Fact sheet: B1.2 Genes, variation and evolution

Question	Answer
These control the development of the bodies characteristics	Genes
The chemical that genes are made of	DNA
The long structures that carry genes	Chromosomes
These are in cells and they contain the chromosomes	Nucleus/ nuclei
Why plants and animals develop similar characteristics to their parents	Genes are passed on to offspring in the sex cells (gametes)
Define 'variation'	The differences in characteristics between members of the same species
The three causes of variation (3)	• Genetic factors • Environmental factors • A combination of genetic and environmental factors
A change in a gene	Mutation
What may happen if a gene changes	May cause the development of a different characteristic
Genetically identical individuals	Clones

Name 2 types of reproduction (2)	Sexual and asexual
How many parents are needed for each type of reproduction? (2)	Sexual needs 2 parents Asexual needs 1 parent
Which type of reproduction leads to variety in offspring?	Sexual
Which type of reproduction produces clones?	Asexual
Type of reproduction that does not involve fusion gametes	Asexual
Which type of reproduction involves the mixing of the parent's genetic information?	Sexual
How Darwin explained evolution	Natural selection
Darwin's theory states that all species of living things have evolved from…	Simple life forms
When life started to develop on Earth	More than 3 billion years ago
Models that allow us to represent and suggest relationships between organisms	Evolutionary trees
Studying similarities and differences between organisms allows us to do this	Classify them into animals, plants and microorganisms

Scientists may produce these to explain similar observations	Different hypotheses
Differences between members of a species	Variation
These organisms are most likely to survive and breed successfully	Individuals with characteristics most suited to the environment
This happens when organisms survive and breed	The genes that enable survival are passed on to the next generation (in gametes)
This may cause a relatively rapid change in a species if the environment changes	Where new forms of a gene result from mutation
The three reasons why the theory of evolution was only gradually accepted (3)	• Challenged the idea that God made all plants and animals • There was insufficient evidence at the time • Mechanism of inheritance and variation not known until after the theory was published
Scientist who believed that changes that occur in an organism's lifetime can be inherited	Lamarck