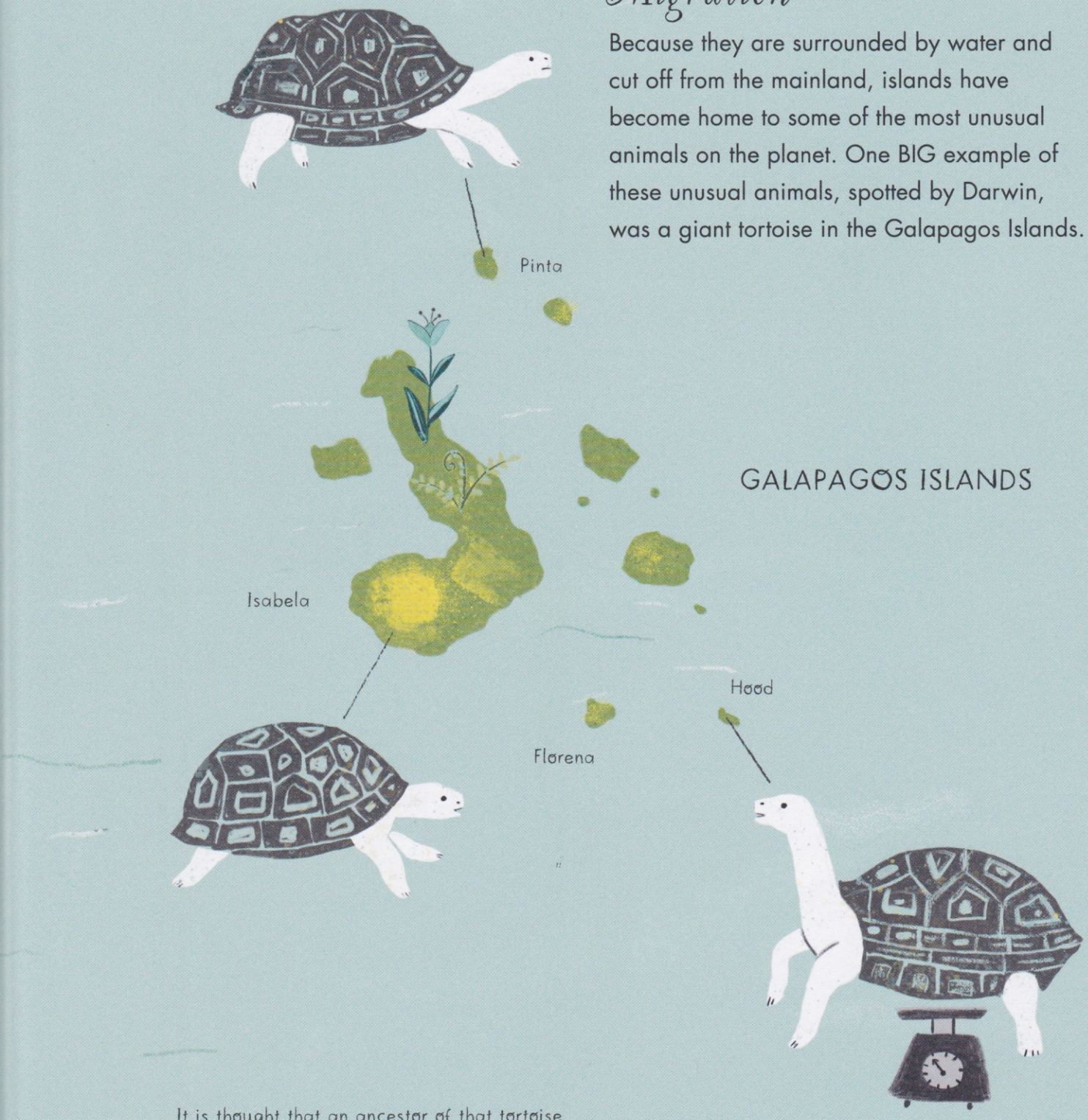
Darwin explained how species spread around the world by something called migration. New species that start in one place will sometimes move to other places. In their new environment, the species will often change even more.

