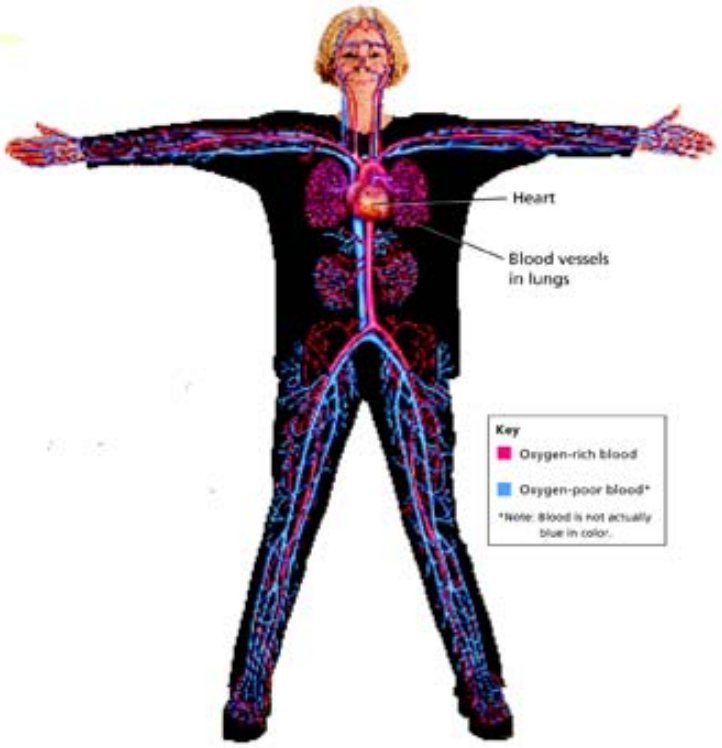
Circulatory System



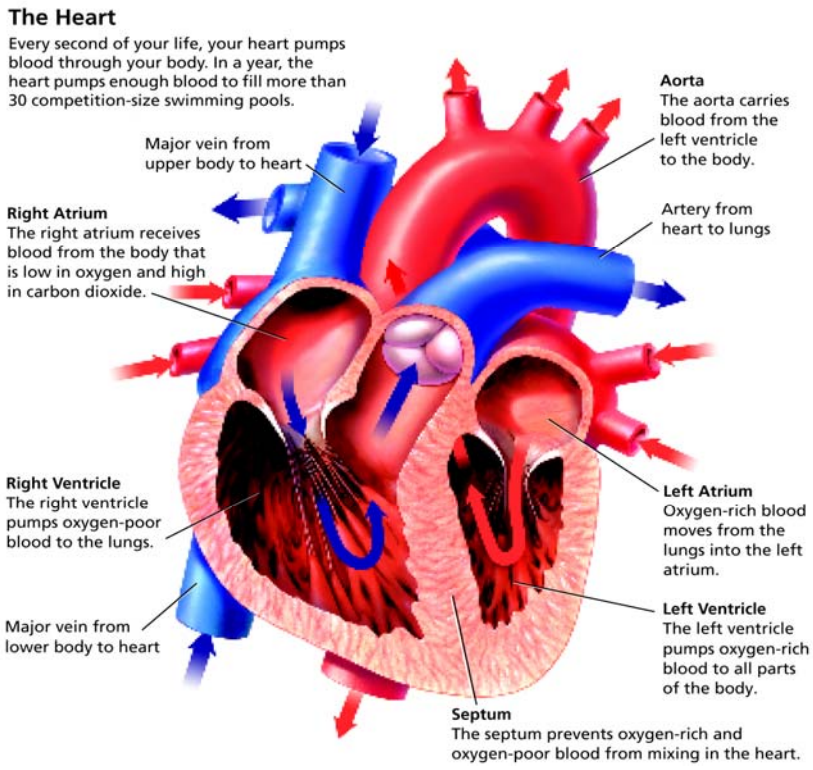
The Body’s Transport System

Cardiovascular System

- Also called the circulatory system
- Consists of the heart, blood vessels & blood.
- It carries needed substances to cells and carries waste products away.
- Blood contains cells that fight disease.

