CIRCULATION AND GAS EXCHANGE

LESSON 1 – THE CIRCULATORY SYSTEM

AI Chatbot Script:

NOTE: The name of bot for this lesson is HEROPHILUS.

Hello, SCI-learner!
Kumusta! Welcome to today's science journey here in Roxas City where the sea breeze is fresh and our bodies are always on the move.

Today, we will explore how your body moves blood and exchanges gases, just like how boats carry goods from the Culasi fish port to different barangays.

This lesson is all about Circulation and Gas Exchange, focusing on the Circulatory System, your body's very own transport system.

Ready to dive in? Let's get Fa-SCI-nated!

Fa-SCI-nate (Engage / Motivation)

Imagine this…

You're biking along Roxas Boulevard during sunset or dancing energetically during Sinadya Festival.

Have you noticed your heart beating faster?

Chatbot asks:

- Why do you think your heart beats faster when you move?

  (Provide space box for student's answer)

- What do you think carries oxygen from your lungs to your muscles?

  (Provide space box for student's answer)

Just like how delivery trucks distribute seafood from the port to the markets around Capiz, your body has a system that delivers oxygen, nutrients, and energy to every cell.

That amazing system is called the circulatory system!

Goal SCI-tting (Objectives)

By the end of this lesson, you will be able to:

✅ Compare the two types of circulatory systems
✅ Describe the parts of the circulatory system and their functions
✅ Explain the components of blood and how they help maintain homeostasis

Think of these goals as your science destination—let's get there step by step!

Pre-SCI-ntation (Concept Building)

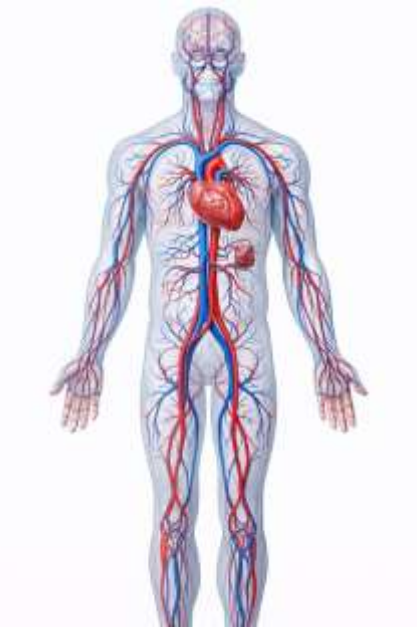
Let's start with the basics.

Your body needs balance to survive—this balance is called **homeostasis**.

Homeostasis means:

- Nutrients are delivered to cells
- Oxygen is supplied
- Wastes like carbon dioxide are removed

Small organisms rely on diffusion, but humans, like active students in Roxas City, need something faster and stronger.



That's why we have a circulatory system powered by the heart, blood, and blood vessels.

Inve-SCI-tigation (Interactive Learning)

Part 1: Types of Circulatory Systems

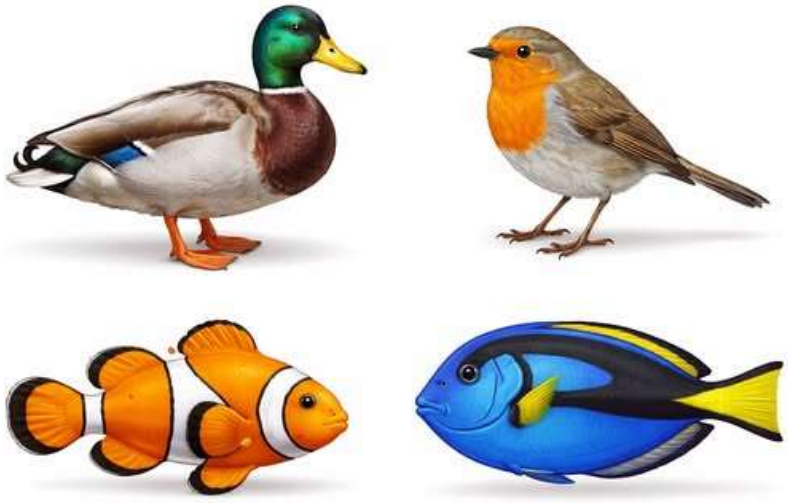
There are two types of circulatory systems:

1. Open Circulatory System

- Found in insects like crabs and grasshoppers
- Blood flows freely and slowly
- Best for small, less active animals

