

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# MAJOR ARTERIES OF THE BODY

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# OBJECTIVES

***At the end of the lecture, the student should be able to:***

- Define the word 'artery' and understand the general principles of the arterial system.
- Define arterial anastomosis and describe its significance.
- Define end arteries and give examples.
- Describe the aorta and its divisions & list the branches from each part.
- List major arteries and their distribution in the head & neck, thorax, abdomen and upper & lower extremities.
- List main pulse points.

# “ARTERIES”

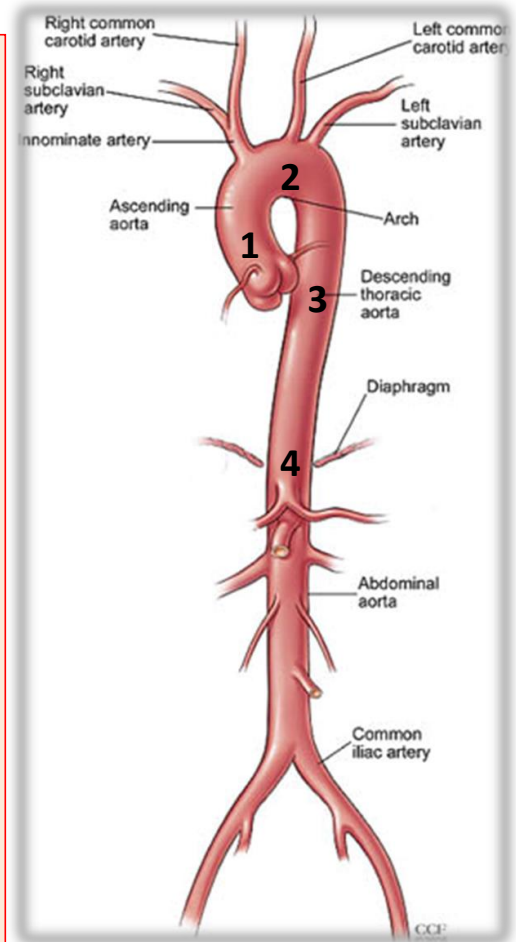
- **Arteries carry blood from the heart to the body.**
- **All arteries, carry oxygenated blood, EXCEPT the PULMONARY ARTERY which carry deoxygenated blood to the lungs.**

# GENERAL PRINCIPLES OF ARTERIES

- The flow of blood depends on the **pumping action of the heart**.
- Arteries have **ELASTIC WALL** containing **NO VALVES**.
- The branches of arteries supplying adjacent areas normally **ANASTOMOSE** with one another freely providing backup routes for blood to flow if one artery is blocked, e.g. **arteries of limbs**.
- The arteries whose terminal branches do not anastomose with branches of adjacent arteries are called **“END ARTERIES”**. End arteries are of two types:
  - **Anatomic (True) End Artery**: When **NO** anastomosis exists, e.g. **artery of the retina**.
  - **Functional End Artery**: When an anastomosis exists but is incapable of providing a sufficient supply of blood, e.g. **splenic artery, renal artery**.

# AORTA

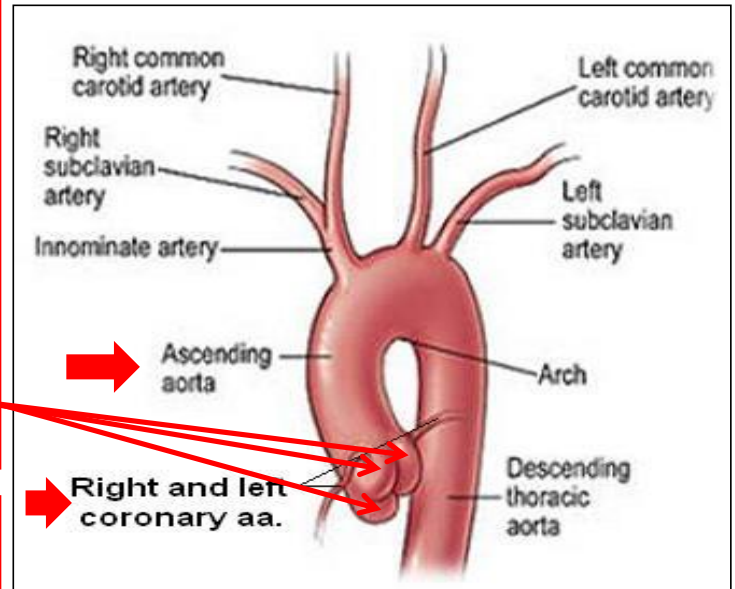
- The **largest** artery in the body
- Carries oxygenated blood to all parts of the body
- Is divided into 4 parts:
  - 1. Ascending aorta**
  - 2. Arch of aorta**
  - 3. Descending thoracic aorta**
  - 4. Abdominal aorta**



