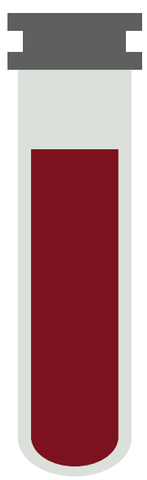
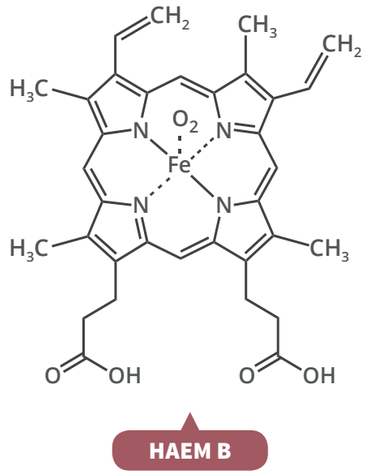
THE CHEMISTRY OF BODILY FLUID COLOURS

Blood, urine, and faeces are quite distinct. However, the compounds that give them their colours are chemical relatives! We take a look at them here.

BLOOD: HAEMOGLOBIN

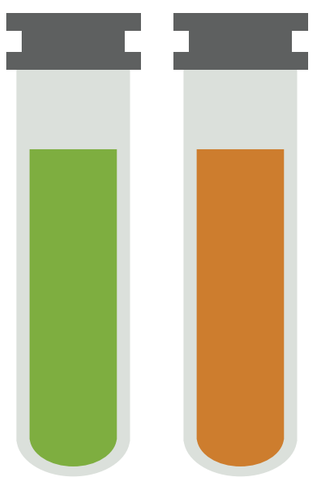


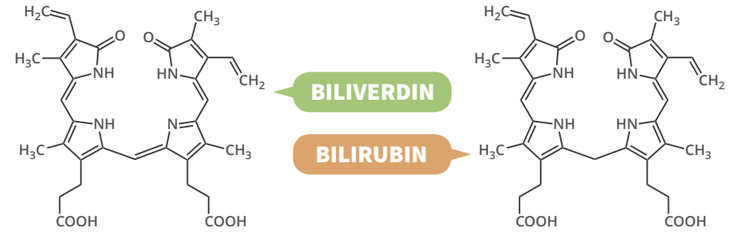


Haemoglobin is a protein found in blood, built up of smaller sub-units containing 'haems'. These haems contain iron, and their structure gives our blood its red colour when oxygenated.

As blood dries it gradually turns brown, as haemoglobin is oxidised to methaemoglobin.

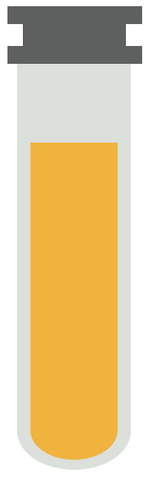
BILE: BILIVERDIN & BILIRUBIN

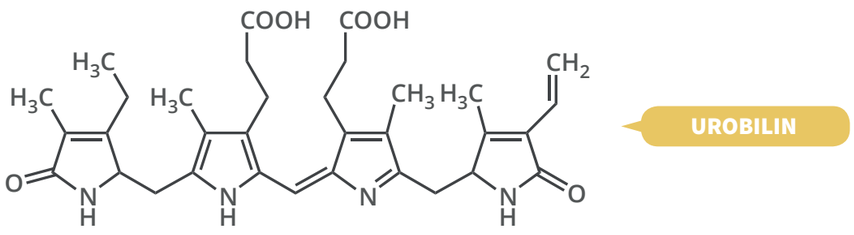




Haem in old and damaged red blood cells can be broken down, first into the green pigment biliverdin, which itself is converted to the brown pigment bilirubin. Both are found in bile, and can also cause the colouration around bruises.

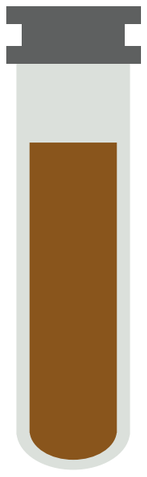
URINE: UROBILIN

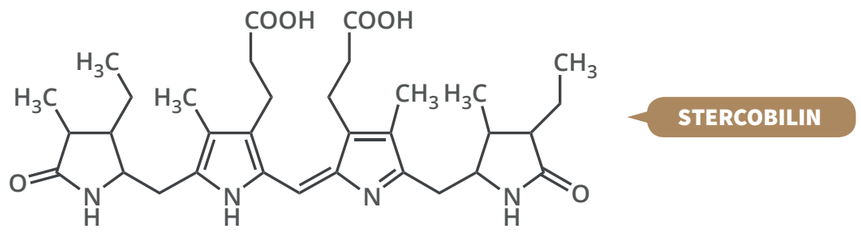




Bilirubin is broken down by microbes in the intestines, producing urobilinogen. This can then be absorbed into the bloodstream, and oxidised to produce urobilin. Urobilin is excreted by the kidneys, and gives urine its yellow colour.

FAECES: STERCOBILIN





Urobilinogen produced by breakdown of bilirubin in the intestines can continue through the digestive system and be reduced to stercobilin. This is excreted from the body in the faeces, and is responsible for their brown colouration.