

Test bank - nucleic acids

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تسقط الاجساد لا الفكرة .. و المقاومة فكرة و الفكرة لا تموت ▼

Q1. What determines the directionality of DNA strands?

- A. The orientation of the sugar molecules within the DNA strand.
- B. The orientation of the bases within the DNA strand.
- C. The orientation of the phosphate molecules within the DNA strand.
- D. The orientation of the nucleotides within the DNA strand.

Q2. You know the nucleotide sequence of only one strand of DNA: ATGCCGAATCGATCCA. How many total thymine nucleotides were in the original double strand of DNA?

- A. 6
- B. 7
- C. 8
- D. 10

Q3. Chargaff found that for DNA_____

- A. $A + T = 50\%$ of the total bases
- B. the ratio of A to T is close to 1:1 and the ratio of G to C is close to 1:1
- C. $A + T = G + C$
- D. the ratio of A to C is close to 1:1 and the ratio of G to T is close to 1:1

Q4. In DNA, the two purines are _____ , and the two pyrimidines are _____

- A. cytosine and thymine ... adenine and guanine
- B. adenine and cytosine... guanine and thymine
- C. adenine and thymine ... cytosine and guanine
- D. adenine and guanine ... cytosine and thymine

Q5. Which one of the following statements is correct?

- A. Adenine forms two hydrogen bonds with guanine; thymine forms three hydrogen bonds with cytosine.
- B. Adenine forms two covalent bonds with thymine; guanine forms three covalent bonds with cytosine.
- C. Adenine forms three hydrogen bonds with thymine; guanine forms two hydrogen bonds with cytosine.
- D. Adenine forms two hydrogen bonds with thymine; guanine forms three hydrogen bonds with cytosine.

Q6. The two antiparallel strands of nucleotides that form the DNA double helix are held together by..?

- A. ionic bonds between guanine and cytosine
- B. covalent bonds between nitrogen atoms in adenine and in thymine
- C. 5' deoxyribose and phosphate bonds covalent bonds between carbon
- D. hydrogen bonds between nucleotide bases

Q7. The two strands of a DNA double helix are antiparallel. This means that _____.

- A. one strand is actually composed of RNA
- B. one strand runs in the 5' to 3' direction, and the other runs in the 3' to 5' direction
- C. they both run in the 3' to 5' direction
- D. the two strands are mirror images

Q8. What is the major difference between bacterial chromosomes and eukaryotic chromosomes?

- A. There is no difference between bacterial and eukaryotic chromosomes.
- B. The DNA molecules of bacterial chromosomes have a slightly different structure than those of eukaryotic chromosomes.
- C. Bacterial chromosomes have much more protein associated with the DNA than eukaryotes.
- D. Bacteria usually have a single circular chromosome whereas eukaryotes have several linear chromosomes.

Q9. One strand of a DNA molecule has the base sequence 5'-ATAGGT-3'. The complementary base sequence on the other strand of DNA will be 3'- _____-5'

- A. UAUCCA
- B. TGGATA
- C. TGGUAU
- D. TATCCA

Q10. A team of virologists has isolated a nucleic acid sample from a newly discovered virus. In order to classify the virus, they need to figure out whether the viral nucleic acid is DNA or RNA.

Which of the the following characteristics of the nucleic acid sample would best help classify the viral nucleic acid as DNA or RNA?

- A. The nucleotides of the virus contain phosphate groups.
- B. The nucleotides of the virus contain deoxyribose.
- C. The nucleotides of the virus contain nitrogenous bases.
- D. The nucleotides of the virus contain covalent bonds.

Q11. Which histones are included in the histone core particle of a nucleosome?

- A. H1, H2A, H2B, H3, H4
- B. H2A, H2B, H3, H4
- C. H1, H2A, H2B, H3
- D. H1, H3, H4

Q12. What term describes the structure formed by histone H1 bound to the octamer and wrapped DNA?

- A. Nucleosome
- B. Chromatosome
- C. Linker DNA
- D. Histone core

Q13. What is the purpose of propell twists in the DNA structure?

- A. To facilitate covalent bonding
- B. To optimize base stacking
- C. To reduce negative charge
- D. To bind DNA-binding proteins

Q14. Which of the following statements about plasmids is true?

- A. They are large, linear DNA molecules
- B. They cannot replicate independently of the genomic chromosomes
- C. They can carry genes that confer resistance to antibiotics
- D. They are infectious like viruses

Q15. Which type of RNA is involved in DNA methylation and transposon repression?

- A. tRNA
- B. piRNA
- C. siRNA
- D. snoRNA

Answers key

1. A
2. C
3. B
4. D
5. D
6. D
7. B
8. D
9. D
10. B
11. B
12. B
13. B
14. C
15. B

