




A Series of Impossible Questions

By Isabel Thomas

Why Do I Like My Friends More Than I Like Other People?





Friends are groups of people who choose to spend lots of time speaking, playing, eating or just hanging out together. But what makes us form these special relationships with some people but not others?

It's still impossible to explain, because scientists haven't been studying friendship for very long.




However, from the studies they have done, one thing was easy to notice: we tend to make friends with people who are like us.




For example, if you are ten years old and live in London, you probably have more friends who are ten years old and live in London than friends who are seven years old and live in Toronto.






We pick friends
who are like us in
more surprising
ways, too.



Scientists have noticed that when we meet new people (potential friends), we are more likely to feel connected to, or to 'click' with, people whose expressions and body language match our own.

An illustration of two children playing in a treehouse. A girl with long black hair, wearing a blue shirt and yellow shorts, is on the left, holding a red ball. A boy with brown hair, wearing a pink shirt and green shorts, is on the right, holding a yellow ball. They are standing in front of a wooden treehouse with a ladder. A squirrel is perched on a branch above the treehouse. A yellow speech bubble contains text. The background shows a green lawn, a white fence, and purple flowers.

Good friends even
blink their eyes a
similar number of
times every minute.

To find out more, scientists asked a group of volunteers to watch funny, exciting or interesting videos while sitting in a brain scanner, and watched to see how their brains responded to different experiences.



Amazingly, volunteers with the most similar brain activity all turned out to be good friends!



This suggests that friends' brains react to the world in similar ways. They are more likely to laugh at the same jokes, care about the same issues and enjoy the same activities together.



This is a big clue that you may like your friends more than other people, simply because they remind you of YOU!





Do Animals Make Friends?



For a long time, it seemed like most animals that hang around in groups prefer to spend time with (and help) members of their own family.



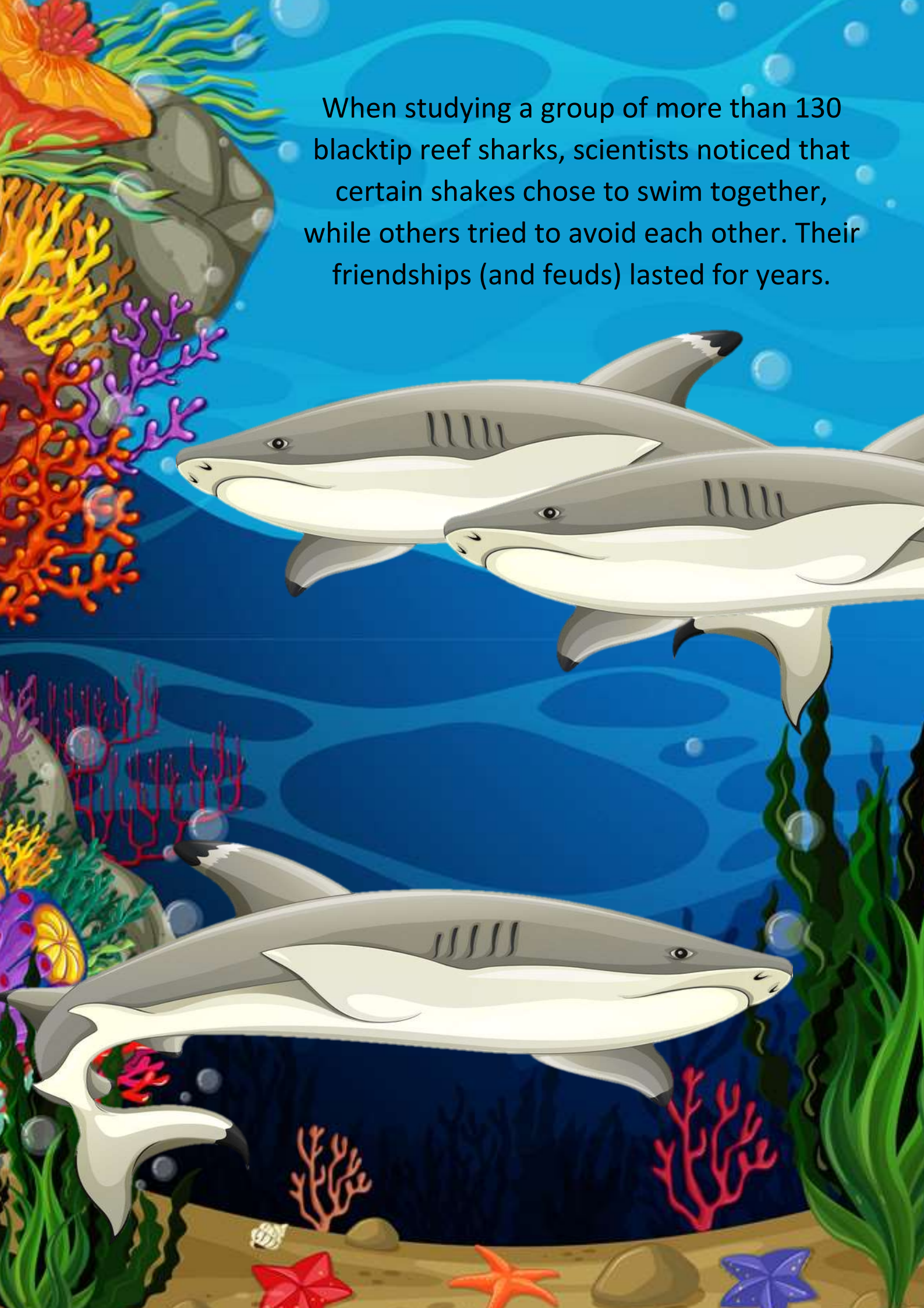
But the more closely scientists look at animals that live in groups, the more examples of animal friendships they find – from birds and baboons, to hyenas and horses.



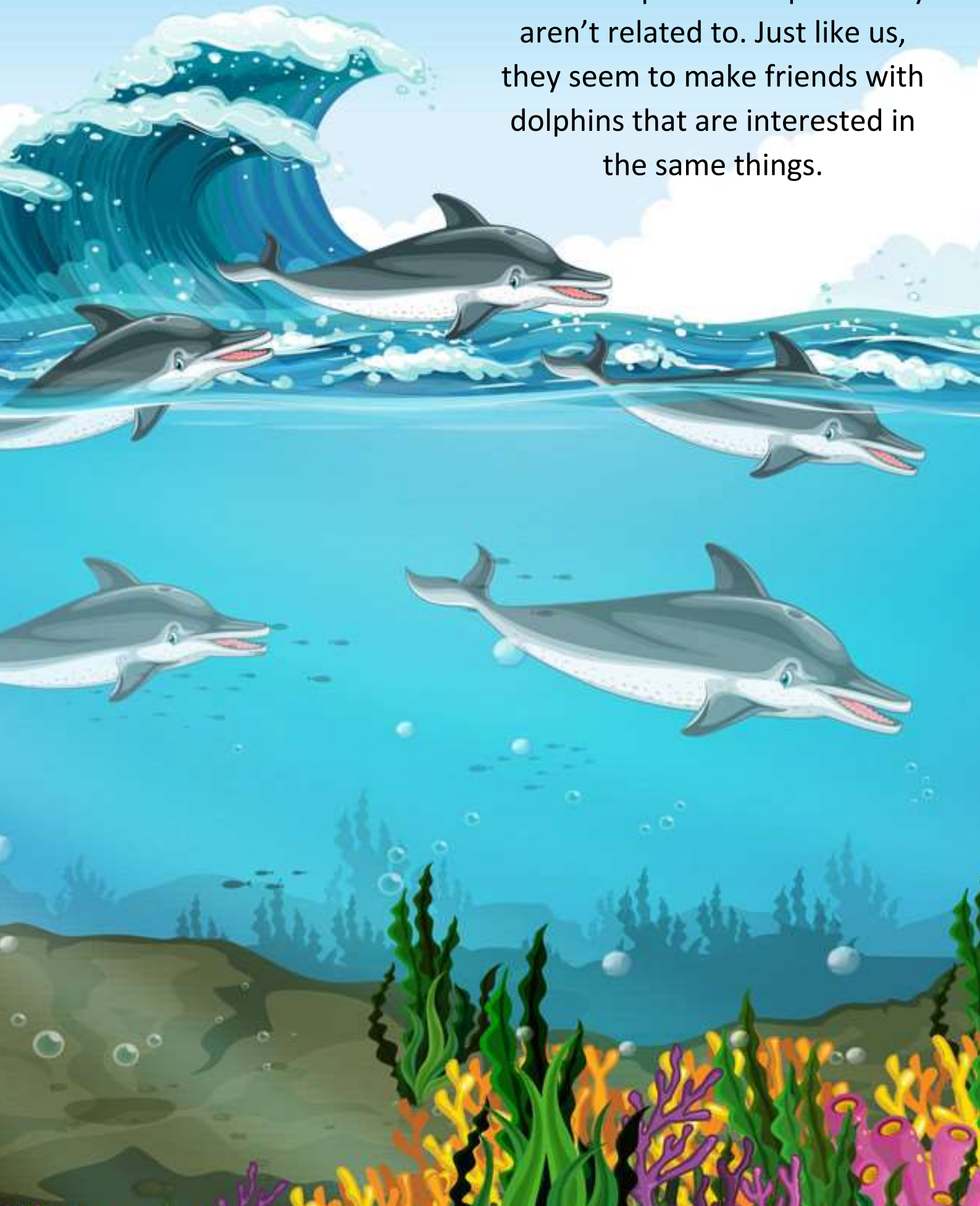
Even sharks – who aren't known for their friendly personalities – seem to buddy up.