# ASCENDING AORTA

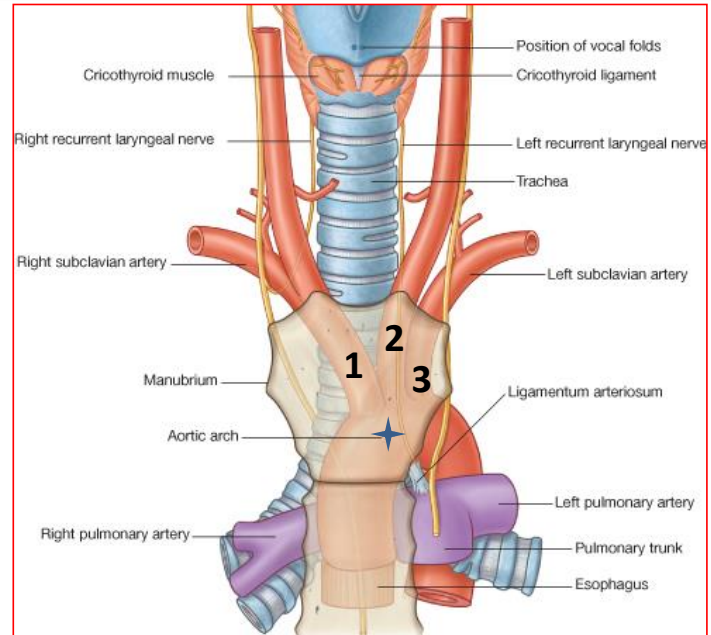
- **Originates from left ventricle.**
- Continues as the **arch of aorta**
- Has three dilatations at its base, called **aortic sinuses**

- **Branches:**
  - **Right & Left coronary arteries (supplying heart),** arise from aortic sinuses



# ARCH OF AORTA

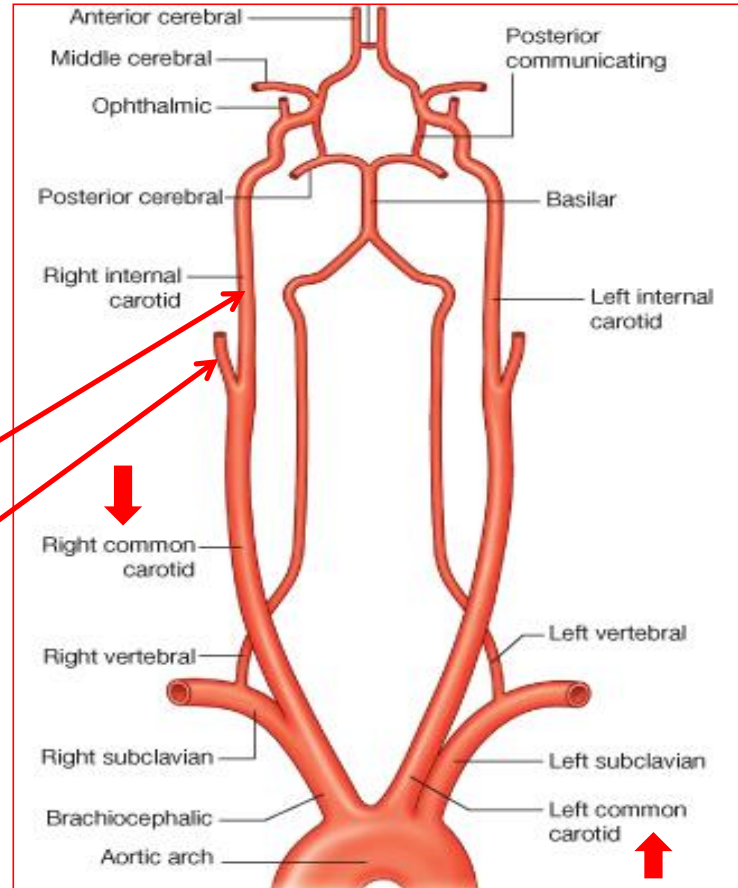
- Continuation of the ascending aorta.
- Leads to descending aorta.
- Located behind the lower part of manubrium sterni and on the left side of trachea.



- **Branches:**
  - 1. Brachiocephalic trunk.**
  - 2. Left common carotid artery.**
  - 3. Left subclavian artery.**

# COMMON CAROTID ARTERY

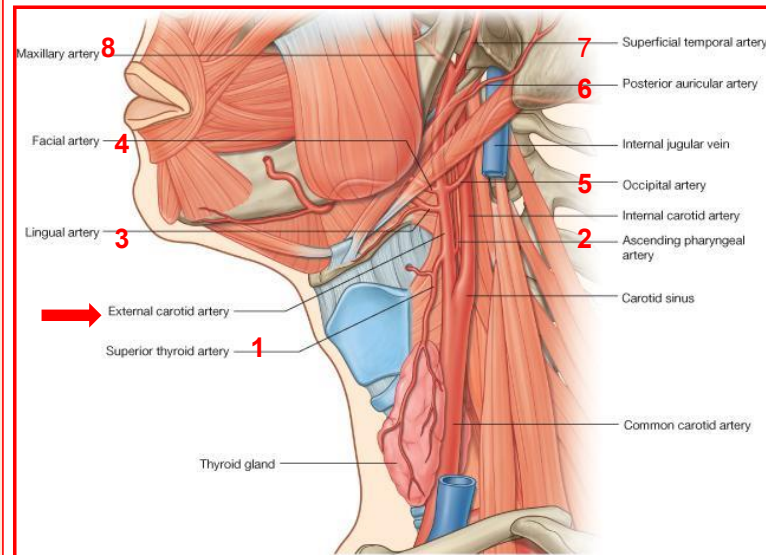
- **Origin:**
    - **LEFT** from **aortic arch**.
    - **RIGHT** from **brachiocephalic trunk**.
  - Each common carotid divides into two branches:
    - **Internal carotid**
    - **External carotid**
- (At the level of the disc between C3 & C4)**





