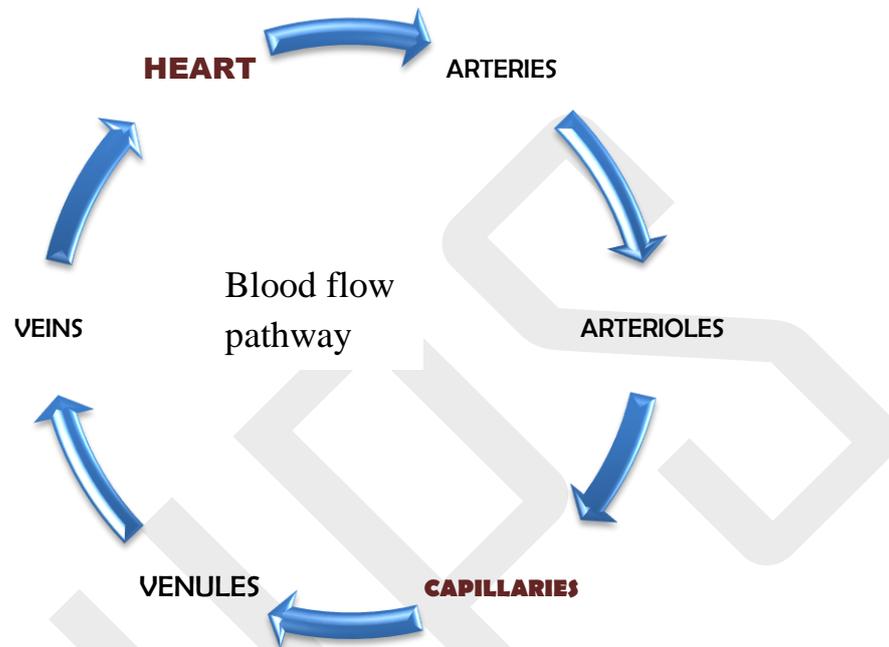


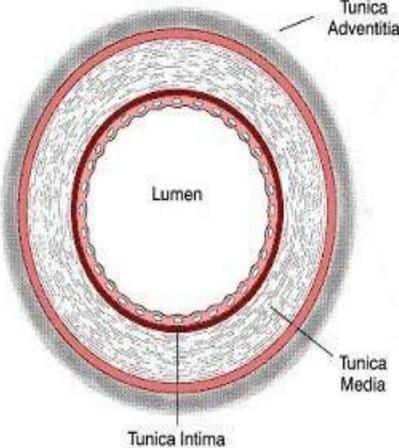
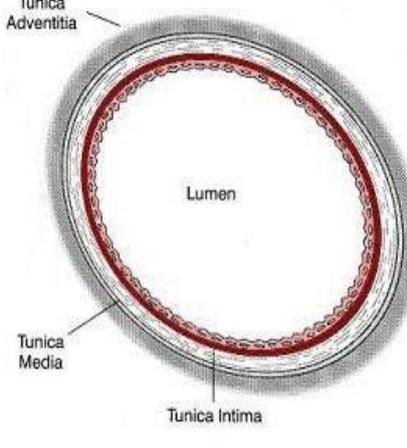
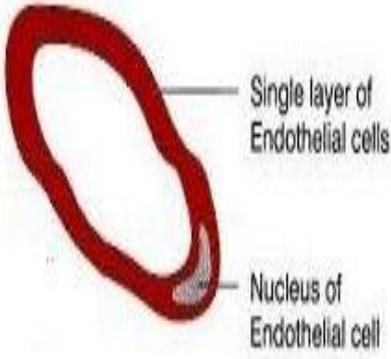
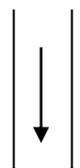
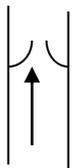
BLOOD VESSELS



- ❖ Like other cells, blood vessels also having their own blood vessel supply for oxygen called "**VASO VASORUM**".