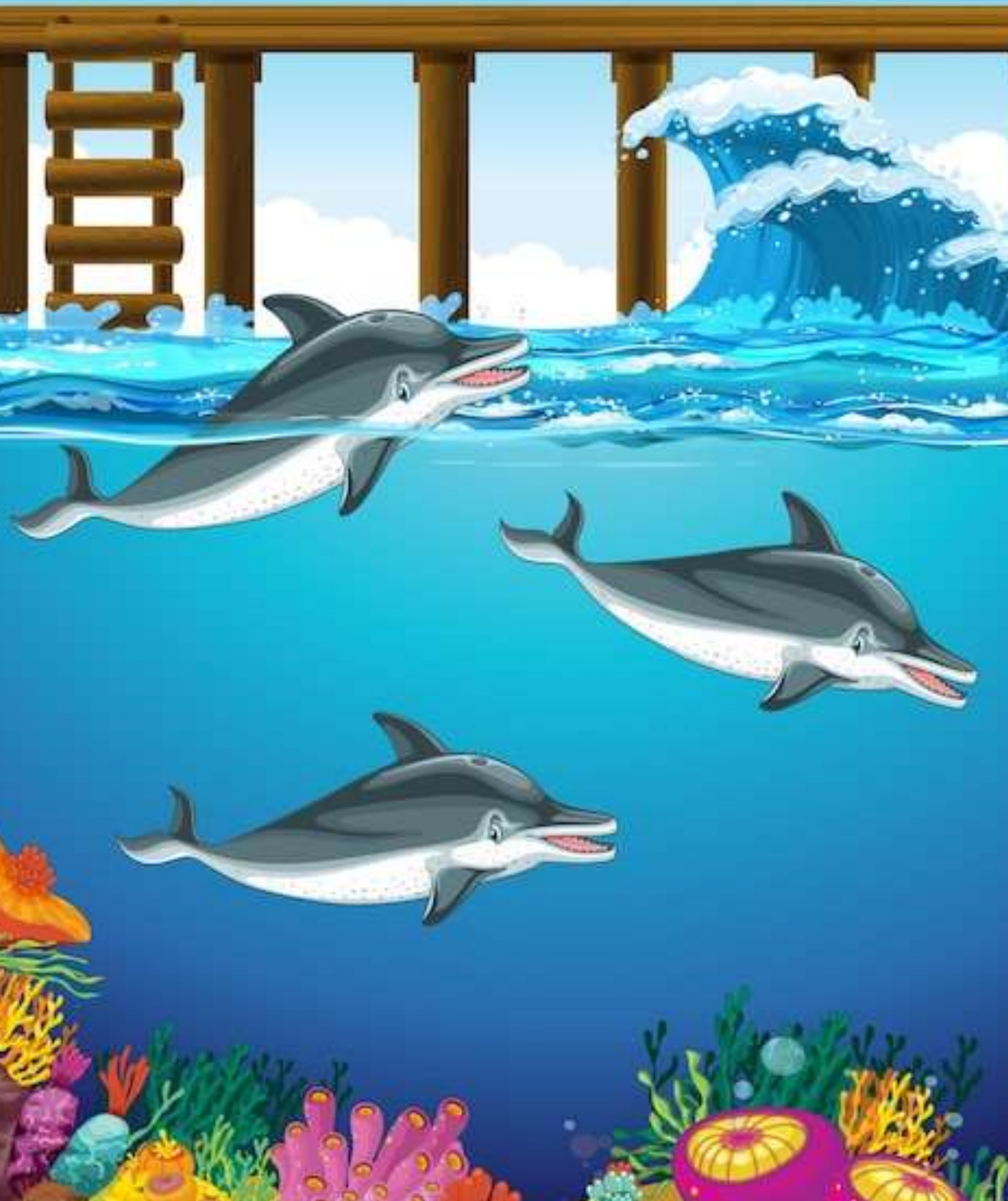
When studying a group of more than 130 blacktip reef sharks, scientists noticed that certain sharks chose to swim together, while others tried to avoid each other. Their friendships (and feuds) lasted for years.



Dolphins can also form special relationships with dolphins they aren't related to. Just like us, they seem to make friends with dolphins that are interested in the same things.



For example, a few dolphins use animals called sponges as a tool to help them find food, and they love to buddy up to forage and feed.



Making friends may help animals to find help and protection when they need it, especially if they live in a bigger group. But animals don't seem to make friends for this reason alone. None of the animal friends that scientists have studied appear to keep a record in their memories of who owes who.



Like us, animals probably make friends just because it feels nice to have a friend, without thinking about all the benefits it brings. For humans, these benefits include lower levels of stress, better health, a better immune system and even longer lives.



Goats have been spotted trying to make friends with humans. In one study, scientists set goats a task that was impossible for a goat to achieve – taking the lid off a box to get a reward. When the goats realised it was impossible, they tried to make friends with nearby humans by gazing at them ... hooping that their new friends with hands would help.





Why Don't We Live Forever?



People have been asking this question for thousands of years. It's true that no animal lives forever.



Some animals have very short lives. Seahorses only live for six years ...



... and mayflies die after just one day as an adult.
(They have a lovely time though – they spend
most of this day dancing)



Other animals have very long lives. Most elephants live for at least 70 years ...



...and some shellfish live for more than 500!



Humans also live for a long time. More than half of the babies born this year will live to celebrate more than 100 birthdays.



Things like taking exercise, eating a rainbow of foods, having good healthcare and getting lots of sleep can help humans to stay healthy and live long lives.