Migration

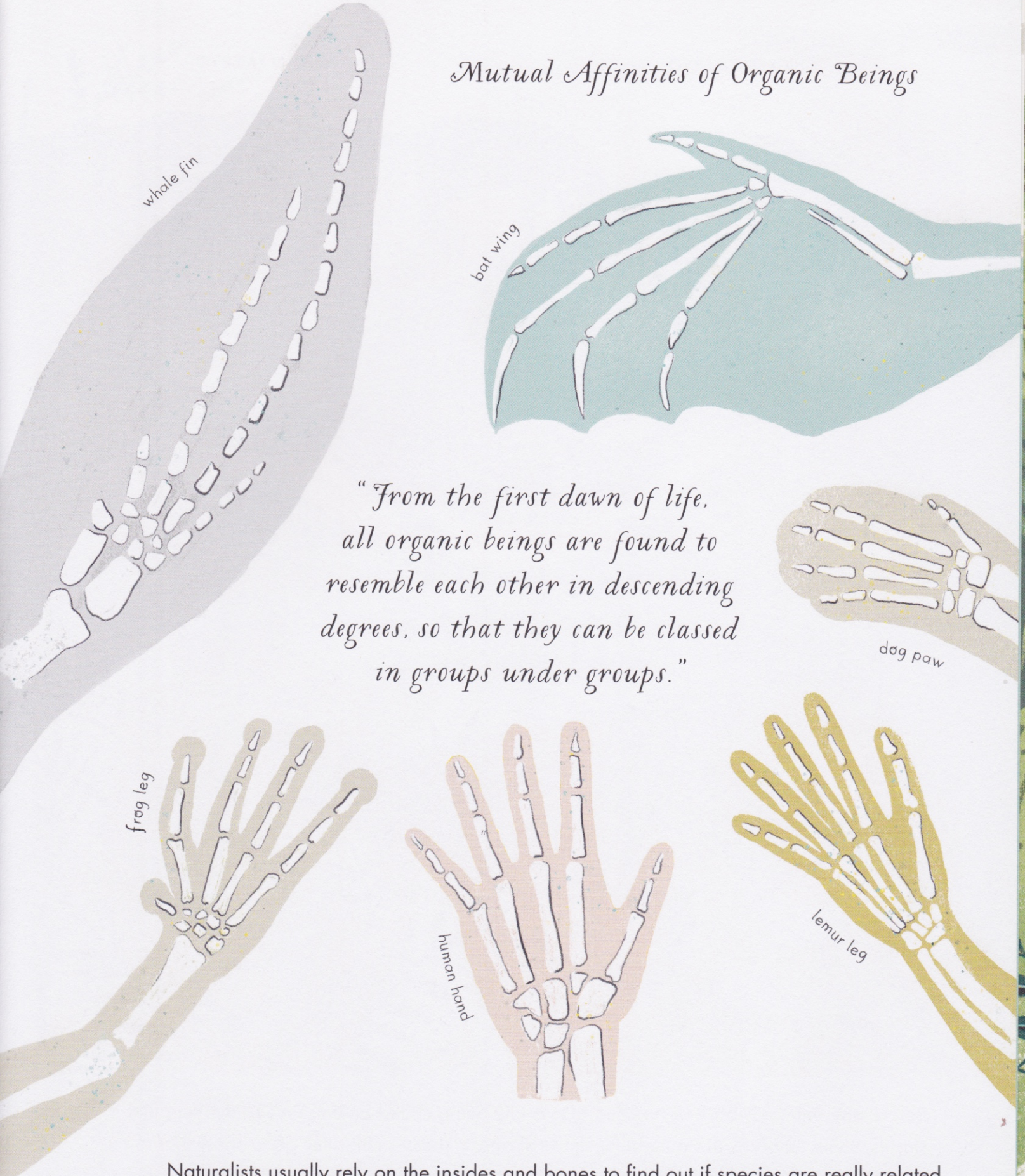
Because they are surrounded by water and cut off from the mainland, islands have become home to some of the most unusual animals on the planet. One BIG example of these unusual animals, spotted by Darwin, was a giant tortoise in the Galapagos Islands.



It is thought that an ancestor of that tortoise floated to the island. With no predators or other large plant-eaters to compete with for food, the tortoise did very well for herself, as did her descendants. So far, evolution has caused the giant tortoise to get bigger and bigger over time, and it now weighs in at over 250kg.

