



Dr.G.R.Damodaran College of Science

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CRISL rated 'A' (TN) for MBA and MIB Programmes

II MSC [2016-2018]

SEMESTER III

ELECTIVE III: CANCER BIOLOGY - 358W1

Multiple Choice Questions.

1. Any agent that causes cancer is called _____.

- A. Mutagen.
- B. Carcinogen.
- C. Oncogene.
- D. Carcinoma.

ANSWER: B

2. Which of the following cancer is not characterized by tumor formation

- A. Melanoma
- B. Leukemia
- C. Sarcoma
- D. Adenoma

ANSWER: B

3. Cancer is caused by _____.

- A. Uncontrolled mitosis.
- B. uncontrolled meiosis.
- C. Rupturing of cells.
- D. Loss of immunity of the cells.

ANSWER: A

4. Mutations that impact evolution most occur in _____.

- A. Somatic cells.
- B. Brain cells.
- C. Germ-line cells.
- D. Sperm cells.

ANSWER: C

5. Carcinogen occurring from *Aspergillus niger* is

- A. Asbestos
- B. Certain dioxins
- C. Aflatoxin
- D. Aniline dyes

ANSWER: C

6. Cancer may start when _____.

- A. Diploid number of chromosomes become defective.
- B. Changes occur in genes controlling cell divisions.
- C. When loci start to change in chromosomes.
- D. Haploid number of chromosomes become defective.

ANSWER: B

7. DNA adducts is formed by which type of linkage between the carcinogen and nucleotide

- A. hydrogen bonds

- B. disulphide bonds
- C. both A and B
- D. hydroxyl linkage

ANSWER: B

8. Chromosomal rearrangement may result in _____.

- A. Monoploidy.
- B. Aneuploidy.
- C. Diploidy.
- D. Statiploidy.

ANSWER: B

9. Carcinomas are tumors arising from _____.

- A. Epithelial tissue.
- B. Bone.
- C. Muscle.
- D. Connective tissue.

ANSWER: A

10. The most reactive ROS species is

- A. hydrogen peroxide
- B. hydroxyl ion
- C. super oxide
- D. singlet oxygen

ANSWER: B

11. Next to breast cancer, the most common form of cancer in the United States is _____.

- A. Leukemia.
- B. Colon and rectum.
- C. Bladder.
- D. Prostate.

ANSWER: D

12. cancer is characterized by

- A. Abnormal cell growth
- B. alteration in gene expression
- C. Disregulated apoptosis
- D. All the above

ANSWER: D

13. Cells that leave a tumor and spread throughout the body, forming tumors at distant sites are called

_____.

- A. Sarcomas.
- B. Lymphomas.
- C. Carcinomas.
- D. Metastases.

ANSWER: D

14. Displasia is a condition characterized by

- A. Abnormal increase in cell number
- B. abnormal in appearance
- C. cells are not found in usual tissues
- D. none of the above

ANSWER: B

15. The term cancer means _____.

- A. Cell division.
- B. Out of control.

- C. Crab.
 - D. Lobster.
- ANSWER: C

16. Cancer is often the result of activation of ____ to ____ and the inactivation of ____ genes.

- A. Oncogenes, tumor-suppressor genes, proto-oncogenes.
- B. Proto-oncogenes, oncogenes, tumor-suppressor genes.
- C. Oncogenes, proto-oncogenes, tumor-suppressor genes
- D. Proto-suppressor genes, suppressors, oncogenes.

ANSWER: B

17. About 50% of all human cancers may involve an abnormal or missing _____.

- A. Oncogene.
- B. Proto-oncogene.
- C. p53 gene.
- D. BRCA-1 gene.

ANSWER: C

18. Adenoma is a type of

- A. Benign tumor
- B. Premalignant tumor
- C. Malignant tumor
- D. metastasized tumor

ANSWER: A

19. Cervical cancer is associated with which of the following viruses?

- A. PIV.
- B. HPV.
- C. HCV.
- D. HSV.

