

# Circulation

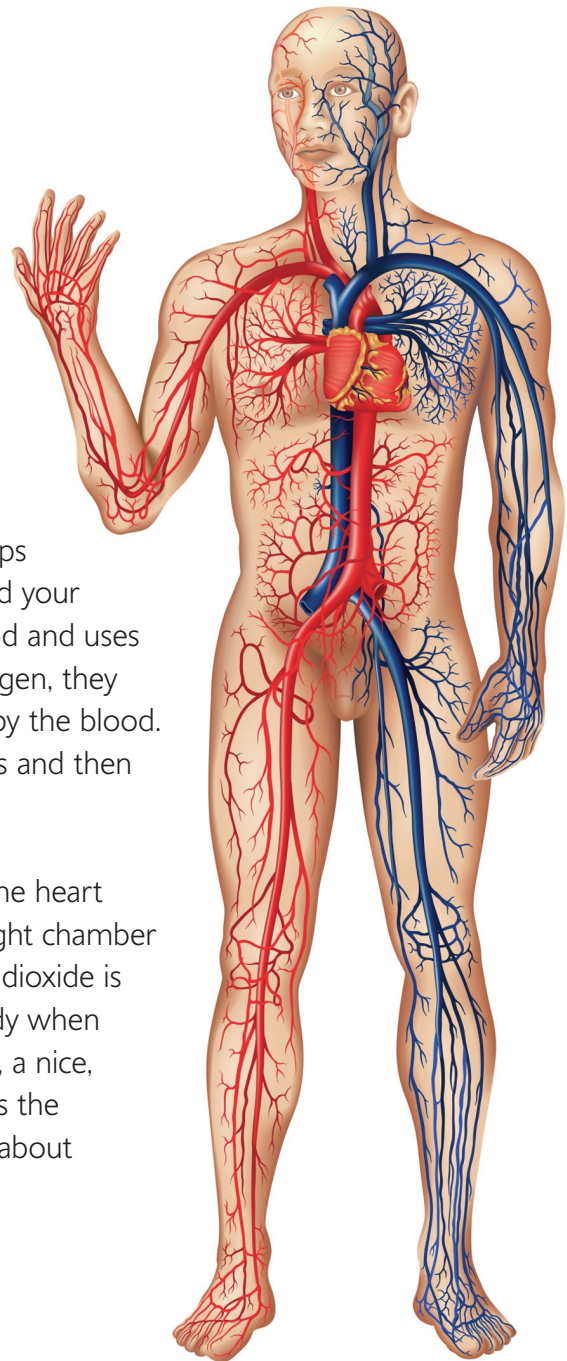
You probably already know that the blood in your body isn't simply slopping and sloshing about all over the place. It is in fact moving along through lots of tubes called arteries and veins that together we call blood vessels. These blood vessels are joined to the heart. The blood vessels that carry blood away from the heart are called arteries and the blood vessels that carry blood back to the heart are called veins.

This movement of blood travelling through the heart and around the body is called circulation.

If the blood did not keep moving around your body you would not stay alive. This is because blood delivers oxygen to all of your body's cells. (Human cells are tiny and make up all your body parts – think of them as the building blocks of life.) Without the oxygen your cells would die and so would all the many different parts of your body.

