Immuno #1

1. Which of the following statements about neutrophils is false?
   A) Neutrophils are the most abundant white blood cells.
   B) Neutrophils are efficient phagocytes.
   C) Neutrophils have a half-life of approximately 7 hours.
   D) Neutrophils release lysozymes to destroy bacteria.
   E) Neutrophils are the largest type of white blood cells.

2. Which of the following statements about monocytes is false?
   A) Monocytes account for approximately 5% of white blood cells.
   B) Monocytes migrate into the tissues and become macrophages.
   C) Monocytes specialize in capturing and presenting antigens.
   D) Monocytes have a shorter lifespan than neutrophils.
   E) Monocytes are also known as Kupffer cells in the liver.

3. Which of the following statements about basophils is false?
   A) Basophils are found in low numbers in the peripheral blood.
   B) Basophils contain vasoactive amines that cause smooth muscle contraction.
   C) Basophils are important in allergic reactions.
   D) Basophils release heparin, histamine, and serotonin.
   E) Basophils are multilobulated granulocytes.

4. Which of the following statements about eosinophils is false?
   A) Eosinophils are named because of their eosin-loving granules.
   B) Eosinophils are active participants in immune responses to parasitic helminth infections.
   C) Eosinophils are bilobed granulocytes.
   D) Eosinophils are primarily involved in antibody production.
   E) Eosinophils contain basic proteins in their cytoplasmic granules.

5. Which of the following statements about lymphocytes is false?
   A) Lymphocytes arise from stem cells in the bone marrow.
   B) Lymphocytes can develop into B cells or T cells.
   C) Lymphocytes play a role in cell-mediated immune responses.
   D) Lymphocytes account for approximately 50% of white blood cells.
   E) Lymphocytes produce antibodies that react against foreign antigens.

6. Which of the following statements about white blood cells (WBCs) is incorrect?
   A) WBCs are named because of their physical appearance after centrifugation.
   B) WBCs are found in the buffy coat.
   C) Hematopoiesis primarily occurs in the bone marrow.
   D) Hematopoietic stem cells give rise to all other blood cell types.
   E) WBCs are responsible for carrying oxygen throughout the body.

7. Identify the statement that does not accurately describe the process of hematopoiesis.
   A) Hematopoiesis involves the differentiation and maturation of hematopoietic stem cells.
   B) Hematopoiesis occurs primarily in the bone marrow.
   C) Hematopoietic stem cells can self-renew and differentiate into all types of blood cells.
   D) Progenitor cells arise from hematopoietic stem cells and can differentiate into specific lineage-committed progenitors.
   E) Red blood cells lose their nucleus and other organelles during differentiation.

8. Which of the following statements about neutrophils is false?
   A) Neutrophils have a half-life of approximately 7 hours.
   B) Neutrophils are the most abundant white blood cells.
   C) Neutrophils release lysozymes that destroy/digest bacteria.
   D) Neutrophil extracellular traps (NETs) are released by neutrophils to trap and eliminate pathogens.
   E) None of the above

9. Identify the statement that does not accurately describe monocytes.
   A) Monocytes migrate into the tissues and become macrophages.
   B) Monocytes specialize in capturing and presenting antigens.
   C) Monocytes are bilobed cells found in low numbers in the peripheral blood.
   D) Monocytes are phagocytes that destroy microbes and clean up dead tissue following an infection.
   E) Monocytes take longer than neutrophils to reach the site of infection but arrive in larger numbers.

10. Which of the following statements does not apply to basophils?
    A) Basophils contain vasoactive amines that cause smooth muscle contraction.
    B) Basophils are readily stained with "base-loving" dyes.
    C) Basophils are important in allergic reactions.
    D) Basophils are involved in capturing and presenting antigens.
    E) Basophils account for hypersensitivity (allergic) reactions.

11. Identify the statement that does not accurately describe eosinophils.
    A) Eosinophils are bilobed granulocytes with cytoplasmic granules that contain basic proteins.
    B) Eosinophils participate in immune responses to parasitic helminth (worm) infections.
    C) Eosinophils are named because of their "eosin-loving" granules.
    D) Eosinophils are active participants in adaptive immune responses.
    E) Eosinophils arise from stem cells in the bone marrow.