ANSWER: B

20. The blood cancer is known as _____.

- A. Haemolysis.
- B. Leukaemia.
- C. Haemophilia.
- D. Thrombosis.

ANSWER: B

21. Inversions in a chromosome _____.

- A. Are a form of transposition.
- B. Are important in eukaryotes if in somatic cells.
- C. Have an effect on recombination.
- D. Alter gene expression.

ANSWER: C

22. Tumor-suppressor genes _____.

- A. Are involved in the cellular response to EGF.
- B. Encode proteins that prevent binding of cyclins.
- C. Stimulates the binding of GTP.
- D. Includes the widely studied myc gene

ANSWER: B

23. The p53 gene is responsible for _____.

- A. Triggering cells to grow uncontrollably.
- B. Damaging DNA.
- C. Over riding the G1 checkpoint.
- D. Initiating transcription of p21 which binds to cyclins.

ANSWER: D

24. Hemangiomas is a tumor caused in

- A. connective tissues
- B. Fibrous tissues
- C. blood vessels
- D. epithelial cells

ANSWER: C

25. Naturally occur carcinogens include _____.

- A. Asbestos.
- B. Certain dioxins.
- C. Aflatoxin.
- D. Aniline dyes.

ANSWER: C

26. Cancer of B lymphocytes is called as _____.

- A. Sarcoma.
- B. Melanoma.
- C. Myeloma.
- D. Carcinoma.

ANSWER: C

27. Following is one of the reasons for lung cancer _____.

- A. Coal mining.
- B. Cement factory.
- C. Calcium flouride
- D. Bauxite mining.

ANSWER: A

28. cytological criteria for diagnosis of cancer cells include all of these except

- A. Morphology of cells
- B. Invasion of cancer
- C. Cells undergoing mitosis
- D. accessibility of tumor

ANSWER: D

29. Which on the following is used in treatment of thyroid cancer?

- A. U-238.
- B. I-131.
- C. C-14.
- D. rA-240.

ANSWER: B

30. Migration of cancerous cells from the site of origin to other part of the body forming secondary tumous is called _____.

- A. Diapedesis.
- B. Metastasis.
- C. Proliferation.
- D. Metamorphism.

ANSWER: B

31. _____ is used to diagnose the breast cancer.

- A. Blood test.
- B. PAP test.
- C. CT scan.
- D. Mammography.

ANSWER: D

32. Which one of the therapies involves only the cancerous cells, but not the normal cells?

- A. Immunotherapy.
- B. Surgery.
- C. Aromatherapy.
- D. Immunotherapy.

ANSWER: D

33. Which one of the following cancers does not form a solid neoplasm?

- A. Leukemia.
- B. Lymphoma.
- C. Lipoma.
- D. Sarcoma.

ANSWER: A

34. Which of the following best defines an oncogene?

- A. An oncogene codes for a cell cycle control protein.
- B. An oncogene codes for a mutated form of a protein that forms part of a signal transduction pathway.
- C. An oncogene codes for a protein that prevents the cell from undergoing apoptosis.
- D. An oncogene is a dominantly expressed mutated gene that gives a cell a growth or survival advantage.

ANSWER: D

35. Which of the following types of protein could be coded by a tumour-suppressor gene?

- A. A protein that forms part of a growth factor signalling pathway.
- B. A protein that codes for a DNA repair enzyme.
- C. A protein that helps prevent apoptosis.
- D. A protein that controls progression through the cell cycle.

ANSWER: D

36. Which property of p53 enables it to prevent the development of cancer?

- A. p53 is a transcription factor that causes production of proteins that stimulate the cell cycle.
- B. p53 prevents the replication of cells with damaged DNA.
- C. p53 prevents cells from triggering apoptosis.
- D. p53 stimulates synthesis of DNA repair enzymes that replace telomere sequence lost during cell division.