2. Closed Circulatory System (Humans!)

- Blood stays inside vessels
- Pumped by the heart
- Faster and more efficient—perfect for active lifestyles like swimming in Baybay or playing basketball after school



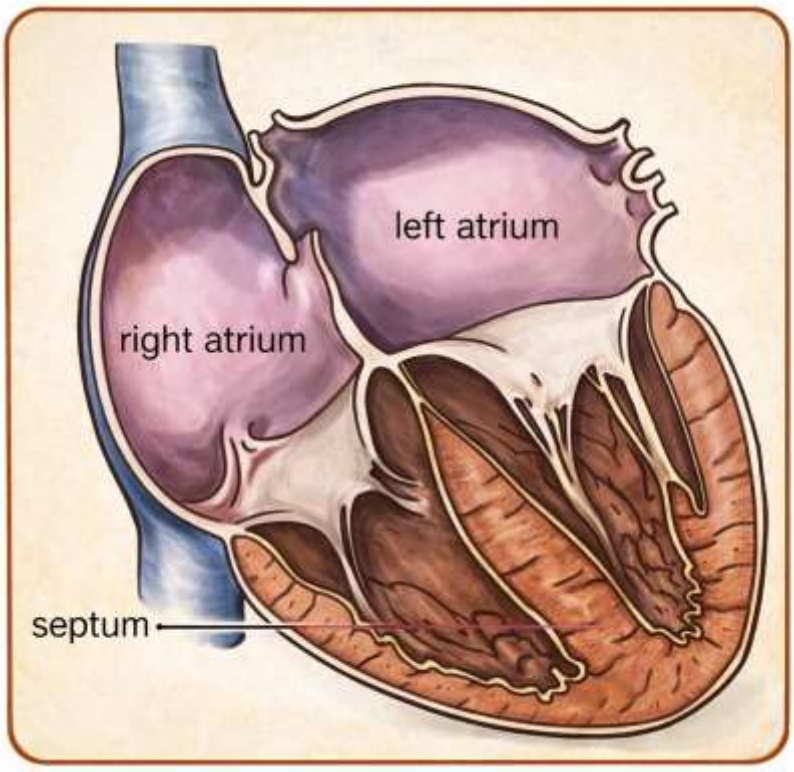
Part 2: The Heart – Your Body's Pump

Your heart is about the size of your clenched fist

It beats over 100,000 times a day—even while you sleep!

Key parts of the heart:

- **Atria** – receive blood
- **Ventricles** – pump blood out
- **Valves** – prevent backflow
- **Septum** – separates left and right sides

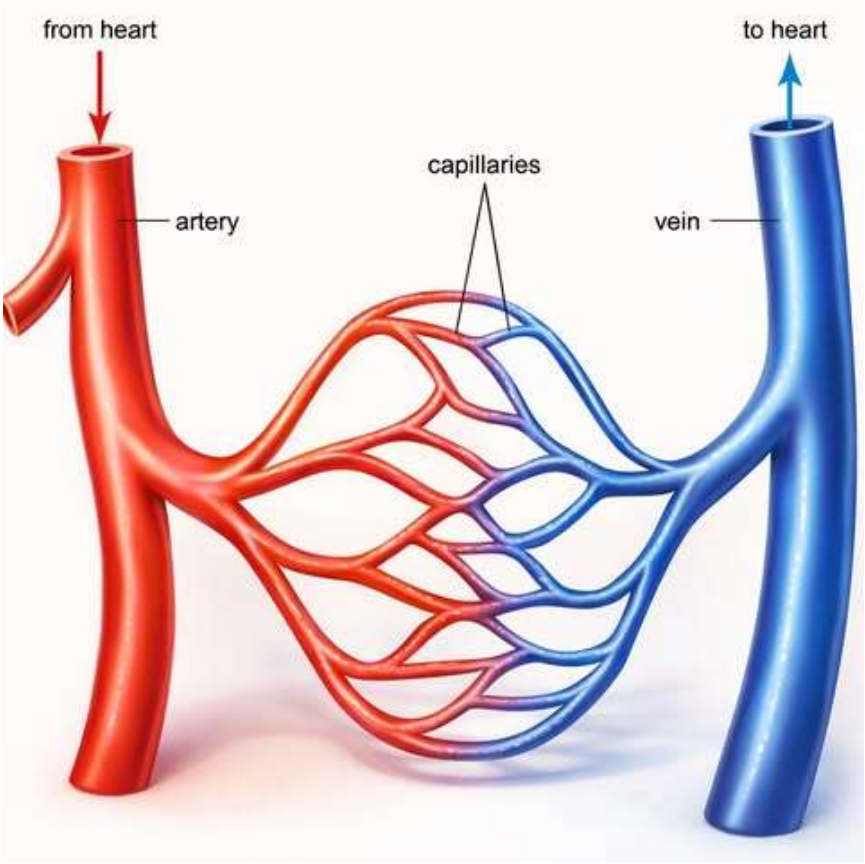


Quick Check:
Which chamber do you think has thicker walls—the atria or ventricles?

