

Tissue Biology
Demonstration Exam FINAL - 2005

We offer these questions as a taste of the Final Exam - similar to the format and style of questions that may appear on the Final Exam on December 12, 2005.

1. Actin filaments are present in

- 1- gap junctions.
- 2- zonulae occludentes.
- 3- microvilli.
- 4- pericentriolar dense material.

2. Compared to the aorta, the inferior vena cava has

- 1- more smooth muscle in its media.
- 2- fewer elastic fibers but more fibroblasts in its media.
- 3- more longitudinally arranged smooth muscle in its adventitia.
- 4- no vasa vasorum in its adventitia.

3. Consider the morphology and functions of the hepatocyte. The surface of the hepatocyte that is analogous to the apical surface of other secretory epithelial cells is

- 1- the lateral canalicular surface of the hepatocyte.
- 2- the surface of the hepatocyte facing the Disse space.
- 3- the lateral intercellular surface of the hepatocyte excluding the bile canaliculus.
- 4- There is no analogous surface.

4. Segments of lymphocyte recirculation include

- 1- aorta.
- 2- efferent lymphatics from nodes.
- 3- high endothelial venules.
- 4- thoracic duct.
- 5- all of the above.

5. In the second trimester of fetal life, blood cells are formed in

- 1- the marrow of long bones.
- 2- liver.
- 3- kidney.
- 4- the marrow of flat bones.

6. Pro-opiomelanocortin is a product of the

- 1- median eminence.
- 2- pars tuberalis.
- 3- pars intermedia.
- 4- pars nervosa.
- 5- supra-optic nucleus.

7. Emerging from the portal triad, branches of the hepatic artery and the portal vein bisect the

- 1- space of Disse.
- 2- acinar lobule.
- 3- portal lobule.
- 4- classic lobule.
- 5- biliary tree.

8. Myoepithelial cells

- 1- are present at the secretory part of sweat glands.
- 2- are present at the base of all epithelia.
- 3- are part of the myoneural junction complex.
- 4- are part of the hair erector apparatus.

9. At the ultrastructural level, the resting parietal cells of the fundic glands of the stomach show

- 1- numerous mucinogen granules.
- 2- a unique tubulovesicular system.
- 3- secretory granules in the basal cytoplasm.
- 4- all of the above.

10. The bronchi

- 1- are lined by transitional epithelium which rests on a distinct basement membrane.
- 2- contain in their walls striated muscle which runs transversely, longitudinally and obliquely.
- 3- contain in their walls only serous glands, the mucous secretions coming exclusively from goblet cells in the epithelium.
- 4- are lined by a pseudostratified, ciliated epithelium which also contains goblet cells.

11. Which association is correct?

- 1- Endothelial cells-desmin.
- 2- Neuroglial cells-GFAP.
- 3- Epithelial cells-vimentin.
- 4- Muscle cells-keratin.

12. Stereocilia in the epididymis are

- 1- structurally incomplete cilia in that only 9 peripheral pairs of filaments are present.
- 2- large branched microvilli.
- 3- associated in left and right pairs.
- 4- are highly motile organelles which spermatozoa.

13. The arrested migration of neurons from the olfactory pit to the hypothalamus produces

- 1- Addison's disease.
- 2- Stein-Leventhal syndrome.
- 3- Adrenogenital syndrome.
- 4- Kallman's syndrome.

14. Periarteriolar lymphatic sheaths are morphological features of

- 1- bone marrow.
- 2- lymph node.
- 3- spleen.
- 4- thymus.

15. Sertoli cells are primarily involved in

- 1- conditioning and protecting developing sperm cells.
- 2- controlling the helicine arteries during erection.
- 3- synthesis and secretion of fructose for the seminal fluid.
- 4- phagocytosis of spermatogonia.

16. The collecting ducts of the kidney

- 1- are lined with low columnar epithelium with elaborate lateral and basal infoldings.
- 2- become less permeable to water in response to antidiuretic hormone.
- 3- carry the glomerular filtrate during the second and final passage through the hypertonic medulla.
- 4- become more permeable to water in response to antidiuretic hormone.

