

Genetic TECHNOLOGY

• genetic engineering — transfer of a single gene

AIM - remove a gene from 1 org and transfer it into another organism - so the gene is expressed in the new host.

• re-combinant DNA — (rDNA)

- DNA that has been made by joining pieces from 2/+ sources (organisms)

- organisms with the new gene - transgenic organism / genetically modified organism (GMO)

Restriction Enzymes:-

restriction endonuclease - class of enzymes from bacteria

recognise & break down DNA of invading viruses

↳ bacteriophages. — short

bacteria makes enzymes - cut phage DNA into smaller pieces.

TOOL 5

enzymes - cut sugar-phosphate backbone of DNA at specific places within the molecule. — answer (Endo - within)

Role is to restrict a viral infection ∴ Restriction enzymes / endonuclease.

restriction enzymes - binds to a specific target site on DNA

bacteria DNA avoid these attacks - 1. chemical markers
2. not having target sites

↳ specific sequences of bases.

Palindrome

↳ reads the same in both directions

for ex:- GGATCC & CCTAGG

GENE TRANSFER

1. Gene required is identified cut from donor made by mRNA by reverse transcription / synthesised from nucleotides.

2. copies of the gene are made using polymerase chain reaction (PCR)

3. gene is inserted into a vector - delivers the gene to the cells.

4. Vector takes the gene into the cell

5. cells that have the new gene are identified & cloned.

↳ Done by the use of

- Enzymes:- restriction endonucleases

- ligase

- reverse transcriptase

- Vectors :- Plasmids
Viruses

- Genes :- coding for easily identifiable substances that can be used as markers.

! not all sites are palindromic.