

SCIENCE | HUMAN BODY | SPACE | TECH | HISTORY

VERY interesting Junior

EXPERIMENT
RAINBOW
DENSITY



OCTOBER 2021

ISSUE #36

growing young minds, testing your knowledge

GRRR!

TIGERS WHY THEY ARE UNDER THREAT

HOW TO...

- Concentrate
- Get a good night's sleep
- Make an origami bookmark

TOP

BIGGEST
LAKES
IN THE WORLD

BURNING QUESTIONS ANSWERED

- How strong is an octopus?
- If a spacecraft lands in my garden, can I keep it?
- What if humans had chlorophyll in their skin?
- What connects mummies and printers?

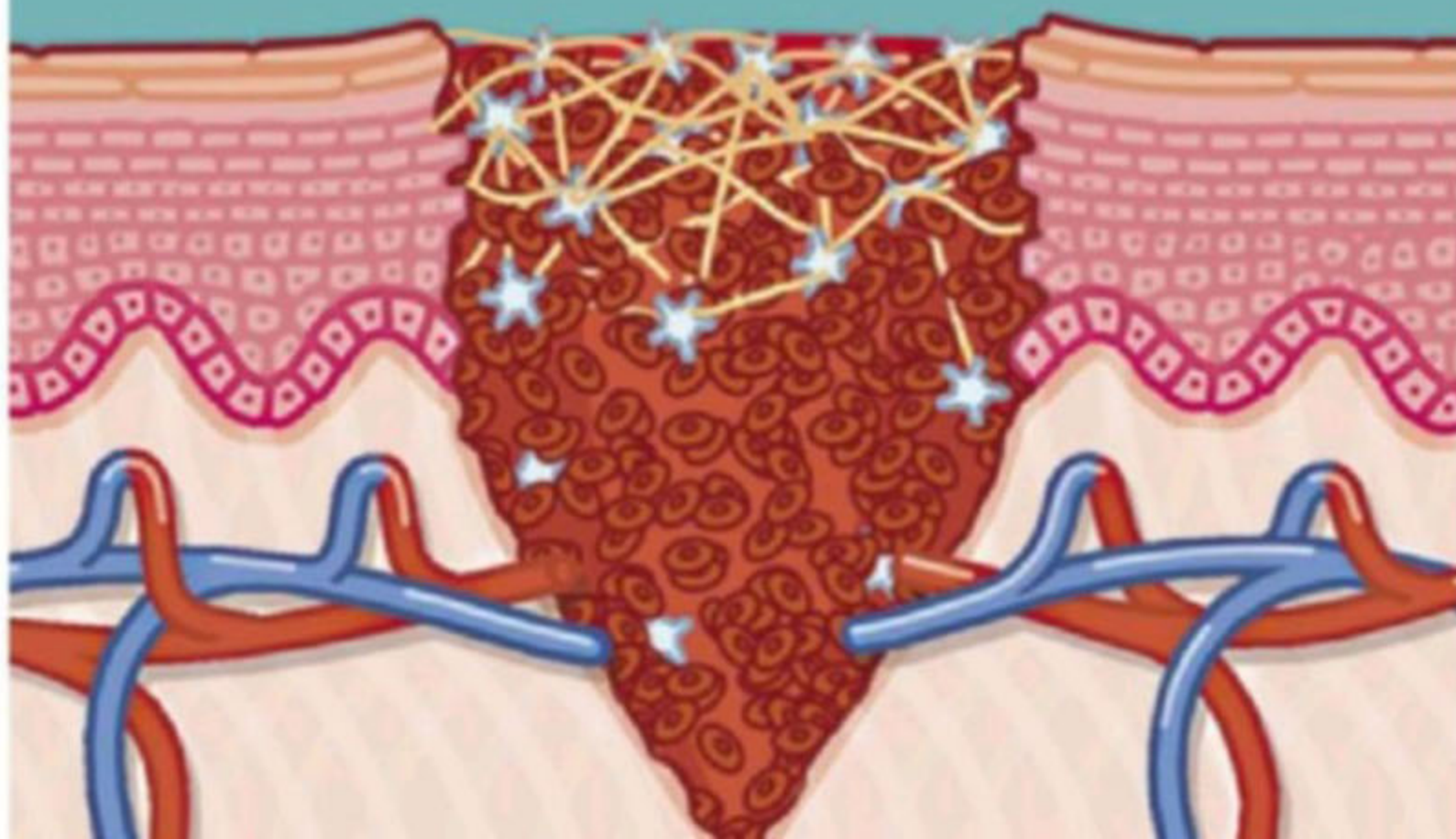


WHY DID THE
DODO GO
EXTINCT?



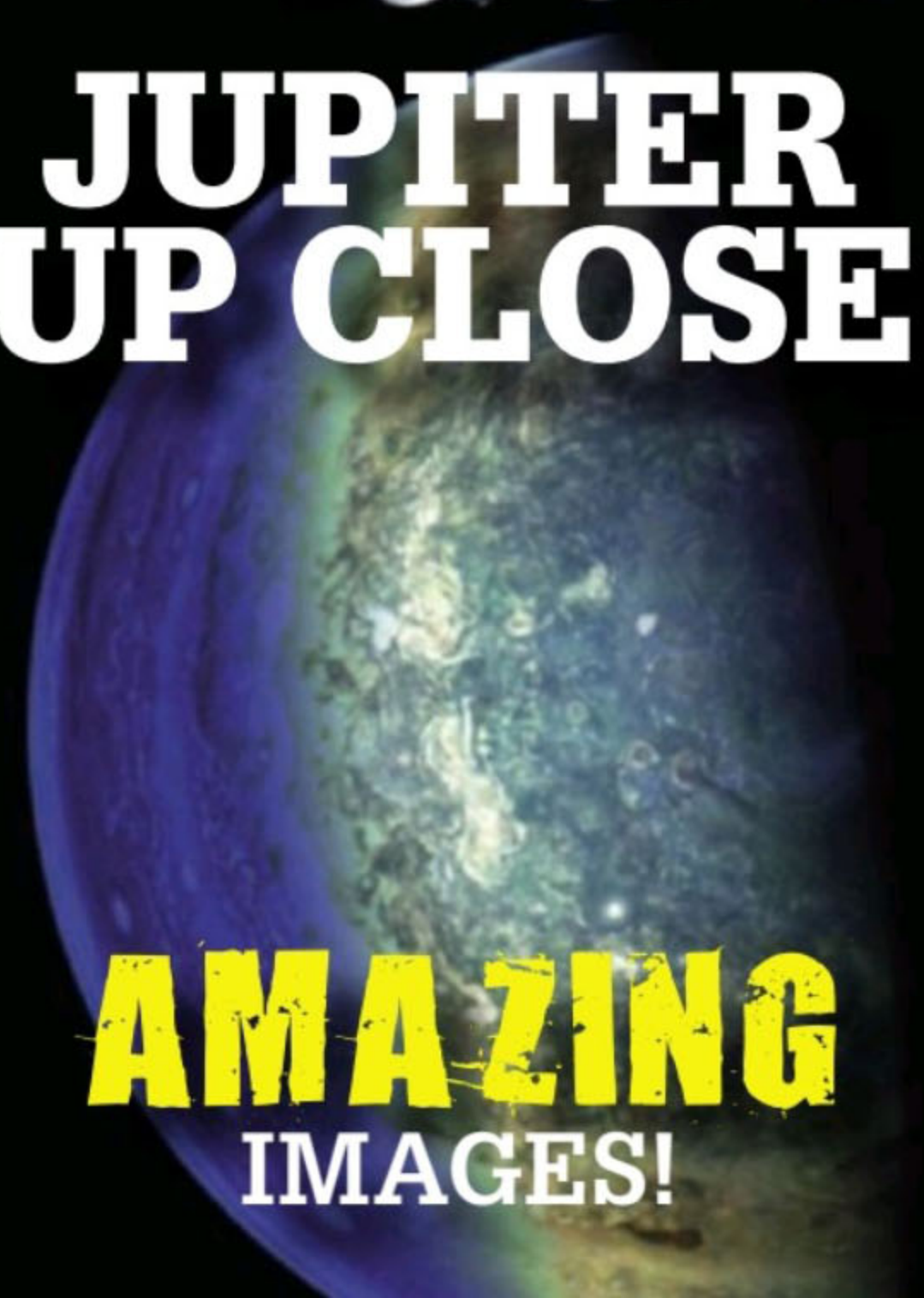
HUMAN BODY

WHAT HAPPENS IN
MY BODY WHEN I GET
A CUT?



JUPITER UP CLOSE

AMAZING
IMAGES!



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JURASSIC WORLD COMES TO LIFE

The Jurassic World Mega Destroyers are here

These larger-sized Mega Destroyers™ dinosaurs include carnivores and herbivores and have an advanced attack feature. Activate the dinosaurs' attacks to break out of their restraints and prepare for battle. With movable joints, realistic sculpting and authentic decoration, they're ready for dinosaur action play or mega displays.

Don't forget to tune into the third season of *Jurassic World Camp Cretaceous* on Netflix. Enjoy the action-packed excitement as six teens are invited to attend a state-of-the-art adventure camp on Isla Nublar, and they must band together to survive when the dinosaurs break out of captivity.

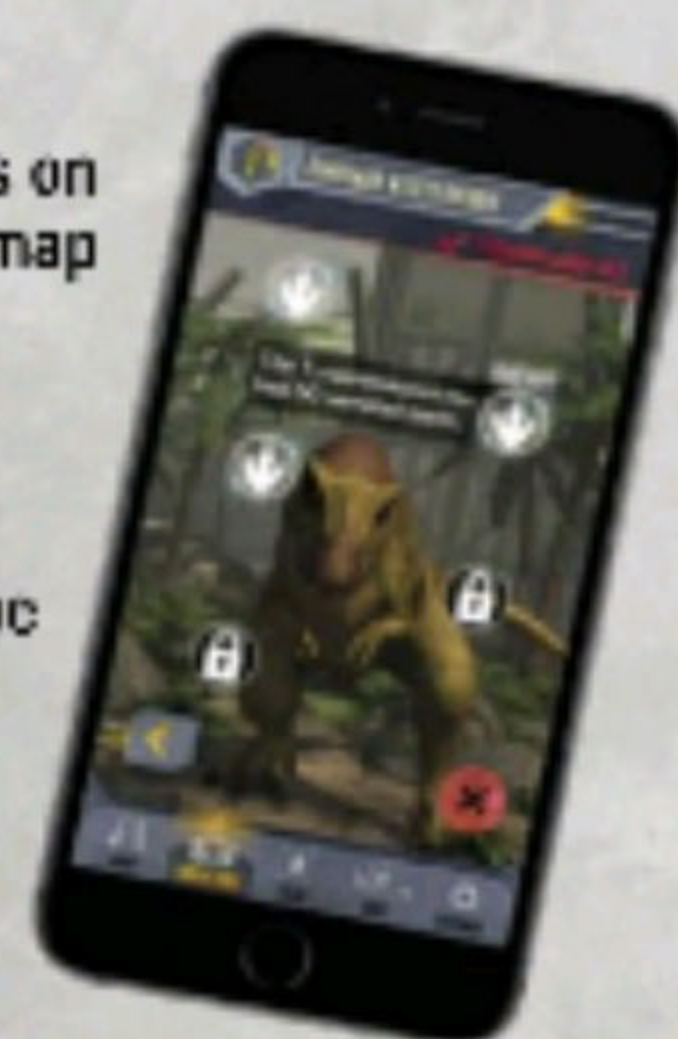
THERE'S AN APP FOR THAT

There are **OVER 200 DINOSAURS TO COLLECT** and engage with on the *Jurassic World Facts* App.

Scan the marker under the foot of your Mattel Jurassic World dinosaur figure to see that dinosaur come to life. Hear your dinosaurs roar and stomp, and see their iconic moves. Check them out in observation mode for a full 360° view and watch canon footage of your dinosaur from across the *Jurassic World* franchise (on select dinosaurs). You can also:

- Enjoy in-app videos and stay up to date with our newest videos in the *Jurassic World Facts* App! You can watch dinosaur battles, music videos and scene recreations.

- Explore seven zones on the *Jurassic World* map and make sure to collect dinosaurs in all seven different habitats, including the new Dino Escape section.
- Learn fun facts. How much does a velociraptor weigh? How much does a T. rex eat every day? Become a dinosaur expert!
- Take on trivia challenges to earn points and badges. You can compete against your friends and see who ranks highest!



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THIS ISSUE'S HIGHLIGHTS ON ONE PAGE



How did this big, flightless, friendly bird end up extinct? p. 44

MEET THE DODO



5 COOL THINGS
about the intelligent octopus p. 6

5 UNSOLVED MYSTERIES

Where do these giant geoglyphs come from? p. 41



**HANDLING
DISTRACTION
TO FOCUS
BETTER**

p. 10

Plus

- Why is there a tree in the Dead Sea?
- What happens in my body when I get a cut?
- Why does food rot?
- Where is the centre of the universe?
- How thick is the thickest fog?
- What state of matter is fire: solid, liquid or gas?

Ed's note

When the Juno spacecraft was launched, it had a job to do. It was to explore our solar system's biggest planet and learn its secrets. And Juno delivered! Check out the amazing pictures of Jupiter on **page 16** to see what she managed to capture. And, even though her job technically ended many years ago, this craft is still hard at work, so there may still be more where that came from.

Talking of mysterious things, check out **page 41** to see five puzzling things that we have no answer for – from giant geoglyphs (drawings) on the desert floor, to squid with jointed tentacles and a manuscript that was so well encoded that, over a century after it was discovered, we still don't know what it says.

In this issue, we learn more about ocean explorer Jacques Cousteau, find out what happens in our bodies when we get a cut, discover how to concentrate and how to sleep better, investigate what would happen if humans had chlorophyll in their skin, and marvel at some seemingly odd experiments researchers have done.

We also dive into the world of the tiger, find five fun facts about the octopus and meet the mandrill. We then look back in time to explore the life of the dodo, who went extinct after humans arrived on her island home.

You can also see some amazing artworks by our talented reader, Sola Sinclair, complete a density experiment and make yourself a cool bookmark.

We hope you enjoy this issue of *Very Interesting Junior*. If you have any subjects you'd like us to cover, please do let us know. You can email me on vijunior@panorama.co.za.

Until next time

Keep learning

Deanne

**DID YOU
KNOW?**

The Caspian Sea is saline, but is around three times less salty than the sea.

TOP

BIGGEST LAKES

These massive lakes are the world's biggest by area

10

10. GREAT SLAVE LAKE

Where is it? Canada

Size? 27,000km²

9. LAKE MALAWI

Where is it? Malawi, Mozambique and Tanzania

Size? 29,500km²

8. GREAT BEAR LAKE

Where is it? Canada

Size? 31,000km²

7. LAKE BAIKAL

Where is it? Russia

Size? 31,500km²

6. LAKE TANGANYIKA

Where is it? Burundi, Tanzania, Zambia and the Democratic Republic of the Congo

Size? 32,600km²

9

8

7

6

DID YOU KNOW?

The Caspian Sea is well known for the delicacy caviar, which consists of the roe (eggs) of the sturgeon fish, who live there. The beluga sturgeon is one of the largest freshwater fish in the world.

400,000 years

The age of Lake Victoria – quite young in geological terms.

5



4



This is known as Turnip Rock!

3



5. LAKE MICHIGAN

Where is it? United States
Size? 58,000km²

4. LAKE HURON

Where is it? Canada and United States
Size? 59,600km²

3. LAKE VICTORIA

Where is it? Uganda, Kenya and Tanzania
Size? 68,870km²

2



2. LAKE SUPERIOR

Where is it? Canada and United States
Size? 82,100km²

1. CASPIAN SEA

Where is it? Kazakhstan, Russia, Turkmenistan, Azerbaijan and Iran
Size? 371,000km²

DID YOU KNOW?

Lake Victoria, Lake Malawi and Lake Tanganyika are all part of the African Great Lakes (*Maziwa Makuu*), which collectively hold around 25% of the world's unfrozen surface fresh water.

1

LAKE VS POND

You may wonder how big a pond has to be in order to qualify as a lake. Well, we did anyway... But there is no one decisive answer. There is no one size that distinguishes the two, but there are other ways you can tell. Yes, a lake is much bigger than a pond. But it's also much deeper. Ponds exist solely in the photic zone, meaning they are shallow enough for the sun to reach the bottom. So, plants will grow on the bed of the pond. The temperature in a pond is also usually more even, and there won't be as many waves.

5

COOL THINGS ABOUT THE OCTOPUS

DID YOU KNOW?

An octopus can lift four times her body weight.



240

The average number of suckers on each of an octopus's arms.

4. CLOUDY WITH A CHANCE OF... INK

When an octopus is startled or under threat, she ejects black ink. This is a handy defence mechanism because it not only makes it tough for the threat to see, but also masks their other senses (smell and taste), allowing the octopus to make a speedy escape. And escape they must - they are not immune to their own ink and could die if they get trapped in the cloud of ink.

1. THEY HAVE HEART(S)!

Octopuses have three hearts: one pumps blood around the body, and the other two pump blood to the gills. The reason for this probably comes down to the unusual make-up of their blood. Unlike vertebrates, who have iron-rich blood packed into red blood cells, octopuses - along with some tarantulas, scorpions and horseshoe crabs - have copper-rich blood (that's why their blood is blue!). But this blue blood is less efficient at transporting oxygen. The three hearts help to make up for this by pumping blood at a higher pressure around the body to keep up with the octopuses' active lifestyles.

3. THEY ARE MULTI-DEXTEROUS

An octopus's arms can work independently - neurons in them can even solve problems completely separately to the octopus herself. That's why they say an octopus has nine brains (one in each of her eight arms and one in her head).

400,000

The number of eggs a female octopus can lay.

2. THEY ARE NOT NEWBIES

The first octopuses lived way back in the Carboniferous Period (around 296 million years ago). Well, that's the oldest octopus fossil we have found, to be more accurate. The fossil, which is housed at The Field Museum in Chicago, USA, shows a pretty flat, globby creature - but she does have eight arms and what scientists think may be an ink sac.

$\frac{3}{10}$ of a second

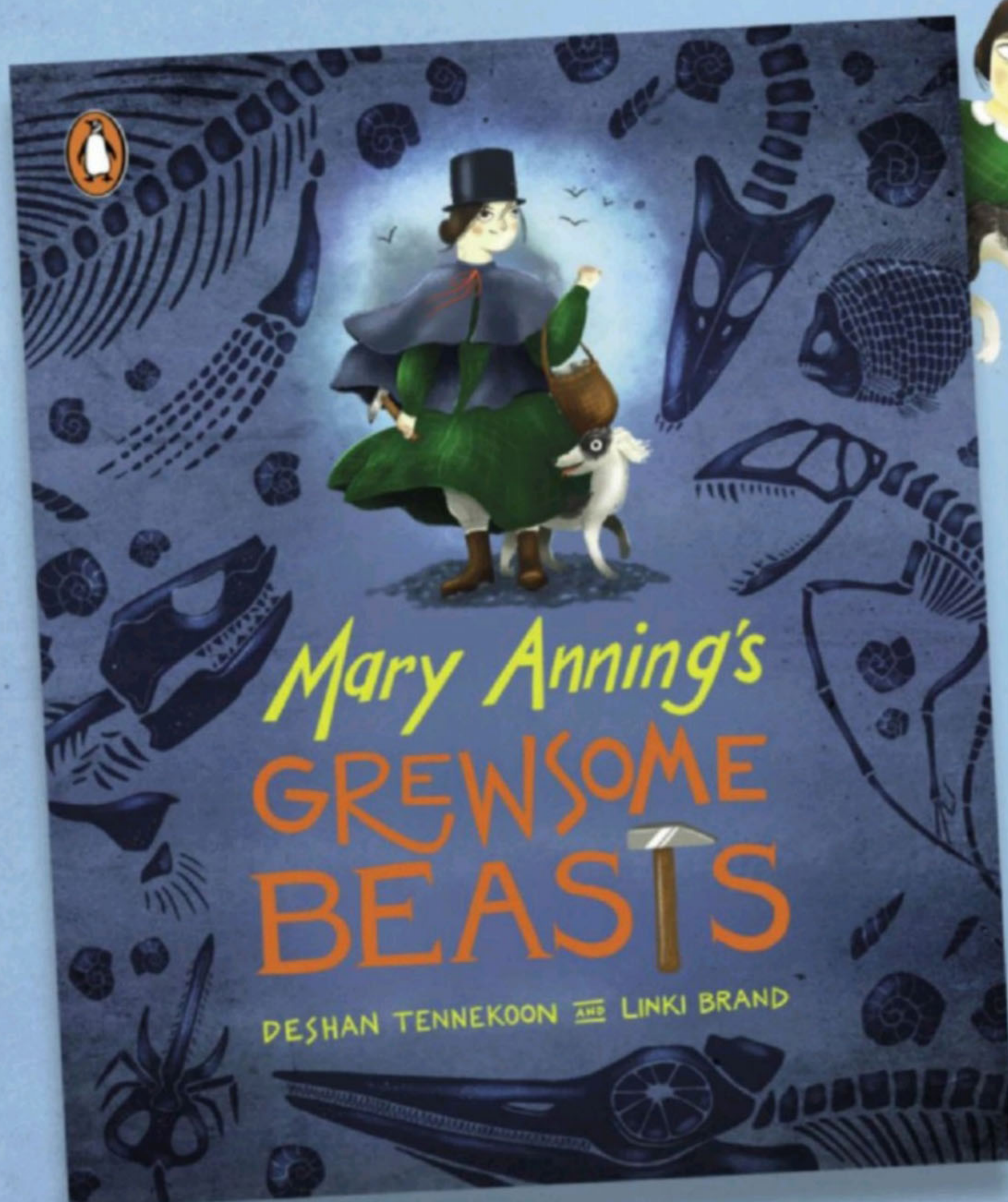
The amount of time in which an octopus can change colour when she needs to camouflage herself.

5. THEY ARE CLEVER

There are many stories of octopuses who can complete mazes, use tools and plan elaborate escapes from their tanks when in captivity. There's even a funny story about a captive octopus who escaped his tank every evening, made his way to a different fish tank and ate an expensive fish every night, making sure to conceal all evidence. But did you know that they can recognise human faces? Scientific American reported a story where an octopus in New Zealand decided she didn't like one of the members of staff at the university she was kept at, and every time the person passed the octopuses' tank, the octopus would spray her with a jet of water. Clever and funny, we think!



Mary Anning's GREWSOME BEASTS



This visual biography contains many deaths and one squirrel; a handsome puppy and 200-million-year-old poop!

OUT NOW

This book tells the true story
of a scientist named
MARY ANNING

*The fossils she found helped invent
the science of palaeontology.*

If you've heard of Ichthyosaurs, Plesiosaurs or Pterosaurs you already know her work but there's so much that's been hidden or forgotten.

HERE ARE SOME THINGS YOU'LL DISCOVER:

- ☞ As a one-year-old, lightning struck Mary but it did not kill her.
- ☞ When she was 12 years old, she found the bones of a creature no one had ever seen before.
- ☞ In her 16th year, dead people washed up on her favourite beach.
- ☞ Her enemies were rich men and landslides – the first called her a liar and the second tried to kill her (a lot).
- ☞ One of her friends often ate mice on toast.



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Random facts for fun!

WHAT ARE THESE?

Nope, these aren't weird, oversized toadstools. They are a group of rock structures called 'hoodoos', which started forming more than 100 million years ago. The columns, which are located in Utah's Grand Staircase-Escalante National Monument, are slowly eroded away over the years, leaving caps consisting of a type of harder brown sandstone.



HOW THICK IS THE THICKEST FOG?

By definition, fog has a visibility of less than 1km, but it can get much thicker than that. The UK Met Office visibility scale runs down to a Category X fog, where visibility is less than 20m. If fog gets mixed with industrial pollution, it becomes smog, and can be thicker still. During the Great Smog of 1952, drivers couldn't see their own headlights!



ZEPTOSECOND

A measure of time equal to a thousandth of a billionth of a billionth of a second.



