SB3 Genetics

SB3a Sexual and asexual reproduction

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe features of asexual reproduction (rapid reproductive cycle, no need for mate, no variation of offspring). |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Explain how some features of asexual reproduction can be advantageous or disadvantageous. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe features of sexual reproduction (slower reproductive cycle, requires mate, variation in offspring). |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Explain how some features of sexual reproduction can be advantageous or disadvantageous. |  |  |  |
|  | Compare the advantages and disadvantages of asexual and sexual reproduction in evaluating the life cycle of an organism. |  |  |  |

SB3b Meiosis

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Recall that gametes are produced by meiosis. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Describe what happens in meiosis. [without details of the stages] |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Explain why haploid gametes are needed for sexual reproduction. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Recall what an organism’s genome is. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe where genes are found. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Recall the function of genes. |  |  |  |

SB3c DNA

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L5.jpg | Recall where DNA is found in a eukaryotic cell. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Name the bases in DNA. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Recall the pairing of bases in DNA. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Describe how DNA strands are held together. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Describe the overall structure of DNA. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | *Describe how DNA can be extracted from fruit.* |  |  |  |

SB3d Protein synthesis

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | H Recall where proteins are made. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Describe how the shape of a protein is determined. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Explain how the order of amino acids in a protein is determined. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Describe what happens during the transcription stage of protein synthesis. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Describe what happens during the translation stage of protein synthesis. |  |  |  |

SB3e Genetic variants and phenotypes

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | H Describe what a mutation is. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Recall some ways in which mutations occur. |  |  |  |
|  | H Describe possible effects of mutations on amino acid sequences. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L9.jpg | H Describe how gene transcription is regulated. |  |  |  |
|  | H Explain the effects of mutations on protein activity. |  |  |  |
|  | H Explain how mutations can influence RNA polymerase binding and so alter protein production. |  |  |  |

SB3f Mendel

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L5.jpg | Recall who discovered the basis of genetics. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Describe how breeding pea plants was used to work out the basis of genetics. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Describe why it was difficult to understand inheritance before the idea of genes. |  |  |  |

SB3g Alleles

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Describe the difference between a gene and an allele. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Explain the effects of alleles on inherited characteristics. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Describe the relationship between a genotype and a phenotype. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Identify homozygous and heterozygous genotypes. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | Use genetic diagrams to work out possible combinations of alleles in the offspring of parents. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | Explain why the effects of some alleles in an organism’s genotype are not seen in its phenotype. |  |  |  |

SB3h Inheritance

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L8.jpg | Use Punnett squares to work out possible combinations of alleles in the offspring of parents. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | Interpret family pedigree charts to work out possible inherited genotypes and phenotypes. |  |  |  |
|  | Describe how sex is determined in humans. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | Calculate ratios of phenotypes (controlled by alleles of a single gene) when organisms are crossed. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | Calculate probabilities of certain phenotypes occurring when organisms are crossed. |  |  |  |

SB3i Multiple and missing alleles

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Describe ABO blood groups as an example of multiple alleles for one gene. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Describe how ABO blood groups are inherited. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Explain the inheritance of codominance. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | H Give examples of sex-linked genetic disorders. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | H Explain why some genetic disorders are sex-linked. |  |  |  |

SB3j Gene mutation

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Give examples of characteristics controlled by multiple genes. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Define the term mutation. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe some potential applications of mapping human genomes. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L9.jpg | Explain how a mutation can cause variation (limited to changes in the protein formed, which can affect processes in which that protein is needed). |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Give examples of mutations in human genes that affect the phenotype, and examples of those that have little or no obvious effect. |  |  |  |
|  | Explain why many mutations have no effect on the phenotype. |  |  |  |

SB3k Variation

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Distinguish between genetic variation and environmental variation. |  |  |  |
|  | Distinguish between continuous and discontinuous variation. |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe the causes of genetic variation (mutation and sexual reproduction). |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L6.jpg | Describe the causes of environmental variation (differences in the environment, acquired characteristics). |  |  |  |
| C:\Users\bhuiya_f\Downloads\Steps icons\Steps icons\Progression_icon_L7.jpg | Analyse the contribution of genes and environment to the variation in a characteristic. |  |  |  |