Interestingly, some animals have developed similar body parts without being closely related, just by living in the same environment.

Mutual Affinities of Organic Beings

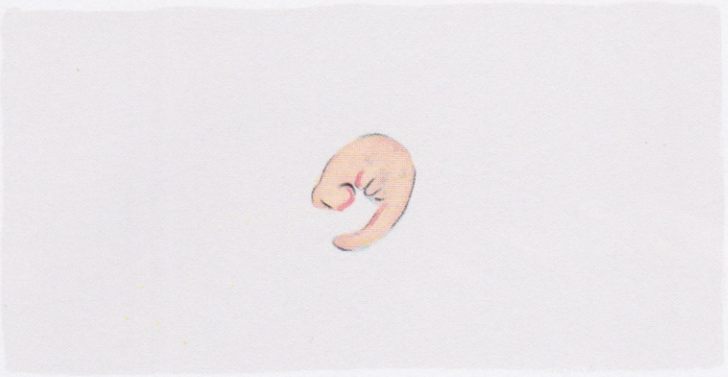


"From the first dawn of life, all organic beings are found to resemble each other in descending degrees, so that they can be classed in groups under groups."

Naturalists usually rely on the insides and bones to find out if species are really related. For example, many species share the same five-fingered bone structure in their hands, paws or flippers. This points to a shared branch in the tree of evolution.