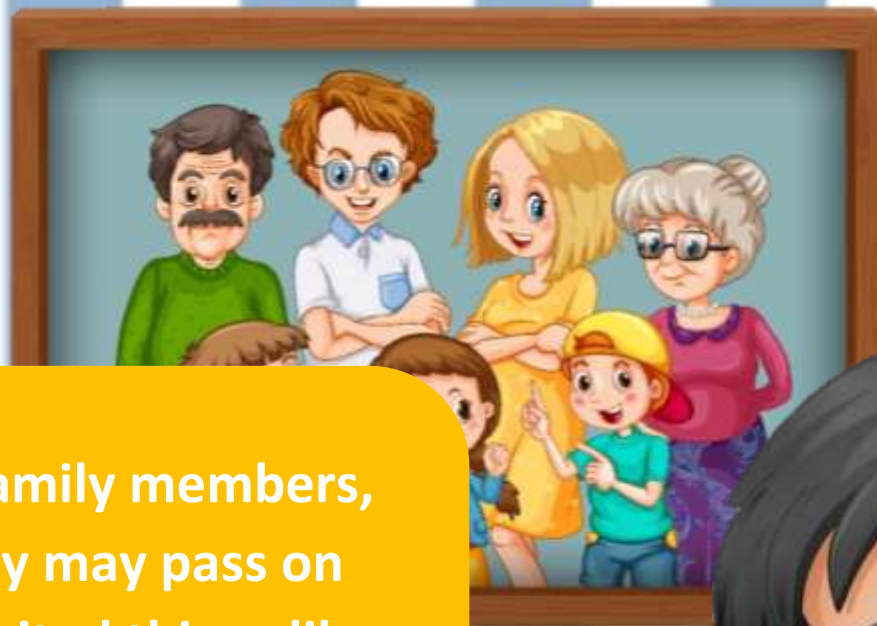
But even if a person or animal never gets sick or injured, they will one day grow old and die. As we live our lives and have adventures, our bodies get slowly worn down.





An older person's body also gets less good at repairing itself. By the time that starts to happen, they may have children, grandchildren, or nephews and nieces.





To family members, they may pass on inherited things like their hair colour, face shape and even part of their personality.





To the world, they pass on the special things they have done, learned and created during their life.



Together, we are all part of the story of life on Earth that has been going for billions of years. In this way, a small part of everybody lives on forever.





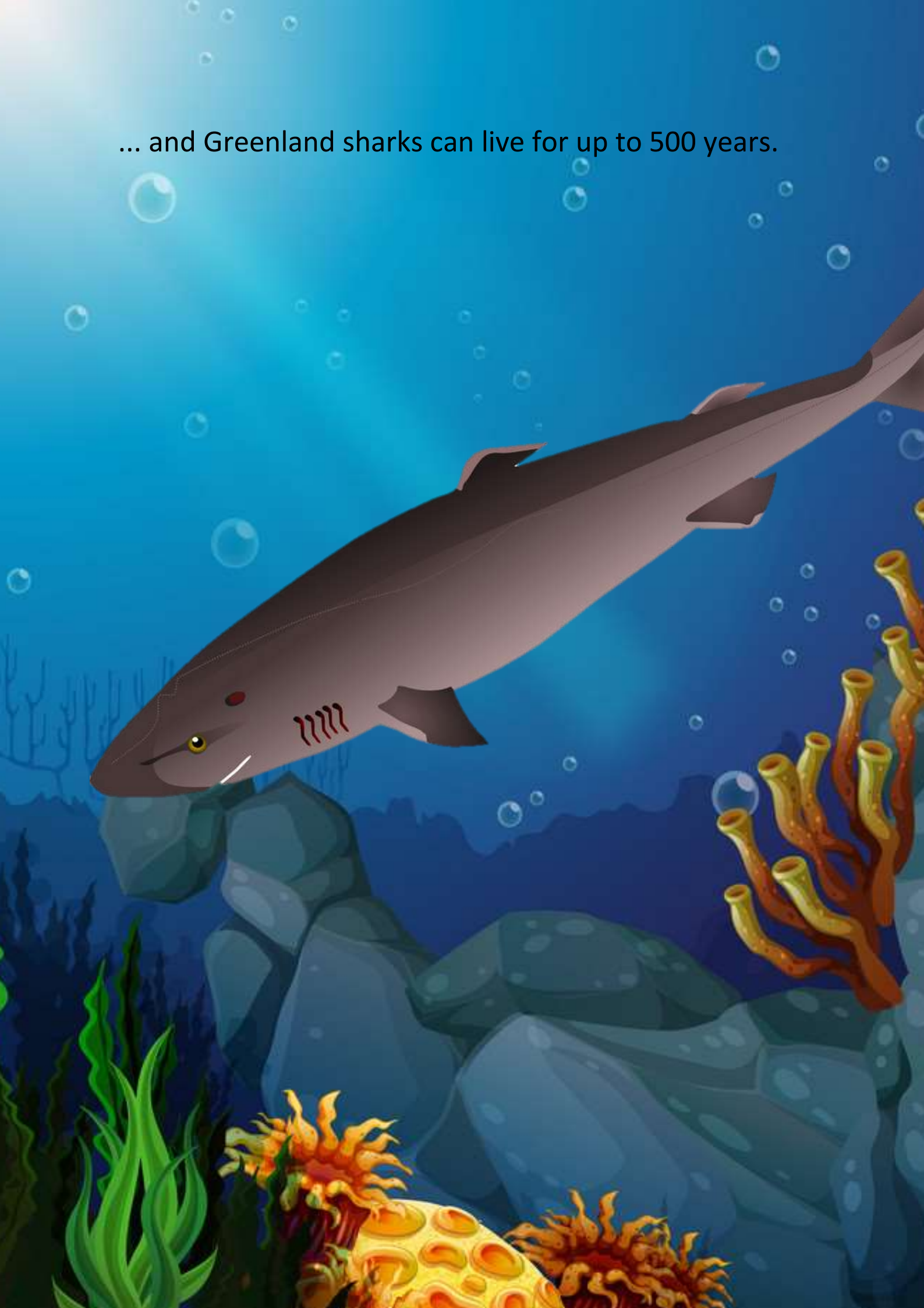
Why Do Trees Live Longer Than Animals?



Some animals live very long lives – Galapagos tortoises often celebrate their 100th birthday ...



... and Greenland sharks can live for up to 500 years.



But even these most ancient sharks are young compared to the world's oldest trees.



