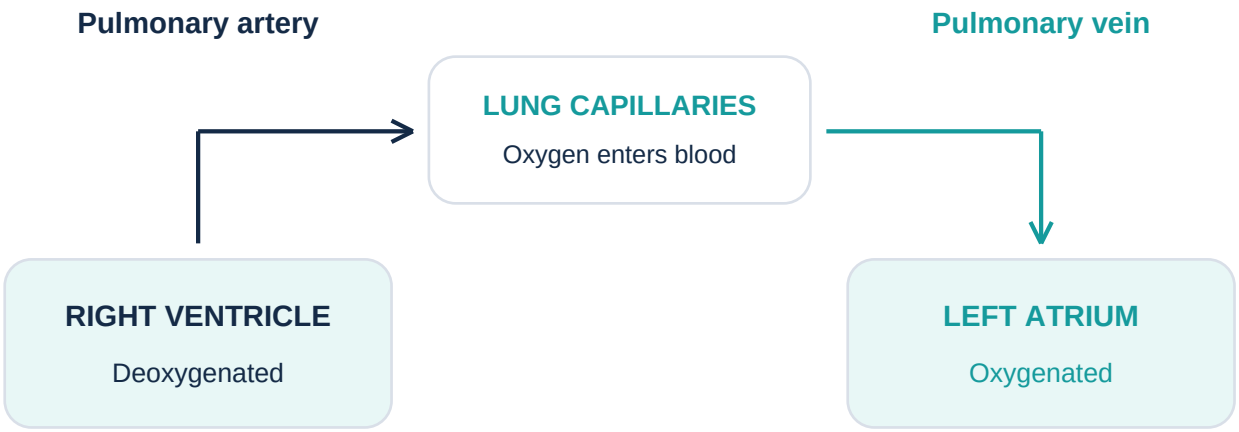
Pulmonary vessels link heart and lungs

Pulmonary circulation takes blood to the lungs for gas exchange and returns it to the heart. Identify each vessel by its origin, destination and the blood it carries.

1. TRACE THE TWO NAMED VESSELS



Schematic routes, not anatomical positions. Teal = oxygenated; navy = deoxygenated. Both types of blood are red, and deoxygenated blood still contains some oxygen.

2. PULMONARY ARTERY: HEART TO LUNGS

The right ventricle pumps deoxygenated blood into the pulmonary artery. It carries blood away from the heart towards the lungs, where blood gains oxygen and loses carbon dioxide.

3. PULMONARY VEIN: LUNGS TO HEART

Pulmonary veins return oxygenated blood from the lungs to the left atrium. In humans, several pulmonary veins enter the heart; a single pathway here represents that return route.

Artery means away from the heart; vein means towards the heart. Pulmonary vessels follow these definitions even though their oxygenation differs from that of the main systemic vessels.

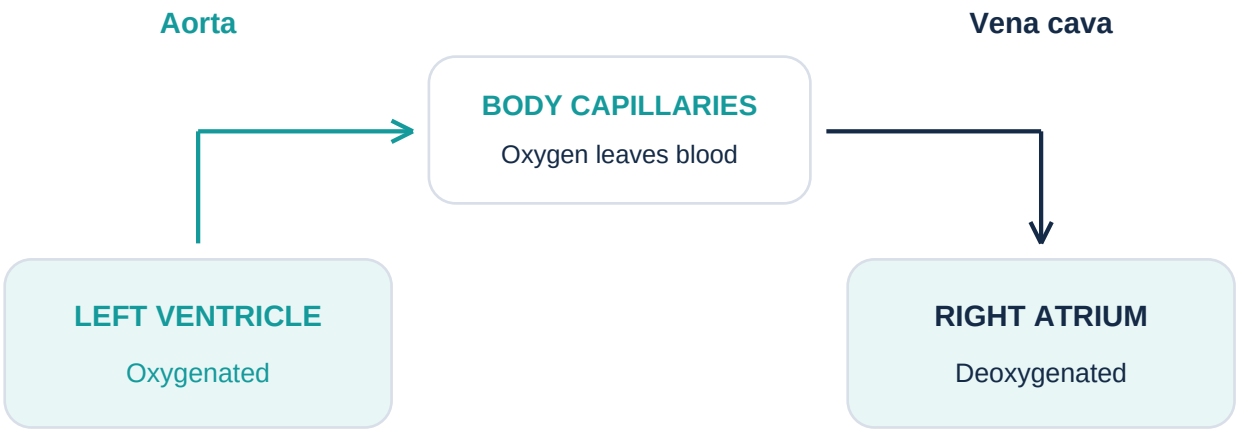
Vessel routes and oxygenation: NIH/NHLBI, How Blood Flows through the Heart.

Scope: Cambridge Biology 9700 syllabus, section 8.1, outcome 2, p. 27.

Systemic vessels link heart and body

The systemic circulation distributes oxygenated blood to body tissues and returns relatively oxygen-poor blood. The aorta and vena cava are the main vessels required here.

1. TRACE THE TWO NAMED VESSELS



Schematic routes, not anatomical positions. Teal = oxygenated; navy = deoxygenated. Both types of blood are red, and deoxygenated blood still contains some oxygen.

2. AORTA: THE MAIN SYSTEMIC ARTERY

The aorta receives oxygenated blood from the left ventricle. Its branches distribute blood to the body, supplying tissues with oxygen and other transported substances. It is not the vessel carrying blood to the lungs.

3. VENA CAVA: RETURN FROM THE BODY

The vena cava returns deoxygenated blood to the right atrium. In humans, the superior vena cava drains the upper body and the inferior vena cava drains the lower body; together they are the venae cavae.

The body-capillary box combines many parallel tissue networks. Blood returning to the right atrium next passes to the right ventricle before being pumped to the lungs.

Vessel routes and oxygenation: NIH/NHLBI, How Blood Flows through the Heart.

Scope: Cambridge Biology 9700 syllabus, section 8.1, outcome 2, p. 27.

Four names, four precise functions

For each vessel, state where blood comes from, where it goes and whether it is oxygenated or deoxygenated. The route is more reliable than a memorised colour.

1. COMPARE THE MAIN VESSELS

VESSEL	DIRECTION OF FLOW	BLOOD
Pulmonary artery	Right ventricle to lungs	Deoxygenated
Pulmonary vein	Lungs to left atrium	Oxygenated
Aorta	Left ventricle to body	Oxygenated
Vena cava	Body to right atrium	Deoxygenated

2. LINK THE TWO CIRCUITS THROUGH THE HEART

From the lungs: pulmonary vein, left atrium, left ventricle, aorta, then body tissues. On return: vena cava, right atrium, right ventricle, pulmonary artery, then lungs. There is no normal direct route from the right side to the left side inside the heart.

3. DO NOT SWAP A VESSEL WITH A CHAMBER

Arteries leave ventricles; veins enter atria in these routes. The aorta leaves the left ventricle, not the left atrium. Pulmonary veins enter the left atrium, not the right atrium. These statements describe normal circulation after birth.

Right and left refer to the person or animal, not the viewer. On a front-view heart diagram, the anatomical right side often appears on your left.

Vessel routes and oxygenation: NIH/NHLBI, How Blood Flows through the Heart.

Scope: Cambridge Biology 9700 syllabus, section 8.1, outcome 2, p. 27.