

White Blood Cells and Platelets

White Blood Cells

White blood cells or **leukocytes** are the second type of cell produced through the process of hematopoiesis. Leukocytes are far less abundant than erythrocytes and play a much different role, as evidenced by their lack of hemoglobin and their possession of nuclei in addition to other membrane bound organelles. White blood cells are responsible for defending the body against invasive pathogens and for eliminating deceased cells and other materials from the body.

Erythrocytes are located exclusively in the bloodstream, but leukocytes are found in many tissues throughout the body. Leukocytes can squeeze between the squamous cells of a blood vessel. This allows leukocytes to move out of the circulation and enter the tissues. To fit between the endothelial cells of a vessel, leukocytes must flatten and lengthen their cell bodies and basically slip through the very narrow space between two cells. This process is called **diapedesis**. Once out of the circulation, leukocytes can "sense" the source of certain molecules and they begin to move in that direction. The molecules that leukocytes "sense" are produced by cells engaged in tissue damage, repair or pathogenic invasion. This process by which leukocytes follow chemicals to an area is called **chemotaxis**. The movement that leukocytes demonstrate when they move through tissues is called **amoeboid movement**. Amoeboid movement is a type of locomotion that occurs via cytoplasmic protrusions, followed by contraction and squeezing of the cell body towards the direction of the largest protrusions.

Many leukocytes engage in phagocytic behaviors to destroy and consume invasive pathogens and other substances. The leukocytes themselves die in large numbers and accumulate along with their degraded materials to form a substance known as **pus**. The various types of leukocytes and their respective functions will be discussed further in Module 3 as well as in Bio 265 Lab.

Platelets

Platelets or **thrombocytes** are the third and final category of formed elements. Platelets themselves are not actually whole cells. Rather they are cell fragments of a large bone marrow cell known as a **megakaryocyte**. Though they are cell fragments, they still contain mitochondria and several other types of organelles. Platelets play an important role in blood clotting which will be described more in 2.2.2.



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