

Patricia bianca c.
balaga



**ASSIGN
BUSTER**

PATRICIA BIANCA C. BALAGA 2B-MT BLOOD AND ITS COMPONENTS Physical Characteristics of Blood * Thicker (more viscous) than water and flows more slowly than water * Temperature of 100. 4 degrees F * pH 7. 4 (7. 35-7. 45) * 8 % of total body weight * Blood volume * 5 to 6 liters in average male * 4 to 5 liters in average female FUNCTIONS OF BLOOD * Transportation * O₂, CO₂, metabolic wastes, nutrients, heat & hormones * Regulation * helps regulate pH through buffers * helps regulate body temperature * Protection from diseases BLOOD COMPONENTS * 55% plasma: 7 to 8% dissolved substances (sugars, amino acids, lipids & vitamins), ions, dissolved gases, hormones and 45% erythrocytes BLOOD PLASMA * Composed of approximately 90 percent water * Includes many dissolved substances * Nutrients, Salts (metal ions) * Respiratory gases * Hormones * Proteins and Waste products FORMED ELEMENTS OF BLOOD * Red blood cells (erythrocytes) * White blood cells (leukocytes) * granular leukocytes * neutrophils * eosinophils * basophils * agranular leukocytes * lymphocytes = T cells, B cells, and natural killer cells * monocytes * Platelets (special cell fragments) Erythrocytes (Red Blood Cells) * Function: carry oxygen * Anatomy of circulating erythrocytes * Biconcave disks * Essentially bags of hemoglobin * Anucleate (no nucleus) * Contain very few organelles * Outnumber white blood cells 1000: 1 HEMOGLOBIN * Iron-containing protein * Binds strongly, but reversibly, to oxygen * Each hemoglobin molecule has four oxygen binding sites * Production of abnormal hemoglobin can result in serious blood disorders such as thalassemia and sickle cell anemia. Erythropoiesis: Production of RBCs * Erythropoiesis occurs in adult red bone marrow of certain bones. * The main stimulus for erythropoietin is hypoxia. * Proerythroblast starts to produce hemoglobin * Nucleus is ejected & a reticulocyte is formed * orange

<https://assignbuster.com/patricia-bianca-c-balaga/>

in color with traces of visible rough ER WHITE BLOOD CELLS * Leukocytes are nucleated cells and do not contain hemoglobin. * Two principal types are: * Granular leukocytes based on the straining of the granules. * Agranular leukocytes do not have cytoplasmic granules * Leukocytes have surface proteins, as do erythrocytes. They are called major histocompatibility antigens (MHC). GRANULOCYTES * Neutrophils -Multi-lobed nucleus with fine granules - Act as phagocytes at active sites of infection * Eosinophils -Large brick-red cytoplasmic granules -Found in response to allergies and parasitic worms * Basophils -Have histamine-containing granules * -Involved in inflammatory and allergy reactions AGRANULOCYTES * Monocytes * Largest of the white blood cells * Function as macrophages * Important in fighting chronic infection Lymphocytes * Nucleus fills most of the cell * Play an important role in the immune response * B cells * destroy bacteria and their toxins * turn into plasma cells that produces antibodies * T cells * attack viruses, fungi, transplanted organs, cancer cells & some bacteria * aka Natural killer cells * attack many different microbes & some tumor cells * destroy foreign invaders by direct attack PLATELETS * Derived from ruptured multinucleate cells (megakaryocytes) * Needed for the clotting process * Normal platelet count = 300, 000/mm³ * Disc-shaped, 2 - 4 micron cell fragment with no nucleus HEMOSTASIS * A clot is a gel consisting of a network of insoluble protein fibers (fibrin) in which formed elements of blood are trapped. * Blood clotting involves a cascade of reactions that may be divided into three stages: -formation of prothrombinase (prothrombin activator) -conversion of prothrombin into thrombin -conversion of soluble fibrinogen into insoluble fibrin. *** If clotting occurs in an unbroken vessel is called a thrombosis Platelet Plug Formation * Platelets store a lot of

chemicals in granules needed for platelet plug formation: * alpha granules * clotting factors * platelet-derived growth factor * dense granules Steps in the process * (1) platelet adhesion (2) platelet release reaction (3) platelet aggregation