



قائمة الاسئلة

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- 1) Most DNA occurs in nature as
  - 1)  Right-handed double-helical molecule known as Watson-Crick DNA or B-DNA.
  - 2)  Single strand molecule
  - 3)  left-handed double-helical molecule
  - 4)  Z-DNA
- 2) Anticodons are present on
  - 1)  Coding strand of DNA
  - 2)  mRNA
  - 3)  tRNA
  - 4)  rRNA
- 3) Deamination of cytosine would produce
  - 1)  Uracil
  - 2)  Thymine
  - 3)  Hypoxanthine
  - 4)  Xanthine
- 4) Termination of the synthesis of the RNA molecule is signalled by a sequence in the template strand of the DNA molecule, a signal that is recognized by a termination protein which is called
  - 1)  Rho factor
  - 2)  Sigma factor
  - 3)  Delta factor
  - 4)  Epsilon factor
- 5) In eukaryotes, the lagging strand DNA is synthesized by DNA polymerase
  - 1)  Alpha
  - 2)  Beta
  - 3)  Epsilon
  - 4)  Delta
- 6) Sense mutation in a gene result in
  - 1)  No change in the nucleotide sequence of the mRNA encoded by the gene
  - 2)  No change in the amino acid sequence of the protein encoded by the gene
  - 3)  No expression of the protein encoded by the gene
  - 4)  Frameshift of the translational reading
- 7) Which of the following cause the unwinding of the DNA double helix?
  - 1)  DNA polymerase
  - 2)  DNA helicase
  - 3)  RNA primer
  - 4)  RNA polymerase
- 8) The ribosome is involved in all of the following EXCEPT
  - 1)  Peptide bond formation
  - 2)  Binding of protein factors during elongation.
  - 3)  Aminoacylation of tRNA.
  - 4)  Binding of mRNA at an initiation codon.
- 9) In replication, once the DNA strands have been separated, reformation of the double helix is prevented by:
  - 1)  DNA helicase enzyme.
  - 2)  Single-strand binding proteins.
  - 3)  DNA polymerases.
  - 4)  DNA ligase



- 10) Which of the following adds new nucleotides to a growing DNA chain?
- 1)  DNA polymerase
  - 2)  DNA helicase
  - 3)  RNA primer
  - 4)  RNA polymerase
- 11) Primase is the enzyme responsible for:
- 1)  Unwinding the DNA double strand
  - 2)  Introducing nicks into the DNA double strand
  - 3)  Hydrolysing ATP to facilitate DNA unwinding.
  - 4)  Making short strands of RNA at the site of replication initiation.
- 12) Okazaki fragments are joined together by:
- 1)  RNA polymerase.
  - 2)  DNA ligase.
  - 3)  DNA polymerase.
  - 4)  RNA ligase.
- 13) The ends of eukaryotic chromosomes can be lengthened by:
- 1)  RNA polymerase.
  - 2)  Primase.
  - 3)  Telomerase.
  - 4)  DNA polymerase.
- 14) A regulatory protein that increases the rate of transcription is termed as
- 1)  Activator
  - 2)  Enhancer element
  - 3)  Repressor
  - 4)  Silencer element
- 15) The region of DNA known as TATA BOX is the site for binding of
- 1)  DNA polymerase
  - 2)  DNA topoisomerase
  - 3)  RNA polymerase
  - 4)  Polynucleotide phosphorylase
- 16) The initiation site for transcription is recognized by
- 1)  DNA polymerase
  - 2)  Telomerase
  - 3)  Sigma factor
  - 4)  Rho factor
- 17) All following factors that can affect mRNA stability EXCEPT
- 1)  Long length of the Poly A tail on mRNA
  - 2)  Presence of destabilizing elements, AU-rich element
  - 3)  Presence of small interfering RNA and microRNA
  - 4)  DNA acetylation
- 18) Post-transcriptional modification occurs in
- 1)  Eukaryotic pre-mRNA
  - 2)  Prokaryotic hnRNA
  - 3)  Prokaryotic mRNA
  - 4)  Eukaryotic DNA transcript
- 19) Coding sequences in a gene are known as
- 1)  Telomere
  - 2)  Nonsense codons
  - 3)  Introns





- 4)  Exons
- 20) Translation results in a product known as
- 1)  Protein
  - 2)  tRNA
  - 3)  mRNA
  - 4)  rRNA
- 21) Chromatin remodeling are essential parts of gene regulation therefore
- 1)  Histone acetylation is associated with inhibition the transcription of gene.
  - 2)  DNA methylation is associated with greater levels of gene transcription
  - 3)  In housekeeping genes CpG islands are unmethylated thus genes tend to be expressed in most cell
  - 4)  Control the DNA replication
- 22) All the following statement are correct regarding microRNAs (miRNAs) EXCEPT
- 1)  Encoded by genes in eukaryotic organisms
  - 2)  Silence expression of specific mRNAs
  - 3)  Give rise to small RNA molecules, typically 21 to 23 nucleotides
  - 4)  Translated into protein
- 23) A mutation that replaces one amino acid in a protein with another is called
- 1)  Frameshift
  - 2)  Recombinant
  - 3)  Nonsense
  - 4)  Missense
- 24) Response elements
- 1)  Are short sequences of DNA within 1st exon of the gene
  - 2)  Are able to bind specific RNA polymerase and regulate transcription of genes.
  - 3)  Under conditions of stress, a transcription activator protein binds to the response element and stimulates transcription
  - 4)  Are proteins that binding the 5'-end of mRNA
- 25) Post-transcriptional modification of pre mRNA involves all of the following EXCEPT
- 1)  Addition of 7-methylguanosine triphosphate cap
  - 2)  Addition of polyadenylate tail
  - 3)  Insertion of nucleotides
  - 4)  Splicing of introns
- 26) Common lesions found in DNA after exposure to ultraviolet light are
- 1)  Pyrimidine dimers.
  - 2)  Purine dimers.
  - 3)  Single strand breaks
  - 4)  Base deletions.
- 27) In the process of transcription, the flow of genetic information is from
- 1)  DNA to DNA
  - 2)  DNA to protein
  - 3)  RNA to protein
  - 4)  DNA to RNA
- 28) DNA sequence that prevents the continuous loss of DNA at the end of the chromosome during the course of replication?
- 1)  Okazaki
  - 2)  Telomere
  - 3)  Histone octamer
  - 4)  Polymer of RNA