17. Which of the following epidermally-derived structures has (have) stratum corneum as a major component?

- 1- the bulb of a hair follicle
- 2- the duct of a sebaceous gland
- 3- the glandular portion of an eccrine sweat gland
- 4- the nail plate of a finger nail
- 5- All of the above stratum corneum as a major component.

18. D.N.E.S. (a.k.a. A.P.U.D.) cells which secrete CCK are distributed in the digestive tract from

- 1- stomach through colon.
- 2- duodenum through colon.
- 3- duodenum through ileum.
- 4- stomach through duodenum.

19. The islets of Langerhans produce

- 1- trypsinogen.
- 2- amylase.
- 3- calcitonin.
- 4- Substance P.

20. In passing across the barrier between fetal and maternal blood, blood-borne materials encounter

- 1- two epithelia and two basement membranes.
- 2- two epithelia and one basement membrane.
- 3- one epithelium and one basement membrane.
- 4- one epithelium and two basement membranes.

21. Oocyte maturation is arrested at metaphase of the second meiotic division until

- 1- ovulation.
- 2- Graphian follicle formation.
- 3- sperm penetration.
- 4- puberty.

22. Which of the following statements is **CORRECT**?

- 1- Juxtaglomerular Cells are modified epithelial cells of the distal tubule.

- 2- A brush border on distal tubule cells resorbs the bulk of plasma proteins passed by the glomerular basement membrane.
- 3- Cells of the Macula Densa produce renin.
- 4- Part of the kidney circulation is arrayed in a portal system.

23. Which of the following epithelial specialization: function relationships is correct?

- 1- Gap junction: attachment
- 2- Macula adherens: communication
- 3- Microvilli: absorption
- 4- Stereocilia: motility

24. In the peripheral nervous system, there are _____ Schwann cells per internode.

- 1- one
- 2- two to five
- 3- five to ten
- 4- more than ten

25. An electron micrograph of an endocrine cell shows the following morphology: prominent golgi, an abundance of smooth endoplasmic reticulum, many lipid droplets, spherical mitochondria with tubular cristae.

Which of the following hormones would this cell be producing?

- 1- Prolactin.
- 2- ADH.
- 3- Epinephrine.
- 4- Insulin.
- 5- hydrocortisone.

26. Modification of saliva to secondary saliva begins in the

- 1- intercalated duct.
- 2- striated duct.
- 3- interlobular duct.
- 4- Stensen's duct.

27. "Demilune" arrangements of serous cells are a fixation artifact.

- 1- True
- 2- False

28. Of the list below, only the _____ is not a multi-nucleated cell.

- 1- megakaryocyte
- 2- osteoclast
- 3- striated muscle fiber
- 4- syncytiotrophoblast

29. Reticular fibers are produced by

- 1- epithelial-reticular cells.
- 2- reticular cells.
- 3- sinusoidal endothelial cells.
- 4- reticulocytes.

30. Secretory products of continuous vascular endothelial cells include

- 1- MHC II.
- 2- vasopressin.
- 3- renin.
- 4- collagen IV.

31. Osteoclasts are activated by

- 1- parathyroid hormone.
- 2- supranormal levels of blood calcium.
- 3- proximal tubule resorption of calcium.
- 4- thyrocalcitonin.

32. Which of the following is NOT characteristic of the syncytiotrophoblast?

- 1- Production of progesterone
- 2- Production of human placental lactogen
- 3- Component of the stratum compactum
- 4- Component of the placental barrier
- 5- All of the above are characteristics of the syncytiotrophoblast.

33. Secretory products of the pancreatic islets include

- 1- Vasoactive Intestinal Peptide.
- 2- Pancreatic Polypeptide.
- 3- Somatostatin.
- 4- Secretory products of the pancreatic islets include all of the above.