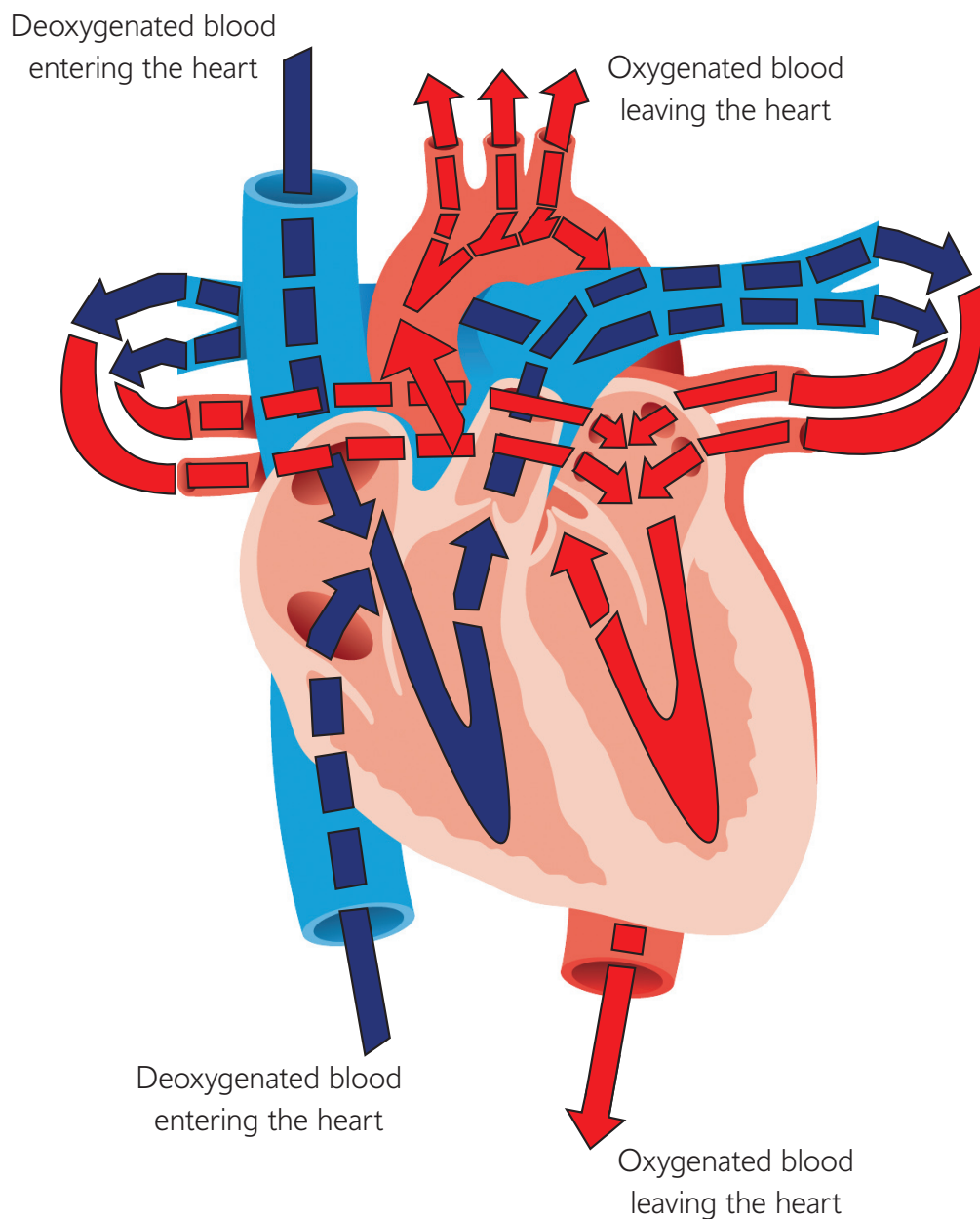
The left side (or left chamber) of your heart pumps the blood containing all that lovely oxygen around your body. The body takes the oxygen out of the blood and uses it in your body's cells. When the cells use the oxygen, they make carbon dioxide and this gets carried away by the blood. It's a bit like the blood delivering lunch to the cells and then removing all the rubbish!

The blood eventually travels all the way back to the heart where it enters the right side or chamber. This right chamber pumps the blood to the lungs where the carbon dioxide is removed from the blood and sent out of the body when we breathe out. Then, when we breathe in again, a nice, fresh breath of air containing lots of oxygen starts the process going again. The whole thing only takes about one minute – from beginning to end!



