مقدمه لعلم الخلية الجزيئي
9:11
الاثنين 5/7/2021
أ.د/نجلاء كمال

Faculty of Computers & Information, Assiut University
2nd Level
Final Exam
Duration: 2 hours

1. الإسم الرباعي (بالعربي فقط) *

ماريا سامح الفونس قزمان

2. رقم الجلوس *

1620195209

3. المستوي *

- الاول
- الثاني
- الثالث

- رابعة 2013
- رابعة 2014
- رابعة 2015
- رابعة 2016
- رابعة 2017

4. البرنامج *

- عام
- بايو
- هندسة

5. رقم المعمل *

ج٣

6. رقم الكمبيوتر *

19

7. الكود (قد تمت مراجعة بيانات الطالب ورقم الجلوس) *

dQ60

8. Which of the following is characteristic of a malignant rather than a benign tumor? (2 Points)

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

9. The functions which have been identified for the proteins expressed by cellular proto-oncogenes include all of the following except:
(2 Points)

- a) transcription factor
- b) component of a signal transduction pathway
- c) enzyme involved in DNA mismatch repair
- d) growth factor

10. What process describes the change in amino acids in a sickle cell RBC?
(2 Points)

- a) Deletion
- b) Substitution
- c) Insertation
- d) None of the Above

11. How many DNA duplexes are obtained from one DNA duplex after 4 cycles of PCR?
(2 Points)

- (a) 8
- (b) 4
- (c) 32

(d) 16

12. Mechanism Of Oncogenesis
(2 Points)

a) Point mutations

b) Chromosomal translocations

c) transformation

d) A&B

13. Which of the following best defines an oncogene?
(2 Points)

a) An oncogene codes for a cell cycle control protein.

b) An oncogene is a dominantly expressed mutated gene that gives a cell a growth or survival advantage.

c)An oncogene codes for a mutated form of a protein that forms part of a signal transduction pathway.

d) An oncogene prevents the cell from undergoing apoptosis.

14. What type of gel is used for SDS PAGE?
(2 Points)

a) Agarose gel

b) Polyacrylamide gel

c) Tris-acetate gel

d) A+B

15. What is angiogenesis?
(2 Points)

- a) Differentiation process
- b) Growth factors
- c) Contact inhibition
- d) Blood vessel formation

16. Sickled cells live only.
(2 Points)

- a) 20-30 days
- b) 10-15 days
- c) C.30-60 days
- d) 5-10 days1

17. Viral carcinogenesis
(2 Points)

- a) Human papilloma virus (HPV) and Hepatitis B virus (HBV
- b) RNA viruses
- c) a&b
- d) alkylating agent

18. What is the process of binding of primer to the denatured strand called?
(2 Points)

- (a) Annealing

(b) Renaturation

(c) Denaturation

(d) None of the aboveption 1

19. What amino acid replaces another by substitution in a sickle cell RBC? (2 Points)

a) Glutamic Acid

b) Histidine

c) a&d

d) Valine

20. Which of the following is in the correct order regarding DNA extraction? (2 Points)

a. RNAase treatment → Protease treatment→ cell lysis → ethanol precipitation

b. Cell lysis→ phenol treatment→ RNAase treatment→ ethanol precipitation

c. Cell lysis→ RNAase treatment→ protease treatment → ethanol precipitation

d. Cell lysis→ phenol treatment→ protease treatment → ethanol precipitation

21. Which property of p53 enables it to prevent the development of cancer? (2 Points)

a) p53 is a transcription factor that causes production of proteins

b)p53 prevents cells from triggering apoptosis.

c) p53 prevents the replication of cells with damaged DNA

d) p53 stimulates synthesis of DNA repair enzymes

22. Name the process of transition from normal cells to cancerous cells?
(2 Points)

- a) Metastasis
- b) Polymerization
- c) Transformation
- d) carcionogenesis

23. The sense strand of a DNA molecule is: C C C A C G T C T The mRNA sequence from this DNA molecule is
(2 Points)

- a) GGGTGCAGA
- b) AGACGTGGG
- c) GGGUGCAGA
- d) AGACGUGGG

24. At what temperature does denaturation of DNA double helix takes place?
(2 Points)

- (a) 54°C
- (b) 74°C
- (c) 94°C
- (d) 60°C

25. What protein is affected by sickle cell disease?
(2 Points)

- a) Red Blood Cells

b) Hemoglobin

c) White Blood Cells

d) DNA

26. The most important tumor suppressor genes are:
(2 Points)

a) Rb gene

b) Aflatoxin

c) P53 gene

d) A&C

27. Molecular Markers in Cancer Biology all except one
(2 Points)

a) Carcinoembryonic antigen

b) Human chorionic gonadotropin

c) Agrose Gel

d) Prostate-specific antigen (PSA)

28. Which of the following is a mismatch?
(2 Points)

a) Polymerase – Taq polymerase

b) Template – double stranded DNA

c) Primer – oligonucleotide

d) Synthesis – 5′ to 3′ direction

29. Phenol used in DNA extraction
(2 Points)

- a. Precipitates DNA and leave proteins in aqueous solution
- b. Precipitates RNA-protein complex and leave DNA in aqueous solution
- c. Precipitates cell debris and leave nucleic acids-protein complex in aqueous solution
- d. Precipitates proteins and leave nucleic acids in aqueous solution

30. In PCR & DNA EXTRACTION1: The polymerase chain reaction is
(2 Points)

- (a) It is a DNA sequencing technique.
- (b) It is a DNA degradation technique
- (c) It is a DNA amplification technique
- (d) All of the above

