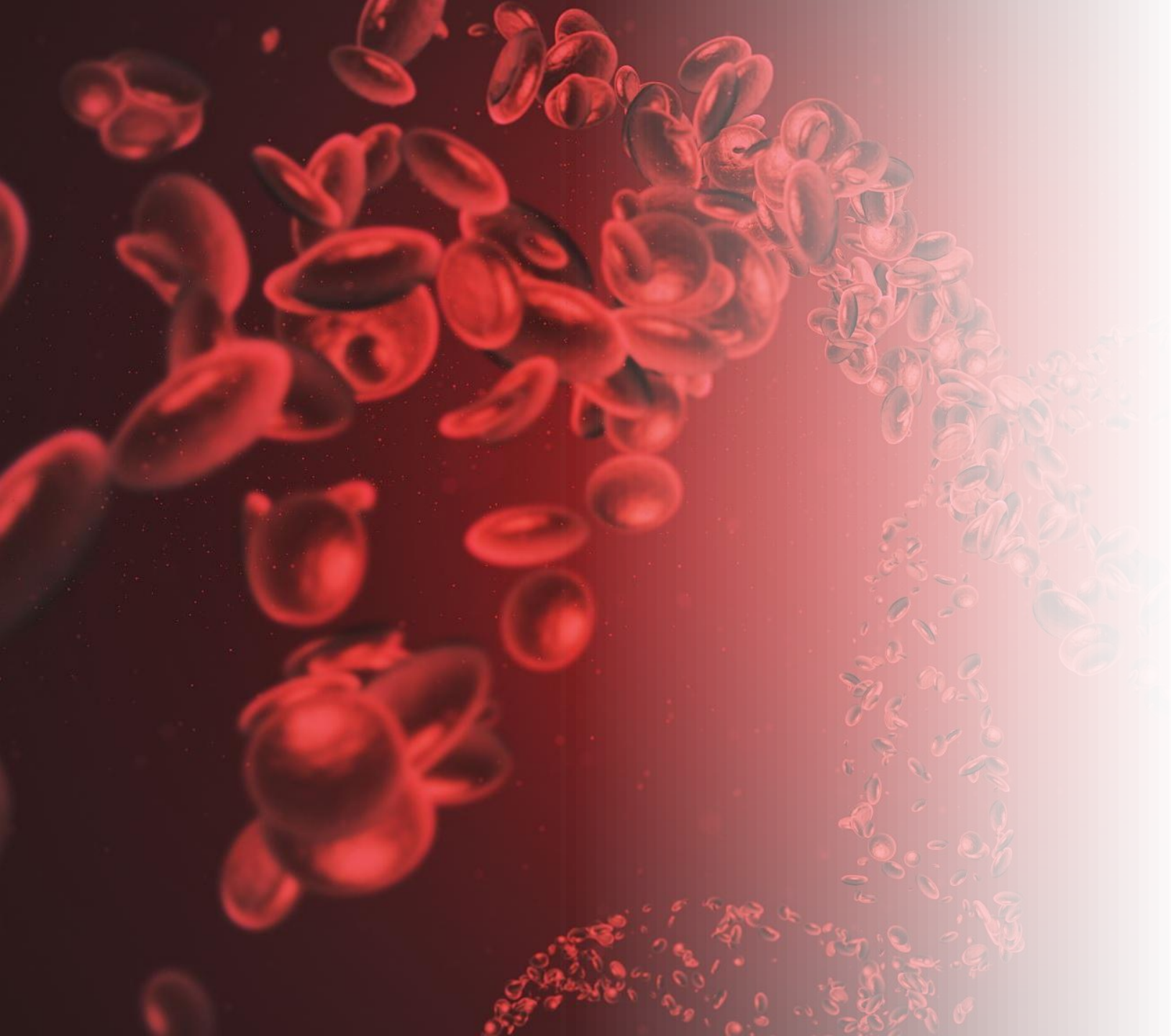