# Circulation diagram

The diagram below shows how the heart pumps blood around the body. The red arrows represent oxygenated blood; the blue arrows represent deoxygenated blood. Deoxygenated blood enters the right side (or right chamber) of the heart and is then pumped out to the lungs. The blood is oxygenated in the lungs and re-enters the heart on the left chamber. This oxygenated blood is then pumped around the body. (Remember that the left and right chambers are reversed when looking at them from a bird's eye view.)



# The Gruesome Story of Princess Marigold

## The Very Greedy Princess

Once upon a time, in a land far away, there lived a very greedy and spoiled princess. Her name was Princess Marigold. Every morning, Princess Marigold would shout (she was rude as well as spoiled and greedy), "WHERE'S MY BREAKFAST?" And, because she always got her own way, all the cooks and all the servants of her father's kingdom would burst into action, preparing a perfect breakfast for a not-so-perfect princess. But, that greedy girl was not one bit grateful. Oh no, every single morning, Princess Marigold would send her breakfast straight back to the kitchen, demanding something much fancier and much more unusual.

On one particular morning, the whole kitchen got together to create the most amazing breakfast you could ever imagine: egg and bacon trifle; sausage, toast and ketchup pudding; scrambled eggs with raspberry jam sauce and an enormous baked-bean cake. Surely this lot would be unusual and extravagant enough for Princess Marigold?

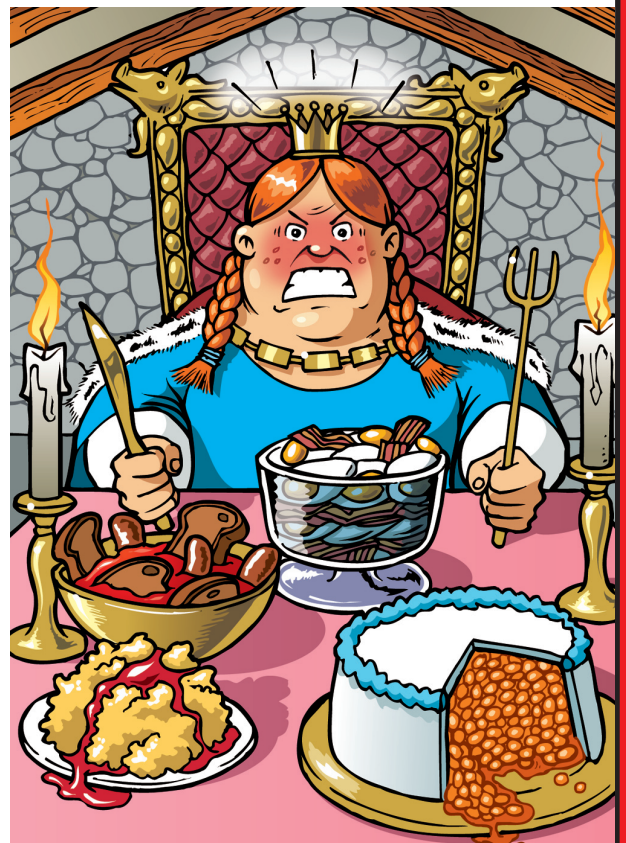
The servants carried the plates of food into the royal dining room, one behind the other in one long line. First, Princess Marigold tried the egg and bacon trifle.

