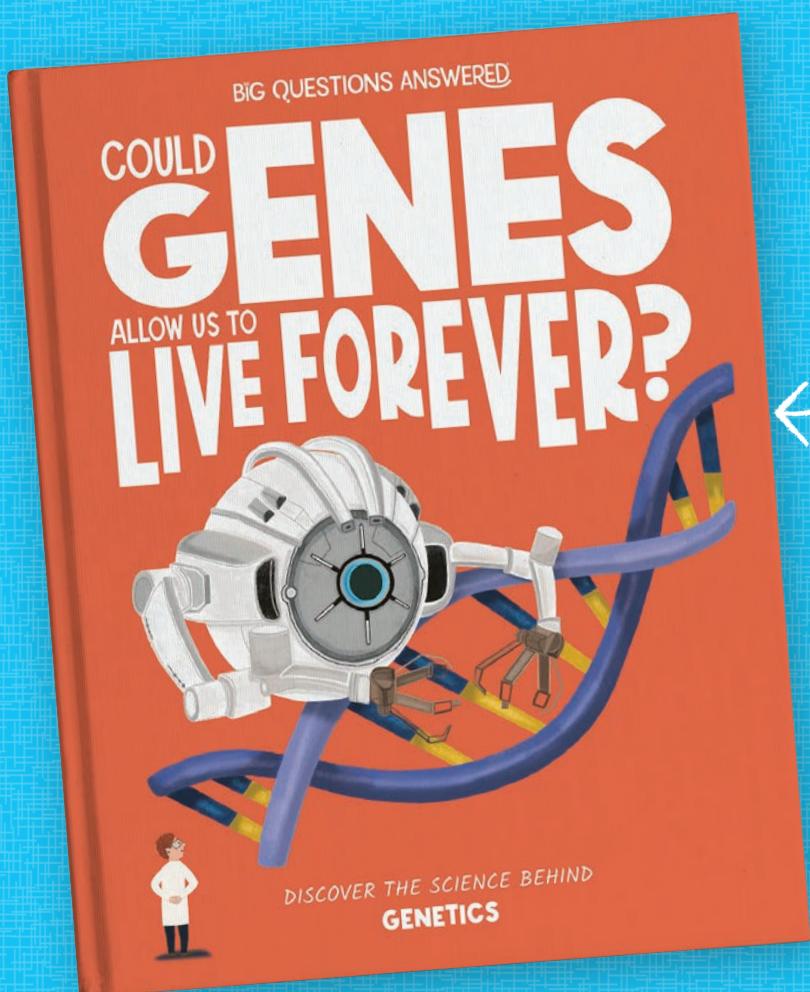


YOUNG GENETICISTS' ACTIVITY PACK



Full of fun and exciting activities to accompany this book!



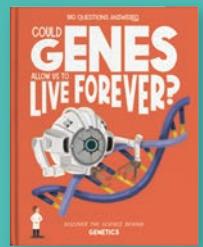
CONTENTS:

Diary Entry: Creative Writing	3
Fantastic Features: Crossword	4
Drawing DNA: Finish the Drawing	5
Hospital Room Hunt: Spot the Difference	6
Elephant Secrets: True or False	7
Genetic Puzzle Pieces: Reflective Writing	8
Impressive Modifications: Fill in the Blanks	9
Super-Bacteria: Creative Drawing & Comic Strip	10
Lost in the Grass: Line Maze	12
Safety in Numbers: Maze	13
The Future of Genetics: Word Search	14
Draw Your Own DNA-Editing Robot: Creative Drawing	15
Long-Living Animals: Cut and Stick	16
Write Your Own Genetics Story: Creative Writing	17
More Fun Activities: Colouring Sheets and More!	18
Activity Answers	25



COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'The Immortal Jellyfish: Scene 1'.



www.thebigquestionsanswered.com

DIARY ENTRY

Imagine you were on an expedition when you discovered a new animal that can live forever because of its genes. Use the space below to write a diary entry all about it.



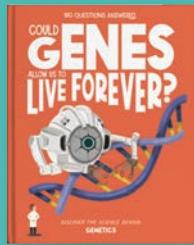
Feeling stuck? Try some of these...

- **Describe the place you found the animal.**
Where were you? What was around you at the time?
- **Describe what the animal looks like.**
Think about the size, colour, and the features it had.
- **Describe how you would be feeling.**
Would you be excited, nervous, or something else?

COULD GENES ALLOW US TO LIVE FOREVER?

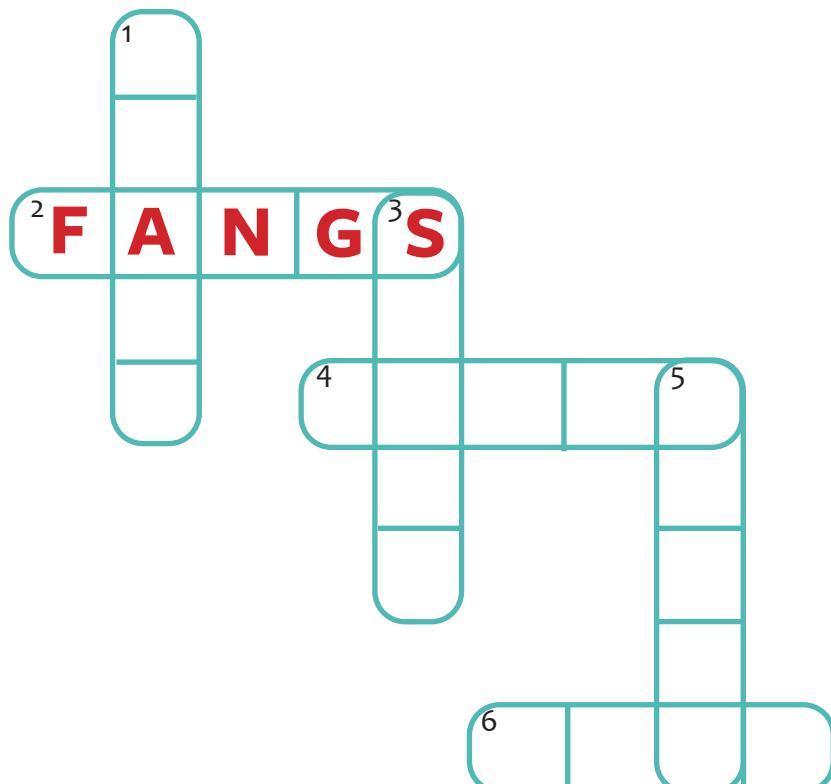
For reference to the Teachers' & Parents' Resources, this goes with 'Inside All Living Things: Scene 2'.

www.thebigquestionsanswered.com



FANTASTIC FEATURES

Many amazing creatures live on Earth, but survival is tough! Animals must use their body features to help them thrive. Use the clues below to work out the different body part and fill in the boxes. The first one has been done for you.