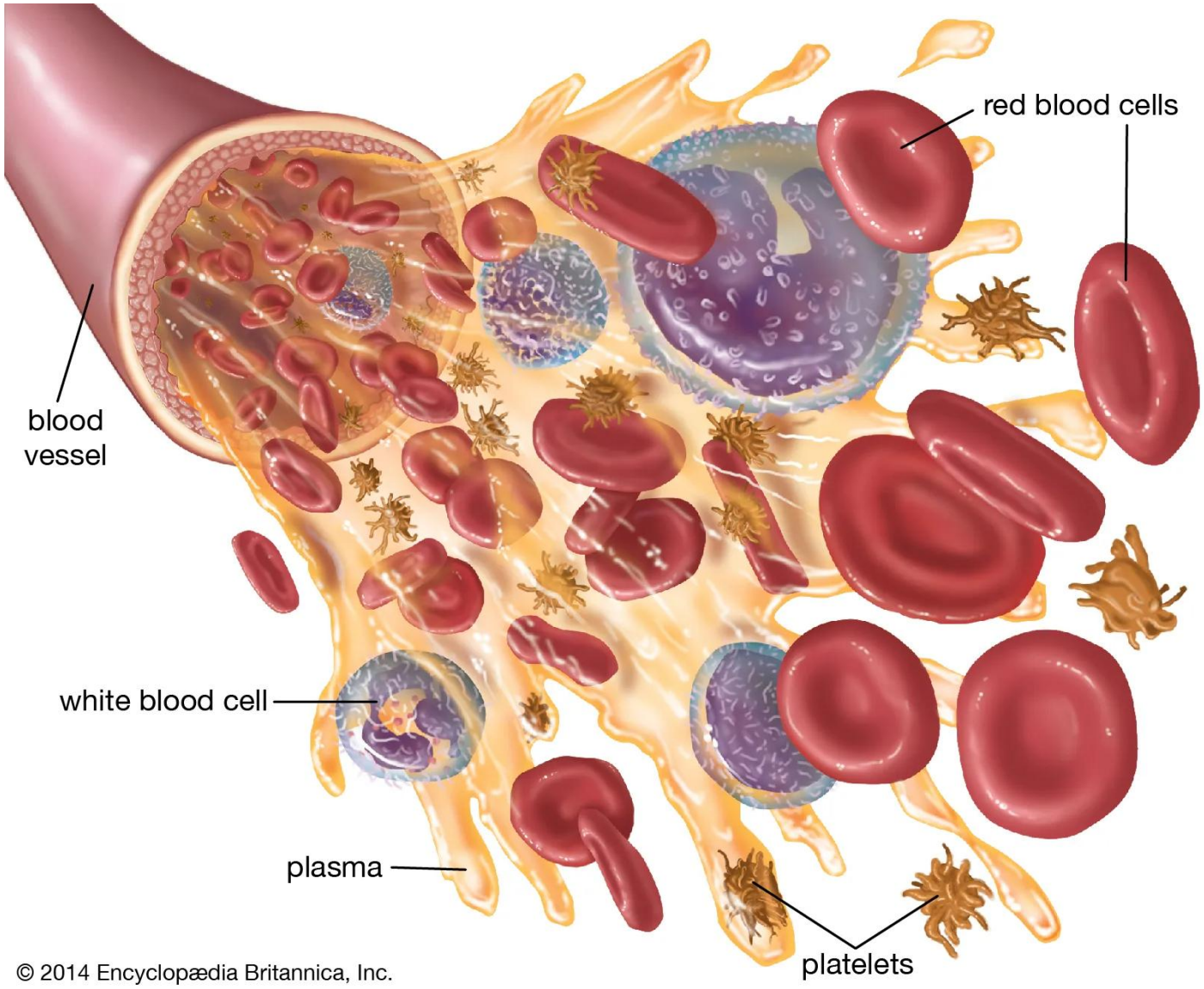


