Cancer & Cloning

1. Small circular, extrachromosomal DNA segments are known as ________.
2. A hollow tube, formed by protein subunits, on the surface of a bacterial cell is called a ________.
3. ________ are small segments of DNA capable of moving from one location to another in a genome.
4. Unequal ________ can rapidly expand the number of copies of genes.
5. Mutations can only be passed onto subsequent generations when they occur in ________.
6. Tumors arising from cells in connective tissue, bone, or muscle are known as ________.
7. Carcinomas tumor arise in ________ tissue such as skin.
8. The changes involving only one or a few of the nucleotides in the sequence of DNA are called ________________.
9. Chromosomal ___________ involve the relocation of large segments of chromosomes or the duplication of segments of chromosome.
10. ________ are agents thought to cause cancer.
11. Genetic change through mutation and recombination provides the genetic variation necessary for ________, the process by which one organism gradually evolves into another.
12. The agents such as radiation and chemicals that cause changes in the DNA base sequence are called ________.
13. The process by which DNA isolated from one cell is introduced into another cell is called ________.
14. Genes that can be mutated and thus produce tumor forming genes are referred to as ________.
15. Genes that encode for proteins that prevent cyclins from binding to Cdk’s are called ________.
16. Smoking one cigarette has been calculated to reduce human life expectancy by _____ minutes.
17. If a cancer cell breaks loose it can spread to other parts of the body and begin secondary tumors. This is called ________.
18. If a cell is ________, then it can form any body cell, even an adult animal.
19. A change in the content of the genetic message is called
   A. transposition
   B. mutation
   C. germ line translocation
   D. cross-over
   E. transfection

20. Spontaneous errors in DNA in which the wrong nucleotide is inserted into the new strand are referred to as
   A. a point mutation
   B. a translocational error
   C. transcriptional error
   D. a frameshift mutation
   E. a zygotic mutation

21. In both bacteria and eukaryotes, individual genes may move from one place to another in the DNA by a process called
   A. transcription
   B. translation
   C. transfection
   D. transference
   E. transposition

22. Mutations that occur in these types of cells are not passed on to the next generation.
   A. egg cells
   B. sperm cells
   C. germ-line cells
   D. somatic cells

23. When a segment of one chromosome becomes part of another chromosome, this is called a
   A. conformation
   B. frameshift
   C. translocation
   D. deletion
   E. inversion

24. If an individual cell starts dividing in an uncontrolled manner, the growth that results is called
   A. an infection
   B. a tranfection
   C. a tumor
   D. frameshift growth tumor
   E. germ-line tumor
25. Small, circular auxiliary DNA molecules of bacteria which are commonly used in genetic engineering technology are referred to as
   A. transposons
   B. germ-line DNA molecules
   C. plasmids
   D. conformational DNA molecules
   E. translational DNA molecules

26. Mutations that consist of a change in one or a few nucleotides of a DNA sequence are called
   A. cancer-causing mutations
   B. chromosomal rearrangements
   C. double-strand breaks
   D. point mutations
   E. somatic mutations

27. Chromosomal changes which involve gene-orientation, but do not usually result in gene expression changes are called
   A. deletions
   B. point mutations
   C. frame shift mutations
   D. inversions
   E. transfections

28. One of the most significant causes of mutation involves transposons, which cause
   A. insertional inactivation
   B. inversion
   C. deletion
   D. transfection
   E. plasmid transfer

29. If a mutation occurs in a somatic cell, it passes to
   A. germ-line cells
   B. the gametes
   C. all descendents of that cell
   D. the zygote
   E. only the neighboring cells

30. A tumor is a ball of cells that starts from a normal cell which
   A. continuously increase in size
   B. has lost normal suppression of cell division
   C. has lost cell cycle controls
   D. b and c are correct
   E. a, b, and c are correct
31. Carcinoma occurs in
   A. any kind of somatic cells
   B. chicken tissues only
   C. connective tissue such as bone
   D. epithelial tissue such as skin
   E. germ-line tissue

32. Sarcoma occurs only in
   A. any kind of somatic cells
   B. chicken tissues only
   C. connective tissue such as bone
   D. epithelial tissue such as skin
   E. germ-line tissue

33. Cells that leave a tumor and spread throughout the body, forming new tumors at distant sites, are called
   A. malignancies
   B. metastases
   C. melotic mishaps
   D. germ-line cells
   E. gametes