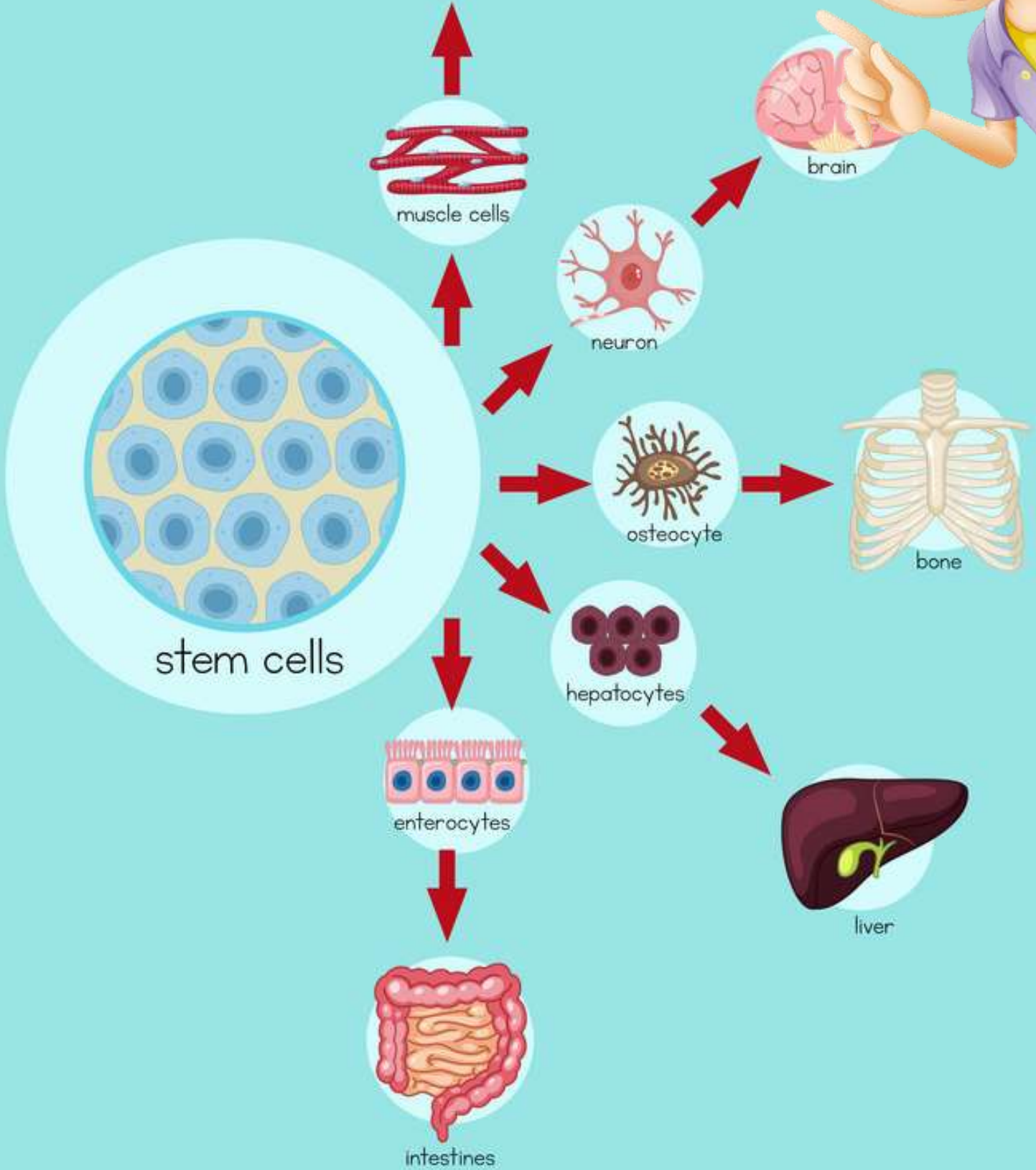


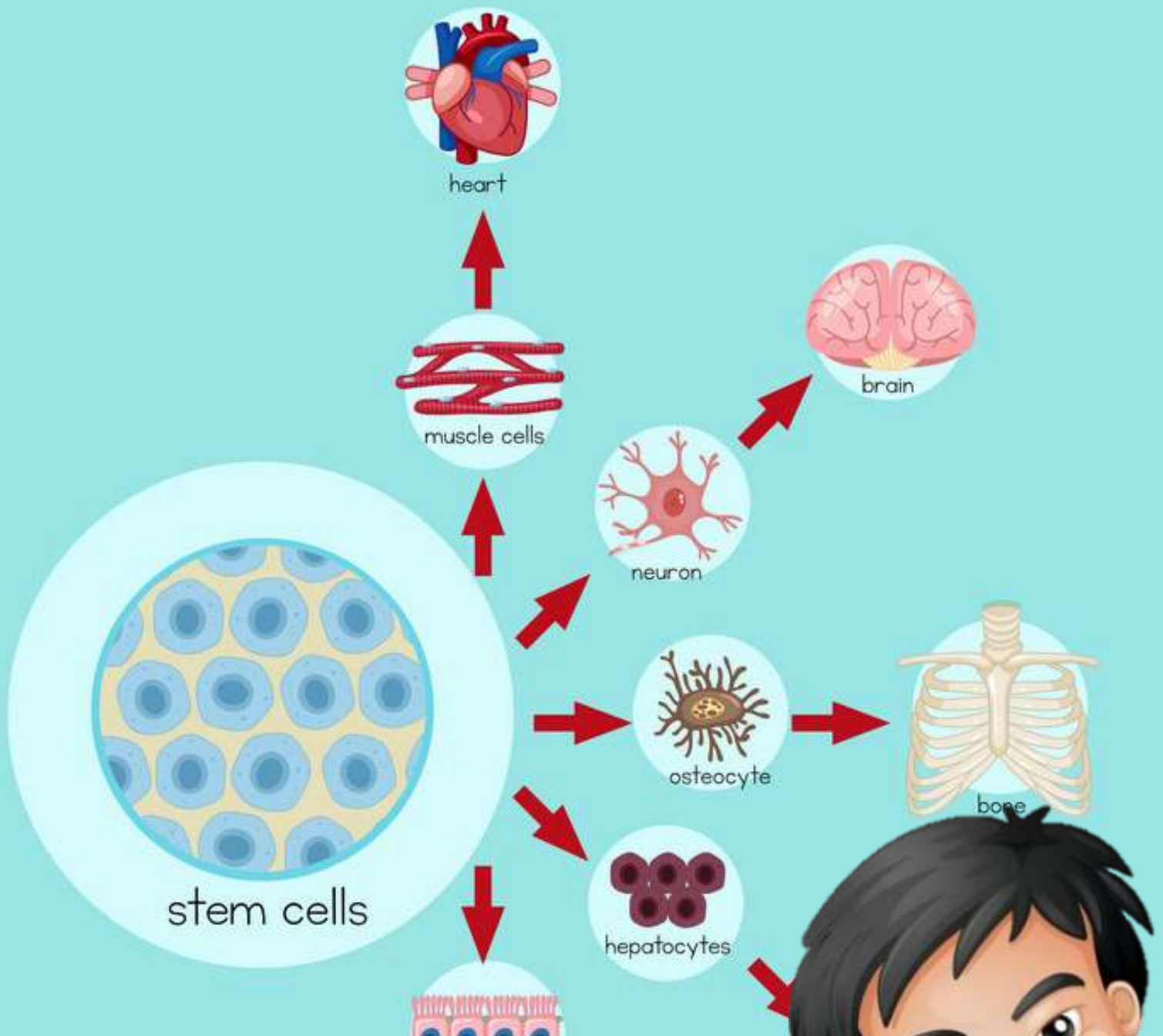
Some bristlecone pines have been growing for more than 500 years. When they were saplings, the Bronze Age was just getting starts. So, what is the secret to their success?



Even when animals stop growing, their bodies are constantly replacing worn out or damaged cells.

To do this, they rely on special cells called stem cells.





But over time, the stem cells themselves get worn out. They become less good at making copies of themselves. Eventually, the animal can't replace damaged or worn out cells anymore, and it dies.





Trees have a version of stem cells too. They're found in a part of the plant called the meristem. These cells last longer than animal stem cells and seem to be less affected by damage.





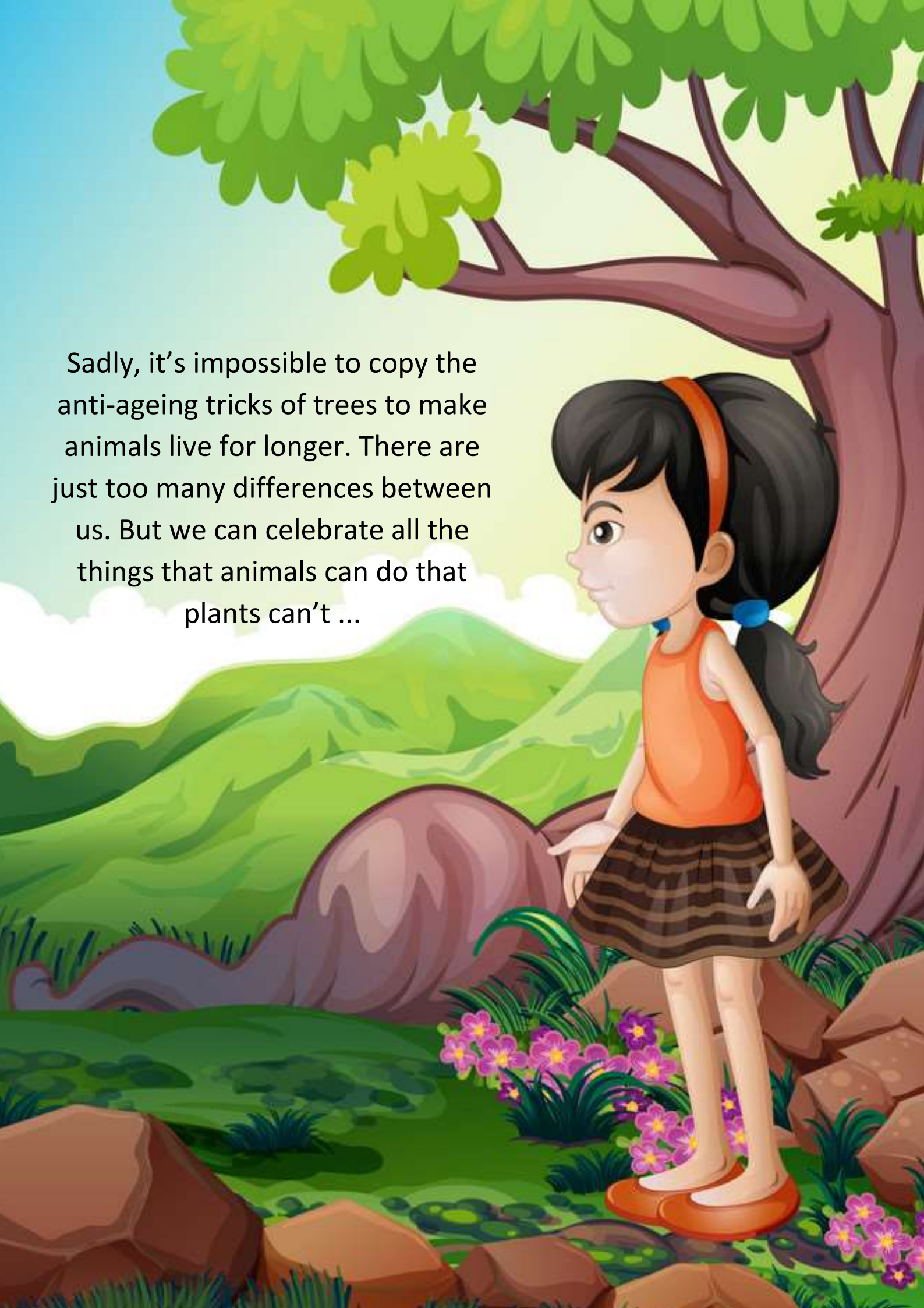
Trees are different in other ways too. The meristem is the only living part of an ancient bristlecone pine that is thousands of years old. New bark, leaves and cones grow every year, and the ancient wood of the trunk and roots is not properly alive at all.



