

Vein viewer

Location

Ground floor, All About Us exhibition

In a nutshell

This exhibit can be used to see the veins in the wrist.

What to do

Wave your arm under the Near infra red light and reveal the pattern of your veins!

Time Required

KS3 & KS4 2 minutes per student.

What's happening?

Your veins and arteries transport blood all around your body. This machine uses Near Infra red light to tell the difference between your arteries and your veins.

Red blood cells use a protein called haemoglobin to carry oxygen molecules around your body. The haemoglobin in your veins absorbs the Near Infra-red light shining from this machine. Your skin, muscle and the haemoglobin in your arteries, which is carrying lots of oxygen, reflects this light. The machine detects where the light is reflected and absorbed and projects an image of your veins onto your skin. Veins make up half the vascular system in the human body. The other half are arteries. Where arteries become veins the blood vessels are called capillaries. Veins, arteries and capillaries carry blood around the body – there are over 80 000 kilometres of arteries, veins and capillaries. The blood is pushed through these vessels by the heart. The act of pushing the blood (rather than pulling it) round the body keeps the vessels full and intact, they cannot collapse. Veins (carrying blood back to the heart and lungs) are generally wider than arteries, have less muscular structure and have valves to prevent blood flowing backwards. This structure also helps the blood to keep flowing in the correct direction. Muscles in the legs squeeze veins and also contribute to the blood returning to the heart and lungs. Blood does a whole range of important jobs. Most obviously, blood carries oxygen to where it is needed across the whole body and picks up carbon dioxide (CO₂). It also distributes other materials, heat, provides pressure, and defends against infection.



Curriculum links

KS3	Science - Gas exchange systems <ul style="list-style-type: none">- the structure and functions of the gas exchange system in humans, including adaptations to function Science - Light waves <ul style="list-style-type: none">- the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface English - Reading <ul style="list-style-type: none">- learning new vocabulary, relating it explicitly to known vocabulary and understanding it with the help of context and dictionaries Design & Technology <ul style="list-style-type: none">- understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
KS4	Science - Human circulatory system <ul style="list-style-type: none">- describe the human circulatory system, including the relationship with the gaseous exchange system, and explain how the structure of the heart and the blood vessels are adapted to their functions- explain how red blood cells, white blood cells, platelets and plasma are adapted to their functions in the blood Science - Interactions of electromagnetic radiation with matter and their applications <ul style="list-style-type: none">- recall that different substances may absorb, transmit, refract, or reflect these waves in ways that vary with wavelength; explain how some effects are related to differences in the velocity of the waves in different substances English - Spoken <ul style="list-style-type: none">- listening to and building on the contributions of others, asking questions to clarify and inform, and challenging courteously when necessary Design and technology <ul style="list-style-type: none">- how electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs

Relates to:

Workshops & Theme Days	Shows	Trails	Other exhibits
<ul style="list-style-type: none">Choose Health (KS3 lower)	<ul style="list-style-type: none">How my body works (KS3)		<ul style="list-style-type: none">Body mirrorBlood vessels in the eye

