

Chapter 17 Blood

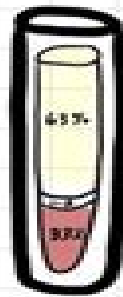
Blood Content:

plasma + formed elements

formed elements - living blood

"cells" suspended in plasma

- **Erythrocytes** - (RBCs) red blood cells
- **Leukocytes** - (WBCs) white blood cells
- **platelets** - cell fragments



- plasma

(Buffy coat)
- WBCs + platelets
- RBCs

plasma - non living fluid matrix

90% water

60% albumin

36% Globulins

4% fibrinogen

- nutrients
- hormones
- wastes
- gases
- proteins

Sticky, opaque, metallic taste pH = 7.35 - 7.45

high O_2 - scarlet, low O_2 - dark red V = 5-6L men, 4-5L women

Blood function:

1. **Distribution** - delivering O_2 and nutrients to body cells; transporting metabolic wastes to lungs and kidneys for elimination; transporting hormones from endocrine organs to target organs
2. **Regulation** - maintaining body temp by absorbing and distributing heat; maintaining normal pH buffer; maintaining adequate fluid volume in circulatory system
3. **protection** - preventing blood loss - plasma proteins and platelets $\rightarrow$ clot formation; preventing infection

RBCs



Spectrin - provides flexibility to change shape

no nucleus

biconcave disks, **anucleate**, no organelles

RBC function: respiratory gas transport, hemoglobin binds with O_2

• 97% hemoglobin form fib function

Hemoglobin - protein in RBC that carries oxygen

Hb

Globin: **Heme**:

- 4 polypeptide chains
- pigment bonded to globin
- 2 alpha + 2 beta chains
- chain - gives blood red color

Oxyhemoglobin - ruby red - O_2 loading in lungs

deoxyhemoglobin - dark red - O_2 unloading in tissues

Carbaminohemoglobin - 20% CO_2 in blood binds to Hb

- heme iron (Fe) binds to 1 O_2
- RBC - 250mil Hb molecules
- Each Hb can produce 4 O_2

Hematopoiesis

- formation of blood cells in red bone marrow

hemocytoblasts - hematopoietic Stem Cells

hematocrit - % of blood volume that is in RBCs

47% $\pm$ 5% (males), 42% $\pm$ 5% (females)

Anatomy And Physiology Blood Packet Key

**Cyprian Mendonca,,Mahesh
Chaudhari,,A Pitchiah**



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Table of Contents Anatomy And Physiology Blood Packet Key

1. Understanding the eBook Anatomy And Physiology Blood Packet Key
 - The Rise of Digital Reading Anatomy And Physiology Blood Packet Key
 - Advantages of eBooks Over Traditional Books
2. Identifying Anatomy And Physiology Blood Packet Key
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Anatomy And Physiology Blood Packet Key
 - User-Friendly Interface
4. Exploring eBook Recommendations from Anatomy And Physiology Blood Packet Key
 - Personalized Recommendations
 - Anatomy And Physiology Blood Packet Key User Reviews and Ratings
 - Anatomy And Physiology Blood Packet Key and Bestseller Lists
5. Accessing Anatomy And Physiology Blood Packet Key Free and Paid eBooks
 - Anatomy And Physiology Blood Packet Key Public Domain eBooks
 - Anatomy And Physiology Blood Packet Key eBook Subscription Services
 - Anatomy And Physiology Blood Packet Key Budget-Friendly Options

6. Navigating Anatomy And Physiology Blood Packet Key eBook Formats
 - ePub, PDF, MOBI, and More
 - Anatomy And Physiology Blood Packet Key Compatibility with Devices
 - Anatomy And Physiology Blood Packet Key Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Anatomy And Physiology Blood Packet Key
 - Highlighting and Note-Taking Anatomy And Physiology Blood Packet Key
 - Interactive Elements Anatomy And Physiology Blood Packet Key
8. Staying Engaged with Anatomy And Physiology Blood Packet Key
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Anatomy And Physiology Blood Packet Key
9. Balancing eBooks and Physical Books Anatomy And Physiology Blood Packet Key
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Anatomy And Physiology Blood Packet Key
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Anatomy And Physiology Blood Packet Key
 - Setting Reading Goals Anatomy And Physiology Blood Packet Key
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Anatomy And Physiology Blood Packet Key
 - Fact-Checking eBook Content of Anatomy And Physiology Blood Packet Key
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements

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