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AWESOME ACTIVITIES



Associate Professor Chamindie Punyadeera



I have always loved science and research because it gives us the chance to think about and solve problems.

Chamindie tests saliva from people to see if they are sick or healthy.

She enjoys helping others and works hard to help young girls and women from different backgrounds to get interested in science.



Do you need saliva to help you taste your food?

What you need:

• Some kitchen paper towel • A scarf or blindfold • A glass of water • Four samples of dry foods, for example: crackers, dry breakfast cereal, biscuits, pretzels • Lemon lolly or chewing gum • An adult helper.

1. Put on the blindfold and then gently dry your tongue and the inside of your mouth with kitchen paper towel to dry up any saliva.

2. Ask your helper to pass you a food sample to taste from the dry foods.

Is it easy or difficult to chew and eat without saliva?

What does the food taste like? Can you guess what it is?

3. Taste the other food samples with a dry mouth.

Did you guess what they were correctly?

4. Ask your helper to pass you a drink of water. Now try tasting each food sample again with saliva in your mouth.

Did you guess what foods you were eating once your mouth was wet?

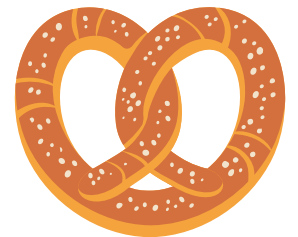
What do your results tell you?

Do you need saliva to help you taste your food?

5. Now try 'stimulating' saliva by sucking on a lemon lolly or chewing gum.

How much saliva can you make?

Write down what you see.



Dr Anu Choudhary

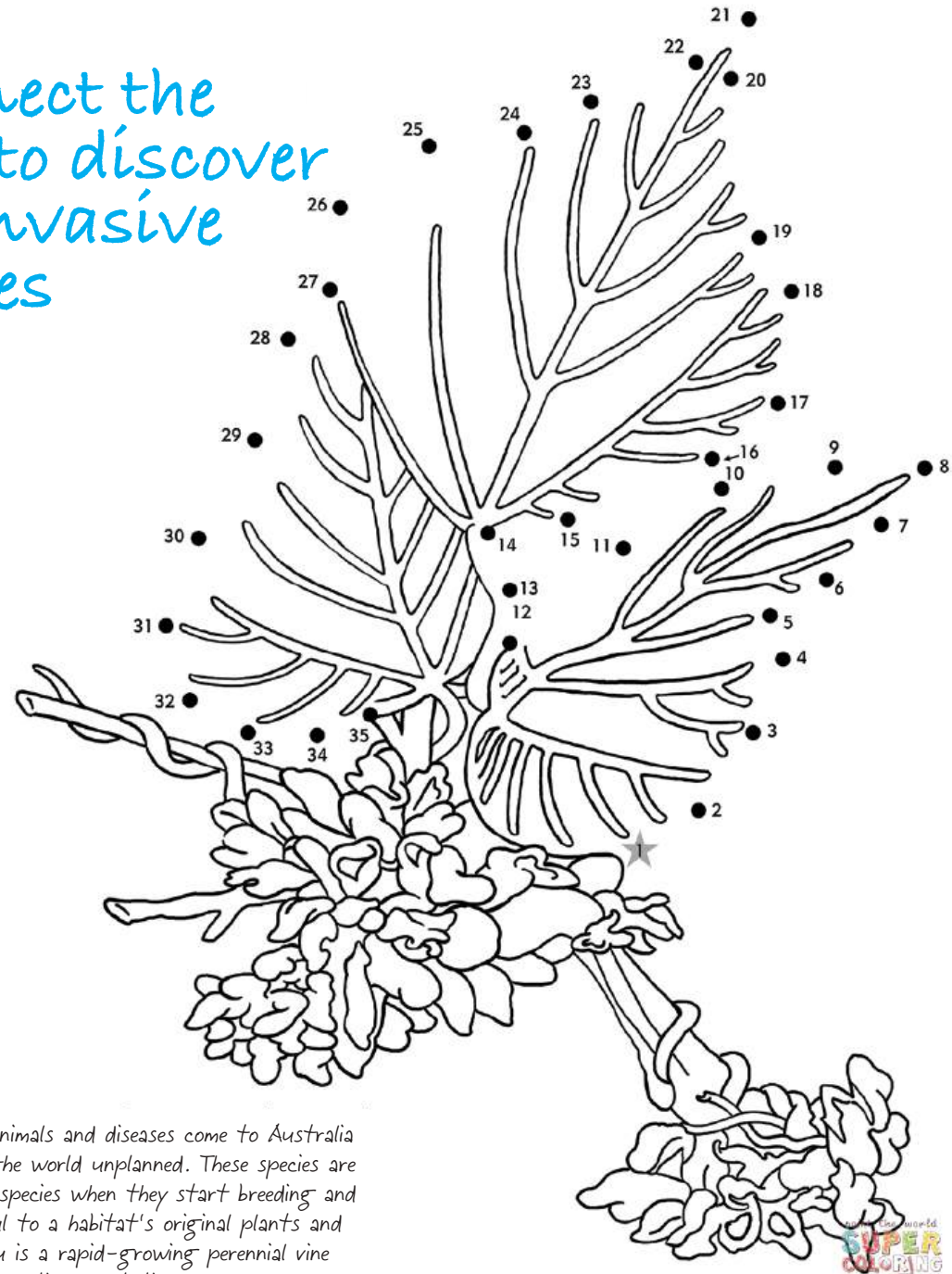


I get to make amazing new tools to help our farmers grow more food.

Anu finds new ways of removing unwanted plants from our farms.

Not only is Anu good at science but she can also understand four languages—Hindi, English, Punjabi and Bengali. When she was little, she wanted to be an astronaut.

Connect the dots to discover the invasive species



New plants, animals and diseases come to Australia from around the world unplanned. These species are called invasive species when they start breeding and become harmful to a habitat's original plants and animals. Kudzu is a rapid-growing perennial vine that smothers native vegetation.

Professor Jonti Horner



In my job, I study the Solar system and try to work out where we should look for life beyond the Earth.

As a child, Jonti dreamt of being an astronomer as he loved looking at stars and the night sky.

He is always searching for alien worlds. He's so lucky that he gets to do what he loves doing every single day of his life! Unfortunately, Jonti is allergic to rosemary—but only gets sick if he eats some and then does exercise!

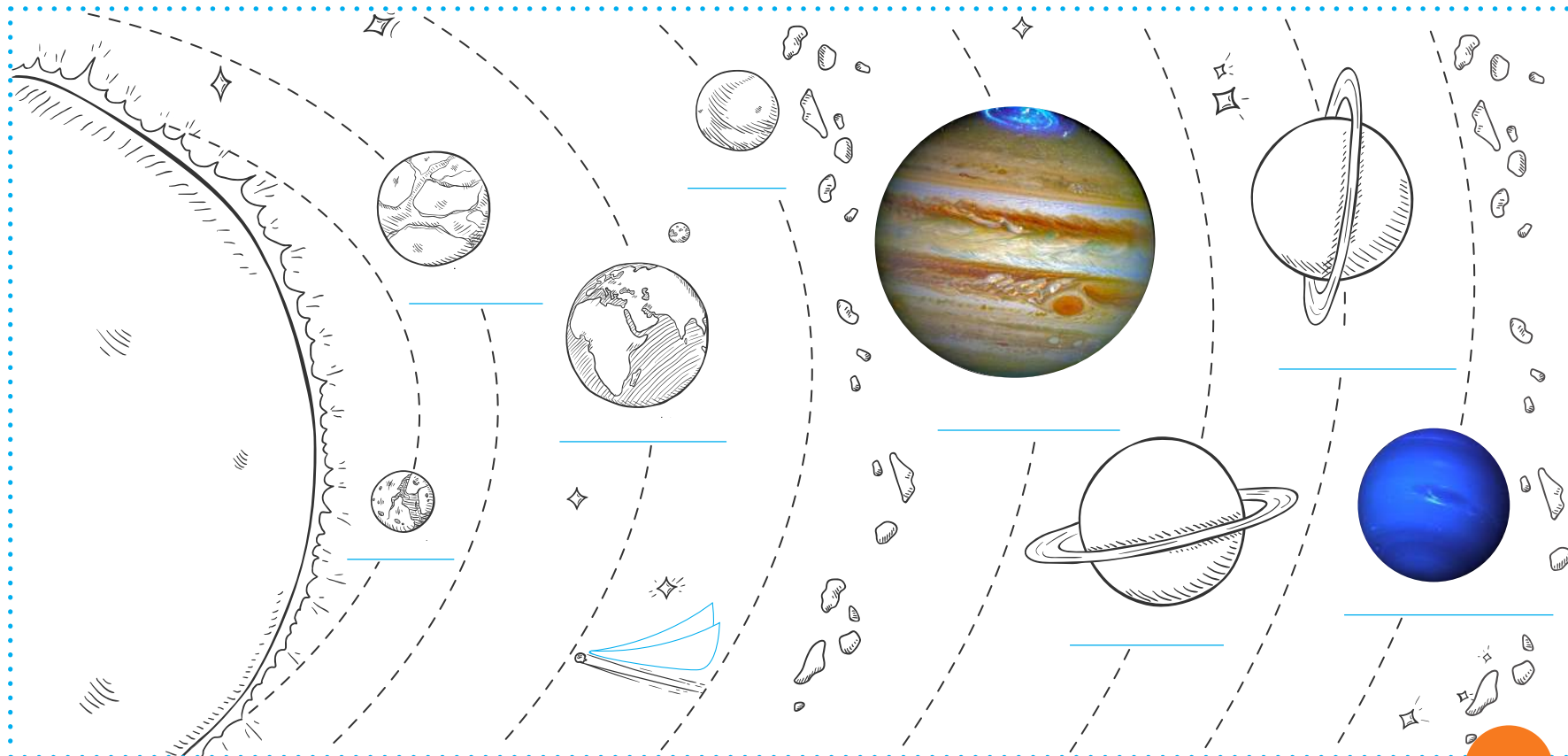
Our Solar system

Name the planets and colour them in.

Did you know ...

that astronomers have now found thousands of planets orbiting other stars?

Maybe, one day, we'll find a place just like Earth—with aliens looking back at us, wondering whether they're alone in the universe!



Dr Larisa McLoughlin

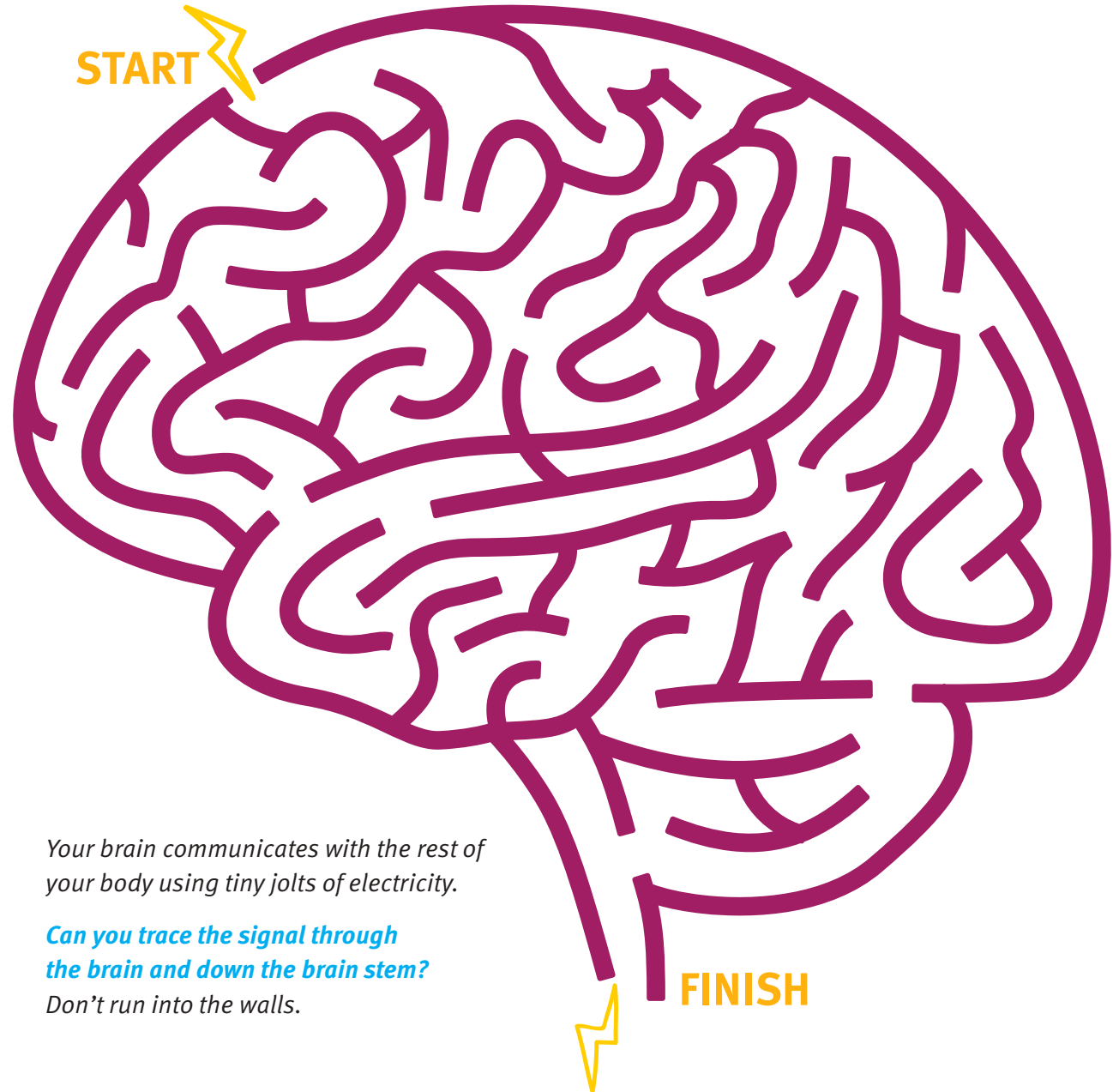


I love being able to understand people's brains.

Larisa researches children's brains and what happens if they are bullied or sad. She is hoping her research will help other people in the future.

She has always wanted to 'fix' people. When she was a child she wanted to be a surgeon.

BRAIN MAZE



Your brain communicates with the rest of your body using tiny jolts of electricity.

Can you trace the signal through the brain and down the brain stem?

Don't run into the walls.

Dr Bonnie Quigley

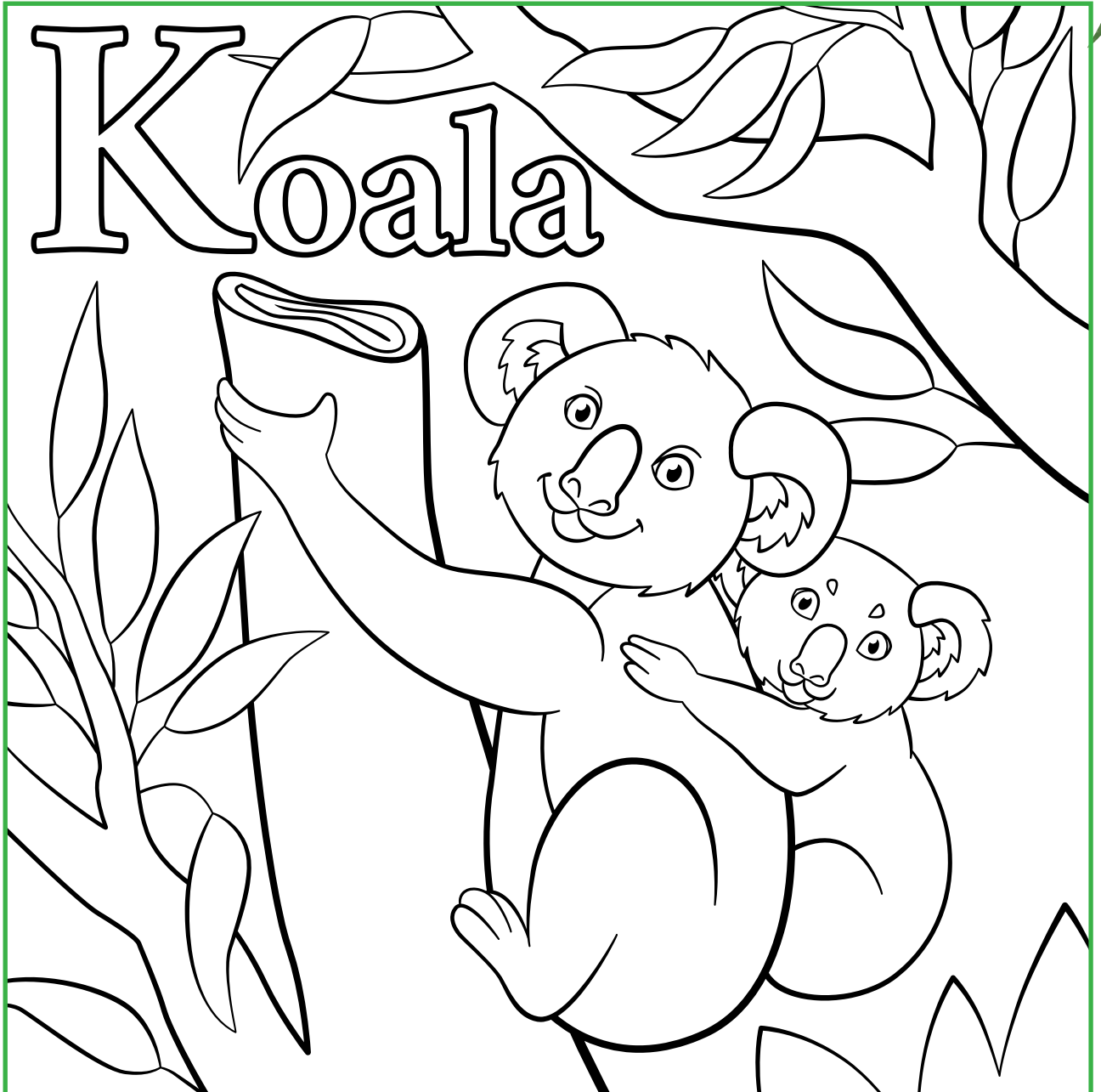


I love seeing animals that are healthy and happy out in the wild.

