

*[Music ends with a flourish. Loud munching can be heard in the trees]*

**Ann:** Can you hear that?

**Kid 1:** Yeah! … Yeah … Something’s eating … I can’t see, it’s tricky to see … There, there!

**Nij:** It’s a giraffe!

**Kid 2:** They’re camouflaging! Their camouflage works perfectly with the trees … Yeah, they’re working awesome!

**Ann:** Yes

*[Classical music starts]*

**Ann:** Despite being probably one of the strangest looking animals, those spots do a pretty good job at disguising a giraffe in its environment.

**Nij:** So, is that why giraffes have spots? Is it for camouflage?

**Ann:** It’s one reason, especially for young giraffes that need to be kept safe. The other is to keep cool when it’s hot.

**Kid 1:** Huh?

**Nij:** So, you’re saying those brown spots keep giraffes cool?

**Ann:** Yep! The spots act a bit like windows to help the giraffe cool down. They're even called thermal windows! The giraffe pumps hot blood under the dark spots, so the heat can escape. Just like opening a window.

**Kid 2:** The dark spots are hotter than the rest of them? … If I touch a giraffe, would it be hot or cold?

**Ann:** There can be as much as 10 degrees difference between the brown spots and the lighter parts of their body

*[Classical music ends]*

**Kid 1:** Wow that’s amazing for giraffes

**Nij:** So, giraffes have spots to camouflage and to keep cool on hot days!

*[Zebras running and braying together]*

**Kid 2:** What’s that!?

**Nij:** A herd of zebras!

**Ann:** You can call them a herd. But another name for a group of zebras is a dazzle!

**Kid 1:** A dazzle of zebras!

**Nij:** They are dazzling

**Kid 2:** If you took a zebra’s stripes off, it’d just be camouflaged with the snow

**Ann:** *laugh*

**Kid 1:** It looks like a type of horse but looks different … Yeah, they kinda look the same

**Nij:** Yeah, are zebras just stripy horses?

*[Gentle classical music starts]*

**Ann:** No, but they are related. Horses, donkeys, and zebras all come from the same family – the equine family – and many, many years ago, they had the same ancestor.

**Kid 2:** A common ancestor? What is that?

**Ann:** It means that all the types of horses and donkeys and zebras in the world today share a great, great, great, great grandparent.

**Nij:** So how come zebras in Africa ended up with stripes, but donkeys and horses didn’t?

**Kid 1:** So, they look like predators? … Tiger stripes actually match the patterns of the trees that go above them, it matches the shadows … Maybe for them to camouflage into a spiky tree?

**Nij:** So, you mean zebras have stripes cos they don’t want to be spotted?

*[More zebras braying as classical music ends]*

*[Ann and kids laugh]*

**Ann:** Good one! But no, no. Black and white stripes aren’t much use as camouflage out here. But they do something very important for zebras

*[Flies start buzzing around]*

**Nij:** I can’t think with all these buzzing flies!

**Kid 1:** Shoo fly! … Get out of it!

**Ann:** Here put these on!

*[Ann pulls out some suits from her kit]*

**Nij:** Zebra suits?

**Ann:** Zebra stripes are fly protection!

**Nij:** What?! Let’s test it out

*[They pull on the suits and zip them up. The flies fly away]*

**Kid 2:** How? … How do they do it?

**Ann:** Scientists found that the black and white stripes could confuse the flies. Their eyes had trouble seeing them properly. They got the wobbles and couldn’t land on the zebras.

*[Plucky classical music starts. High-pitched fly voice shouts ‘Woah, I can’t see’]*

**Kid 1:** Zebras use their stripes for confusing camouflage … That’s pretty funny.

**Nij:** So, why do zebras need fly repellent?

**Ann:** Well apart from being super annoying, flies can also bite the zebras and even make them sick. Zebras don’t have swishy tails and manes to flick away the flies like their horse cousins do. So instead, they’ve *evolved* into being stripy.

**Kid 2:** Evolution … That’s when you turn into something else

**Nij:** Yeah, evolution is the way living things change very slowly over a long time

**Ann:** Over a looooong time. Millions and millions of years

*[Zebras braying]*

**Ann:** The way an animal evolves usually has a lot to do with where they live. So, in the case of zebras living among all these flies – evolving stripes was very helpful.

*[More zebras as classical music ends]*

**Kid 1:** Zebras do not like flies

*[High-pitched fly voice yells and flies off]*

**Nij:** So, we know that giraffes have spots to camouflage and keep cool; and zebras have insect repellent stripes… What was the other question?

**Kid 2:** Why do chameleons change colour?

**Ann:** Oh yeah, let’s head over to the forest and see. We might need to change our outfits for this one. What do you reckon?