The Heart

- Hollow muscular organ that **pumps** blood through the body
- Size of fist
- Located center of the body, behind the **sternum** (breast bone)
- Each beat **pushes** blood through the blood vessels
- Composed of **cardiac muscle tissue**

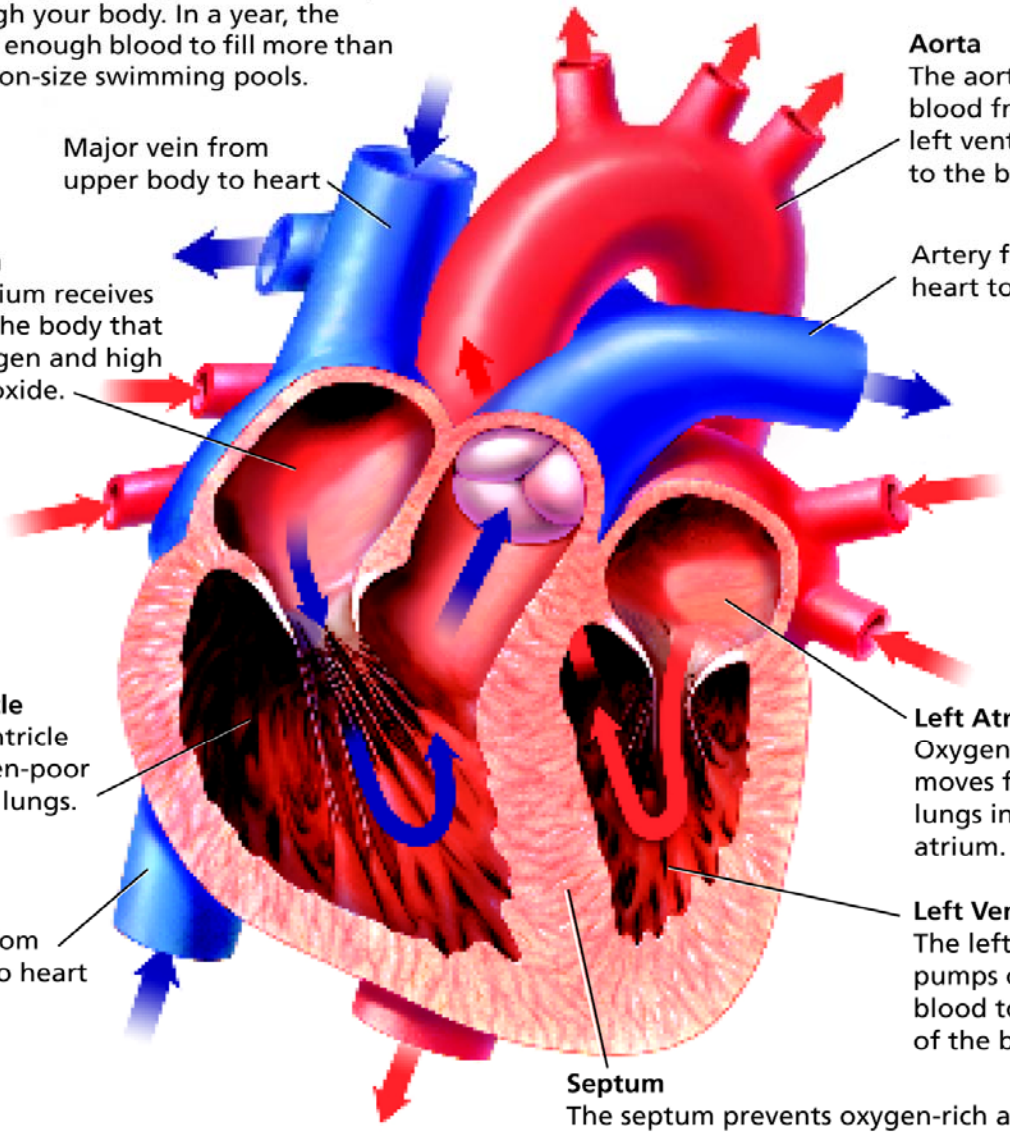


Heart's Structure

- Has a right and left side
- Right side is separated by a wall of tissue called the septum
- Each side has two chambers, and upper and lower chamber
- The upper chambers are called atrium and both receive blood to the heart.
- Lower chambers are called the ventricles and pump blood out of the heart.
- A valve between chambers (atrium & ventricles) prevents blood from flowing backwards

The Heart

Every second of your life, your heart pumps blood through your body. In a year, the heart pumps enough blood to fill more than 30 competition-size swimming pools.



Major vein from upper body to heart

Aorta
The aorta carries blood from the left ventricle to the body.

Right Atrium
The right atrium receives blood from the body that is low in oxygen and high in carbon dioxide.

Artery from heart to lungs

Right Ventricle
The right ventricle pumps oxygen-poor blood to the lungs.

Left Atrium
Oxygen-rich blood moves from the lungs into the left atrium.