Bonnie studies the germs that make koalas sick and tries to make medicines to keep them well. She has lived and worked in four different countries around the world.

Her favourite animal is one of Australia's native animals—the koala.

COLOUR ME IN



Dr Jenni Gunter



I think science is amazing
because every day
I learn something new.

Jenni studies the way cancer cells make and use energy and she tries to find new ways to treat sick people. She believes we can use science to try to stop people dying from cancer.

Did you know that Jenni likes to hike? She once went hiking in the Transylvanian Alps and visited Dracula's castle.

Animals, including humans, are made up of microscopic (tiny) structures called cells. Cells look slightly different depending on the different jobs they perform in your body, but all cells have certain common parts. Learn about a few and make this cell colourful.

Colour me in

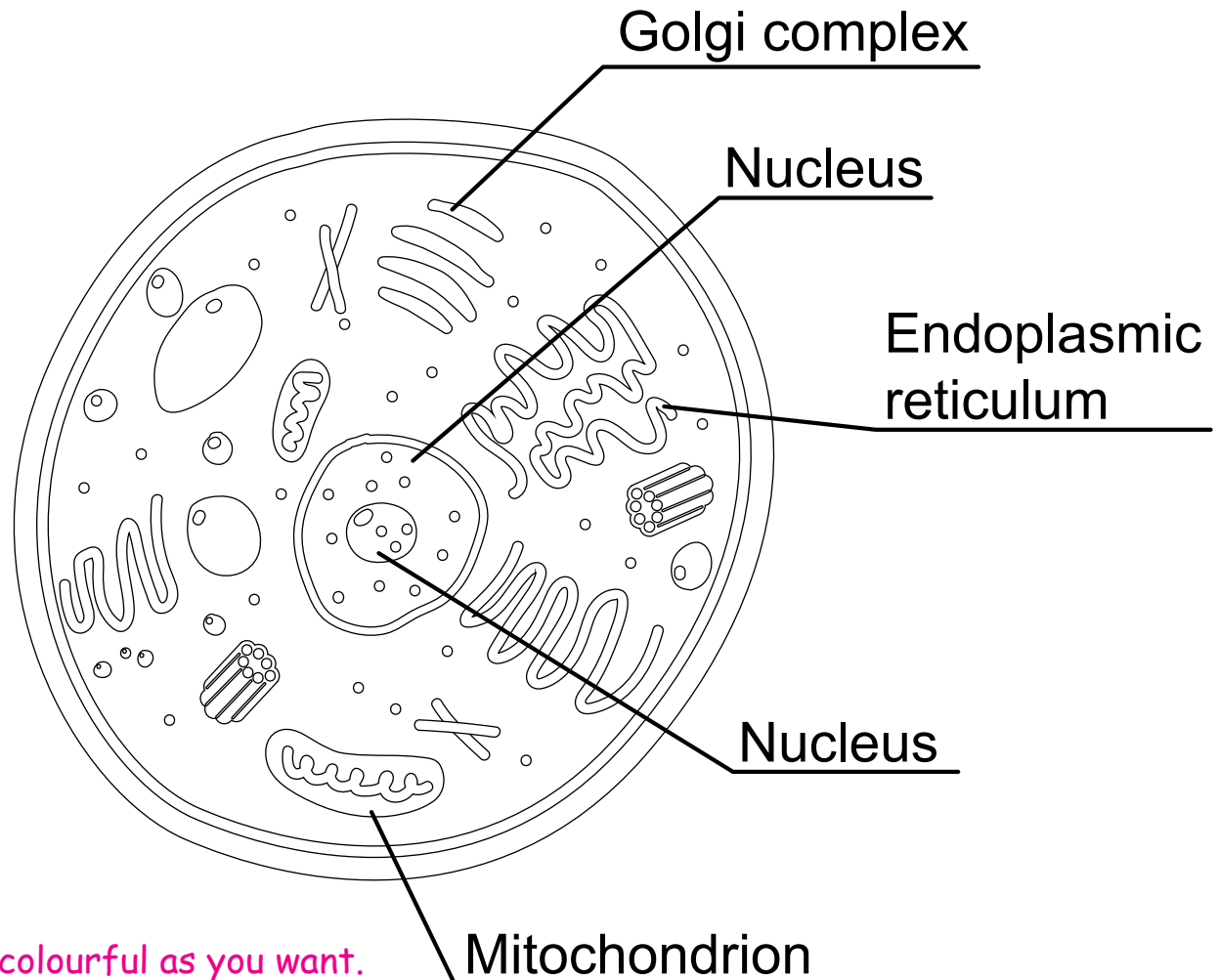
Red: I'm the Nucleus, the central round 'brain' of each cell and I contain the information that makes you, you and that makes Jenni, Jenni.

Blue: I am the Mitochondrion. I have an oval body that contains many folds inside. Me and my siblings are the 'power plants' of each cell and we make sure that you don't get tired too fast.

Purple: I'm the Golgi complex. I might not look like much but I'm a stack of ovals that make sure that everything a cell produces gets safely wrapped until it is needed somewhere else.

Green: I'm the Endoplasmic reticulum. I'm a lot of folds all throughout the cell and I help to fold proteins into their right shape. Don't I look like a curly worm?

Done? Now make the rest of the cell as colourful as you want.



Dr Ben Allen



In my job, I get to travel to some amazing places and see some amazing animals.

Ben studies wild animals in the outback to try and figure out how to keep them healthy.

He has been bitten by ants, spiders, scorpions, lizards, snakes, birds, rats and cats. Would you believe, he has eaten kangaroo, emu, warthog and zebra—all in the name of science! Since a young child, Ben wanted to be a wildlife scientist, and he grew up to become exactly what he wanted to be.

Crepuscular = more active at dawn and dusk
Diurnal = more active during the day
Nocturnal = more active at night

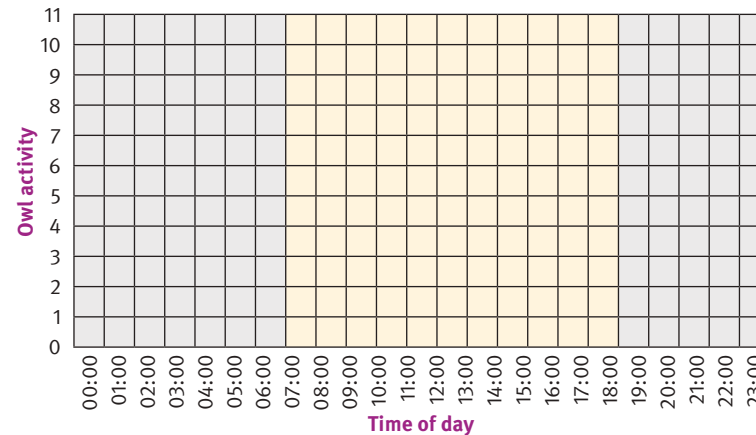
Get graphing

Plot the numbers onto the graph to show how active the owl is during the day and the night.

Join the dots to form a line.

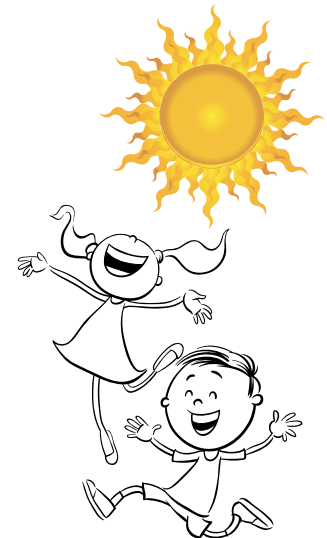
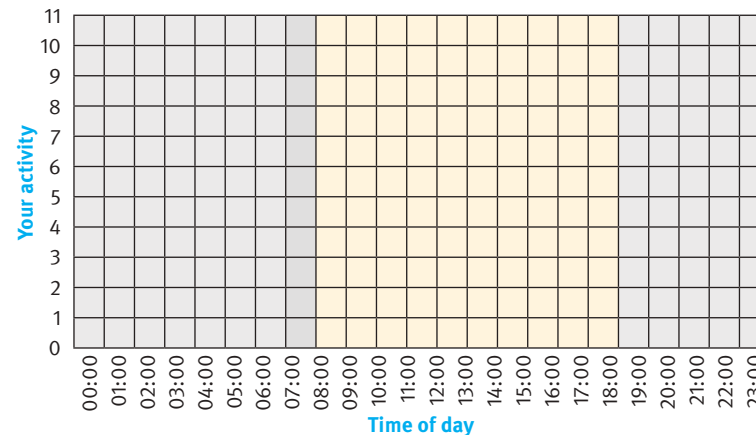
Are owls more active at night or more active during the day? Are they nocturnal animals?

Time	Activity	Time	Activity
00:00	10	12:00	1
01:00	10	13:00	1
02:00	10	14:00	2
03:00	10	15:00	3
04:00	10	16:00	5
05:00	9	17:00	7
06:00	7	18:00	9
07:00	5	19:00	10
08:00	3	20:00	10
09:00	2	21:00	10
10:00	1	22:00	10
11:00	1	23:00	10



Can you plot a graph that shows your own activity levels during the day and night? Make a special mark when you go to bed and when you go to school.