Blood composition

Prepared by: Besir Zeneli

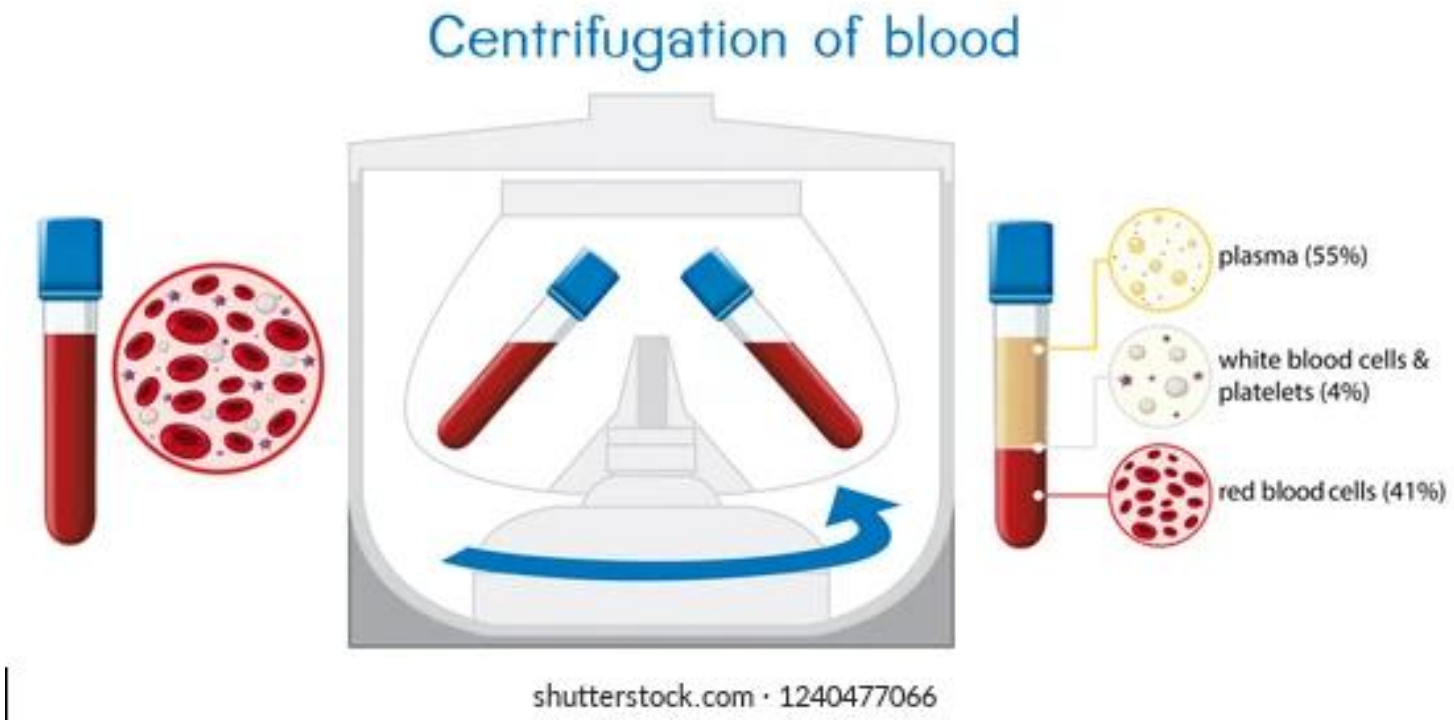
What is blood?

- Blood is a specialized bodily fluid that circulates through the arteries and veins.
- It delivers essential substances like nutrients and oxygen to the body's cells and removes waste products.



Centrifugation of blood

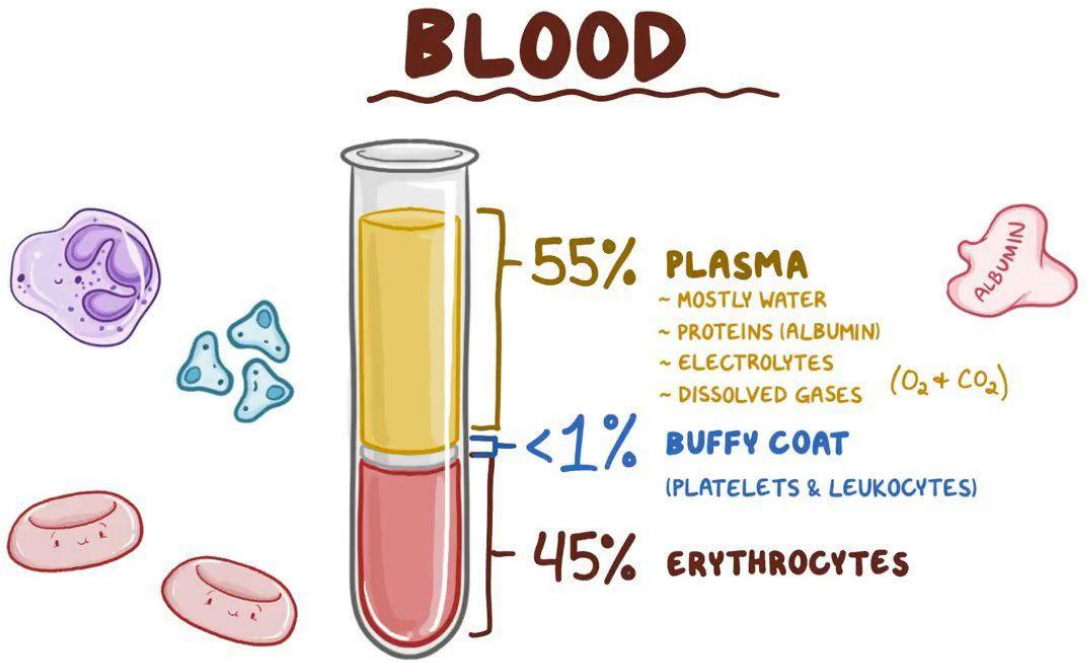
- In the picture, you can observe a process used to separate different parts of blood, like **red blood cells** and **white blood cells**, from the liquid part called **plasma**.
- To do this, scientists use special machines called **centrifuges**. When you go for a blood test, your blood sample is placed in one of these machines and spun around for a few minutes. **After spinning, the blood in the test tube will divide into layers, just like you can see in the picture**.
- This helps scientists analyze each part of the blood more easily.