31. The cells that proceed through the multiple rounds of division during the growth and maintenance of the organism,
(2 Points)

- a) Chemical carcinogenesis:.
- b) Radiation carcinogenesis
- c) Viral carcinogenesis
- d) All of above

32. The correct order of western blot steps is:
(2 Points)

a) Transfer – blocking – gel electrophoresis

b) Gel electrophoresis – blocking – antibody incubation

c) Detection – blocking – analysis

d) Gel electrophoresis – transfer - blocking

33. Molecules that regulate signal transduction
(2 Points)

a) Neurofibromatosis-1 (NF-1) gene product

b) GTPase-activating protein

c) P53

d) a&b

34. Oncogenes do not encode for
(2 Points)

a) Trans-membrane protein receptors

b) Growth factors

c) DNA-dependent RNA polymerase

d) Cytoplasmic G-proteins and protein kinases

35. Sickle-shaped red blood cells have all criteria except
(2 Points)

a) don't move easily through blood vessels.

b) Born with it

c) last only 60 days.

d) To help prevent a sickle cell crisis, don’t drink plenty of fluids each day

36. Sickle cell anemia is a result of
(2 Points)

- a) Non sense mutation
- b) Sense mutation
- c) Mis-sense mutation
- d) Frame shift mutation

37. Western blot is used to detect:
(2 Points)

- a) DNA
- b) Proteins
- c) RNA
- d) None of the above

38. Proto-oncogenes can be transformed to oncogenes by all of the following mechanisms except
(2 Points)

- a) Elimination of their start signals for translation
- b) During a viral infection cycle
- c) Chromosomal rearrangements
- d) Chemically induced mutagenesis

39. Why do sickle cell anemia patients experience pain?
(2 Points)

a) Sickled red blood cells cause blockages

b) The sickled blood cells are carried throughout the body to fast

c) Sickled blood cells attack normal blood cells

d) There is a lower number of white blood cells

40. Primers used for the process of polymerase chain reaction are _____.
(2 Points)

(a) Single-stranded RNA oligonucleotide

(b) Single-stranded DNA oligonucleotide

(c) Double-stranded RNA oligonucleotide

41. Sickle cell are
(2 Points)

a) Round and flexible

b) Stiff and flexible

c) Round and sticky

d) Stiff and sticky

42. Radiation carcinogenesis caused by
(2 Points)

a) Aniline dyes lead to Bladder cancer and Arsenic

b) UV

c) ionizing radiation

d) b&c

43. Reverse transcription PCR uses _____.
(2 Points)

- (a) RNA as a template to form DNA
- (b) mRNA as a template to form cDNA
- (c) DNA as a template to form ssDNA
- (d) All of the above

44. If the secondary antibody is linked to an enzyme, the type of detection can be:
(2 Points)

- a) Radioactive detection
- b) Colorimetric detection
- c) Chemiluminescent detection
- d) B or C

45. Chromosomal translocations including all steps except
(2 Points)

- a) Insertional inactivation
- b) Chimeric protein formation
- c) Gene amplification
- d) carcinogenesis

46. The leading cause of death in kids with sickle cell disease is
(2 Points)

- a) Acute Chest Syndrome
- b) Stroke

- c) Pneumonia
- d) Seizure

47. Which of the following is true?
(2 Points)

- a) Western blot is used for qualitative detection of single proteins
- b) If a protein is degraded quickly, western blotting can detect it
- c) Size of protein can not be detected by western blot
- d) Western blot is a very fast technique1

48. In sickle-cell disease, the substitution of amino acids results in formation of HbS molecules, which:
(2 Points)

- a) Aggregate abnormally and cannot adequately carry O2
- b) Have abnormally high-affinity binding for O2
- c) Stabilize the wall of the red blood cell against oxidative damage
- d) Cause experience high levels of repulsion between neighboring HbS molecules

49. Denaturation is the process of
(2 Points)

- (a) Heating between 72°C
- (b) Heating between 40 to 60°C
- (c) Heating between 90 to 98°C
- (d) None of the above

50. . Which of the following reagents are used for precipitating DNA?
(2 Points)

- a. Isopropanol
- b. Ethanol
- c. Both a and b
- d. None of these

51. Which of the following is the first and the most important step in the polymerase chain reaction?
(2 Points)

- (a) Annealing
- (b) Primer extension
- (c) Denaturation
- (d) None of the above

52. Programmed cell death is termed as
(2 Points)

- a) Metastasis
- b) Apoptosis
- c) Proliferation
- d) Mitotic termination

53. Proto-oncogene is a group of genes:
(2 Points)

- a) Growth factor genes

b) Responder gene,

c) Cyclin gene,Cyclin dependent kinase (CDK)

d) All of the above

54. Three fundamental changes of cancer include all of the following except
(2 Points)

a) Limitless replicative potential

b) Evasion of apoptosis ,

c) Angiogenesis

d) fibrosis

55. Which is NOT a typical mechanism by which a proto-oncogene is converted to an oncogene?
(2 Points)

a) A point mutation in the proto-oncogene

b) Amplification of the proto-oncogene

c) A chromosomal translocation resulting in the up-regulation of the proto-oncogene

d) Complete deletion of the proto-oncogene

56. .Proto-oncogene is a group of genes except :
(2 Points)

a) Growth factor genes,

b) Transducer protein,

c) Responder gene and Cyclin gene

d) Matrix mettalproteinases,

57. A blood transfusion
(2 Points)

- a) prevent a sickle cell crisis
- b) can damage the spleen
- c) increase the life spane of red blood cells upto 100days
- d) Can cure sickle cell anemia.