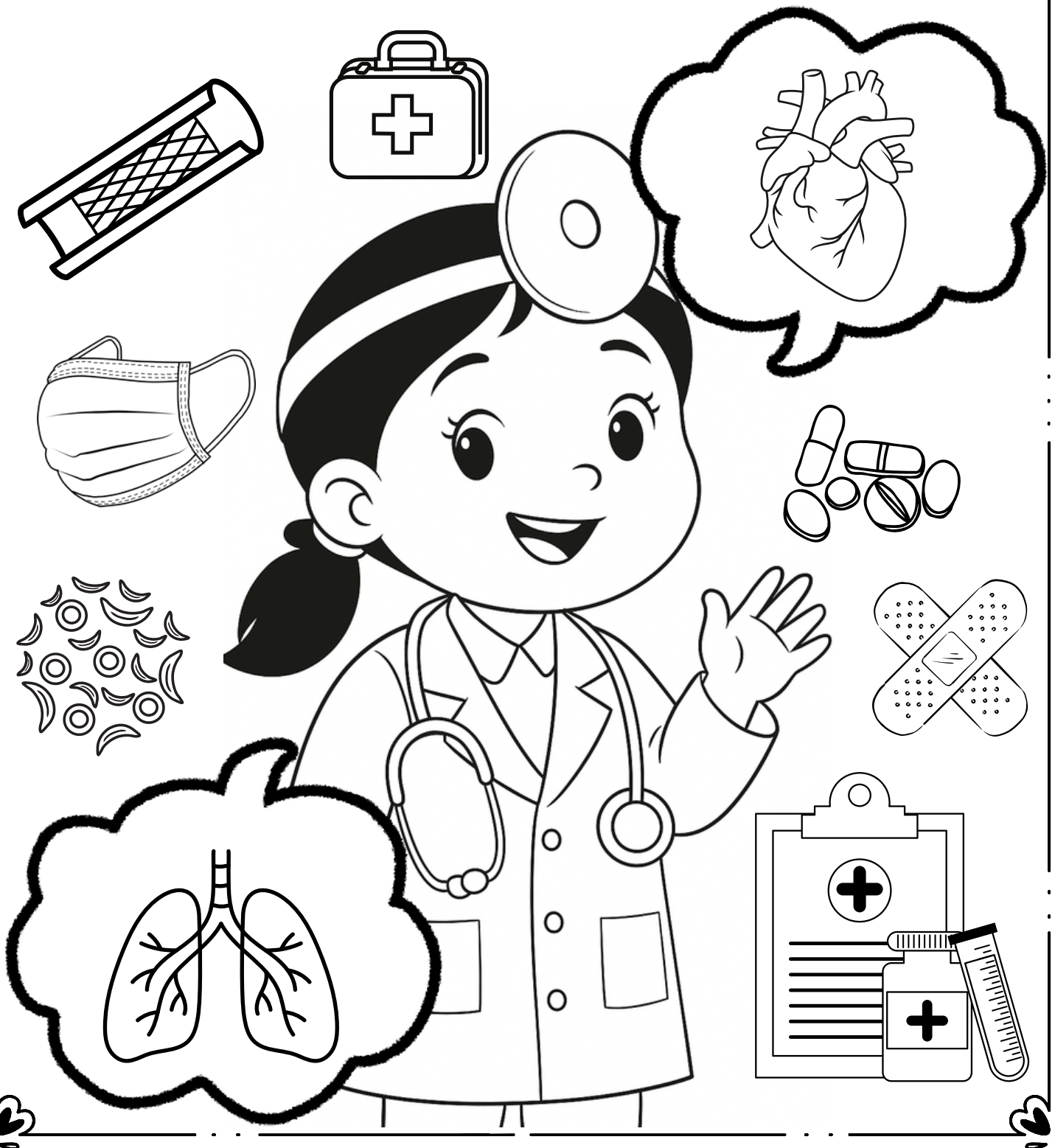


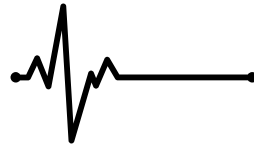
Name: _____

Class: _____

I AM A YOUNG CARDIOLOGIST



What is a cardiologist?



A cardiologist (car-dee-OL-uh-jist) is a doctor who specialises in understanding and caring for the heart and blood vessels. These are part of the _____ system, and are important in transporting blood around the body.

Blood carries _____ from the lungs and _____ food from the small intestines to all the cells in the body to produce energy through a process called _____. Blood also transports _____ from the cells to the _____ through the blood vessels. The _____ pumps the carbon dioxide-rich blood to the lungs. When we breathe out, carbon dioxide _____ the body.