Trees are also better at recovering from damage. If a plant loses a branch in a storm, or its leaves get eaten by insects, it can replace them. Very few animals can regrow missing parts.



Sadly, it's impossible to copy the anti-ageing tricks of trees to make animals live for longer. There are just too many differences between us. But we can celebrate all the things that animals can do that plants can't ...



... such as exploring different places, eating delicious food and snuggling up to read brilliant books at bedtime.



Why Can't I Remember Falling Asleep?



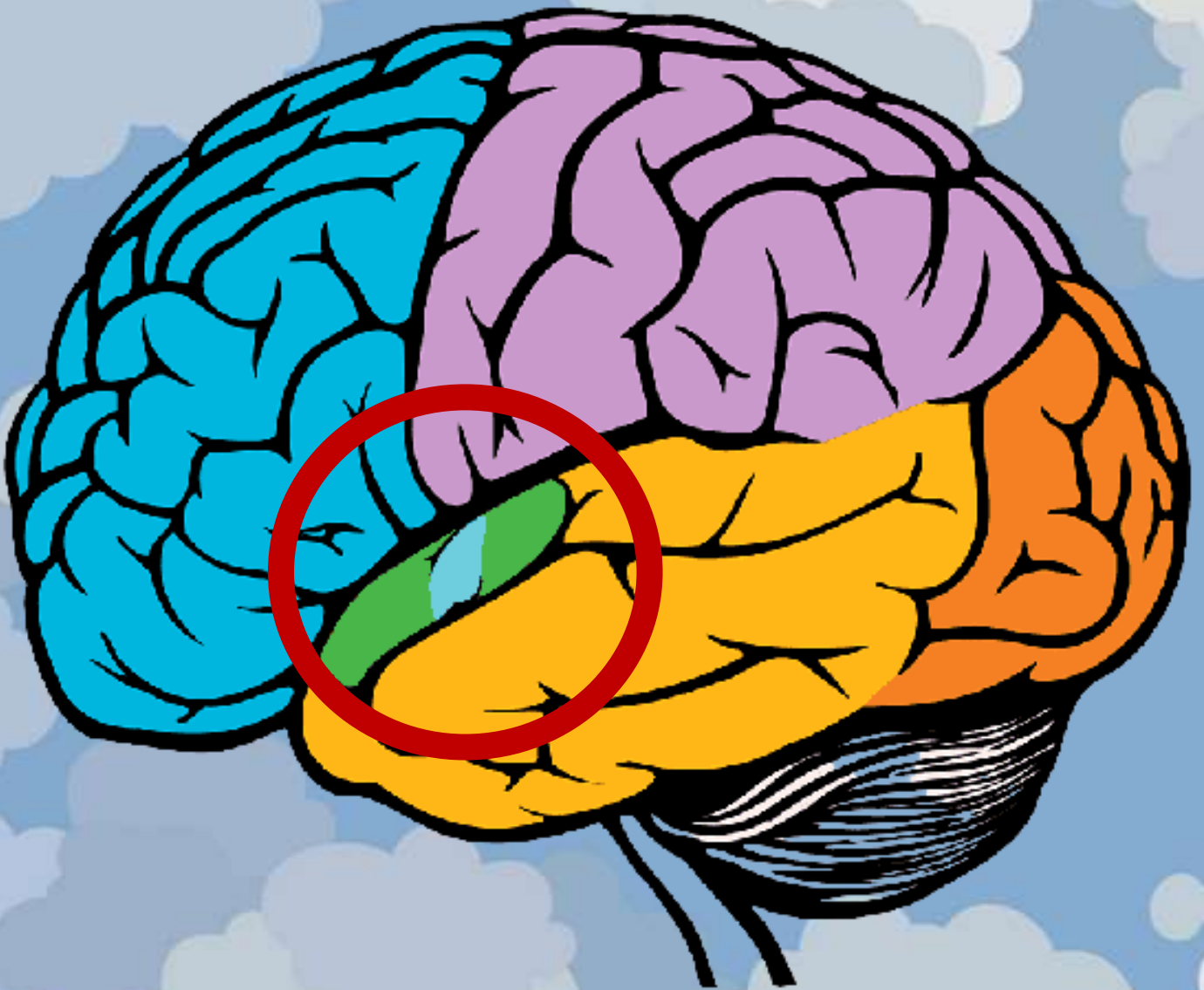
You've done it thousands of times, but you still have no idea what it feels like.



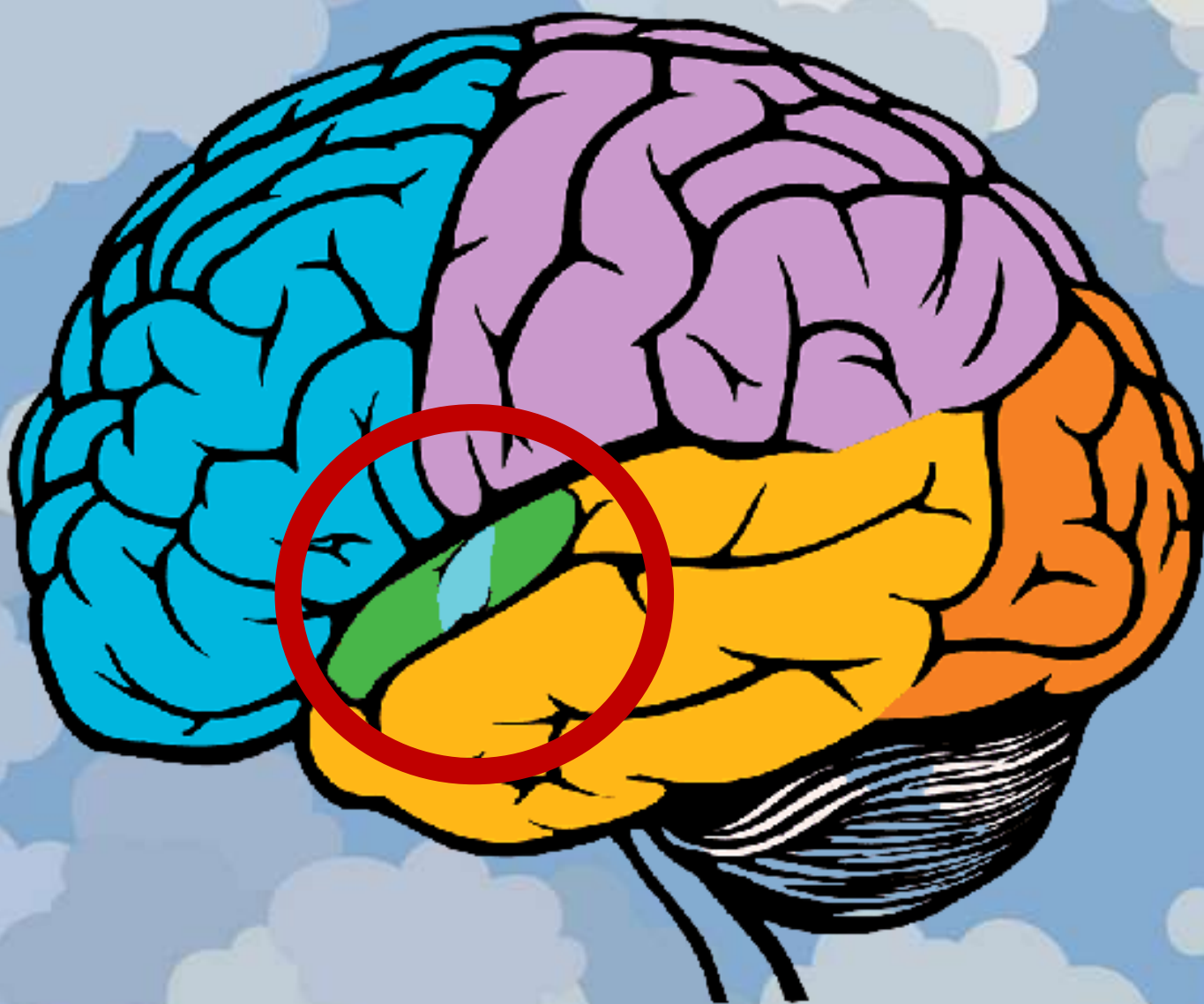
Don't worry – no one remembers the moment they fall asleep each night. It's because of the way that our brains make memories.