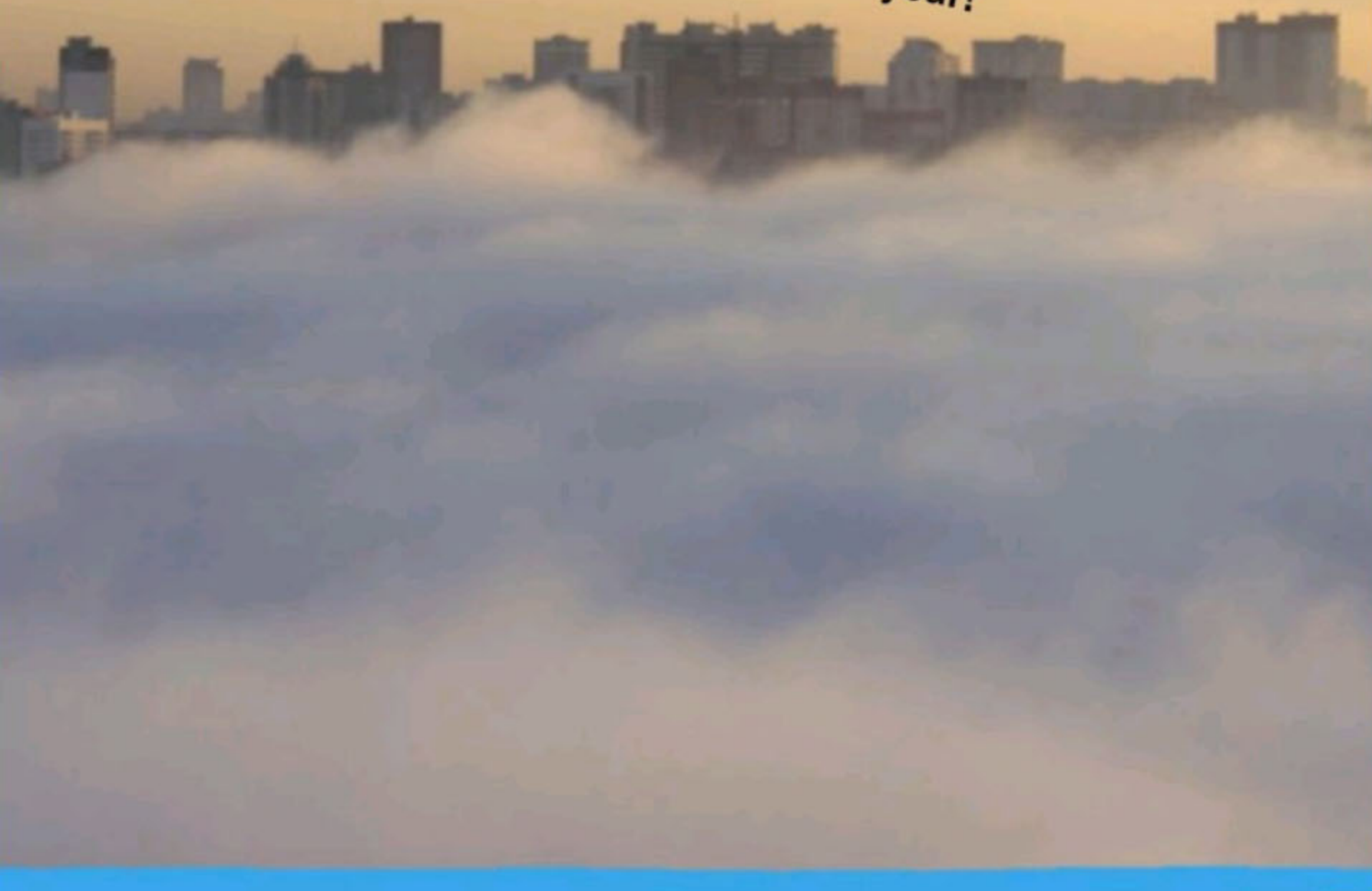
WHY DOES FOOD ROT?

As cells die, their membranes break down and enzymes start leaking out. The cell digests (eats) itself, then neighbouring cells, and the process cascades. Without any immune response to stop them, bacteria and fungi will also begin eating the

food and multiplying. As they munch away, they alter the texture of the food and release waste products that change the taste. There are purely chemical rotting mechanisms too, like fat oxidation, which makes it taste rancid. Yuck!

DID YOU KNOW?

The Grand Banks in Canada are foggy for around 200 days a year!



Is plastic currency more or less hygienic than paper money?

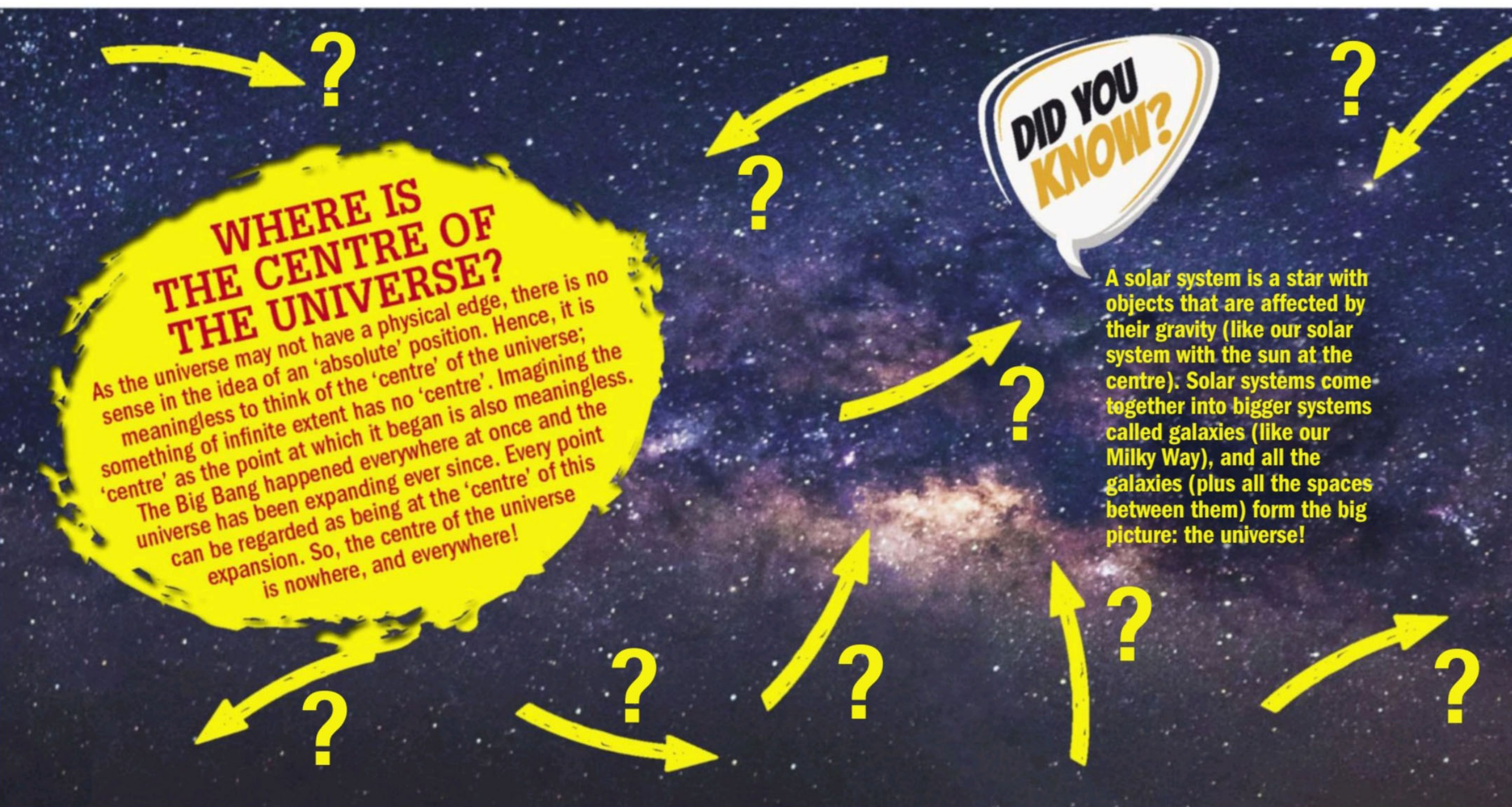
A 2013 study found that the polymer currency used in Romania allowed MRSA superbugs (bacteria that are resistant to several widely used antibiotics) to survive for 24 hours, compared with just three hours for paper notes. But subsequent studies on new types of polymer notes found that harmful germs are much less likely to stick to the plastic in the first place.

WHERE IS THE CENTRE OF THE UNIVERSE?

As the universe may not have a physical edge, there is no sense in the idea of an 'absolute' position. Hence, it is meaningless to think of the 'centre' of the universe; something of infinite extent has no 'centre'. Imagining the 'centre' as the point at which it began is also meaningless. The Big Bang happened everywhere at once and the universe has been expanding ever since. Every point can be regarded as being at the 'centre' of this expansion. So, the centre of the universe is nowhere, and everywhere!

DID YOU KNOW?

A solar system is a star with objects that are affected by their gravity (like our solar system with the sun at the centre). Solar systems come together into bigger systems called galaxies (like our Milky Way), and all the galaxies (plus all the spaces between them) form the big picture: the universe!



HOW TO CONCENTRATE

A scientist's guide on the best way to improve your concentration



You're trying to study for your test and your little brother is crying. Or you're doing homeschooling and the dog is barking. It's not always easy to concentrate on what you are doing, so here's some advice on how to deal with distractions.

DISTRACTION ISN'T ALL BAD

If we get distracted at school, it's not great for productivity (getting stuff done), but distraction does have a positive side. If we were always so focused that we never got distracted, we'd miss potential changes, such as threats in our environment. Imagine you were concentrating so hard on a book that you didn't hear a fire alarm going off. Distraction can be vital for survival.



SILENCE IS BEST

Of course, there are plenty of times when you do need to concentrate, and noise becomes a problem. For example, it was found that people do worse on tasks such as mental maths when there's background noise to disturb them.

SOME SOUNDS ARE MORE DISTRACTING THAN OTHERS

Noises that are varied are more distracting than those that aren't. Classroom noise with speech is more distracting than classroom noise without speech. Also, playing music with lyrics is more distracting than playing instrumental music.

Baby Shark
doo doo doo doo
doo doo doo



BUT SOME PEOPLE SAY MUSIC HELPS THEM CONCENTRATE?

They may say this, but research doesn't always back it up. If you ask people to predict how well they'll do on a task while listening to music that they like, versus listening to music that they don't like, they tend to think they will do better than they actually do. Liked and disliked music tend to have similar effects (they are equally distracting).



TRY WORKING IN A COFFEE SHOP

Unless someone smashes a cup or makes some other sudden noise, the gentle background hum can be a good backdrop for working. Or try noise-cancelling headphones, which seem to work because they screen out loud and unexpected sounds.



HAS LOCKDOWN MADE IT HARDER TO CONCENTRATE?

Maybe. For people with busy households, there may be more distractions when working from home (like doing homeschooling). But it's too soon to say if it's had any long-term effects on our concentration. It could be that we are still adjusting to new ways of working in different environments.

LEARN TO CONCENTRATE BETTER

People with better working memory (the ability to store and use information in the short-term) seem to have better concentration. We can all improve by doing tasks that involve working memory. For example, try to remember and recall a list of, say, five numbers in order. Then next week, try to remember six in order, and so on.

1 3 2
9
100
55

TURN OFF YOUR NOTIFICATIONS

If you want to concentrate for a long time, turn off your phone's notifications, take regular breaks, and hope that what you are concentrating on is interesting. It's easy for the mind to wander when the subject matter is boring!

WHO RESEARCHED THIS?

Dr Nick Perham, who is a senior lecturer in the Department of Applied Psychology at the Cardiff Metropolitan University. He researches auditory (sound) distraction, emotion and cognition. So we'll bet he concentrates really well!

IN A NUTSHELL:

1. Silence is best, or a gentle background hum. 'Coffee shop noise' is great!
2. Switch off notifications on your phone so you can concentrate on the task at hand.
3. Exercise your working memory to improve your ability to focus.

HAVE YOUR SAY!

What helps you concentrate better? Air and share (you may help someone else!) by emailing us at vijunior@panorama.co.za. We'd love to hear from you!

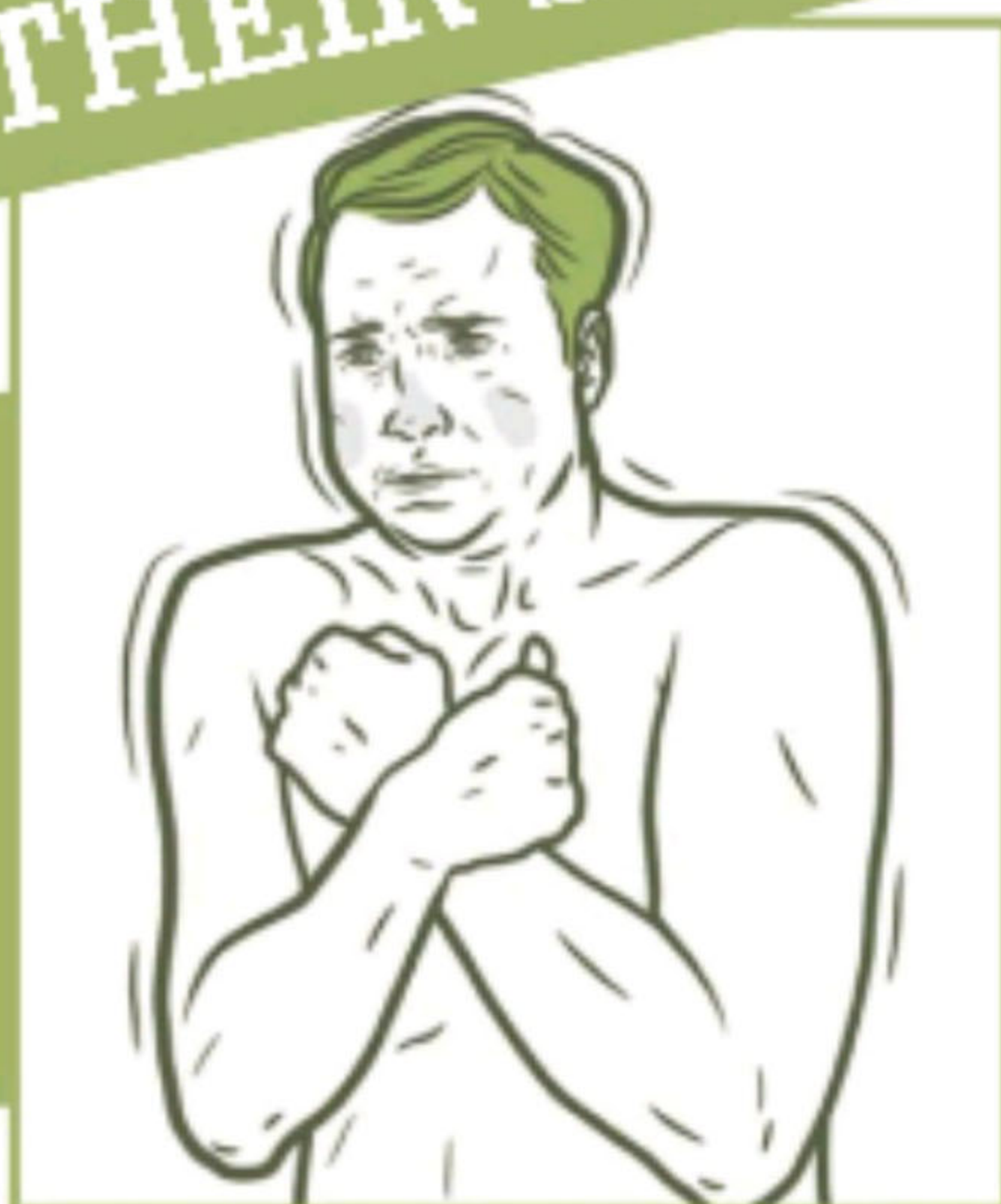
**DID YOU
KNOW?**

Photosynthesis is the process plants use to make their own food, using sunshine, chlorophyll, water and carbon dioxide. Chlorophyll is a green pigment plants have that allows them to absorb light.

WHAT IF HUMANS HAD CHLOROPHYLL IN THEIR SKIN?

1. WE'D STILL NEED TO EAT

Photosynthesis is only 3-6% efficient. If you stood naked outdoors all day, you would generate fewer than 240 calories – about three chocolate digestive biscuits' worth. If you weren't eating anything to supplement (add to) this, photosynthesis wouldn't even be enough to offset the heat your naked body would lose. You'd die of hypothermia before you starved.



2. WE'D STILL NEED OXYGEN

Plants generate all the oxygen they need as a by-product of their own photosynthesis. But since you'd need to eat extra food to power your more active metabolism, you'd also need to breathe extra oxygen in order to convert (change) all that food into energy. Photosynthesis would let you lower your breathing rate by 10% at most. Photosynthetic astronauts would still need oxygen tanks.



3. WE MIGHT NOT EVEN BE GREEN

Most plants need light to synthesise (produce) chlorophyll. If humans used the same method, our skin would only be green where it was exposed to the sun. Office workers and many people in the far North probably wouldn't get enough sunshine to tint their skin more than pale yellow, except on their faces and hands. Those working rolling shifts (some day, some night) might cycle between green and white.



FURY UNLEASHED!

What happens when you combine a volcanic eruption and lightning?

This amazing phenomenon is due to a combination of lightning and a volcanic eruption that took place at Volcán Calbuco in Chile in 2015. It's known as a **dirty storm**, which is when the black smoke billowing out of a volcano's crater carries red-hot ash and rock fragments that bash into each other as the smoke spews upwards. All this jostling creates static electricity, which is discharged as bolts of lightning that travel upwards through the plume. A 2016 study of dirty storms over the Sakurajima volcano in Japan showed that volcanic lightning may be able to indicate the size of a volcano's ash cloud, and could therefore be used to determine air quality in the surrounding area.

DID YOU KNOW?

Sakurajima is a stratovolcano (built up of alternate layers of lava and ash), measuring 1,117m high, and is one of the most active volcanoes in the world.



WATCH IT!

Ask an adult if you can scan this QR code and watch a dirty storm in action.

THE HOT LIST...

Sakurajima is one of 16 volcanoes currently identified as **Decade Volcanoes**. These volcanoes have been identified as potential threats by the International Association of Volcanology and Chemistry of the Earth's Interior (more reasonably called IAVCEI). That's because it has a history of big and destructive eruptions, and because many people live near enough to the volcano to be affected by it if it erupts. This pic shows you all 16 Decade Volcanoes.



7 QUESTIONS FOR JULIA 'BISH' ROBSON

Hoping to make it on the local esports scene? Find out how Julia did it!

ABOUT JULIA 'BISH' ROBSON

Gaming professionally since the age of 16 (she's now 25), Julia has taken the top spot at various gaming competitions. Aside from being a professional esports player and brand ambassador for major tech brands, she is one of the country's first women to own an esports organisation, after the launch of DNMK Esports in 2020.

**DID YOU
KNOW?**

esports (short for electronic sports) is a word used to describe competitive video gaming. It has gained a huge following in recent years and people hold massive events where professional gamers compete, often with spectators.



1 How old were you when you started gaming, and can you remember what your first favourite game was?

My very first game would be *Klonoa* on PlayStation 2 when I was around six or seven years old. But I would hardly consider that gaming, until I started playing *Counter-Strike: Source* at age 14 – that would then also be my favourite game!

2 How did you first get into esports?

I competed in *Call of Duty 4 Promod* at a local LAN event called 'Organised Chaos', which was hosted monthly in the Bellville Velodrome. This was also when I started meeting a lot of other gamers online, and it escalated to travelling to Johannesburg to compete at a national level, and then even further until I started attending international events.

3 Can you explain what it feels like to compete at such a high level versus playing as a hobby?

It definitely is a 'calling' of some sort. You feel very passionate about the culture, the community, and the game/results of the game. Playing as a hobby can be just as rewarding, but some would say way less 'stressful', as there is generally a really large skill gap between the pro and amateur gamers, so there is a lot to learn and even more to prove.

4 If other articles are true, you were studying dentistry before you decided to rather pursue esports. What changed your mind?

It was more a case of opportunity than me changing my mind. I always knew what I was passionate about, and it became such a big part of my life towards the end of high school, but there were no opportunities to pursue gaming as a career. So, when I got selected to study dentistry, it felt like the natural 'societal' thing to do.

But, when the opportunity arose for me to become a brand ambassador and play games and create content for big tech companies, it was something that I couldn't miss out on!

5 You're not only a gamer, but also a businessperson – you own your own esports company. What does an 'average' workday look like for you?

My day-to-day is consumed with [my company] DNMK Esports at the moment. We have BIG plans to grow and serve the local esports community as a multi-gaming organisation, and even bigger dreams for the brand!

For now, my day starts quite early, with meetings and admin (usually around 8am) along with a LARGE cup of coffee. Then, over lunch, I take a break to check the social accounts and make sure we are on track with the day's schedule, which usually leads to meetings with the DNMK creative team.

I then move into the afternoon, which is predominately focused on errands/content creation, and that leads into a two-hour break for my gym workout. After that, my esports teams often catch me up on any updates before I sign off and start gaming myself for around four to six hours.

6 Any advice for a young person looking to break into the esports scene? What does it take to make it?

It is important to note that esports/gaming content (just like any other niche content on the internet) takes time to curate and perfect. Whether it is streaming, TikTok or YouTube, all these platforms require some hard work and dedication to master.

The first piece of the puzzle is a passion for what you are doing. It really comes a lot more naturally spending upwards of eight hours a day, seven days a week, on gaming and content creation when you are enjoying yourself! Another tip would be to do a lot of research into what other content creators/professional gamers do to get to the top, and possibly even try to reach out and ask them some questions. We are always happy to help and advise anyone needing more info or advice at DNMK Esports!

7 What do you see for the future of esports in South Africa?

I really hope to see more people share some awesome moments – that gaming and meeting new people through gaming. I have met so many amazing people and friends for life! The social and cultural side of esports often gets overlooked, and I hope more brands get involved to help the local scene host more events, create a more inclusive environment, and better our country's infrastructure to further the growth of local esports into a scene that gets international recognition.

Luckily, we have seen that happen, with Red Bull Campus Clutch and Red Bull Hit The Streets allowing local gamers to show off their talents on an international stage, and we need more of that!

THE SECRETS JUPITER

See some of the amazing images of Jupiter captured by the spacecraft Juno

In classical mythology, the god Jupiter surrounded himself with clouds, so that no one could see what he was up to. Only his wife, Juno, could see his true nature. And so it is with the NASA spacecraft of the same name. The secrets of the formation of the whole solar system lie below Jupiter's clouds, waiting to be discovered. Jupiter, like the sun, is made up mostly of hydrogen and helium, so it too must have been formed early on, capturing most of the leftover material after our star (the sun) formed.

How this happened is not clear. Once processed, the data taken by Juno's instruments will help us to piece the puzzle together and may reveal how the planet formed, and what conditions in the early solar system were like. And the images from JunoCam have been out of this world!

WHAT WAS THE JUNO MISSION?

In June 2005, NASA selected Juno to become the space agency's next New Frontiers mission. These missions are aimed at better understanding the solar system by collecting scientific data. Here is how its journey has gone so far:

- 📅 **5 August 2011** – Juno launches from Cape Canaveral Air Force Station atop an Atlas V rocket.
- 📅 **5 July 2016** – Juno arrives at Jupiter and goes into polar orbit.
- 📅 **27 August 2016** – Juno completes its first Jupiter flyby. All systems and instruments are working well.
- 📅 **19 October 2016** – Juno is meant to perform an engine burn to reduce its

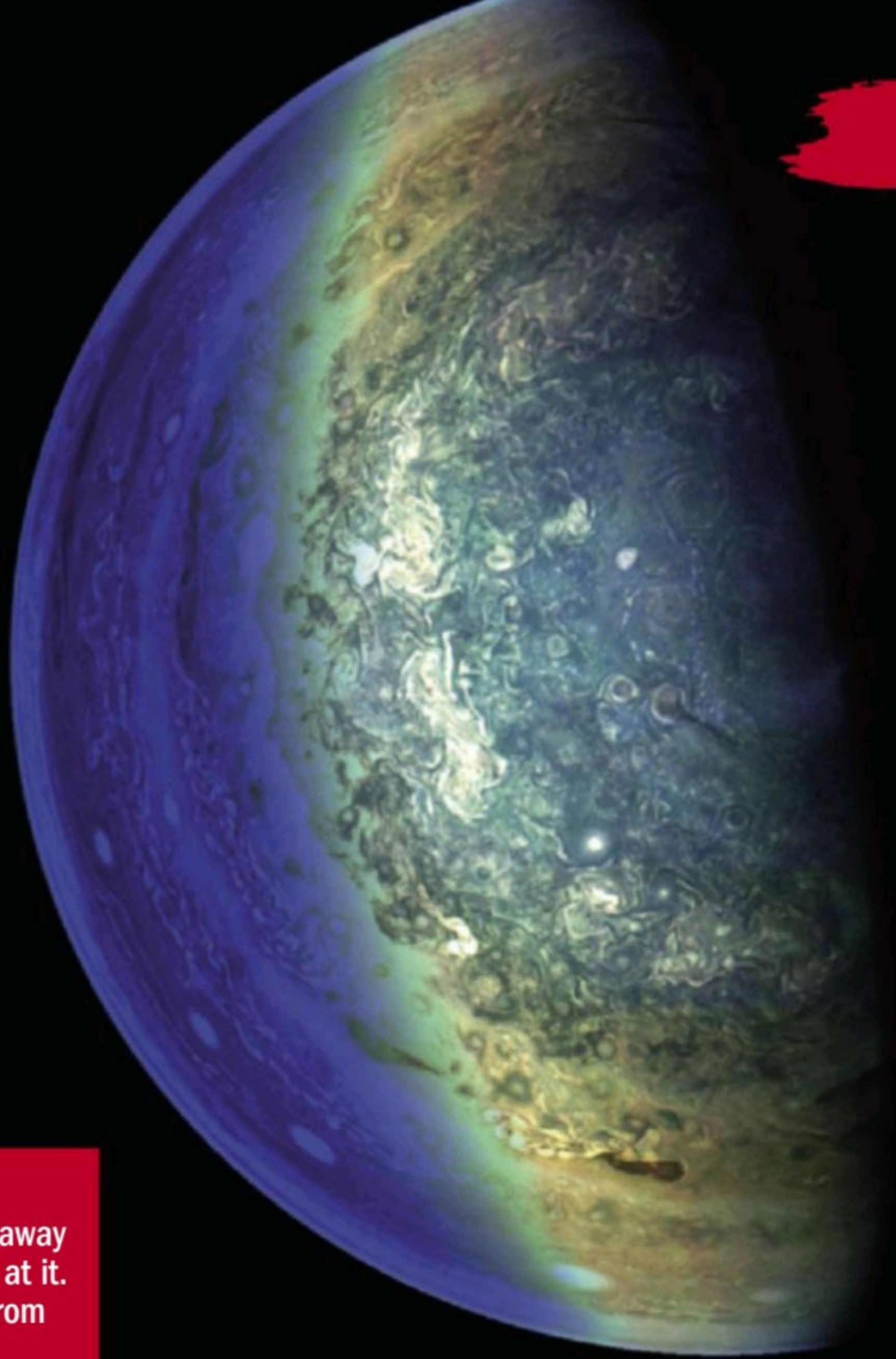
orbit time from 53 to 14 days. Mission managers postpone and eventually cancel this, due to a glitch.

