

Blood
Chapter Study Guide (C19)
Tortora / Derrickson

1. What is the distinction between the cardiovascular system and the circulatory system?
2. What are the three primary functions of blood?
3. What type of tissue is blood? Why?
4. What is the structure of blood? Define blood in terms of cells and matrix.
5. What term is used to describe the blood's matrix? What do you call this if you remove the fibrinogen?
6. List and define the characteristics of the seven "formed elements" of blood?
7. What are the three main plasma proteins? Where are these proteins produced? Their functions?
8. What is the hematocrit? The benchmark number? Single major component? What is its effect on viscosity? Significance?
9. What is the "buffy coat"? It's contribution to the hematocrit volume?
10. What are the reference benchmarks as described in class for these blood items: pH, hematocrit, RBC concentration, platelet concentration, WBC concentration.
11. What are platelets? Where are they formed? How? Primary function? Another name?
12. What are the characteristics of an erythrocytes? Where are they formed? How long do they circulate in blood? Primary function? Size? Size compared to a continuous capillary? Significance?
13. How are WBC classified? (two major groups)
14. Where are all WBC formed (i.e. origin or "born")?
15. What WBC goes to the thalamus to complete maturation? Significance?
16. After WBC complete maturation, where do WBC go (i.e. deployed)?
17. What are neutrophils? Function? Significance?

18. What are eosinophils? Function? Significance?
19. What are basophils? Function? Significance?
20. How do basophils “change” when they leave the blood and enter the tissue spaces? What do we call a basophils after they enter the interstitial space? What do basophils contain? Function? Significance?
21. What is the stimulus which cause mast cells to “degranuale”?
22. What is a monocyte? What do we call a monocyte after they emigrate into the interstitial space? What is the function for each cell state?
23. How is blood viscosity influenced by blood hematocrit? Significance?
24. What is the osmolarity of blood? Significance? What blood component plays the major role in determining the blood's osmolarity?
25. What happens when blood osmolarity is to high? To low? Where within the cardiovascular sytem does osmolarity effect the circulatory system? Significance?
26. What is hemopoiesis?
27. Where does hemopoiesis take place during fetal development?
28. Where does hemopoiesis take place in adult life?
29. What is the name of the stem cell responsible for hemopoiesis?
30. What is the primary function of the RBC?
31. What is the diameter of a RBC? What is the diameter of a capillary? How do RBC pass through a continuous capillary?
32. What two cytoskeletal proteins play a key role in the life cycle of a RBC? Significance?
33. How long do RBC circulate in the blood? Where is the graveyard for RBC? Why there?
34. What cell “recycles” ruptured RBC? What happens to the different components of the recycled RBC?
35. What is erythropoietin? What is the homeostatic mechanism that regulates erythropoiesis?

36. How long does it take to produce a new RBC?
37. What are immature RBCs called? What cytoplasmic organelle persist during this phase?
38. What is hemoglobin? Form and function?
39. What is the difference between fetal and adult hemoglobin? Significance?
40. What are the three critical nutrients required for RBC production?
41. How is heme from hemoglobin eliminated from the body?
42. Why is iron important? How is it managed by the human body?
43. Where is carbonic anhydrase located in blood? Function?
44. What is the chloride shift? Significance?
45. What is hypoxia?
46. What is hypoxemia?
47. What is polycythemia? Primary vs secondary?
48. How will polycythemia affect blood viscosity? Heart function?
49. What is anemia? Different forms: hemorrhagic, hemolytic, iron deficiency, pernicious, and sickle cell.
50. Explain why if hypoxia is caused by emphysema then the hypoxia can not be reversed by erythropoiesis. What is the long term significance?
51. How many WBC are in a microliter of blood? Significance?
52. Where are leukocytes born? After they circulate in the blood where do they go? Functions?
53. What type of information is contained in a complete blood count report?
54. What is leukopoiesis?
55. What is leukopenia? Leukocytosis?
56. What is another name for a platelet?

57. What is thrombopenia? Thrombocytosis?
58. What is hemolysis? Conditions that may cause hemolysis? Why do bacteria lyse RBC?
59. What is hemostasis?
60. What role do platelets play in hemostasis?
61. What are the seven functions of platelets?
62. Where are 40% of the platelets stored in the body? Significance?
63. What are the three stages of hemostasis?
64. What is prostacyclin? Where is it found?
65. What are the two different mechanisms that can activate hemostasis? Which mechanism is faster?
66. What is fibrinogen? How is it converted to fibrin? Significance?
67. What is clot retraction? When does this occur?
68. What is platelet derived growth factor?
69. What is fibrinolysis?
70. What is a thrombus? Thrombosis?
71. What is an embolism?
72. What is ischemia? Infarction?
73. How are red blood cells assigned a blood type? Use these terms to explain this question: antigen (agglutinogen) and antibody (agglutinin)
74. When you were a young child, your Grandmother said “you were sweet”. Why was she right? What is this cellular component called?
75. What is agglutination? Is it dangerous? Why?
76. What is the difference between an agglutinogen and an agglutinin? Another name for these objects?

77. In the ABO system, what is the most common blood type? The rarest blood type?
78. What blood type is the universal donor?
79. What blood type is the universal recipient?
80. What occurs if you mismatch blood in a blood transfusion?
81. How many RBC can a single agglutinin bind at one time?
82. What is the Rh factor?
83. How are the agglutinins managed differently in the ABO and Rh system?
84. What is RhoGam?
85. Are anti-D agglutinins present at birth? Explain. When do they form? Two conditions which may cause agglutinins to form?
86. What is the hemolytic disease of the newborn?