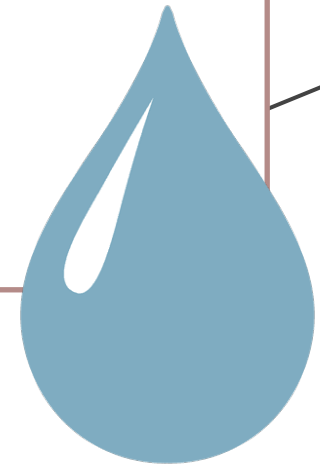


Blood Biochemistry BCH 471[Practical]

**Lab (0) Introduction**



# Course Outline

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	Title of the Experiments
1	Separation of Plasma and Serum and Their Proteins From Whole Blood
2	Determination of Plasma Enzymes (Lactate Dehydrogenase)
3	ABO Blood Grouping and Rh Groups
4	Hemolyzing Agents and Detection of Blood
5	Hemoglobin and Anemia
6	Determination of Iron Serum
7	Estimation of Serum Bilirubin ( Total and Direct )
8	Coagulation Time and Prothrombin Time, HCT and ESR
9	Complete Blood Cell Count

# Marks Distribution

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Tasks	Marks
Reports	5 Marks
Quiz	5 Marks
Conducting the experiment	3 Marks
Homework	2 Marks
Final	Practical 10 Marks
	Theoretical 5 marks
<b>Total</b>	<b>30 Marks</b>



# Writing a Scientific Report

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The scientific reports should contain the following:

1. **Cover page:** Title, course number and students' name.
  2. **Brief introduction:** [ Theoretical background information ]
  3. **Objectives.**
  4. **Materials and method (Experimental):** As lab sheet.
  5. **Results:** This section states what you found. Tables, graphs or calculation should be included.
  6. **Discussion:**
    - In this section you are required to describe of **what happened** in the experiment [Principle].
    - explain your results (reasons for **why** you get your results).
    - make conclusions by comparing your results to **expected values**.
    - In case of unexpected results, justify or **explain** the reasons why you have obtained such results.
- “The Discussion must answer the question "What do the results mean?" It is an argument based on the results.”



**Note:** reports are uploaded to blackboard as groups

# Lab Safety

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- You must wear a **lab coat** and hand **gloves** and a **mask**.
- **Keep a safe distance.**
- **Open toed shoes** must not be worn because they cannot protect you against chemical spills.
- **Long hair** should be tied back to avoid any interference with the experiment.
- In case of **acid or base contact with your skin**, wash it with large amount of clean, cold water and inform the instructor immediately.
- Do not **eat, drink, or chewing gum** in the laboratory.
- **Do not depart from the lab** leaving an experiment unattended. If you need to leave the lab you must inform your instructor before leaving the lab.
- You must **wash your hands** with soap after finishing the experiment.
- After finishing the experiment **clean all glassware, and work bench.**