34. Which of the following is NOT an exocrine cell?

- 1- Goblet cell
- 2- Great alveolar epithelial cell
- 3- Parafollicular cell
- 4- Paneth cell

35. The correct association of endocrine organ and clinical correlation is

- 1- pineal gland - destructive tumor produces delayed puberty.
- 2- thyroid gland - hypoactivity results in goiter.
- 3- adrenal gland - hypofunction of the zona reticularis produces adrenogenital syndrome.
- 4- All of the above associations are correct.

36. Which of the following is characteristic of a smooth muscle cell?

- 1- It does not communicate with its neighbors.
- 2- Its nucleus often assumes a corkscrew appearance upon contraction.
- 3- It lacks myosin thick filaments.
- 4- All of the above are characteristic of a smooth muscle cell.

37. As the adult human ages

- 1- the marrow of long bones becomes adipose tissue.
- 2- cartilage loses its blood vessels.
- 3- The thymus increases its production of lymphocytes.
- 4- Type I collagen in loose connective tissue becomes less cross-linked.

38. Olfactory cilia

- 1- are actively motile.
- 2- are present on the respiratory epithelium.
- 3- lack all microtubules.
- 4- are part of specialized, bipolar nerve cells.

39. Procollagen peptidases

- 1- reside in the membrane of the golgi apparatus.

- 2- act extracellularly.
- 3- act after fibril formation.
- 4- require Vit C for activity.

40. Skin components that contribute to normal coloration include

- 1- melanin.
- 2- carotenes.
- 3- oxyhemoglobin.
- 4- All of the above contribute to normal coloration.

41. The diameter of an erythrocyte is approximately

- 1- 8 nm.
- 2- 80 nm.
- 3- 800 nm.
- 4- 8000 nm.

42. The mammary gland changes from the resting state to the active state under the influence of

- 1- prolactin and estrogen.
- 2- oxytocin.
- 3- estrogen and progesterone.
- 4- relaxin.

43. The lumen of a lacteal is lined by

- 1- cuboidal epithelial cells in an acinar arrangement.
- 2- discontinuous, lymphatic endothelial cells.
- 3- apocrine secretory cells.
- 4- Lacteals are lined by none of the above.

44. The large intestine

- 1- is characterized by well-developed villi.
- 2- is responsible for the absorption of most nutrients.
- 3- has easily observed plicae ciculares.
- 4- has submucosal mucous glands.
- 5- The large intestine is characterized by none of the above.

45. Cuboidal epithelial cells with a single central, apical cilium are present in _____ cells.

- 1- Podocyte
- 2- Medullary interstitial
- 3- Collecting tubule
- 4- Mesangial
- 5- Proximal tubule

46. Fibrolysin is produced in the

- 1- epididymis.
- 2- seminal vesicles.
- 3- prostate gland.
- 4- paraurethral glands of Littre.
- 5- Fibrolysin is produced in the none of the above structures.

For Questions 47 and 48, Match items A through E in the list below to the description in the Question (Items A through E may be used once, more than once, or not at all):

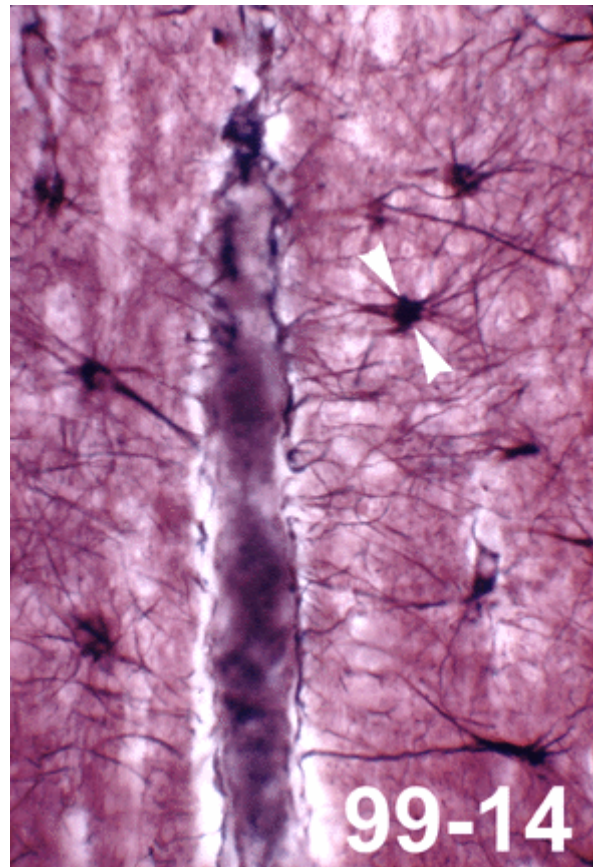
- A Cardiac muscle cells only
- B Skeletal muscle cells only
- C Cardiac and skeletal muscle cells
- D Smooth muscle cells only
- E All muscle cells