Components of blood

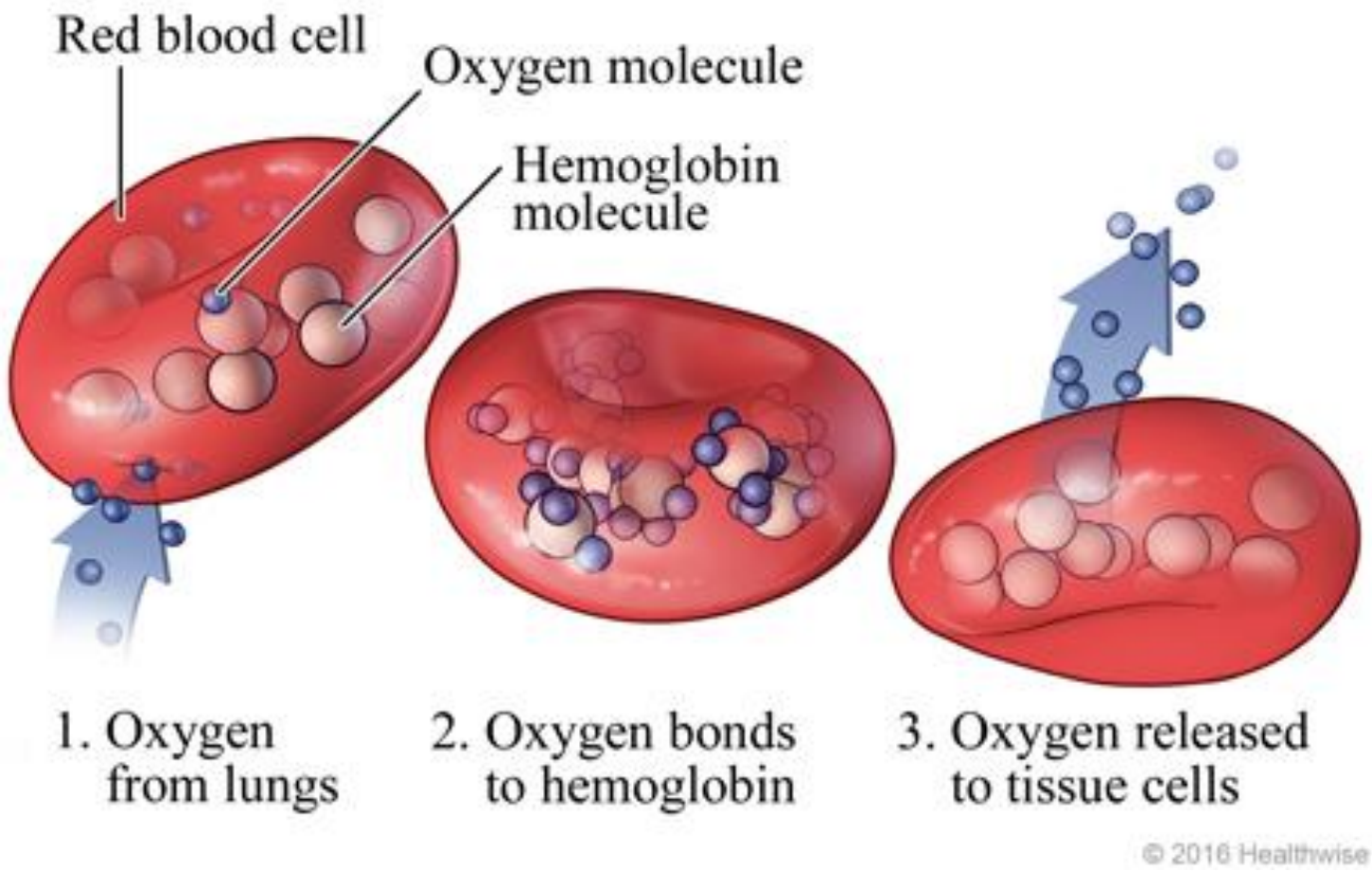
Blood is composed of several components:

- Red Blood Cells (RBCs)
- White Blood Cells (WBCs)
- Platelets
- Plasma



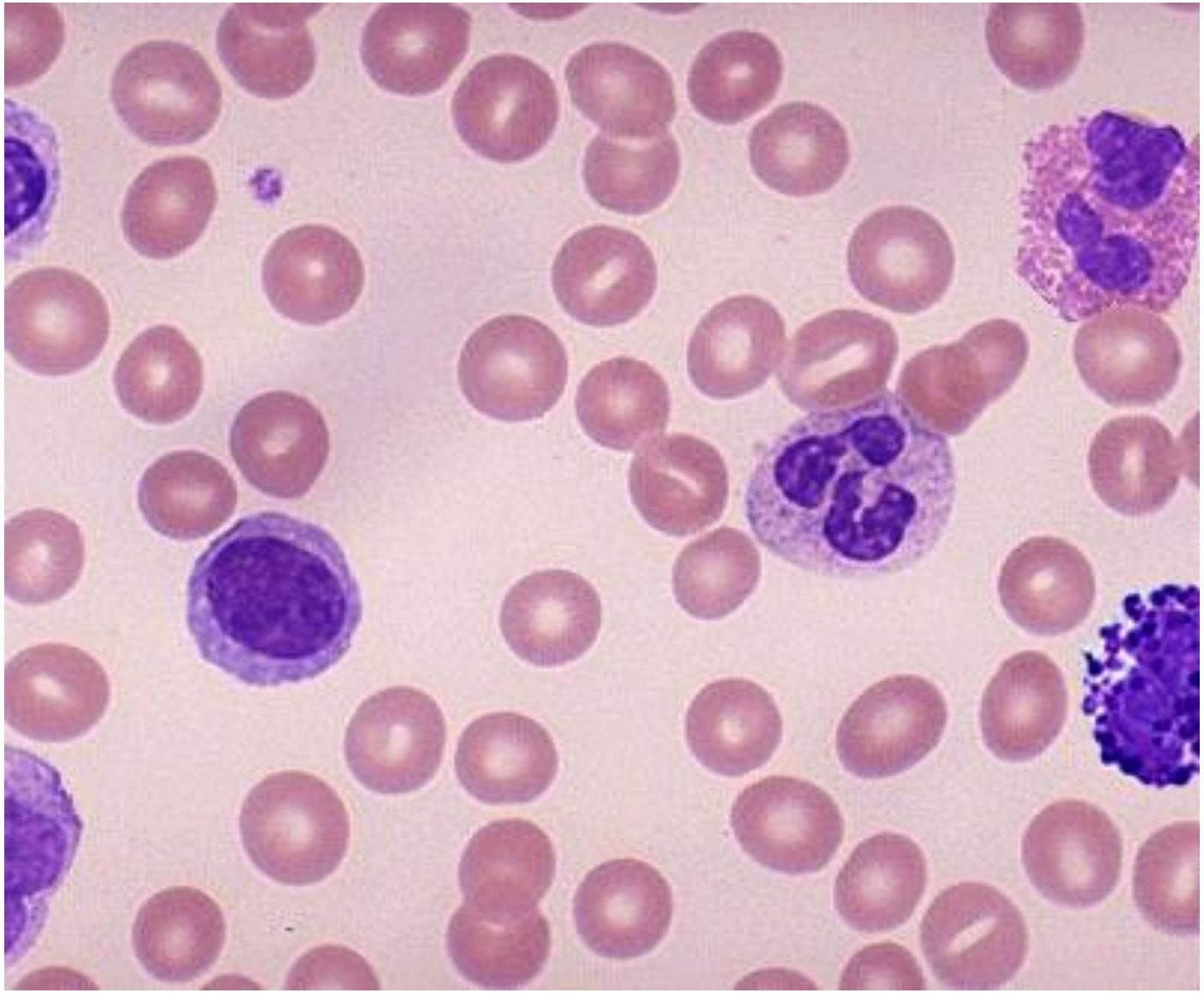
Red Blood Cells (RBCs)

- **Red Blood Cells**, also called **erythrocytes**, are the most abundant cells in the blood.
- Their **primary function is to carry oxygen** from the lungs to the body tissues.
- RBCs contain **hemoglobin**, a protein that binds to oxygen molecules through the **iron** in their structure.
- This is why it's very important to eat foods containing proteins and iron. Proteins compose hemoglobin, and iron forms in hemoglobin. Hemoglobin and iron provide better oxygenation for our body.



