

Name _____

2016 Mock Exam
General Pathology

1. You have 1 HOUR to complete this 50-question multiple choice exam.
2. Write your name on all pages of the exam packet.
3. Use capital letters on the answer sheet.
4. For each question, select the ONE best answer and mark it on the answer sheet.
5. Credit will be given only for correct answers recorded on the answer sheet.
6. All questions for which more than one answer is marked will be recorded as incorrect.
7. No credit will be awarded or deducted for incorrect answers.
8. Turn in the entire exam packet when you are done.

**2016 Mock Exam
General Pathology
Answer sheet**

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Name _____

1. Which of the following toxins reaches its target cell using retrograde axonal transport?
 - a. tetanospasmin
 - b. botulinum toxin
 - c. syntaxin
 - d. SNAP-25

2. All of the following EXCEPT which are true regarding high mobility group box protein 1 (HMGB-1)?
 - a. it is a histone-related nuclear protein
 - b. it is an alarmin
 - c. it can bind TLR2
 - d. can cause release of IL-1

3. Which of the following is present in neutrophil specific granules?
 - a. acid hydrolases
 - b. alkaline phosphatase
 - c. elastase
 - d. cationic proteins

4. Which of the following occurs under hypoxic conditions?
 - a. hydroxylation of HIF- α
 - b. HIF- α binds von Hippel-Lindau protein
 - c. HIF- α binds p300BP
 - d. HIF- α is ubiquitinated

5. Spontaneous point mutation of individual nucleic acid bases in viral DNA is termed?
 - a. antigenic shift
 - b. genetic drift
 - c. genetic reassortment
 - d. genetic recombination

6. Loss of cell viability, caused by dysfunctional trafficking of macropinosomes is termed?
 - a. ferroptosis
 - b. pyroptosis
 - c. methuosis
 - d. paraptosis

7. A function attributed to FGF-7 is?
- stimulation of ECM protein synthesis
 - stimulation of keratinocyte migration
 - stimulation of hepatocytes
 - increased vascular permeability
8. *M. tuberculosis* uses which molecule to mask PAMPs as a way to avoid the host innate immune system?
- CCL2
 - phenolic glycolipid (PGL)
 - phthiocerol dimycocerserate
 - TLR4
9. CRISPR and Cas9 are used in or are associated with?
- genomic editing
 - self-renewal of stem cells
 - creating induced pluripotent stem cells
 - asymmetric division of stem cells
10. Two features of reversible cell injury that can be recognized using light microscopy are?
- chromatin condensation and cell shrinkage
 - vacuolar degeneration and hydropic change
 - fatty change and karyorrhexis
 - hydropic change and fatty change
11. Which CDK inhibitor has selective effects on CDK4 and CDK6?
- p15
 - p21
 - p27
 - p57
12. All of the following EXCEPT which are transcription factors involved in myocardial hypertrophy?
- GATA4
 - NFAT
 - MEF2
 - PI3K
13. Which of the following molecules are correctly paired?

a	VLA-4	VCAM-1
b	L-selectin	ICAM
c	CD31	CD106
d	MAC-1	CD31

14. Nitric oxide synthase makes nitric oxide from which molecule?
- glutamate
 - succinate
 - lysine
 - arginine
15. Which of the following statements is FALSE regarding neutrophil extracellular traps?
- they are composed of chromatin
 - they help trap microbes
 - they are only found in tissue
 - may contribute to autoimmune disease
16. RIG-like receptors are generally found in which cellular compartment?
- plasma membrane
 - endosomal membrane
 - cytoplasm
 - nucleus
17. Natural killer T (NK-T) cells recognize glycolipids displayed by which?
- CD1
 - MHC I
 - MHC II
 - CD80
18. MHC class I molecules bind peptides that are?
- derived from extracellular antigens
 - processed in an endocytic pathway
 - degraded within the cytoplasm by a proteasome complex
 - presented to CD4 positive cells
19. Which hypersensitivity reaction is T cell mediated?
- Type I
 - Type II
 - Type III
 - Type IV
20. The classical C3 convertase is?
- C3bBb
 - C3bBb3b
 - C4b2a
 - C4b2a3b

21. Which Toll-like receptor recognizes LPS?

- a. TLR 3
- b. TLR 4
- c. TLR 5
- d. TLR 8

22. Which is FALSE about $\gamma\delta$ T cells?

- a. They are generally found associated with epithelium
- b. They require MHC to recognize antigen
- c. They are the predominant circulating T cell type in ruminants
- d. They may provide cell-mediated immunity in some neonates

23. Which of the following molecules can promote the differentiation of TH2 cells from CD4+ lymphocytes?

- A. IL-4
- B. IL-12
- C. IL-10
- D. IFN- γ

24. Langerhans cell differentiation is critically dependent on which molecule?

- a. GM-CSF
- b. Stem cell factor
- c. TGF- β 1
- d. IL-4

25. Two components of the microprocessor complex are?

- a. Drosha and DCGR8
- b. Dicer and AGO-2
- c. TRBP and pre-miRNA
- d. pri-miRNA and Dicer

