

LITTLE BOOKS OF  
BIG FACTS

# BIOLOGY

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# What is biology?



The field of biology is the study of living organisms. While some biologists focus their studies on a particular plant or animal species, other biologists look more widely at ecosystems and how everything within them interacts. Whether looking at the large or the small, biology is fascinating.

Are all animals part of one family?

**YES!**

We can all be traced back to one ancestor.



# What is the biosphere?



It is easy to think of 'nature' as being something separate to built spaces like cities. However, everything on our planet is in one biosphere.

This means that everything can affect each other. If we think of spaces as separate, it is difficult for us to see the connections and what they might mean.

**Can pollution spread out over space and time?**

Yes. Many pollutants affect places where they were not released, and they can do this for a long time.

## Why do biologists research plants?

There are a lot of reasons to love plants. They soak up the waste product that we exhale (carbon dioxide) and give us oxygen to breathe. They also play very important roles in balancing the soil, providing food for animals, and can even show us when an ecosystem isn't healthy. Also, they have their own fascinating evolution story, just like animals do.



## Have we changed fruits and vegetables over time?

Yes! By selecting traits from the plants that we liked, we have drastically changed our fruit and veg.



## How are landscapes different?



Biologists also examine how things like soil, air, animals, and plants are different for a variety of ecosystems. The communities that develop in an ecosystem differ depending on the landscape. Those who dwell on coasts, land, in the deep sea, and in the desert have very different behaviour and characteristics.

## Have we fully explored the deep?

No. We still know more about space than we do about our own deep sea.



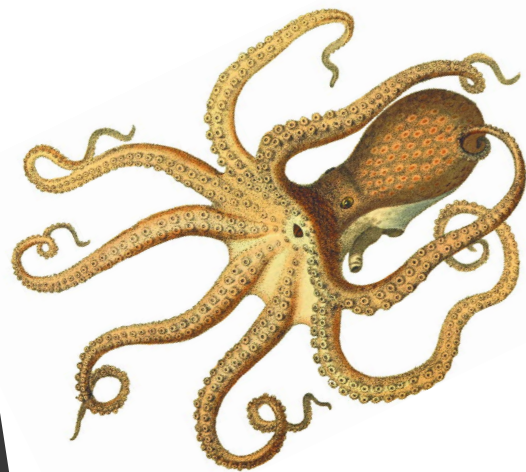
## Why are some animals similar?



Have a look at the red panda and the raccoon. What kind of similarities do they have? If you look past their colouring, they have a similar stature, fur, and body shape. They also play a similar role in their ecosystem as far as what they do and eat. We can also see many similarities in the behaviour and characteristics of octopuses and squid. This is because each set of these creatures is closely related.

## What are octopuses and squid classed as?

They are cephalopods.



## Why are other animals so different?

While we can draw many similarities across the animal kingdom, we can also see a lot of stark differences. This is because animals that survive well in their ecosystems adapt to suit it. Biologists study physical adaptations and the anatomy of animals to understand how their bodies help them to survive in their environment.



## Were therapod dinosaurs covered in feathers?

Yes. From the fossil record, we now know that dinosaurs like T-rex and velociraptor had feathers.

## Why do biologists study animal behaviour?



While physical adaptations happen over a long period of time, animals can sometimes alter their behaviour more rapidly. By studying diet, family dynamics, communities, defence strategies, and other factors, biologists can understand pressures on the environment and animal populations.

It can also help them to project what changes might be coming.



## What kind of tools can animals use?

In the wild, they often use things like sticks, rocks, and shells. In the city, they use what is available to them.

## How are biology and health connected?

Biomedical scientists specialise in health. Some people end up as doctors and vets who look after us, our pets, and our farm animals. Others in biomed research new ways to prevent and treat illnesses and diseases. Whether they focus on the effects of different foods and chemicals, genetics, pharmaceuticals, or other fields, it all adds to our knowledge of medical science.

## What is the full name for DNA?

Deoxyribonucleic acid.





## What does farming have to do with biology?

Agricultural science covers all the ways that crops and farm animals can be cared for. Understanding soil on a farm, which crops to plant together, and when land needs to lie fallow helps farmers look after their property. There is also a lot of research into the health of farm animals, as cattle can get parasites and have other issues.



## What did George Washington Carver do?

He helped farmers to understand why it is important to grow different crops. He also did a lot of research about uses for peanuts!

## What is some important equipment for biology?

When observing in the field, biologists need things to help them in that environment. This could include cameras, diving equipment, soil core samplers, or anything that will allow them to have a deeper understanding of the living organisms around them. In the lab, biologists often do dissections and examine animal and plant cells under microscopes.



## Do different microscopes have different magnification and resolution?

Yes! Here is a dust mite under an electron microscope. This has a much higher magnification and resolution than light microscopes.

## What do biologists do when they aren't in the field?

In the lab, biologists can examine changes in different conditions. Sometimes this will be things observable to the naked eye. Other times, different microscopes will be required to show the changes. By putting samples in different situations, biologists can make models for how the specimens might react in ecosystems.

## Can you see all cells easily under the microscope?

No. Some samples need to have a dye so that you can see the cell structure.

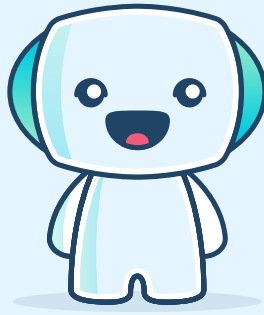
## Why is biology important for our future?

So many parts of our world are changing. With differences in climate, the products that we are producing, human population, and the sprawl of cities, biologists have a lot of work to do. They need to find ways of understanding and conserving landscapes, plants, and animals so that we keep a diverse range in our biosphere.



## Are some species removed off endangered lists?

Yes. When habitats are properly conserved and animal populations cared for, endangered species can thrive again.



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