Edexcel (B) Biology A-level

7.1 - Using gene sequencing

Flashcards

Define genome.

What is the genome?

The complete set of genetic information contained in the cells of an organism.

What is DNA sequencing?

What is DNA sequencing?

Identifying the base sequence of a DNA fragment.

How can we amplify DNA fragments in order to sequence them?

How can we amplify DNA fragments in order to sequence them?

Using the polymerase chain reaction.

Makes millions of a copies of a fragment.

Describe the reaction mixture in the first stage of PCR.

Describe the reaction mixture in the first stage of PCR.

Contains the DNA fragment to be amplified, primers that are complementary to the start of the fragment, free nucleotides to match up to exposed bases, and DNA polymerase to create the new DNA.

Summarise the process of amplifying DNA fragments using PCR.

Summarise the process of amplifying DNA fragments using PCR.

1. Heated to break apart the DNA strands.
2. Cooled to allow primers to bind.
3. Heated again to activate DNA polymerase and allow free nucleotides to join.
4. New DNA acts as template for next cycle.

How can DNA sequencing be used in medicine?

How can DNA sequencing be used in medicine?

To screen for heritable conditions. When the base sequence of a particular allele or gene is known, we can test a person's DNA to see if that allele or gene is present.

How can DNA sequencing be used in forensics?

How can DNA sequencing be used in forensics?

To compare DNA obtained during crime investigations against the DNA of victims or suspects, in order to identify them or discount them.

In which other ways can DNA sequencing be used?

In which other ways can DNA sequencing be used?

- To predict the amino acid sequence of proteins.
- To test relatedness of two individuals, including paternity testing.