Time	Activity	Time	Activity
00:00		12:00	
01:00		13:00	
02:00		14:00	
03:00		15:00	
04:00		16:00	
05:00		17:00	
06:00		18:00	
07:00		19:00	
08:00		20:00	
09:00		21:00	
10:00		22:00	
11:00		23:00	



Dr Amanda Dawson

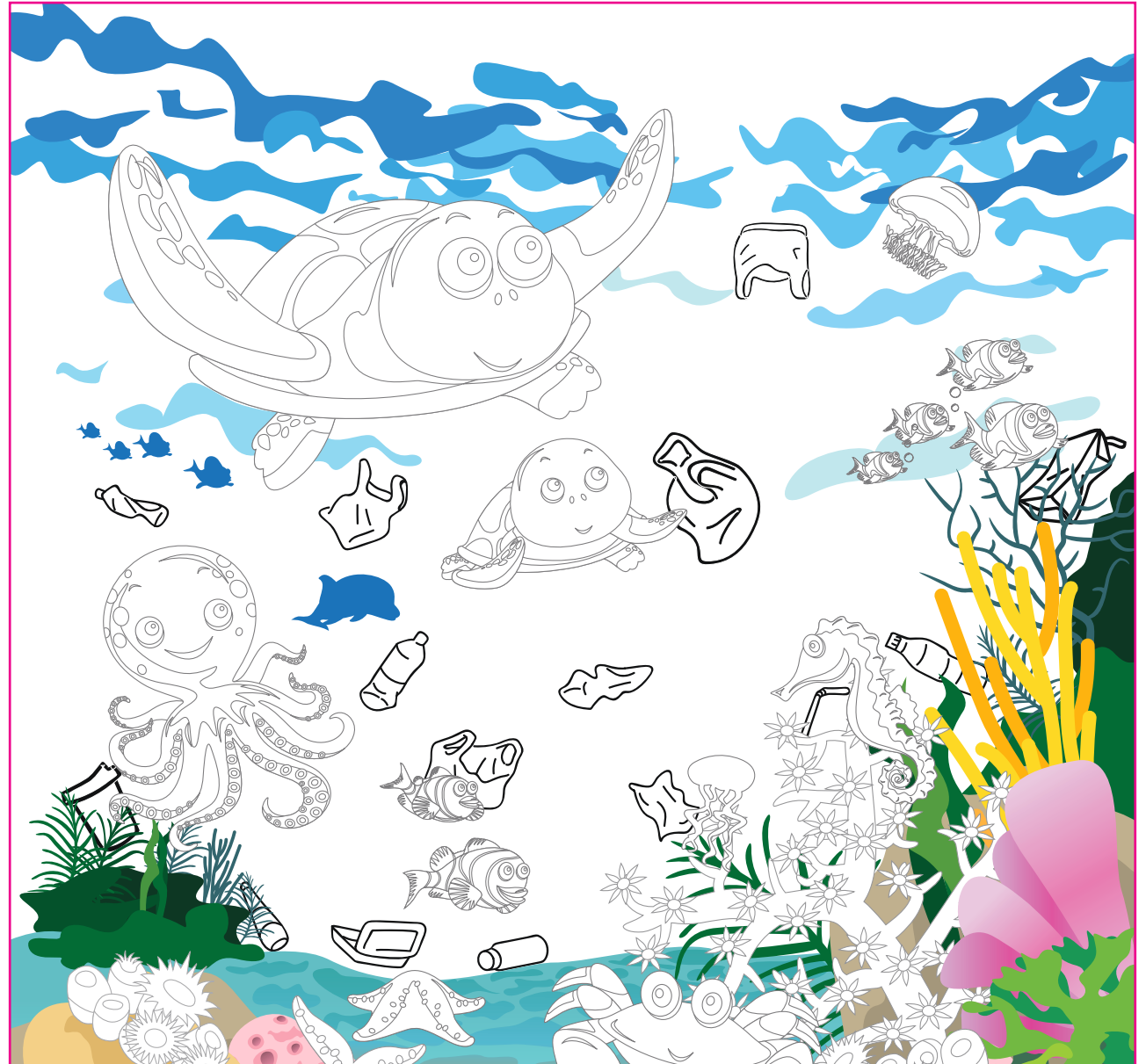


It's so much fun to learn and try to figure things out.

Amanda is studying how plastic pollution is harmful to the fish and crustaceans like crabs and prawns that live in the ocean.

Every day, she is trying to help ocean animals. When she is not working she likes to colour her hair bright colours, and changes the colour every six months—at the moment it is bright pink!

Find the 15 pieces of rubbish and then colour in



Dr Andreas Kupz

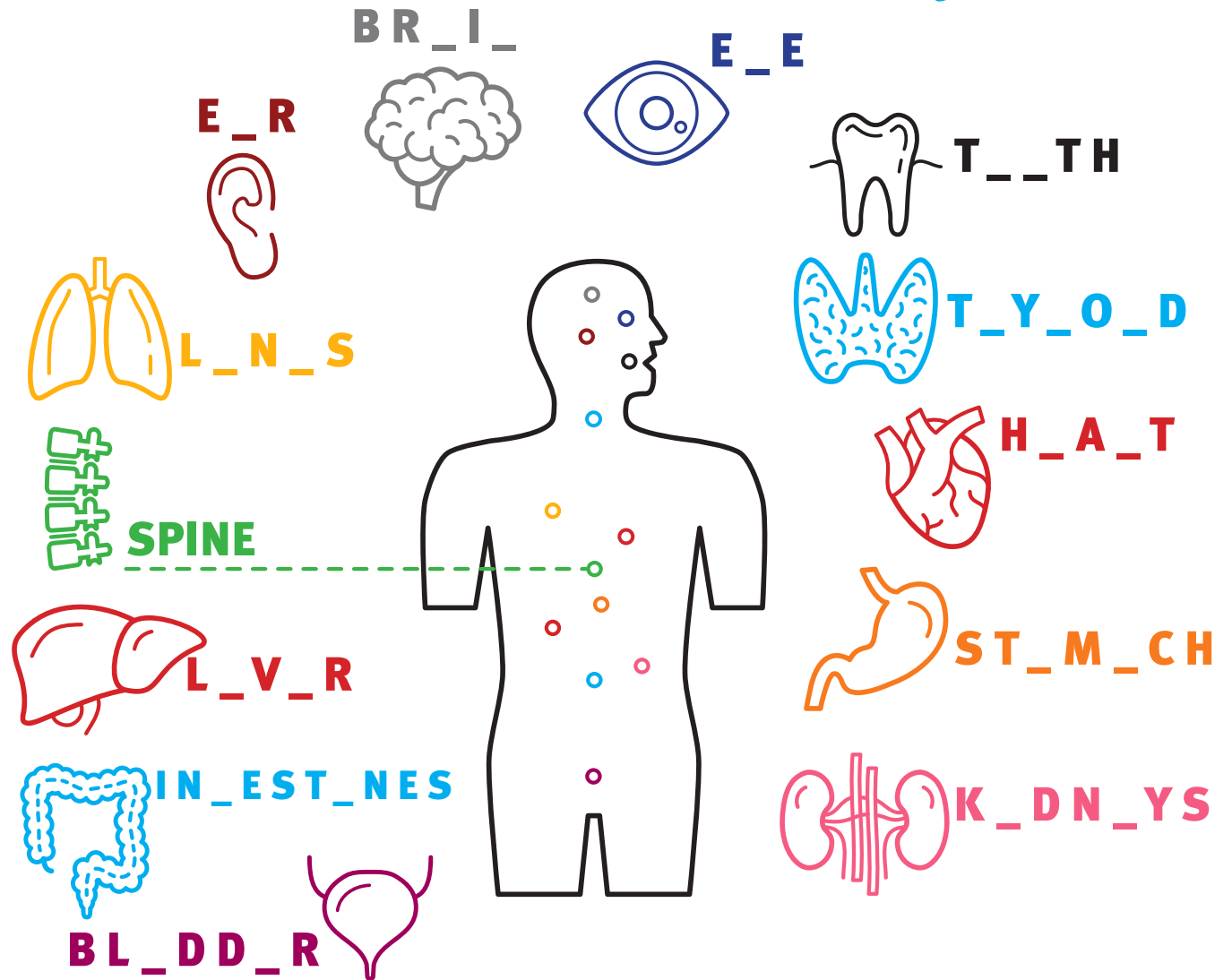


I love being able to create new knowledge by working with other scientists who have great ideas.

Andreas works on the development of a new vaccine to fight against a disease called tuberculosis. Tuberculosis is a disease caused by germs that usually affects a person's lungs, but it can also affect other parts of the body, such as the brain, the kidneys, or the spine. It is a very dangerous disease.

He was born in Germany and loves picking lots of different mushrooms in the forest.

Fill in the names of the parts of the body and draw a line to where it belongs.



Dr Sara Herke



I love solving challenging problems and drawing pictures of networks!

