Extracellular Matrix

1. The most abundant protein in the human body is:

(a) Elastin (b) Fibrillin
(c) Collagen (d) Fibronectin

2. Collagens assume a gel-like consistency in:

(a) Vitreous humor
(b) Tendons
(c) Bones
(d) Cornea

3. The following is *not* true for collagens:

(a) Fibrous proteins
(b) Extracellular
(c) Glycoproteins
(d) Lack quaternary structure

4. Basement membranes mainly contain collagen type:

(a) III (b) IV (c) VII (d) XII

5. Tendons and ligaments mainly contain collagen type:

(a) III (b) IV (c) VII (d) XII

6. Fetal skin mainly contains collagen type:

(a) III (b) IV (c) VII (d) XII

7. The commonest amino acid in collagens is:

(a) Glycine
(b) Proline
(c) Hydroxyproline
(d) Lysine

8. Collagens are synthesized by:

(a) Osteoblasts (b) Chondroblasts
(c) Fibroblasts (d) All of the above

9. The formation of interchain H-bonds in collagens depends on the presence of:

(a) Glycine (b) Proline
(c) Hydroxyproline (d) Lysine

10. The formation of interchain covalent bonds in collagens depends on the presence of:

(a) Glycine (b) Proline
(c) Hydroxyproline (d) Hydroxylysine

11. Lysyl oxidase requires:

(a) Oxygen (b) Cupric ions
(c) Ascorbic acid (d) All of the above

12. Lysyl hydroxylase requires:

(a) Oxygen (b) Ferrous ions
(c) Ascorbic acid (d) All of the above

13. The following is *true* for extension peptides in procollagen:

(a) Completely retained in mature collagens
(b) Removed intracellularly
(c) Removed extracellularly
(d) Partly retained in mature collagens

14. Osteogenesis imperfecta involves collagen type:

(a) I (b) II (c) III (d) IV

15. A common cause of death in type II osteogenesis imperfecta is:

(a) Fractures
(b) Epistaxis
(c) Hematuria
(d) Pulmonary hypoplasia

16. Desmosine cross-links are found in:

(a) Collagens (b) Elastin
(c) Fibrillin (d) Fibronectin

17. In elastin, every one in seven amino acids is:

(a) Glycine (b) Lysine (c) Proline (d) Valine

18. In collagens, every one in three amino acids is:

(a) Glycine (b) Lysine (c) Proline (d) Valine

19. The elasticity of elastin is due to:

(a) Desmosine cross-links
(b) Valine-rich domains
(c) Both
(d) None of the above

20. The following is *true* for Marfan's syndrome:

(a) Floppy mitral valves
(b) Arachnodactyly
(c) Fibrillin gene mutation
(d) All of the above

21. The following is *not* true for keratan sulphate:

(a) Most homogeneous group of glycosaminoglycans
(b) Keratan sulphate-I is found in cornea
(c) May be N-linked or O-linked with proteins
(d) Sulphate content is variable

22. Epimerization at C5 of glucuronate forms:

(a) Iduronate (b) Gulonate
(c) Guluronate (d) Mannuronate

23. The enzyme deficient in Hunter syndrome is:

(a) Iduronate sulphatase
(b) α-L-Iduronidase
(c) Galactose-6-sulphatase
(d) β-Galactosidase

24. The enzyme deficient in Hurler syndrome is:

(a) Iduronate sulphatase
(b) α-L-Iduronidase
(c) Galactose-6-sulphatase
(d) β-Galactosidase

25. The enzyme deficient in Morquio syndrome A is:

(a) Iduronate sulphatase
(b) α-L-Iduronidase
(c) Galactose-6-sulphatase
(d) β-Galactosidase

26. The enzyme deficient in Morquio syndrome B is:
(a) Iduronate sulphatase
(b) α-L-Iduronidase
(c) Galactose-6-sulphatase
(d) β-Galactosidase

27. The enzyme deficient in Sanfilippo syndrome A is:
(a) Heparan sulphamidase
(b) N-Acetyl glycosaminidase
(c) Acetyl CoA: Glucosaminide N-acetyl transferase
(d) N-Acetyl glucosamine-6-sulphate sulphatase

28. The enzyme deficient in Sanfilippo syndrome B is:
(a) Heparan sulphamidase
(b) N-Acetyl glycosaminidase
(c) Acetyl CoA: Glucosaminide N-acetyl transferase
(d) N-Acetyl glucosamine-6-sulphate sulphatase