Part of your brain called the hippocampus helps to change short-term memories (like what happened at the start of this page) into long-term memories (like what happened on your last birthday).



After this change has happened, the short-term memory fades to make room for more. If you wake a few seconds after falling asleep, you will still remember the thoughts you were thinking or the sounds you heard as you fell asleep. These are still active in your short-term memory, and it won't feel like you've been sleeping at all.



But if you fall asleep for longer than a few minutes, these short-term memories fade away. They NEVER get transferred to your long-term memory because your hippocampus is asleep too!



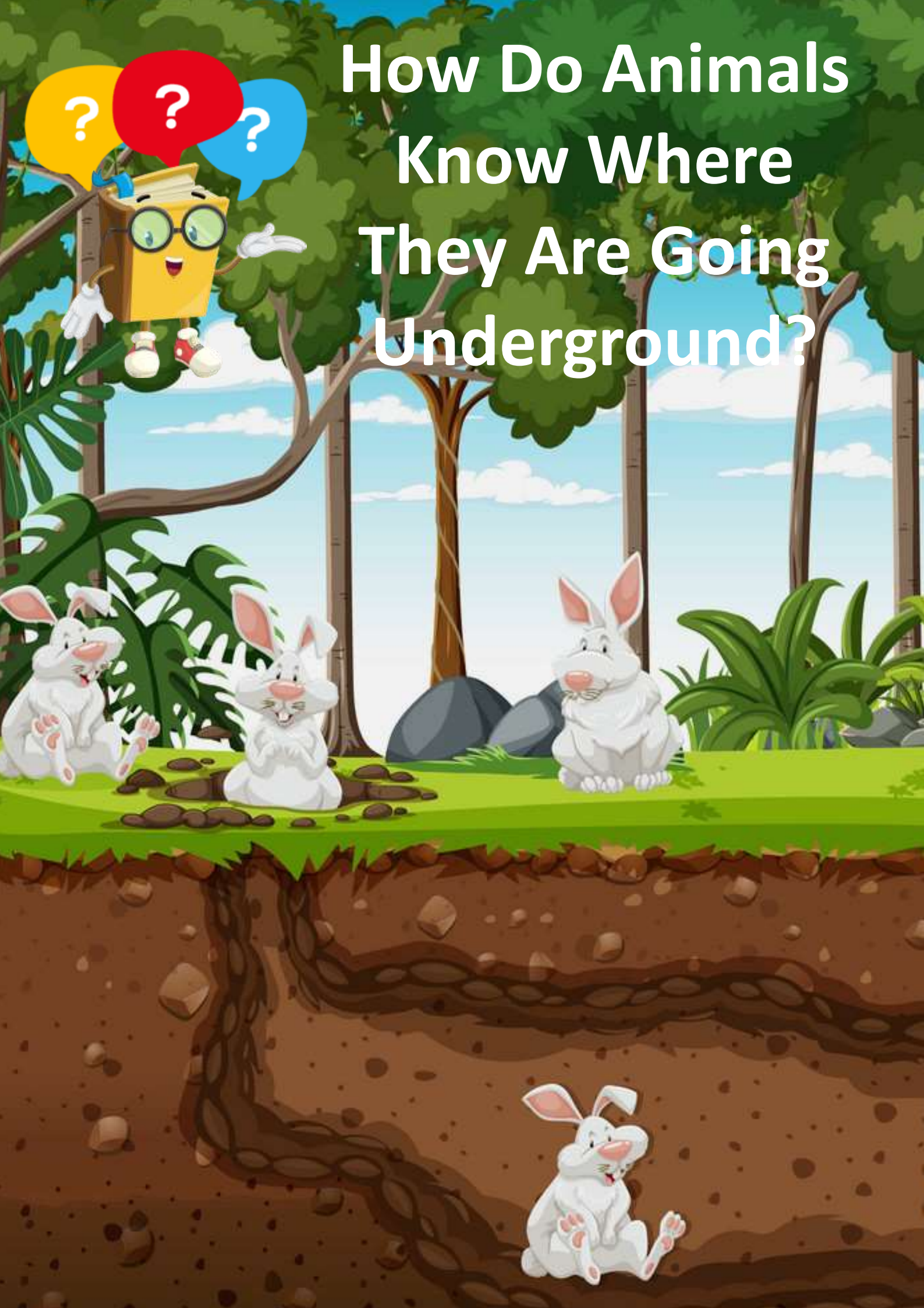
Even if you wake up just six minutes after falling asleep, everything you were thinking or feeling at that moment will have faded away.