In this lesson, you will take on the role of a Young Cardiologist. You will explore how the **circulatory system** works together with the **respiratory system** and **digestive system** to keep the body alive and functioning.

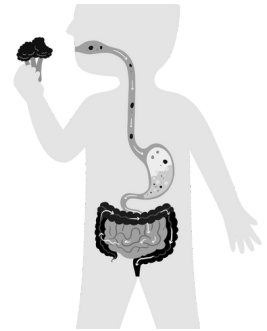


Making Connections



In Primary 4, you learned about the digestive system and how it breaks down the food we eat into simpler substances. The digested food is then absorbed in the small intestine but where does it go after that?

This year, you will find out how digested food and oxygen are transported around the body, and how the body removes waste gases like carbon dioxide.



Digested Food

Click on 'Predictions' and 'Activity #1' on your iPad. Follow the instructions given. Explore the simulations and answer the question below.

Activity 1



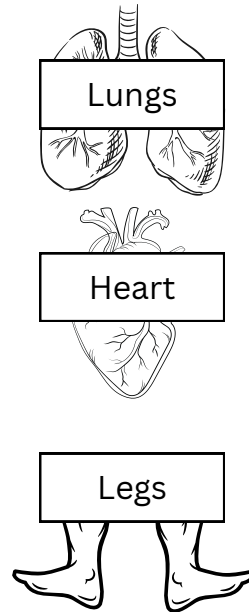
What did you observe about the digested food in the small intestines?

As a Young Cardiologist, this helps you understand how the digestive system works together with the circulatory system.

Oxygen & Carbon Dioxide

Let's Recap...

Draw arrows to show the flow of blood in the diagram below.



Click on 'Predictions' and 'Activity #2' on your iPad. Follow the instructions given. Explore the simulations and answer the question below.

Activity 2



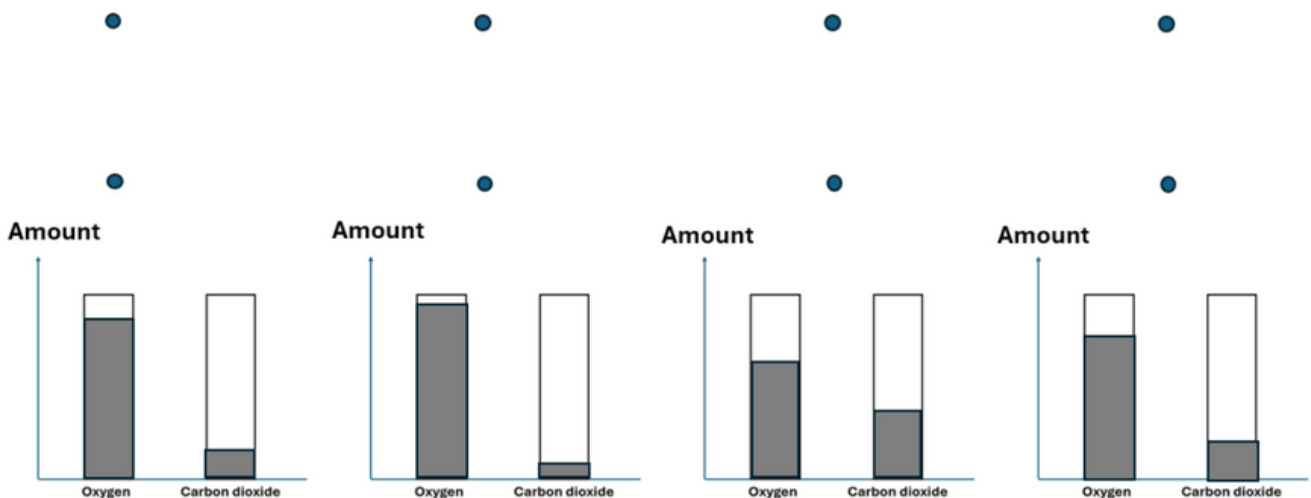
Scan the blood vessels and observe the amount of oxygen and carbon dioxide in the blood cells between the parts of the human body. Match the bar graphs to the correct blood vessels.

1. From the lungs to the heart

2. From the heart to the lungs

3. From the legs to the heart

4. From the heart to the legs



As a Young Cardiologist, knowing the levels of gases in different blood vessels helps you understand how well the heart and lungs are working together.

Walking vs Running

As a Young Cardiologist, an important part of your job is to observe how the heart functions under different conditions (e.g. at rest compared to when exercising).

Click on 'Predictions' and 'Activity #3' on your iPad. Follow the instructions given and explore the simulations.