47. Thin filaments in this(these) type(s) bind(s) to alpha-actinin.

48. Thin filaments aligned by nebulin.

49. The _____ is an intrahepatic biliary passageway.

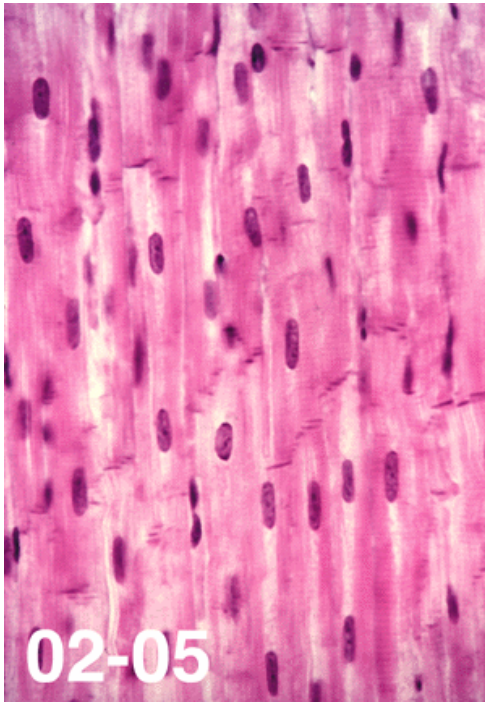
- 1- Space of Disse
- 2- Space of Mall
- 3- Periportal Space
- 4- Sinusoid
- 5- Cholangiole



Consider Micrograph 99-14 from CNS.

50. The blackened cells (one indicated) in this section

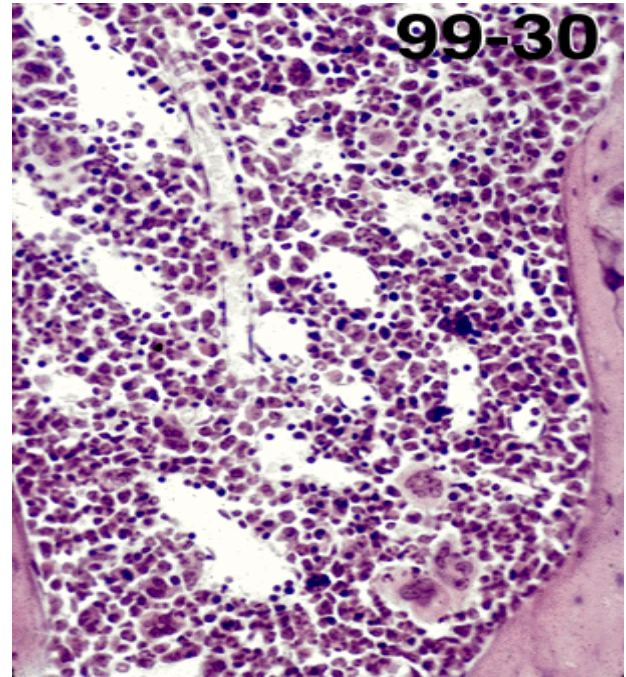
- 1 - are derived from mesenchyme.
- 2 - augment the blood-brain barrier.
- 3 - have spines for synapses on dendrites.
- 4 - myelinate axons in fiber tracts.