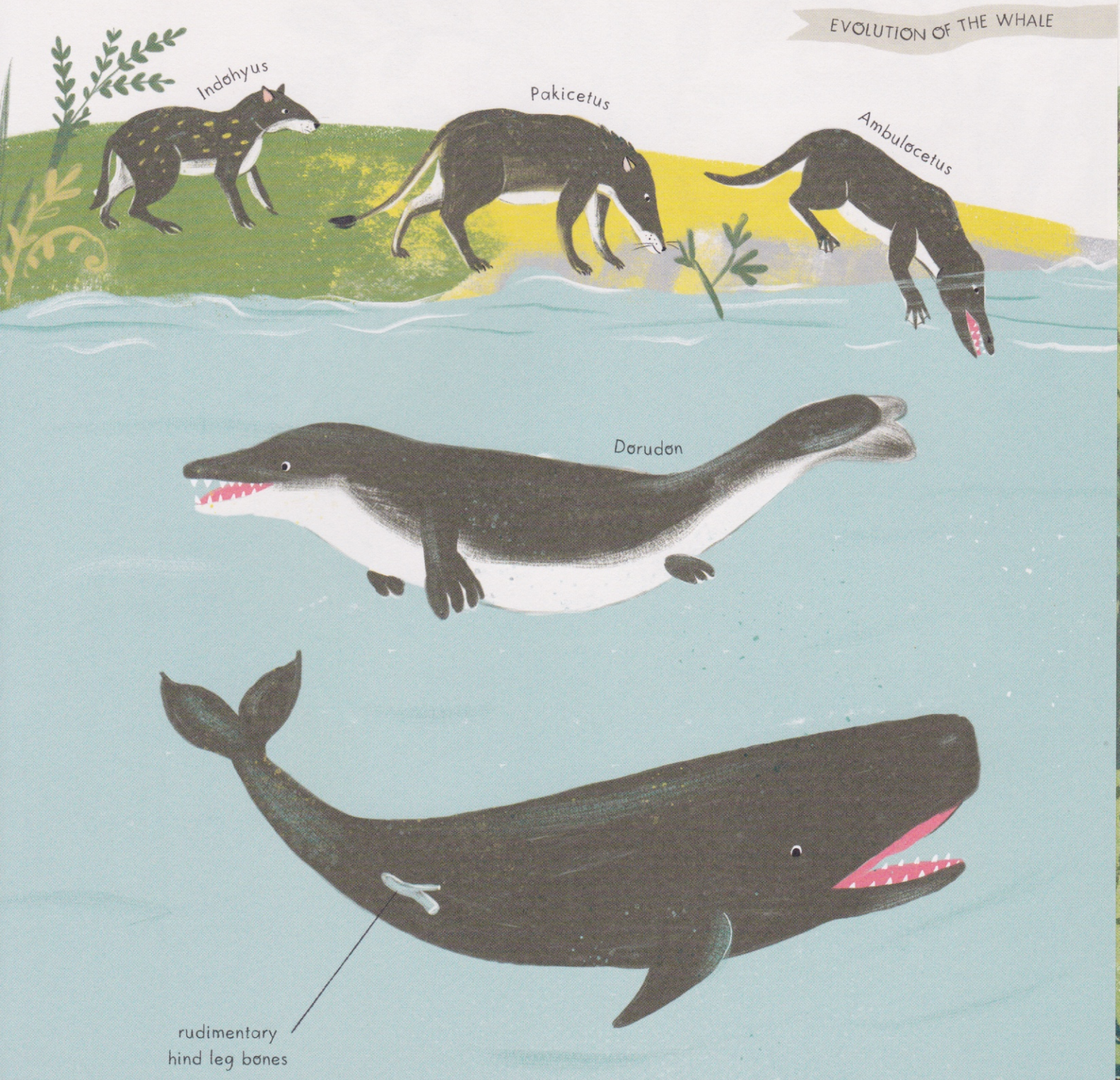
CHICKEN EMBRYO

HUMAN EMBRYO

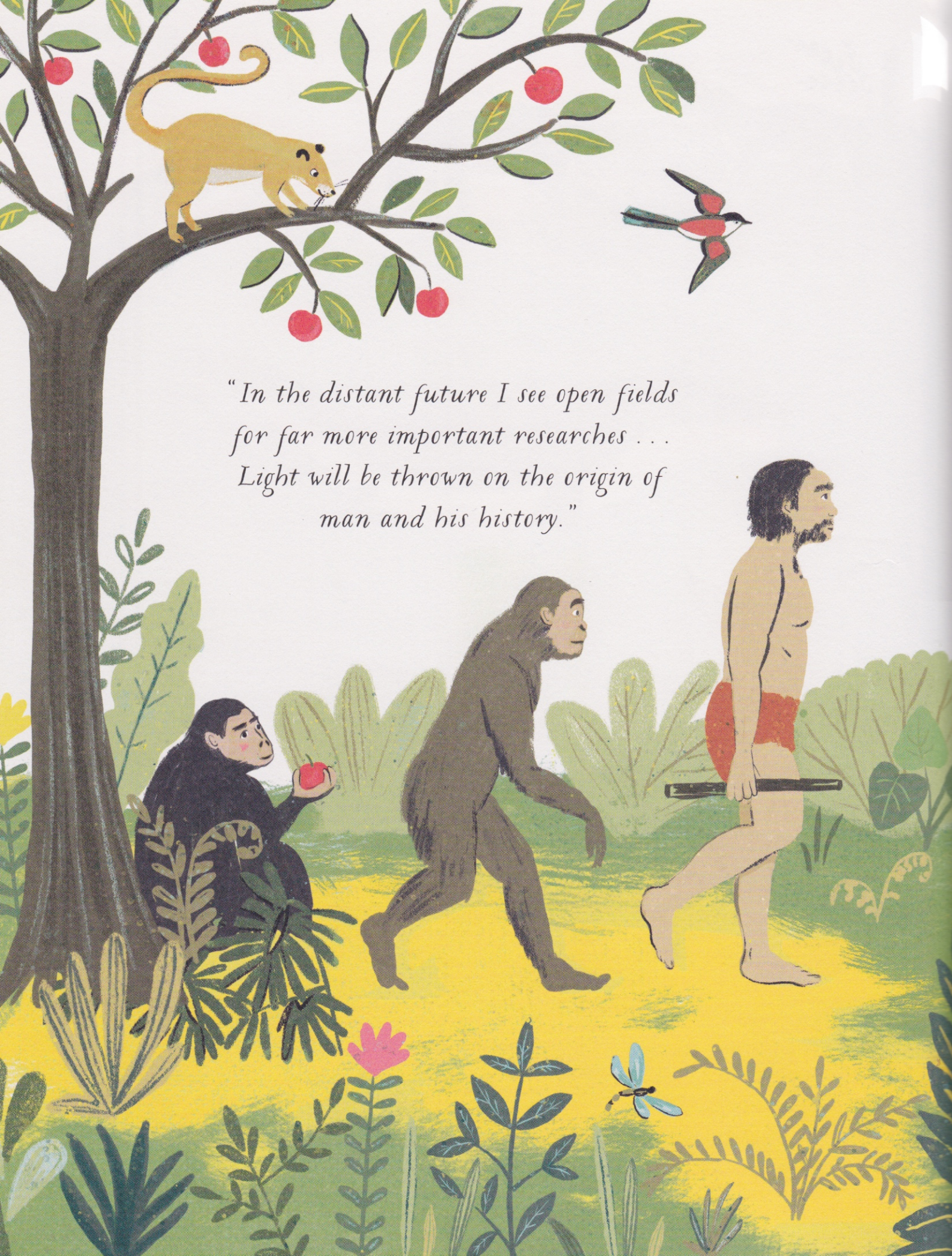


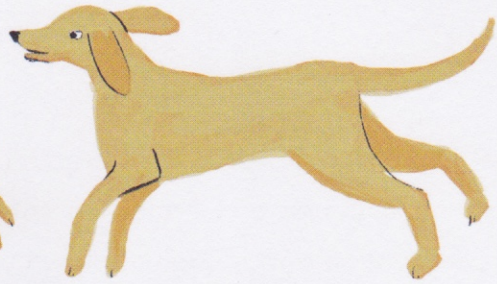
Before any animal is born or hatched, it is a tiny being called an embryo. At the very first stages, some embryos are quite difficult to tell apart. These similarities go to show that all animals are related at some level. Each creature has evolved its own different features based on the same basic blueprint for a creature's beginnings here on Earth.

✱ See Appendix VIII



Many animals have bones, organs and other parts which don't do anything any more, but were very important for their ancestors. Because they don't harm the animal's chance of survival, these leftovers haven't disappeared even though they're no longer of any use. From the remains of our own lost tails to the leftover leg bones from a whale's time walking upon the land, our bodies tell the history of our evolution.


"In the distant future I see open fields
for far more important researches . . .
Light will be thrown on the origin of
man and his history."



Conclusion

Darwin's Theory of Evolution by Natural Selection:

1.
All living things are born with slight variations or differences.

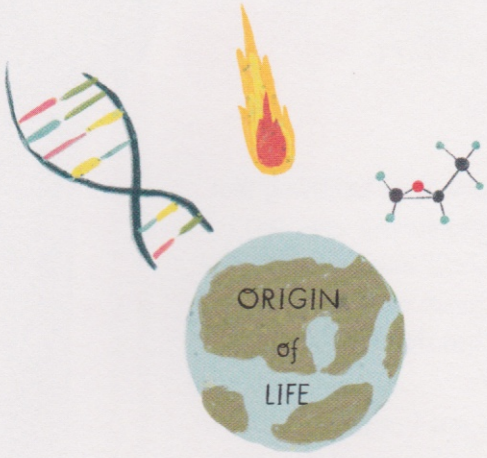
2.
Some differences help with survival and having babies, and are passed down through generations.