- 📅 **10 July 2017** – During the seventh close flyby, Juno passes over Jupiter's most famous feature, the Great Red Spot.
- 📅 **16 July 2018** – Juno's mission comes to an end, but the spacecraft is still healthy, so its operational life is extended until July 2021.
- 📅 **July 2021** – The Juno mission receives another extension and is set to continue until 2025, or until the craft's life ends. At the moment, it's cruising around Jupiter's moons – like Ganymede, Europa and Io.

SECRET LIFE OF JUPITER

NIGHT AND DAY

This picture was taken when Juno was moving away from the planet's south pole and looking back at it. The line separating the dayside of the planet from the nightside is called the 'terminator'.



THE JUNO CRAFT

1 JUNOCAM (hidden in this image)

Takes colour images

2 GRAVITY SCIENCE

Studies Jupiter's gravitational fields

3 SOLAR PANEL

Three of these power the craft

4 JOVIAN ENERGETIC PARTICLE DETECTOR INSTRUMENT (JEDI)

Detects highest energy particles

5 JOVIAN AURORAL DISTRIBUTION EXPERIMENT (JADE)

Detects particles and ions that cause the auroras

6 MICROWAVE RADIOMETER (MWR)

Measures microwave emissions

7 WAVES

Measures radio waves

8 MAGNETOMETER

Measures magnetic field's direction and strength all around Jupiter

9 RADIATION VAULT

The craft's systems are encased in titanium to protect them from the high radiation levels around Jupiter

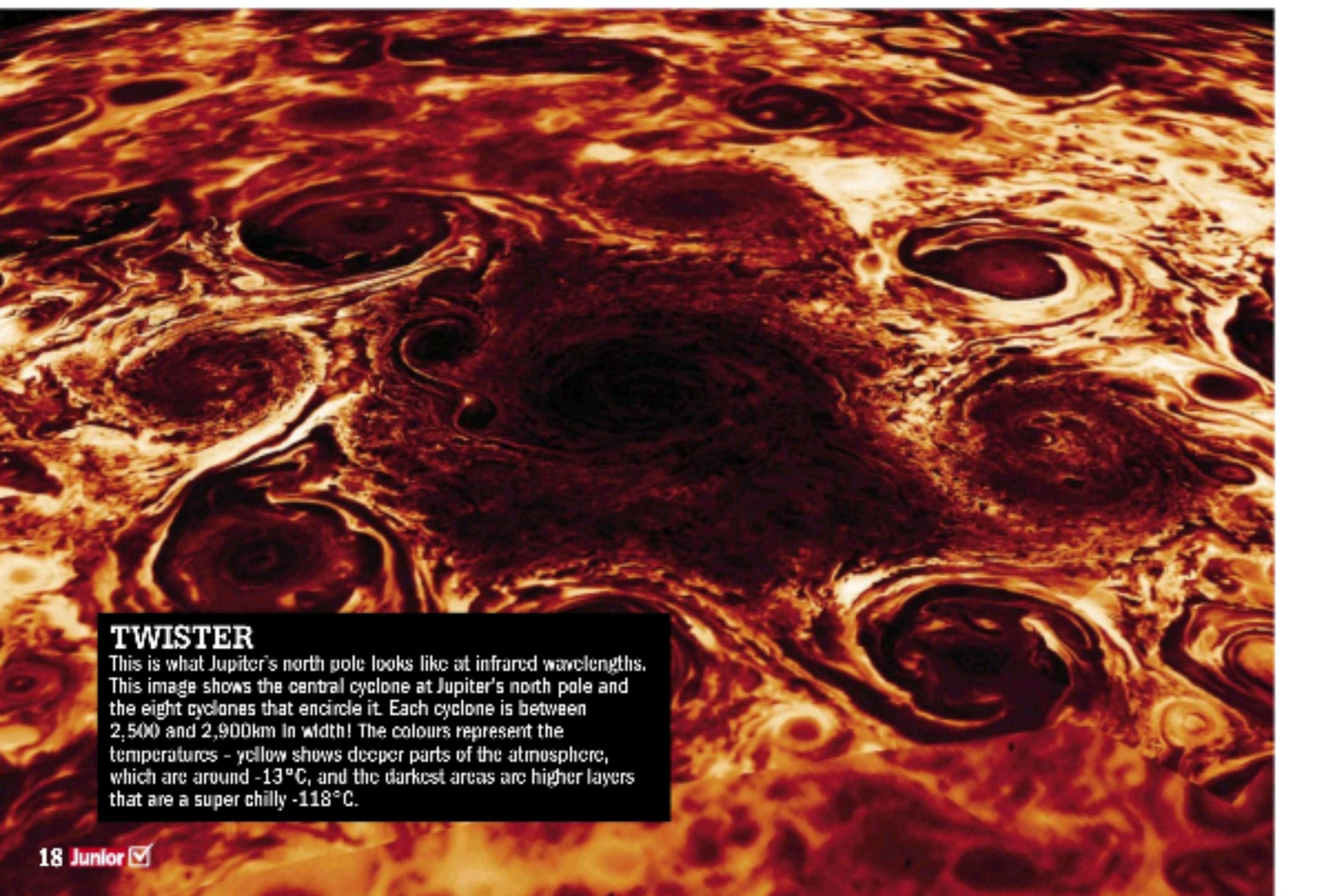
10 JOVIAN INFRARED AURORAL MAPPER (JIRAM) (underside of craft)

Images auroras in infrared and measures thermal output of Jupiter's upper layers



CLOUDS OF ICE

This raging storm in Jupiter's northern hemisphere was captured in October 2017. The storm is rotating anticlockwise. The brighter clouds are higher in the atmosphere and catch more light, whereas the darker clouds are deeper down and more shadowy. Both the bright clouds and their shadows measure from 7 to 12km in length and width. These icy clouds contain a mixture of ammonia and possibly also water ice crystals.



TWISTER

This is what Jupiter's north pole looks like at infrared wavelengths. This image shows the central cyclone at Jupiter's north pole and the eight cyclones that encircle it. Each cyclone is between 2,500 and 2,900km in width! The colours represent the temperatures - yellow shows deeper parts of the atmosphere, which are around -13°C , and the darkest areas are higher layers that are a super chilly -118°C .

ALIEN AURORA

This is the southern aurora (lights in the sky) of Jupiter. From Earth, the planet's southern aurora can hardly be seen. Auroras are ovals of light that occur when particles from the sun strike molecules in a planet's atmosphere and cause them to glow. We get auroras here on Earth too (like the northern lights) but, as Jupiter's magnetic field is the strongest in the solar system, its auroras are much stronger.

ON THE SPOT

If you were to make a list of the seven wonders of the solar system, Jupiter's Great Red Spot would be near the top. The massive storm system is **BIGGER THAN EARTH** and was formed in the 19th Century (though there are unverified reports about it from the 1660s onwards). This image is based on one taken in July 2017 when Juno was around 10,000km above the planet's cloud tops.

EYES OF THE STORM

The Great Red Spot grabs all the glory when we think about Jupiter's giant storms, but it is just one of many that rage in the planet's atmosphere. This image shows two white storms. The storm at the bottom is part of what is known as Jupiter's 'String of Pearls'. This is a series of oval storms, all of them white in colour, that encircle the planet's southern hemisphere. Since 1986, the number of storms has varied from six to nine. There are currently eight, all rotating in an anticlockwise direction. These storms are powered by the heat generated in Jupiter's interior.

NEXT FOR NEW FRONTIERS

NASA's next New Frontiers mission is set for a 2026 launch. Called Dragonfly, it will explore Saturn's moon, Titan. Due to arrive in 2034, it will collect data on whether the moon contains any of the building blocks of life (like underground water) and will investigate whether there is any evidence of past life there.

EXPERIMENT



Scan to watch
it in action.

Make a sugar rainbow to demonstrate how density works

YOU WILL NEED:

- Six glasses filled with equal amounts of lukewarm water
- Sugar (white sugar works best)
- Food colouring
- A spoon
- A straw
- A separate, empty glass
- A pipette

1

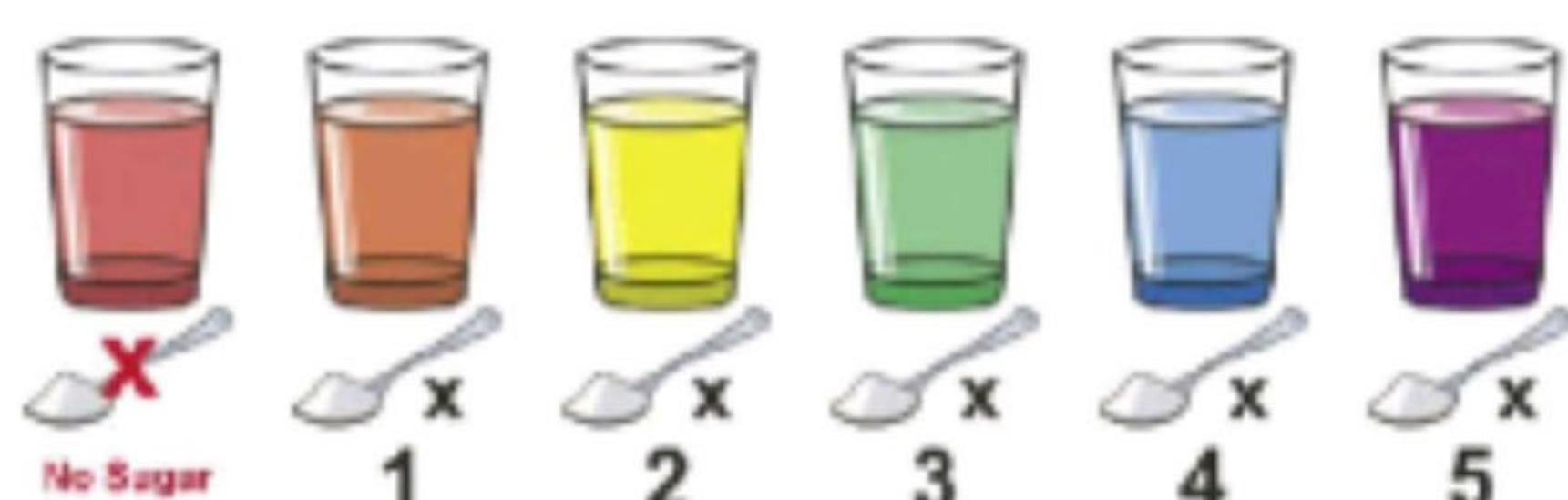
WHAT TO DO:

Place your six glasses of water on a counter.



2

Add a few drops of food colouring to each glass, in the colours shown, and stir to dissolve completely.



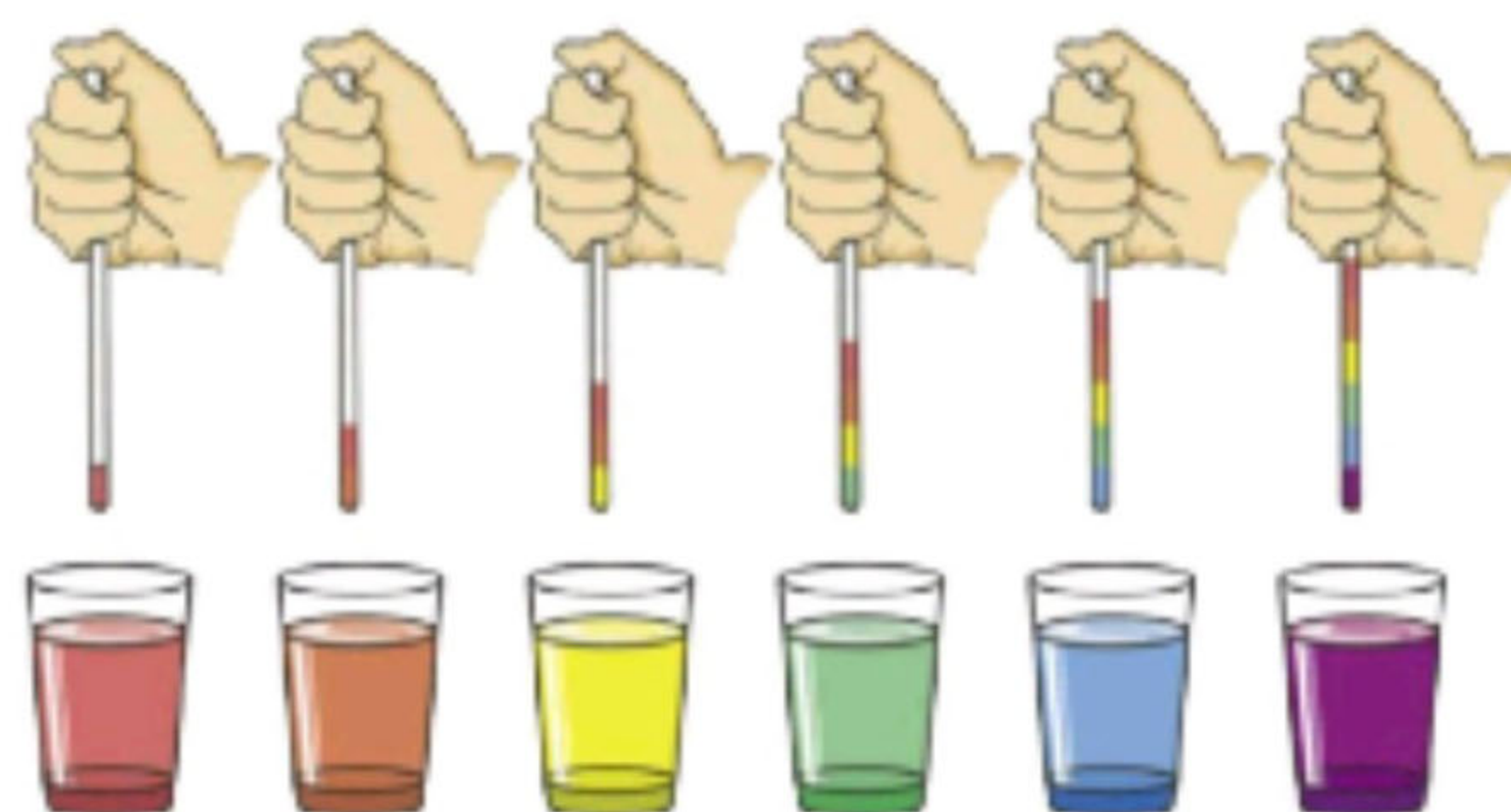
3

Add teaspoons of sugar to the glasses in the amounts shown.



4

Stir each glass until all the sugar has dissolved.



5

Dunk the straw into the first glass and then quickly cap the top of the straw with your thumb. Dunk it in the next colour, and quickly uncapped and then cap the end of the straw again. Keep going until you have a bit of each colour in the straw. Remember, if you let your thumb go at any stage, you will lose all your water.

6

You can also try using a pipette and sucking up a bit of each colour at a time to see if you can layer it in a separate glass.



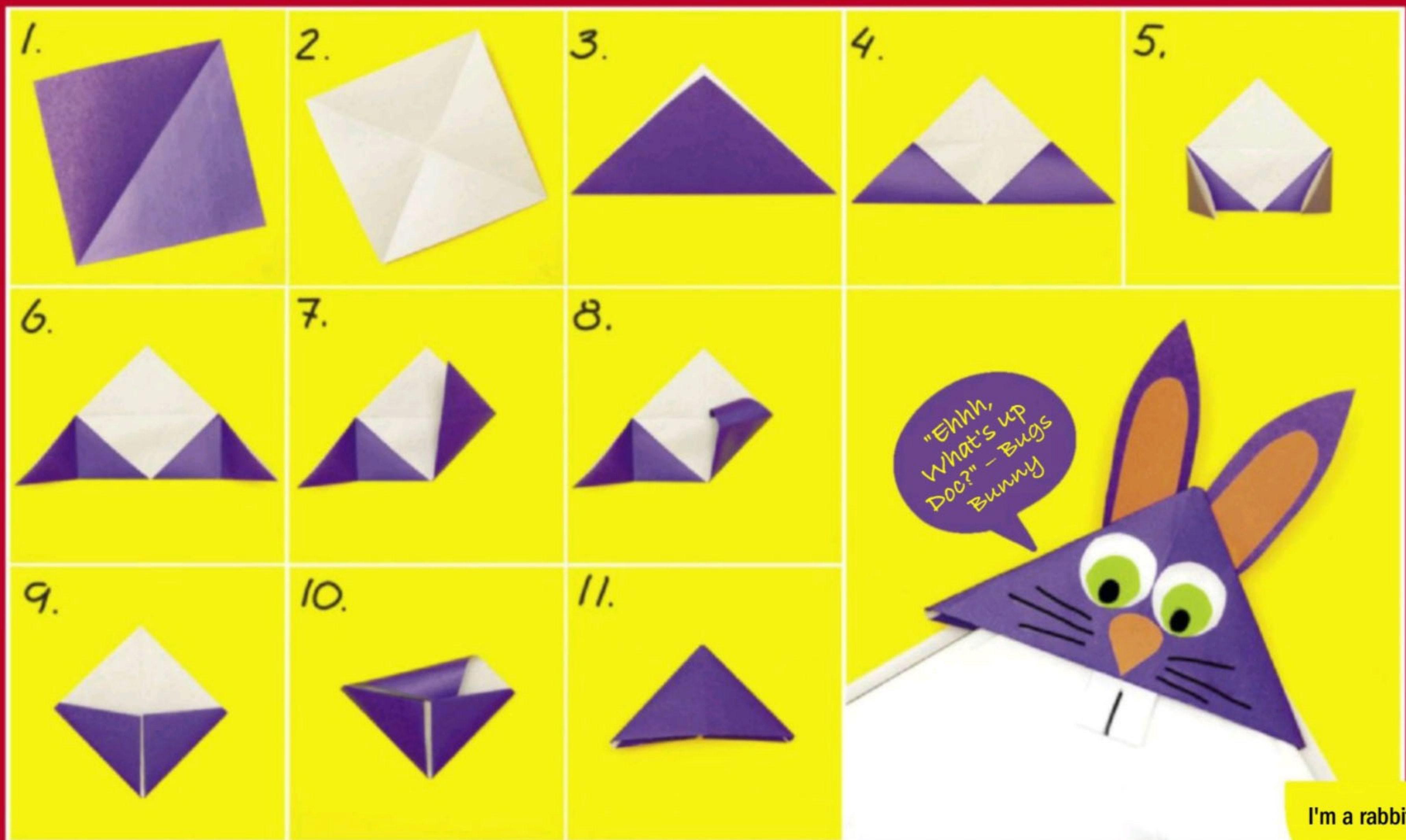
WHAT IS HAPPENING?

Each glass of water has a different amount of sugar dissolved into it, but the same amount of water, and so each has a different density. The more sugar, the greater the density (the more mass it has per volume).

If you got the experiment right, send us a pic! We'd love to see. You can email us at vljunior@panorama.co.za.

ORIGAMI BOOKMARK

Follow the steps to make yourself and your friends a creative bookmark



I'm a bat.

The baby bat screamed out in fright...

"Turn on the dark, I'm afraid of the light." - Shel Silverstein

YOU WILL NEED:

- ✂ Thin cardboard in various colours
- ✂ Scissors
- ✂ Glue
- ✂ A marker

STEP 1: Fold a square piece of paper in half.
STEP 2: Fold it in half again, in the opposite direction.
STEP 3: Open it up and fold one of the halves together again.
STEP 4: Take the top layer and fold the top pointy bit down until it reaches the base of the triangle. Fold it.
STEP 5: Fold each of the bottom corners of the triangle inwards until they touch the bottom. Fold.
STEP 6: Open the triangle shape back up.
STEP 7: Take each of the bottom corners of the triangle and fold them upwards until they

line up with the top corner of the triangle.
STEP 8: This is the trickiest part. Take the newly folded corner and tuck it into the pocket that has been created.
STEP 9: Do the same with the opposite side, so that you end up with a diamond shape.
STEP 10: Tuck the top of the diamond in, so that you end up with a triangle shape that creates a pocket that you slide over the top corner of your book to keep your place.
STEP 11: You're all done! Decorate the bookmark however you please! Here is a rabbit, bat and hedgehog example.

"Nothing starts until you take action." - Sonic the Hedgehog

I'm a hedgehog.

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OUR READERS

HAVE TALENT!

Meet Sola Sinclair, whose art is simply amazing!

Sola is a 17-year-old artist from KwaZulu-Natal. She started creating art from the time she could hold a pencil and it grew into a passion for her. Sola does wildlife art and is currently working on a collection of items to donate to the charity Warriors for Africa's Wildlife (WAW), as she wants to raise awareness to save the environment and endangered species.

Sola uses all sorts of mediums for her art, which she has exhibited at art museums and exhibitions. Aside from her paintings, Sola also does portraits of people and pets (which you can order from her), and crochets and knits. Going forward, Sola wants to share her passion and talent with others, so she is starting an art club in Ramsgate, called 'Hear Us Roar' Arts, Crafts and Music Club.

Sola wants to make a name for herself in the art world and, with talent like this, we're sure she will do just that!



"For me, art is more than a hobby; it's an integral part of my existence, which I could not live without."

1. A crocheted creation by Sola.
2. Sola with one of her colourful bird artworks.
3. Such beautiful colours on this zebra piece.
4. Sola has a passion for wildlife, and she has created many beautiful artworks of wild animals.
5. A realistic rabbit painting.
6. Sola recently finished this roaring lion artwork.
7. Sola displays her art at the Art by the Sea exhibitions run by the Ramsgate Lions Club.



SEE IT AND SUPPORT IT ONLINE

Ask an adult to look Sola up on social media, so you can see (and order) her work:

Sola's Gallery artby.sola



10 COOL FACTS ABOUT JACQUES COUSTEAU

Things you should know about this underwater explorer

He was a lover of the sea, a visionary and a true adventurer. Jacques Cousteau will always be remembered for his dedication to the ocean and for the development of apparatus that have allowed humans to spend more time beneath the surface and to document it.

- 1** Jacques Cousteau was born on 11 June 1910 in France. He joined the army when he was 20 but, when an accident prevented him from continuing his training to become a naval pilot, he looked instead to the seas.
- 2** While he was serving on a battleship in the French navy, he started doing

underwater experiments. In 1936, he swam with goggles for the first time, and he was hooked. He started looking for ways to stay underwater for longer periods.

- 3** In 1943, along with engineer Emile Gagnan, he developed the Aqua-Lung, an underwater breathing apparatus (scuba) that allowed divers to breathe oxygen using a tank and mouthpiece. He spent the next few years carrying out diving experiments.
- 4** In 1950 he got his own floating laboratory – a ship called Calypso. It was aboard this vessel that he had many thrilling adventures and

explored the rivers and oceans of the world.

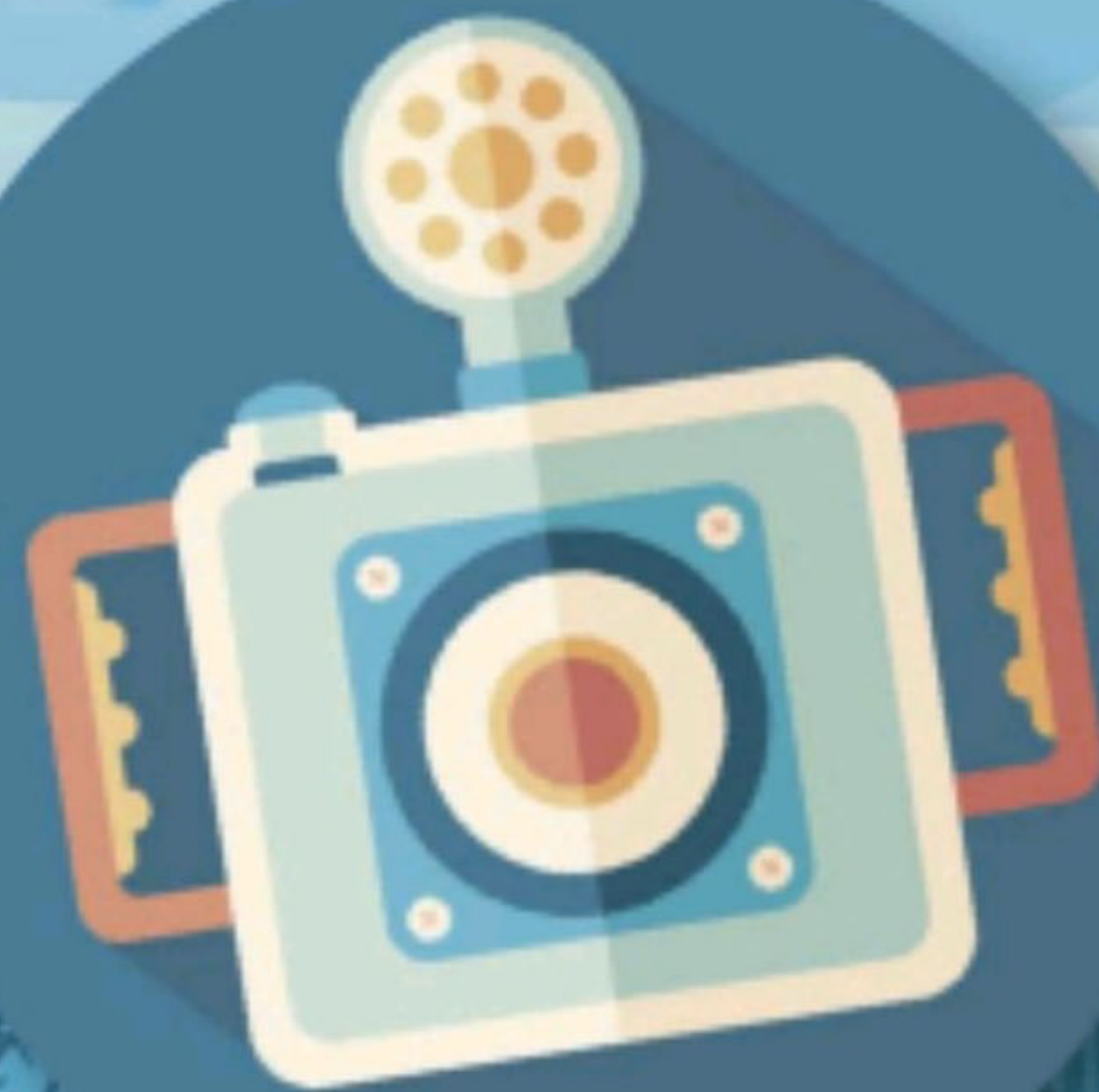
- 5** In 1953, Cousteau released his first book, *The Silent World*. Written with his diving companion Frederic Dumas, it tells the story (and shows pictures) of the beginning of his scuba career, including visiting shipwrecks. It was made into a 1956 documentary of the same name that went on to win an Academy Award.
- 6** In 1953, Cousteau became the first to make the observation that porpoises (similar to dolphins) use echolocation.