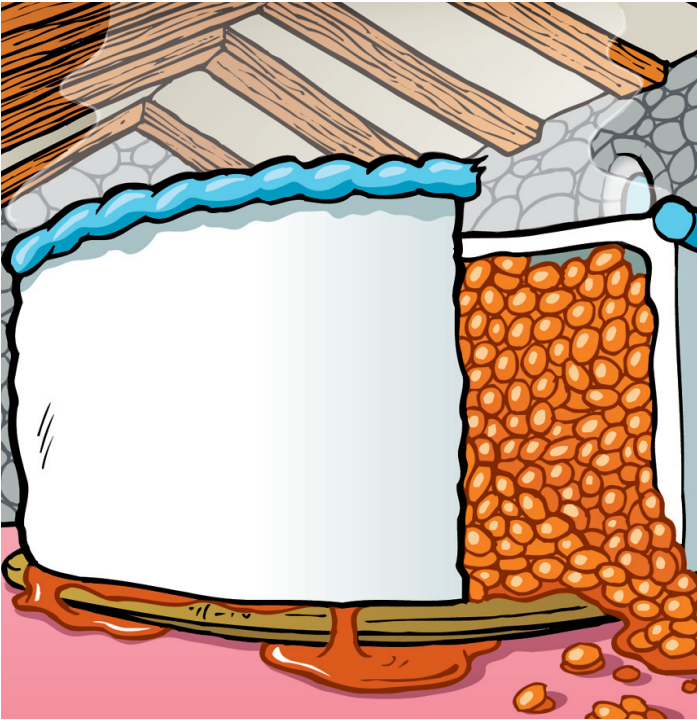
"Disgusting!" Princess Marigold screamed, spitting the food out all over the tablecloth. "Take it back at once." And the poor servant had to carry it all the way back to the kitchen.

Next, Princess Marigold tried the sausage, toast and ketchup pudding. "Yuk and double yuk!" she screeched as loudly as she could, and the servant had to take the gigantic pudding all the way back to the kitchen again. "Give me something better to eat – NOW!" the Princess screamed.

As the next servant brought her the scrambled eggs with raspberry jam sauce, everyone held their breath, hoping that this time the Princess would be happy. But, as soon as she tasted it, she screamed, "What a rubbish breakfast! Chuck it in the bin, servant." And the third servant had to traipse wearily back to the kitchen.

The royal staff were now pinning all their hopes on their last magnificent creation: the enormous baked-bean cake. Everyone looked on nervously as Princess Marigold cut herself a nice, big slice and took a huge, greedy bite.





“Mmm,” she said, and took another bite, then another and another. Then she cut herself another huge slice and greedily ate that all up too, and, in no time at all, she had gobbled up the whole cake. “At last you bunch of pea-brains have managed to make me a decent breakfast,” she shouted at the royal staff. “Fetch me lots more of these delicious cakes immediately – or I’ll have all your ugly heads chopped off!”

And, because they were so scared of the horrible princess, they did exactly as she asked. All those royal cooks and all those royal servants worked into the night bringing her one baked-bean cake after another. Each one had to be bigger and more baked-beany than the last.

It was an amazing sight to see one long line of servants carrying the food into the hall and then another long line of servants carrying the empty plates and leftovers back out again.

By midnight those poor, exhausted royal cooks and servants were barely able to stand, they were so tired. But, still Princess Marigold demanded one more cake. This one had to be super gigantic and contain the contents of 27 tins of baked beans. The royal cooks, frightened that they might have their heads chopped off if they didn’t do as they were told, set to work on the biggest cake they had ever made. When it was finished, it was so heavy it took 15 strong servants to carry it from the kitchen to the royal dining room. As soon as greedy Princess Marigold saw the cake, her eyes lit up.

“Yummy-yum for my tummy-tum!” she said, licking her lips as she started to shove huge spoonfuls of sticky cake into her great, big mouth.

Then, something unexpected happened. Princess Marigold’s tummy started to rumble, then it started to rumble really, really loudly, then it started to rumble so loudly that it hurt the cooks’ and servants’ ears!

Princess Marigold stopped eating her cake with a rather worried look in her eyes. The rumbling grew louder and louder. Then, all of a sudden, the strangest thing happened – horrible, rude, greedy Princess Marigold exploded with a great big bang! She had stuffed herself so full of cake that there wasn’t any room left for even one more spoonful.

The King and Queen were very understanding and said that, as they’d worked so hard, the staff could leave the mess until the next day – and have a bit of a lie-in in the morning. And the funny thing is, the entire kingdom has been a much happier place ever since.