Activity 3

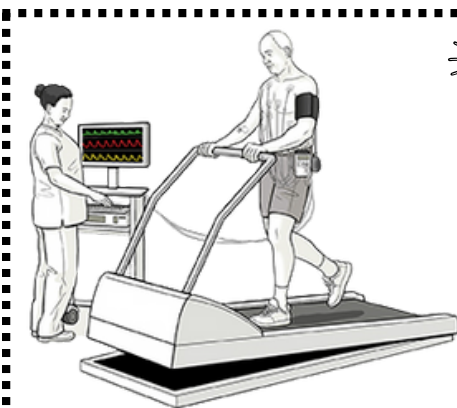


1) When the person is walking, what does the heart pump?

The heart pumps _____ blood to the muscles. The muscle cells _____ and provide _____ needed to _____ the legs. At the same time, blood carries away _____ and other waste materials away from the cells.

2) Observe what happens to the person's heart rate and the speed of blood flow when the running speed increases. Record your observations below.

3) Explain your observation in Q2.



Fun Fact

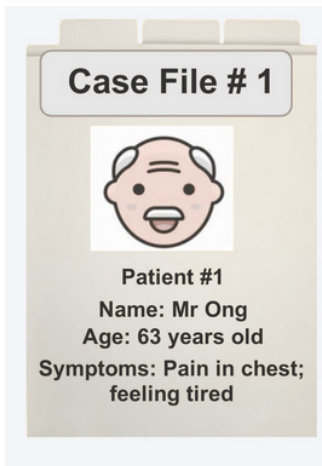


Cardiologists sometimes ask patients to walk or run on a treadmill while connected to special machines to check how their heart works when they exercise. This is called a stress test. If the heart pumps blood properly and the signals look normal, doctors know that the patient's heart is strong and healthy. If something does not look right, it helps the doctor know what kind of care or treatment the patient might need.

As a Young Cardiologist, looking at case files helps you to understand how different diseases can affect the function of the circulatory system.



Atherosclerosis



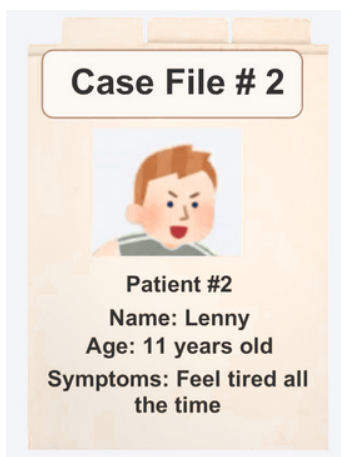
Compare Mr Ong's blood vessel with a normal blood vessel. What do you observe?



Atherosclerosis is a disease where _____ deposits _____ on the walls of the blood vessels that carry _____ - rich blood. Over time, these blood vessels become _____ so _____ blood and _____ can flow to the rest of the body.



Sickle cell anaemia



Compare Lenny's red blood cells with the normal red blood cells. What do you observe?

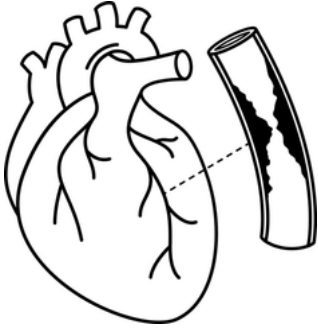


Sickle cell anaemia is a disease where the _____ blood cells are _____ - shaped instead of round. These cells do not carry _____ well and _____ can get _____ in blood _____ vessels, _____ down the blood flow.

Cardiologists focus on the heart and blood vessels, but sometimes they work together with other specialists called hematologists, who study blood diseases like sickle cell anaemia. When a patient has sickle cell anaemia, the cardiologist and hematologist team up to help the patient and keep the body systems working properly.

As a Young Cardiologist, understanding how a disease affects the body helps you to decide on the right tools and treatments to fix the problem.

Treatment for Blocked Arteries



Step 1

A _____ with a _____ is placed in the blocked blood vessel.

Step 2

The _____ is _____ to push the _____ against the walls of the blood vessels.

Step 3

A _____ is _____ to keep the blood vessel _____ wide.

Step 4

The _____ is removed but the _____ stays to keep the blood flowing smoothly.

My Reflections

In this lesson, you used an Augmented Reality (AR) application to learn more about the body systems. AR uses a device, like a tablet or a phone, to show 3D images that appear as if they are part of the real world. With AR, you were able to interact with the body systems simulations to gather data and deepen your understanding of how the systems work together.

Now, think about your learning experience and answer the questions below.

How did your experience in using the AR app help you understand the body systems better?



How was learning with AR different from reading your science textbook?

Would you like to use AR again to learn science? Why or why not?