

# The Circulatory System

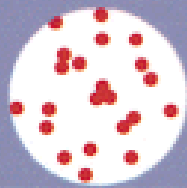



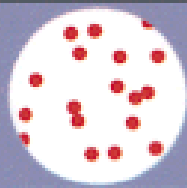
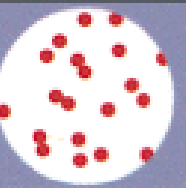


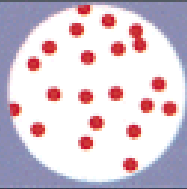
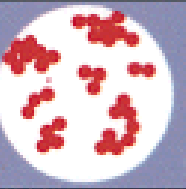
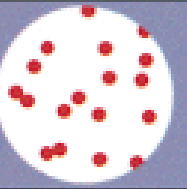
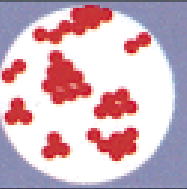
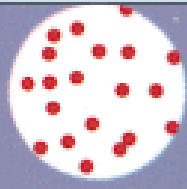
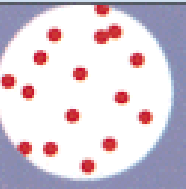
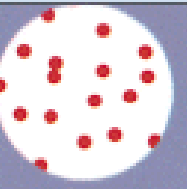
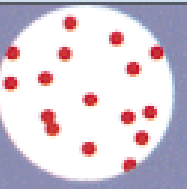
Blood Typing & Blood Vessels

# Blood Typing

- **Based on protein “self” markers on red blood cells**
- **Blood Type**
  - **A**                    **anti B antibodies**
  - **B**                    **anti A antibodies**
  - **AB**                   **none**
  - **O**                    **anti A and anti B antibodies**

# Blood Transfusion

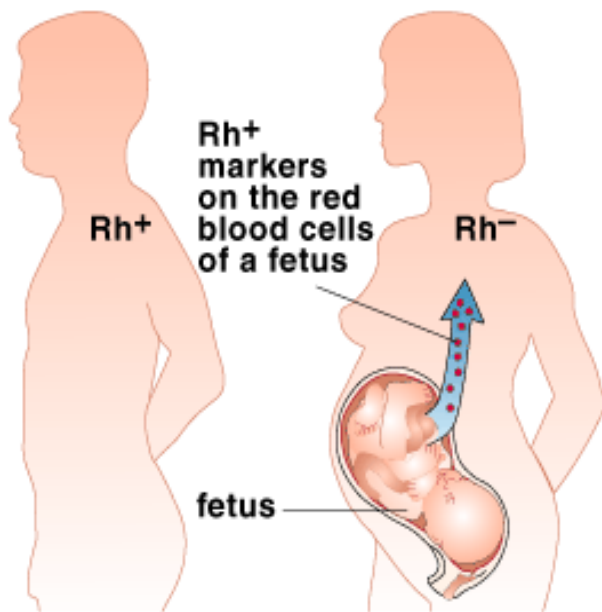
- Agglutination of incompatible blood
- Antibodies

		Blood Type of Donor			
		O	A	B	AB
Blood Type of Recipient	O				
	A				
	B				
	AB				

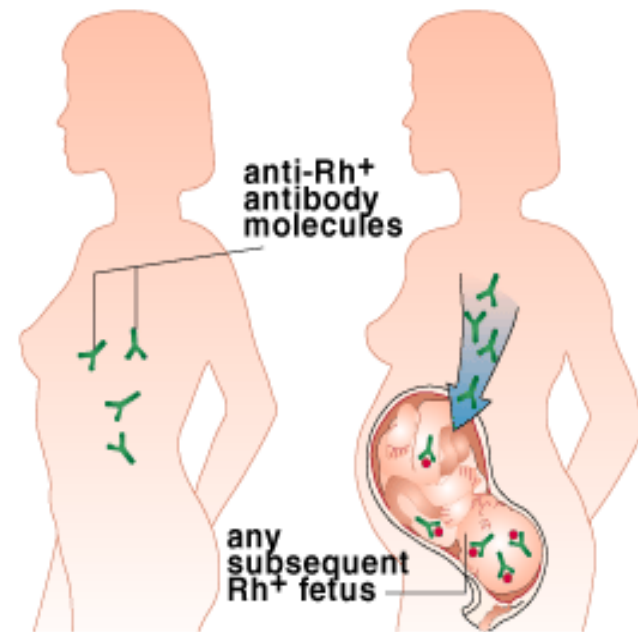
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# Rh Blood Typing

