1. When chromosomes are heated and stained with Giemsa stain, the resulting bands are called:
A. G bands
B. Q bands
C. R bands
D. C bands
Ans: C

2. The purpose of a staining technique of chromosomes such as Giemsa is to:
A. allow the mitotic process to be followed and monitored for variations.
B. allow the numbering of chromosomes and identification of variations.
C. identify new somatic cells formed through mitosis and cytokinesis.
D. distinguish the point mutations in chromosomes
Ans: B

3. What would happen if a mutation created a new allele with decreased fitness?
A. The new allele would spread through the population and decrease the fitness of that population.
B. The new allele would decrease the fitness of the individual that possessed it, and that individual would have few or no offspring.
C. The new allele would have to change back to an allele of higher fitness so the possessor of that allele could maintain its fitness.
D. The individual with the new allele would wait for an environmental change so that its fitness would increase again.
Ans: B

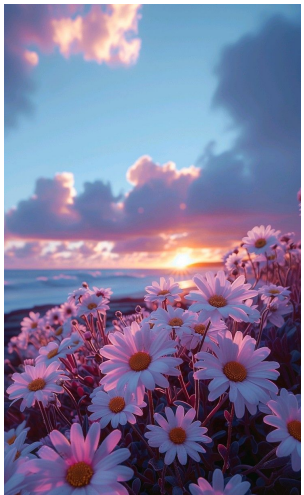
4. What are histone variants?
A. histone proteins that have slightly different amino acid sequences and have specialized functions
B. histone proteins that have slightly different amino acid sequences but are found in nucleosomes throughout the chromosomes
C. histone proteins that have been modified by acetylation
D. histone proteins that have been modified by acetylation and phosphorylation
Ans: A

5. The promoter of gene A has histones that are acetylated on lysine 27 of histone H3, and the promoter of gene B has histones that are methylated on lysine 9 of histone H3. Which gene is being actively transcribed?
A. gene A, because histone acetylation is associated with gene expression
B. gene A, because histone acetylation is associated with gene silencing
C. gene B, because histone methylation is associated with gene expression.
D. gene B, because histone acetylation is associated with gene silencing
E. Both genes are actively transcribed because both of those marks are associated with gene expression.
Ans: A

6. What type of RNA is Xist?
A. LncRNA
B. mRNA
C. rRNA
D. siRNA
E. tRNA
Ans: A

7. The parents of a child with a karyotype of 47,XY, +21 ask the nurse what this means. Which is an accurate response by the nurse?
A. This karyotype is for a normal male.
B. This karyotype is for a normal female.
C. This karyotype is for a male with Down syndrome.
D. This karyotype is for a female with Turner's syndrome.
Ans: C

8. If, while examining a human karyotype, it is observed that there are 22 paired chromosomes and two chromosomes that are not the same size, this would most likely be due to:
A. The karyotype belonging to a female
B. Nondisjunction
C. The karyotype belonging to a male or nondisjunction
D. The karyotype belonging to a male
E. The karyotype belonging to a female or nondisjunction
Ans: D



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