TEETH

~~FANGS~~

HORNS

SHELL

CLAWS

NOSE

ACROSS

2. ~~Extra long, sharp teeth that can deliver venom to attacking animals!~~
4. Hard bones inside the mouth that help animals eat.
6. A body part that helps animals sniff out their prey.

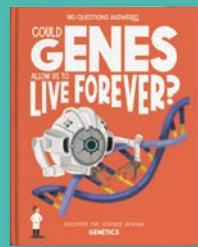
DOWN

1. A sharp body part, often found on the end of an animal's fingers or toes.
3. A hard casing that protects an animal's body that they can sometimes hide inside.
5. Spikes that can be used to fight off attackers.

COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'The Shape of DNA: Scene 3'.

www.thebigquestionsanswered.com



DRAWING DNA

Scientists have discovered that DNA is shaped like a twisted ladder with lots of little rungs. Can you complete the drawing of this strand of DNA by drawing the rest of it? Finish the picture by colouring it in.



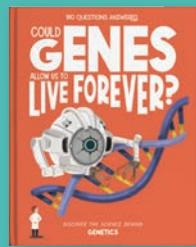
What's your favourite fact
about DNA?



COULD GENES ALLOW US TO LIVE FOREVER?

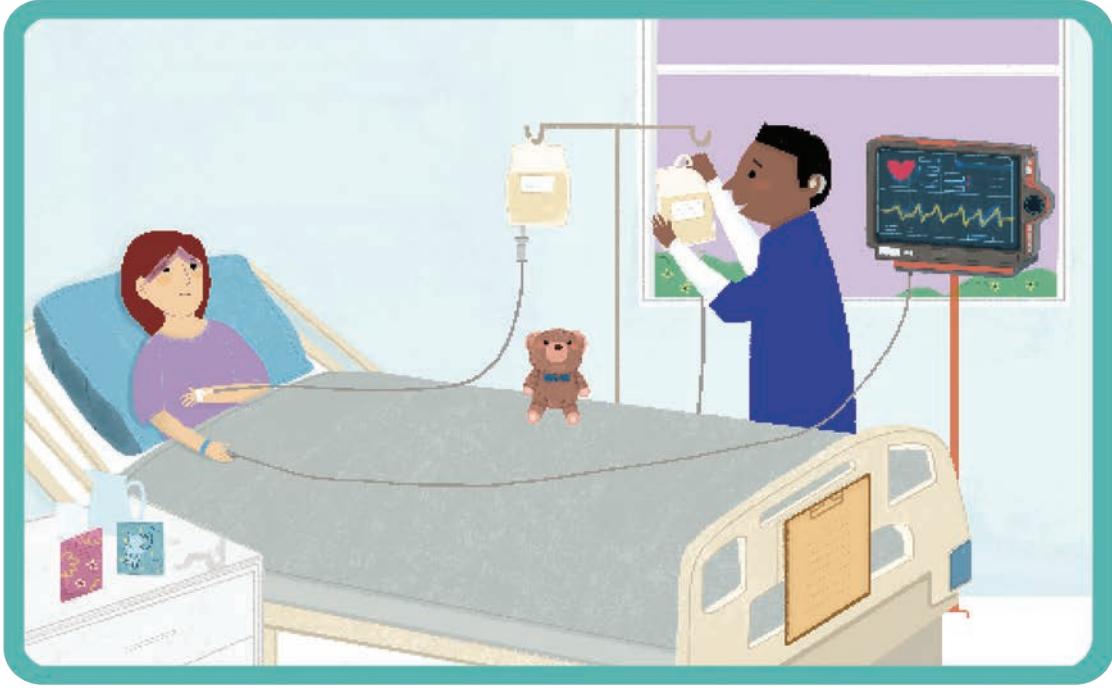
For reference to the Teachers' & Parents' Resources, this goes with 'The Power of Medicine: Scene 4'.

www.thebigquestionsanswered.com



HOSPITAL ROOM HUNT

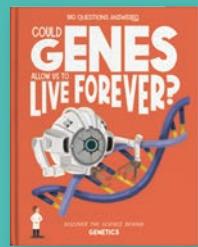
Can you spot the 9 differences between the two scenes? Circle them when you spot them.



COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'Turning Genes On and Off: Scene 5'.

www.thebigquestionsanswered.com



ELEPHANT SECRETS

Can you use what you've learnt about elephants and genes to work out which of the sentences are true and which are false?

	SENTENCE	TRUE	FALSE
1	Scientists who study genes are called genies.		
2	Elephants and humans are the only animals that have genes.		
3	Genes are passed down from parents to children.		
4	Elephants have a clever, cancer-fighting gene.		
5	Genes are a new invention that have only existed for 100 years.		

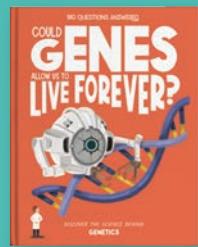




COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'Genetically Modifying Animals: Scene 6'.

www.thebigquestionsanswered.com



GENETIC PUZZLE PIECES

The future of genetic studies is very exciting and scientists still have lots to learn. What do you think about it? Read the questions below and think about your own opinions before filling in your answers.

What do you find most interesting about genes?

.....
.....
.....

Do you think genetic modifications are a good idea or a bad idea? Why?

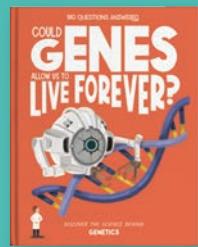
.....
.....
.....

If you were a geneticist, what would you most enjoy – learning about animals' genes or working on experiments to modify genes?

.....
.....
.....

What would be your big question about genes?

.....
.....
.....



IMPRESSIVE MODIFICATIONS

Can you use the words below to fill in the blanks and uncover some amazing facts about genes and genetic modifications? Each answer can only be used once.

flooding

resistant

plants'

global warming

unique

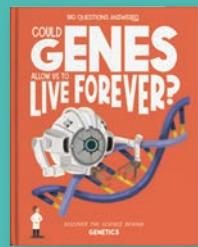
genetic modifications

1. The process of scientists changing something's genes is called _____. This is very complicated to do!
2. Almost every living thing in the world has genes that are _____ – they're not the same as anyone else's.
3. Scientists don't just modify animals' genes, they can modify _____ genes too.
4. Plants' genes can be changed to make them have more vitamins, grow faster, and cope better with extreme weather like _____.
5. They can also be made to be _____ to disease and pests. This means farmers don't have to use as many harsh chemicals on them, which is better for the environment.
6. Flooding, hurricanes, and heatwaves may all get worse because of _____. That's why scientists think genetic modifications are important.

COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'Plastic-Eating Bacteria: Scene 8'.

www.thebigquestionsanswered.com



SUPER-BACTERIA

Scientists have designed plastic-eating bacteria that could help clean up our environment. If you could design your own plastic-eating bacteria, what would it look like? Draw it below!