- Presence or absence of Rh markers
- Erythroblastis fetalis



**a** A forthcoming child of an Rh<sup>-</sup> woman and Rh<sup>+</sup> man inherits the gene for the Rh<sup>+</sup> marker. During pregnancy or childbirth, some of its cells bearing the marker may leak into the maternal bloodstream.



**b** The foreign marker stimulates her body to make antibodies. If she gets pregnant again and if this second fetus (or any other) inherits the gene for the marker, the circulating anti-Rh<sup>+</sup> antibodies will act against it.

# Blood Vessels

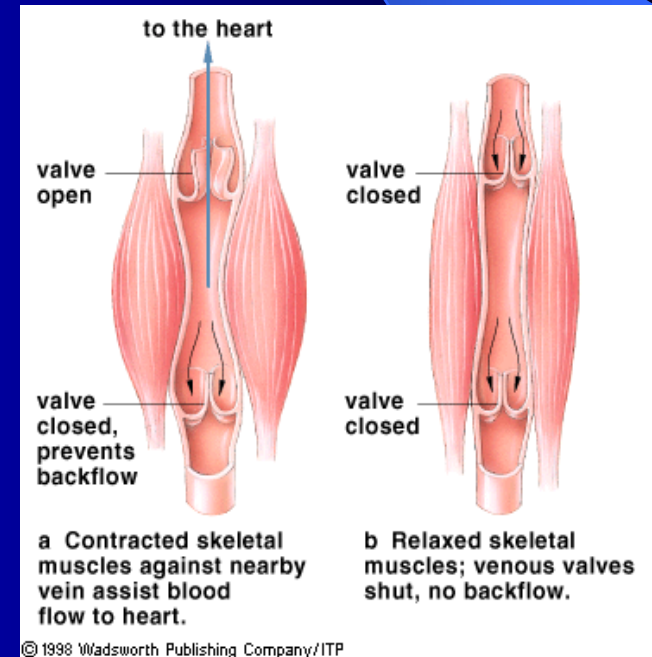
- We have a closed system
- Heart – arteries – arterioles – capillaries – venules – veins – heart
- Capillaries are the smallest of blood vessels and the functional unit of the circulatory system

# 3 Layers

1. Tunica externa: outermost layer (loose ct)
2. Tunica media: middle layer (smooth muscle)
3. Tunica intima: innermost layer, simple squamous epi (endothelium) & ct. Capillaries are all endothelium

# Vessels

- Arteries: Large arteries expand when blood surges into them. Carry blood away from the heart
- Capillaries: No cell in the body is no more than 0.1 mm from a capillary (60,000 miles of them)
- Veins: Carry blood to the heart



