



8. Differentiate between the followings:

- (a) Repetitive DNA and Satellite DNA
- (b) mRNA and tRNA
- (c) Template strand and Coding strand

Ans:

- (a) The main differences between repetitive DNA and satellite DNA are as following:
- (b) The main difference between mRNA and tRNA are as following:
- (c) The main difference between template strand and coding strand are as follows :

9. List two essential roles of ribosome during translation.

Ans: Two essential roles of ribosomes during translation are ;

- (i) they provide surface for binding of mRNA in the groove of smaller sub unit of ribosome.
- (ii) As larger sub unit of ribosome has peptidyl transferase on its 'P' site, therefore, it helps in joining amino acids by forming peptide bonds. .

10. In the medium where E. coli was growing, lactose was added, which induced the lac operon. Then, why does lac operon shut down some time after addition of lactose in the medium?

Ans: Lac operon is switched on adding lactose in the medium, as lactose acts as inducer and make repressor inactive. Due to this switch on of lac operon system,  $\beta$ -galactosidase is formed which converts lactose into glucose and galactose. As soon as lactose is consumed, repressor again become active and cause switch off (shut down) of system.

11. Explain (in one or two lines) the function of the followings:

- (a) Promoter
- (b) tRNA
- (c) Exons

Ans: Promoter: It is one of the three components of a transcription unit that takes part in transcription. It is located at the start 5' end and provides site for attachment of transcription factors (TATA Box) and RNA polymerase.

tRNA: It takes part in the transfer of activated amino acids from cellular pool to ribosome for their taking part in protein formation.

Exons: In eukaryotes, DNA is mosaic of exons and introns. Exons are coding sequences of DNA which are transcribed and translated both.

12. Why is the Human genome project called a mega project?

Ans: Human genome project is called a mega project because

- (i) it required bioinformatics data basing and other high speed computational devices for analysis, storage and retrieval of information.
- (ii) it generated lot of information in the form of sequence annotation.
- (iii) it was carried out in number of labs and coordinated on extensive scale.

13. What is DNA fingerprinting? Mention its application.

Ans: DNA fingerprinting is identification of difference in specific region of DNA sequences based on DNA polymorphism, repetitive

DNA and satellite DNA.

Application of DNA fingerprinting: Settling, paternity disputes and identity of criminal by different DNA profiles in forensic laboratories.

14. Briefly describe the following:

- (a) Transcription
- (b) Polymorphism
- (c) Translation
- (d) Bioinformatics

Ans:

Transcription: It is DNA directed synthesis of RNA in which the RNA is transcribed on 3'→5' template strand of DNA in 5'→3' direction.

Polymorphism: Variation at genetic level arisen due to mutation, is called polymorphism. Such variations are unique at particular site of DNA, forming satellite DNA. The polymorphism in DNA sequences is the basis of genetic mapping and DNA finger printing.

Translation: Protein synthesis from mRNA, tRNA, rRNA.

Bioinformatics: Computational method of handling and analyzing biological databases.

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