Draw your
design in here!

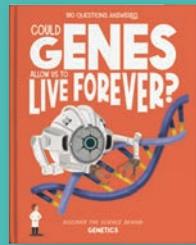


Feeling stuck? Try some of these hints...

- **What shape do you think it would be?**
Would it have arm-like parts that stick out or suction-like parts like a vacuum?
- **What colour do you think it would be?**
Is it the same all over?

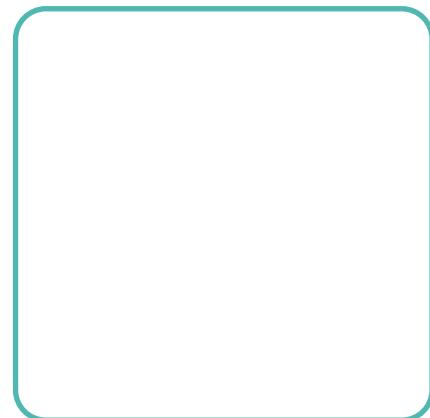
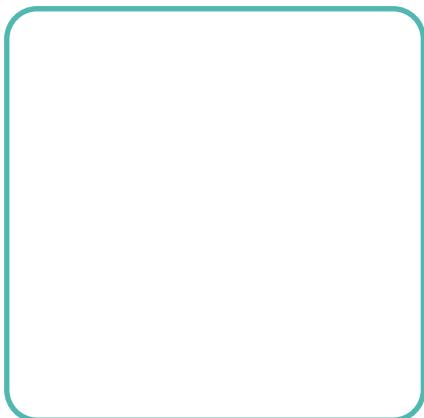
For reference to the Teachers' & Parents' Resources, this goes with 'Plastic-Eating Bacteria: Scene 8'.

www.thebigquestionsanswered.com



SUPER-BACTERIA

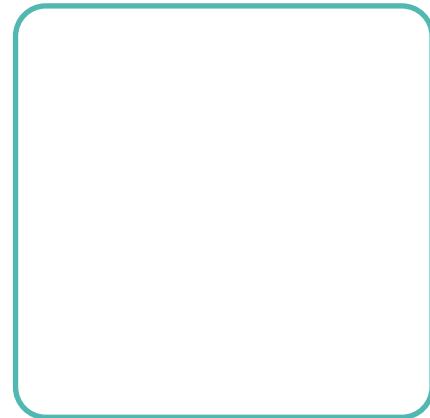
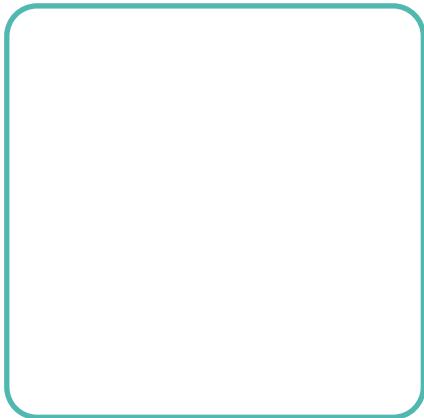
Now you have drawn what your super plastic-eating bacteria looks like, it's time to go on an adventure. Below are some sentences; draw an image to match each sentence to create your own comic.



A boat drives across the ocean. The ocean is filled with plastic bottles and bags.

The captain spots a hungry seabird trying to catch a fish, but it can't reach because there's too much plastic in the water.

The scientists on the boat tell the captain not to worry – they have the solution.



The scientists pour a bucket full of their super plastic-eating bacteria into the water.

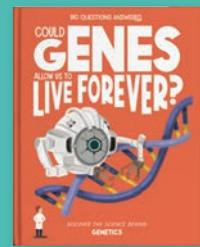
The plastic-eating bacteria start munching on all the plastic in the ocean around the boat.

The plastic is gone! The seabird can now catch a fish for its dinner. The scientists have saved the day!

COULD GENES ALLOW US TO LIVE FOREVER?

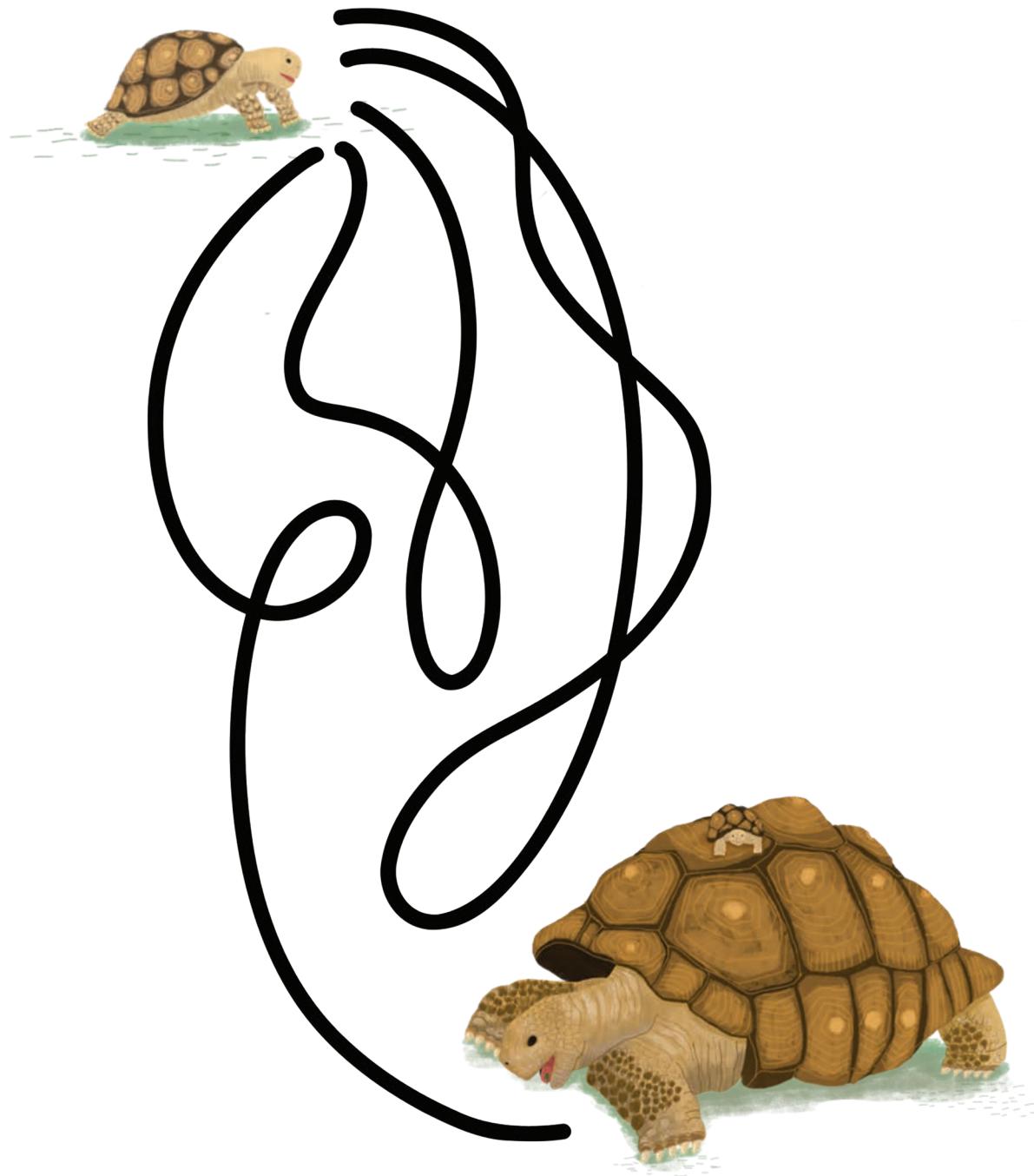
For reference to the Teachers' & Parents' Resources, this goes with 'Long-Living Giant Land Tortoises: Scene 9'.