3.
Many species have lots of babies, some of which will not survive.

4.
Those that survive are better adapted to living and breeding in that environment.

5.
Useful traits that can be passed down through generations will become more common in the population, eventually leading to evolution.

Darwin's book comes to an end, but the process of evolution keeps going. For as long as the cycle of life goes on, we will adapt and evolve alongside our fellow animals and plants, here on planet Earth.

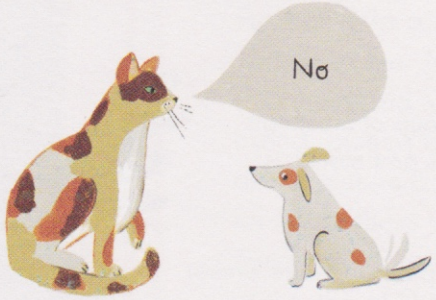


Evolution explains the origin of life on Earth

No, this is a misconception (a mistaken belief). The theory of evolution does not explain how life on Earth started. Darwin's theory explains how species can change over time, and how new species are created from existing species, by the process of Natural Selection.

Evolution proves that we evolved from monkeys

No, humans did not evolve from monkeys as we know them now. All primates shared a common ancestor some 25 to 30 million years ago, and both monkeys and humans evolved from this animal in lots of different ways, until we became the species we are today. Modern primates, like monkeys and apes, are more like cousins. You are descended from your parents but you are only related to your cousins.