ANSWER: B

37. Which of the following is characteristic of a malignant rather than a benign tumour?

- A. Undergoes metastasis.
- B. Develops a blood supply.
- C. Cells divide an unlimited number of times.
- D. Grows without needing a growth signal.

ANSWER: A

38. BRCA-1 is associated with which cancer?

- A. Breast.
- B. Thyroid
- C. Nerve.
- D. Leukemia.

ANSWER: A

39. Which of the following statements about telomerase is incorrect?

- A. A) It is an enzyme that adds DNA to telomeres.
- B. It serves as the template for telomeres lengthening.
- C. It is not activated in cancer cells.
- D. Its activity continually resets the cellular clock.

ANSWER: C

40. Top most carcinogen is

- A. Asbestos
- B. UV radiation
- C. Ionizing radiation
- D. Tobacco

ANSWER: D

41. An oncogene transcribed and translated with another gene produces a _____.

- A. Transcribed protein.
- B. Fusion protein.
- C. Fusion cell.
- D. Cancer protein.

ANSWER: B

42. The P53 protein normally promotes _____.

- A. DNA repair.
- B. Tumor formation.
- C. Cell division.
- D. Apoptosis.

ANSWER: D

43. FAP colon cancer results from _____ mutation(s).

- A. One.
- B. Two.
- C. Three.
- D. Four or more.

ANSWER: D

44. Which type of study compares the incidence of a type of cancer among very different groups of people?

- A. Population.
- B. Case-control.
- C. Prospective.
- D. Empiric.

ANSWER: A

45. Which type of study would collect data about the distribution of disease world wide?

- A. Epidemiological
- B. Case-control.
- C. Prospective.
- D. Empiric.

ANSWER: A

46. Which of the following cancers develops from loss of tumor suppression?

- A. Aute T cell leukemia.
- B. Wilms' tumor.
- C. Burkitt's lymphoma.
- D. Rous sarcoma.

ANSWER: B

47. Why is genetic counseling for familial breast cancer difficult?

- A. BRCA1 and BRCA2 are incompletely penetrant.
- B. Breast cancer can occur in other ways.
- C. Not all mutations are associated with disease.
- D. All the above.

ANSWER: D

48. A mutation in which gene makes nearby DNA more susceptible to replication errors?

- A. APC
- B. BRCA1
- C. P53
- D. RB

ANSWER: A

49. Cancer cells require lots of nutrients, which are supplied by blood vessels. The growth of new blood vessels to cancerous tissue is called:

- A. Angiogenesis.
- B. Metastasis.
- C. Carcinogenesis.
- D. Apoptosis.

ANSWER: A

50. The critical checkpoints that control the cell cycle are at the _____.

- A. G1 to S stage and G2 to M stage.
- B. S to G2 stage and G2 to M stage.
- C. M to G1 stage and G2 to M stage.
- D. M to G1 stage and S to G2 stage.

ANSWER: A

51. Which of the following is NOT true about cancer cells?

- A. They never fully differentiate.
- B. They exhibit contact inhibition.
- C. They exhibit uncontrolled growth.
- D. They exhibit disorganized growth.

ANSWER: B

52. Cancer is the second largest death causing disease in the world next to

- A. AIDS
- B. Malaria
- C. Cardio vascular disease
- D. tuberculosis

ANSWER: C

53. Which one of the following genes is involved in the conversion of proto-oncogenes into oncogenes causing cancer?

- A. Metastasis genes.
- B. Angiogenesis genes.
- C. Transposons.
- D. Tumor suppressor genes.

ANSWER: D

54. Which of the following therapies will involve only the cancerous cells not the normal cells in treatment?

- A. Immunotherapy.
- B. Surgery.
- C. Aromatherapy.
- D. Chemotherapy.

ANSWER: A

55. The best system which can be adopted for gene therapy is _____.

- A. P elements.
- B. Cre-Lox system.
- C. Non-homogenous recombination.
- D. Ac-Ds elements.

