

**UNIT-1**

1. There are multiple origins of replication in
  - a) Prokaryotic DNA Chromosome
  - b) Eukaryotic DNA Chromosome.
  - c) Mitochondrial DNA
  - d) None of these
  
2. Eukaryotic chromosomes are usually visible during
  - a) Complete life cycle of the cell
  - b) When a cell is in the process of dividing
  - c) Early stages of cell growth
  - d) Final stages of cell growth
  
3. When the centromere is close to the mid-point of chromosome, it is known as
  - a) Submetacentric
  - b) Metacentric
  - c) Telocentric
  - d) Acrocentric
  
4. When the centromere is sufficiently far away from the mid-point of the chromosome, for the long arm to be distinguished, the chromosome is referred to as
  - a) Submetacentric
  - b) Metacentric
  - c) Telocentric
  - d) Acrocentric
  
5. If the centromere is at the end of chromosome and there is only one arm, the chromosome is referred to as
  - a) Metacentric
  - b) Telocentric
  - c) Submetacentric
  - d) Acrocentric
  
6. If the centromere is so close to the end of chromosome that short arm is just discernible, the chromosome is referred to as
  - a) Metacentric
  - b) Submetacentric
  - c) Telocentric
  - d) Acrocentric
  
7. Karyotype is the name from
  - a) Prokaryotic chromosome
  - b) Eukaryotic chromosome
  - c) Complete diploid set of chromosome
  - d) Haploid set of chromosomes

8. G-banding patterns for chromosome identification correspond to which of the following
- a) Dark-stained bands are rich in bases adenine and thymine, whereas pale-staining interbands are rich in guanine and cytosine.
  - b) Darkly-stained G-bands are rich in guanine and cytosine, while pale-staining interbands are rich in adenine and thymine.
  - c) Dark stained G-bands are rich in adenine and cytosine, while pale-staining interbands are rich in guanine and thymine.
  - d) Dark stained G-bands are rich in guanine and adenine, while pale-staining interbands are rich in thymine and cytosine.
9. Staining dye in the case of G-banding patterns for chromosome identification is
- a) Toluidine blue
  - b) Acridine orange
  - c) Giemsa
  - d) Commaisee blue
10. The site at which the spindle attaches during cell division is known as
- a) Telomeres
  - b) Nucleolar organizer region (NOR)
  - c) Centromeres
  - d) None of these
11. Any chromosome fragment which loses its connection to a centromere
- a) Will segregate to daughter cells at the end of cell division
  - b) Will not segregate to daughter cells at the end of cell division
  - c) Both a & b
  - d) None
12. The best studied centromeres are those of
- a) Bacteria
  - b) Yeast
  - c) Fungi
  - d) Plants
13. Normally the centromeres consist of-
- a) Long stretches of DNA
  - b) Highly-repeated satellite DNA
  - c) Tandem repeats
  - d) Redundant regions
14. In humans, the chromosomes can be distinguished by the presence of specific
- a) Satellite DNAs
  - b) Alphoid satellite DNAs
  - c) Repeated satellite DNAs
  - d) Redundant DNA

15. A complex of centromere with protein forming multilayered structure is known as-
- a) Karyotype
  - b) Ideogram
  - c) NORs
  - d) Kinetochore
16. Telomers consist of
- a) Satellite DNAs
  - b) Repeated satellite DNAs
  - c) Multiple repeats of simple, short DNA sequences
  - d) Alphoid satellite DNA
17. In humans, the repeat sequence of telomere is
- a) TATGGC
  - b) TTAGGG
  - c) GGCATT
  - d) ATTTGGG
18. Molecular marker of ageing process in terms of telomeres is
- a) Number of repeats per telomere is low in germ cells but increases with age in somatic tissues.
  - b) Number of repeats per telomere high in germ cells but decreases with age in somatic tissues.
  - c) None
  - d) All of these
19. Telomere length is maintained by an enzyme known as telomerase. This enzyme
- a) Is a simple protein
  - b) Multicomplex protein made up of many different subunits.
  - c) Protein that contains RNA complementary to the telomere repeat DNA sequence
  - d) Protein that contains a satellite DNA attached to it.
20. Any chromosome fragment which loses its connection to a centromere
- a) Telomerase is absent from the tumor cells but is present in somatic cells.
  - b) Telomerase is absent in somatic cells but reappears in tumor cells.
  - c) Telomerase is present both in somatic as well as tumor cells.

- d) Telomerase is present both in somatic as well as tumor cells but is more stable in tumor cells.
21. NORs consist of
- a) Tandemly repeats of 5.8S rRNA,                      b) Tandemly repeats of 18S rRNA.  
c) Tandemly repeats of 28S rRNA.                      d) All of these
22. In humans, NORs are found on
- a) short arms of metacentric chromosomes except the Y-chromosome.  
b) short arm of acrocentric chromosome except the Y-chromosome,  
c) short arm of acrocentric chromosome except the X-chromosome,  
d) short arm of sub-meta centric chromosome except Y-chromosome.
23. Each NOR consists of
- a) 10-20 repeats    b) 80-100 repeats  
c) 500-1000 repeats                                      d) 5 repeats
24. When the cell enters metaphase of mitosis, the chromosome appears to be still attached to their short arm. This is known as
- a) Association    b) Restricted Association  
c) Satellite Association                                  d) Chromosomal Association
25. Which of the following strongly suggests that histones have an important role in survival of eukaryotes?
- a) There are five classes of histones.  
b) Histones have basic charge assisting in intimate interaction with the polyanion DNA,  
c) Amino acid sequence of each of the histone is highly conserved throughout evolution.  
d) Molar mass of histones is less than 23KDa.
26. The highest level of packing of DNA with histones is observed during
- a) Anaphase    b) Telophase  
c) Metaphase    d) None of these

27. Organisation of chromosomes involves finding of chromocenters fibers to a chromosomal scaffold. This is made up largely of
- a) Histones
  - b) Non-histone protein
  - c) Acidic - non-histone – protein
  - d) Histone-non-histone protein complex
28. Scaffold Attachment Regions (SARs) are
- a) Several hundred base pair regions rich in bases adenine and thymine.
  - b) Several hundred base pair regions rich in bases guanine and cytosine.
  - c) Several hundred base pair regions rich in all four bases.
  - d) Several hundred base pair regions made up of satellite DNAs.
29. The part of chromatin which is actively involved in transcription is
- a) Heterochromatin
  - b) Euchromatin
  - d) NOR
  - d) None of these
30. Plants chromosomes can be easily identified through
- a) C-banding
  - b) G-banding
  - c) M-banding
  - d) None
31. Some regions of chromatin can exist in the form where they are either actively transcribing or non-transcribing. This is known as
- a) Heterochromatin
  - b) Euchromatin
  - c) Facultative chromatin
  - d) X-chromatin
32. Barr body or X-chromatin is known as
- a) X-chromosomes of female mammals which can be observed as small dense spots on the side of interphase nucleus.
  - b) One of the X-chromosome of female-mammal which can be observed as small dense spot on the side of interphase of nucleus.
  - c) One of the X-chromosome of male-mammal which can be observed as small dense spot on the side of interphase of nucleus
  - d) None of these