





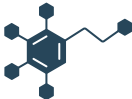



Blood Components



LIMMER
EDUCATION

Blood has two components – plasma (the liquid portion of the blood) and formed elements (red cells, white cells, and platelets).

<h2>Plasma Functions</h2>	<p>Plasma is the largest component of the blood, making up more than 55 percent of its overall content.</p>
 <h3>Coagulation</h3>	<p>Fibrinogen plays a major role in blood clotting, along with thrombin and factor ten.</p>
 <h3>Defense</h3>	<p>Immunoglobulins in plasma play an important role in the body's defense against bacteria, viruses, fungi, and parasites.</p>
 <h3>Maintenance of Osmotic Pressure</h3>	<p>Maintains colloidal osmotic pressure by the presence of plasma proteins.</p>
 <h3>Nutrition</h3>	<p>Transportation of nutrients absorbed from the digestive tract to different parts of the body.</p>
 <h3>Respiration</h3>	<p>Transportation of oxygen to the various organs and carrying carbon dioxide back to the lungs for excretion.</p>
 <h3>Excretion</h3>	<p>The blood removes nitrogenous waste products produced after cellular metabolism and transports them to the kidney, lungs, and skin for excretion.</p>
 <h3>Hormones</h3>	<p>Hormones are released into the blood and transported to their target organs.</p>
 <h3>Regulation of Acid-Base Balance</h3>	<p>Plasma proteins contribute to acid-base balance through their buffering action.</p>

Formed Elements

The remaining 45 percent of the blood is composed of formed elements.

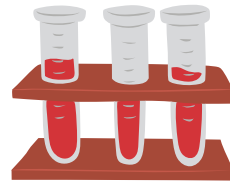
White blood cells (leukocytes)

Make up about one percent of the blood, consisting of neutrophils, basophils, eosinophils, lymphocytes, and monocytes.





Red blood cells (erythrocytes)

Make up approximately 98-99 percent of the formed elements, with four to six million per mm³ (basically, one drop of blood). Red blood cells are produced by red bone marrow within the medullary cavity of flat bones (pelvis, scapula, skull, and sternum) and have a lifespan that can reach 120 days.

Blood Types



Blood types are determined by the presence or absence of certain antigens – substances that can trigger an immune response if they are foreign to the body. There are four major blood groups determined by the presence or absence of two antigens, A and B, on the surface of red blood cells. Depending on which antigen is on the surface of a red cell, the patient's plasma will contain the opposite antibody

 A Type	<p>A type blood has A surface antigens and has B antibodies</p>
 B Type	<p>B type blood has B surface antigens and has A antibodies</p>
 AB Type	<p>AB blood has both A and B surface antigens and no antibodies</p> <p>Donors with type AB blood are universal recipients and can receive red blood cells from any other blood type. This blood type has no circulating plasma antibodies because the red cells have both A and B surface antigens.</p>
 O Type	<p>O type blood has no surface antigens, and A and B antibodies</p> <p>Donors with type O red blood cells are universal donors, and their cells can be given to any other blood type. When O blood is infused, since its red cells have no surface antigens, the receiving patient's blood antibodies have nothing to latch onto and attack.</p>