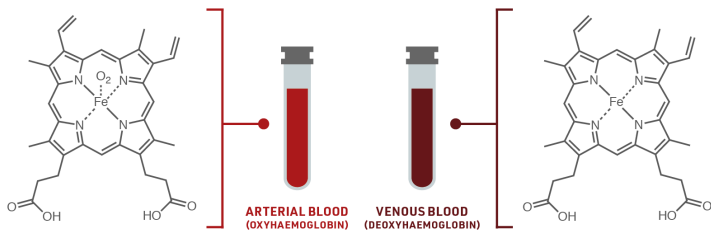


## WHAT COLOUR IS DEOXYGENATED BLOOD?



Many people think that the deoxygenated blood in our veins is blue, and this misconception can be reinforced by textbook depictions of red/blue hearts and circulatory systems. The blood is actually deep red, but our veins look blue due to the scattering of light by the skin.

## HOW DO MISCONCEPTIONS ARISE?



### We form ideas based on everyday experience

"The sun goes around the Earth, causing day and night."



### We have an incomplete understanding

"Giraffes have long necks because their ancestors stretched to reach leaves in trees."



### We talk about things anthropomorphically

For example, "atoms want a full outer shell".



### Something seems logical

"Copper looks red, so copper atoms are red."



### We depict things in a certain way

For example, diagrams with blue-coloured blood.



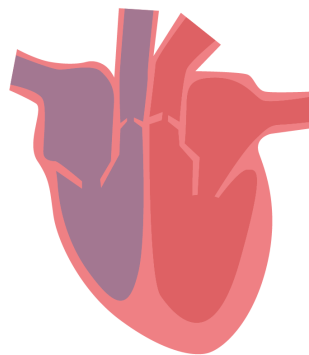
### Everyday words with a specific scientific meaning

For example, the terms weight, mass, work and field.



### Common expressions

"I've completely run out of energy!"

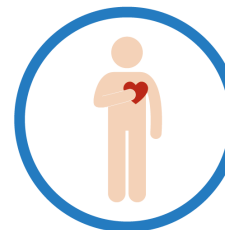


# WHY ARE OUR VEINS BLUE?



## IS IT JUST THE QUEEN WHO HAS BLUE BLOOD?

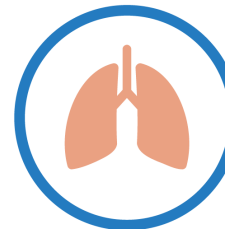
## COMMON MISCONCEPTIONS



### WHERE IS THE HEART LOCATED?

Many children believe:

- Your whole heart is found solely on the left-hand side of your chest.
- The heart pumps air around the body.
- Our bodies are hollow, and blood slashes around inside them.



### HOW DO WE BREATHE?

Many children believe:

- We breathe in **only** oxygen and breathe out **only** carbon dioxide.
- Air goes from our lungs to our heart, which then pumps it around the body.
- Respiration is another word for breathing.



### IS ANYTHING LIGHTER THAN AIR?

Many children believe:

- Air doesn't weigh anything.
- A party balloon is lighter when it's full of air than before it's inflated.
- When water boils the bubbles you see are filled with air.

## PLANNING AROUND MISCONCEPTIONS (RADAAR)



**RESEARCH  
ANTICIPATE**

Consider common misconceptions before you teach.



**DIAGNOSE  
ADDRESS**

Uncover misunderstandings and build on the ideas that children bring with them.



**ASSESS  
REVIEW**

Revisit key ideas and make links with other topics.