

# Selective Lysis of Red Blood Cells and Platelets with Long-Term Preservation of White Blood Cells

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## INTRODUCTION

A blood cell is also known as hematopoietic cell, haemocyte, or hepatocyte, is a type of cell that is mostly present in the blood and is created through the process of haematopoiesis. Red blood cells (erythrocytes), white blood cells (leukocytes), and platelets are the three main types of blood cells (thrombocytes). These three different types of blood cells make up 45% of the blood tissue's overall volume, with plasma, the liquid component of blood, making up the remaining 55% of the tissue's composition.

### Red blood cells

Using a blue slide stain, red and white human blood cells are visible under a microscope. The blood in the darker red blood syringes is deoxygenated blood, while the brighter red blood is oxygenated blood. The main function of red blood cells, also known as erythrocytes, is to transport oxygen and to absorb carbon dioxide. The iron-containing protein haemoglobin provides red blood cells their colour and makes it easier for oxygen to travel from the lungs to the tissues and carbon dioxide to travel from the tissues to the lungs for exhalation. Red blood cells make up the majority of the blood, making up between 40% and 45% of its volume. Because they are circular, biconcave, disk-shaped, and malleable, red blood cells may fit through small capillaries. They are present without nucleus. Compared to most human cells, red blood cells are considerably smaller. Erythropoiesis is the process by which hematopoietic stem cells differentiate into RBCs in the red bone marrow. RBC production in adults averages 2.4 million per second. The average number of RBCs per cubic millimetre is 4.5-5. RBCs have a life expectancy of about 100 days to 120 days. The spleen filters them out of the blood after they have lived out their existence. The absence of a nucleus in mature red blood cells makes them distinct from other cells in the human body (although erythroblasts do have a nucleus). Anaemia having too few or too many red blood cells is referred to as polycythemia.

The rate at which RBCs sink to the bottom is known as the Erythrocyte Sedimentation Rate (ESR) (when placed in a vertical

column after adding an anticoagulant). Normal values of ESR are:

- 3 mm to 5 mm per hour in males.
- 4 mm to 7 mm per hour in females.

## DESCRIPTION

### White blood cells

Electron micrograph of blood cells that has been artificially coloured. Erythrocyte, thrombocyte, and leukocyte can be seen from left to right.

White blood cells, also known as leukocytes, are immune system cells that protect the body against both infectious diseases and external substances. They are created and developed from hematopoietic stem cells, which are multipotent cells found in the bone marrow. The lymphatic and circulatory systems of the body both include leukocytes. Different kinds of white blood cells play different functions in the human immune system. WBCs constitute approximately 1% of the blood volume. Granules in the cytoplasm are used to distinguish between granulocytes and agranulocytes, two types of white blood cells. Basophils, eosinophils, neutrophils, and mast cells are examples of granulocytes. Lymphocytes and monocytes include agranulocytes.

## CONCLUSION

Leukopenia is a disorder in which there are an abnormally low number of white blood cells, whereas leukocytosis is an excessive number. There are several terms for an excess or deficiency of particular types of white blood cells. The prevalence of infection is frequently accompanied by an increase in the number of white blood cells in circulation. White blood cell production that is not in the proper range is the root cause of many haematological malignancies.

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