

PC3303 Week 1 – Revision of the cardiovascular system – blood.

If you're interested – the 8 main blood types explained.

If you're interested... There are 8 main blood types (or blood groups) based on the surface antigens on the red blood cells – they are A, B, AB or O PLUS you can be Rhesus +ve or –ve. This makes up the 8 types. Blood type is determined by the expression or absence of surface antigen, for example

- A type blood has only A antigens on red blood cells
- B type blood has only B antigens on red blood cells
- AB has both A and B antigens on red blood cells
- O has neither A or B antigens on red blood cells.

The body produces antibodies to these antigens restricting the use of a different type of blood given to a patient:

- A type blood has only A antigens on red blood cells but produces anti-B antibody in the plasma
- B type blood has only B antigens on red blood cells but produces anti-A antibody in the plasma
- AB has both A and B antigens on red blood cells and produces no anti-A or anti-B antibody in the plasma
- O has neither A or B antigens on red blood cells but produces both anti-A and anti-B antibody in the plasma

You can see why O-group blood is considered the universal donor (all blood groups can receive O-group blood, and why those people with type AB blood can receive any type of blood (they are also known as universal receivers).

In addition to the blood type, blood is also classified as Rh-D positive or Rh-D negative. Rh is short hand for Rhesus – a large (50+) group of antigens found on red blood cells. The Rhesus-D antigen is particularly problematic as it is quite immunogenic. Patients who are Rh-negative should not be given Rh- positive blood as it risks the body mounting an immune response targeting those infused red blood cells.

Activity: For more information, have a read of the Australian Academy of Science article on blood types: Blood types: the not so bleeding obvious available at <https://www.science.org.au/curious/people-medicine/blood-types>.