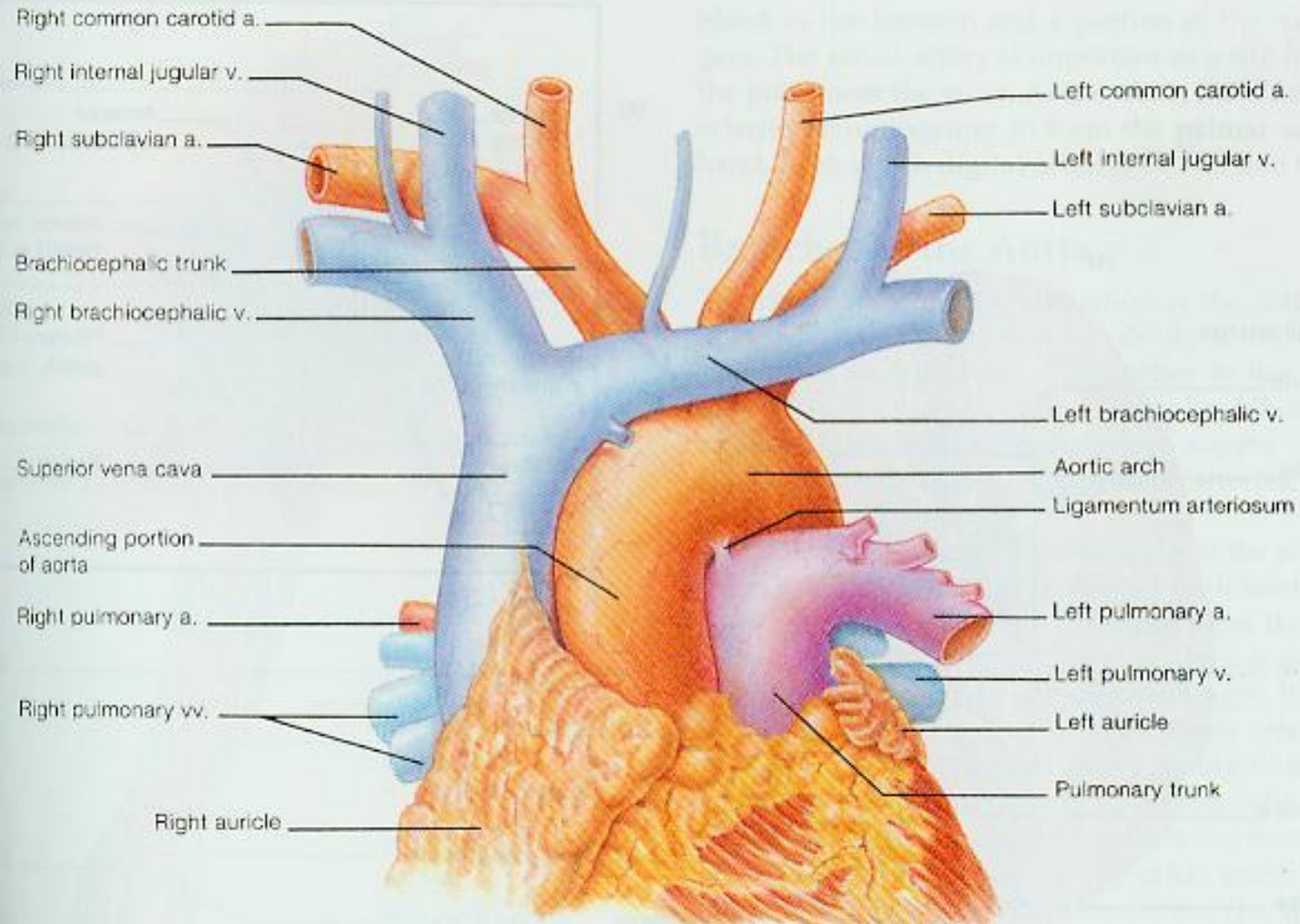
# Aortic Arch

- All main arteries arise from the aorta
- The aorta arches to the left, to clear the pulmonary arteries – the aortic arch
- The “big three”
  - Brachiocephalic trunk (right Common carotid)
  - Left common carotid
  - Left Subclavian