DID YOU KNOW?

Cousteau invented cameras that could take pictures underwater.



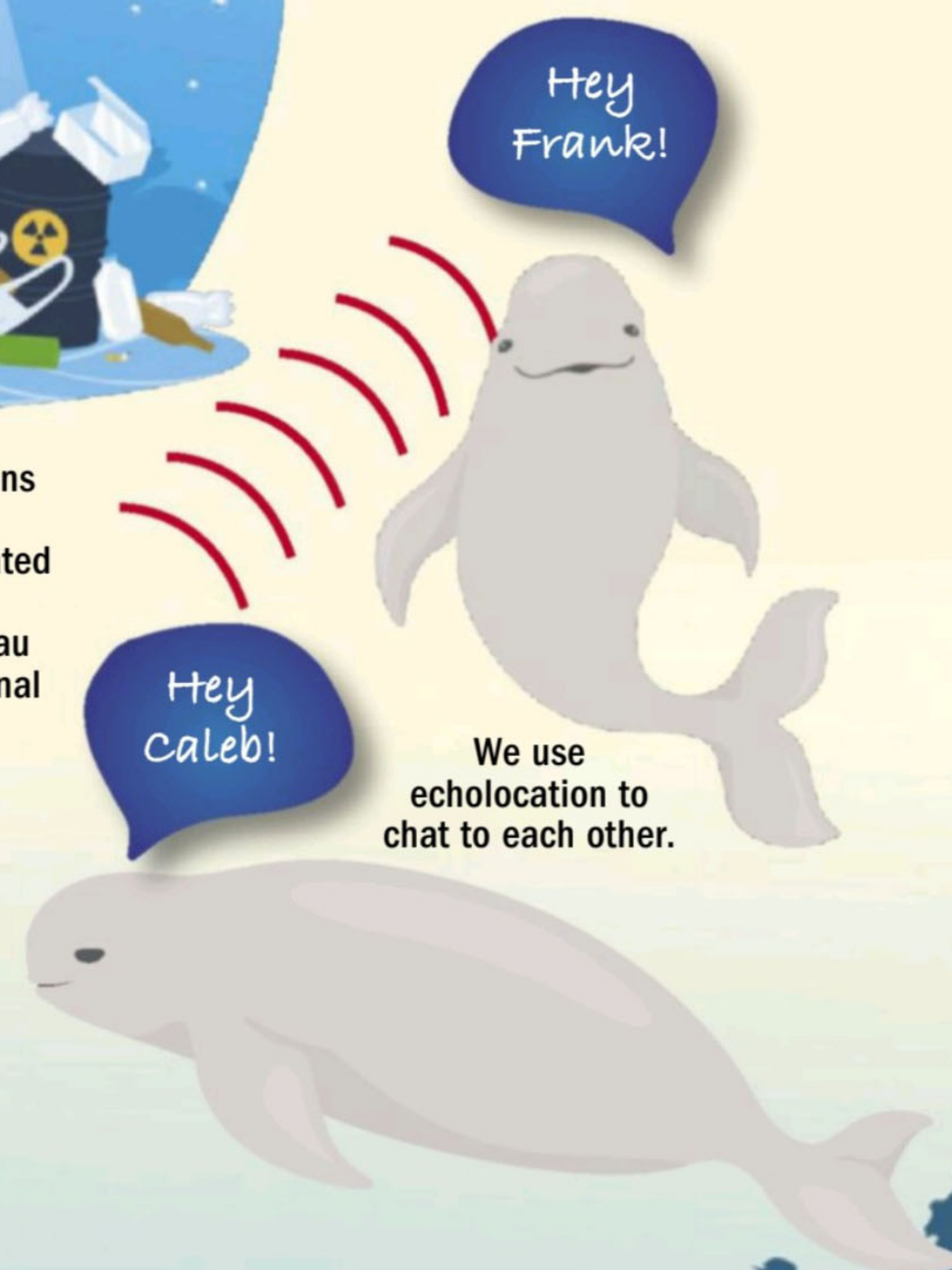
"If we go on the way we have, the fault is our greed and if we are not willing to change, we will disappear from the face of the globe, to be replaced by the insect."





- 7** In 1960, Cousteau became involved in a campaign to prevent radioactive waste from being dumped into the Mediterranean Sea. He received a lot of support from the public and the campaign was successful.
- 8** In the 1960s, Cousteau was involved in trying to create underwater villages, which would allow people to live under the sea and work on the sea floor. They were developed and tested, but were eventually abandoned in favour of using undersea robots.

- 9** In 1973, Cousteau, two of his sons and the organisation's first president, Frederick Hyman, created the Cousteau Society for the Protection of Ocean Life. Cousteau went on to win the UN International Environmental Prize in 1977.
- 10** Cousteau died of a heart attack at the age of 87. He had made more than 120 documentaries, had written more than 50 books and had created a massive environmental legacy via his foundation.



In the mid-1950s, Cousteau helped to develop the 'diving saucer', which could allow humans to travel to depths of over 350m. It now resides at a Monte-Carlo museum.

"The sea, once it casts its spell, holds one in its net of wonder forever."



WHAT HAPPENS IN MY BODY

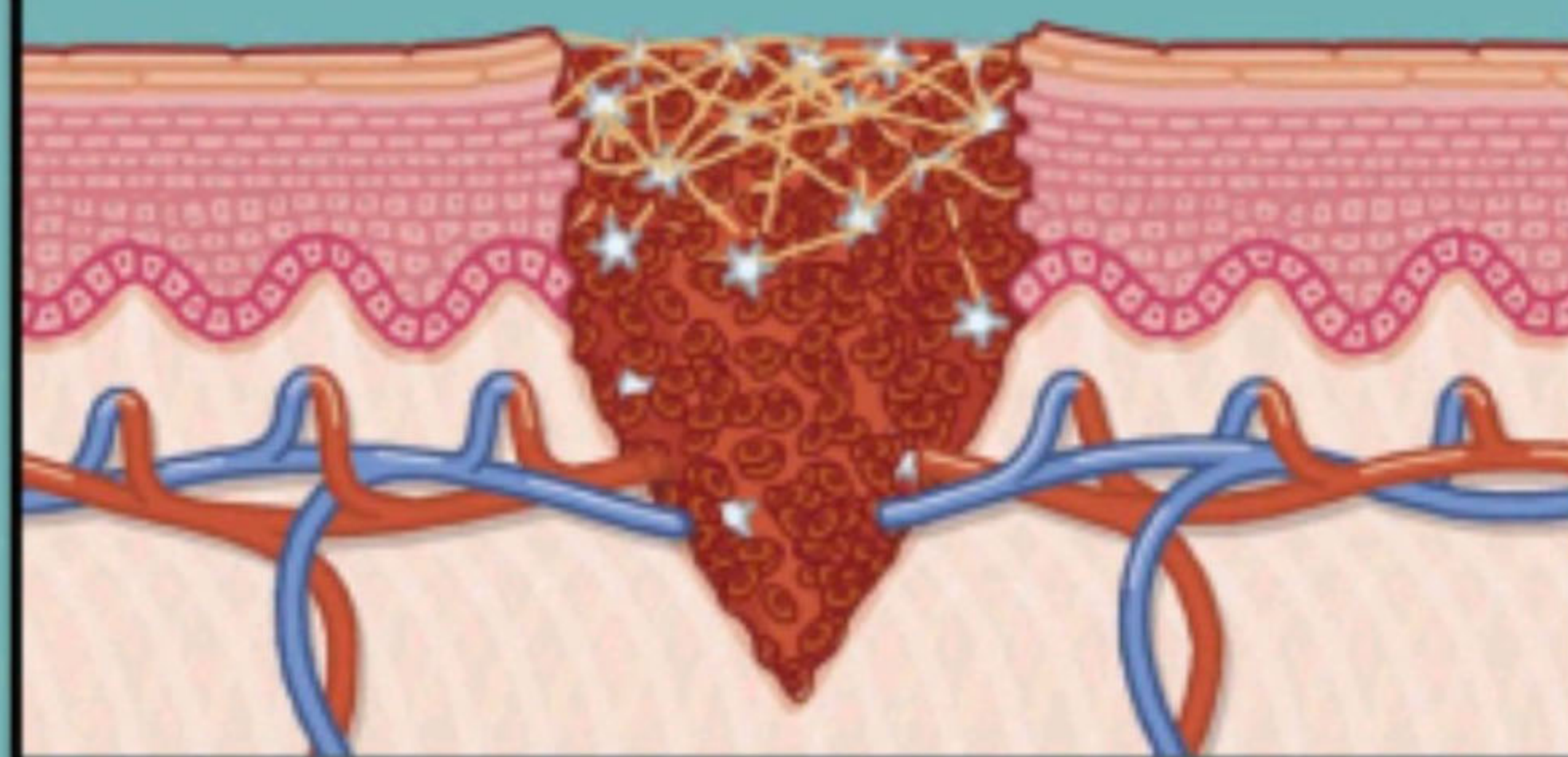
WHEN I GET A CUT?

Your body has some pretty impressive ways to deal with injuries

Your skin's most important job is to keep out the billions of harmful bacteria that swarm over every surface. Any wound that penetrates (gets past) the outer dermis layer and causes bleeding, could allow bacteria to get in, so

your body needs to seal it up as quickly as possible. The healing process uses extra collagen protein for the repair, so the new skin is actually stronger than before. This shows as a visible scar.

SMALL CUT



1. HEMOSTASIS

If the skin is punctured, blood vessels contract and platelets release proteins that tangle together to form a clot and seal the wound.

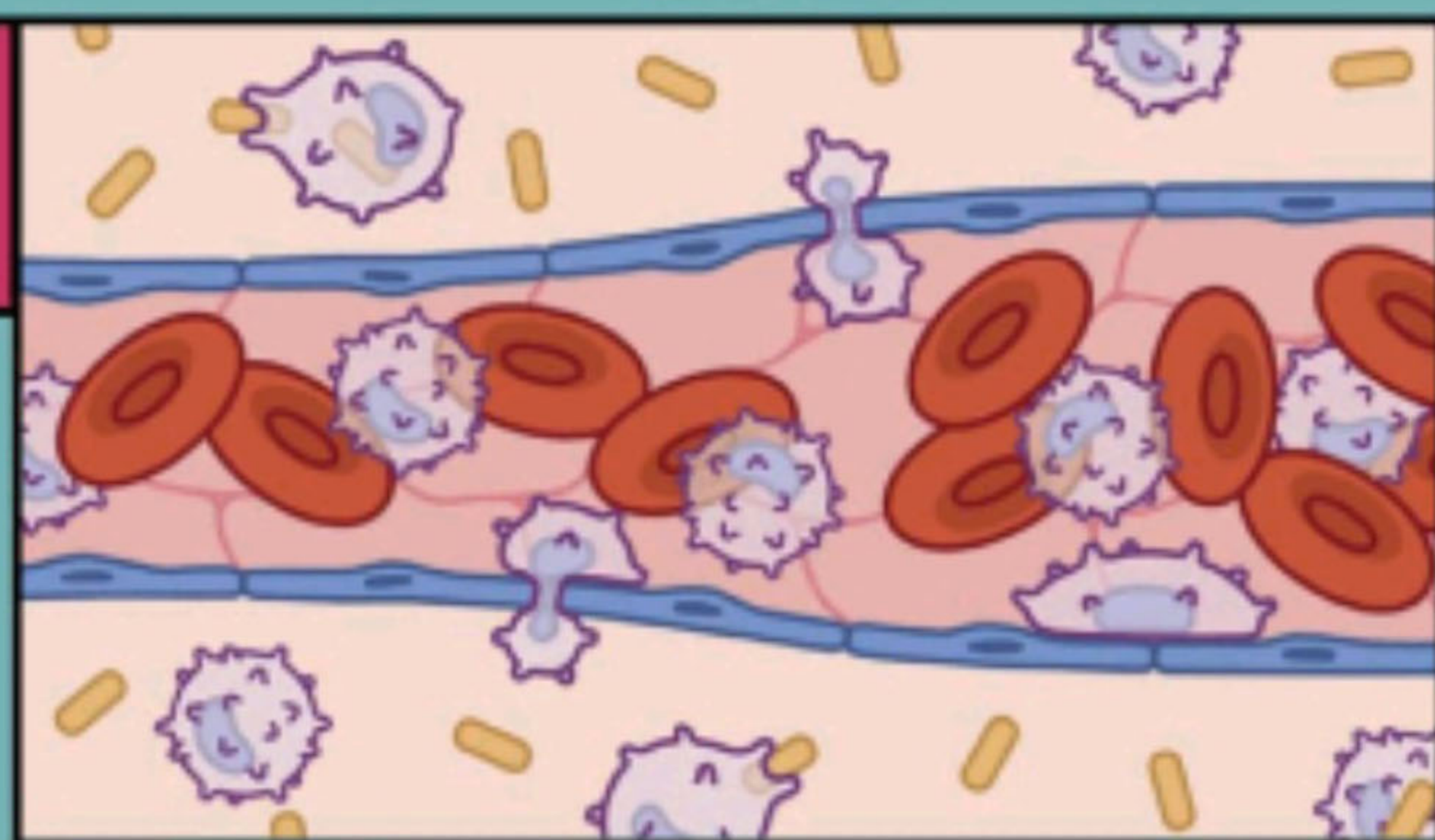
1888

The year Johnson & Johnson started selling the world's first commercial first aid kits.


FIRST AID KIT

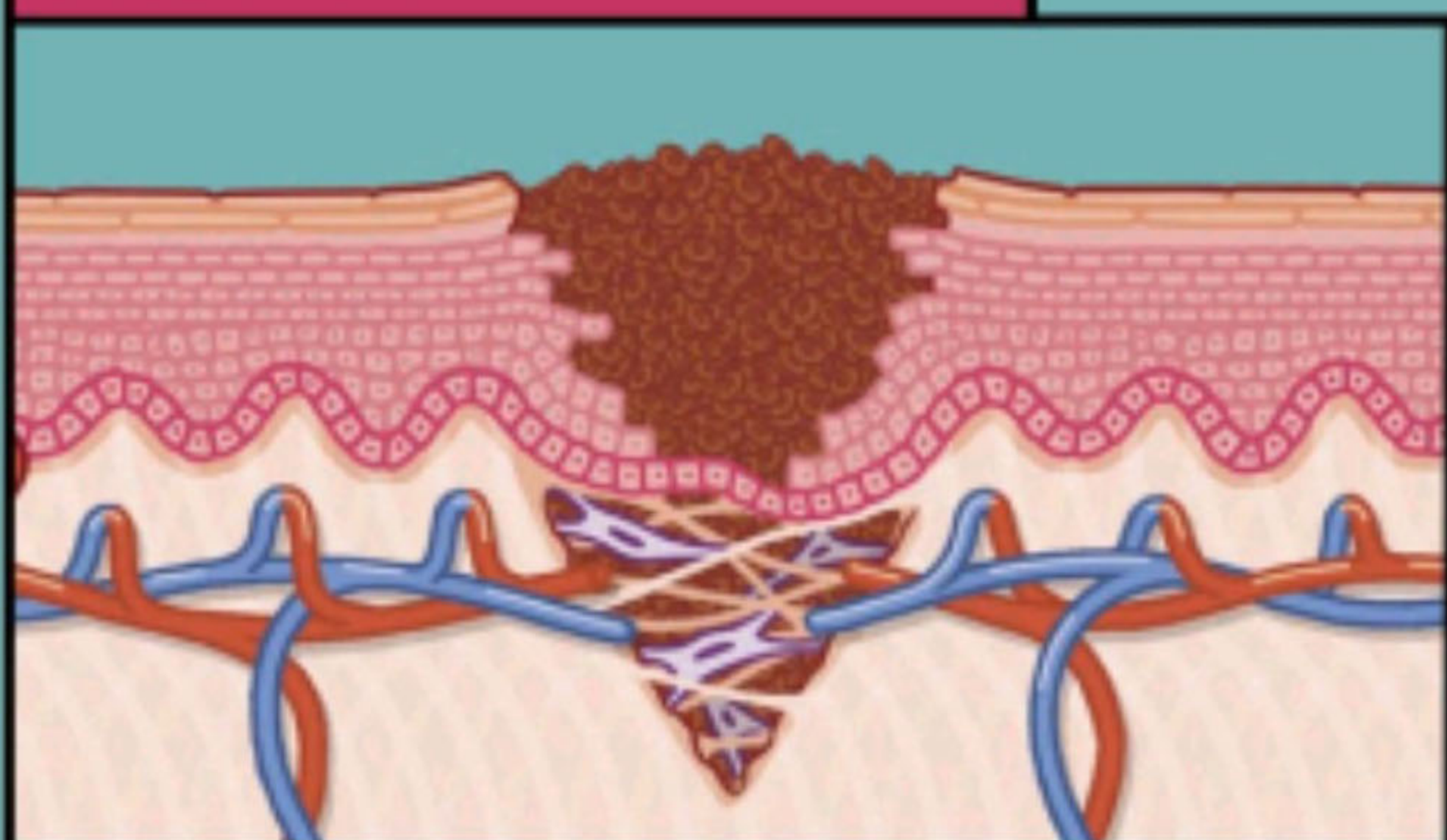
2. INFLAMMATION

Next, the blood vessels expand again to allow white blood cells to flock to the wound site. These attack any bacteria that got past the clot.



3. PROLIFERATION

After a few days, fibroblast cells arrive and produce collagen. This protein acts like a scaffold, while the dermis cells reproduce to close up the wound.



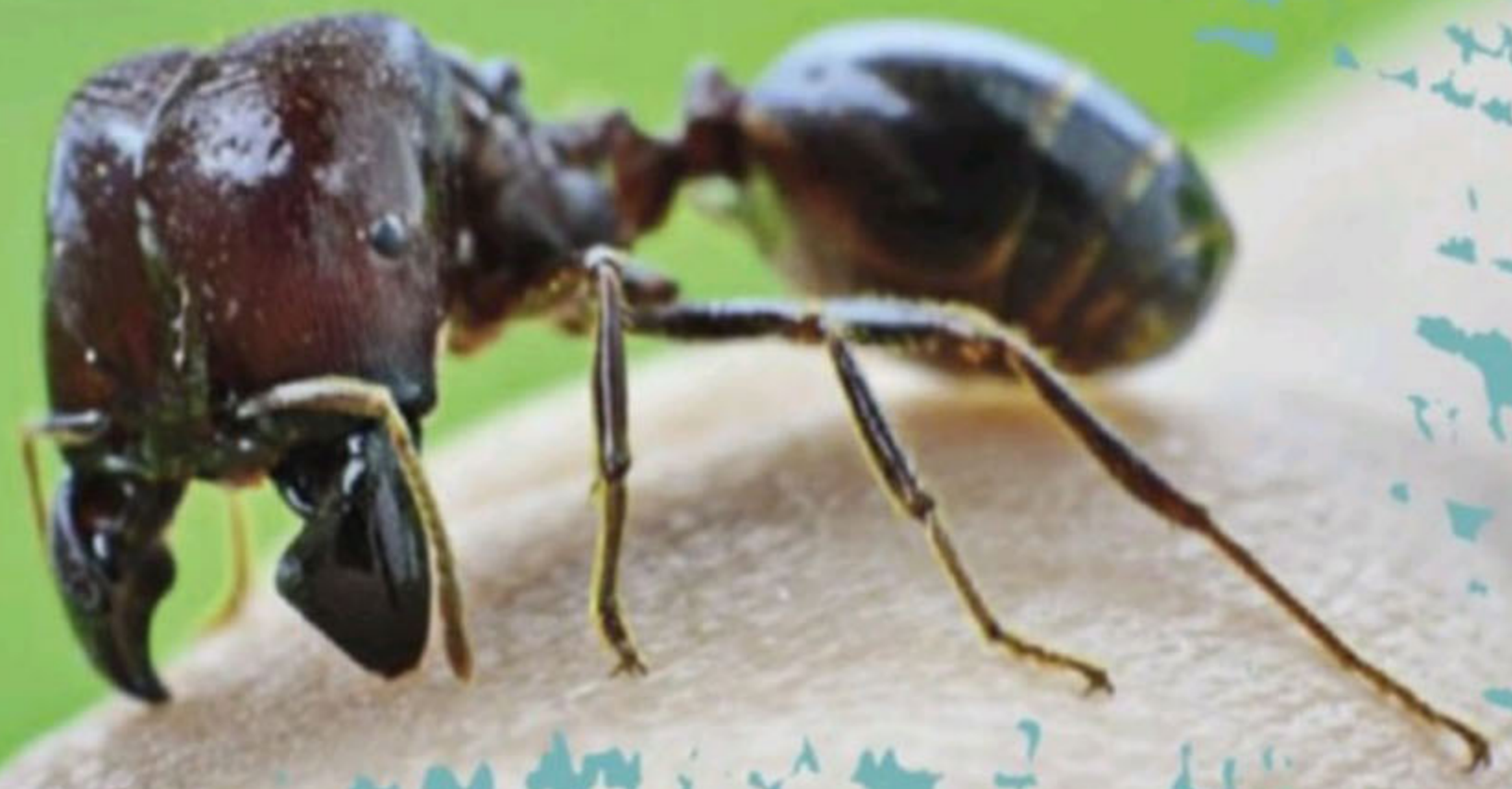
DID YOU KNOW?

Ancient Egyptians used honey to treat wounds, as it helps to prevent infections. Kind of like a natural antibiotic.

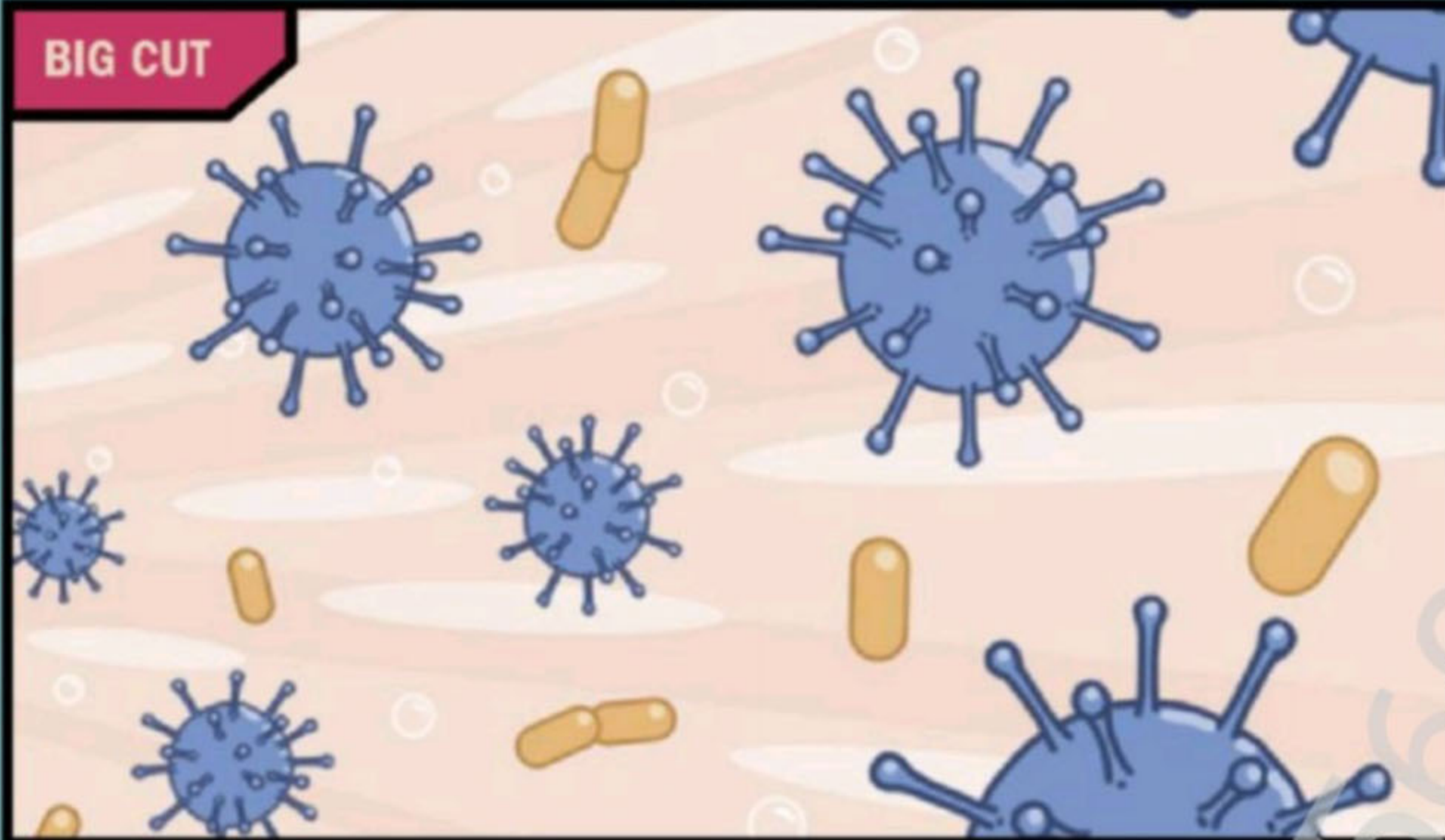


DID YOU KNOW?

