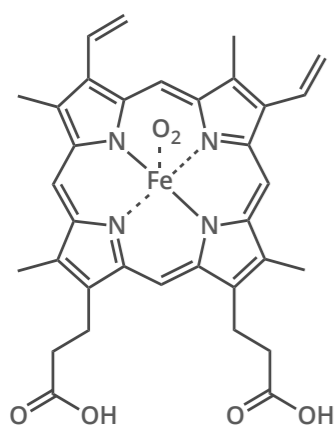


# THE CHEMISTRY OF BLOOD

Blood is a complex chemical mixture. The chemicals in it dictate its colour, and some also contribute to its characteristic, slightly metallic odour. Here we take a look at some of these chemicals, as well as examining some of the differences that determine a person's blood type.

## THE COLOUR OF BLOOD

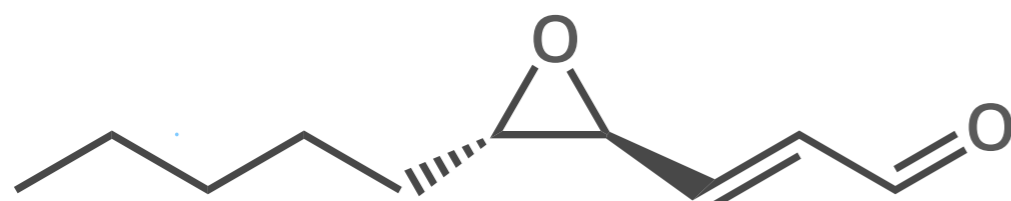


HAEM B  
(oxygenated form)

Haemoglobin is a protein found in blood, built up of smaller sub-units containing 'haems'. These haems contain iron, and their structure gives our blood its red colour when oxygenated. Deoxygenated blood is a red colour - not blue!

Blood lost due to bleeding gradually turns brown, as haemoglobin is oxidised to methaemoglobin.

## THE SMELL OF BLOOD



TRANS-4,5-EPOXY-(E)-2-DECENAL

The compound that gives human blood its characteristic metallic odour is *trans*-4,5-epoxy-(*E*)-2-decenal. The metallic smell of metals and blood coming into contact with skin is largely due to oct-1-en-3-one, produced due to the reaction between oxidised skin lipids and the iron in haemoglobin.



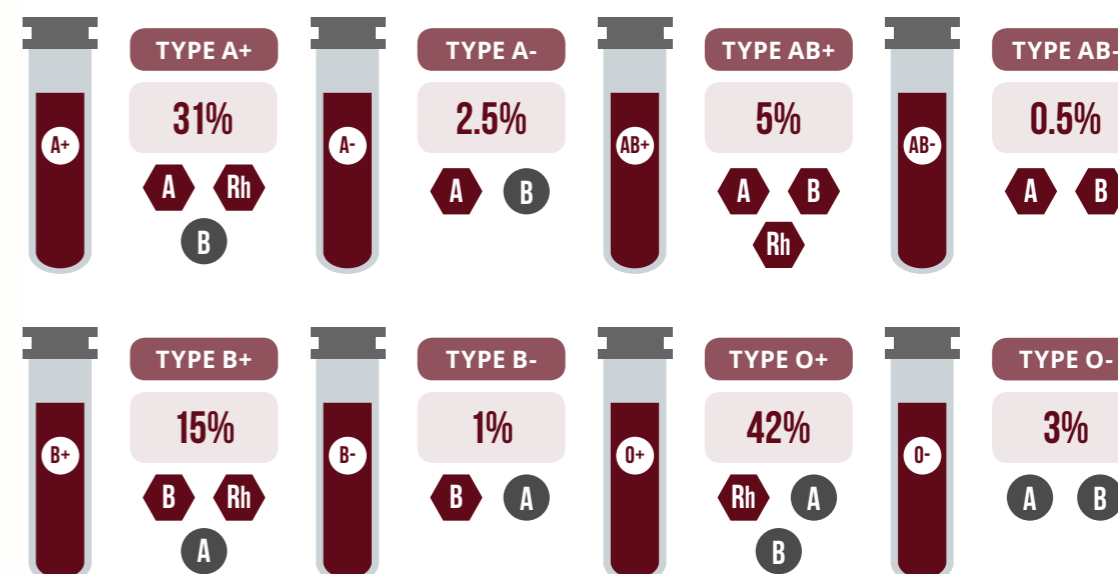
## BLOOD TYPES

Blood type is determined by the presence of antigens. Antigens are found on red blood cell surfaces; they can bind to antibodies and stimulate an immune response. Antibodies are proteins in blood plasma that help fight infection.

### APPROXIMATE WORLDWIDE DISTRIBUTIONS OF BLOOD TYPES

Key ANTIGEN ANTIBODY

Usually only red blood cells are added in transfusions, so only blood antibodies of the person receiving blood are of concern.



The antibodies a blood type contains determines what blood can be received in transfusions. Someone with blood containing A antibodies cannot be given blood containing A antigens. O can be given to all as it contains no A or B antigens.