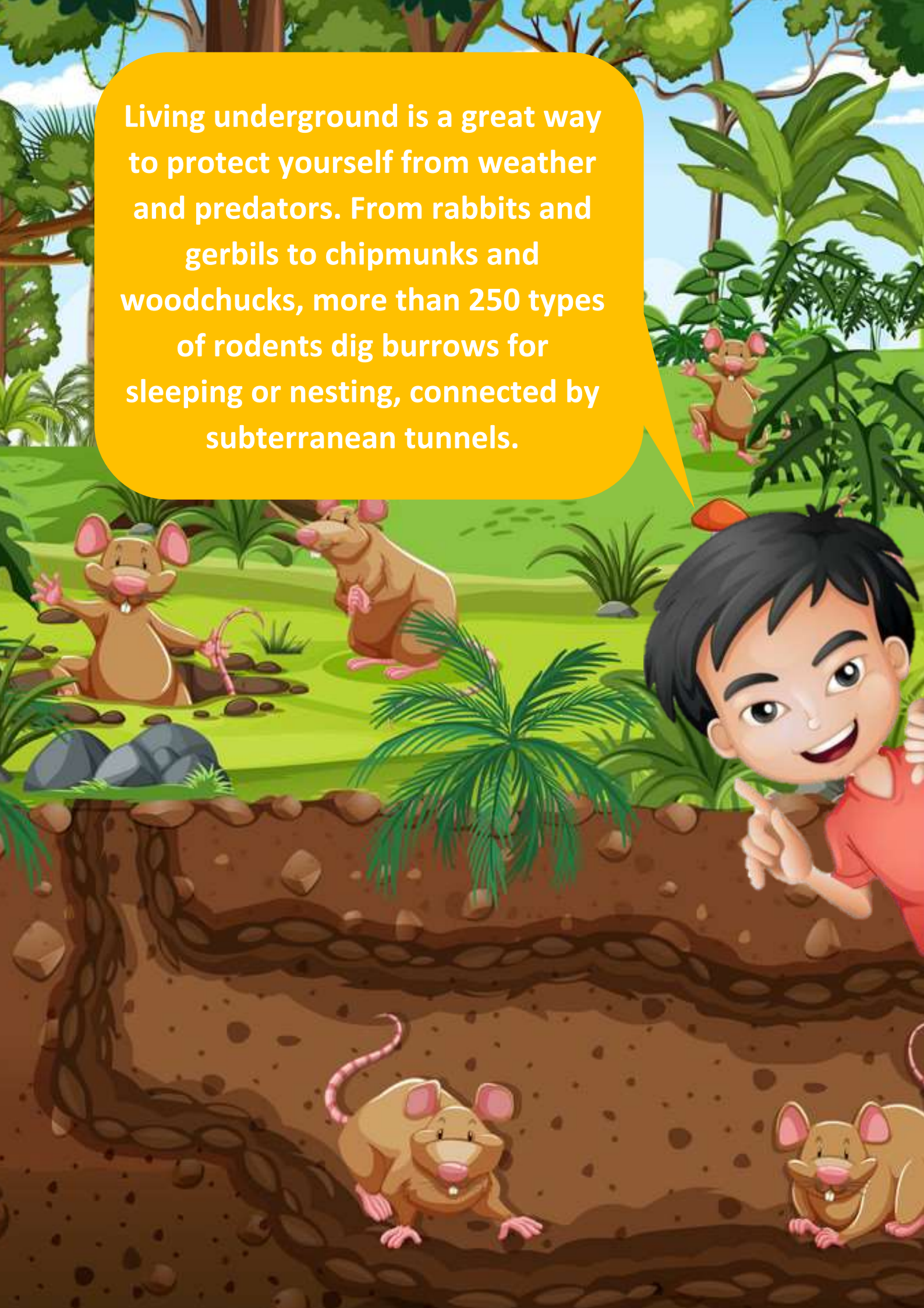
This is also why you should keep a notepad by your bed and write all those BRILLIANT world-changing ideas that come to you as your head hits the pillow... if you leave it until the morning, they'll be lost FOREVER!

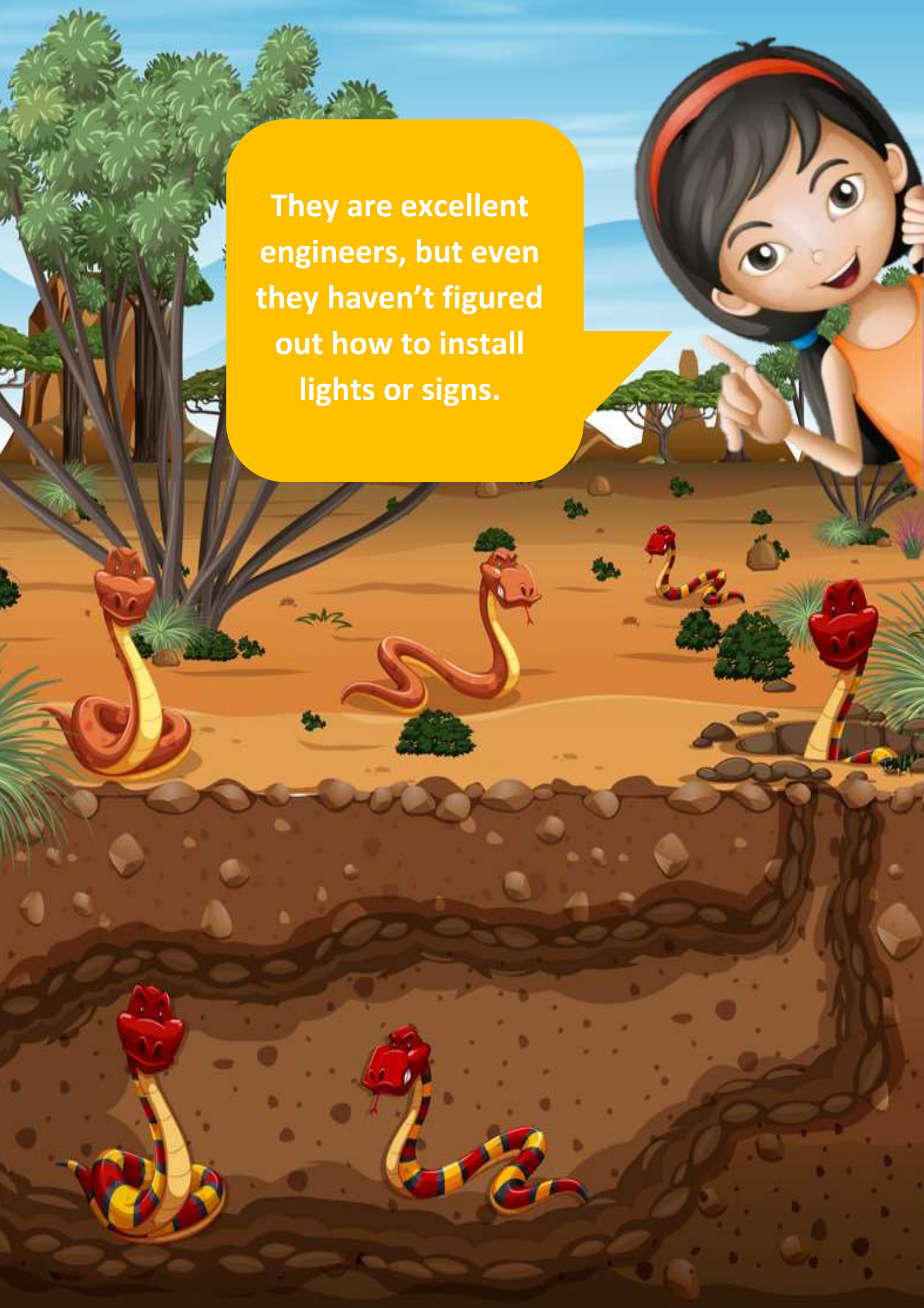


How Do Animals Know Where They Are Going Underground?



Living underground is a great way to protect yourself from weather and predators. From rabbits and gerbils to chipmunks and woodchucks, more than 250 types of rodents dig burrows for sleeping or nesting, connected by subterranean tunnels.