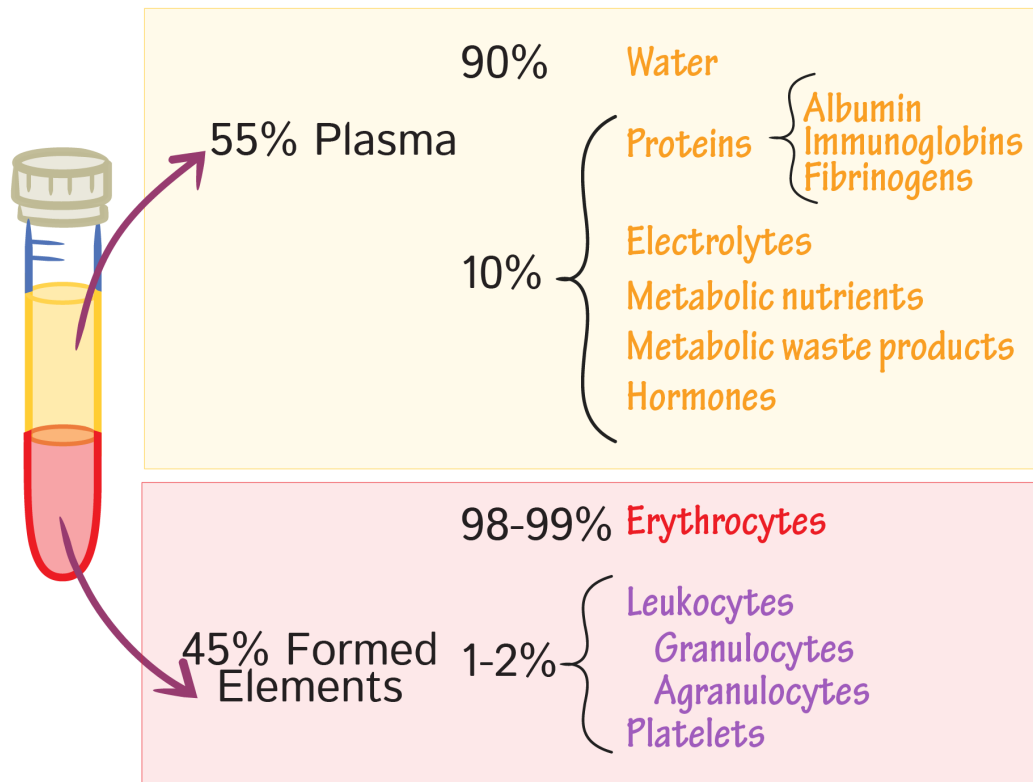
The image features a white background with decorative black lines in the corners. In the top-right corner, a line descends from the top edge, then turns left, and then descends again. In the bottom-left corner, a line descends from the bottom edge, then turns right, and then descends again. Centered in the middle of the page is a rectangular box with a thin, dark brown border. Inside this box, the text "Blood Components" is written in a bold, black, serif font.

# **Blood Components**

# Blood Compositions

- **Blood**, fluid that transports oxygen and nutrients to the cells and carries away carbon dioxide and other waste products.

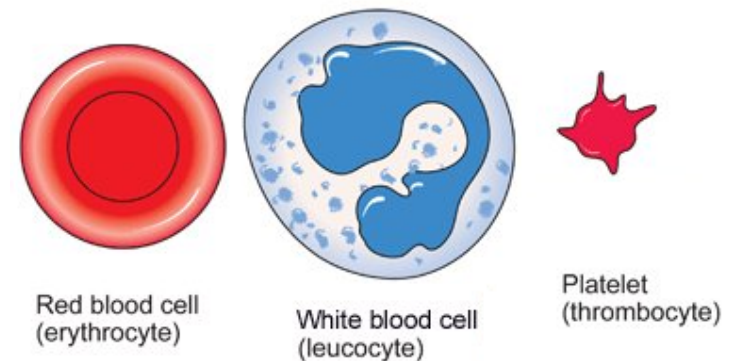
## Blood Composition



## Formed Elements (BLOOD CELLS):

- Red blood cells (erythrocytes)
- White blood cells (leukocytes)
- Platelets (thrombocytes)

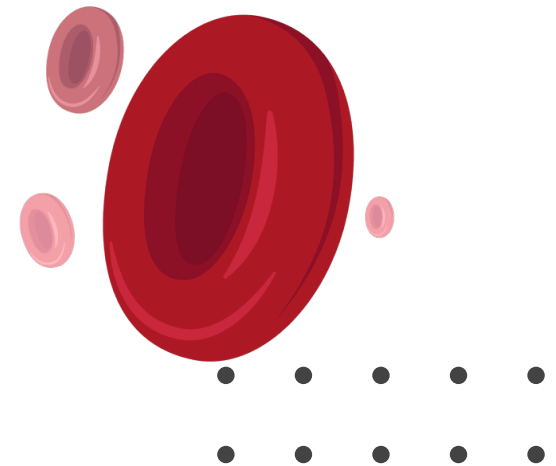
The cells are produced primarily by **bone marrow** and account for blood “solids”.



# Red Blood Cells (RBC)

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- Red blood cells contain **hemoglobin**, a complex iron-containing protein that carries oxygen throughout the body and gives **blood its red color**.
- They live for **approximately 120 days** in the circulatory system and are eventually removed **by the spleen**.