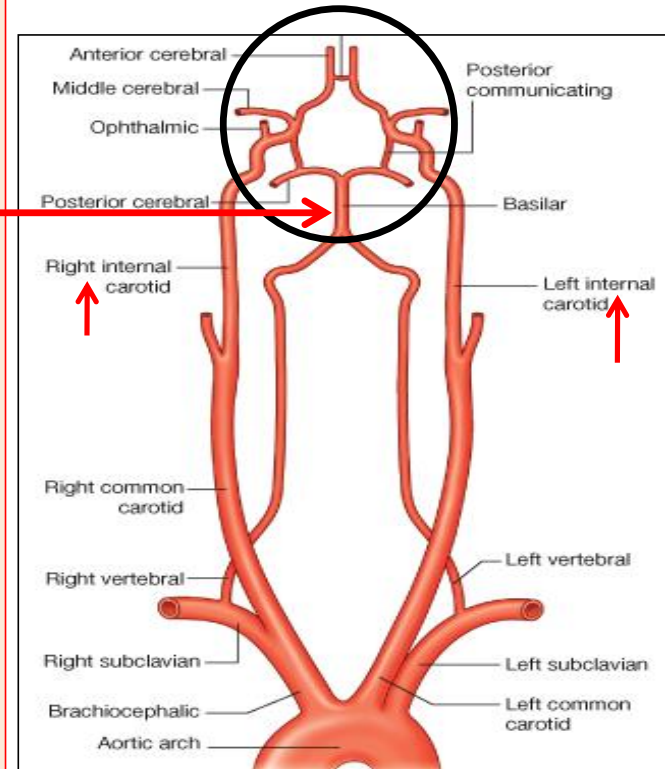
# EXTERNAL CAROTID ARTERY

- It divides **behind neck of mandible** into: **Superficial temporal & maxillary arteries**
- It supplies:
  - **Scalp**: Superficial temporal, occipital, & posterior auricular arteries
  - **Face**: Facial artery
  - **Maxilla & mandible**: Maxillary artery
  - **Tongue**: Lingual artery
  - **Pharynx**: ascending pharyngeal artery
  - **Thyroid gland**: Superior thyroid artery



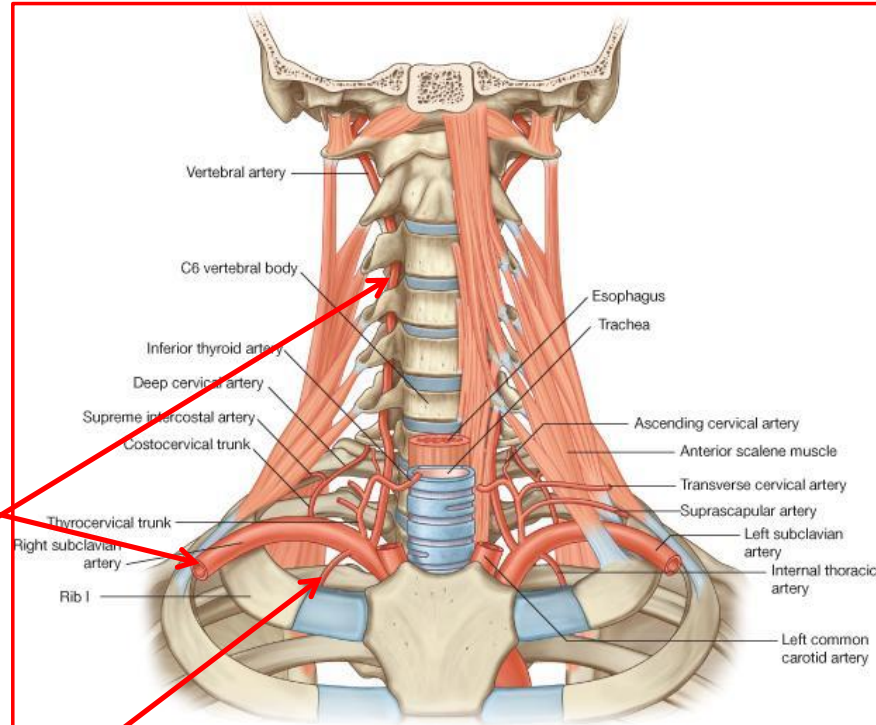
# INTERNAL CAROTID ARTERY

- Has **NO** branches in the neck
- Enters the cranial cavity, joins the **basilar artery** (formed by the union of two vertebral arteries) and forms '**arterial circle of Willis**' to supply brain.
- In addition, it supplies
  - **Nose**
  - **Scalp**
  - **Eye**