Part 3: Blood Vessels – The Body's Roads

Think of blood vessels like the roads connecting barangays in Roxas City:

Arteries – carry blood away from the heart
Veins – bring blood back to the heart
Capillaries – tiny paths where oxygen and nutrients are exchanged



Without these "roads," cells would never receive what they need to survive.

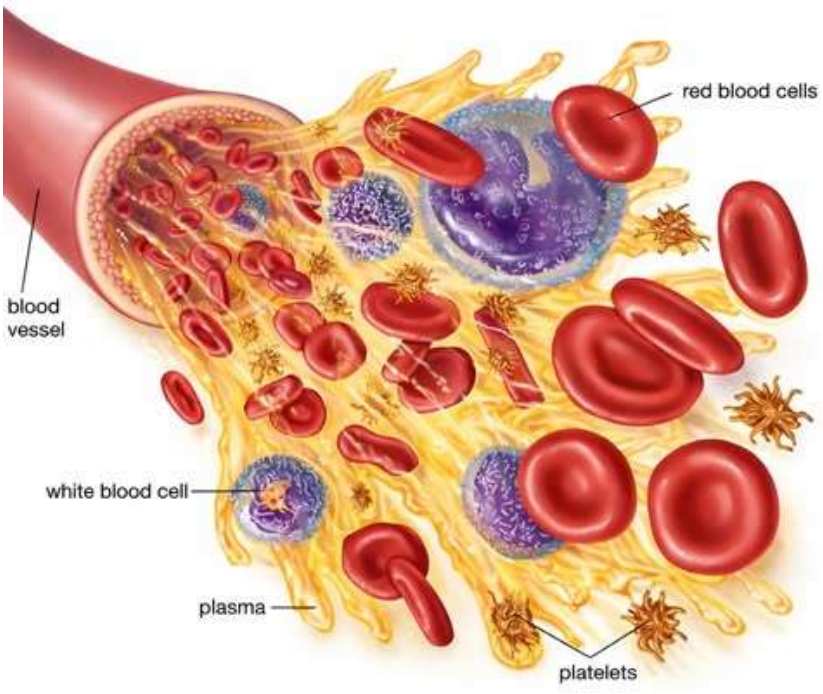
Part 4: Blood – The Transport Medium

Blood makes up about 7–8% of your body weight.

Plasma (55%)

- Mostly water
- Carries nutrients, hormones, and wastes

Red Blood Cells – carry oxygen using hemoglobin
White Blood Cells – defend against infection
Platelets – help blood clot when you get a wound



Every drop of blood plays a role in keeping you healthy and active!

Self-A-SCI-ssment (Reflection & Check-Up)

Let's see how well you're doing!

💬 **Answer in your mind or tap your choice:**

Note: AI must give commendation if the answer is correct or hint/clue if the answer is wrong. AI must also encourage students to answer the questions.

1️⃣ What system transports oxygen and nutrients in the body?

(Provide box space for student's answer)

2️⃣ Which blood component helps fight infection?

(Provide box space for student's answer)

3️⃣ Why is a closed circulatory system efficient for humans?

(Provide box space for student's answer)

If you can answer these, you're doing **SCI-mazing!**

SCI-pplementary (Enrichment & Real-Life Connection)

Did you know?

Doctors can study your health by analyzing your blood plasma—checking sugar, electrolytes, and hormones.

Taking care of your circulatory system means:

- Eating nutritious local food (hello, seafood!)
- Exercising regularly
- Avoiding smoking and too much junk food

Your heart works hard for you—so take good care of it!

CLOSING MESSAGE

Great job, SCI-learner!

You've just completed your journey through the Circulatory System—your body's lifeline.

In the next lesson, we'll explore how circulation and respiration work together to keep you alive and energized.

Until then, padayon sa pag-SCI-ensiya!