29. The enzyme deficient in Sanfilippo syndrome C is:
(a) Heparan sulphamidase
(b) N-Acetyl glycosaminidase
(c) Acetyl CoA: Glucosaminide N-acetyl transferase
(d) N-Acetyl glucosamine-6-sulphate sulphatase

30. The enzyme deficient in Sanfilippo syndrome D is:
(a) Heparan sulphamidase
(b) N-Acetyl glycosaminidase
(c) Acetyl CoA: Glucosaminide N-acetyl transferase
(d) N-Acetyl glucosamine-6-sulphate sulphatase

31. The enzyme deficient in Sly syndrome is:
(a) β-Glucuronidase
(b) β-Glucosidase
(c) β-Galactosidase
(d) β-Galacturonidase

32. The following is a podocyte cell surface protein:
(a) Nephrin
(b) Podocin
(c) Both
(d) None of the above

33. The following is *not* a feature of Liddle's syndrome:

(a) Abnormal apical membrane Na^+-channel in renal cortical collecting ducts
(b) Hypotension
(c) Hypokalemia
(d) Metabolic alkalosis

34. Skeletal muscle membrane Na^+, K^+-ATPase is stimulated by:

(a) Insulin
(b) Epinephrine
(c) Both
(d) None of the above

35. Digitalis over dose causes hyperkalemia by:

(a) Inhibiting muscle Na^+, K^+-ATPase
(b) Stimulating muscle Na^+, K^+-ATPase
(c) Inhibiting liver Na^+, K^+-ATPase
(d) Stimulating liver Na^+, K^+-ATPase

36. The following is an adaptor protein:

(a) Spectrin (b) Ankyrin
(c) Actin (d) Calmodulin

37. Hereditary spherocytosis is due to defective:

(a) Ankyrin R (b) Ankyrin B
(c) Ankyrin G (d) None of the above

38. Spectrin and ankyrin function together to:

(a) Maintain RBC shape
(b) Expression of antigens on T lymphocytes
(c) Assembly of axonal membrane ion transporters
(d) All of the above

39. Defect in RBC membrane glycosylphosphatidylinositol results in:

(a) Paroxysmal nocturnal hemoglobinuria
(b) Sickle cell anemia
(c) α-Thalassemia
(d) β-Thalassemia

40. Extracellular fibrillar amyloid deposits in Alzheimer's disease are rich in:

(a) Amylin
(b) Amyloid β-peptide (Aβ42)
(c) Amyloid precursor protein
(d) α-Synuclein

41. Which of the following organelle is involved with glycosylation and sorting of proteins?

(a) Endoplasmic reticulum
(b) Golgi apparatus
(c) Mitochondria
(d) Peroxisomes

42. Which of the following acts as a signal for transporting enzymes to lysosomes?

(a) KDEL sequence
(b) Signal peptide sequence
(c) Mannose-6-phosphate
(d) COPI vesicles

43. Which of the following protein is involved with import and export of various macromolecules across the nucleus?

(a) Heat shock protein Hsp 70
(b) Rho protein
(c) Ran GTPsase
(d) Cyt P450

44. Which of the following is *not* true about Zellweger syndrome?

(a) Accumulation of very long fatty acids
(b) Defect in bile acid synthesis
(c) Reduction of plasmalogens
(d) Accumulation of phytanic acid

45. Which of the following is *not* a peroxisomal abnormality?

(a) Zellweger syndrome
(b) Neonatal adrenoleukodystrophy
(c) Infantile Refsum disease
(d) I-cell disease

46. All of the following is true about Ubiquitinated protein degradation process *except*.

(a) It is ATP dependent process
(b) Ubiquitin dependent degradation of proteins occurs in the proteosomes
(c) Linkage of ubiquitin always mark for degradation of that protein
(d) Ubiquitin is recycled after the process

Answer key

1. c	**2.** a	**3.** d	**4.** b	**5.** d	**6.** a
7. a	**8.** d	**9.** c	**10.** d	**11.** d	**12.** d
13. c	**14.** a	**15.** d	**16.** b	**17.** d	**18.** a
19. c	**20.** d	**21.** a	**22.** a	**23.** a	**24.** b
25. c	**26.** d	**27.** a	**28.** b	**29.** c	**30.** d
31. a	**32.** c	**33.** b	**34.** c	**35.** a	**36.** b
37. a	**38.** d	**39.** a	**40.** b	**41.** b	**42.** c
43. c	**44.** d	**45.** d	**46.** c		