34. Normal genes that have gone awry and now cause cancer are the
   A. DNA viruses
   B. growth-promoter genes
   C. oncogenes
   D. retroviruses
   E. tumor viruses

35. Small auxiliary circles of DNA that are able to enter and leave specific places on the main bacterial chromosomes are called
   A. chromatids
   B. cytoplasmic genes
   C. plasmids
   D. transfer DNA
   E. transposons

36. Small fragments of a chromosome that migrate from one position to another at random are called
   A. chromatids
   B. cytoplasmic genes
   C. plasmids
   D. transfer genes
   E. transposons
37. Commonly, the amount of bacterial DNA found in plasmids is
   A. variable
   B. about 0.01%
   C. about 0.1%
   D. about 0.5%
   E. about 5%

38. Mismatched pairs of nucleotides may occur in synapsed pairs of chromosomes; the cell’s error-correcting machinery may correct the mismatch, but change the sequence of a gene. This is called
   A. correctional misalignment
   B. gene conversion
   C. reciprocal recombination
   D. conjugation
   E. unequal crossing over

39. Crossing over is a form of recombination that occurs in
   A. bacterial conjugation
   B. eukaryotic transposition
   C. mutation
   D. prophase I of meiosis
   E. prophase II of meiosis

40. An individual organism that has gained or lost a single chromosome of the normal complement is said to be
   A. aneuploid
   B. transposed
   C. polyploid
   D. recombined
   E. monosomic

41. In bacteria genes may be transferred through a pilus which acts like a bridge in a process called as
   A. transfection
   B. inversion
   C. conjugation
   D. recombination
   E. transformation

42. When a sequence present in more than one copy on a chromosome pairs out of register, similar to a shirt buttoned wrong by one button, this is referred to as
   A. triplet expansion
   B. slipped mispairing
   C. base substitution
D. insertional inactivation
E. translocation
43. A condition called _____ exists when an entire chromosome set is duplicated.
   A. polyploidy
   B. translocation
   C. triplet expansion
   D. aneuploidy
   E. excision addition

44. The only DNA repair system that is able to handle doubled-strand breaks in DNA is
   A. photorepair system
   B. mismatch repair system
   C. excision repair system
   D. post-replication repair system
   E. reciprocal repair system

45. The nonspecific DNA repair system that responds to distortions in the double helix caused
   by damaged bases is the
   A. photorepair system
   B. mismatch repair system
   C. excision repair system
   D. post-replication repair system
   E. reciprocal repair system

46. ____________ is the alteration of one homologue by the cell’s error-detection and repair
   system to make it resemble the other homologue.
   A. Reciprocal recombination
   B. Gene conversion
   C. Unequal crossing over
   D. Recombinational excision
   E. Insertional inactivation

47. A cancer treatment aimed at the “receiving the signal to divide process” of the cell cycle is
   A. the use of farnesyl transferase
   B. the use of the human immune system by using monoclonal antibodies
   C. the use of the tumor suppressor protein p53
   D. the use of antisense RNA
   E. the use of the Ras gene to amplify the signal of the gene product

48. The recruitment and production of new blood vessel to a growing tumor site is called
   A. metastasis
   B. gene intervention
   C. therapeutic intervention
   D. angiogenesis
   E. tumorogenesis
49. If a gene has been methylated,
   A. it has been involved in metastatic cancer of some somatic tissue
   B. it has been treated with monoclonal antibodies
   C. the polymerase proteins cannot recognize it and thus the gene is not read and therefore not expressed
   D. it can be read with the antisense mRNA
   E. it can be used in gene therapy of metastatic cancer

50. Embryonic stem cells are located
   A. inside the blastocyst
   B. outside the blastocyst
   C. attached to the placenta
   D. inside the unfertilized egg cell
   E. inside specific tissues found in the somatic tissues of adults

51. Match each of the following.
   _____ A. A jumping gene disrupts the sequence of a gene into which it is inserted.
   _____ B. A change in a small number of nucleotides, one or two or a few.
   _____ C. Bacteria have no mechanism for repairing such mutations.
   _____ D. Removal of one or two nucleotides from a 3-nucleotide coding segment causes errors in all the rest of the message.
   _____ E. Mutation in a body cell rather than in a reproductive cell.
### Answer Key

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