www.thebigquestionsanswered.com



LOST IN THE GRASS

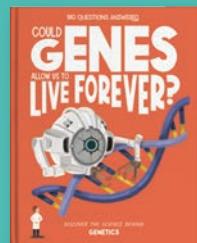
The baby land tortoise has been separated from its parent and is trying to find its way back home. Can you help the baby tortoise find its way back to its parent?



COULD GENES ALLOW US TO LIVE FOREVER?

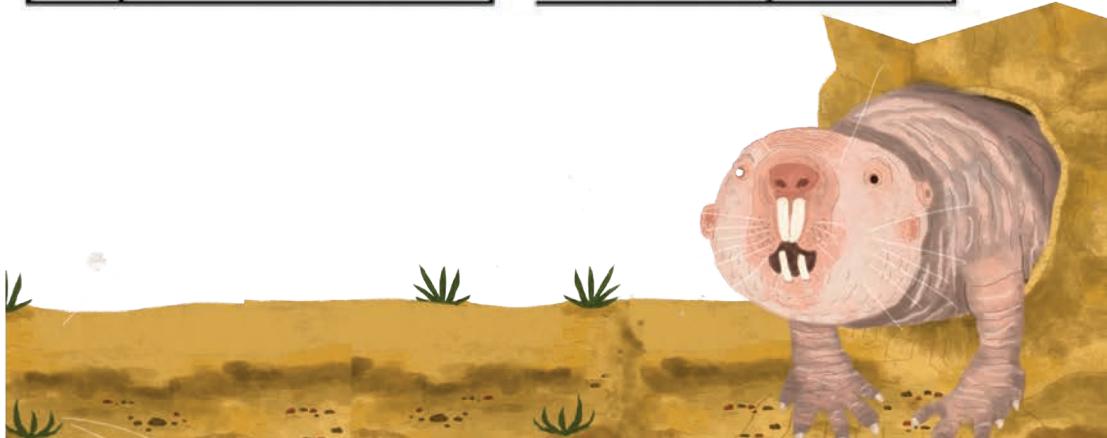
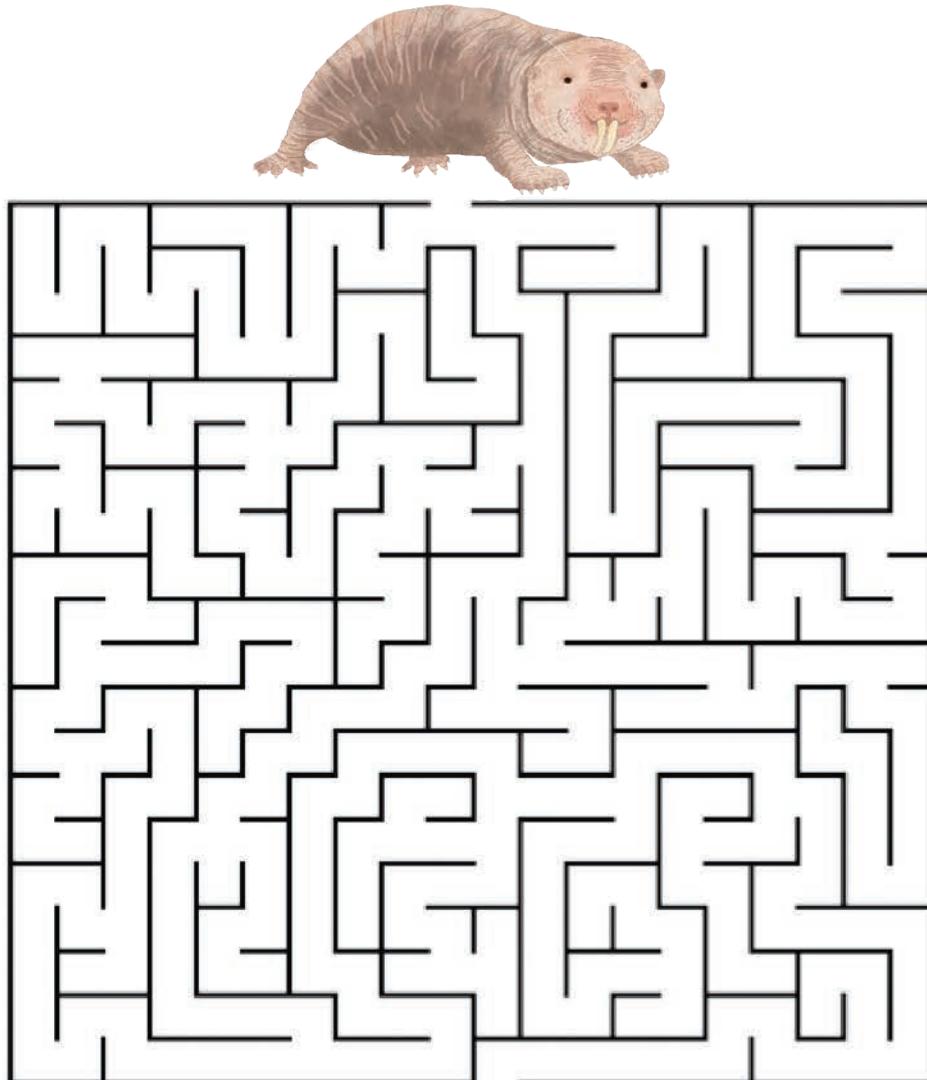
For reference to the Teachers' & Parents' Resources, this goes with 'DNA-Repairing Genes - Naked Mole-Rats: Scene 10'.

www.thebigquestionsanswered.com



SAFETY IN NUMBERS

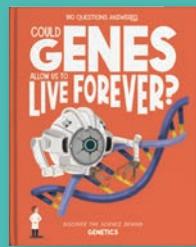
This naked mole-rat has burrowed too far and needs to find its way back to its pack where it's safe! Can you help it follow the maze and reach safety?



COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'Repairing Cells with Nanobots: Scene II'.

www.thebigquestionsanswered.com



THE FUTURE OF GENETICS

The future of genetics research is going to be very exciting, but scientists have a lot of work to do! Can you find and circle the words listed below, in the grid? Words can up and down, left to right, and can overlap each other.



GENES
GENETICS
GENETICIST
NANOBOTS

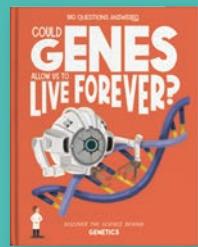
MACHINES
CELLS
EDITING
REPAIRING

DAMAGE
HELIX
MICROSCOPE
SAMPLE

COULD GENES ALLOW US TO LIVE FOREVER?

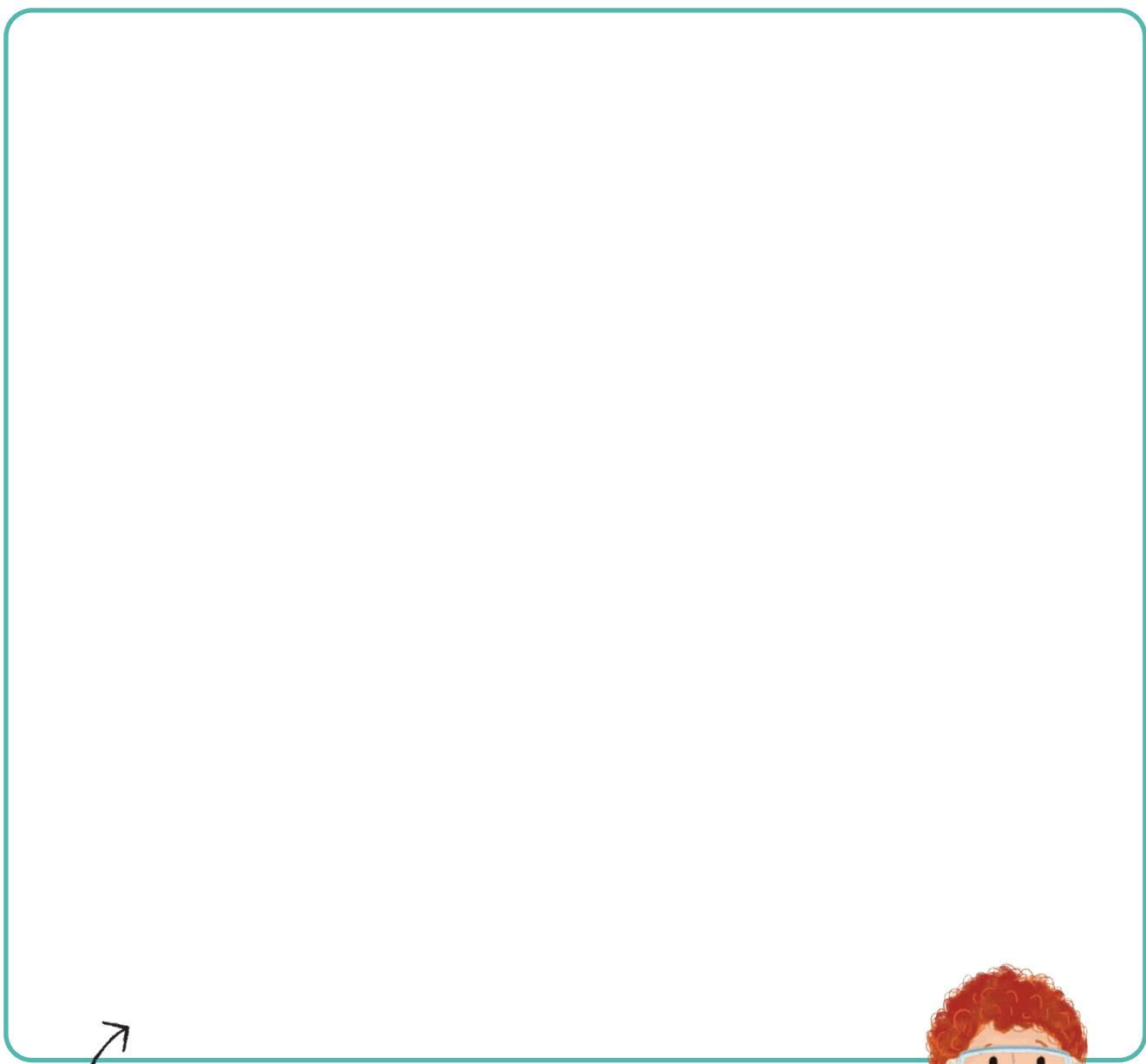
For reference to the Teachers' & Parents' Resources, this goes with 'The Future of DNA: Scene 12'.

www.thebigquestionsanswered.com



DRAW YOUR OWN DNA-EDITING ROBOT

Scientists might one day create robots that can edit DNA. Design your own DNA-editing robot and draw it in a scene to show it in action!



Draw your creation
in here!

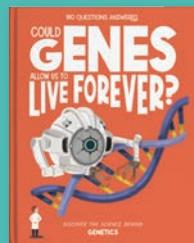
What will you call this new
type of robot?



COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'Animals with Record-Breaking Genes: Scene 13'.

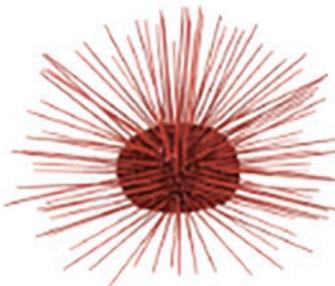
www.thebigquestionsanswered.com



LONG-LIVING ANIMALS

Some animals live incredibly long lives because of their genes. Cut along the dotted lines, then match each animal with its name and fact. Then glue them in order on another piece of paper, from the shortest to the longest living.

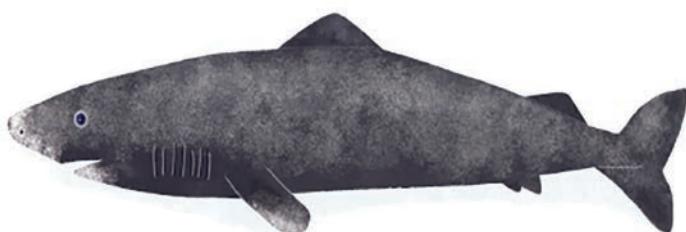
Ocean Quahog Clam
This creature lives for up to 500 years!



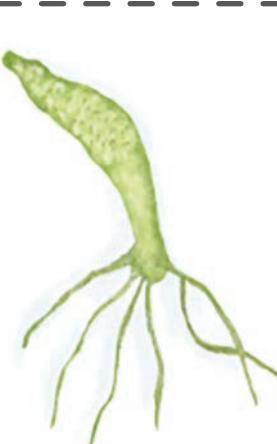
Bowhead Whale
This creature lives for over 200 years!