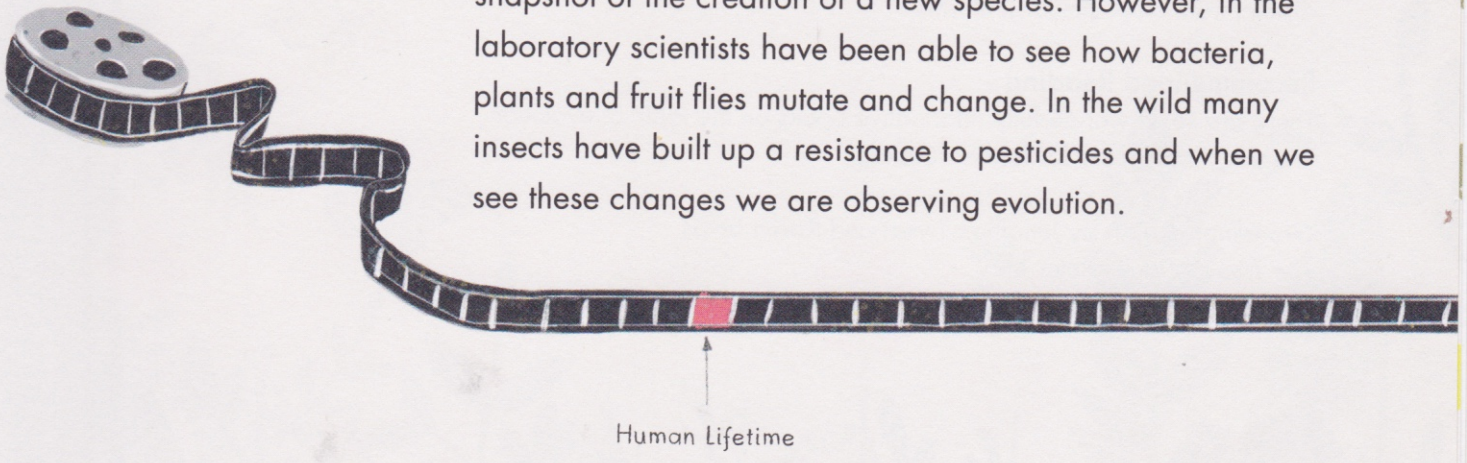


Evolution is when one kind of animal gives birth to another kind of animal

No, an individual animal can never give birth to a completely new kind, or new species of animal. For example, a cat will never give birth to a dog. Instead, young animals are born with small differences, and after many generations the species gradually changes.

You can't see evolution happening

You can sort of, but evolution is a very slow process that takes thousands of years. In a human lifetime we can only see a snapshot of the creation of a new species. However, in the laboratory scientists have been able to see how bacteria, plants and fruit flies mutate and change. In the wild many insects have built up a resistance to pesticides and when we see these changes we are observing evolution.



Glossary and Recommended Literature

Adapt
To modify or adjust to new conditions or a new environment

Adaptation
A special feature or way of behaving that helps a living thing to survive

Ancestor
An earlier form of an animal or plant from which the others have evolved

Descendant
A living thing that has descended from a particular ancestor

DNA
The substance that carries genetic information within the cells of all living things

Evolve
To change or develop very gradually over time

Extinct
Species no longer in existence, no longer having any living members

Fossil
The ancient remains of an animal or plant preserved in layers of rock

Generation
A group of plants or animals born and living in the same period of time

Genes
Small sections of DNA, which together determine the characteristics of a living thing

Genus
A group of related species of plants or animals

Naturalist
A person or scientist who studies and appreciates nature

Offspring
The children or young of a specific parent, or parents

Primates
A large and diverse group of mammals including humans, apes and monkeys

Sediment
Small pieces of rocks/soil that have come away, they sink and settle in layers

Species
A group of animals or plants that are similar and can produce offspring together

Variation
A slightly different version of something, distinct from other similar lifeforms

Recommended Reading
There are some wonderfully informative books on the topic of evolution that you might enjoy for further reading.

Grandmother Fish by Jonathan Tweet and Karen Lewis
The Tree of Life by Peter Sís
What Mr Darwin Saw by Mick Manning and Brita Granström