ANSWER: B

56. The cleavage of spectrin network in the cell by the proteolytic enzyme calpaine indicate:

- A. Apoptosis of cell.
- B. Necrosis of cell.
- C. Cellular inflammation.
- D. Phagocytosis by macrophages.

ANSWER: B

57. Mutations that impact evolution most occur in _____.

- A. Somatic cells.
- B. Brain cells.
- C. Germ-line cells.
- D. Sperm cells.

ANSWER: C

58. Ultraviolet light can cause the formation of double bonds between adjacent pyrimidines, resulting in a formation called a _____.

- A. Pyrimidine mispairing.
- B. Pyrimidine-pyrimidine pairing.
- C. Pyrimidine dimer.
- D. Pyrimidine pseudopairing.

ANSWER: C

59. Chromosomal rearrangement may result in _____.

- A. Monoploidy.
- B. Aneuploidy.
- C. Diploidy.
- D. Statiploidy.

ANSWER: B

60. Carcinomas are tumors arising from _____.

- A. Epithelial tissue.
- B. Bone.
- C. Muscle.
- D. Connective tissue.

ANSWER: A

61. Pseudogenes are important to evolution because _____.

- A. They are silent genes that have been activated by mutations.
- B. They did not exist until recently.
- C. They occur entirely within multigene families.
- D. Mutational changes may convert them to active genes, encoding a protein with different properties.

ANSWER: D

62. The ras-induced bladder cancer is caused by _____.

- A. Inducing the transcription of p21 proteins.
- B. Inducing p53 mutations.
- C. A single DNA base change in the normal ras protein.
- D. Preventing phosphorylation of Rb protein

ANSWER: B

63. Transposition can facilitate _____.

- A. Insertional activation.
- B. Gene amplification.
- C. Gene mobilization.
- D. Insertional reversion

ANSWER: C

64. Unequal crossing over tends to cause _____.
- A. An increase in the number of copies of a gene.
 - B. Insertional inactivation in the region of crossing over.
 - C. Insertional Loss of genes excised by correction mechanisms.
 - D. Conversion of the excess DNA into heterochromatin.

ANSWER: A

65. The virus known as RSV is associated with _____.
- A. Chicken sarcoma.
 - B. Bovine cancer.
 - C. Breast cancer.
 - D. Liver sarcomas

ANSWER: A

66. The most common organs of metastases are
- A. breast and uterus
 - B. Breast and Lungs
 - C. Lungs and liver
 - D. Liver and Kidney

ANSWER: C

67. A carcinoma in lungs can metastasize to all the below organs except
- A. Liver
 - B. Breast
 - C. Brain
 - D. spleen

ANSWER: B

68. Next to breast cancer, the most common form of cancer in the United States is _____.
- A. Breast.
 - B. Prostate.
 - C. Colon & rectum.
 - D. Bladder

ANSWER: B

69. Transposons are _____.
- A. Are more numerous than satellite DNA, but are shorter in length.
 - B. Appear to play no functional role in a cell.
 - C. More diverse in mammalian genomes than in other eukaryotes.
 - D. Account for at least 20% of Drosophila DNA.

ANSWER: B

70. Cells that leave a tumor and spread throughout the body, forming tumors at distant sites are called _____.
- A. Sarcomas.
 - B. Lymphomas.
 - C. Metastases.
 - D. Metamorphoses.

ANSWER: C

71. Cancer is more common in older people because _____.
- A. Their immune systems have degenerated.
 - B. The supply of certain hormones declines with age.
 - C. A change in the rate of cell replacement takes place.
 - D. They have accumulated more mutations.

ANSWER: D

72. Tandem clusters occur most commonly in _____.

- A. Satellite DNA.
- B. Centromere.
- C. The nuclear organizer regions.
- D. Plasmids.