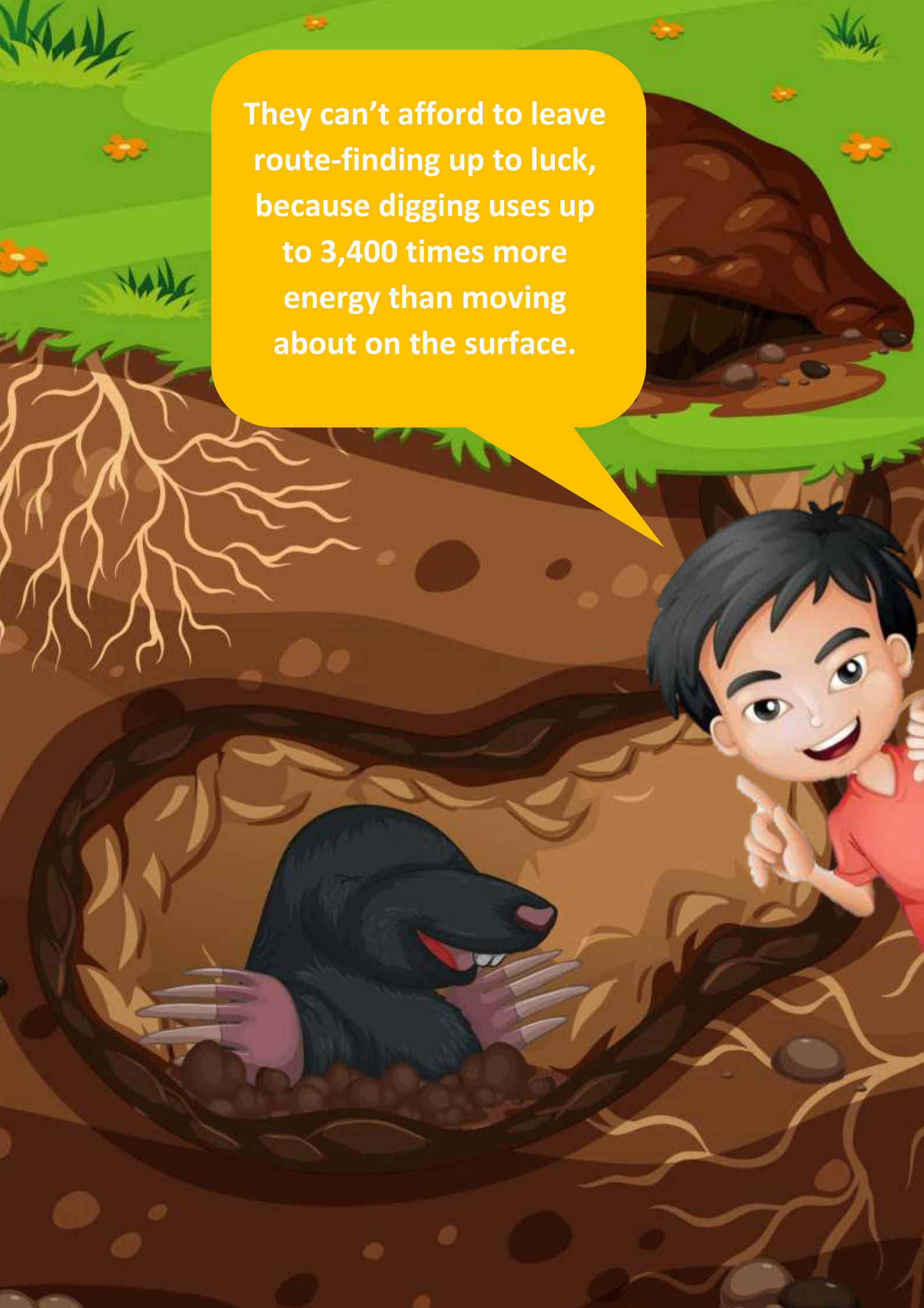


A cartoon illustration of a savanna landscape. In the foreground, a girl with black hair and a red headband, wearing an orange tank top, is pointing towards the scene. The ground is sandy with scattered rocks and small green bushes. Several snakes are visible: two orange and yellow snakes on the surface, one red and yellow striped snake in a burrow, and two red and yellow striped snakes inside the burrow. The background features acacia trees and a blue sky with distant mountains.

They are excellent engineers, but even they haven't figured out how to install lights or signs.

Some rodents, called mole rats, can barely see at all, yet they somehow dig and then find their way around huge underground neighbourhoods in the darkest dark.



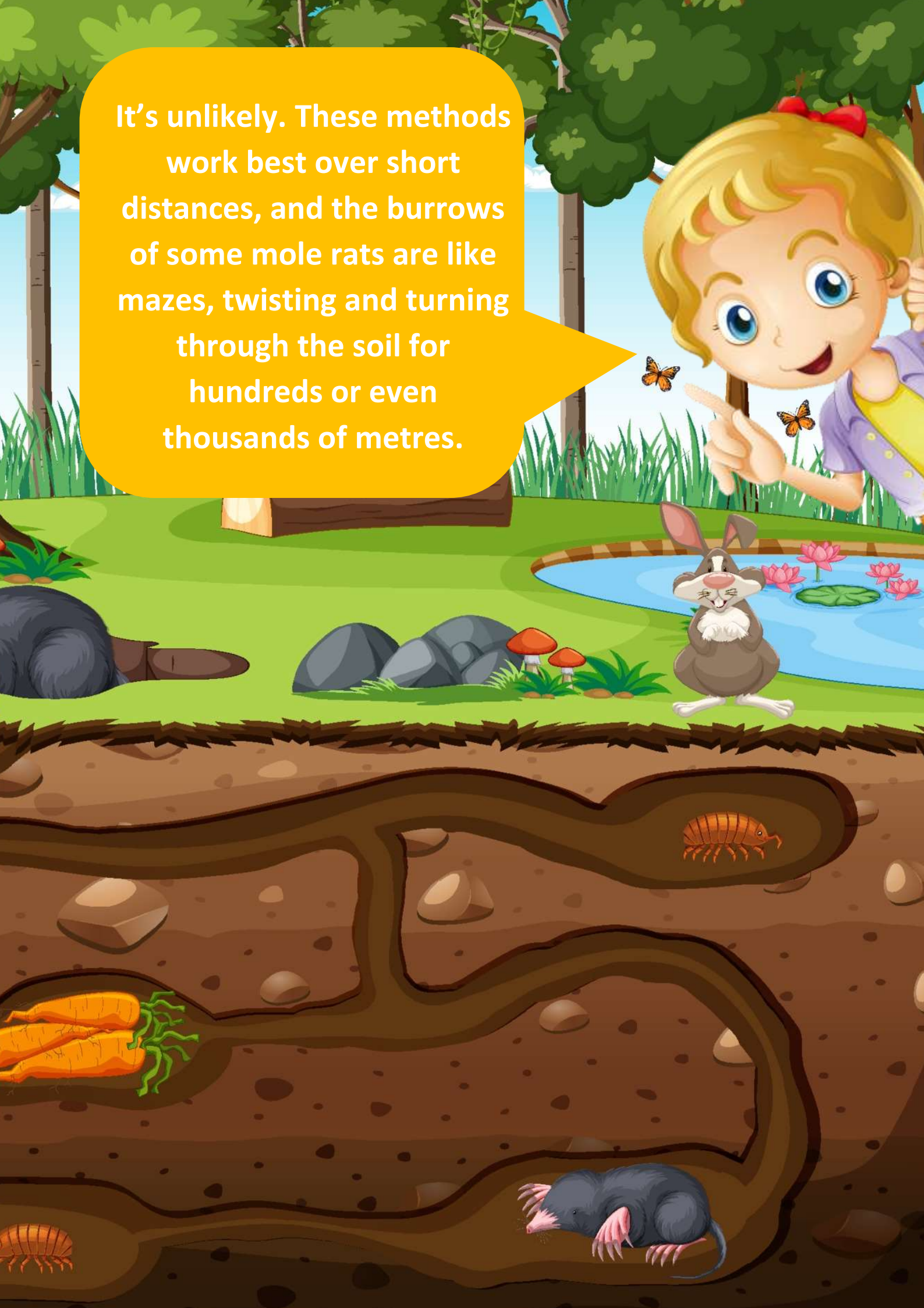
An illustration showing a mole in its underground burrow. The mole is dark brown with a pink nose and large, pink, spade-shaped front paws. It is sitting in a circular chamber of its tunnel, which is lined with small brown pebbles. The burrow system is shown in cross-section, with various tunnels and chambers. Above the ground surface, there is green grass, small orange flowers, and a large brown rock formation. A young boy with black hair, wearing a red shirt, is standing on the right side of the image, pointing his right index finger towards the mole. A yellow speech bubble is positioned above the mole, containing text.

They can't afford to leave route-finding up to luck, because digging uses up to 3,400 times more energy than moving about on the surface.

So how do mole rats and other rodents make sure they're moving in the right direction? Could they be following sounds or smells? Or just remembering where they dug in the past?



It's unlikely. These methods work best over short distances, and the burrows of some mole rats are like mazes, twisting and turning through the soil for hundreds or even thousands of metres.



A big clue comes from the long, straight tunnels dug by silvery mole rats, which always run from north to south. This suggests that mole rats can sense Earth's magnetic field and use it to help them find their way.



The next step towards answering this question will be to find out which part of a rodent's body acts as their built-in satnav.



Other animals seem able to sense Earth's magnetic field too, including birds, fish, butterflies and termites.





THINK

DIGITAL ACADEMY

