NSCI487 MT Practice Problems

1. Which of the following is not a chemical or physical barrier of the immune system?
    a. Skin
    b. Stomach pH
    c. Lysozyme in tears and saliva
    d. The lymphatic system
2. Which of the following is not a common myeloid progenitor?
    a. Natural killer cells
    b. Neutrophils
    c. Eosinophils
    d. Basophils
3. Which of the following is a granulocyte?
    a. Macrophages
    b. Natural killer cells
    c. Monocytes
    d. Mast cells
4. Which of the following is not a border-associated immune cell?
    a. Perivascular macrophage
    b. Mast cell
    c. Innate lymphoid cells
    d. Granulocytes
5. Peripheral inflammation can be detected through various mechanisms. Which of the following is not accurate?
    a. Circumventricular organs around ventricles lack normal BBB, allowing entry of peripheral immune mediators.
    b. BBB endothelial cells activate parenchymal glia, modulating changes in BBB permeability.
    c. An increased influx of lymphocytes, NK cells, microglia and neutrophils signal peripheral inflammation.
    d. Neural pathways such as the vagus nerve transmit information about peripheral inflammation.
6. Regarding sickness behaviour, which is false?
    a. Symptoms include hyperalgesia, listlessness, fever and lethargy.
    b. These symptoms may be mediated by anti-inflammatory cytokines.
    c. Multiple symptoms such as social disinterest, anhedonia and poor concentration overlap with psychiatric disorders.
    d. These behavioural changes can be induced by acute infections.
7. Which of the following is not a trait of neutrophils?
    a. Release antimicrobial proteins
    b. First to arrive at the site of infection
    c. Release histamine
    d. Use Neutrophil Extracellular Traps to kill microbes.
8. Regarding monocytes and macrophages, which is not true?

a. Monocytes can derive macrophages and dendritic cells.
b. Macrophages circulate in the bloodstream while monocytes are resident in the tissue.
c. M1 macrophages release proinflammatory cytokines.
d. Monocytes, macrophages and dendritic cells are all examples of antigen-presenting cells.

9. Which of the following statements about natural killer cells is false?
    a. NK cells rapidly respond and kill infected, damaged and tumourous cells.
    b. NK cells are an essential component of the adaptive immune response.
    c. NK cells can detect cytokines and antibodies with activating receptors.
    d. If MHC-I is absent on target cells, NK cells will destroy them.
10. Which of the following is not a mechanism through which NK cells kill cells?
    a. Produce a pore in the cell wall
    b. Induce apoptosis
    c. Signal CD8+ cells
    d. Induce lysis
11. Which of the following is not a signalling molecule involved in the complement system?
    a. Anaphylatoxin
    b. Opsonin
    c. MHC-II
    d. Membrane attack complex
12. Which of the following is not released by macrophages?
    a. Interleukin-1
    b. Interleukin-6
    c. Histamine
    d. Tumor necrosis factor α
13. Which of the following is NOT a PAMP?
    a. Lipopolysaccharides
    b. Glycoproteins
    c. Nucleic acids
    d. Fibrinogen
14. Which of the following is not involved in the resolution stage of innate immunity?
    a. IL-10
    b. Glucocorticoids
    c. Perforin
    d. Resolvin
15. MHC-II is found on…
    a. Almost all nucleated cells
    b. CD8+ cells
    c. Antigen-presenting cells
    d. CD4+ cells
16. What do CD4+ T cells release to promote B cell proliferation?
    a. IL-6
    b. IL-4

c. IL-10
d. None, B cells only proliferate independently.

17. Which is not a role of the lymphatic system?
    a. Maintaining fluid balance
    b. Cleansing CSF
    c. Fat transportation
    d. Immune defense
18. Which of the following is false regarding antibodies?
    a. They bind to viral spike proteins, preventing entry.
    b. They can glue pathogens together.
    c. They can cause pathogen cell lysis.
    d. They can tag pathogens for destruction using opsonin.
19. Cytotoxic T cells…
    a. Are classified as CD4+
    b. Are antigen-nonspecific
    c. Detect antigens on MHC-I of cells
    d. Detect antigens on MHC-II of cells
20. Th2 cells detect…
    a. PAMPs
    b. Mannose receptors
    c. PAMPs and DAMPs
    d. Apoptotic cells
21. Which of these helper T cells interact with macrophages?
    a. Th1
    b. Th2
    c. Th17
    d. Treg
22. Which is not a result of Treg signalling?
    a. Production of anti-inflammatory cytokines
    b. Perforin signalling
    c. Granzyme signalling
    d. Eosinophil activation
23. Which of the following does Th17 not release?
    a. IL-17
    b. Chemokines
    c. IL-8
    d. IL-4
24. Which of the following immune cells is not found in the skull?
    a. Monocytes
    b. Lymphocytes
    c. Astrocytes
    d. Granulocytes
25. Which cell type is not found in the leptomeninges?
    a. T cells

b. Monocytes
c. Dendritic cells
d. Mast cells

26. Which of the following is not a function of microglia during development?
    a. Modulate axon growth.
    b. Facilitate oligodendrogenesis.
    c. Release CX3CL1.
    d. Synaptic development.
27. Which of the following is not an outdated view in the classification of microglia?
    a. M1 vs M2
    b. Ramified vs ameboid
    c. Surveillant vs homeostatic
    d. Resting vs activated
28. Astrocytes perform a variety of functions, including:
    a. Phagocytosis
    b. Glucose metabolism
    c. Myelination
    d. Generate action potentials
29. Aged microglia do not have:
    a. Enlarged soma
    b. Thinner and shorter branches
    c. Lipid droplet accumulation
    d. Fragmentation
30. Activation of the HPA axis does not lead to:
    a. Increased glucose metabolism
    b. Lipolysis
    c. Fight or flight response
    d. Immune system modulation
31. Chronic stress is associated with…
    a. Large-scale redistribution of immune cells
    b. Suppression of leukocyte proliferation
    c. Increase in neutrophil number
    d. Increased proinflammatory cytokines
32. At high concentrations, glucocorticoids…
    a. Bind to glucocorticoid receptors on microglia, producing a pro-inflammatory response
    b. Bind to glucocorticoid receptors on microglia, producing an anti-inflammatory response
    c. Bind to mineralocorticoid receptors on microglia, producing a pro-inflammatory response
    d. Bind to mineralocorticoid receptors on microglia, producing an anti-inflammatory response
33. In the stress response, males are more likely to show:
    a. Increased baseline HPA activity

b. Increased leukocytes in response to acute social stress
c. Increased post-acute stress HPA activation
d. Increased leukocytes in response to chronic restraint stress