ANSWER: C

73. The price of smoking a pack of cigarettes is _____ hours of one's life.

- A. 24.
- B. 16.
- C. 12.
- D. 3.5.

ANSWER: D

74. Slipped mispairing may cause deletions resulting in _____.

- A. Single nucleotide substitution.
- B. Frameshift mutation.
- C. Translocations.
- D. Insertion inactivation.

ANSWER: B

75. Plasmids are transferred between bacteria by way of a _____.

- A. Conjugator.
- B. Pilus.
- C. Transposer.
- D. Snorkel.

ANSWER: B

76. The primary effect of ultraviolet radiation is the production of _____.

- A. Two-stranded breaks in DNA.
- B. Pyrimidine dimers.
- C. Base analogue mispairing.
- D. Isomerization of a base.

ANSWER: B

77. Gene conversion refers to _____.

- A. Alterations in homologues as mismatch pair errors are corrected.
- B. Insertion of a transposon that alters the reading frame.
- C. The formation of plasmids from a bacterial genome.
- D. Single nucleotide substitution caused by a base analogue mispairing.

ANSWER: A

78. Inversions in a chromosome _____.

- A. Are a form of transposition.
- B. Cause aneuploidy.
- C. Are important in eukaryotes if in somatic cells.
- D. Have an effect on recombination.

ANSWER: D

79. Which of the following is not a form of genetic recombination _____.

- A. Plasmid formation.
- B. Chromosome assortment.
- C. Reciprocal recombination.
- D. Gene transfer

ANSWER: A

80. Tumor-suppressor genes _____.

- A. Are involved in the cellular response to EGF.
- B. Encode proteins that prevent binding of cyclins.

- C. Stimulates the binding of GTP.
- D. Includes the widely studied myc gene.

ANSWER: B

81. The p53 gene is responsible for _____.
- A. Triggering cells to grow uncontrollably.
 - B. Damaging DNA.
 - C. Over riding the G1 checkpoint.
 - D. Initiating transcription of p21 which binds to cyclins.

ANSWER: D

82. In Staging of the tumor the N stage refers to
- A. Presence or absence of metastasis
 - B. Involvement of regional lymph nodes
 - C. Primary tumor formation
 - D. None of the above

ANSWER: B

83. Which of the following cancer can be prevented by vaccination?
- A. Oral cancer.
 - B. Cervical cancer.
 - C. Breast cancer.
 - D. Colon cancer.

ANSWER: B

84. The best system which can be adopted for gene therapy is _____.
- A. Pelements.
 - B. Cre-Lox system.
 - C. Non-homogenous recombination.
 - D. Ac-Ds elements.

ANSWER: B

85. Which of the following is NOT a cell adhesion protein?
- A. Cadherin.
 - B. Integrin.
 - C. Selectin.
 - D. Clathrin.

ANSWER: D

86. Which of the following DNA repair mechanism is known as the 'cut and patch mechanism'?
- A. Photoreactivation.
 - B. Nucleotide excision repair.
 - C. Base excision repair.
 - D. Mismatch repair.

ANSWER: B

87. DNA helicase enzyme involved in base excision repair mechanism is _____.
- A. DNA helicase I.
 - B. DNA helicase II.
 - C. DNA helicase III.
 - D. DNA helicase IV.

ANSWER: C

88. Saturated animal fat and red meat is associated with
- A. Colon cancer
 - B. Rectum cancer
 - C. Prostate cancer
 - D. All the above

ANSWER: D

89. The main difference between nucleotide excision repair (NER) and base excision repair (BER) is:
- A. In NER double strand breaks are repaired where as in BER single strand breaks repaired.
 - B. NER is a light dependent reaction whereas BER is light independent process.
 - C. In NER phosphodiester backbone is first cleaved where as in BER. phosphodiester backbone is cleaved later
 - D. All of these.

ANSWER: C

90. Which of the following molecules, when present in its normal, functional form, does not help "brake" or slow down the cell cycle?.