In some places, ants are used to stitch wounds together. Army ants, when grabbed just behind the head, will open their mandibles (jaws). They are placed carefully along the wound, with one mandible on each side of the cut, and then the ant does what comes naturally – it pierces the skin as it clamps down, pulling the two sides of the wound together. **OUCH!**



BIG CUT



1. KEEP IT CLEAN

Wash the open cut to prevent bacteria getting trapped inside. Don't use disinfectant, because this will kill your own cells that are trying to repair the wound.

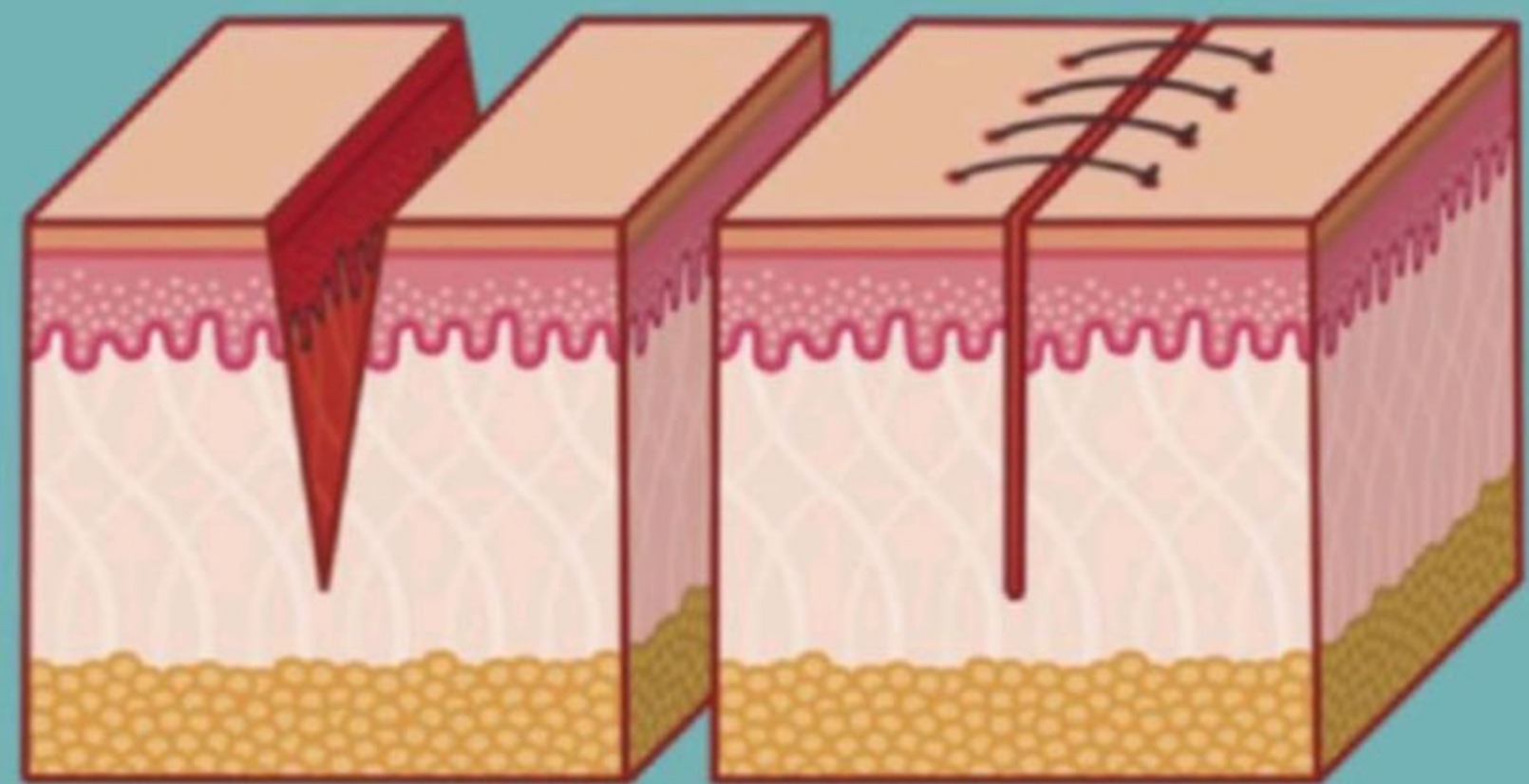


2. SEAL IT

A plaster keeps dirt out and helps clotting. If the wound is still bleeding after 10 minutes with a plaster on, you may need stitches.

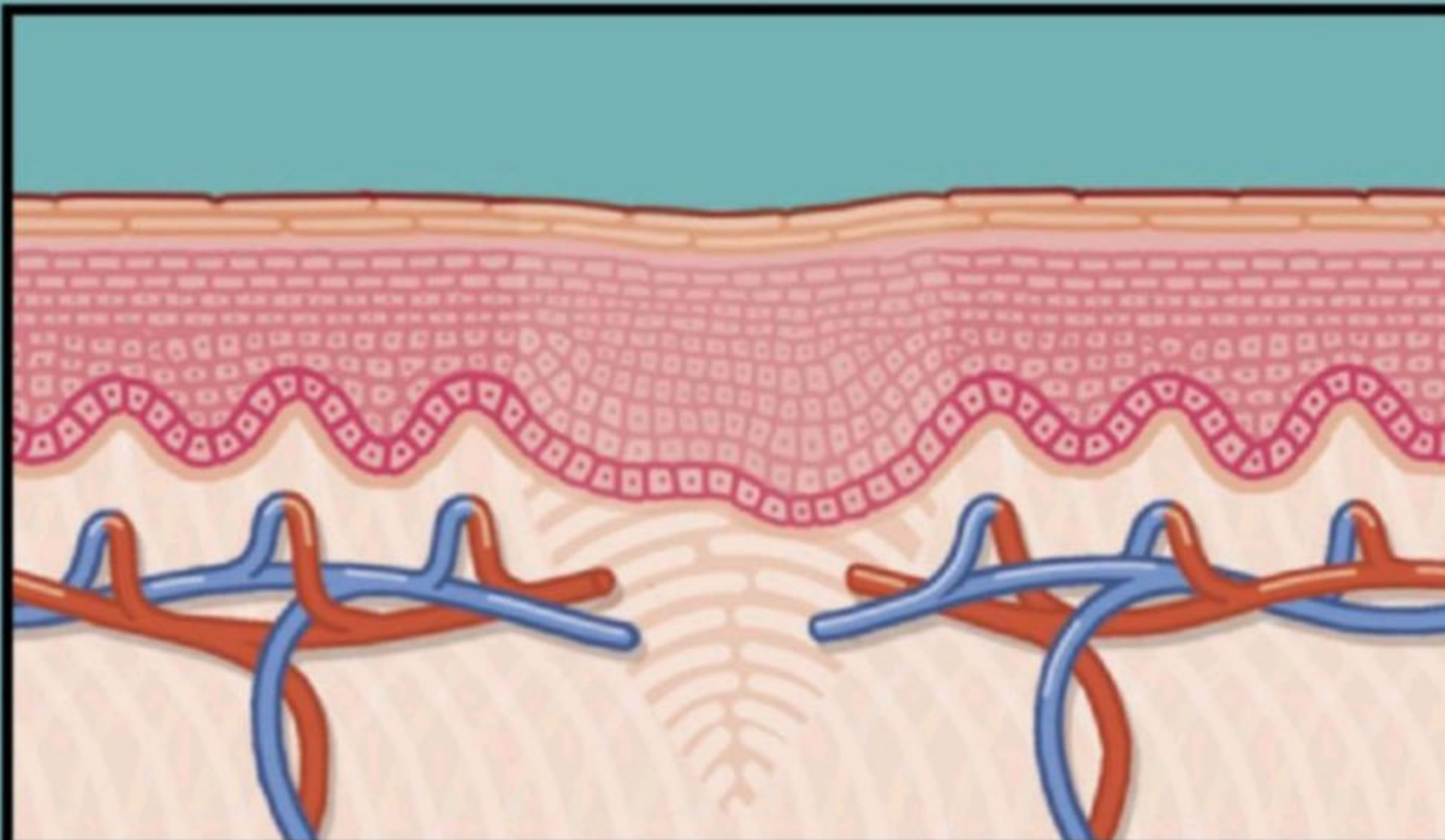
DID YOU KNOW?

BAND-AID plasters were invented in 1920 by a young man called Earle Dickson, whose wife cut herself often in the kitchen. He took a long piece of adhesive tape and placed strips of gauze down the middle. He showed his boss, who showed the president of Johnson & Johnson, and the iconic BAND-AID was born.



3. SCARRING

The skin continually rebuilds the collagen matrix for up to a year after the cut. The scar tissue will fade slightly for another year after that.



WOUND HEALING TO SCAR



**DID YOU
KNOW?**

The Dead Sea is the lowest place on Earth at 430m below sea level.

DEAD SEA TREE

What is a tree doing on a salt island?

**WHY DO YOU
FLOAT IN THE
DEAD SEA?**

The water is super salty - up to 10 times saltier than regular sea water. This makes the water really dense, and your body is then lighter than the water, so you float!

**DID YOU
KNOW?**

You can do your own density experiment using sugar and colourful water. Find out how on page 20!

This amazing natural formation is a major tourist attraction – a white salt island in the middle of the Dead Sea makes for some amazing photo opportunities. People have always visited the Dead Sea (which is technically a lake), which is famous because of how you float in the very salty water, and because of the mineral-rich mud it produces. But the tree stands out. Why? Because it's impossible for a tree to grow in salty water. The tree was, in fact, planted there by a lifeguard, and he has to visit it daily to give it soil and ('unsalty') water to keep it alive.

380m

The depth the Dead Sea reaches.

**DID YOU
KNOW?**

The minerals in the Dead Sea's water and mud are believed to help many skin conditions.



Random facts for fun!

WHY DO WE RUB OUR FACES WHEN WE ARE TIRED?

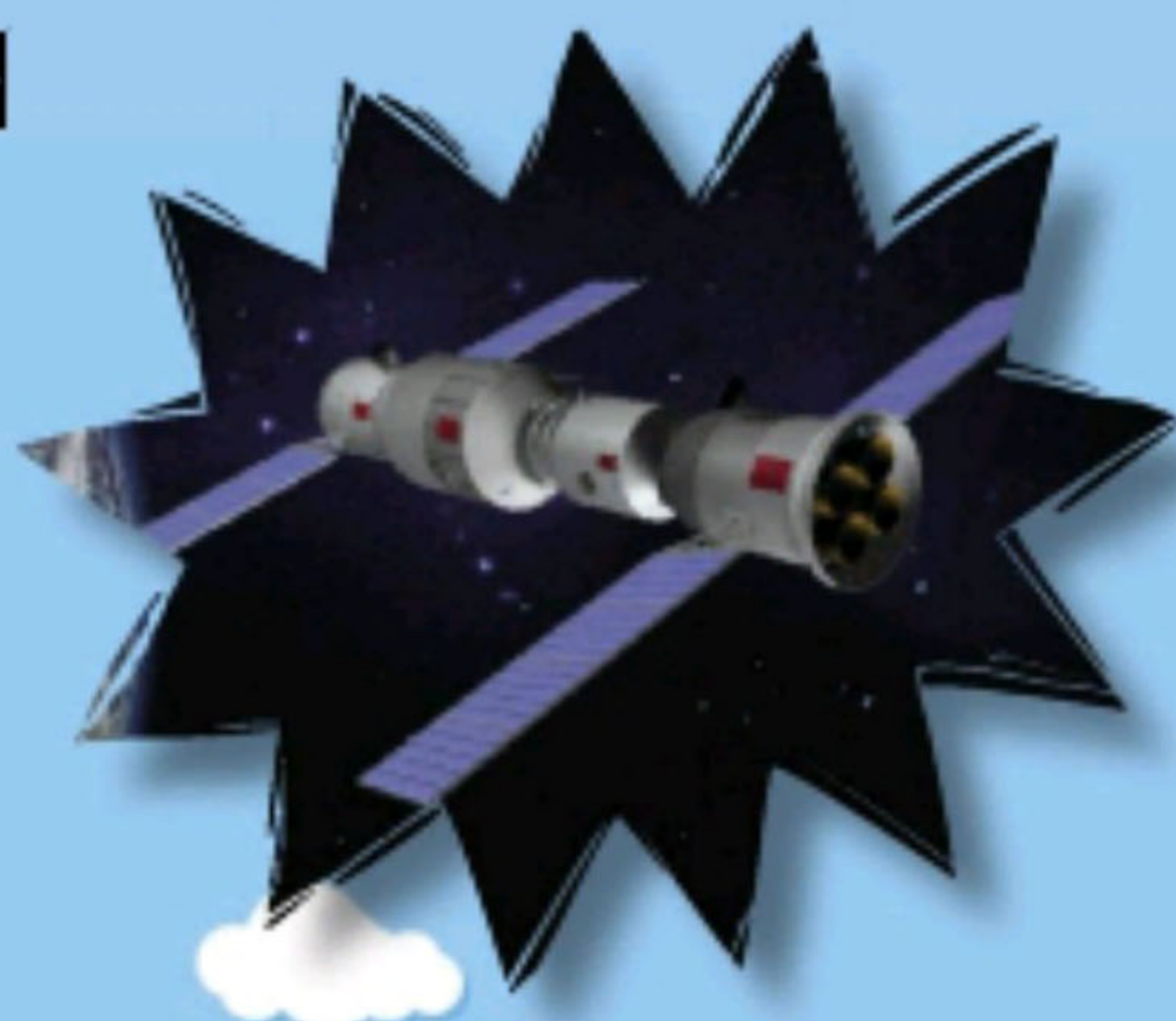
Often, when we are tired, our eyes feel itchy and rubbing them stimulates the tear ducts to release lubricating fluid. But there may also be another reason – a connection exists between the ophthalmic nerve that serves the face, scalp and eyes, and the vagus nerve that runs to the heart. Rubbing your face or pressing your eyes triggers the 'oculocardiac reflex', which slows down your heart rate. This can help relax you when you are tired.



IF A PIECE OF A SPACECRAFT LANDS IN MY GARDEN, CAN I KEEP IT?

China lost control of their Tiangong-1 space station prototype in March 2016 and it re-entered Earth's atmosphere in April 2018. Most of the station burnt up during re-entry. Technically, any pieces that remain are the property of the launching nation, but the

current international law is much more concerned with who is responsible for the damage and pollution at the crash site. When Skylab debris hit Australia in 1979, NASA allowed local residents to keep any pieces they found.



Mom... can we keep it, PLEASE?!

DID YOU KNOW?

The different parts of the International Space Station were delivered via 42 missions – 37 on US space shuttles and the remainder via Russian rockets.

DID YOU KNOW?

Your dog may not be able to distinguish between the colours red and green, according to researchers at the University of Bari in Italy.



15 million

The number of Aztecs who were wiped out over a period of five years as a result of an epidemic called *cocoliztli* (meaning 'pestilence' in the local Nahuatl language). That was 80% of the Aztec population.



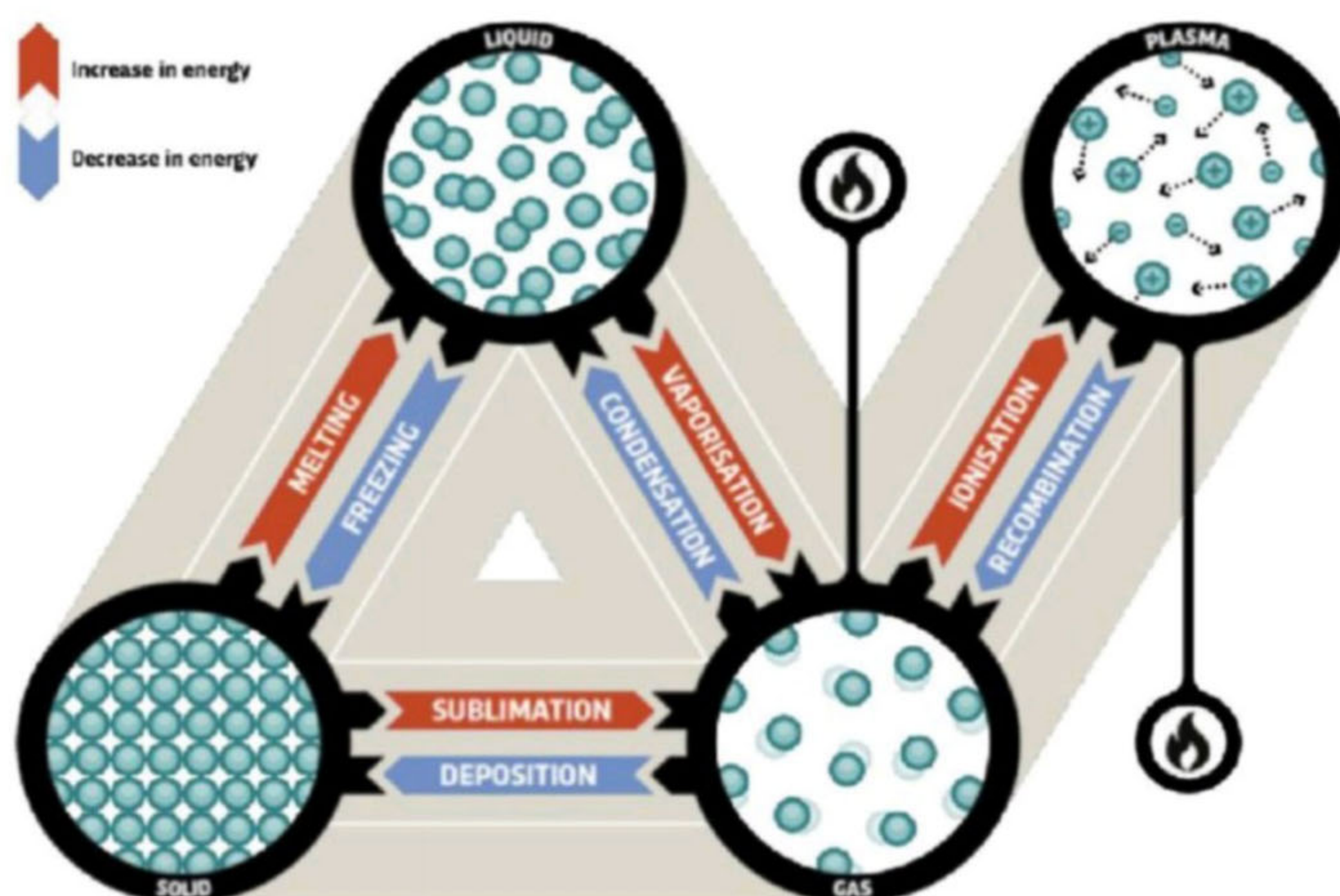
IS IT TRUE THAT EUROPEAN DISEASES KILLED THE AZTECS?

Debate has long raged over what caused the epidemics that wiped out large sections of the Aztec society after Europeans arrived in the late 16th Century. Most blame it on measles, smallpox or typhus. But researchers analysing the teeth of people buried during one of the worst epidemics (*cocoliztli*) have found that salmonella may have been to blame. It is possible to carry salmonella without falling ill, so the Europeans may have infected Aztecs who had no resistance to it.

Some suggest that Europeans had some sort of natural disease protection from their long history of living in close quarters with domesticated animals and their waste. The Aztecs, on the other hand, had few domesticated animals, as they relied heavily on corn for their diet, supplementing with wild game, insects and fish. They also had more hygienic living conditions than many Europeans at the time, as they made use of a system of aqueducts, which brought in fresh water.

WHAT STATE OF MATTER IS FIRE: SOLID, LIQUID OR GAS?

The nature of the flame depends on what is being burnt. A candle flame will mostly be a mixture of hot gases (air and vaporised paraffin wax). The oxygen in the air reacts with the paraffin to produce heat, light and carbon dioxide. Other materials – such as magnesium – burn much hotter, resulting in the fourth state of matter: plasma.



MONKEY'S BATHING HABITS STUDIED

WHAT DID THEY DO?

A team of researchers at Japan's Jigokudani Monkey Park recorded the bathing habits of a group of Japanese macaques. They also tested how their levels of glucocorticoids (hormones associated with stress and temperature management) varied as the animals bathed.

WHY DID THEY DO THAT?

In 1963, the monkeys were first observed taking long dips in the natural hot springs that occur in the mountainous areas of Japan. It was always assumed that they did this to warm themselves up to cope with the low temperatures during the winter months, but this had never previously been tested.

WHAT DID THEY FIND?

They found that monkeys who took regular baths displayed lower levels of glucocorticoids. From this they were able to suggest that, as well as helping to keep the animals warm, hot spring baths also help to lower the animals' levels of stress.



THEY DID WHAT?

Scientists often study things that seem slightly odd to us, but have real scientific value



ELECTRONIC TONGUE DESIGNED TO TASTE SPICY FOOD

WHAT DID THEY DO?

Researchers at Washington State University created an e-tongue lined with sensors to detect spicy, sweet, salty, sour and umami (a Japanese word meaning 'pleasant savoury taste') flavours, and then 'fed' it cheese that had different levels of spiciness.

WHAT DID THEY FIND?

Tasting spicy food properly can be tricky as human taste buds get confused and overloaded by capsaicin (the compound that gives chilli its kick). But the e-tongue can be used over and over again without ever becoming numbed by the spice. It's also better at determining the difference between two very mild spices or two very hot ones than a human tongue.

WHY DID THEY DO THAT?

According to the researchers, the e-tongue may be used in the food industry to speed up taste testing because it could quickly narrow down the flavours that are desired before humans refine it.





ORCA TAUGHT TO SPEAK

WHAT DID THEY DO?

A team of researchers at the University of St Andrews taught Wikie, an orca living at Marineland Aquarium in Antibes, France, to imitate (copy) human speech.

WHAT CAN SHE SAY?

The researchers picked words that were initially unfamiliar to Wikie. But, by copying a trainer, she was able to say "hello" and "bye-bye", and count to three. And she's a fast learner too – she often spoke the words correctly on her first try.

WHY DID THEY DO IT?

It's known that orcas in the wild have calls that are specific to their own pod, and when captive orcas are moved, they change their call to fit in with their new surroundings. The researchers wanted to show that these animals learn these new calls by imitating the sounds that they hear.

SCIENTISTS DROP BOTTLES INTO THE RIVER GANGES

WHAT DID THEY DO?

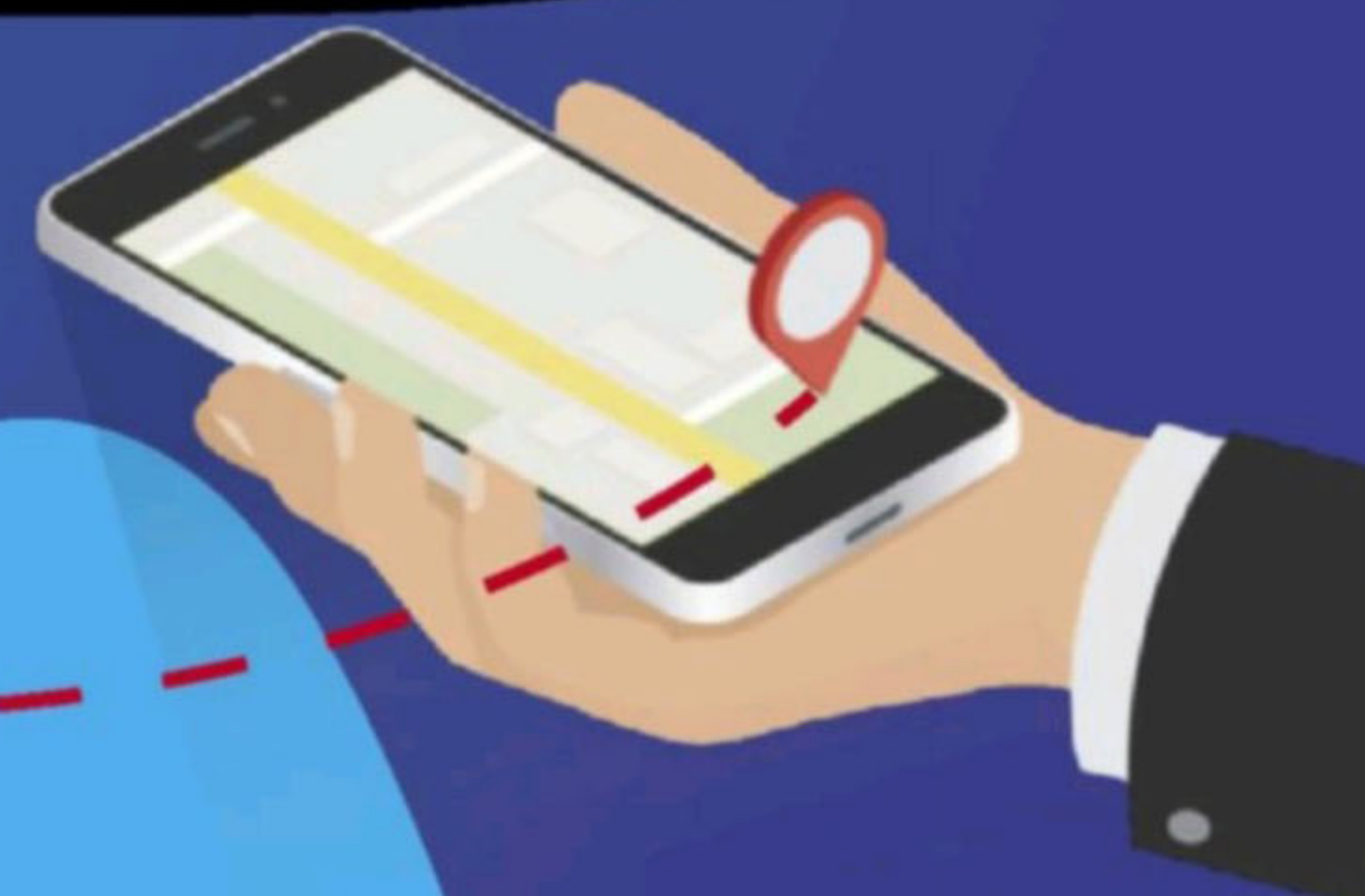
Researchers from the University of Exeter and the Zoological Society of London released 25 500ml bottles at various spots along the River Ganges. Originating in the Himalayas, the Ganges flows through India and Bangladesh, before reaching the Bay of Bengal in the Indian Ocean. By placing GPS satellite tags into the bottles, the researchers were able to track them as they floated and bobbed their way downstream.