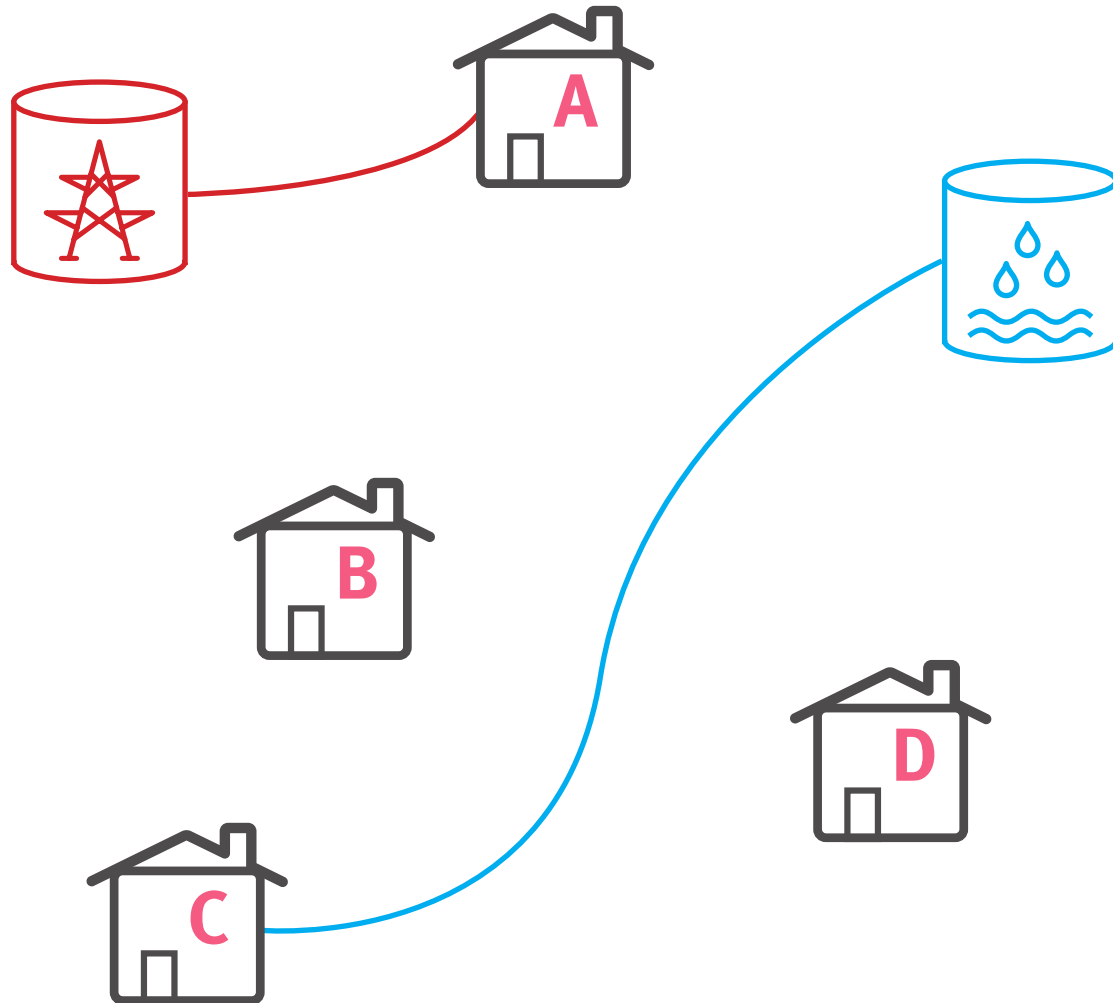
Sara uses maths and computers to study networks. Networks show us how things are connected to each other.

She always wanted to be a teacher. Now, she gets to teach maths at university, and she loves it!

MAKING CONNECTIONS

Right now, **House A is connected to the electricity** and **House C is connected to the water**. We want every house to be connected to both electricity and water. But we don't want any connections to cross over each other!

Can you add connections so that every house is connected to both electricity and water with no crossing lines? That means each line you draw should not touch any other line.



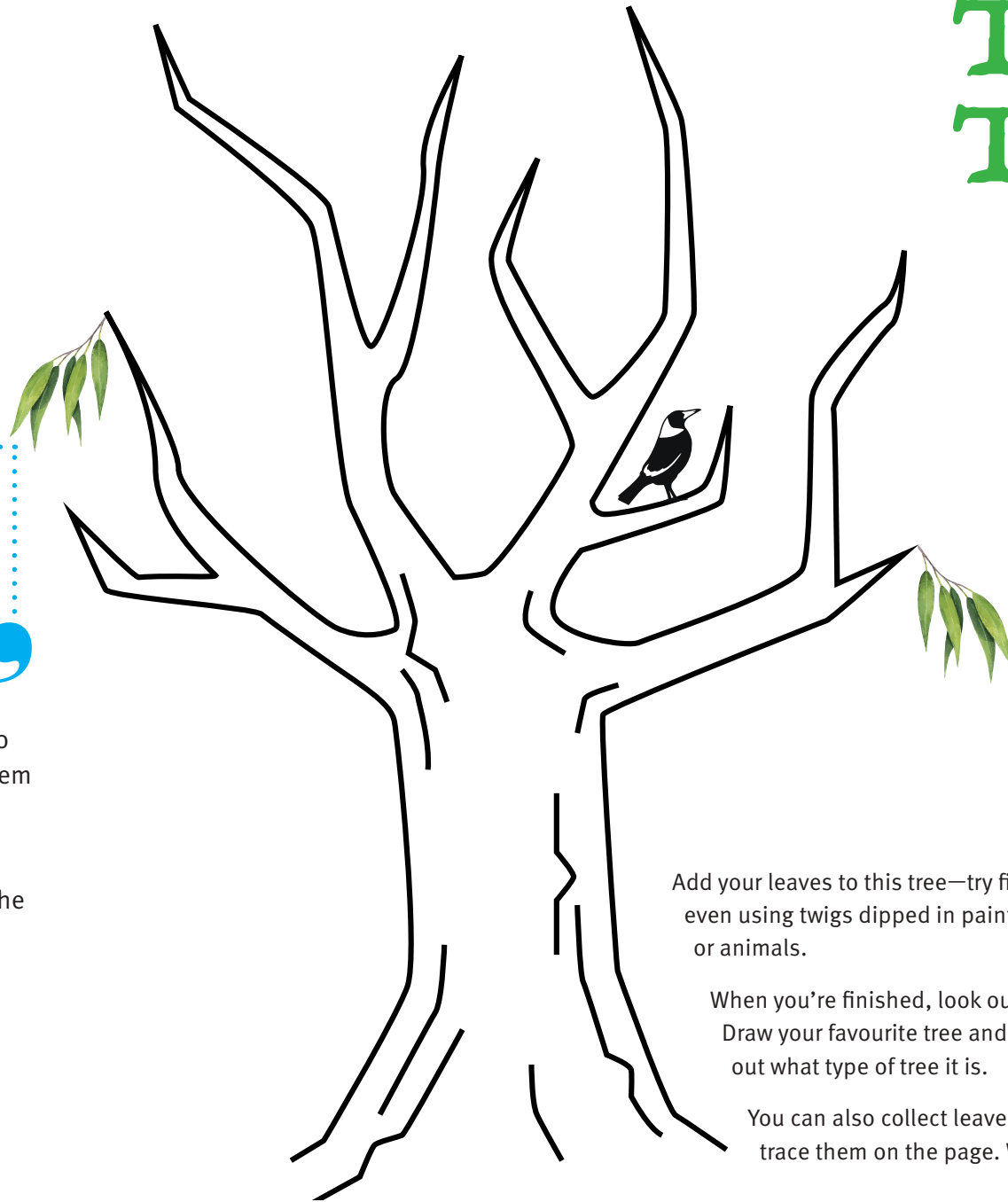
Dr Maryam Shirmohammadi



I enjoy asking questions, like any good scientist.

Maryam studies wood and looks at their cells and their stiffness. She uses the information to make stronger wooden products and to use them for different things such as buildings.

She is always interested to know ‘why’ and ‘how’. This means she never looks at objects the same way twice.



TREE TIME

Add your leaves to this tree—try finger painting or even using twigs dipped in paint. Add some birds or animals.

When you’re finished, look outside your window. Draw your favourite tree and see if you can find out what type of tree it is.

You can also collect leaves from outside and trace them on the page. What can you see?