- A. p53.
- B. p21.
- C. ATM.
- D. Cyclin B1.

ANSWER: D

91. Which of the followings does NOT need a primer in order to function?

- A. DNA Pol I.
- B. DNA Pol II.
- C. DNA Pol III.
- D. RNA polymerase.

ANSWER: D

92. How many hydrogen bonds form between U and A in a Watson-Crick base pair interactions?

- A. 0.
- B. 1.
- C. 2.
- D. 3.

ANSWER: C

93. Which of the followings is required for end to end joining of DNA?

- A. DNA Pol I.
- B. DNA ligase.
- C. DNA Pol III.
- D. RNA polymerase.

ANSWER: B

94. The only methylated base in mammals is _____.

- A. 7-methyl guanine.
- B. Thymine.
- C. Methyl adenine.
- D. 5-methyl cytosine.

ANSWER: B

95. Radioactive substance emitted from earth's crust is

- A. UV
- B. Radon
- C. IR
- D. Gamma rays

ANSWER: B

96. Repressor molecules bind to the _____.

- A. Promoter.
- B. Enhancer.
- C. Operator.
- D. Hormone response element.

ANSWER: C

97. Which of the following enzyme(s) can remove or insert supercoil twists into circular DNA?

- A. Topoisomerases.
- B. DNA Pol II.
- C. Spliceosomes.
- D. Helicase.

ANSWER: A

98. Nucleosomes _____.

- A. Bind to RNA pol II.
- B. Package prokaryotic DNA.
- C. Are only present in prokaryotes.
- D. Are composed on an octamer of histones and ~150 bp of DNA.

ANSWER: D

99. Which of the following m RNA s lack poly A tail?

- A. Ferritin.
- B. Interferon.
- C. Insulin.
- D. None of the above.

ANSWER: B

100. The RNA primer is removed from the Okazaki fragment by:

- A. DNA Pol I.
- B. DNA Pol II.
- C. DNA Pol III.
- D. RNA polymerase.

ANSWER: A

101. Histones have an abundance of which of the following amino acids?

- A. Lysine and arginine.
- B. Alanine and glutamine.
- C. Glycine and Glutamine.
- D. Arginine and Glutamine.

ANSWER: A

102. Which of the following is not a cloning vector?

- A. Helicase.
- B. PBR322.
- C. SV40.
- D. E.coli genomic DNA.

ANSWER: A

103. Which of the following is false about the E. coli Lac operon?

- A. It is polycistronic.
- B. It is an example of negative control.
- C. The presence of lactose acts as an inducer.
- D. The repressor binds to the promoter.

ANSWER: D

104. The part of the bacterial RNA polymerase responsible for recognizing the promoter is the:

- A. Alpha subunit.
- B. Rho protein.
- C. DNA Pol III.
- D. Sigma subunit.

ANSWER: D

105. Enhancer regions in eukaryotic DNA are _____.

- A. DNA Pol I binding sites.
- B. Inhibit the binding of repressor.
- C. Enhance the frequency of transcription.
- D. Specific for given set of genes.

ANSWER: C

106. In contrast to DNA polymerase, RNA polymerase _____.

- A. Fills in the gap between Okazaki fragments.
- B. Works only in 5`to 3` direction.
- C. Edits as it synthesizes.
- D. Synthesizes RNA primer to initiate DNA synthesis.

ANSWER: D

107. DNA is replicated:

- A. Conservatively.
- B. Distributively.
- C. Semi-conservatively.
- D. Dispersively.

ANSWER: C

108. Telomerase does which of the following _____.

- A. Joins Okazaki fragments on the lagging strand.
- B. Catalyzes DNA replication at the ends of chromosome.
- C. Enhances transcription.
- D. Requires dCTP.