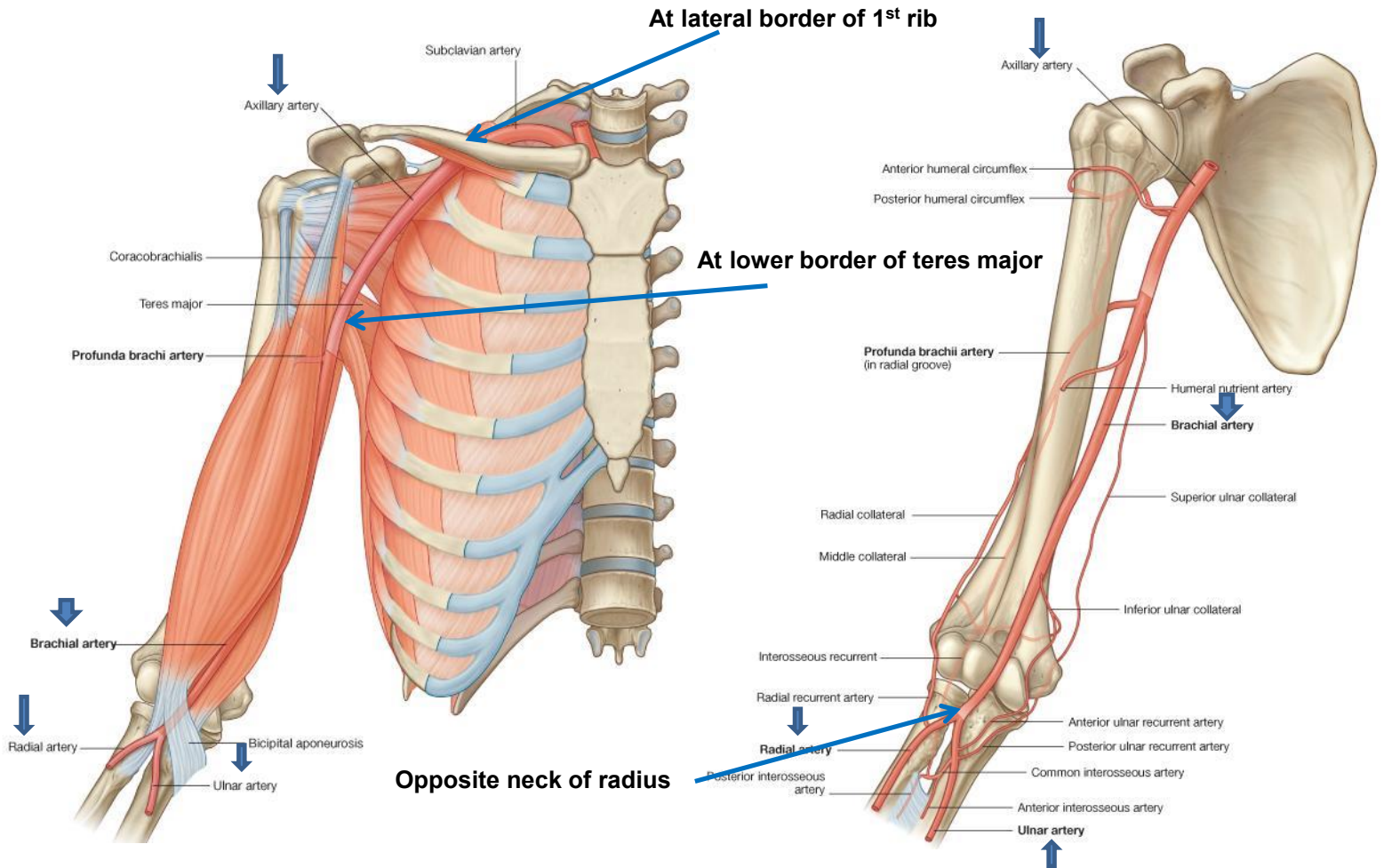


# SUBCLAVIAN ARTERY

- **Origin:**
  - **LEFT:** from **arch of aorta**
  - **RIGHT:** from **brachiocephalic trunk**
- It continues, at lateral border of first rib, as **axillary artery: artery of upper limb**
- **Main branches:**
  - **Vertebral artery:** supplies **brain & spinal cord**
  - **Internal thoracic artery:** supplies **thoracic wall**



# ARTERIES OF UPPER LIMB

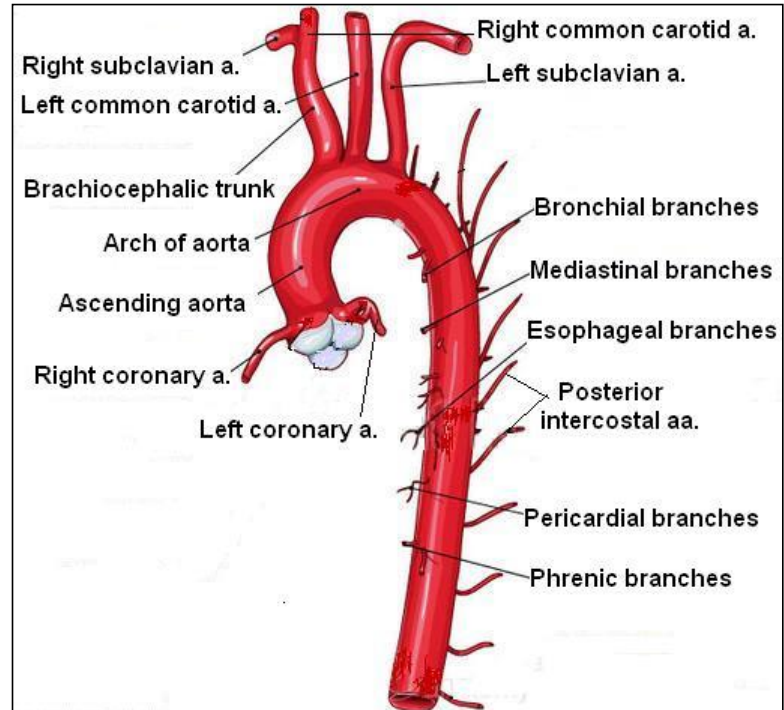


# DESCENDING THORACIC AORTA

- It is the **continuation of aortic arch**
- At the level of the **12<sup>th</sup> thoracic vertebra**, it passes through the diaphragm and continues as the **abdominal aorta**