White Blood Cells (WBCs)

- **White Blood Cells**, also known as **leukocytes**, are part of the body's immune system.
- They **help fight infections and diseases** by attacking and destroying pathogens like **bacteria and viruses**.
- There are different types of white blood cells, each with its specific function.



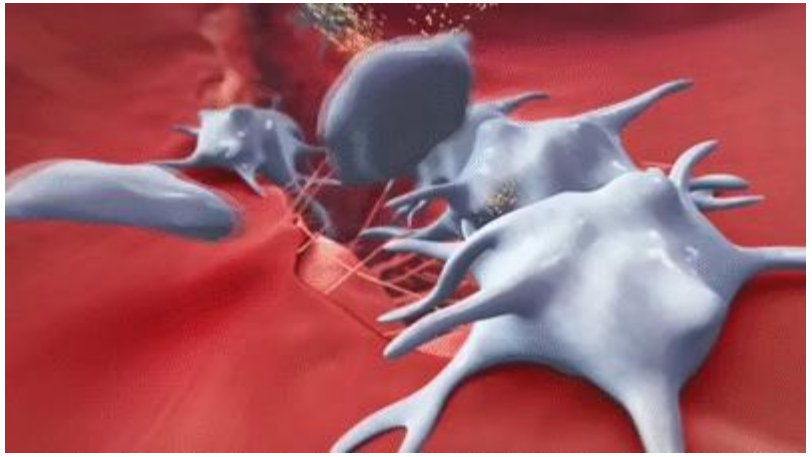
Videos about white blood cells

- https://www.youtube.com/watch?v=BDr44vLNnPY&t=1s

- https://www.youtube.com/watch?v=I_xh-bkiv_c

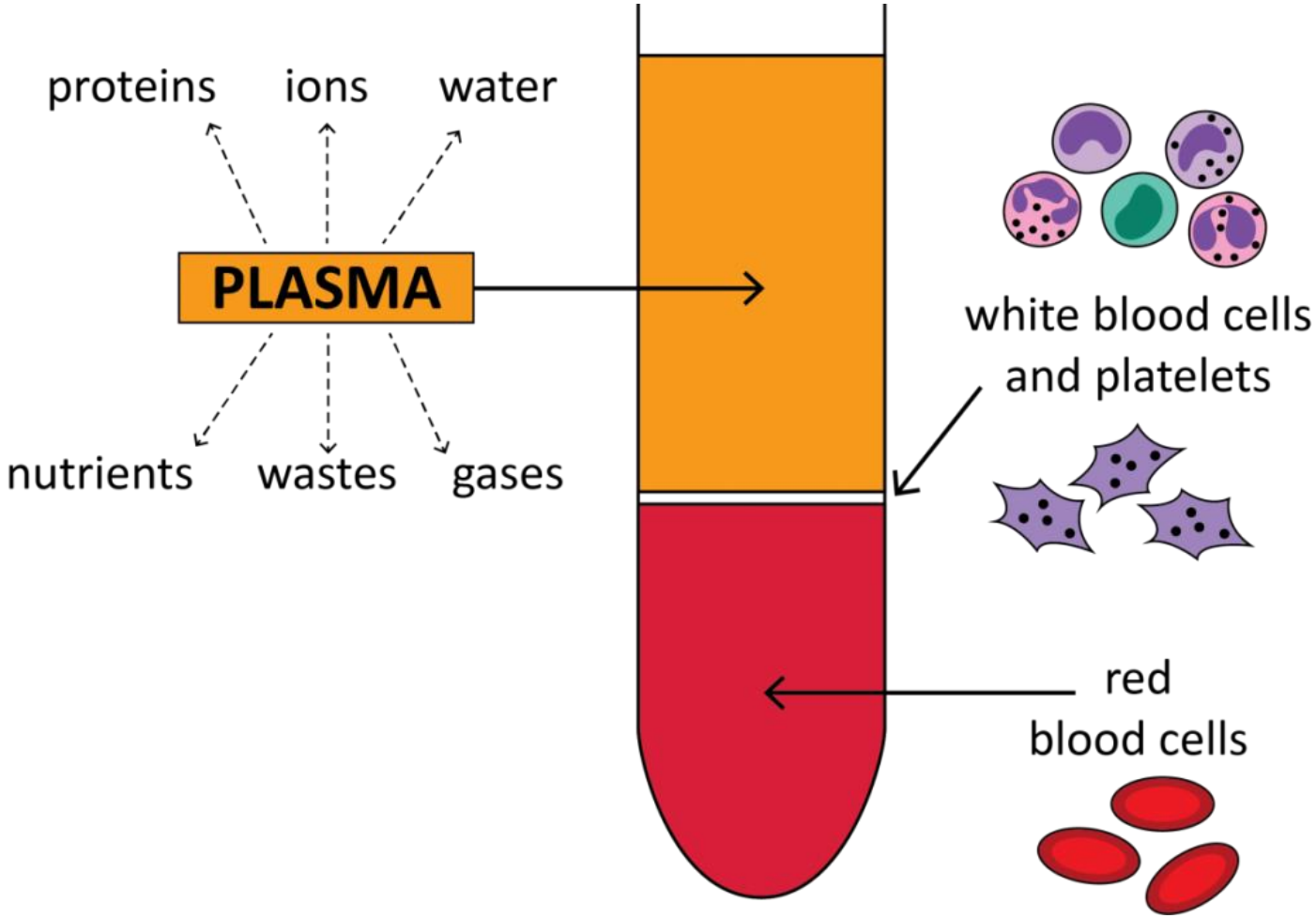
Platelets

- **Platelets**, or **thrombocytes**, are small cell fragments that play a crucial role in **blood clotting**.
- When a blood vessel is damaged, platelets rush to the site to form a **clot**, **preventing excessive bleeding**.
- They release proteins and other substances to promote clot formation.