WHY DID THEY DO THAT?

They wanted to see how far-reaching the impact of plastic pollution is, by finding out how many ecosystems simple rubbish, like plastic bottles, interact with.

WHAT DID THEY FIND?

The bottles all followed the same route downstream, with a few getting stuck along the way. Once they reached the estuary (where the river meets the sea), they followed coastal currents, then dispersed and travelled further into the open ocean. One bottle travelled 2,854km (the same as the distance between central South Africa and central Madagascar) in just 94 days.



HOW CAN I GET A BETTER NIGHT'S SLEEP?

Tips on making the most of your ZZZZZs



1. GET THE TEMPERATURE RIGHT

If you're too cold, you'll be shivering to generate heat, which uses energy and keeps you in a half-asleep state. If you're too hot, you'll toss and turn all night. Your room should ideally be between 16 and 18°C.

2. BANISH GADGETS

The light from mobile devices (and TVs and computer screens) contains blue wavelengths that suppress your body's production of melatonin (the hormone that regulates sleep).

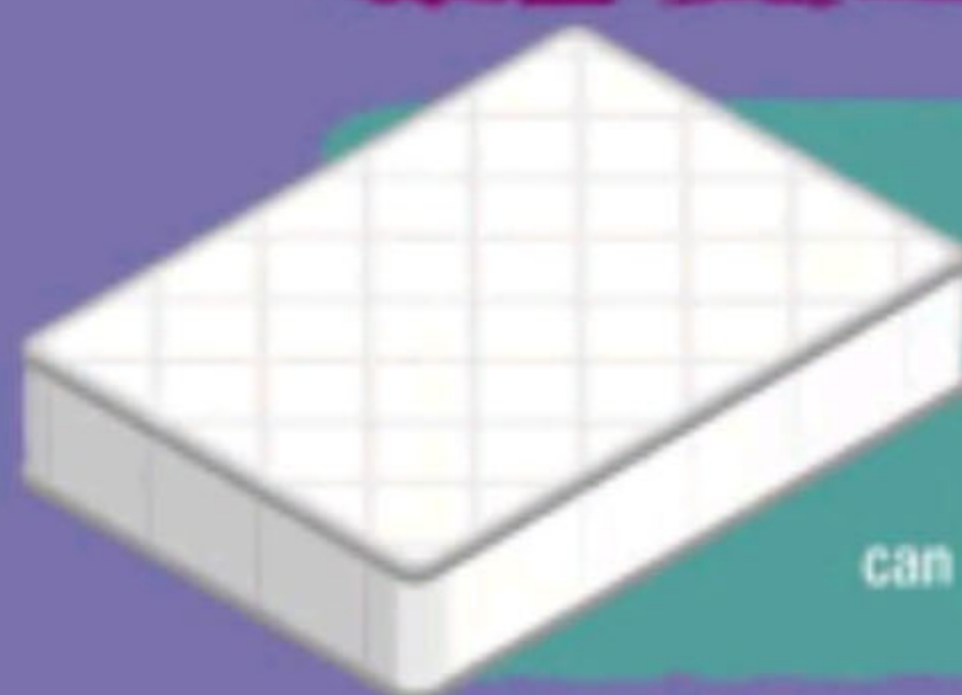
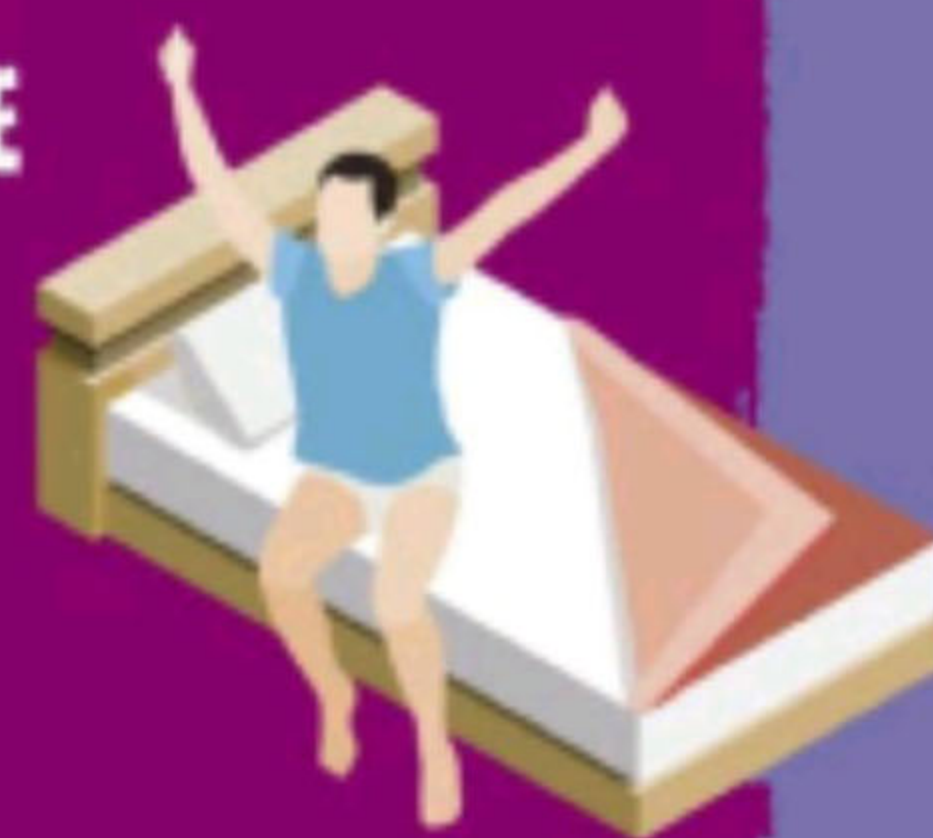


3. SWITCH TO WATER

It takes between three and five hours for your body to reduce the caffeine in your bloodstream by 50%, at which point you might still be feeling the effects. Avoid caffeinated drinks from mid-afternoon onwards. And caffeine doesn't only mean coffee – it's found in many sodas too. Rather switch to water.

4. RISE AND SHINE

Most people miss out on around five hours of sleep during the week. But it only takes one-and-a-half hours extra at the weekend to make up for this, because your body automatically spends more time in deep sleep to catch up. Sleeping in for longer can actually disrupt your natural sleep cycle.



5. GET A NEW BED

If your bed isn't comfy, see if you can get your parents to invest in a new one for you. An uncomfortable bed or mattress can prevent you from getting quality sleep.

WHY DOES DRIVING OR RIDING IN A CAR MAKE US SLEEPY?

Riding in a moving car can trigger drowsiness in as little as 15 minutes, according to a team from RMIT University in Australia. Their research found that the vibrations we experience while driving trigger sleepiness. They aren't 100% sure why, but it may have something to do with the frequency of the vibration or the hiss-like 'white noise' (a constant, soothing sound) created by the wheels on the road.



CAN CARROTS HELP YOU SEE AT NIGHT?

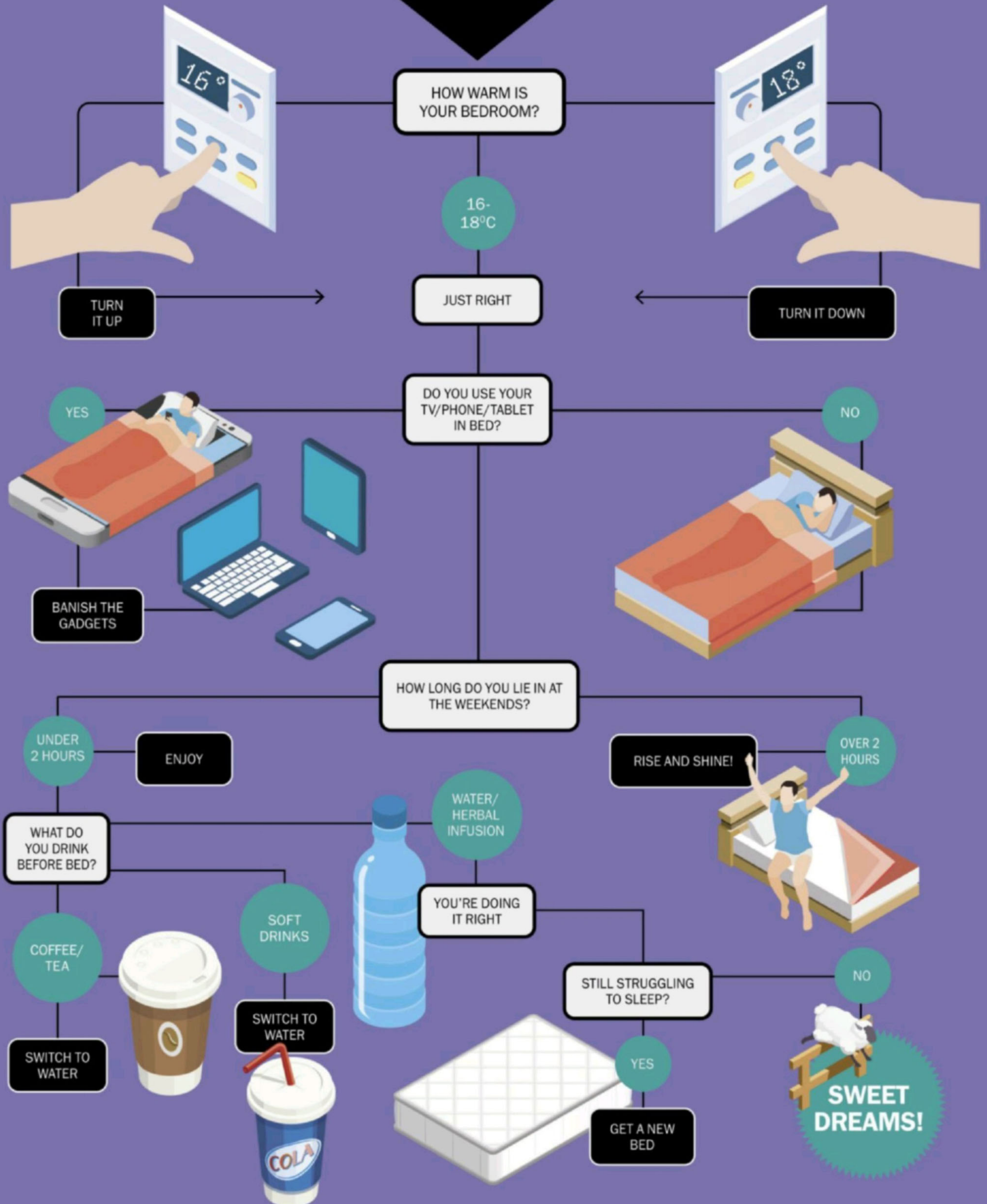
Carrots won't give you pure night vision, but eating them will certainly help to keep your eyes healthy. The idea that carrots help you see in the dark may have come from WWII, when British pilots, who had great accuracy when shooting down enemy bombers during nighttime raids, spread rumours that they were eating lots of carrots to boost their night vision. In actual fact, they were using secret new radar technology, but the British public seemed to believe them.

Carrots are rich in an orange pigment called beta-carotene. Enzymes in the body convert beta-carotene to a form of vitamin A, which is vital for eye health. Without vitamin A, we would develop night blindness. So, while chomping on tonnes of carrots alone won't enable you to see in the dark, it does help your vision.




START HERE

Now you know




KEY

 Tiger range

ANIMALS IN DANGER

Tiger

 IUCN status: endangered

 Population estimate:
2,150-3,160

TIGERS HAVE **DISAPPEARED** FROM MORE THAN **90%** OF THEIR **ORIGINAL HABITAT** RANGE, MAINLY DUE TO **ILLEGAL POACHING**.



Bengal tigers

On India's central plateau, below the Himalayas, Bengal tigers live in floodplains with marshes and oxbow lakes, as well as in the drier deciduous forest further south.

Mangrove habitat

In far eastern India and Bangladesh, Bengal tigers cope with the changes of the coastal Sundarbans – the world's biggest area of mangrove forest, a place that is flooded daily by the tides.

Dry and wet forests

In southern India, Bengal tigers are found in the wet evergreen and dry deciduous forests in the hills that line the foothills of the Western Ghats.

Vanishing tigers

A century ago, tigers lived from the Caspian Sea in the west to Java and Bali in the east. Today, no tigers survive in these places, and throughout the rest of their range, they exist in ever smaller patches. Poaching, often for the illegal trade in body parts that are used in traditional medicine, poses the biggest threat to remaining tigers.



Indochinese tigers

Tigers from the tropical rainforests and dry forests of mainland Southeast Asia are smaller than those of India but larger than the ones in Sumatra. Only a few hundred remain.

Sumatran tigers

The smallest tigers – nearly half the size of those from Siberia – live in the remaining rainforests of Sumatra in Indonesia. Their thinner coats are darker orange and have more stripes.

THERE ARE **MORE** TIGERS KEPT **IN CAPTIVITY** THAN THERE ARE IN THE **WILD**.

A TIGER CAN **EAT** MORE THAN **35KG** OF MEAT IN **ONE MEAL**.

Tiger territories

There are local populations of tigers in different regions of Asia, but they all belong to the same species. Adult tigers only come together to mate and otherwise live alone, patrolling territories to protect their own supply of prey. Since prey is scarcer for Siberian tigers, they need to roam territories four times bigger than those of the Bengal tigers on the Indian subcontinent.

Top cat

A tiger has massive forelimbs, needed to strike with enough strength to bring down large prey. His fiery-coloured coat helps to conceal him in sun-dappled forests.

Siberian tigers

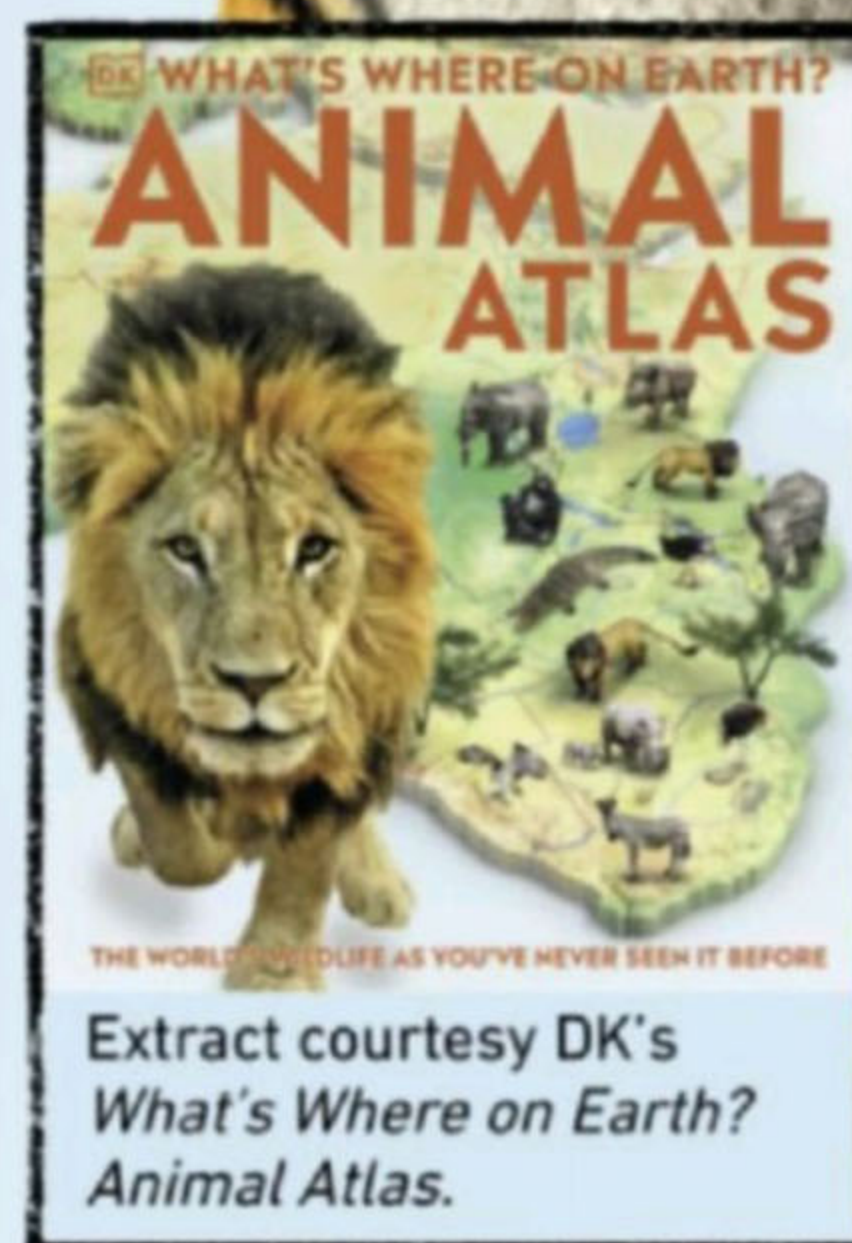
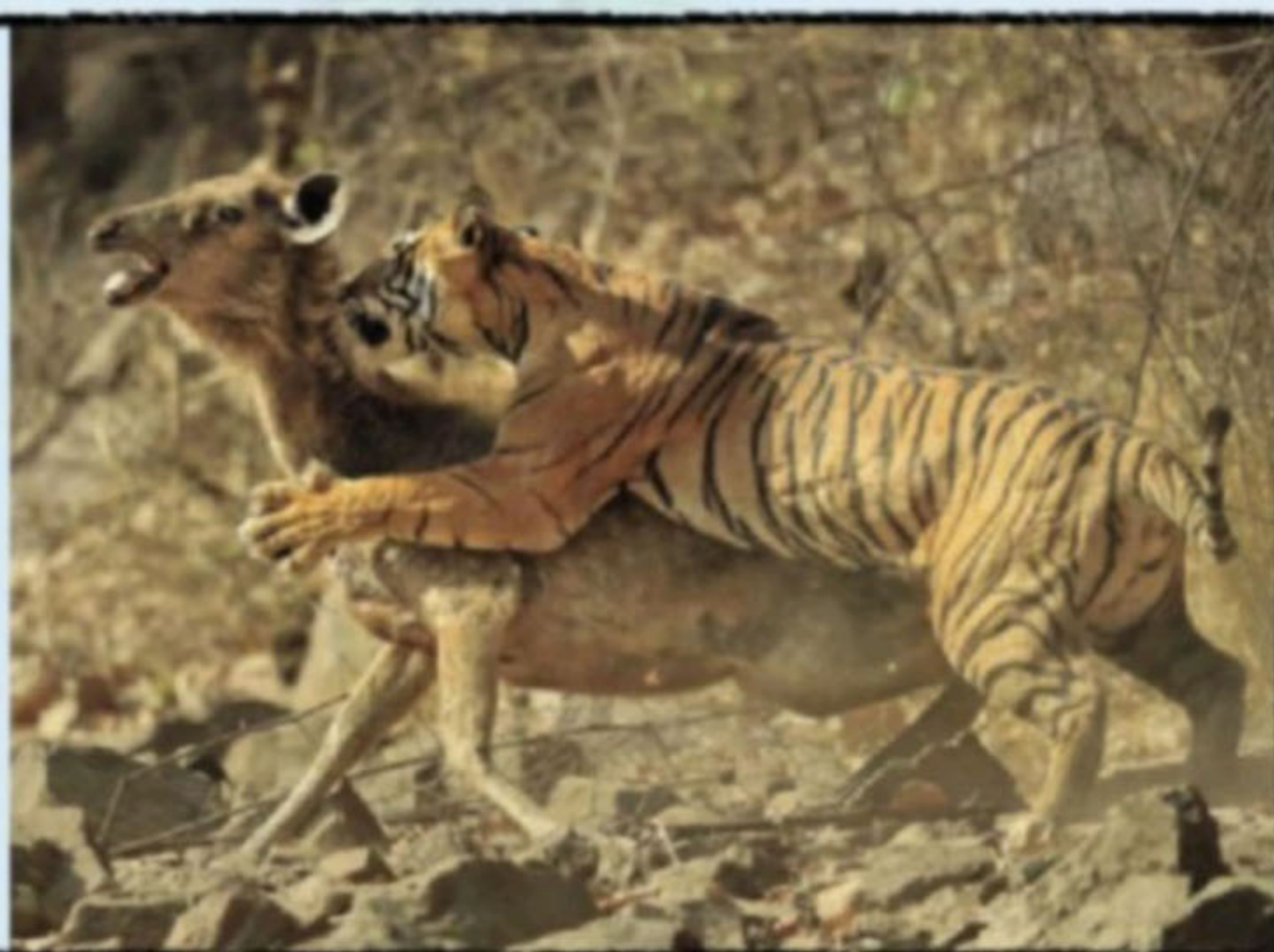
Tigers of Russia's Siberian pine forests are among the largest of all cats, with paler colouring, fewer stripes, and thick fur that keeps out the bitter cold of winter.

Tiger

The tiger is the world's biggest cat. But this formidable hunter is also hunted: across Asia, tiger numbers are falling as more become victims of poachers, or lose their habitat to farming, logging, and ever greater numbers of humans needing space.

Lone hunter

Adult tigers hunt alone, stalking their prey from the cover of vegetation. Blending in, a tiger can sneak close to his prey before ambushing it. Grabbing the prey with his broad forepaws, and with his long claws extended, the tiger kills his victim with a bite to the neck.



10 FUN FACTS ABOUT THE MANDRILL

Learn more about this large, brightly coloured monkey



1. SOCIAL BUTTERFLIES

Mandrills are very social animals and live in large hordes, usually between 600 and 800. The largest group of mandrills living together ever recorded was 1,300 individuals, found in Lopé National Park in Gabon.

2. FLAUNTING COLOURS

The male might have the brightest and most colourful hides you have ever seen in nature. He has a red and blue coloured nose and a multi-coloured beard decorated with a mix of scarlet, purple, blue, pink and red. His beard is usually yellow-orange and the rest of his fur is an olive green or dark grey colour. When the mandrill gets excited, these colours become even brighter, making him stand out and attracting the female mandrill.



3. PORTABLE CUSHIONS

The mandrill's bum, with its bright colours, is not only used to attract females, it is also hairless, toughened and cushion-like so they can sit upright and sleep comfortably in high trees.

4. BIG MONKEYS, BIG EMOTIONS

Mandrills are the largest monkeys in the world. The female's body length is about 55-67cm while the male's is 75-95cm. The tail adds another 5-10cm, and the male's tail is usually longer than that of the female. Not only is the mandrill very large, he also shows his emotions in a big and obvious way. When he is excited, he shows his teeth and shakes his head, but watch out when he slaps the ground and stares, because then you know the mandrill is not messing around.

5. HOME IS WHERE THE RAINFORESTS ARE

They enjoy living on the ground in rainforests, even though they sleep in trees. You can find them in tropical rainforests and woodlands in African countries such as Gabon, Cameroon, Equatorial Guinea and the Republic of Congo. They can also be seen in rocky forests and stream beds.



6. FOOD POUCHES

The mandrill has the special ability to store food in his mouth. He has large cheek pouches, which he stuffs full of food to eat when he wants to. Since he is an omnivore, he stores things like fruit, roots, insects and reptiles. He doesn't even need his hands to carry his food - around, he can use his mouth - imagine having pockets in your cheeks!

7. NOISY COMMUNICATORS

You will definitely hear the deep grunts and high-pitched screams of mandrills from far away. When they travel around and forage, they need to communicate with each other over long distances, and that's why they are noisy and loud. When they are closer to each other, they communicate through scent marks and body language. Both males and females have chest glands that produce a scent to attract a mate. This is like a built-in perfume, which tells the others that he is looking for a mating partner. He wants to impress, and what better way to do that than to smell nice?



8. HUMAN-LIKE FAMILIES

Just like humans, mandrill families live with and care for each other. Mandrills only have one baby at a time and are not likely to have twins. The mother mandrill gives the baby food and she grooms him, while the rest of the family has the fun task of playing with the babies and keeping them busy and safe. The father tends to live away from the horde until the mating season comes around, which happens from June to October.



DID YOU KNOW?

Humans are also omnivores, because we eat plants and meat.

DID YOU KNOW?