ANGIOGENESIS:

- ❖ Refers to growth/formation of new blood vessels.
- ❖ It is an important process in embryonic and fetal development process.
- ❖ In post natal life, serves an important functions such as:
 - Wound healing.
 - Formation of new uterine lining after menstruation.
 - Formation of corpus leuteum after ovulation, etc.

ARTERIES	VEINS	CAPILLARIES
Transport blood away from the heart with high pressures.	Transport blood to the heart with low pressures.	Receives blood from arterioles and send to venules where gaseous exchange takes place.
Walls are thicker & wider lumen.	Walls are thinner & narrow lumen.	Walls are very thin & narrow.
Lumen diameter: Muscular arteries: 0.1mm to 10mm. Elastic arteries: >1cm.	Lumen diameter: 0.1mm to >1mm	Lumen diameter: 4 to 10µm.
<p style="text-align: center;">ARTERY</p> 	<p style="text-align: center;">VEIN</p> 	<p style="text-align: center;">CAPILLARY</p> 
<p>Valves and cusps are absent.</p> 	<p>Valves and cusps are present which are formed from the thin folds of tunica interna.</p> 	<p style="text-align: center;">Arteriole ↓ Meta arteriole ↓ Precapillary sphincter(rings of smooth muscles fibers) ↓ Capillary bed (10-100capillaries) ↓ Through fare channel ↓ Venules</p>

<p>Sympathetic nerve supply to tunica media.</p> <p>Sympathetic stimulation</p> <p>↓</p> <p>smooth muscle contraction</p> <p>↓</p> <p>decreases lumen diameter</p> <p>↓</p> <p>Vasoconstriction.</p>	<p>Sympathetic nerve supply is absent.</p>	<p>Sympathetic nerve supply is absent.</p>
<p>When an artery cuts, blood flow or spurts with high pressure, sympathetic stimulation takes place to limit the blood flow from damaged vessel.</p>	<p>When a vein cuts, veins collapsed and a slow steady flow of blood escapes.</p>	<p>When capillaries damaged, a little amount of blood escapes.</p>
<p>Arterial branches divide into small microscopic arteries known as arterioles (10-100 μm diameter).</p>	<p>Veins branches divide into small microscopic veins known as venules (10-100 μm diameter).</p>	<p>Meta arterioles are sub divided into small network of 10-100 capillaries known as capillary bed (4-10 μm diameter).</p>
<p>Systemic blood pressure is mainly determined by the resistance of these arterioles, so these are known as resistance vessels.</p>	<p>Venules are distensible & have the capacity to hold large portion of blood, so these are known as Capacitance vessels.</p>	<p>Capillaries found almost in every cell in the body where gaseous exchange takes place, so these are known as exchange vessels.</p>

- The arteries that form a link between main arteries supply an area are known as **Anastomoses**. If one occluded, anastomotic arteries provide collateral circulation.
- End arteries have no anastomoses.
 - ex: The branch of Circulus arteriosus (circle of willis) in brain, if one end of the artery occluded, all the tissue die due to no alternative blood supply.

✚ **Ductus Arteriosus (DA)**, also called the **ductus Botalli**, is a blood vessel connecting the pulmonary artery to the proximal descending aorta. It allows most of the blood from the right ventricle to bypass the fetus's fluid-filled non-functioning lungs. Upon closure at birth, it becomes the **ligamentum arteriosum**.

✚ **Foramen ovale** also **foramen Botalli, ostium secundum of Born** or **falx septi**, allows blood to enter the left atrium from the right atrium. In most individuals, the foramen ovale closes at birth. It later forms **the fossa ovalis**.

✚ **Ductus venosus** shunts a portion of the left umbilical vein blood flow directly to the inferior vena cava. Thus, it allows oxygenated blood from the placenta to bypass the liver. It plays a critical role in preferentially shunting oxygenated blood to the fetal brain. It is a part of fetal circulation.