SB4 Natural Selection and Genetic Modification

SB4a Evidence for human evolution

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Define ‘evolution’.	☐	☐	☐
5th	Recognise binomial species names.	☐	☐	☐
7th	Explain how evidence from fossils and stone tools supports current ideas about human evolution.	☐	☐	☐
5th	Recall how stone tools are dated from their environment.	☐	☐	☐
6th	Describe how stone tools created by human-like species have developed over time.	☐	☐	☐
6th	Describe the fossil evidence for human-like species that lived 4.4, 3.2 and 1.6 million years ago.	☐	☐	☐

SB4b Darwin’s theory

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the cause of genetic variation.	☐	☐	☐
5th	Describe how adaptations allow organisms to survive.	☐	☐	☐
8th	Explain how natural selection allows some members of a species to survive better than others when conditions change.	☐	☐	☐
9th	Explain how natural selection can lead to the evolution of a new species.	☐	☐	☐
10th	Explain how the development of resistance in organisms supports Darwin’s theory.	☐	☐	☐

SB4c Development of evolution theory

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall the names of the scientists who first developed the idea of evolution by natural selection.	☐	☐	☐
8th	Describe some of the evidence that Darwin and Wallace used to support their idea.	☐	☐	☐
9th	Explain the impact of the idea of evolution by natural selection on modern biology.	☐	☐	☐
7th	Recall what is meant by the pentadactyl limb, and where it is found.	☐	☐	☐

10th	Explain how changes in the pentadactyl limb provide evidence for evolution by natural selection.	☐	☐	☐

SB4d Classification

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how organisms are classified into smaller and smaller groups (based on their characteristics).	☐	☐	☐
6th	Identify genus and species from a binomial name.	☐	☐	☐
6th	Identify an organism as a member of one of the five kingdoms.	☐	☐	☐
7th	Describe what genetic analysis is.	☐	☐	☐
9th	Explain why biologists often now classify organisms into three domains.	☐	☐	☐

SB4e Breeds and varieties

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe why new breeds and varieties are created.	☐	☐	☐
7th	Describe what is meant by a ‘genetically modified organism’.	☐	☐	☐
8th	Describe how selective breeding is carried out.	☐	☐	☐
10th	Explain the impact of selective breeding on domesticated plants and animals.	☐	☐	☐

SB4f Tissue culture

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how tissue culture is carried out.	☐	☐	☐
8th	Explain why tissue culture produces many identical cells.	☐	☐	☐
9th	Describe advantages of using tissue culture in medical research.	☐	☐	☐
9th	Describe advantages of using tissue culture in plant breeding programmes.	☐	☐	☐

SB4g Genes in agriculture and medicine

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	H Describe the main stages of genetic engineering.	☐	☐	☐

7th	Recall some uses of selectively bred organisms (in agriculture).	☐	☐	☐
8th	Recall some uses of genetically engineered organisms (in agriculture, in medicine).	☐	☐	☐
11th	Evaluate the benefits and risks of using selective breeding and genetic engineering to produce new varieties and breeds.	☐	☐	☐

SB4h GM and agriculture

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Give examples of useful GM organisms.	☐	☐	☐
9th	Describe how crop plants can be modified to make them resistant to insect pests.	☐	☐	☐
7th	Explain how using GM organisms can increase the amount of food we produce.	☐	☐	☐
7th	Explain how using GM organisms can cause problems in the environment.	☐	☐	☐
9th	Evaluate the advantages and disadvantages of using GM organisms.	☐	☐	☐

SB4i Fertilisers and biological control

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the principle of biological control.	☐	☐	☐
5th	Explain why we need to produce more food.	☐	☐	☐
7th	Explain how biological control can help to increase crop yield.	☐	☐	☐
7th	Explain how biological control can cause problems (in decreasing biodiversity).	☐	☐	☐
7th	Explain how fertilisers can increase crop yield.	☐	☐	☐
8th	Explain how fertilisers can damage the environment (by causing pollution).	☐	☐	☐