



Science

Evolution and Inheritance

The background of the entire image is a light blue color, populated with numerous DNA double helix structures. These structures are rendered in a stylized, cartoonish manner, with grey ribbons forming the sugar-phosphate backbones and colored lines (red, yellow, green, and blue) representing the nitrogenous base pairs. The helices are scattered across the frame in various orientations and sizes, creating a repeating pattern.

Inheritance

twinkl

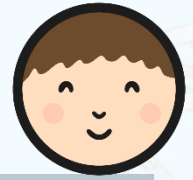
Aim

- I can explain the scientific concept of inheritance.

Success Criteria

- I can identify inherited characteristic that are passed on from parent to offspring.
- I can explain how inherited characteristics can lead to variation.

Key Vocabulary



Write one or two concise sentences to explain the meaning of the words.

If you are unsure, think about similar words and what they mean to work out the meaning of the key words.

Evolution and Inheritance Key Vocabulary

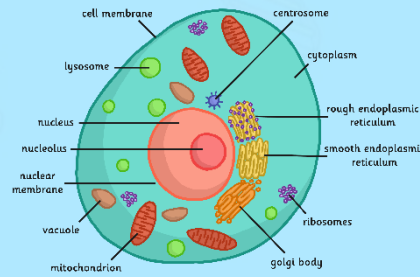
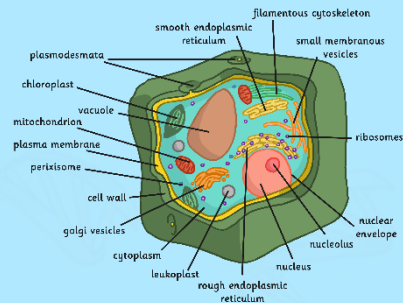
Read the words and then write one or two sentences explaining what the word means.

Key Vocabulary	Meaning (Start of Unit)	Meaning (End of Unit)
Variation		
Parent		
Fossils		
Identical		
Evolution		
Offspring		
Adaptation		
Non-identical		
Environment		
Inheritance		

Cells, Chromosomes, DNA and Genes

While you will not be examining these in detail, it is helpful to know about the building blocks of life for this unit.

Cells



Cells are the building blocks of all living things. All living things are made up of cells. Amoebas have one cell. Humans have trillions of cells!

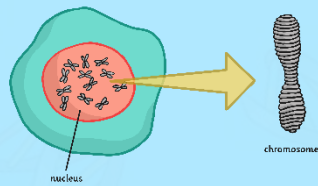
Chromosomes



DNA



Genes



The nucleus of a cell contains chromosomes, which are made up of DNA.

DNA carries the characteristics that we inherit. It is located in two places in the cell: the nucleus and the mitochondria. DNA can replicate and make copies of itself. When cells divide, each cell needs to have an exact copy of the DNA in the old cell.

Genes are short sections of DNA that contain specific information. This is often called the genetic code. All the genes in the whole cell are called the genome.

Variation



What does variation mean?

What causes variation?

Inheritance

These are characteristics that are passed on to offspring from their parents.



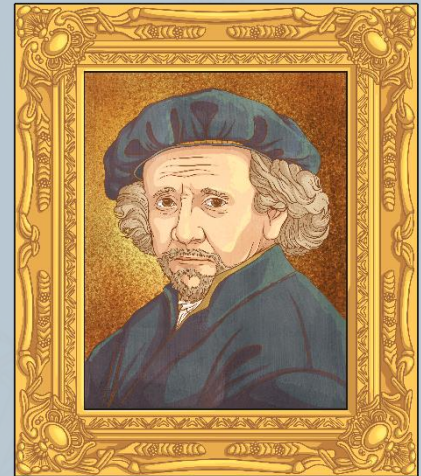
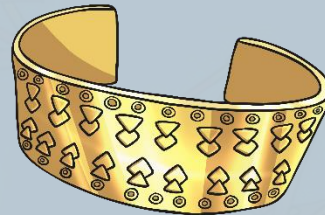
Adaptation

Over many generations, a species will adapt to its environment because the animals with the most successful characteristics are more likely to survive and pass on these characteristics to their offspring.



Inheritance

When we talk about inheritance, we often mean things that are passed on to us when one of our relatives or friends has died. Inherited items are sometimes houses or important objects.



Inheritance

In science, inheritance refers to the genes that are passed on from parents to offspring. When we refer to inherited characteristics we tend to focus on physical characteristics as these are easy to spot but inherited characteristics include abilities such as taste and smell.

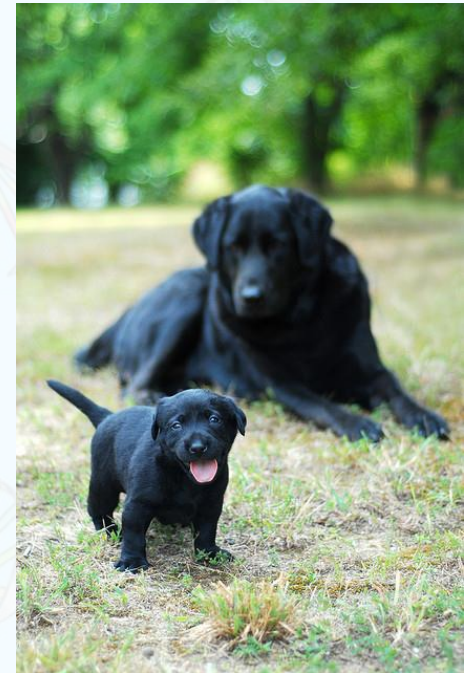


Photo courtesy of Parker Knight, blogdnd and jolly_janner (@flickr.com) - granted under creative commons licence -- attribution

Parents and Offspring



Match the parent with its offspring.



How did you match the parents and offspring?
What are the inherited characteristics that you could see?

Photo courtesy of Courtney McCutchen, Steve Skater, Airwolfhound, Dan (catching up) and Tony Fischer (@flickr.com) - granted under creative commons licence - attribution

Parents and Offspring



MISCONCEPTION ALERT!

While offspring does mean child, it does not mean that you are only offspring when you are children! The inherited characteristics you gain from your parents are part of your DNA for life.

Even when you are an adult you are your parents' child!



Photo courtesy of Randen Pederson and Benh LIEU SONG (@flickr.com) - granted under creative commons licence – attribution

Inheritance and Variation

How can inherited characteristics (similarities between parent and offspring) result in variation (differences)?

Well the majority of living things are the result of sexual reproduction so they have two parents. You inherit the characteristics from both parents but the way they combine makes the offspring unique.



The inherited characteristics can combine in different ways, which is the reason why siblings inherit the same characteristics but are not identical to each other.

Even identical twins that share the exact same combination of DNA are not 100% the same! This is due to the fact that genes develop separately when the twins are embryos or during later development.

Inherited Characteristics



We often talk about inheriting characteristics from our parents. However, it is not always the case that these are passed on through DNA. Some are learnt as we grow up.

Using the Inherited Characteristics Cards place the characteristics into two groups.

Inherited Characteristics

Acquired Characteristics

Discuss each card in your group and each group member needs to give reasons for why they think it belongs to a particular category. How do they know it is inherited or acquired?

Inherited Characteristics



Inherited Characteristics



Skin



Hair



Eye Colour



Cleft chin



Freckles



Nose



Playing a musical instrument



Swimming



Drawing



Reading



Riding a bike

Aim



- I can explain the scientific concept of inheritance.

Success Criteria

- I can identify inherited characteristic that are passed on from parent to offspring.
- I can explain how inherited characteristics can lead to variation.