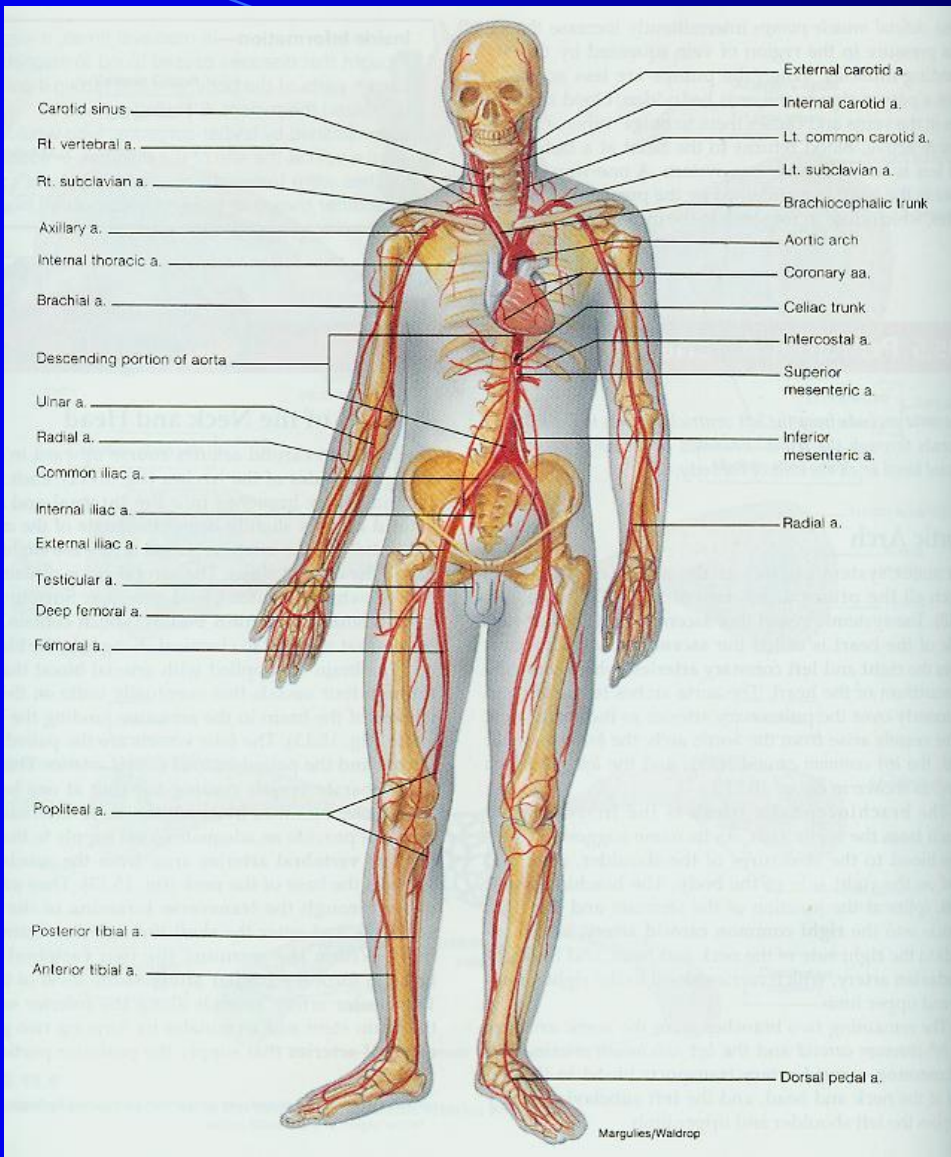
## CHAPTER 15 CIRCULATORY SYSTEM: HEART AND BLOOD VESSELS

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# Branches of the Aorta

- Descending aorta – drops down the body
- Celiac trunk – just below the diaphragm
- Superior mesenteric artery – the guts
- Renal arteries – the kidneys
- Gonadal arteries – gonads
- Inferior mesenteric artery – large intestine
- Right & left common iliac – divide for legs



# Main Veins

1. Superior Vena Cava
2. Jugular veins
3. Right & left subclavian
4. Brachiocephalic

# Main Veins

1. Inferior Vena Cava
2. Lumbar
3. Renal
4. Gonadal
5. Common Iliacs