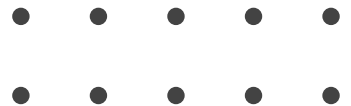
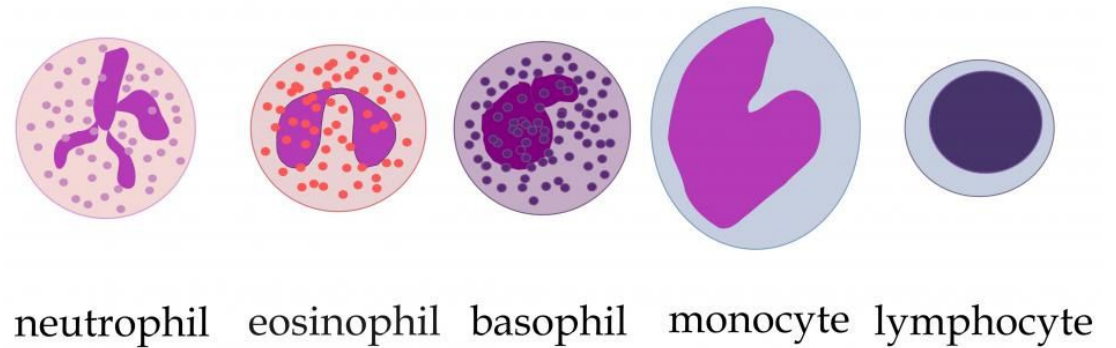




# White Blood Cells (WBC)

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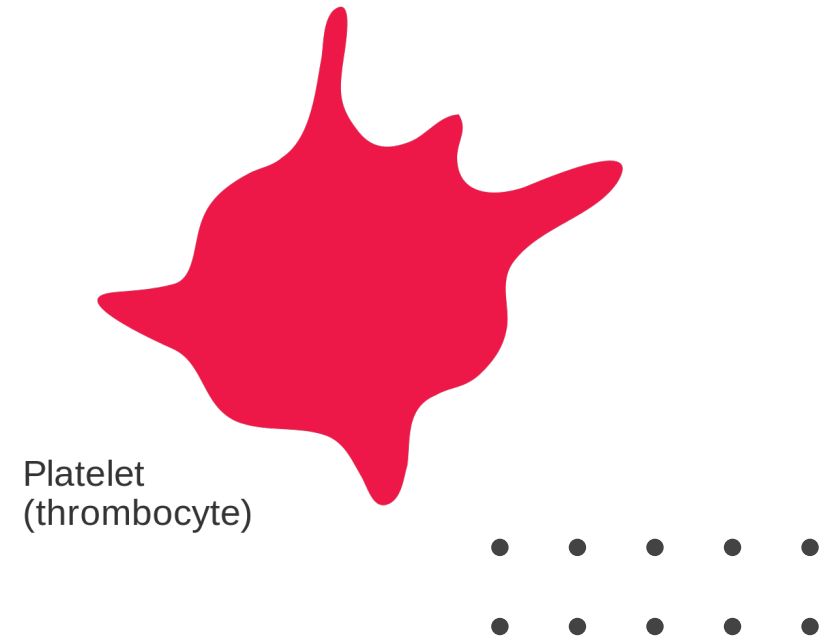
- They are responsible for **protecting the body** from invasion by foreign substances such as bacteria, fungi, and viruses.
- **WBC** have short life span of **5 – 21 days**.



# Platelets

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- They are very small cellular components of blood that **help the clotting process** by sticking to the lining of blood vessels.
- They survive in the circulatory system for **an average of 9-10 days** before being removed from the body **by the spleen.**



# Blood Functions

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## Transportation

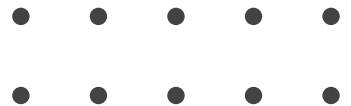
1. Gases (O<sub>2</sub> , CO<sub>2</sub>)
2. Nutrients
3. Waste materials
4. Hormones
5. Metabolites

## Regulation

1. pH
2. Temperature
3. Osmotic pressure  
(water content of cells)

## Protection

1. Protect against infections
2. Clot formation



# Questions to be answered in this course

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1. How to **separate** blood components?
2. How to use blood in the aid of **diagnosis**?
3. What test is used for the detection of a **blood type**?
4. How to **detect blood** in a biological sample?
5. How to diagnose **sickle cell anemia**?
6. How to detect **iron deficiency**?
7. How to treat **neonate jaundice**?