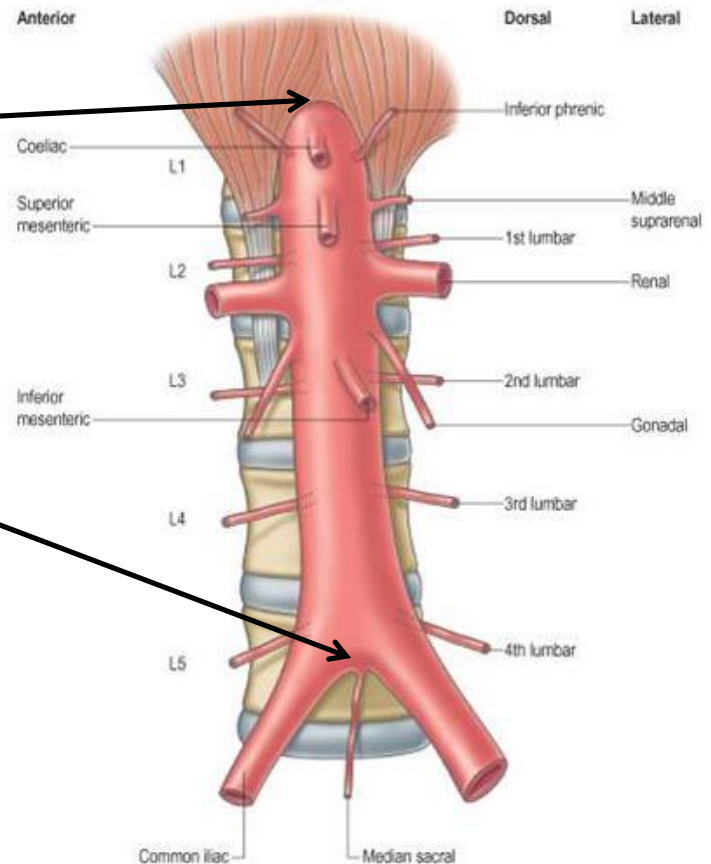
- **Branches:**

- **Pericardial**
- **Esophageal**
- **Bronchial**
- **Posterior intercostal**



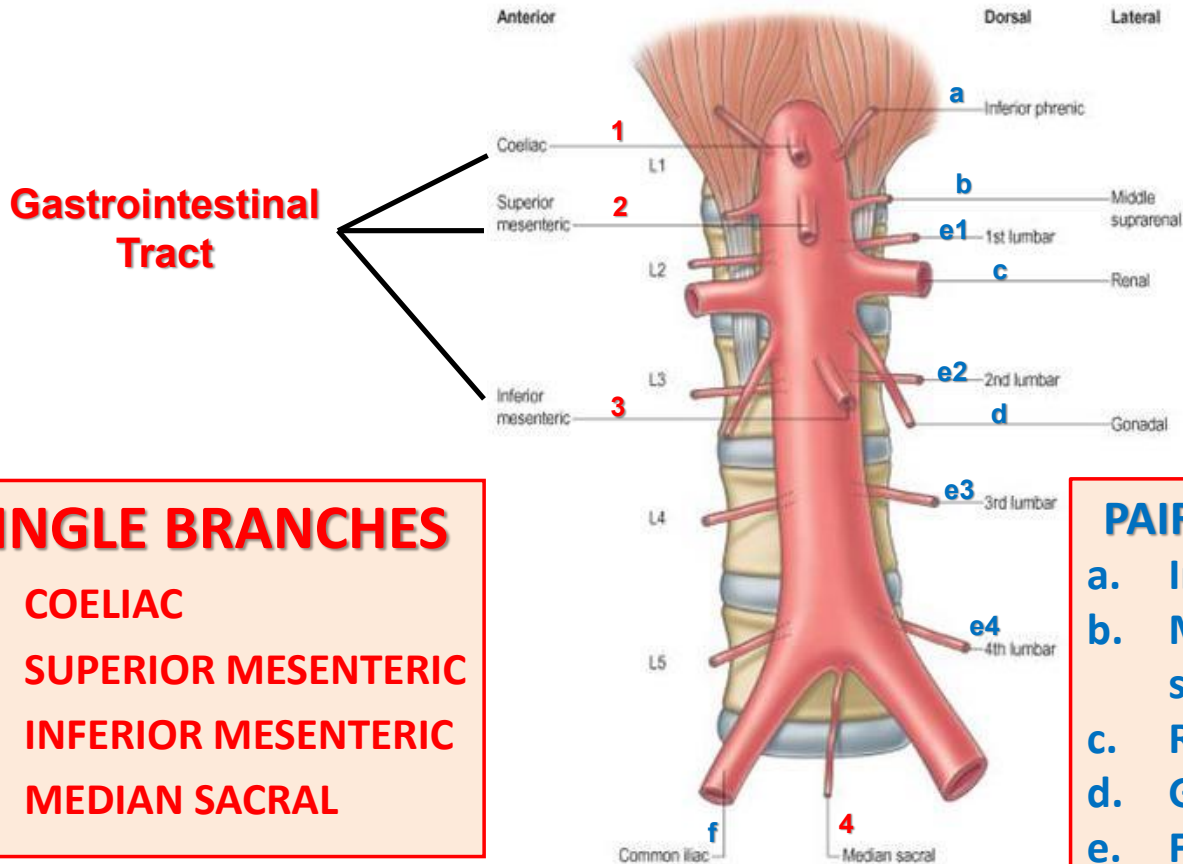
# ABDOMINAL AORTA

- It enters the abdomen through the **aortic opening of diaphragm**.
- **At the level of lower border of L4, it divides into two common iliac arteries.**
- **Branches:** divided into two groups:
  - Single branches
  - Paired branches