Consider Micrograph 02-05.

51. This view was taken from the

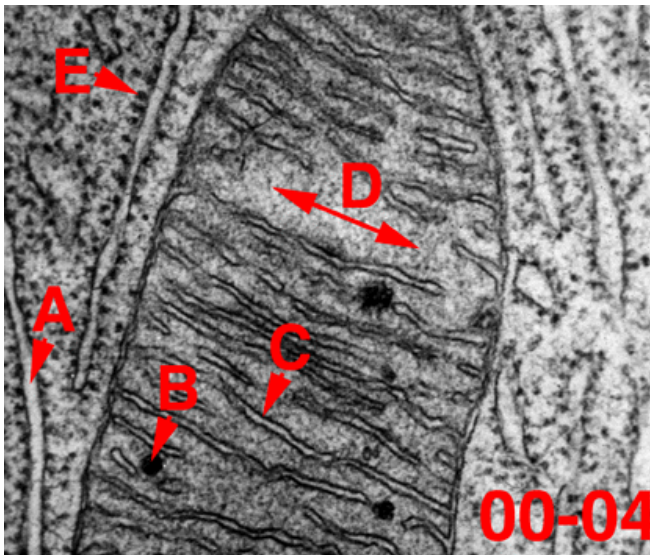
- 1 - spleen.
- 2 - eye.
- 3 - small intestine.
- 4 - heart.



Consider Micrograph 99-30.

53. This view was taken from

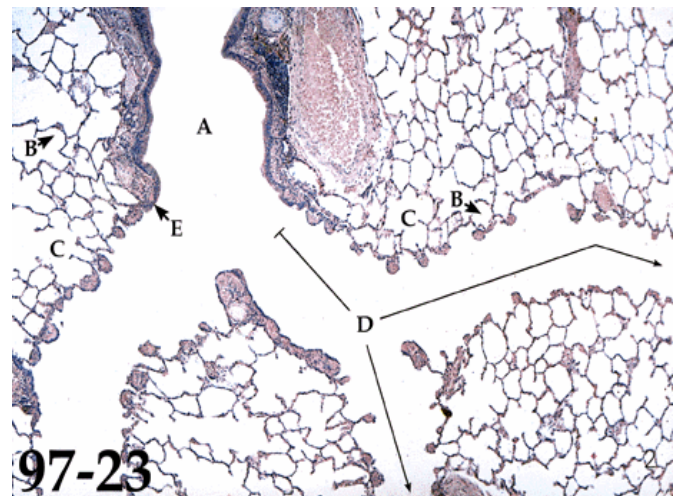
- 1 - thymus.
- 2 - bone marrow.
- 3 - lymph node.
- 4 - spleen.



Consider Micrograph 00-04. A portion of a cell is seen.

Match the most appropriate letter in the micrograph to the description below.

52. Site of mitochondrial DNA transcription.



Consider Micrograph 97-23.

54. The structure indicated by "A" is a(an)

- 1 - terminal bronchiole.
- 2 - respiratory bronchiole.
- 3 - alveolar duct.
- 4 - alveolar sac.
- 5 - alveolus.

1. 3
2. 3
3. 1
4. 5
5. 2
6. 3
7. 2
8. 1
9. 2
10. 4
11. 2
12. 2
13. 4
14. 3
15. 1
16. 4
17. 4
18. 3
19. 4
20. 1
21. 3
22. 4
23. 3
24. 1
25. 5
26. 1
27. 1
28. 1
29. 2
30. 4
31. 1
32. 3
33. 4
34. 3
35. 2
36. 2
37. 1
38. 4
39. 2
40. 4
41. 4
42. 1
43. 2
44. 5
45. 3
46. 3
47. E
48. C
49. 5
50. 2
51. 4
52. D
53. 2
54. 1