- 29) Which is transcribed by RNA polymerase in the strand of the DNA?
- 1)  Sense strand.
  - 2)  Non-coding
  - 3)  Antisense.
  - 4)  Template strand
- 30) Translation in eukaryotic cells occurs in the
- 1)  Nucleus
  - 2)  Cytoplasm
  - 3)  Nucleolus
  - 4)  Lysosome
- 31) During translation, proteins are synthesized by
- 1)  Ribosomes using the information on DNA
  - 2)  Lysosome using the information on DNA
  - 3)  Ribosomes using the information on mRNA
  - 4)  Ribosomes using the information on rRNA
- 32) In human organisms, the AUG codon codes for:
- 1)  The initiation of translation.
  - 2)  The termination of transcription.
  - 3)  The termination of translation.
  - 4)  The amino acid valine.
- 33) In addition to the DNA of nucleus, there is DNA in.
- 1)  Mitochondria.
  - 2)  Endoplasmic reticulum.
  - 3)  Golgi apparatus.
  - 4)  Plasma membrane
- 34) Transcription regulatory regions that contain CpG islands are inactivated by
- 1)  Methylation
  - 2)  Phosphorylation
  - 3)  Acetylation
  - 4)  Deacetylation
- 35) A polypeptide found in the cytoplasm of a cell contains 12 amino acids. How many nucleotides would be required in the mRNA for this polypeptide to be translated?
- 1)  4
  - 2)  12
  - 3)  24
  - 4)  36
- 36) The termination of protein synthesis is catalyzed by
- 1)  A special type of tRNA that binds at termination codon.
  - 2)  A special type of protein release factor that binds at termination codon.
  - 3)  The activity of ribosome itself.
  - 4)  The activity of miRNA
- 37) Xeroderma pigmentosum is caused by defect in
- 1)  Repair of UV damage
  - 2)  Either MLH or MSH
  - 3)  Base excision repair
  - 4)  Mismatch repair mechanism
- 38) The most common type of DNA variant is
- 1)  SNPs
  - 2)  Deletions





- 3) - Insertions  
4) - Chromosome translocation
- 39) A piece of double stranded DNA has 20% A, what will be the % of G?  
1)  + 30%  
2) - 40%  
3) - 20%  
4) - 70%.
- 40) Daunorubicin and doxorubicin are used in the treatment of leukemia, they exert their effects by  
1)  + Interfering with the activity of topoisomerase II and preventing proper replication of the DNA.  
2) - Interfering with the activity of ligase  
3) - Interfering with the activity of primase  
4) - Interfering with the activity of RNA polymerase
- 41) Which of the following nucleotide sequences represents the complement to the DNA strand 5' – AGATCCG- 3' ?  
1) - 5' – AGATCCG- 3'  
2) - 3' – AGATCCG- 5'  
3) - 5' – CTCGAAT- 3'  
4)  + 3' – TCTAGGC- 5'
- 42) Chromosomes of a eukaryote cell are replicated  
1)  + From multiple origins of replication bidirectionally.  
2) - From one origin of replication bidirectionally.  
3) - From multiple origins of replication unidirectionally.  
4) - From one origin of replication unidirectionally.
- 43) An mRNA “5' cap”:  
1) - Prevents translation.  
2) - Marks the mRNA for degradation.  
3) - Decreases the half-life of the mRNA.  
4)  + Protects newly synthesized mRNA from degradation.
- 44) Introns in pre-mRNA are known to:  
1) - Code for specific protein.  
2)  + Undergo excision, whereby they are spliced out.  
3) - Protect pre mRNA from enzyme degradation.  
4) - Code for important amino acid sequences.
- 45) Which of the histones below binds to linker DNA?  
1) - H1  
2) - H3  
3) - H2A  
4)  + H2B
- 46) Which of the following enzyme breaks the DNA molecules during replication.  
1)  + Topoisomerases  
2) - Single-strand binding proteins  
3) - DNA polymerases  
4) - RNA polymerases
- 47) What are the set of positively charged basic proteins called as?  
1) - Histidine  
2) - DNA  
3) - RNA  
4)  + Histones
- 48) A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant





plasmid using

- 1) - Taq polymerase
  - 2) - Polymerase III
  - 3)  Ligase
  - 4) - Eco RI
- 49) To make the recombinant plasmid permeable to DNA molecules, which of the chemicals is added?
- 1) - MgCl<sub>2</sub>
  - 2)  CaCl<sub>2</sub>
  - 3) - NaCl
  - 4) - HCl
- 50) Which of the following enzyme is responsible for making a DNA copy from RNA?
- 1)  Reverse transcriptase
  - 2) - DNA polymerase
  - 3) - RNA polI
  - 4) - RNA polII