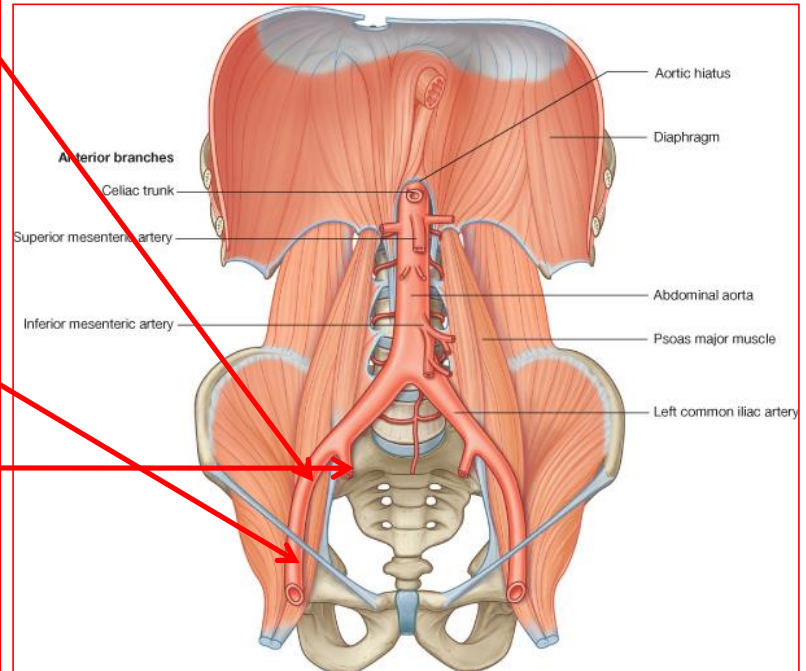


# MAIN BRANCHES OF ABDOMINAL AORTA



# BRANCHES OF COMMON ILIAC ARTERY

- **EXTERNAL ILIAC ARTERY:**  
continues (*at midpoint of inguinal ligament*) as **femoral artery** the main supply for **lower limb**
- **INTERNAL ILIAC ARTERY:**  
supplies **pelvis**





# ARTERIES OF LOWER LIMB

## ❖ Femoral Artery

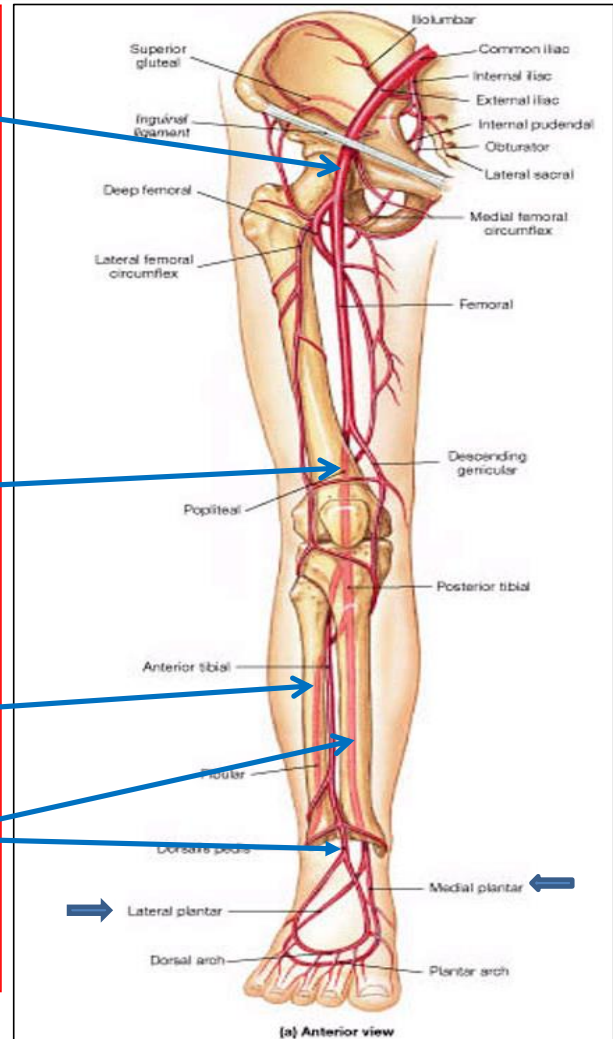
- Is the main arterial supply to lower limb
- Is the continuation of external iliac artery **behind the midpoint of the inguinal ligament**
- Passes **through adductor hiatus** and continues as:

## ❖ Popliteal Artery

- Deeply placed **in the popliteal fossa**.
- Divides, **at lower end of popliteal fossa** into:

**1-Anterior Tibial Artery (continues as Dorsalis Pedis Artery)**

**2-Posterior Tibial Artery (divides into Medial & Lateral Planter Arteries)**



[a] Anterior view

# PULSE POINTS IN HEAD & NECK

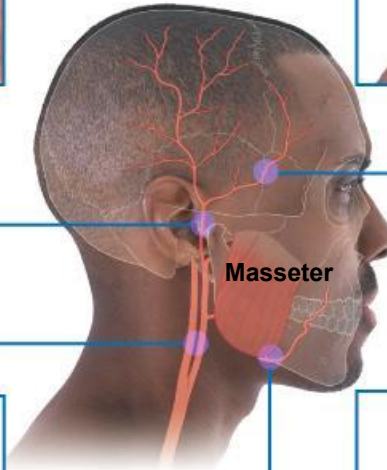


Temporal pulse  
(superficial temporal artery)

Above & in front  
of the tragus of ear



Temporal pulse  
(anterior branch of  
superficial temporal artery)



Masseter

Opposite the antero-inferior border  
of Masseter muscle

Carotid pulse



Just below  
the angle of  
the mandible

Facial pulse



# PULSE POINTS IN UPPER LIMB

Below the lateral wall of the axilla →



Axillary pulse

A



Brachial pulse in mid-arm



Just lateral to tendon of Flexor carpi radialis muscle →



Radial pulse in distal forearm

← Just medial to Biceps tendon



Brachial pulse in the cubital fossa

← Just lateral to tendon of Flexor carpi ulnaris muscle



Ulnar pulse in distal forearm



Radial pulse in the anatomical snuffbox

B



# PULSE POINTS IN LOWER LIMB

Just below inguinal ligament, at point midway between ASIS & Symphysis pubis



Femoral pulse

In the center of popliteal fossa



Popliteal pulse

Just behind & below medial malleolus



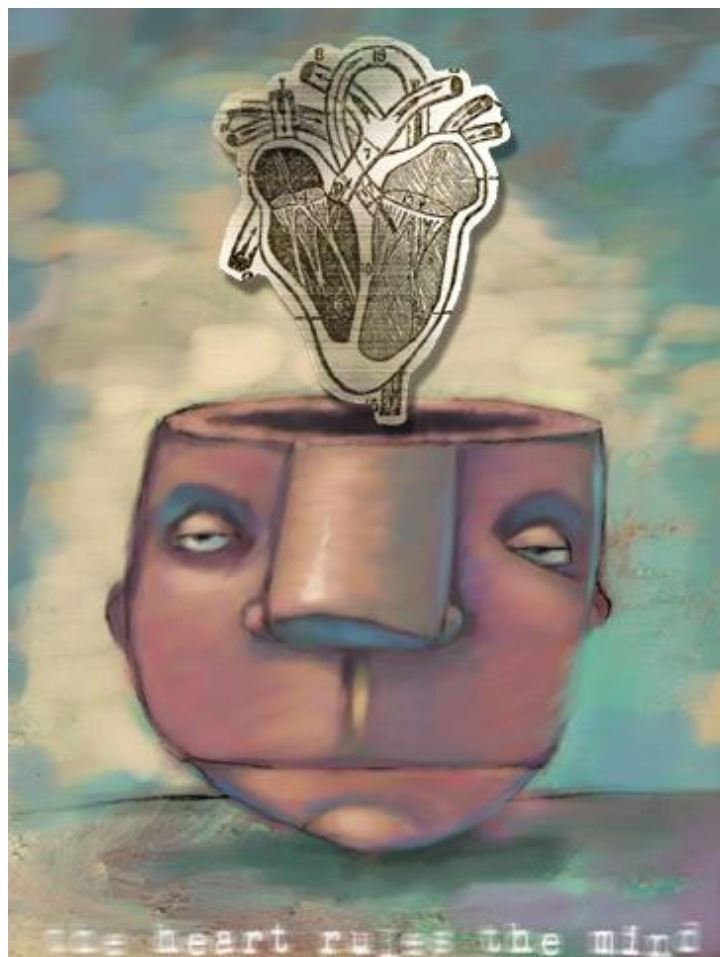
Posterior tibial pulse

Between 1<sup>st</sup> & 2<sup>nd</sup> Metatarsal bones, lateral to tendon of Extensor hallucis longus



