Upper Key Stage 2
Evolution & Adaptations

Investigating how and why adaptations to different environments occur in different species

Name..............................................................

Go to Into Africa to find these animals. Look at these adaptations on giraffes and zebras. How do these features help them? Put your answers in the boxes below.

Stripes
Confuse predators

A black tongue
To protect it from sunburn (they spend a lot of their day feeding and use their tongue to pull leaves off branches)

Eyes at the side of their head
See behind them so they can see predators coming

A long neck
To eat leaves on the highest branches that other animals can’t reach

Now go and see the okapi. Look at his features. Do you think this species is more closely related to a zebra or a giraffe? Why?

I think the Okapi’s closest living relative is the: Giraffe

Because....
Shared features include head shape, oscicles on head (horn-like structures), long black tongue

One okapi adaptation for its forest habitat:
Dark colour for camouflage. Long tongue to pull leaves from branches, shorter neck than giraffe helps it move through rainforest

Land of the Giants
Into Africa

Visit these animals during your visit to London Zoo to help you with the challenges in this workbook
What is evolution?

The verb “to evolve” just basically means that something changes over time.

Animals have evolved over a very long time. By looking at fossils, we can see how animals - including us humans - have changed over time.

These gradual changes over time means that every animal that lives on Earth now has its own special features that help an animal to survive in its habitat. We call these features adaptations. If these changes helped a species survive (or at least did not harm them in any way) then it could lead to a new species evolving.

During your Zoo visit you will be able to see different animals and think about their very own adaptations and how they might have come about.

Can you find the following words in the word search below? These words will help you with the challenges in this book!

Spot the Difference

These three Humboldt penguins are all sisters which means they have the same mum and dad. Although they look similar they are not exactly the same. This is the same with all animals - including us humans - we look similar, but not identical to our parents, brothers or sisters.

Can you spot the main difference between them? Circle where on the pictures they are different. They have different spot patterns—the keepers use this to help ID them.

Can you find these three sisters in Penguin Beach?

Which of these animals could be one of their parents?

Why? Same species—know this because they look similar.
Go to Penguin Beach and see our penguins! Penguins are a type of bird. There are 18 penguin species of penguin in the world.

All penguins eat fish (which they catch in oceans) and so they have some adaptations that are the same. However, because different species of penguin live in different parts of the world they have some different adaptations to help in live in these different habitats.

**At Penguin Beach we have two different species of penguin. Can you draw and them in the boxes below**

![Humboldt Penguin](image1)

![Rockhopper Penguin](image2)

**Humboldt Penguin**

**Rockhopper Penguin**

**How are these two species similar?**
Describe physical features (colour, beak, flippers etc) diet or habitat

**How are they different?**
Different physical features e.g. yellow crest feathers, red eyes, movement etc

**Why are penguins black and white?**
Camouflage in the sea—black helps to hide with predators/prey looking down. White camouflages when predators/prey look up

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**Key Words**

**Adaptation:** A feature of an animal or plant that helps it to survive within its environment.

**Evolution:** the process by which changes in plants and animals happen over time.

**Genes:** a ‘building block’ of information about a feature or characteristic, which is passed on from a parent to offspring.

**Habitat:** a place where plants and animals live which provides them with everything they need to survive.

**Species:** A group of individuals that are similar enough that they can breed with each other in their natural environment to produce fertile offspring.

**Variation:** differences, or distinct versions, of something e.g. in a species this may be height, colour or weight.
Evolution of Reptiles

Evidence from fossils has shown that it is most likely that reptiles evolved from some amphibians over 300 million years ago!

Now on Earth, there are thought to be around 9,500 different species of reptile alive today. Because they all evolved from this one group, there are many features that ALL reptiles have in common.

Go to the Reptile House to look at different reptiles. Which of these the features do ALL reptiles have in common? (Cross out the ones that are not the same in all reptiles)

<table>
<thead>
<tr>
<th>Scales</th>
<th>No-legs</th>
<th>Shell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Skeleton</td>
<td>Cold-blooded</td>
<td></td>
</tr>
<tr>
<td>Two eyes</td>
<td>Dry skin</td>
<td>Lay eggs</td>
</tr>
<tr>
<td>Long-tail</td>
<td>Breathe air</td>
<td></td>
</tr>
</tbody>
</table>

Which of these features do mammals, birds, fish and amphibians also have?

Internal skeleton

Land of the Giants

Over many generations, Galapagos tortoises have evolved to be giants! This is because the Galapagos Islands don’t have any large predators on them that might eat the tortoises. In Galapagos, the tortoises have been able to grow large without being eaten by predators. Being large has given these tortoises a greater chance of survival and a greater chance of having more babies who are also likely to be big.

Go to Land of the Giants to find our giant Galapagos tortoises:

Habitat A
Dry with tall cacti plants

Some Galapagos tortoises have domed shells like this. From the two habitats above, which are they better adapted for? ___B____ Why? The food (plants) is close to the ground so the tortoise doesn’t need to stretch neck up

Habitat B
Wet with many plants close to the ground

Some Galapagos tortoises have saddleback shells like this. From the two habitats above, which are they better adapted for? ___A____ Why? The food (plants) is high up so the tortoise needs to stretch neck up.

What type of shell do our tortoises have? ____________________________

See if you can find out about other animals that are island giants by visiting the world’s largest lizard, the Komodo Dragon. Where do they live? Why are they so big? Be a scientist and record your observations here: