

Edexcel (B) Biology A-level

8.1 - Origins of genetic variation

Flashcards

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Suggest factors that increase genetic variation.



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- Mutations.
- Random assortment and crossing over during meiosis.
- Random fertilisation during sexual reproduction.



What is a mutation?



What is a mutation?

An alteration to the DNA base sequence.
Often arise spontaneously during DNA replication.



Why might a mutation **not** lead to change in the amino acid sequence?



Why might a mutation **not** lead to change in the amino acid sequence?

Because the genetic code is degenerate, meaning the mutation may end up coding for the same amino acid as the original triplet unless a frame shift occurs.



What are addition and deletion mutations?



What are addition and deletion mutations?

Where one or more nucleotides (bases) are either inserted or deleted from the DNA sequence. This is more likely to be harmful and significant, as it leads to a frame shift which means the entire amino acid sequence will be different.



What is a substitution mutation?



What is a substitution mutation?

When a nucleotide in the DNA sequence is replaced by another. This is more likely to be a quiet mutation, meaning no change occurs in the amino acid sequence.



How can processes during meiosis
create new combinations of alleles?



How can processes during meiosis create new combinations of alleles?

- Random arrangement of chromosomes during lining up.
- Crossing over of chromatids before the first division.



How does random fertilisation bring about genetic variation?



How does random fertilisation bring about genetic variation?

Gametes are haploid cells, meaning they only contain half of a person's DNA. As this is determined by meiosis, every gamete contains different DNA. Therefore the same two individuals can produce genetically different offspring.