Dr Jodie Rummer

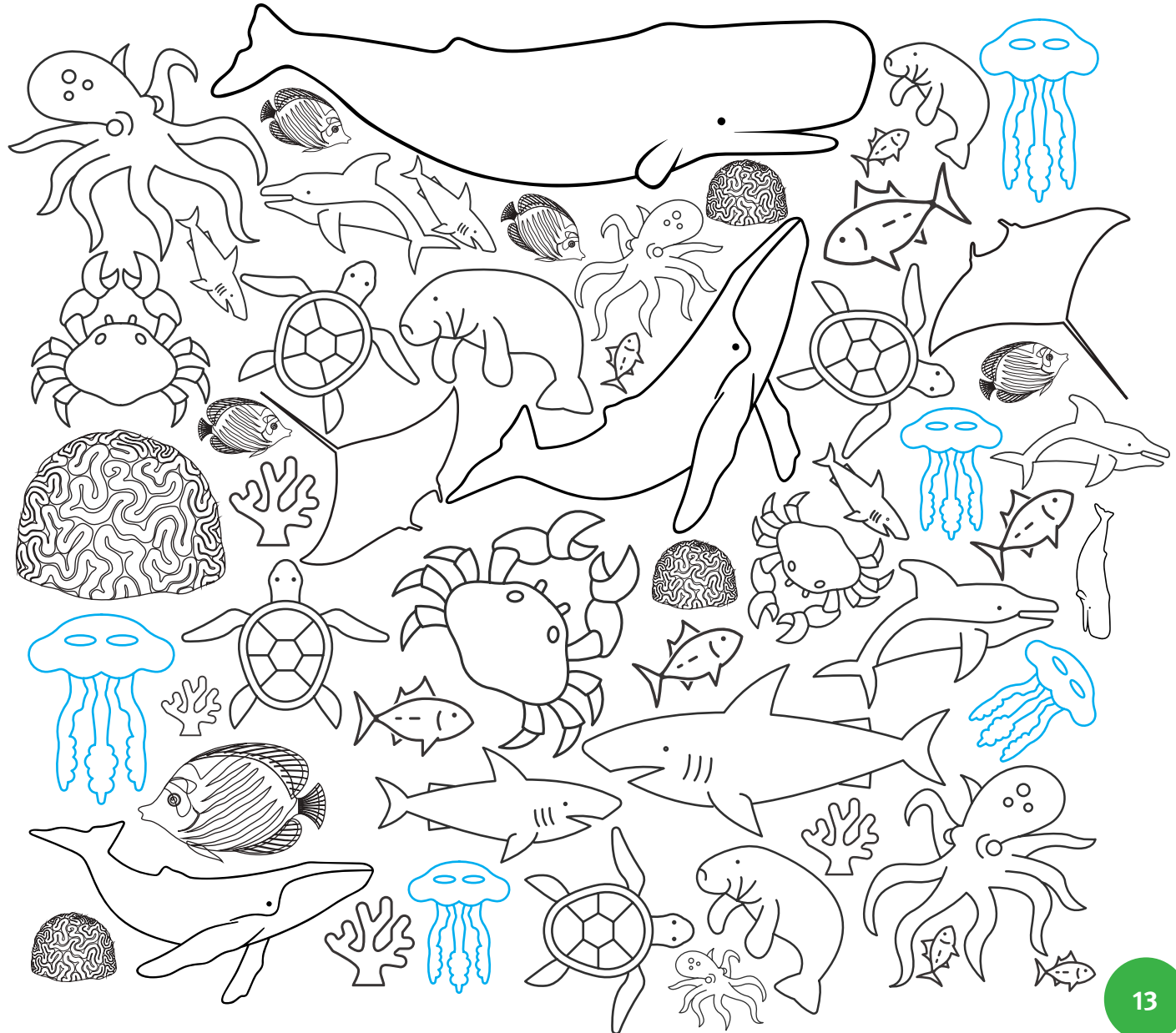
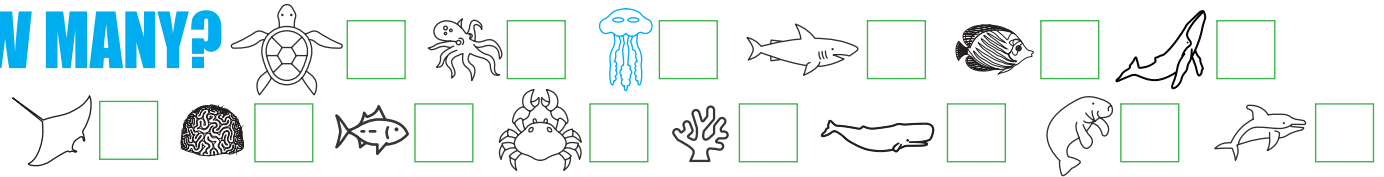
HOW MANY?



I love the underwater world,
understanding how things work,
and looking after the planet.
All of this makes my job perfect.

Jodie researches how sharks and other fishes exercise—looking at how they breathe and swim. She is also interested in how they become stressed with warmer water.

She really wants to protect the planet, and has always been inspired by television shows about the ocean. Jodie loves to ask questions, and this makes her a great marine biologist!



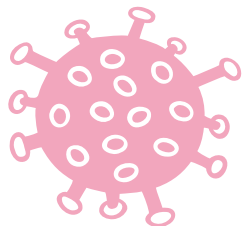
Dr Shaneel Chandra



I am a curious person, and being a scientist you ask a lot of questions when you want to make things better. I love it!

Shaneel designs small sensors that can help determine what sickness a person has. His work also includes COVID-19 research. Oddly, although he is a scientist, Shaneel doesn't watch science fiction shows on television.

One of his first experiments as a child was to mix soil and water, and separate rocks. He loved science as soon as he could walk.



Find the words

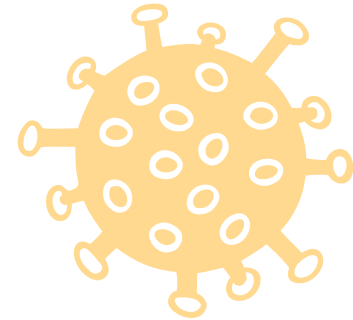
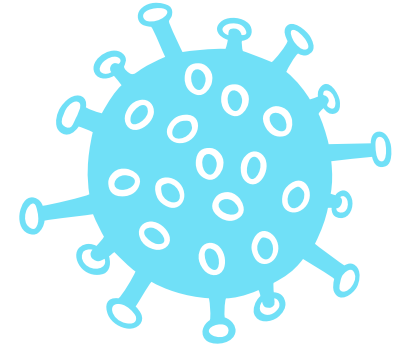
Q X Y K D W S L Y A Y I D H F Y G R O K W G X Q B
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P C W P W Z R R S G E A G E Y G E Q S P L U S G R
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W F O E G Q L C U R I O S I T Y I S H J E U X S K
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R J G U H D K C F L I V C E E R N S Q S Y C P K N
W H P T E X H O W O A C S A U I N R P H M O Y U G
P V E E L H Z V Z U K M H K C U R I O S I T Y R Q
D Q O R C L V E O M J D Y G L S A N T C G O R H V
P W P S X A J R Q U E S T I O N S N D P C U L L Y
E P L T F S Y Y H M R J F E P T A U M O K U G G V
P V E A Y T A I S J J J B D Z Z K D I M E N D N H
Q E Y N Y S H D P N J I S I C K N E S S R E Y K D

ANSWERS
CHEMISTRY
COMPUTERS
CURE
CURIOSITY

DISCOVERY
DISEASE
EXCITING
HEALTHY
HELPFUL

MEND
PEOPLE
PROBLEM SOLVING
QUESTIONS
REPAIR

SCIENCE
SENSORS
SICKNESS
SOLVE
WELLBEING



???

Which word killed the cat? It's in here twice ...

Dr Linlin Ma



My job is so interesting and challenging, and it is good to try to help others.

Linlin tries to understand how some brain diseases happen and help doctors find better treatments for them.

As a child, she loved one of her primary school teachers so much that she wanted to become a teacher too. She now teaches at university.

She has a 10-year-old daughter and they make up riddles and puzzles. *Guess who wins more?*

Experiment: Lava Lamp

Materials:

- A clean plastic bottle, try to use one with smooth sides
- water
- Vegetable oil (or you could use baby oil)
- Fizzing tablets such as *Alka Seltzer*
- Food colouring

Instructions:

1. Fill the bottle up about one quarter with water.
2. Pour the vegetable or baby oil in the bottle until is almost full. You may want to use a measuring cup with a spout or a funnel. Wait a couple of minutes for the oil and water to separate.
3. Add a few drops of your food colouring. Watch as the colour sinks through the oil. Did your drops of colour mix with the water immediately or float in between for a few minutes?
4. Break your fizzy tablet in half and drop part of it into the bottle. Get ready ... here come the bubbly blobs!
5. You can even get a torch, turn off the lights and drop in another half tablet. This time shine the torch through the lava lamp while the blobs are bubbling!



