BLOOD

Red blood cells (also called erythrocytes) are the most numerous, making up 40-45 percent of one's blood, and they give blood its characteristic color. Red blood cells are shaped like tiny doughnuts, with an indentation in the center instead of a hole. They contain a special molecule called hemoglobin, which carries the oxygen. In the lungs, where there is a lot of oxygen, the hemoglobin molecules loosely bind with oxygen. Each molecule of hemoglobin contains four iron atoms, and each iron atom can bind with one molecule of oxygen, allowing each hemoglobin molecule to carry four molecules of oxygen. In the capillaries, where there is little oxygen, the hemoglobin readily sheds the oxygen it is carrying and allows it to be absorbed by the body's cells. The iron in hemoglobin is what makes blood red.

White blood cells (leukocytes) are the body's mobile warriors in the battle against infection and invasion. There are three types of white blood cell: granulocytes, lymphocytes, and monocytes. There are, in turn, three kinds of granulocyte: neutrophils, eosinophils, and basophils. (Granulocytes are called that because they contain granules that hold digestive enzymes.) Neutrophils kill invading bacteria by ingesting and then digesting them. Eosinophils kill parasites, and are involved in allergic reactions. Basophils also function in allergic reactions, but are not well understood.

Lymphocytes are key parts of the body's immune system. There are two kinds of lymphocyte: T cells and B lymphocytes. T cells direct the activity of the immune system. B lymphocytes produce antibodies, which destroy foreign bodies. Monocytes, the largest kind of white blood cells, enter the tissues of the body and turn into even larger cells called macrophages. These eat foreign bacteria and destroy damaged, old, and dead cells of the body itself.

The blood cells called platelets (thrombocytes) help blood to clot, in several different ways. When bleeding occurs, platelets clump together to help form a clot. Also, when they are exposed to air (as they would be by a wound), platelets start breaking down and release a substance into the bloodstream. This substance starts a chain of chemical events that eventually causes a protein in the blood, fibrinogen, to turn into a different substance, fibrin, which forms long threads. These threads tangle up red blood cells to help form a clot, or scab, over the wound.
In their "resting" state, platelets look like two plates stuck together (hence the name). When

"activated" and helping to form a clot, they change shape and look like tiny roundish blobs with tentacles. At only two to three microns, they are the smallest kind of blood cell.

Plasma is a clear, straw-colored liquid that carries the blood cells and various hormones, nutrients, and so on through the body. It makes up a little more than half of the total blood volume. Plasma is about 90 percent water. Much of the other ten percent comprises various kinds of protein molecules, including enzymes, clotting agents, immunoglobulins (part of the immune system), and proteins that carry hormones, vitamins, cholesterol, and other things the body needs. Plasma also contains sugar (glucose) and electrolytes like sodium, potassium, and calcium, as well as other things like hormones, vitamins, and cholesterol.