ANSWER: B

109. Immunosuppressive drugs causes

- A. Leukemia
- B. melanoma
- C. Lymphoma
- D. All the above

ANSWER: C

110. A promoter site on DNA _____.

- A. Is present upstream to the start site.
- B. Is present on the coding strand.
- C. Initiates transcription.
- D. All of the above.

ANSWER: D

111. In protein synthesis which out of the following is not a termination codon?

- A. UAG.
- B. UGA.
- C. UUU.
- D. UAA.

ANSWER: C

112. Which of the following drug is used for the treatment of breast cancer?

- A. Tamoxifin.
- B. Ribose phosphate.
- C. Ara C.
- D. PRPP (5- phosphoribosylpyrophosphate).

ANSWER: A

113. Fertility drugs increases the risk of

- A. Breast cancer.

- B. Cervical cancer
- C. Ovarian cancer
- D. Endometrial cancer

ANSWER: C

114. BRCA-1 is associated with which cancer?

- A. Breast.
- B. Nerve.
- C. Thyroid.
- D. Leukemia.

ANSWER: A

115. The p53 protein normally promotes _____.

- A. DNA replication.
- B. Cell division.
- C. Tumor formation.
- D. Apoptosis.

ANSWER: D

116. The mutagenicity of a compound can be detected by _____.

- A. ELISA.
- B. Ames test.
- C. Western blotting.
- D. All of the above.

ANSWER: A

117. A toxin from Fusarium is able to cause

- A. Pharyngeal cancer
- B. Stomach cancer
- C. Oesophageal cancer
- D. Pancreatic cancer

ANSWER: C

118. All are nucleosides except :

- A. Cytosine.
- B. Guanosine.
- C. Inosine.
- D. Adenosine.

ANSWER: A

119. Restriction endonucleases are enzymes _____.

- A. Used for joining DNA to cloning vector.
- B. That cleave randomly.
- C. That digest DNA from ends.
- D. Cleave DNA at specific sites.

ANSWER: D

120. An alkaloid carcinogen obtained from medicinal plants is

- A. Ochratoxin
- B. Pyrrolizidine
- C. Bracken
- D. DTT

ANSWER: B

121. Which one of the following molecules is not a component of the 30 S initiation complex?

- A. GTP.
- B. mRNA.
- C. Initiation factor 2.

D. ATP.

ANSWER: D

122. Out of the following, one class of RNA characteristically contains unusual purines and pyrimidines. This RNA is _____.

- A. tRNA.
- B. rRNA.
- C. mRNA.
- D. 16s RNA.

ANSWER: A

123. Synaptic signaling involves _____.

- A. Endocrine signals.
- B. Paracrine signals.
- C. Autocrine signals.
- D. Neurotransmitters.

ANSWER: D

124. Characteristics of intracellular receptors that regulate gene transcription include all of the following except :

- A. DNA binding site.
- B. An extracellular binding site.
- C. Transcription activating domain.
- D. May be signaled by lipid soluble molecules

ANSWER: B

125. Cell surface receptors may be any of the following except :

- A. G protein linked.
- B. Enzymic receptors.
- C. Single-pass transmembrane proteins for neurotransmitters.
- D. Chemically-gated ion channels.

ANSWER: C

126. In the cAMP pathway, the G protein stimulates

- A. Phospholipase C.
- B. Adenylyl cyclase.
- C. The endoplasmic reticulum.
- D. Calmodulin.

ANSWER: B

127. The _____ surrounds the cell like a belt, preventing the passage of substances between the cells.

- A. Gap junction.
- B. Hemidesmosome.
- C. Desmosome.
- D. Tight junction.

ANSWER: D

128. In most cases protein kinases _____.

- A. Hydrolyze proteins.
- B. Polymerize amino acids.
- C. Polymerize amino acids.
- D. Add phosphate groups to proteins.

ANSWER: D

129. Enzyme which methylates the hemi methylated DNA is

- A. DNMT3
- B. DNMT3A
- C. DNMT1

D. DNMT3A

ANSWER: C

130. In desmosomes, cadherins link to _____ of an adjacent cell.

- A. Integrins.
- B. Connexons.
- C. Ras proteins.
- D. Intermediate filaments.