Dr Robert Clemens

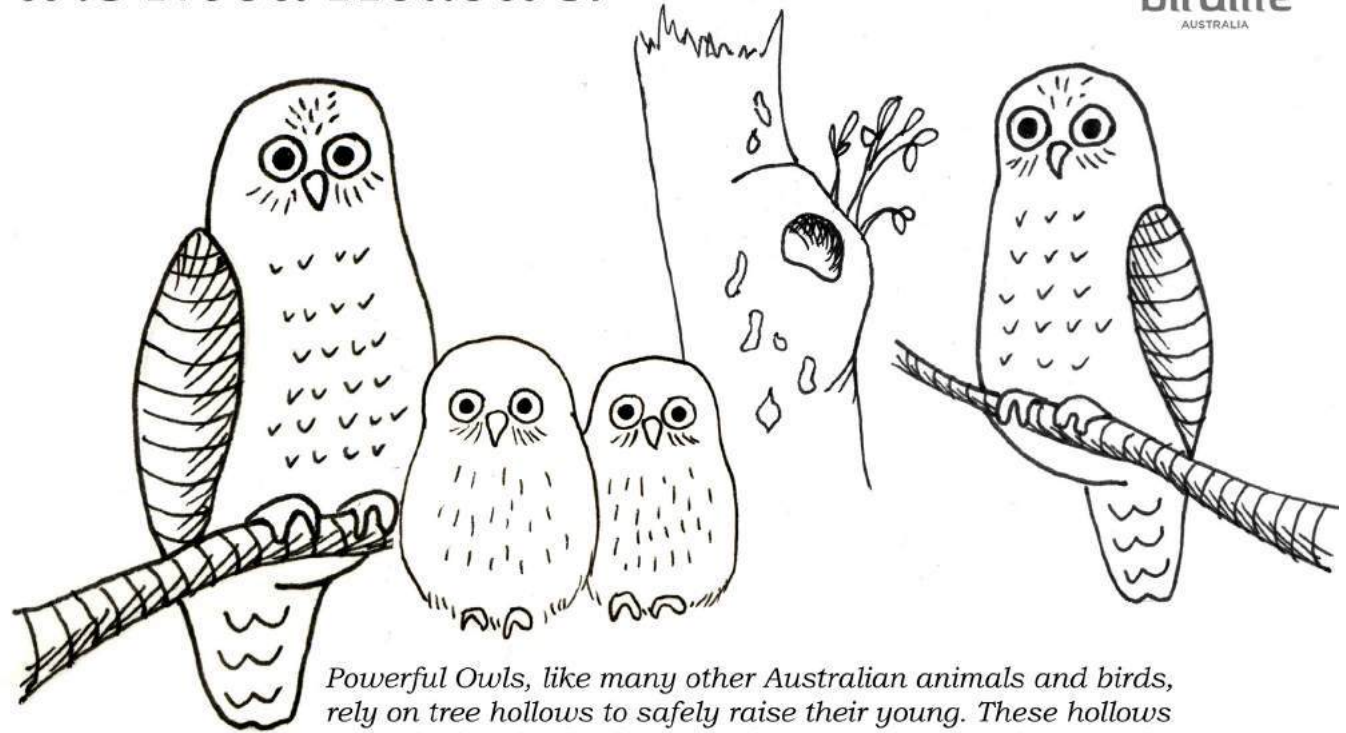


I love learning about wildlife, spending time in the outdoors and working to protect the environment.

Robert takes large groups of volunteers to learn about Powerful Owls.

When he was younger, he spent 20 years climbing mountains throughout the world, and before that he wanted to be a pilot!

Owls Need Hollows!



Powerful Owls, like many other Australian animals and birds, rely on tree hollows to safely raise their young. These hollows can take hundreds of years to form. We need to take care of our parks and woodlands so there will be plenty of these vital homes for future generations of birds and animals.

Birds come in all shapes and sizes. The largest bird is the ostrich at 2.7 metres tall and the smallest bird is the hummingbird at five centimetres tall.

Did you know anyone, young or old, can be a citizen scientist?
Citizen scientists are volunteers who help scientists research.

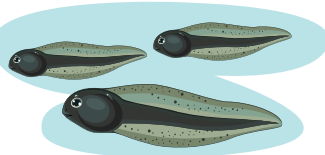
Dr Rob Capon



I like my job because I get to make exciting new discoveries about how nature works, and to use this to solve important problems.

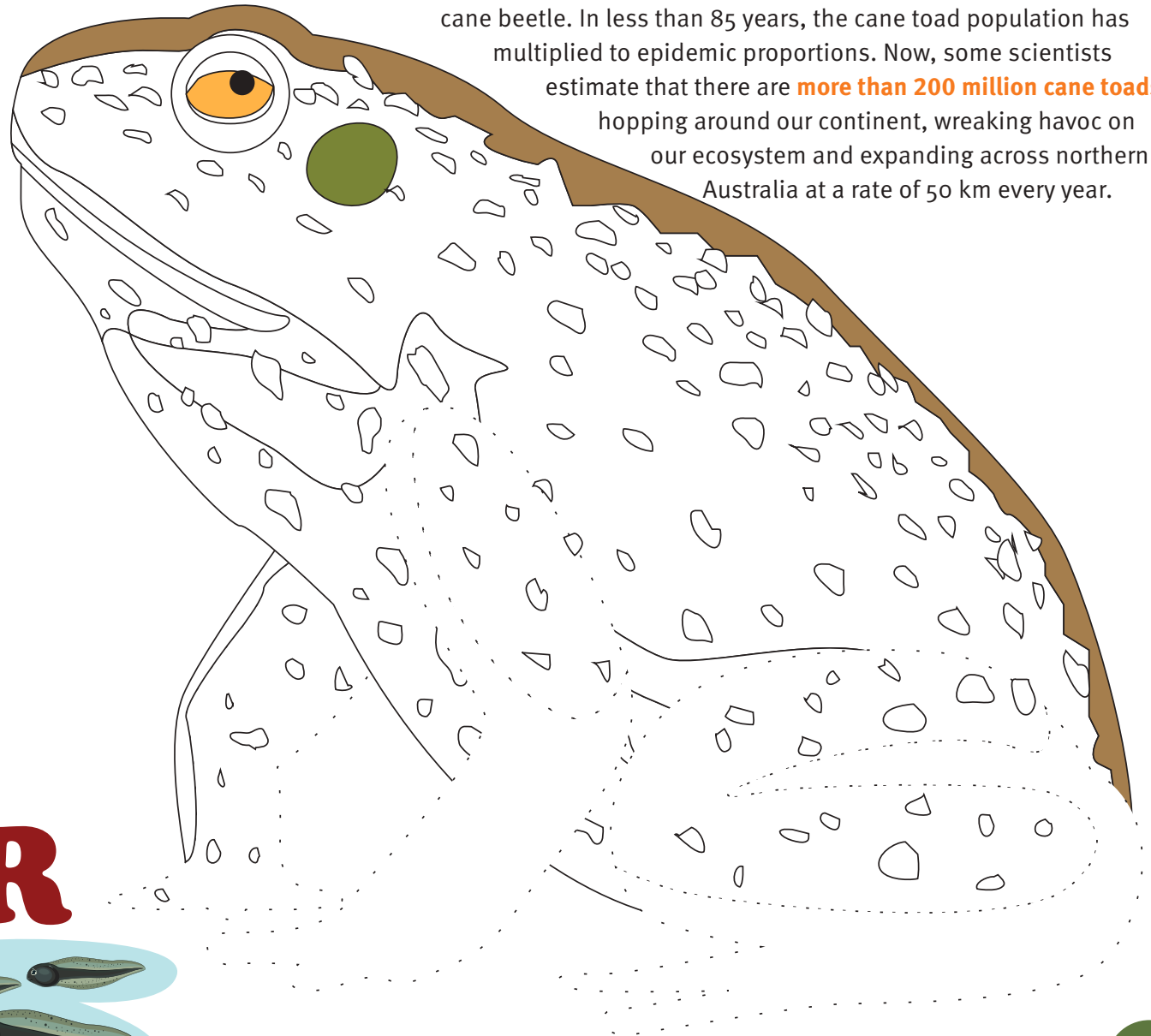
Rob uses science to catch millions of poisonous cane toad tadpoles, to protect the environment, native animals and pets.

In his spare time he likes to do quick crosswords!

JOIN THE DOTS AND
COLOUR
ME IN 

Did you know?

102 cane toads were released in Queensland in 1935 to control the cane beetle. In less than 85 years, the cane toad population has multiplied to epidemic proportions. Now, some scientists estimate that there are **more than 200 million cane toads** hopping around our continent, wreaking havoc on our ecosystem and expanding across northern Australia at a rate of 50 km every year.



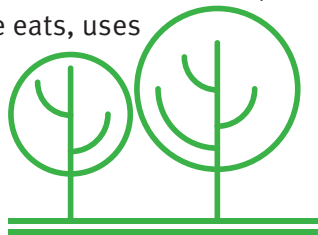
Dr Stephanie Schoeppe



I love doing research and want to teach children to have an active healthy lifestyle.

Stephanie helps families to become more physically active by giving children and their parents physical activity trackers and smart phone apps to track and increase their steps and active minutes. She wants us all to be more active and have fun with each other.

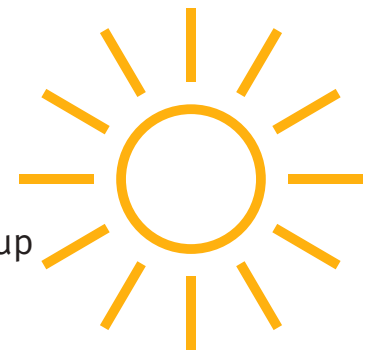
Stephanie tries to protect the environment by thinking about what she eats, uses and throws out.



Activity: 10 for 10

Come up with **10 outdoor activities** during which you can pick up '10 pieces of plastic litter' when you are out in the local area, park or beach.

Hint: there's no right answer, but think about games and activities you do every day like walking to school or taking the dog to the park.



- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____
- 7 _____
- 8 _____
- 9 _____
- 10 _____



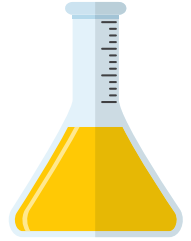
Julia Lackenby



I love my job because every day is a new adventure. I get to ask questions and then design and run experiments to find the answer.

Julia is working on a COVID-19 vaccine that will teach our immune system what the virus looks like so if our body sees it, it can fight it off before it can make us sick. She originally wanted to be a doctor, but changed her mind when she was doing work experience in a hospital and found that she wanted to follow the samples to the lab to run tests. Now she works in a laboratory to stop people from getting sick.