**Kid 1:** Yeah! ... Yeah

**Ann:** Right! Zebra suits off!

*[Zebra suits unzip and drop to the floor]*

**Ann:** Jungle mode activated.

*[Ann pushes a button and phaser sound pans across the jungle]*

**Ann:** Where’d you all go!? You’ve disappeared

**Kid 2:** *giggle* we’re camouflaged

**Nij:** Is that why chameleons change colour? To camouflage?

**Ann:** That’s a popular idea, and they can change colour to blend in better with their surroundings, but it’s not like what you might see in a movie or a tv show where chameleons can exactly match their background.

**Kid 1:** Yeah, it’s not like if they walk in a rainbow, they change to rainbow colours

**Nij:** Um, Ann? I think that leaf just winked at me

**Ann:** It’s a chameleon!

*[Curious music starts]*

**Kid 2:** It’s like a leaf blowing around in the wind … I really like the way they blend into leaves and stuff … Cos if I stand back, it just looks like the stem of a tree

**Nij:** This one looks all green and yellow, just like all the speckled leaves on this tree. I thought chameleons don’t change colour to camouflage.

**Ann:** Chameleons do blend in really well with their surroundings. They’ve *evolved* to match their homes. But when they change colours, and turn bright pinks and oranges, it’s not to blend in. It’s to talk to other chameleons, and sometimes other animals too.

**Kid 1:** What do they say?

**Ann:** Well, they might turn a really bright colour if they’re angry, and they want to tell another chameleon to give them some space.

**Kid 2:** Their normal colour is green but when they feel threatened, they change into something else

**Ann:** Or they might look very colourful as a warning to birds not to eat them. Usually in the animal kingdom, bright colours mean ‘Look out, I’m very dangerous and poisonous!’

*[Music ends]*

**Nij:** So, their normal colour helps them camouflage, but when they change colour it’s not to hide.

**Ann:** Yeah, it’s actually when they really want to stand out, that’s when they change to really bold colours.

**Nij:** So how do they do it?

*[Soft chiming music starts]*

**Ann:** The first layer of chameleon skin is see-through. Underneath they’re covered in special crystals that reflect light and colour in different ways. By tuning these crystals, a chameleon can change colour in an instant!

*[Chameleon voices: Purple, orange, I mean yellow!]*

**Nij:** You said before that chameleons evolved to be able to blend in and hide really well and that zebras evolved to have their stripes, and giraffes their spots. Why do animals evolve to be so different?

*[South African song from beginning of episode starts]*

**Ann:** Evolution is the word for how living things change over a really long time. These changes, we call them adaptations, they all depend on where an animal live and what makes them strongest in their environment. In the animal kingdom, being strong comes in all shapes and sizes and patterns and colours! Being able to keep cool on a hot day, that’s a big strength.

**Kid 1:** Like a giraffe!

*[Giraffe munching]*

**Ann:** Not being bitten by nasty flies is one too

*[Zebras braying]*

**Kid 2:** Like a zebra

**Ann:** And being able to hide or stand out with colour is a strength.

**Kid 1:** Like a chameleon

*[Music ends]*

**Nij:** Thanks for taking us to Tanzania! My brain is swimming with all these stripes, spots, and scales!

**Ann:** No worries, you head home – I’m gonna stay here and hang out with the hippos

*[Hippos snort]*

**Ann:** Laughing

**Kids and Nij:** Bye Ann! … Bye! … Cya!

*[Classical music starts]*

**Nij:** So, there you have it, giraffes have spots to cool down on hot days

**Kid 2:** Ahhhh

**Nij:** And to blend in and camouflage in the trees

*[Giraffe munching in the trees]*

**Kid 1:** Can’t see me!

**Nij:** Zebras have black and white stripes to help protect them from nasty flies

*[Zebra braying]*

**Kid 2:** Shoo fly don’t bother me!

**Nij:** And chameleons change to bright bold colours to talk to each other

**Kid 1:** I need some space please

**Nij:** and to trick other animals

**Kid 2:** Don’t eat me! … I’m dangerous

**Nij:** All animals - the spotty…

*[Leopard roar]*

**…** the stripy…

*[Insect buzzing]*

**…** and the scaly - look the way they do because they’ve evolved in different environments for millions and even billions of years.

*[Monkeys chattering, elephants trumpeting]*

They’ve adapted special ways of living and looking to help them survive and be strong in different places – from jungles and deserts to mountains and seas.

*[The sound of a rainforest moves to the lapping of waves on the shore]*

These changes are always happening, even if we can’t see them. And it’s the reason there are so many amazing and different kinds of colourful life on Earth.

*[Music ends under a flourish of different animal noises]*

**Nij:** Imagine This is an ABC Kids listen podcast hosted by me, Dr Niraj Lal. A big thanks to ABC noisy nature expert Dr Ann Jones, and to all the kids who help make the podcast. Today’s episode was written and produced by Soumia Bella, and was made on Gadubanud, Wadawurrung and Gadigal lands. Our engineer is Que Nguyen and senior producer is Emma Gibbs. For more great podcasts to play, music to move, and stories & soundtracks for sleep, download the ABC Kids listen App, free from your app store.