Rafiki in *The Lion King* is referred to as a baboon, but he is actually a mandrill. Rafiki has bright blue and red skin on his face, proving that he is a mandrill. Baboons have a dull, grey face.



9. YOUNG ADULTS

The average mandrill usually lives for between 20 and 25 years in the wild, which is not much for a human, but a long time for a wild animal. In captivity, however, they live for up to 30 years, with the longest recorded lifespan for a captive mandrill being 46 years.

10. MISTAKEN IDENTITY

The mandrill was previously mistaken for a baboon, since they look similar, but because the mandrill is so cool and different, he is now grouped separately. The big difference between the mandrill and baboon is the mandrill's colourful appearance and size. His behind is multi-coloured, while that of the baboon's is only red or pink. The mandrill is also larger than the baboon.



For more interesting articles on animals, get *Animaltalk* magazine from leading retailers and www.coolmags.com.

Text: Marlene Pöhlert.



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time



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you read, the more
things you will
know. The more
you learn, the
more places you'll
go." — Dr. Seuss*

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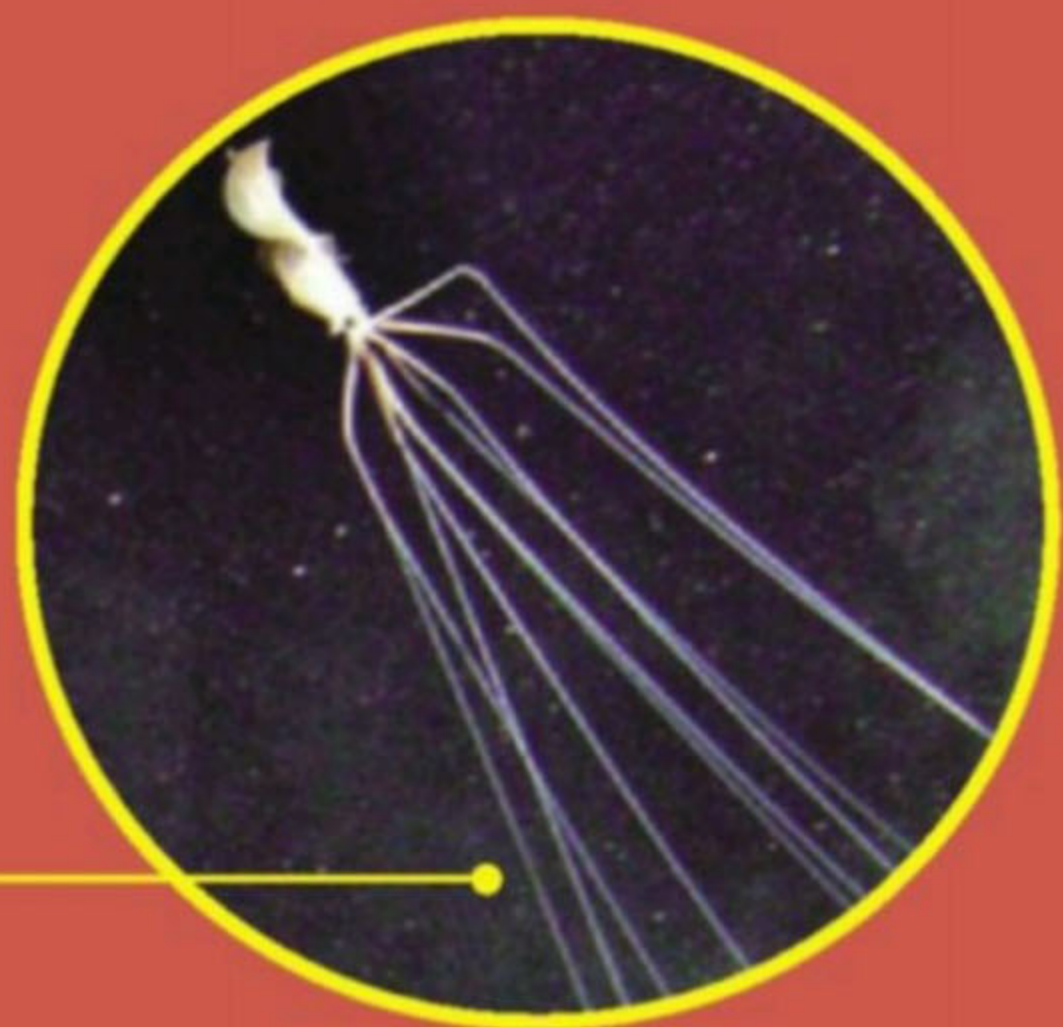
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MYSTERIES RIGHT HERE ON EARTH

We are always looking at the mysteries of space, but there are still unanswered questions here at home



1. BIGFIN SQUID

Many mysterious creatures live in the depths of our oceans, but perhaps none are as strange as the bigfin squid. No one has ever managed to find an adult specimen to study, but submersibles have filmed the animals in the Atlantic, Pacific and Indian Oceans. They look a bit like the aliens from *The War of the Worlds*, with huge tentacles that can stretch up to 8m long. These tentacles appear jointed, meaning these squid look like they have elbows.

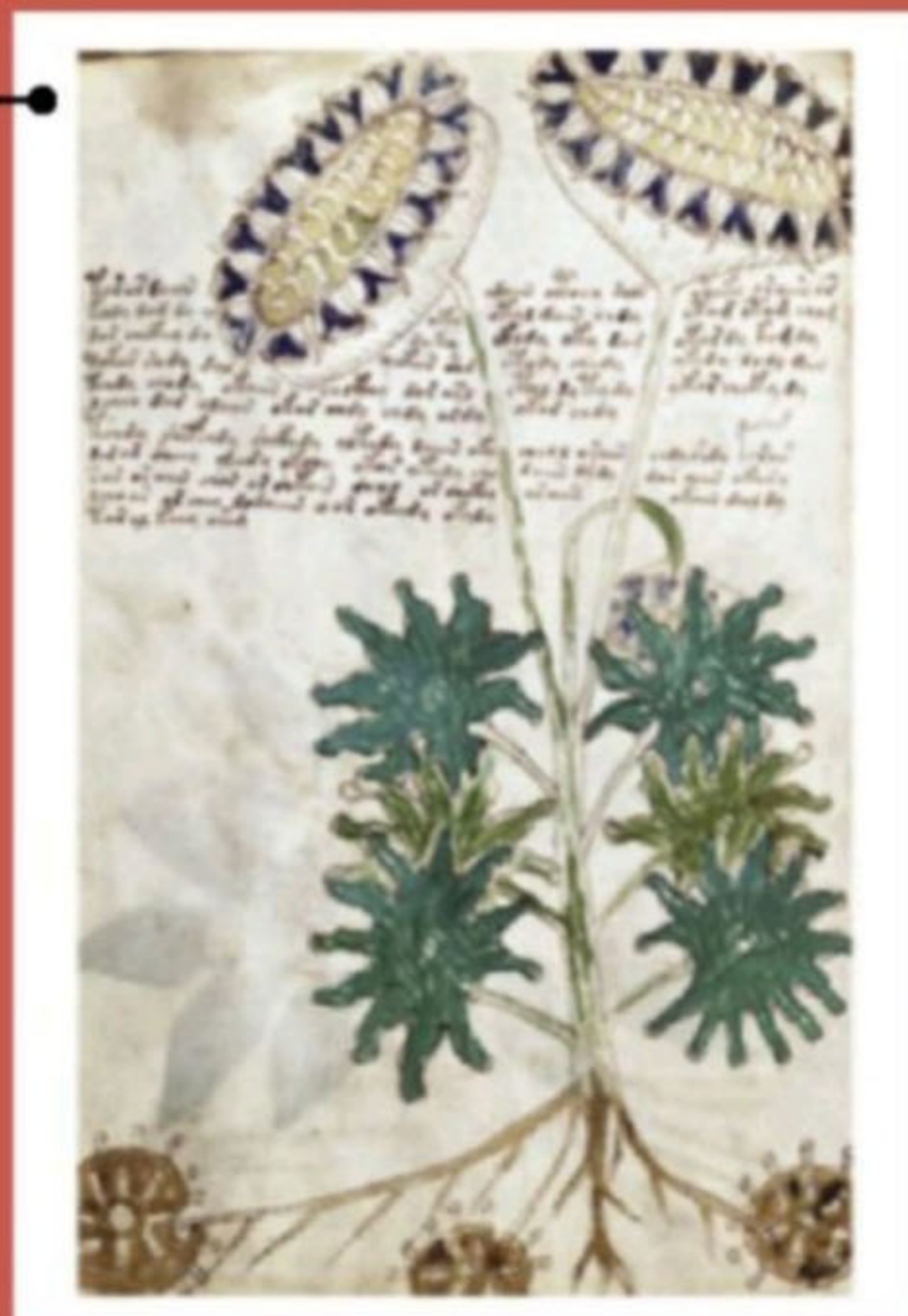


2. STONE SPHERES OF COSTA RICA

Loggers clearing forests in Costa Rica in the 1930s found a whole bunch of large, almost perfectly spherical stones hidden amongst the trees. The largest weighs over 14 tonnes and is more than 2m in diameter. Known as the Diquis Spheres, it isn't clear how these sculptures were made or what purpose they served, but they are thought to have been created by a lost civilisation that lived in the area around 1,000 years ago.

3. VOYNICH MANUSCRIPT

This 600-year-old book is written in a language that has never been seen before or since. Its 240 pages are filled with diagrams that are equally as puzzling. The unknown author has done such an incredible job of encoding it, that its meaning is so far impenetrable – and code breakers have been trying for nearly a century to work it out! In 2018, a study used artificial intelligence to work out that it was originally written in Hebrew before being encoded, but many are not convinced.



4. ARCTIC DINOSAURS

The cold, icy tundras of the Arctic are hardly a place you'd expect to find dinosaur fossils. After all, the reptiles were largely cold-blooded, and most of their fossils have been found in warmer places. The discovery of the remains of a 9m-long, duck-billed dinosaur in Alaska in 2015 was a real surprise. Palaeontologists now think that 13 species of dinosaur lived in Arctic conditions, causing us to rethink what we know about their make-up and habits.



The giant/
astronaut



The condor

5. NAZCA LINES

In the Nazca Desert in Peru are hundreds of massive geoglyphs (patterns etched into the ground). They were created somewhere between 500 BC and AD 500 by people basically scratching into the Earth to expose different coloured ground. Some form the shapes of animals and plants. And when we say they are massive, we mean up to 370m across.

The climate is perfect for preserving them – it doesn't rain or get very windy – so they are still very visible, especially from a plane or drone. But why they were made is unclear. Pretty impressive though!



The spider



The monkey

MAKING CONNECTIONS

Sometimes two seemingly unconnected things are just a few steps away from having something in common...

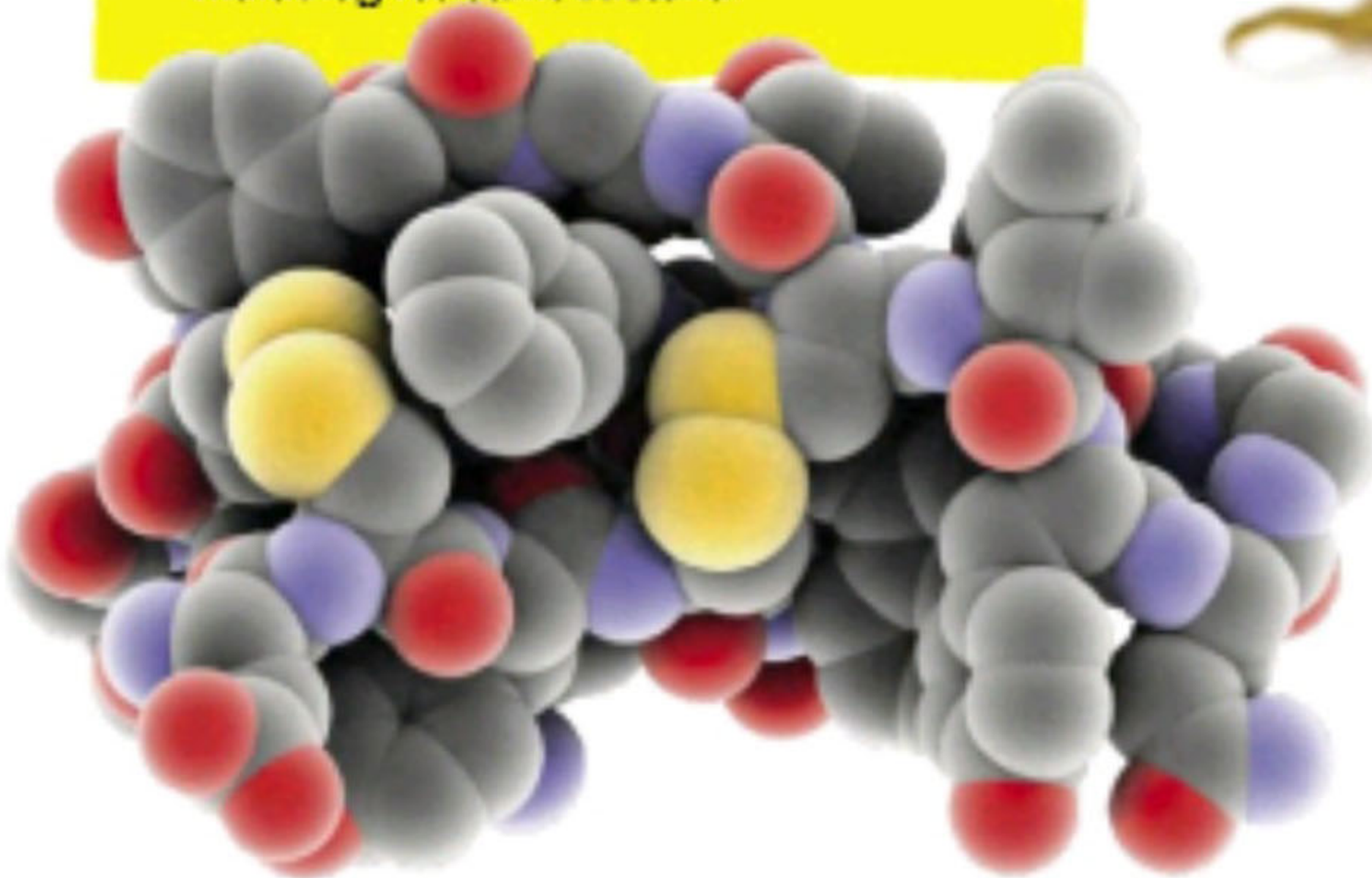
WHAT CONNECTS FROGS AND FRESH MILK?

1

Frogs, like all amphibians, have thin, porous skin that they breathe through. But this also poses a risk, because it makes it easier for bacteria to infect them.

2

To protect themselves, frogs secrete (produce) substances called cationic antimicrobial peptides (CAMPs). Other animals secrete CAMPs too, but frogs produce much more, including some peptides that are effective against multidrug-resistant bacteria.



3

Milk goes off because of bacteria. This ferments the lactose in milk into lactic acid, and hydrolyses milk proteins into some pretty terrible-tasting by-products.

4

According to Russian folklore, putting a live frog in milk helps it stay fresh. Recent research has found that CAMPs from the Russian brown frog could kill the bacteria in milk and prevent it from going off.

DID YOU KNOW?

Frogs can be found on every continent except Antarctica.



DID YOU KNOW?

A person who studies frogs is known as a herpetologist.



WHAT CONNECTS STAR WARS' PRINCESS LEIA AND THE MEXICAN REVOLUTION?

1 Princess Leia was brought up in a noble household in a galaxy far, far away. But she dedicated herself to the downfall of the established regime, by force, if necessary.

DID YOU KNOW?

Carrie Fisher, who played Princess Leia in the *Star Wars* franchise, reportedly hated Princess Leia's double bun hairstyle, because it required two hours to create every day.



2 To most of us she is most identifiable for her iconic hairstyle. The twin 'cinnamon bun' look is handy for keeping your ears warm on chilly planets like Hoth.

3 In 1977, George Lucas (*Star Wars* creator) was on the hunt for a distinctive look for Leia. He was inspired by the Mexican fashions of the early 20th Century, but women there mostly wore their hair long.



4 Except for Clara de la Rocha. She was a revolutionary hero and guerrilla fighter (someone who fights as part of a smaller group against an army) who became a colonel during the 1910 Mexican Revolution and fought in several battles.



DID YOU KNOW?

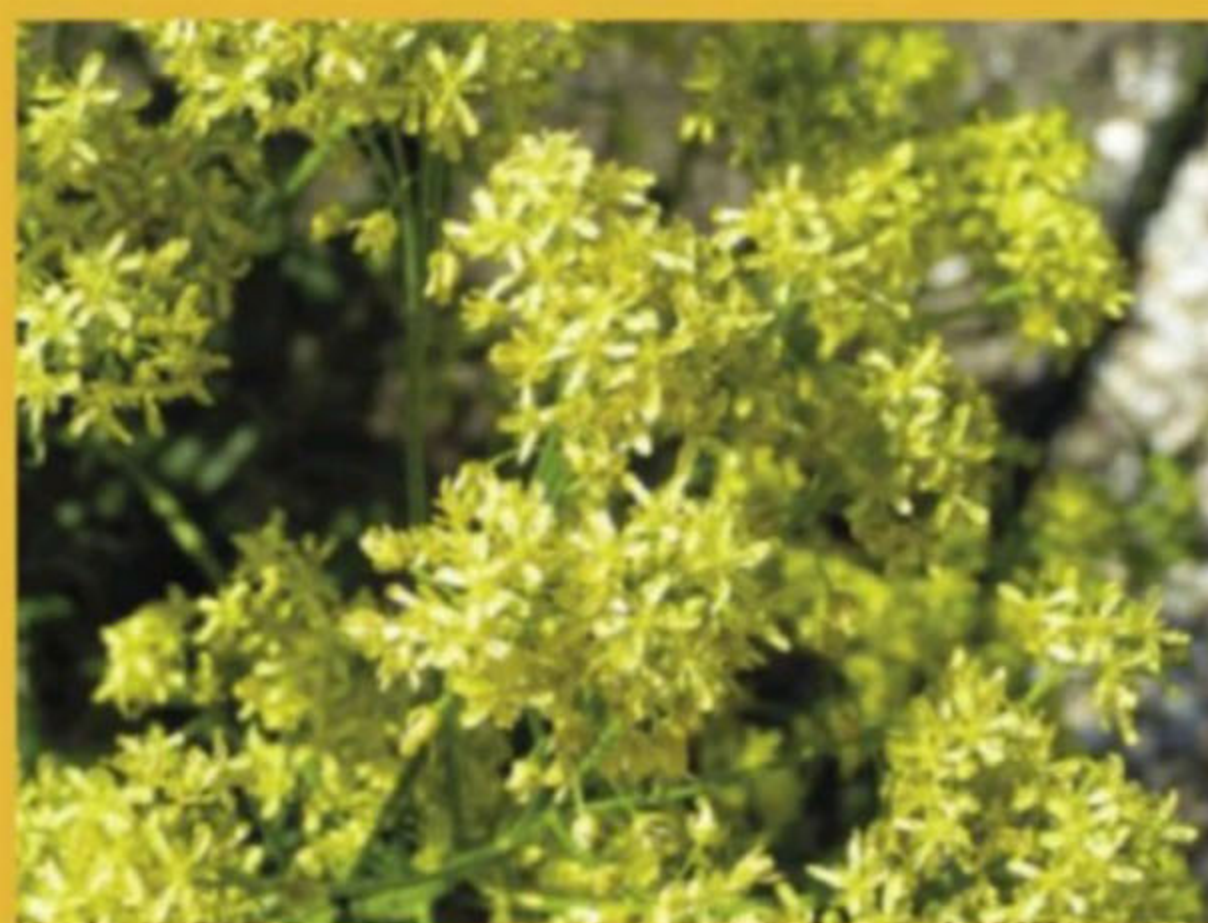
Clara de la Rocha was part of a group of female revolutionaries known as the *soldaderas*.

WHAT CONNECTS MUMMIES AND PRINTERS?

1 Ancient Egyptian mummies have been found with linen wraps, dyed a deep blue. This colour has survived for thousands of years, when all other dyes have faded away.

DID YOU KNOW?

Anubis is the ancient Egyptian god of mummification. He has the head of a jackal and the body of a human, and it is his job to ready the bodies of the dead for Osiris (the god of the dead).



2 The dye comes from the plant *Isatis tinctoria*, commonly known as woad. Originally native to Asia, it has been cultivated in Europe since the Roman period at least.

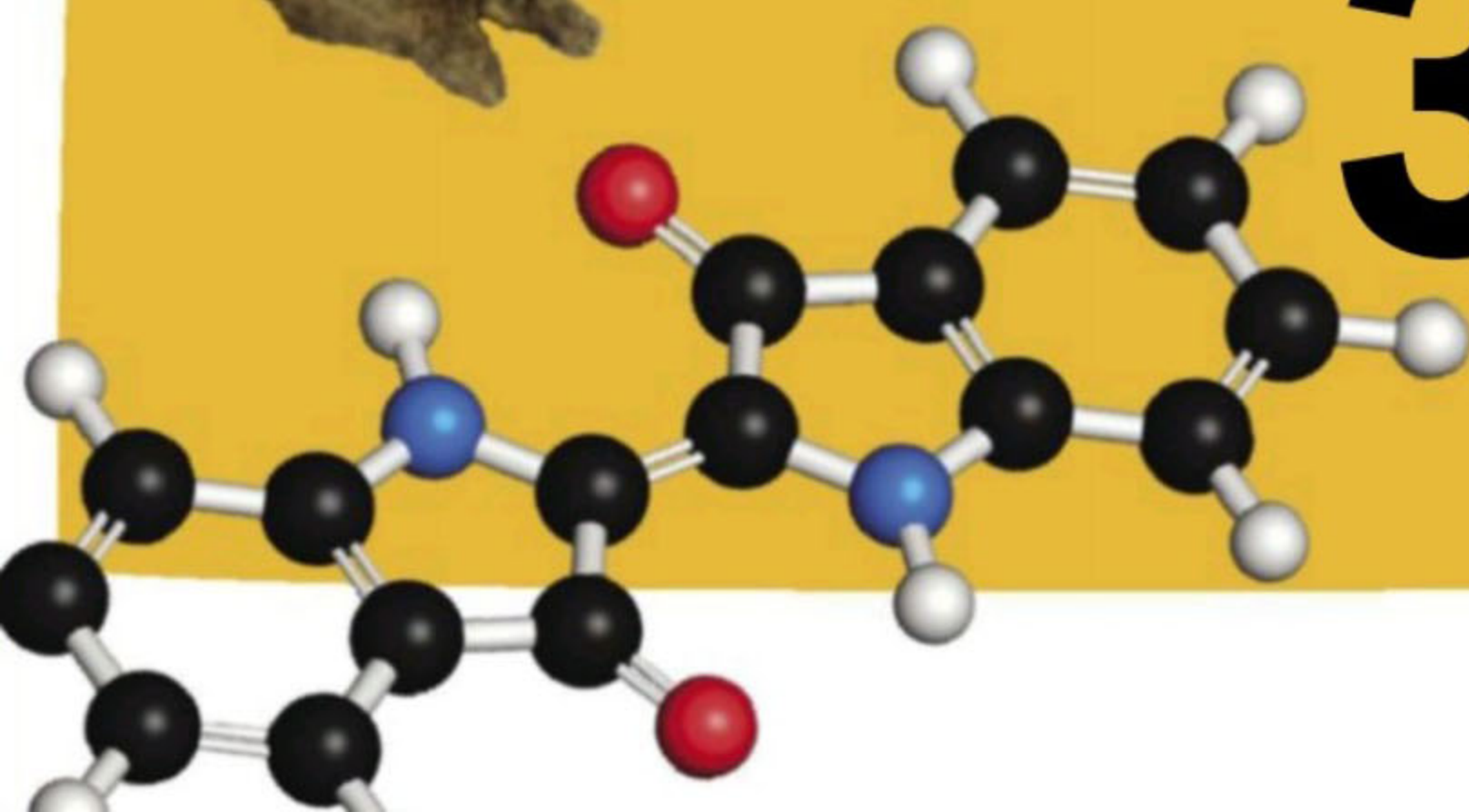
3 The dye molecule is indigo, which is normally insoluble (doesn't dissolve) in water and doesn't stick well to fabric. But it can be chemically reduced to the soluble and colourless white indigo.

4 White indigo has been used in ink for inkjet printers. This soluble form doesn't clog the printer nozzle but it converts back to blue indigo on contact with the oxygen in the air.



DID YOU KNOW?

The Incredible Hulk wasn't originally meant to be green. Creator Stan Lee wanted him grey, but the colourist had trouble keeping the colour consistent, so when the comics printed, he came out greenish. Luckily Stan Lee ended up liking it, and the green stuck.



GET TO KNOW... THE DODO

This big, flightless bird became extinct a long time ago, but what was she like?

WHAT DID DODOS LOOK LIKE?

They were large birds, who stood about 75cm tall and weighed between 15 and 20kg. That's around the height of an Egyptian Goose but almost 10 times her weight. The dodo's feathers were grey, and they had small wings and a fluffy tail. They flapped their tiny wings during courtship or to defend their territory, but they could not fly. They had enormous, hooded beaks, large yellow eyes and strong claws on their feet.



Dodo



Egyptian Goose

WHAT WAS HER DIET AND BEHAVIOUR LIKE?