Greenland Shark
This creature lives for up to 400 years!



Red Sea Urchin
This creature lives for up to 200 years!



Hydra
This creature may live forever!



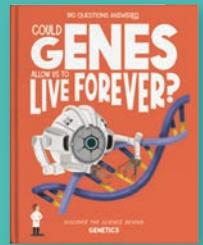
Rougheye Rockfish
This creature lives for over 200 years!



COULD GENES ALLOW US TO LIVE FOREVER?

For reference to the Teachers' & Parents' Resources, this goes with 'Post-Reading Questions'.

www.thebigquestionsanswered.com



WRITE YOUR OWN GENETICS STORY

Can you write a story of your own about genetics, making sure to include the 3 key words below?

GENES

YEARS

GENETICIST

MORE FUN GENETICS ACTIVITIES

COLOURING SHEETS & MORE!

The following activities aren't based on any specific scenes in the book. They can be used on their own or alongside the book as extra activities.

FIND THE SCIENTIST

There are lots of different scientists below. Can you find the geneticist?
Circle them when you find them – there's only one!



SIMPLE SUMS

Below are 3 objects which represent different numbers.

Work out the sum based on what each object represents and write your answers in the boxes.



= 3



= 1



= 5



+



-



=



+



-



=



+



+



=



+



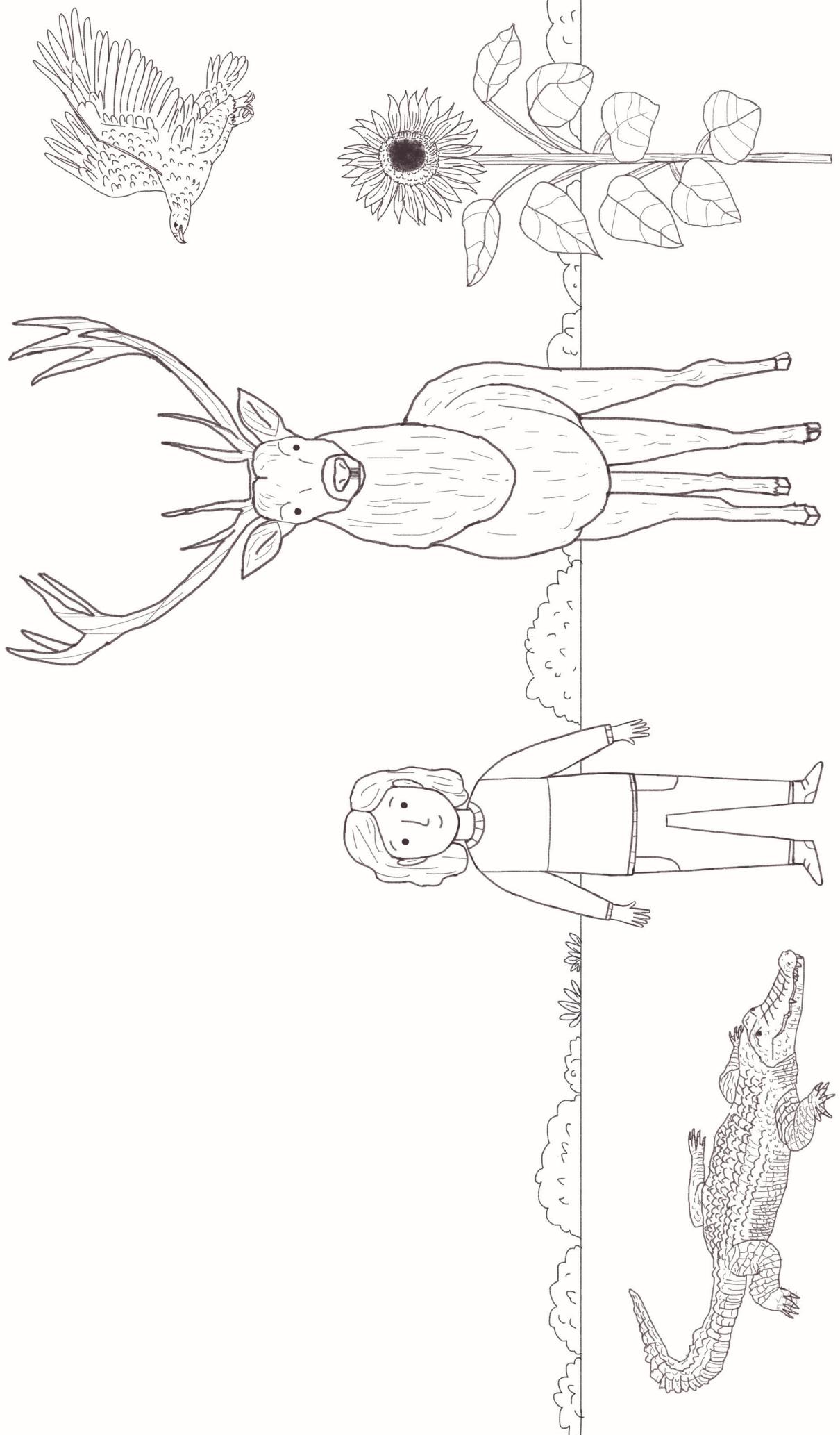
+



=

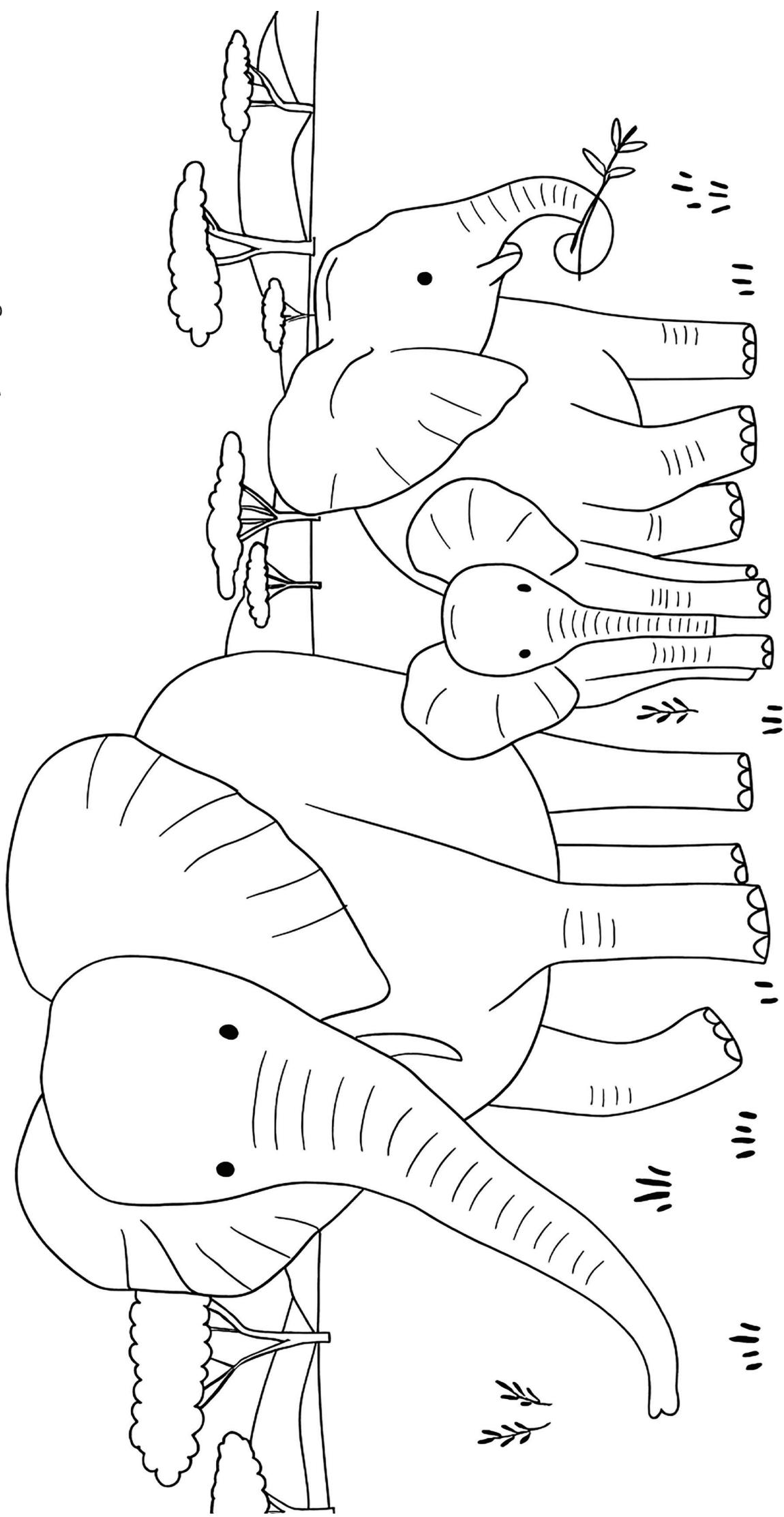
COLOUR ME IN!

This colouring sheet is based on
scene 2: Inside All Living Things.



COLOUR ME IN!

This colouring sheet is based on
scene 5: Turning Genes On and Off.



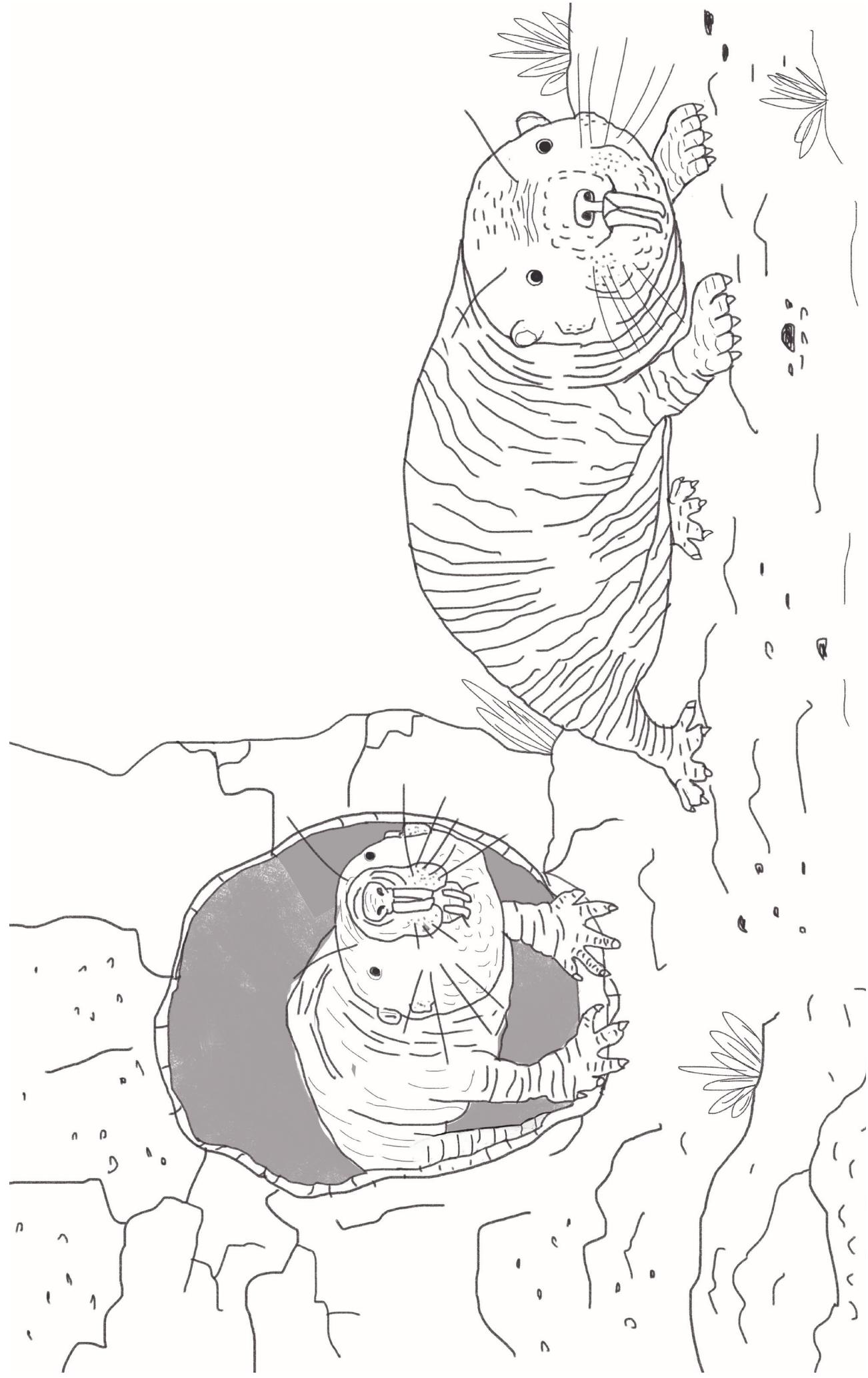
COLOUR ME IN!

This colouring sheet is based on scene 6: Genetically Modifying Animals.



COLOUR ME IN!

This colouring sheet is based on scene 10: DNA-Repairing Genes – Naked Mole-Rats.