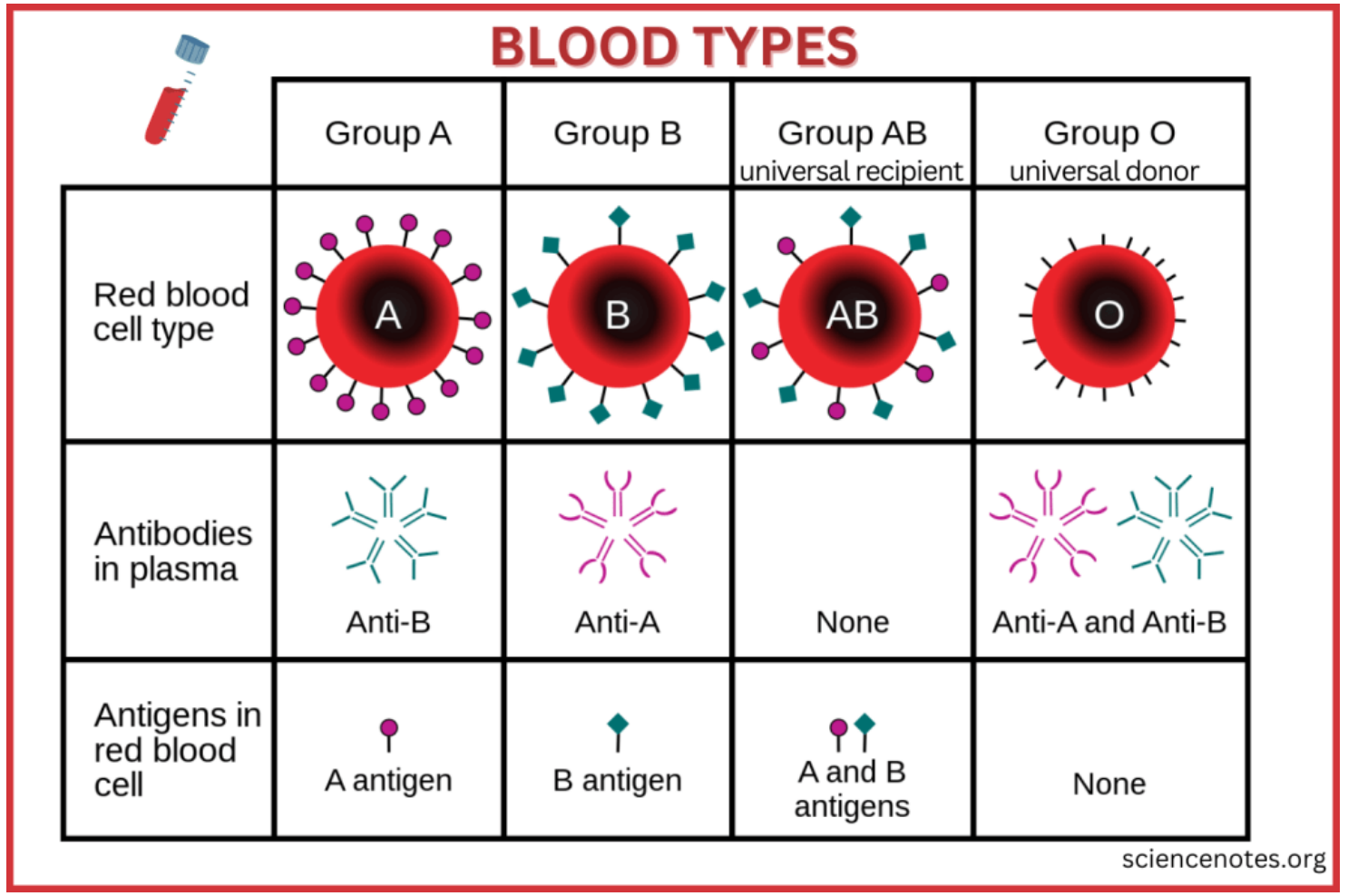
Plasma

- **Plasma** is the **liquid portion** of blood, making up about 55% of its volume.
- It is mostly composed of **water** but also contains **proteins**, **electrolytes**, **hormones**, and **waste products**.
- Plasma transports nutrients, hormones, and proteins throughout the body and helps maintain blood pressure.

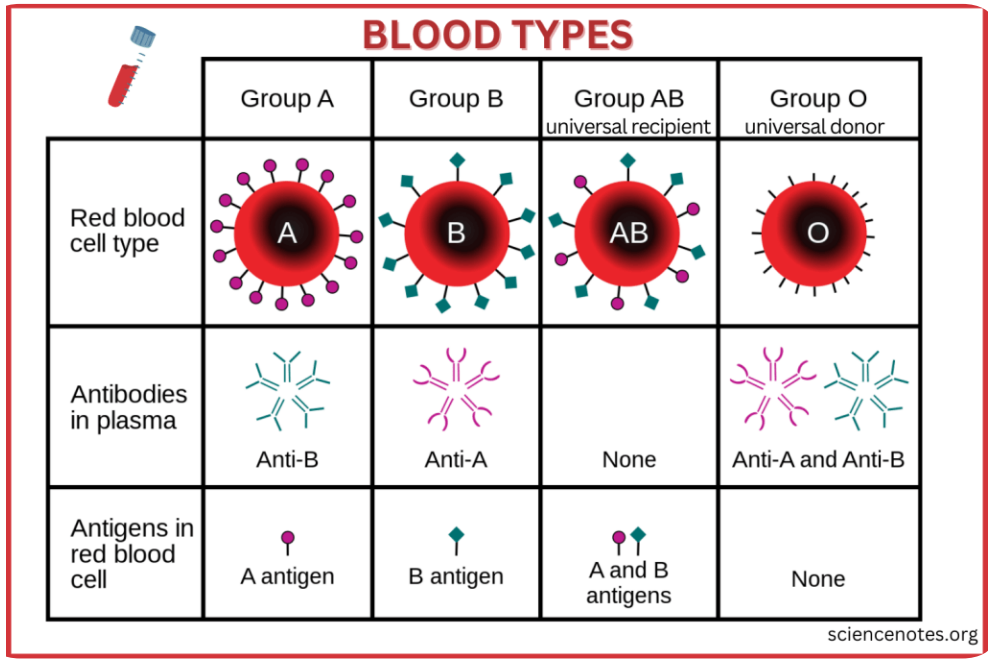


Blood Types

- Blood can be classified into different types based on the presence or absence of certain **antigens on the surface of red blood cells.**
- The ABO blood group system and the Rh factor are the most important for blood transfusions.
- Understanding blood types is crucial for ensuring compatibility during transfusions.



Blood Types



- When it comes to blood transfusions, it is important to match the blood type of the donor and the recipient. This is because if the recipient's body does not recognize the donor's blood cells, it can attack them. This can lead to serious health problems, including death.
- Here are some general rules about which blood types can donate to each other:
- **Type O negative blood** is the universal donor because it has no antigens. This means that it can be safely given to people of any blood type.
- **Type AB positive blood** is the universal recipient because it has both A and B antigens and no antibodies. This means that it can safely receive blood from any blood type.
- **People with type A blood** can receive blood from people with type A or O blood.
- **People with type B blood** can receive blood from people with type B or O blood.
- **People with type AB blood** can receive blood from people with any blood type.

Animation

- https://www.youtube.com/watch?v=UgvH3A-BDx8