ANSWER: D

131. _____ junctions may protect a damaged cell through chemical gating.

- A. Tight.
- B. Gap.
- C. Occluding.
- D. Occluding.

ANSWER: B

132. _____ is a common second messenger.

- A. cAMP.
- B. cGTP.
- C. cMHC.
- D. cATP.

ANSWER: A

133. In anchoring junctions, cadherins are linked to _____.

- A. Actin filaments in the cell's cytoskeleton.
- B. Cell walls of adjacent cells in plants.
- C. Connexons of its own and adjacent cells.
- D. Extracellular matrices of adjacent cells.

ANSWER: A

134. Adherens junctions may involve _____.

- A. Extracellular matrix.
- B. Integrins.
- C. Actin filaments.
- D. All of the above.

ANSWER: D

135. A single-pass protein that acts as a "self" marker is _____.

- A. GTP.
- B. MHC.
- C. GMP.
- D. MCA.

ANSWER: B

136. Cell signals with short-lived local effects are called _____.

- A. Paracrine.
- B. Apocrine.
- C. Merocrine.
- D. Holocrine.

ANSWER: A

137. Desmosomes are associated with _____ junctions.

- A. Adherens.
- B. Tight.
- C. Anchoring.
- D. Communicating.

ANSWER: C

138. One protein kinase cascade begins with the phosphorylation of the _____.

- A. Tap protein.
- B. Gat protein.
- C. Sat protein.
- D. Ras protein.

ANSWER: D

139. When a signal molecule arrives at a G protein-linked receptor, the G protein _____.

- A. Becomes deactivated.
- B. Binds to the signal molecule.
- C. Becomes activated.
- D. Binds with a Ca^{++} .

ANSWER: C

140. Cell junctions that prevent small molecules from passing in between two cells are called _____.

- A. Gap junctions.
- B. Tight junctions.
- C. Adhesions.
- D. Plasmodesmata.

ANSWER: B

141. In some tissues subject to mechanical stress, special junctions called _____ connect the cytoskeletons of adjacent cells.

- A. Cadherin junctions.
- B. Tight junctions.
- C. Stress junctions.
- D. Anchoring junctions.

ANSWER: D

142. The G₀ phase is _____.

- A. The checkpoint before G₁.
- B. The state of most cells in an animal body.
- C. Another name for interphase.
- D. A permanent state of all body cells.

ANSWER: B

143. Cdks bind with _____, enabling the Cdks to function as enzymes.

- A. MPF.
- B. Cyclins.
- C. Histones.
- D. p53.

ANSWER: B

144. _____ from a blood clot stimulates the growth of cells in the healing process.

- A. EGF.
- B. PDGF.
- C. MPF.
- D. NGF.

ANSWER: B

145. The term "homologous chromosomes" _____.

- A. Refers to replications of the same chromosome.
- B. Is another name for sister chromatids.
- C. Must be haploid.
- D. Means a pair of chromosomes of the same kind, such as sex chromosomes.

ANSWER: D

146. Mitosis is controlled at the _____ checkpoint.

- A. C.
- B. G1.
- C. G2.
- D. M.

ANSWER: D

147. DNA methylation occurs in

- A. Exons
- B. Transcription start site
- C. Promoters
- D. CpG islands

ANSWER: D

148. Irreversible arrest of cell growth is called

- A. Invasion
- B. Senescence
- C. metastasis
- D. Angiogenesis

ANSWER: B

149. The primary growth phase of a cell is the _____.

- A. G0.
- B. G1.
- C. G2.
- D. M.

ANSWER: B

150. _____ triggers the division of activated T lymphocytes.

- A. FGF.
- B. Interlukin 2.
- C. PDGF.
- D. Erythroprotein.

ANSWER: B

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