

ANSWER KEY FOR MOLECULAR - BIOLOGY:-

1. Actin:

Actin is a globular multi-functional proteins that form microfilaments. It is found in essentially all eukaryotic cells it is present in concentration of over 100m, roughly 42 –Kda, diameter of 4 to 7 nm. Actin main role cellular process including muscle contraction, cell motility, cell division and cytokinesis vesicle, and organelle movement, cell signaling and maintenance of cell junction and shape.

2. Hetero dimer:

A dimer made up of similar but not identical subunits in two different proteins is heterodimer. Example heterodimer is an enzyme, reverse transcription or transcriptase, it is comprised of two different amino acid chains. A dimer in biochemistry are not connected by covalent bonds.

3. Cytoskeleton:

The cytoskeleton is a complex dynamic network of interlinking protein filaments present in the cytoplasm of the cells including bacteria and archaea. It extends from the cell nucleus to the cell membrane and is similar proteins in the various organisms in eukaryotes composed of three main components microfilaments intermediate filaments of microtubules.

4. Locus:

Locus it is a specific, fixed position on chromosome where a particular gene or genetic marker is located. Gene mapping is the process of determining the specific locus or loci responsible for producing a particular phenotype or biological trait.

5. Hetero chromatin:

It is a tightly packed form of DNA or condensed DNA which comes in multiple varieties lie on the two extremes of constitutive heterochromatin and facultative heterochromatin. Both are exposed of genes

6. Cytogenetics:

The study of chromosome are long strands of DNA and proteins that contains most of the genetic information in a cell. Cytogenetic involved testing sample of tissue, blood, or bonemarrow in laboratory to look for change in chromosome include broken, missing, rearranged or extra chromosome.

7. Dominant:

A genetic trait is considered dominant if it is expressed in a person who has only one copy of that gene. A dominant trait is opposed to a recessive trait which is expressed only when two copies of the gene are present. Example dominant disorder include in Achondroplasia form of dwarfism.

8. Punnett square:

The Punnett square is a square diagram that is used to predict the genotype of a particular cross or breeding experiment. It is named after Reginald C. Punnett, who devised the approach. The diagram is used by biologists to determine the probability of an offspring having a particular genotype.

9. Phenotype:

The term phenotype refers to the observable physical properties of an organism. These include the organism's appearance, development, and behavior. An organism's phenotype is determined by its genotype (the set of genes the organism carries) as well as by environmental influence upon these genes.

10. *Drosophila melanogaster*:

It is a species of fly (taxonomic order: Diptera, family: Drosophilidae). Species is known as common fruit fly or vinegar fly. Tephritidae are also called fruit fly class: Insect, Kingdom: Animalia, higher classification: Sophophora.

11. RNA polymerase:

RNA polymerase (abbreviation: RNAP or RNA pol) is an enzyme that synthesizes RNA from a DNA template. RNA polymerase locally opens the double-stranded DNA so that one strand is exposed. The exposed nucleotides can be used as a template for the synthesis of RNA, a process called transcription. RNA polymerase is an enzyme that is responsible for copying a DNA sequence into an RNA sequence.

12. Pribnow box:

The Pribnow box, also known as the Pribnow-Schaller box, is the sequence TATAAT of six nucleotides (thymine, adenine, thymine, etc...) is an essential part of a promoter site on DNA for transcription to occur in bacteria.

13. Polyadenylation:

Polyadenylation is the addition of a poly(A) tail to a messenger RNA. The poly(A) tail consists of multiple adenosine monophosphate. In other words, a stretch of RNA only.

adenosine base in eukaryotes polyadenylation is part of the process that produce mature messenger RNA (MRNA) for translation

14. Transcription factors:

It is synthesis of RNA from DNA genetic information from DNA into protein the substance that gives an organisms its form this flow of information occurs the sequential process of transcription (DNA to RNA) and translation (RNA to protein)

15. Glycosylation :

It is react with carbohydrate (ie) glycosyl donor .is attached to a hydroxyl or other functional group of another molecules. In biology ,glycosylation mainly refers in particular to the enzymatic process that attaches glycans to other organic molecules. Example glycoprotein.

16. PNKP.

It meaning of polynucleotide kinase 3-phosphate, it is a bifunctional enzyme involved in the phosphorylation of the 5'-phosphate, both intermediates in the repair of the abortive top 1 complexes by TDPI. 3-Phosphates are also the most common form of DNA damage created by Ros

17. DNA polymerase:

It is an enzyme the synthesis DNA molecules from deoxyribonucleotides the building blocks for the DNA these enzymes are essential for DNA replication and usually work in pair to create two identical DNA strands from in original DNA strands from single original DNA molecules.

18. Ligase:

It is an enzyme that can catalyze that can joining of two large molecules by forming a new chemical bond usually with accompanying hydrolysis of a small pendant chemical group on one of the larger molecules or the enzyme catalyzing linking together two compound Example: enzyme the catalyze

19. Okazaki fragments:

It is short, newly synthesized DNA fragments that are formed on the lagging template strand during DNA replication .They are complementary to the lagging template strand together forming short double stranded DNA section. it can only be synthesizing in one direction (3' to 5')

20. BER. (Bit error rate)

In digital transmission the number of bit error is the number of received bits of a stream over a communication channel that have been altered due to the noise, interference, distortion or bit synchronization errors. The bit error rate is the number of bit error per unit time.

21. Lac-operon

The lactose operon (lac operon) is an operon required for the transport and metabolism of lactose in *E. coli* and many other enteric bacteria. The gene products of lac Z is β -galactosidase which cleaves lactose, a disaccharide into glucose and galactose.

22. Promoters

In genetics a promoter is a sequence of DNA to which proteins bind that initiate transcription of a single RNA from the DNA downstream of it. This RNA may be encoded a protein or can have function in and of itself such as tRNA, mRNA, rRNA.

Example: addition of platinum reforming catalyst improves its formation.

23. Gene loss:

It has often been associated with the loss of redundant gene duplication without apparent functional consequences and this process has mostly been neglected as an evolutionary force. Example: mammals.

24. Attenuation (genetics)

It is a proposed mechanism of control in some bacterial operon which results in premature termination of transcription and is based on the fact that in bacteria, transcription and translation proceed simultaneously. Example: Tryptophan operon.

25. Gene amplification:

It is an increase in the number of copies of a gene without a proportional increase in other genes. This can result from duplication of a region of DNA that contains a gene through error, DNA replication and repair machinery as well as through fortuitous capture by selfish genetic elements. Example: gene amplification. The ribosomal gene and histone genes are clustered tandemly (end-to-end arrays in the genome).