YOUNG GENETICISTS' ACTIVITY ANSWERS

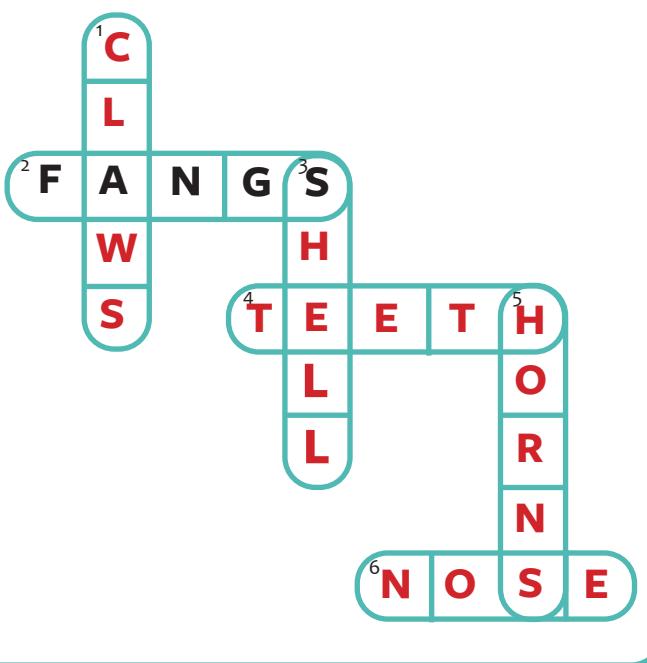
Find the answers to the activities on the following pages.

ACTIVITY ANSWERS

Check your answers against the correct answers below!

FANTASTIC FEATURES ANSWERS

The answers below are for the 'crossword' activity on page 4.



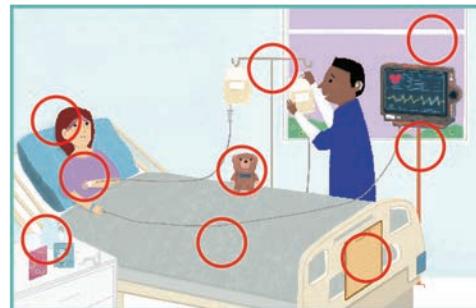
ELEPHANT SECRETS ANSWERS

The answers below are for the 'true or false' activity on page 7.

	SENTENCE	TRUE	FALSE
1	Scientists who study genes are called genies.		FALSE
2	Elephants and humans are the only animals that have genes.		FALSE
3	Genes are passed down from parents to children.	TRUE	
4	Elephants have a clever, cancer-fighting gene.	TRUE	
5	Genes are a new invention that have only existed for 100 years.		FALSE

HOSPITAL HUNT ANSWERS

The answers below are for the 'spot the difference' activity on page 6.



ELEPHANT SECRETS ANSWERS

The answers below are for the 'true or false' activity on page 7.

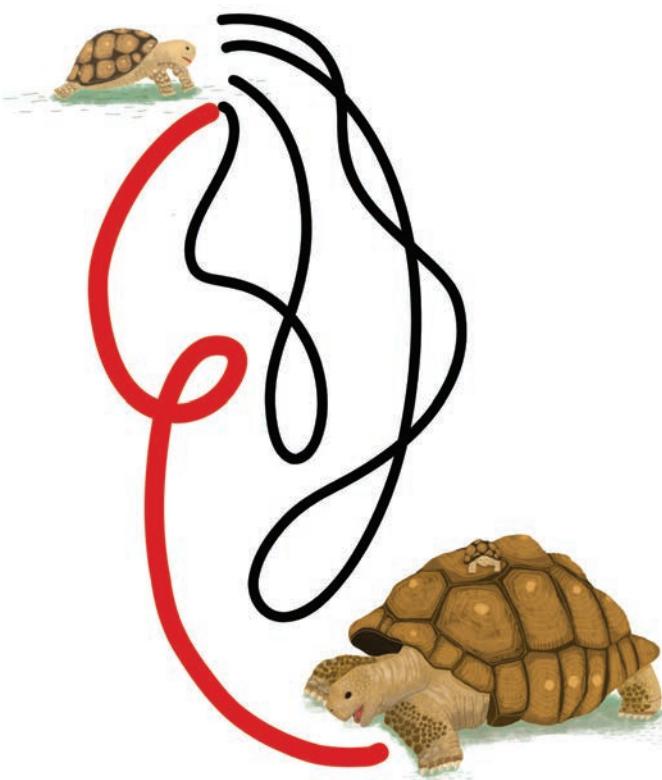
IMPRESSIVE MODIFICATIONS ANSWERS

The answers below are for the 'fill in the blanks' activity on page 9.

1. The process of scientists changing something's genes is called genetic modifications. This is very complicated to do!
2. Almost every living thing in the world has genes that are unique – they're not the same as anyone else's.
3. Scientists don't just modify animals' genes, they can modify plants' genes too.
4. Plants' genes can be changed to make them have more vitamins, grow faster, and cope better with extreme weather like flooding.
5. They can also be made to be resistant to disease and pests. This means farmers don't have to use as many harsh chemicals on them, which is better for
6. the environment.
7. Flooding, hurricanes, and heatwaves may all get worse because of global warming. That's why scientists think genetic modifications are important.

LOST IN THE GRASS ANSWERS

The answers below are for the 'line maze' activity on page 12.



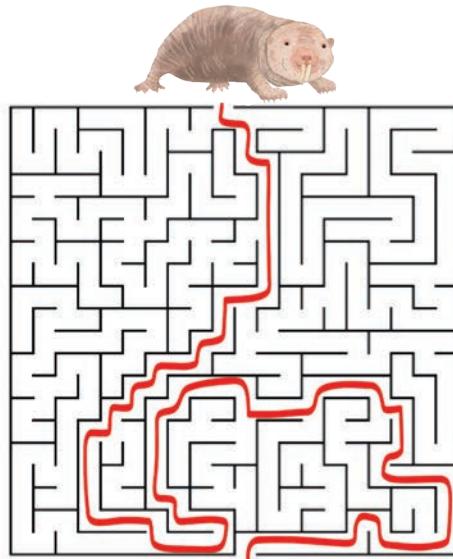
THE FUTURE OF GENETICS ANSWERS

The answers below are for the ‘word search’ activity on page 14.



SAFETY IN NUMBERS ANSWERS

The answers below are for the ‘maze’ activity on page 13.



LONG-LIVING ANIMALS ANSWERS

The answers below are for the ‘cut and stick’ activity on page 16.



Red Sea Urchin
This creature lives for
up to 200 years!



Bowhead Whale
This creature lives for
over 200 years!



Rougheye Rockfish
This creature lives
for over 200 years!



Greenland Shark
This creature lives for
up to 400 years!



Ocean Quahog Clam
This creature lives for
up to 500 years!



Hydra
This creature may
live forever!

EXTRA ACTIVITY ANSWERS

Check your answers against the correct answers below!

FIND THE SCIENTIST

The answers below are for the activity on page 19.



SIMPLE SUMS

The answers below are for the activity on page 20.



+



=

5



+



-



3



+



5



+



11