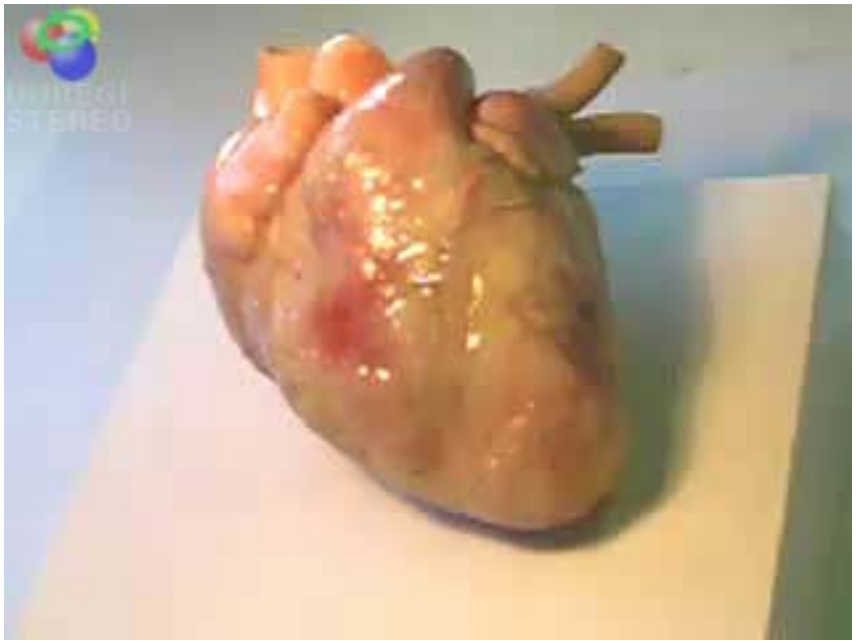
Major vein from lower body to heart

Left Ventricle
The left ventricle pumps oxygen-rich blood to all parts of the body.

Septum
The septum prevents oxygen-rich and oxygen-poor blood from mixing in the heart.

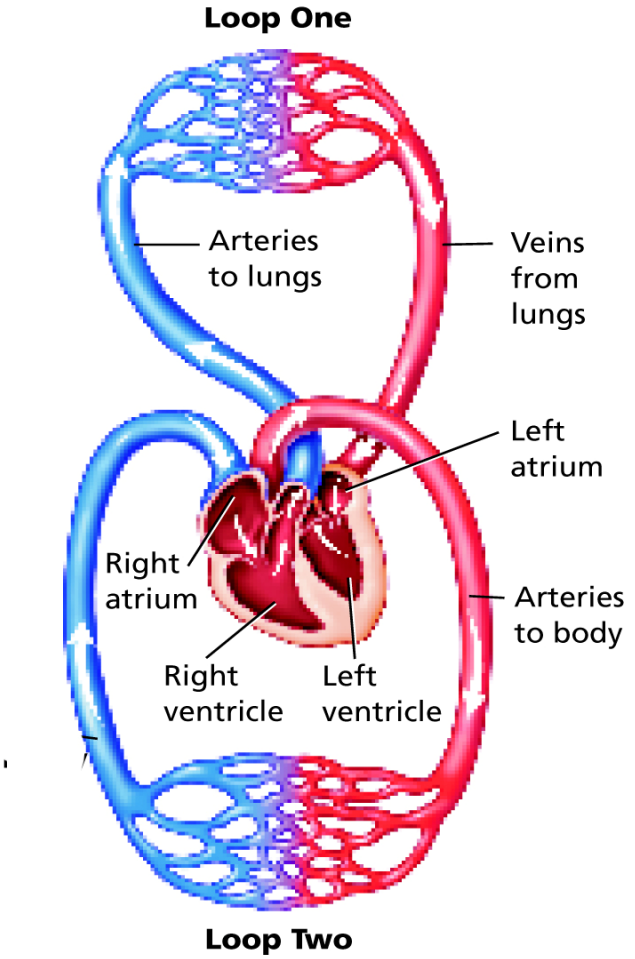
How the Heart Works

- Two main phases for the action of the heart.
- **Phase one:** muscle relaxes and heart fills with blood
- **Phase two:** the heart muscle contracts and pumps blood forward.
- Heart beat, ***lup-dup,*** is what is heard during the pumping phase.