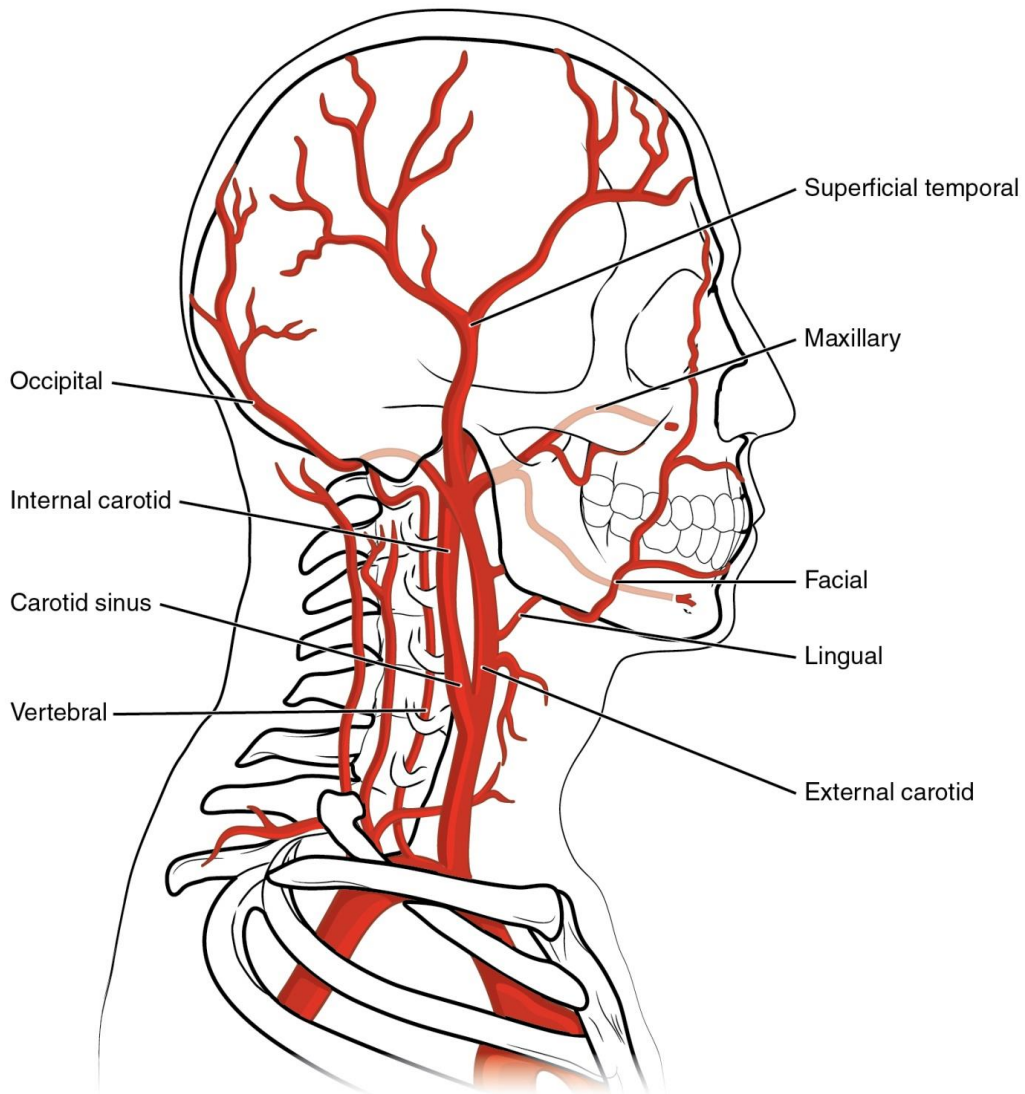
Dorsalis pedis pulse

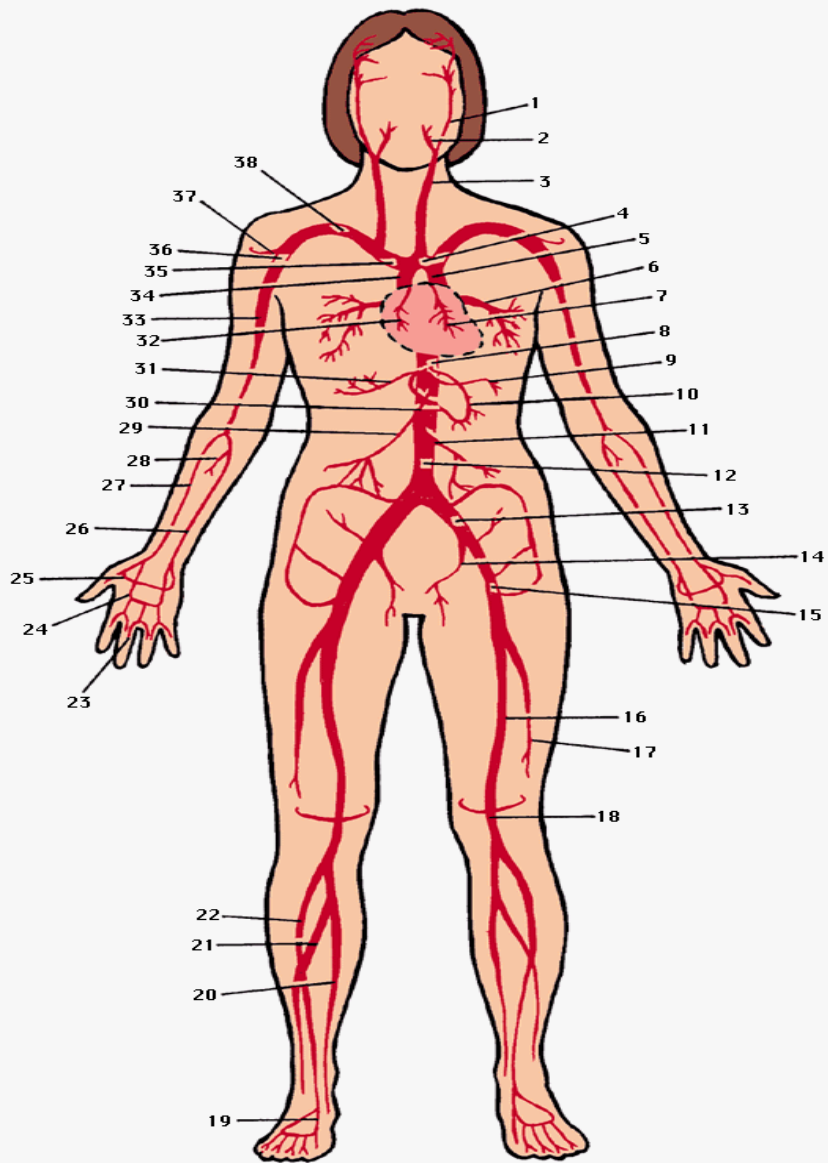




# SUMMARY








## **Principal arteries of the human body:**


1 internal carotid artery, 2 external carotid artery, 3 common carotid artery, 4 arch of the aorta, 5 descending aorta, 6 pulmonary vein, 7 left coronary artery, 8 celiac artery, 9 splenic artery, 10 left gastric artery, 11 inferior mesenteric artery, 12 abdominal aorta, 13 common iliac artery, 14 internal iliac artery, 15 external iliac artery, 16 femoral artery, 17 profunda femoris artery, 18 popliteal artery, 19 dorsalis pedis, 20 posterior tibial artery, 21 peroneal artery, 22 anterior tibial artery, 23 digital artery, 24 superficial palmar arch, 25 deep palmar arch, 26 ulnar artery, 27 radial artery, 28 common interosseous artery, 29 superior mesenteric artery, 30 right gastric artery, 31 hepatic artery, 32 right coronary artery, 33 brachial artery, 34 ascending aorta, 35 brachiocephalic artery, 36 axillary artery, 37 anterior circumflex humeral artery, 38 subclavian artery




# QUESTION 1

- Which one of the following is a functional end artery?
  - A. Splenic artery 
  - B. Brachial artery
  - C. Central artery of the retina
  - D. Superior mesenteric artery

# QUESTION 2

- Which one of the following is a branch of external carotid artery?
  - A. Facial artery 
  - B. Vertebral artery
  - C. Basilar artery
  - D. Internal thoracic artery

# QUESTION 3

- Pulsations of which one of the following arteries could be checked below the angle of the mandible?
  - A. Facial
  - B. Lingual artery
  - C. Superficial temporal
  - D. Carotid 



**THANK YOU**