Cheatography

Biology 20: Circulatory System Cheat Sheet

by Diana D (dianadavis) via cheatography.com/134628/cs/27854/

Functions of the Circulatory System

Carries nutrients (O2) to cells

Takes waste away from cells

Distributes heat throughout the body

Regulates levels of body fluids

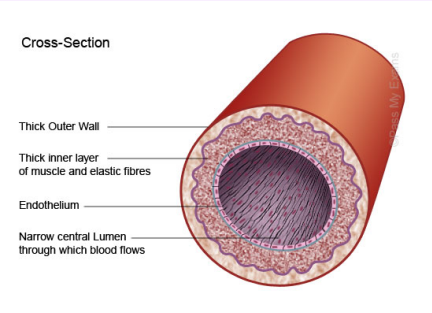
Sends chemicals messengers to different parts of the body (hormones)

Defends against foreign organisms

Types of Blood Vessels

Arteries	The muscular-walled tubes by which blood (mainly oxygen-ated) is delivered from the heart to all parts of the body, *high pressure vessels*
Arterioles	Small arteries that lead into capillaries, *still have high pressure but not as much as arteries*
Capillaries	Composed of a single layer of cells, ideal for fluid and gas exchange
Venules	Small veins that lead from capillaries, *low pressure*
Veins	Vessels that carry mainly deoxygenated blood to the heart that have a larger diameter than arteries, *low pressure vessels*

Arteries



Arteries carry blood away from the heart

Most arteries carry oxygenated blood (**except the pulmonary artery that goes from heart to lungs**)

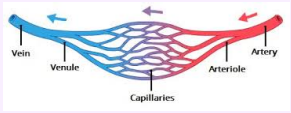
They have thick walls with 3 layers:

Inner and outer walls: connective tissue

Middle layers: made of muscle fibres and elastic connective tissue

The walls **stretch** with every heart contra-

Arterioles & Venules



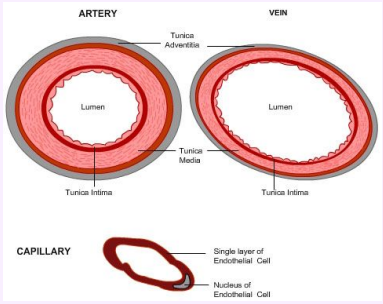
Arterioles:

- Middle layer is smooth muscle and elastic fibre
- Pressure is still high but less than arteries
- *The diameter is controlled by the autonomic nervous system*, messages from the ANS can cause **vasoconstriction** or **vasodilation**
- Pre-capillary sphincters regulate blood flow, so not all arterioles are open at any given time

Venules:

- Lined with smooth muscle, but not 3 layers (like seen in arteries)
- Not enough blood pressure to return blood to heart

Veins



- Mainly carry deoxygenated blood (**exception of the pulmonary vein which brings blood from the lungs to the heart**)
- Blood pressure in the veins is much lower than in the arteries **therefore, veins are lined with valves to prevent backflow**
- If blood pools, the vein will swell in front of the valve
- Blood moves through veins as the vein is squeezed by *skeletal muscles*
- Act as blood reservoirs (65% of total blood volume can be found in the veins)

Capillaries

Arteriosclerosis

Arteriosclerosis: a group of disorders that cause the blood vessels to thicken, harden, and lose elasticity

Atherosclerosis: a degeneration of blood vessels caused by the accumulation of fat deposits in the inner wall

Caused by a lipid build-up along with calcium and other minerals to form a plaque

Leads to high blood pressure, if this forms a blood clot and it breaks off, it can cause a heart attack

Aneurysm

Aneurysm: a bulge in the weakened wall of a blood vessel, usually an artery

Often due to atherosclerosis

If an aneurysm bursts, less oxygen and nutrients are delivered to the tissues, resulting in cell death

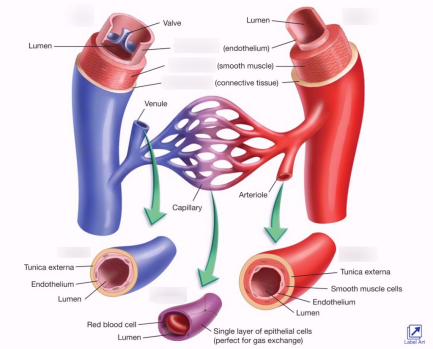
Stroke: aneurysm in the brain

Pulse & The Control of Blood Flow

Pulse	When the ventricle contracts, blood surges forward into arteries, when a pulse if felt, it is the artery expanding and contracting
Decreasing Blood Flow	Smooth muscles on arterial walls contract to decrease blood volume and pressure
Capillary Blood Flow	Precapillary sphincters close off to limit blood volume and pressure in capill-aries

Through-fare channels are always open to allow blood flow

ction and **recoil** after the blood has passed through



- Composed of a single layer of cells
- Small diameter, slows the flow of red blood cells
- Thin wall ideal for gas and fluid exchange
- Due to high surface area, the pressure drops significantly
- 85% of fluid returns to capillaries (remaining 15% returns via lymph)

By **Diana D** (dianadavis)
cheatography.com/dianadavis/

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