



The Juice of Life

Blood runs through us all - but do you know what goes on inside your veins?

Day after day, blood tirelessly courses through our bodies

delivering oxygen and nutrients and removing waste - yet most of us rarely give it a second thought. Unless, of course, it's being splattered about. Adults have nearly five litres of it flowing in their bodies. And it performs a startling number of vital functions.

There are four basic components to blood: plasma, red blood cells, white blood cells and platelets.

Plasma makes up just over half of our blood's volume and is the liquid in which cells float. Straw-coloured, it is 90 percent water with the remaining 10 percent composed of proteins, electrolytes, lipids (like cholesterol), vitamins, minerals and glucose (blood sugar). These are distributed to body tissues as the blood circulates. Plasma doesn't only drop off beneficial nutrients around the body, it collects waste products like urea and lactic acid and delivers them to various glands, organs and muscles for processing and removal.

Floating in the plasma are red blood cells. Shaped like puffy oval discs with indentations on each side, they have a large surface area through which they can absorb

oxygen. They contain haemoglobin, a protein rich in iron that colours them red. Haemoglobin is especially good at bonding with oxygen molecules as it passes through the tiny capillaries in the lungs. As the blood flows into other areas of the body and encounters tissues with lower oxygen pressure than the lungs (muscles, organs), the red blood cells release the oxygen molecules. The red blood cells then pick up surplus carbon dioxide and other waste gases, and bring them back to the lungs where they can be exhaled.

Like their red counterparts, white blood cells also circulate throughout the body, and are continually on the lookout for invaders. They are a

Red blood cells (left) live for three to four months, platelets for seven to ten days and white cells for only a few days. Luckily our bone marrow produces millions of new blood cells every second.

critical part of our immune system and fight off bacteria, viruses, cancer cells and other foreign invaders. Some types of white blood cells are known as granulocytes because they contain tiny granules of enzymes that digest harmful bacteria and microbes in our bodies. Others are capable of producing powerful antibodies that help neutralise bacteria. One type, Memory T Lymphocyte, can actually remember harmful organisms from a previous infection and acts by organising a rapid, stronger defence should the invaders return to the scene of the crime.

Platelets are the maintenance workers. When a blood vessel is damaged, platelets recognise the collagen produced by the rupture and start coagulating, or thickening, the blood to minimise further blood vessel damage. Even more importantly, when bleeding suddenly occurs they work with calcium, vitamin K and a protein known as fibrinogen to produce clots and help stop the blood flow. ■

WHAT'S YOUR TYPE?

The differences in blood are due to the presence or absence of certain protein molecules on the surface of red blood cells. These are referred to as A or B. If a person has group A, their blood is type A. If B, they are type B. If both groups are present, they have type AB blood and if they have neither, they are type O. Whether blood is positive or negative is determined by a protein known as the Rh factor, named after the

Rhesus monkey in which it was first found. If the protein is present, the person's blood type is positive. If absent, the type is negative. Type O+ can be given to anyone and is therefore known as the universal donor. Type AB- people can receive blood from anyone and so AB- is thus known as the universal receiver. Receiving the wrong blood in a transfusion is a deadly mistake so be sure you know your type!