26. Which M2 macrophage subtype is stimulated by IL-4?

- a. M2a
- b. M2b
- c. M2c
- d. M2d

27. The major stimulus for coagulation *in vivo* is?

- a. activation of factor 12
- b. exposure to tissue factor
- c. exposure to tenase complexes
- d. activation of factor 8

28. Follicular dendritic cells generally present antigen to which cell type?
- CD4+ T cells
 - CD8+ T cells
 - CD3+ T cells
 - B cells
29. FLIP binds to which protein to inhibit apoptosis?
- Fas
 - procaspase 8
 - caspase 3
 - procaspase 9
30. Down regulation of MCH class I molecules by tumor cells may help them avoid detection by _____ but increases their susceptibility to _____ killing.
- CD8+ T cells and natural killer cell
 - CD4+ T cells and CD8+ cells
 - natural killer cells and CD8+ T cell
 - CD4+ T cells and CD3+ T cells
31. Epigenetic changes thought to occur in malignancy are?
- decreased total DNA methylation content and increased hypermethylated CpG islands.
 - increased total DNA methylation content and increased hypermethylated CpG islands.
 - decreased total DNA methylation content and decreased hypermethylated CpG islands.
 - increased total DNA methylation content and decreased hypermethylated CpG islands.
32. Intracytosolic myelin figures are generally derived from which organelle or cellular structure?
- mitochondria
 - endosomal membranes
 - endoplasmic reticulum
 - nuclear membrane
33. The term for one cancer cell invading/entering another cancer cell is?
- phosphatidylserine scramble
 - cytophagocytosis
 - emperipolesis
 - entosis
34. Carbon tetrachloride causes hepatic lipidosis by which mechanism?
- impaired uptake of fatty acids
 - decreased β -oxidation of fatty acids
 - impaired protein synthesis
 - interference with VLDL formation in the Golgi apparatus

35. Key initiators of p53 activation following DNA damage are?
- ATM and ATR
 - ATM and MDM2
 - MDM2 and GADD45
 - GADD45 and ATR
36. SNAIL and TWIST may promote epithelial-to-mesenchymal transition by which mechanism?
- upregulation of vimentin expression
 - down regulation of E-cadherin expression
 - cleavage of TGF- β in the ECM
 - down regulation of cytokeratin expression
37. The Philadelphia chromosome is an example of which type of chromosomal change?
- promoter substitution
 - enhancer substitution
 - deletion
 - fusion gene creation
38. Arrange the following into chronological order to describe Type I hypersensitivity reactions:
- Production of IgE
 - Repeat exposure to allergen
 - Binding of IgE to Fc ϵ RI on mast cells
 - Activation of mast cell; release of mediators
 - Activation of Th2 cells and IgE class switching in B cells
- 1,2,5,4,3
 - 3,1,4,2,5
 - 5,4,2,1,3
 - 5,1,3,2,4
39. Proteins C and S inhibit clotting by proteolytic inactivation of which factors?
- VIIa and VIa
 - Va and VIIIa
 - Ia and IIa
 - IIa and IXa
40. Diapedesis involves CD31 on the neutrophil interacting with which endothelial cell protein?
- PECAM-1
 - E-selectin
 - ICAM-1
 - CD106

41. Main sources of histamine include which cell types?
- mast cells, basophils, eosinophils
 - mast cells, endothelial cells, eosinophils
 - mast cells, basophils, platelets
 - mast cells, platelets, activated macrophages
42. Macrophage inflammatory protein-1 α (MIP-1 α) is which type of chemokine?
- C
 - C-C
 - C-X-C
 - CX₃C
43. The systemic acute-phase response is predominately mediated by which molecules?
- IL-1, IL-6, TNF
 - IL-1, IL-4, IL-6
 - TNF, IL-4, IL-6
 - IL-8, IL-1, MCP-1
44. Which of the following correctly pairs the complement pathway with its activator?
- classical pathway:cobra venom
 - alternative pathway: mannose-binding lectin
 - lectin pathway: IgM
 - alternative pathway: LPS
45. Defects in or decreased numbers of _____ are likely to result in hemarthrosis?
- factor 8
 - platelet granule release
 - Gp1b
 - platelets
46. Which of the following lysosomal storage diseases and enzyme deficiencies are correctly matched?
- MPS 1: α -L-iduronidase
 - Mannosidosis: sphingomyelinase
 - GM₁ gangliosidosis: hexosaminidase, α subunit
 - Fucosidosis: arylsulfatase A
47. Autoimmune hemolytic anemia is an example of which type of hypersensitivity?
- I
 - II
 - III
 - IV

48. Which is the ligand for CD117?

- a. IgE
- b. IL-33
- c. Stem-cell factor
- d. c-kit

49. Transition through the G1/S checkpoint requires all of the following EXCEPT?

- a. cyclin D/CDK4 complex
- b. hyperphosphorylated RB
- c. free E2F
- d. recruitment of histone methyl-transferase

50. All of the following EXCEPT which are mechanisms used by neoplastic cells to suppress or evade the immune system?

- a. down regulation of PD-L1
- b. secretion of TGF- β
- c. secretion of galectins
- d. down regulation of MHC class 1