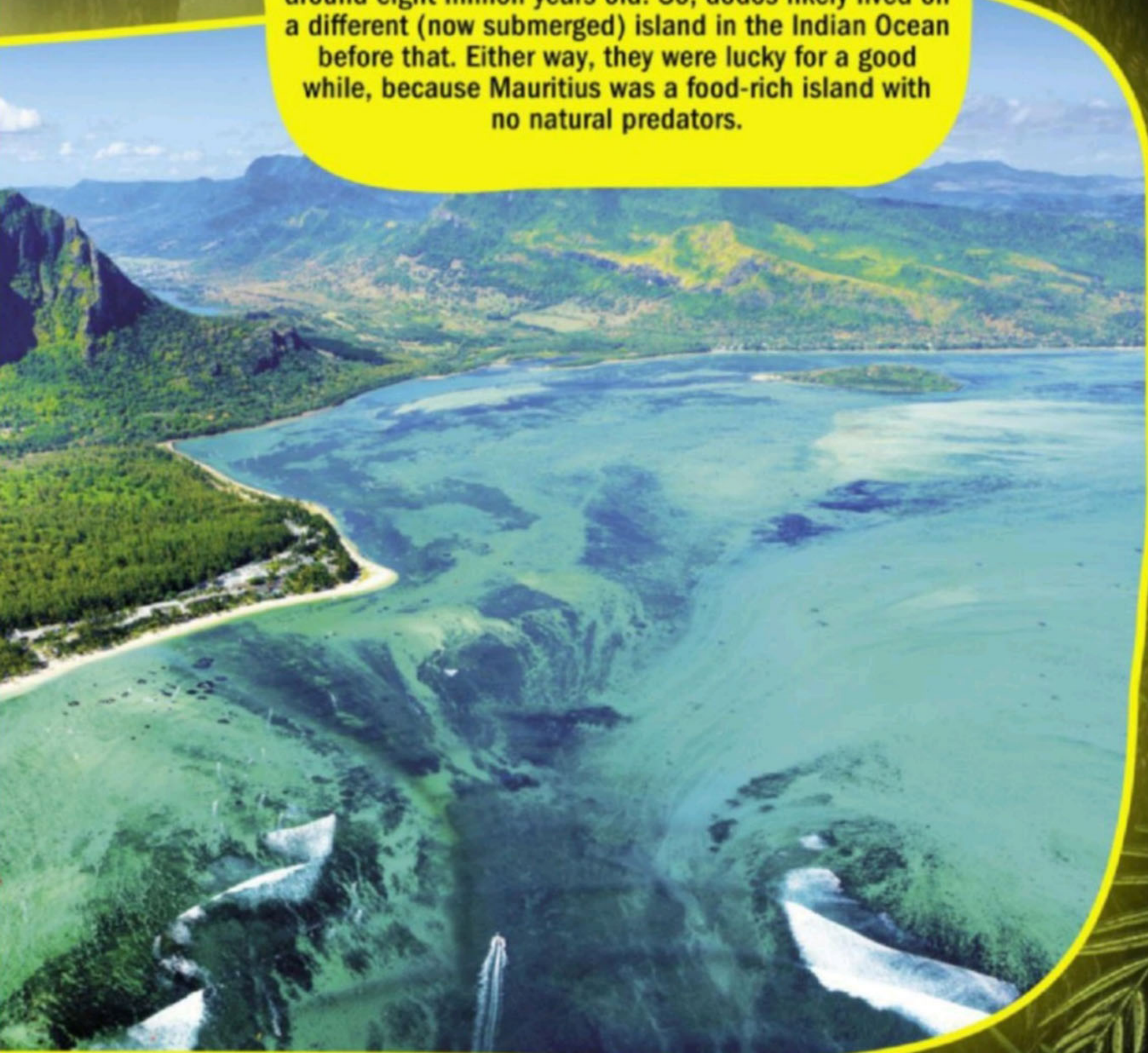
She ate fruit, insects and shellfish, and laid a single, oval-shaped egg around 10cm long, which she guarded in a nest on the ground, made of leaves. It is thought that pairs mated for life. Dodos were very sociable and gathered in large groups. Unfortunately for the dodos, they were even friendly to humans when sailors first arrived on the island...





WHERE DID THEY LIVE?

On the island of Mauritius, along the seashore and coastal lowlands. But they didn't always. There is evidence that the dodo became her own species around 26 million years ago, yet the island of Mauritius is only around eight million years old. So, dodos likely lived on a different (now submerged) island in the Indian Ocean before that. Either way, they were lucky for a good while, because Mauritius was a food-rich island with no natural predators.



SO, WHAT HAPPENED?

The first record of the dodo by humans was a brief mention by Dutch sailors in 1598. In 1601, Commander Harmenszoon recorded in his log (a type of diary ships keep) that these birds could be caught in large numbers on the island of Mauritius, as they were unable to fly, and they provided good sustenance (meals). Within three years of the dodos' discovery, they had become a standard food source for sailors. Humans also introduced new animals to the island (like dogs, cats, goats, rats, pigs and monkeys), some of whom preyed on the dodos and competed with them for food and space. The last reliable record of the dodo was in 1662 – meaning that it took humans all of 64 years to kill off a bird who had lived in a perfect environment for millions of years. And dodos weren't the only animals to become extinct in Mauritius at that time – they were joined by giant saddleback tortoises, geckos, parrots, owls, pigeons, starlings and a flightless ibis.



COULD WE BRING THEM BACK?

Russian scientists plan to take extinct hairy mammoth DNA and implant it into modern elephants to 'bring the mammoth back to life'. So, could we try that with the dodo? The answer is a no, at least for now. With our current knowledge and techniques, we wouldn't be able to get it right. And we'd have to find a bird who is more closely related to the dodo than her distant cousin, the Nicobar pigeon.

TEST YOURSELF

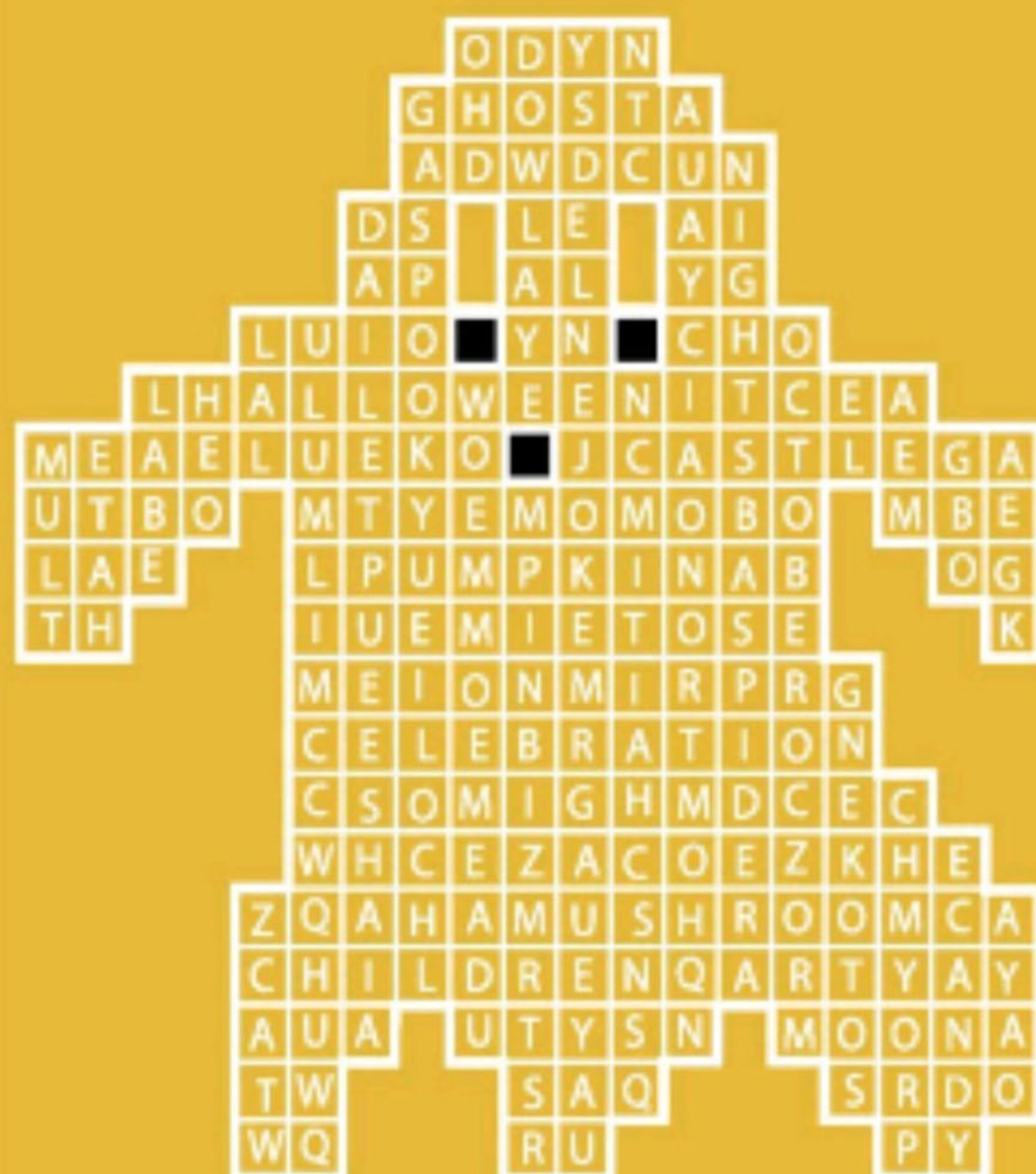


Four pages
of puzzles
and activities
to keep
you busy!

Train your brain by challenging yourself with these tricky puzzles

WORD SEARCH

Find the Halloween words hidden in the ghost grid. Words can go in any direction. Words can share letters and cross over each other.



Scary, spider, spooky, trick, mushroom, joke, candy, halloween, autumn, bat, castle, cat, celebration, children, hat, horror, moon, owl, ghost, night, october, pumpkin.

ODD ONE OUT



Which arrow is unique?

My answer: _____

WORD GAME

See how many new words you can make using the letters in the word Eucalyptus. We challenge you to make 20!

Use the letters in **EUCALYPTUS** to make new words:

- | | |
|-----------------|-----------------|
| 1. <u> </u> | 11. <u> </u> |
| 2. <u> </u> | 12. <u> </u> |
| 3. <u> </u> | 13. <u> </u> |
| 4. <u> </u> | 14. <u> </u> |
| 5. <u> </u> | 15. <u> </u> |
| 6. <u> </u> | 16. <u> </u> |
| 7. <u> </u> | 17. <u> </u> |
| 8. <u> </u> | 18. <u> </u> |
| 9. <u> </u> | 19. <u> </u> |
| 10. <u> </u> | 20. <u> </u> |

CODE BREAKER

Use the key to work out the name of a wild animal.



The name of the animal is: _____

CROSSWORD

Make sure you've read the whole magazine before you complete this puzzle – the answers can be found in the articles.



ACROSS

2. The name of the orca who researchers taught to speak.
4. Ancient Egyptians used this sweet substance to treat wounds and prevent infections.
7. Frogs can be found on every continent except this one.
10. The _____ Sea is the world's biggest lake by area.
11. The _____ Manuscript is mysteriously encoded and, a century later, we still cannot read it!
12. What you call a person who studies frogs.
13. These orange veggies contain beta-carotene, which is good for eye health.
14. The _____ Volcanoes are ones that have been identified as potential threats.
17. The green pigment that allows plants to photosynthesise.
18. Some people use these insects to 'stitch' wounds together.
19. The International _____ Station was built over 42 missions, each delivering different parts.
22. The Great Red _____ is a massive storm on Jupiter that is bigger than Earth.
24. The _____ pigeon is a distant relative of the dodo.

DOWN

1. In 1953, Jacques Cousteau released a book called *The _____ World*.
3. The ancient Egyptian god of mummification, who had the head of a jackal.
5. The country where Jacques Cousteau was born.
6. The geological period during which the octopus first appeared.
8. The island the dodo lived on.
9. The name of the spacecraft that studied Jupiter up close.
15. The hormone your body releases to help you sleep.
16. The number of hearts an octopus has.
20. Around 80% of the _____ population was wiped out by the cocoliztli epidemic.
21. When lightning and a volcanic eruption combine, it's called a _____ storm.
23. The country where you may see massive geoglyphs in the Nazca Desert.
25. The colour of an octopus's blood.

LEARN TO DRAW

Improve your art skills! Follow the steps and draw this cartoon cat.



1

DRAW EARS, ...

2

THE HEAD, ...

3

THE BACK ...

4

...AND ADD THE TAIL!

5

DRAW SOME FEET, ...

6

NEXT EYES...

7

AND THE MOUTH!

8

NOW, ADD SOME DETAILS
AND ...

9

Meow
Meow

TA-DA!

MAKE A WORD

Take a letter or group of letters from each tube to make the names of four animals.
The first one has been done for you.

MO	N	K	EY

MO T EL AN	IG EP TE N	HA K LO E	PE R EY NT
---------------------	---------------------	--------------------	---------------------

My answers: _____, _____, _____, _____

VOCAB BUILDER



Make a problem less severe.

"The doctor gave the patient pain
meds to alleviate her symptoms."

COMPLETE THE GRID

Can you correctly fit the three- and five-letter words into the grids?

3-letter words

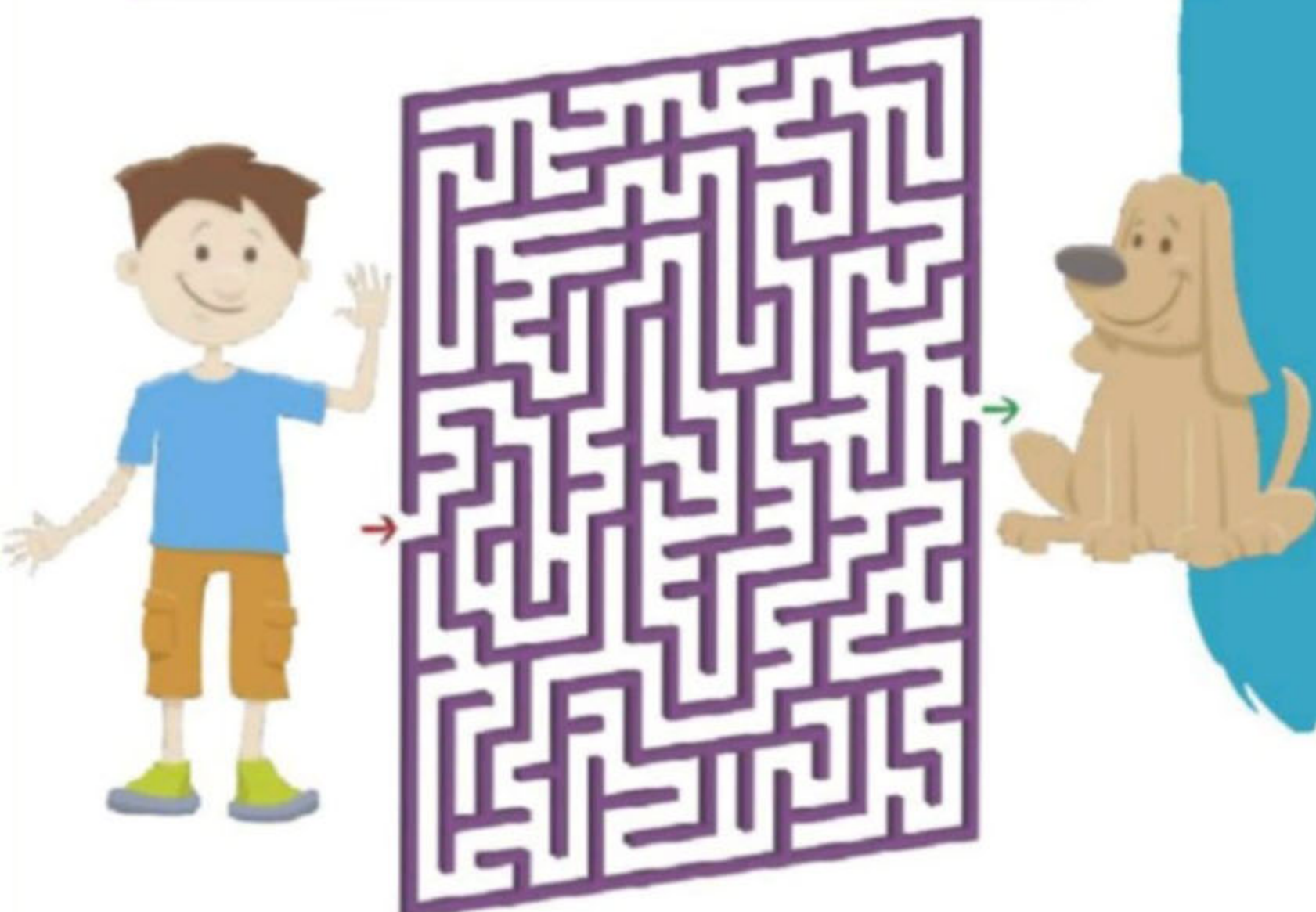
MUG
NUT
OFF
UFO

5-letter words

BLOOM
BOOTS
COMIC
FLUID
GIFTS
HONEY
TITAN
VEGAN

HELP NEO FIND MURPHY

Work your way through the maze and help Neo find his dog Murphy.



WORD SEARCH

ODYN
GHOSTA
ADWDUN
APALY
CHOL
LUIO
LHALLOWEEN
JCASTLEGA
MBO
MTEMOMBO
LPMKINAB
IUEMIEOSE
MEIONMIRPRG
CELEBRATION
CSOMIGHMDEC
WHCEZACOEZKHE
ZQAHAMUSHROOMCA
CHILDRNENQARTYAY
AUAUTYSN
RUSAO
WQW

GRID 1: Across - comic, nut, vegan; Down - honey, mug, titan.

GRID 2: Across - bloom, UFO, gifts; Down - fluid, off, boots

MAKE A WORD

Number 12 is unique

ODD ONE OUT

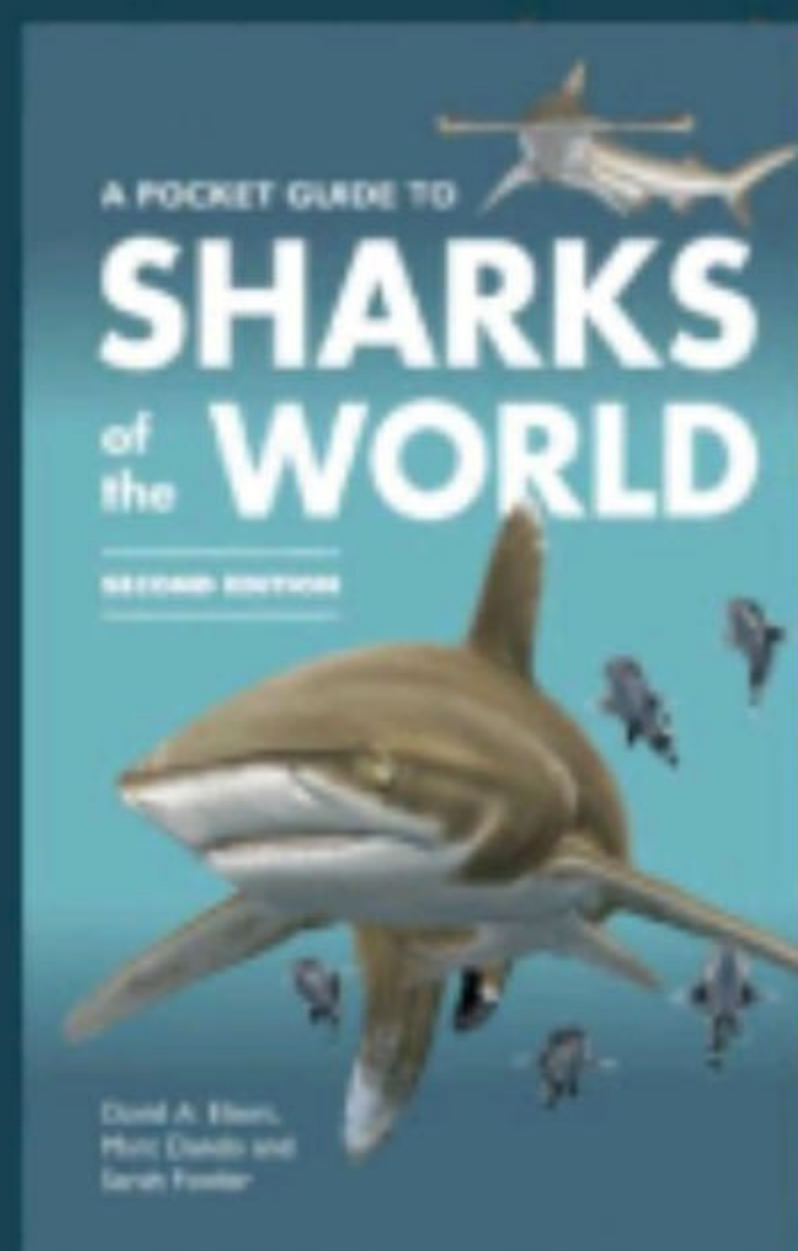
Tiger, elephant, antelope

CROSSWORD

SNOUTS

Totally trending

THE COOLEST STUFF OUT THERE



A POCKET GUIDE TO SHARKS OF THE WORLD

Sharks are some of the most misunderstood animals on the planet. We still have much to learn about these fascinating creatures, but time is running out: sharks are more seriously threatened with extinction and in greater need of conservation and management than any other major group of vertebrates. A Pocket Guide to Sharks of the World is the only field guide to identify, illustrate and describe every known shark species. It contains useful sections on the ID of shark teeth and shark fins most commonly encountered in the fin trade, and takes a look at shark biology, ecology and conservation.

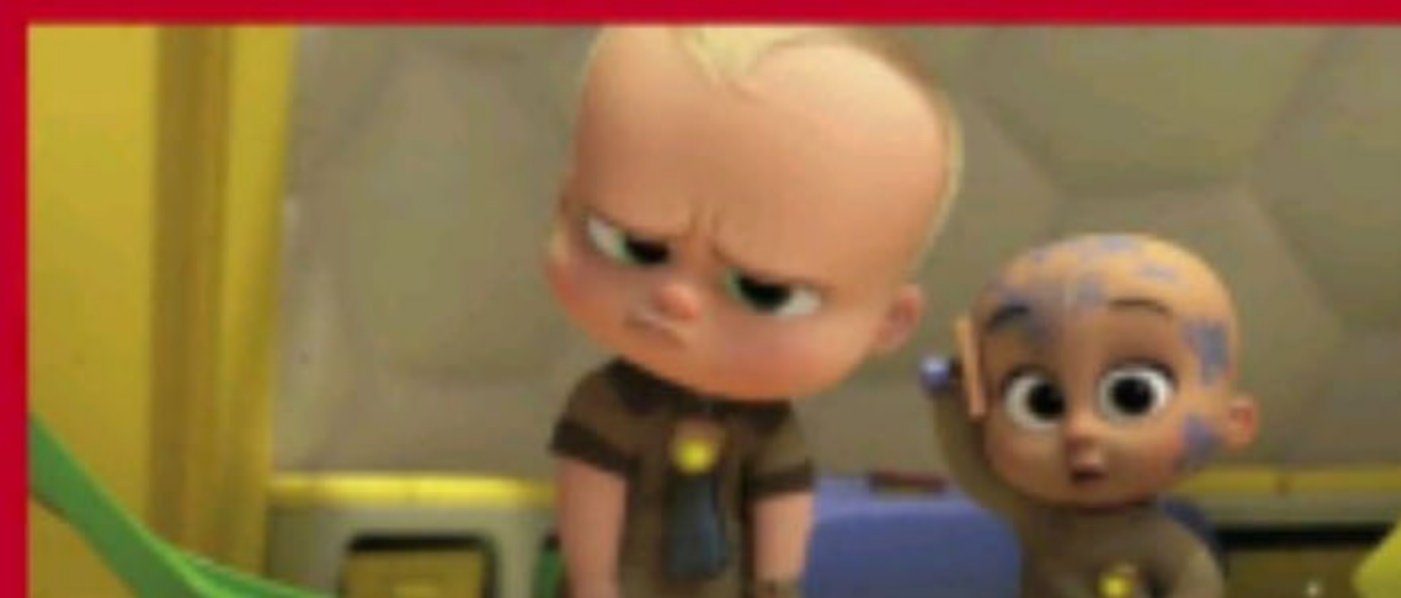


MOVIE – THE ADDAMS FAMILY 2

Releases 8 October 2021

The Addams family has been happily living in their run-down mansion atop a foggy hill for years, but things are about to get crazy as they prepare to welcome extended family to celebrate son Pugsley's 'Sabre Mazurka' – a rite of passage for Addams family men. What the family doesn't know is that their neighbour is on a mission to create a neighbourhood of 'perfect' houses, and the Addams' mansion is getting in her way. Wednesday has

her own journey, as she experiments with being 'normal' by joining cheerleading, befriending the neighbour's daughter and wearing pink. This is a great family movie about acceptance, family and embracing your own 'normal'.



ON THE BIG SCREEN – THE BOSS BABY: FAMILY BUSINESS

Releases 24 September 2021

It's been 40 years since the crazy adventures of the first film, and Tim is now all grown up with kids of his own – seven-year-old Tabitha and baby Tina. His little brother Ted is a high-flying CEO, who is never around. But, when Tim discovers that Tina is a Boss Baby, just like Ted once was, he is tasked with getting Ted on board for a mission. Trouble is, Ted doesn't remember anything from his days as a Boss Baby. When Tina takes them to Baby Corp, they learn that the mission involves Tabitha's new school, and that there is a new type of formula that will allow them to become children again, so that they can go undercover... The brothers must work together to figure out what the school's principal is planning. But can they ever be close again?

WIN!

We have five Boss Baby lunch bags and water bottles up for grabs! To enter, send an email with the words 'VI Junior Boss Baby' in the subject line to vjunior@panorama.co.za. Include your name, a daytime delivery address and a daytime contact number. Entries close on 31 October 2021.





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