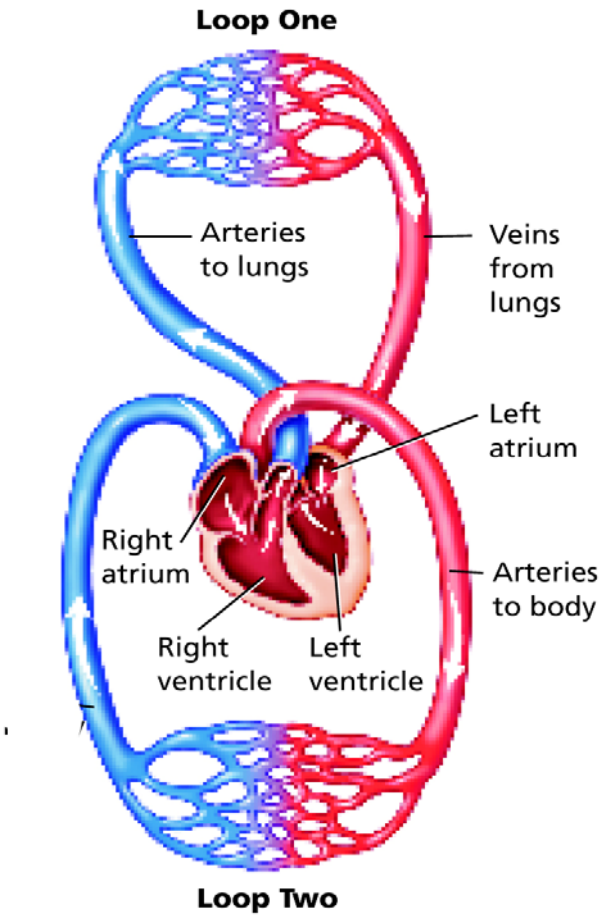
Forces of the Ventricles

- When the muscle cells in the ventricles contract, they exert a force on the blood
- The force pushes the blood out the heart and into the arteries.
- Contraction of the **right ventricle** sends blood to the lungs.
- Contraction of the **left ventricle** sends blood throughout the rest of the body.



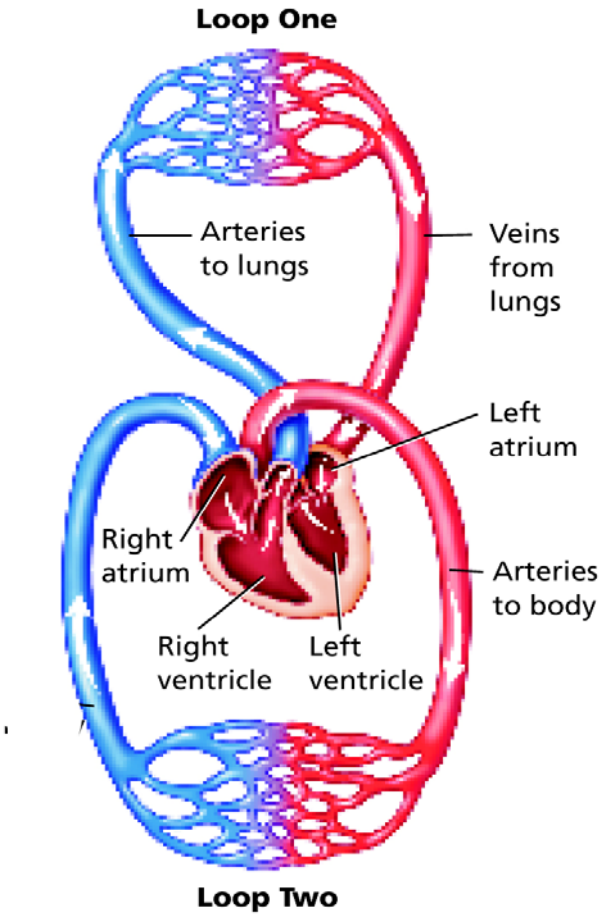
Two Loops – Pattern of Blood Flow

- **Loop One:**
- Blood travels from the heart to the lungs
- Blood flows into the right atrium
- Then to the right ventricle and out to the lungs via the pulmonary artery
- Blood in the lungs exchange oxygen and carbon dioxide



Two Loops – Pattern of Blood Flow

- **Loop Two:**
- Blood returns from the lungs into the left atrium
- Blood leaves the heart via the left ventricle and travels throughout the body
- Oxygen moves out of the blood into the body cells and takes up carbon dioxide.
- Blood returns to the heart and loop one starts again.



Type of Vessels

- Arteries: vessels that carry blood away from the heart.
- Veins: vessels that carry blood back to the heart.
- Capillaries: tiny vessels between arteries and veins. Very narrow (only one cell wide). Site of oxygen and carbon dioxide exchange.