12. Which of the following statements about lymphocytes is false?
    A) Lymphocytes develop into B cells or T cells depending on their location of maturation.
    B) Lymphocytes arise from stem cells in the bone marrow.
    C) Lymphocytes account for 24-40% of white blood cells.
    D) T cells undergo maturation in the thymus and participate in humoral immune responses.
    E) B cells produce antibodies that react against foreign antigens.

13. Which of the following cell types is responsible for the production of antibodies?
    A) Neutrophils
    B) Monocytes
    C) B-lymphocytes
    D) Eosinophils
    E) Basophils

14. Which of the following types of white blood cells is associated with parasitic infection and allergic reactions?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

15. Which of the following is a characteristic feature of lymphocytes?
    A) Phagocytic activity
    B) Granular cytoplasm
    C) Multilobed nucleus
    D) Formation of pus
    E) Specific immune response

16. Which type of white blood cell is primarily responsible for phagocytosis of foreign substances and Bacteria?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

17. Which of the following cells play a significant role in allergic reactions by releasing histamine?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

18. Which of the following is the correct order of the stages of hematopoiesis from earliest to latest?
    A) Progenitor cells - Hematopoietic stem cells - Differentiation and maturation
    B) Hematopoietic stem cells - Progenitor cells - Differentiation and maturation
    C) Differentiation and maturation - Hematopoietic stem cells - Progenitor cells
    D) Hematopoietic stem cells - Differentiation and maturation - Progenitor cells
    E) Differentiation and maturation - Progenitor cells - Hematopoietic stem cells

19. Which of the following is a function of monocytes?
    A) Production of antibodies
    B) Release of histamine

C) Synthesis of platelets
D) Phagocytosis
E) Blood clotting

20. Which of the following is an example of a lymphoid organ?
    A) Liver
    B) Kidney
    C) Pancreas
    D) Thymus
    E) Small intestine

21. Which type of white blood cell is the most abundant in the human body?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

22. Which of the following cell types is primarily involved in cell-mediated immunity?
    A) Neutrophils
    B) Monocytes
    C) B-lymphocytes
    D) Eosinophils
    E) T-lymphocytes

23. Which of the following stages of hematopoiesis gives rise to all other blood cell types?
    A) Hematopoietic stem cells
    B) Progenitor cells
    C) Differentiation and maturation
    D) Red blood cell (RBC) production
    E) Platelet production

24. Which type of white blood cell is responsible for secreting elastase, which can result in tissue destruction?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

25. Which process involves leukocytes squeezing themselves through small pores between endothelial cells?
    A) Diapedesis
    B) Chemotaxis
    C) Phagocytosis
    D) Hematopoiesis
    E) Amoeboid motion

26. What is the function of monocytes once they leave the capillaries and enter the tissues?
    A) Synthesis of antibodies
    B) Antigen presentation
    C) Smooth muscle contraction
    D) Production of histamine
    E) None of the above

27. Which type of white blood cell plays a crucial role in the cell-mediated immune response?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

28. Which of the following cells are not B-lymphocytes or T-lymphocytes but are important in the innate immune system?
    A) Neutrophils
    B) Monocytes
    C) Natural killer cells
    D) Eosinophils
    E) Basophils

29. What is the name given to the process of leukocytes moving through tissue spaces using cytoplasmic extensions?
    A) Diapedesis
    B) Chemotaxis
    C) Phagocytosis
    D) Hematopoiesis
    E) Amoeboid motion

30. Which type of white blood cell contains vasoactive amines and is involved in inflammatory and allergy reactions?
    A) Neutrophils
    B) Monocytes
    C) Lymphocytes
    D) Eosinophils
    E) Basophils

31. Which type of white blood cell is known for its role in killing virus- or bacteria-infected cells?
    A) Neutrophils
    B) Monocytes
    C) Natural killer cells
    D) Lymphocytes
    E) Eosinophils

32. What is the purpose of the differential WBC?
    A) To determine the total number of leukocytes in circulation
    B) To differentiate leukocytes based on their various cell lines and stage of maturity
    C) To evaluate the degree of response to a pathologic process
    D) None of the above
    E) All of the above

Answers:

1) E	**9)** C	**17)** E	**25)** A
2) D	**10)** D	**18)** B	**26)** B
3) E	**11)** D	**19)** D	**27)** C
4) D	**12)** D	**20)** D	**28)** C
5) E	**13)** C	**21)** A	**29)** E
6) E	**14)** D	**22)** E	**30)** E
7) E	**15)** E	**23)** A	**31)** C
8) E	**16)** A	**24)** A	**32)** B