Complete the crossword

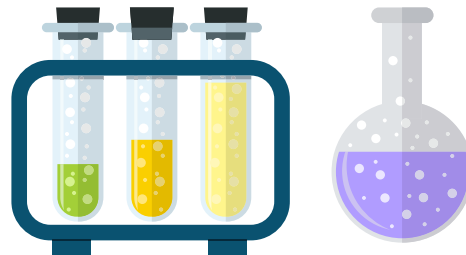


Across

1. What to give someone who is sick
6. Where scientists work to run experiments
8. What scientists do
10. Another word for 'see' or what you do when watching an experiment

Down

2. When scientists find something new
3. Something you might find in a lab
4. The results of an experiment go into a special document
5. Something to give you to prevent you getting a disease
7. STEM is short for _____, technology, engineering and maths
9. The opposite of healthy



You can help stop the spread of viruses like COVID-19 by:

1. _____ your hands with soap and water, then using _____ sanitiser.
2. Trying not to _____ your eyes, nose and mouth (this can be really hard).
3. Staying _____ if you are sick.

ANSWERS

- Across**
1. vaccine
 6. lab
 8. research
 10. observe
- Down**
2. discovery
 3. test tube
 4. report
 5. medicine
 7. science
 9. sick
- washing | hand | touch | home

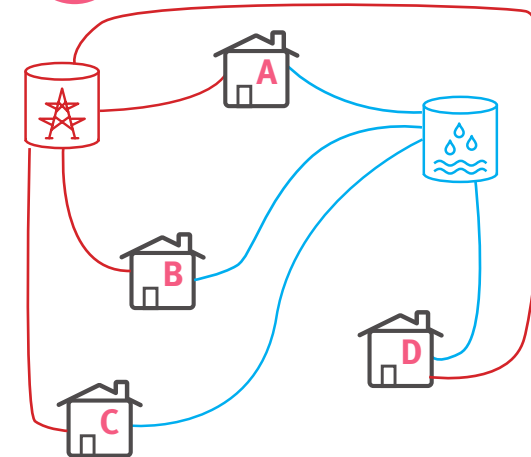
ANSWERS

PLANETS (L-R): Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

10

A diagram of a human body with labels for various organs and systems. The labels are: ears, brain, eyes, teeth, thyroid, heart, stomach, kidneys, bladder, intestines, liver, spine, lungs, and heart. Dashed lines connect each label to its corresponding organ or system on the body.

There are various solutions ...
this is only one.



4



4



5



2

2



4



8



3



4

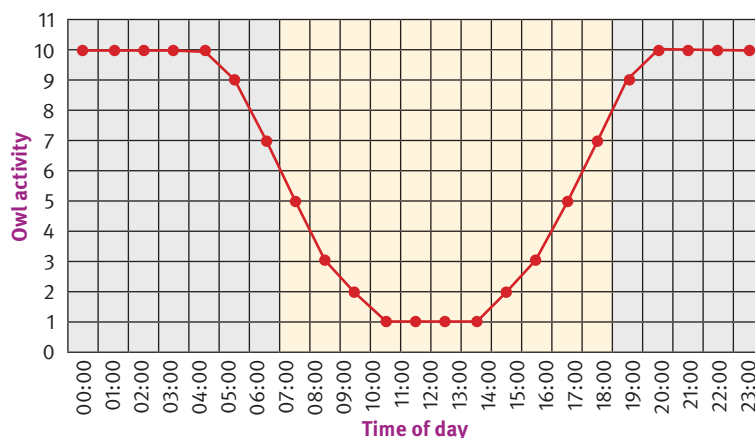


1



3

Time	Activity	Time	Activity
00:00	10	12:00	1
01:00	10	13:00	1
02:00	10	14:00	2
03:00	10	15:00	3
04:00	10	16:00	5
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07:00	5	19:00	10
08:00	3	20:00	10
09:00	2	21:00	10
10:00	1	22:00	10
11:00	1	23:00	10



Q X Y K D W S L Y A Y I D H F Y G R Y W G X Q B
I H S T E N C E M T H E A L T H Y K E L G V F
S A K T J E Y Q L K A Q P Y C J A W F L O X L D
P C W P W R R S G E A G E Y G E Q S P L U S G R
K R D J O K L T C A S F Y X U S T R E N B L X J
W F O E G O L C U R I O S I T Y S H J E U X S V
L S F B N C E X P E R I M E N T S H Q S I G V K A
Q X D Y I T H R B G T V N P T B E S R M O L M
V P I K Z E I L S E A S P U T L R E D V K A U G
G A G N P Y M S M T U V C A Y U P L R Y I R M N K
L L Y W Z M Z S L V X V U S R G F L F Q L S
B S U I E X Z E O P S D W R O C S U T S I D S W E X
R J E Y Z J I B L L Y T E L M W J E G Z R E X C
E B T O Y M N Y E O V H R S V C Z N N G X E R C
P G F O K U T D E R W I H V E H D J S F X J J
A T U M X I R I M K Q K N W M Q M M Y O G Y N R I
I H Q P Y S Z S C K L Y Z P F R E O R P W M T I
R J G U H D K C F L I V C E R N S Q S Y C P K N
W H P T E X H V O W A C S A U L N R P H M O Y U G
P V E E L H Z V Z U K M D K C U R I O S I T Y R Q
D O Q R S C L V E O I M D Y G L S A N T C G O R H V
P W P S X A J R Q U E S T I O N S N D P C U L L Y
E P L T F S Y J H M R J F E P T A N D M O K U G V
P V I A Y T A S S J J B D Z Z K D I M E N D H
Q E Y N Y S H D P N I I S I C K N E S S R E Y K

CURIOSITY
killed the cat

Queensland is home to lots of people who use all sorts of amazing science, technology, engineering and mathematics (STEM) in their jobs.

A big thank you to those who have contributed activities to this book and for sharing their love of their work.

We hope this activity book inspires young Queenslanders and provides information about the great work happening in Queensland and the range of careers in STEM.

If you're a teacher, parent, scientist or researcher, you may like to read our Engaging Queenslanders in Science strategy. This strategy looks to involve all Queenslanders in science—at school, at events and at home. It is available at www.chiefscientist.qld.gov.au.

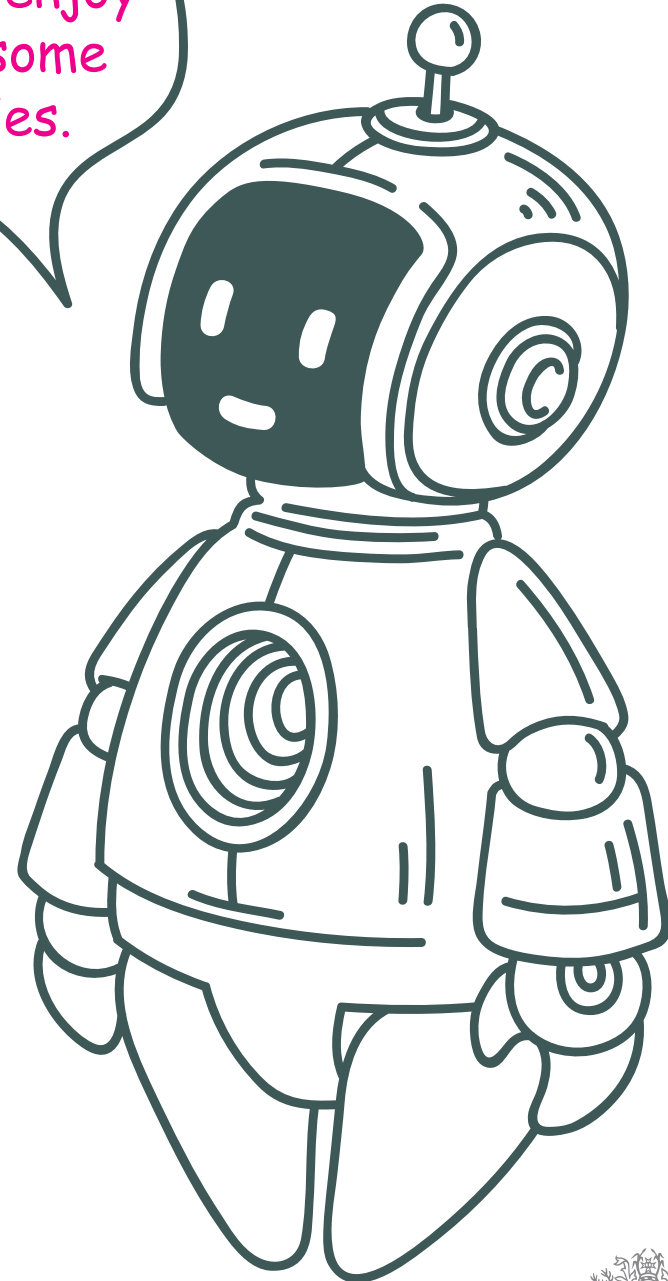
Special acknowledgement to Professor Kathy Andrews from That's Rad! Science for the concept idea.



For more fun activities, visit the Office of the Queensland Chief Scientist website
www.chiefscientist.qld.gov.au.

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Hope you enjoy
our awesome
activities.



Queensland
Government