GCSE (9-1) Biology

Natural selection and genetic modification

Specification/Revision Checklist



Topic checklist. I can ….

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| --- | --- | --- | --- | --- | --- |
| Reference | Description | I understand this | I need to check this | I need help with this | Revised  [http://www.clipartbest.com/cliparts/nTE/64d/nTE64d8TA.png](http://www.google.co.uk/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwiv6I6g1sfKAhVFvRoKHRFoCQwQjRwIBw&url=http://www.clipartbest.com/powerpoint-check-mark-symbol&psig=AFQjCNE2-K8HbMWKNvaBznntFTbUu74vpg&ust=1453904435498135) |
| 4.1B | Describe the work of Darwin and Wallace in the development of the theory of evolution by natural selection and explain the impact of these ideas on modern biology |  |  |  |  |
| 4.2 | Explain Darwin’s theory of evolution by natural selection. |  |  |  |  |
| 4.3 | Explain how the emergence of resistant organisms supports Darwin’s theory of evolution including antibiotic resistance in bacteria. |  |  |  |  |
| 4.4 | Describe the evidence for human evolution, based on fossils, including:         (a) Ardi from 4.4 million years ago         (b) Lucy from 3.2 million years ago         (c) Leakey’s discovery of fossils from 1.6 million years ago. |  |  |  |  |
| 4.5 | Describe the evidence for human evolution based on stone tools, including:         (a) the development of stone tools over time         (b) how these can be dated from their environment. |  |  |  |  |
| 4.6B | Describe how the anatomy of the pentadactyl limb provides scientists with evidence for evolution |  |  |  |  |
| 4.7 | Describe how genetic analysis has led to the suggestion of the three domains rather than the five kingdoms classification method. |  |  |  |  |
| 4.8 | Explain selective breeding and its impact on food plants and domesticated animals. |  |  |  |  |
| 4.9B | Describe the process which involves modifying the genome of an organism to introduce desirable characteristics |  |  |  |  |
| 4.10 | Describe genetic engineering as a process which involves modifying the genome of an organism to introduce desirable characteristics. |  |  |  |  |
| 4.11 | **Describe the main stages of genetic engineering including the use of:             (a) restriction enzymes             (b) ligase             (c) sticky ends             (d) vectors.** |  |  |  |  |
| 4.12B | Explain the advantages and disadvantages of genetic engineering to produce GM organism including the modification of crop plants, including the introduction of genes for insect resistance from *Bacillus thuringiensis* into crop plants. |  |  |  |  |
| 4.13B | Explain the advantages and disadvantages of agricultural solutions to the demands of a growing human population, including the use of fertilisers |  |  |  |  |
| 4.14 | Evaluate the benefits and risks of genetic engineering and selective breeding in modern agriculture and medicine including practical and ethical implications. |  |  |  |  |