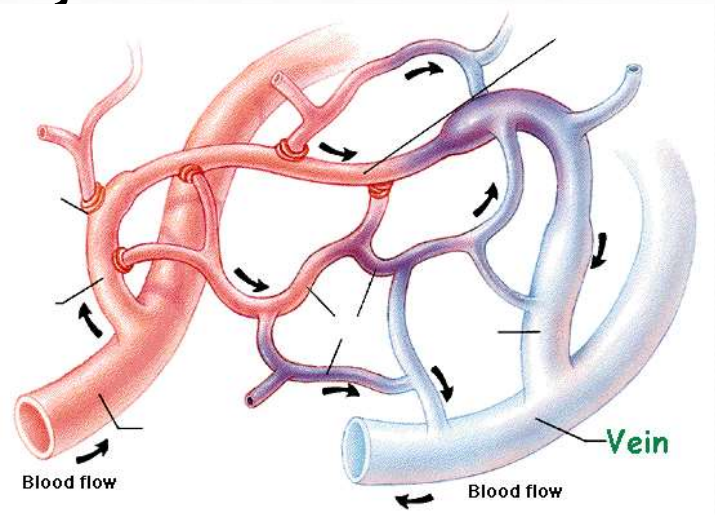
Blood Vessels

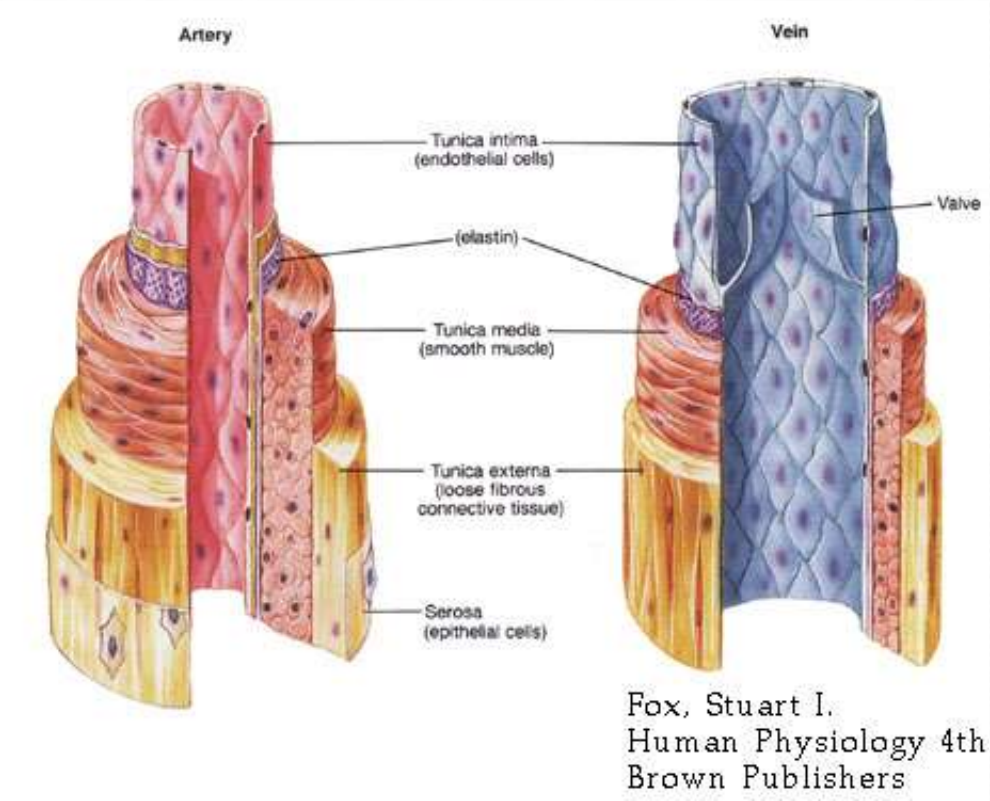
EQ: How does the structure of an artery help with its function? A vein?

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

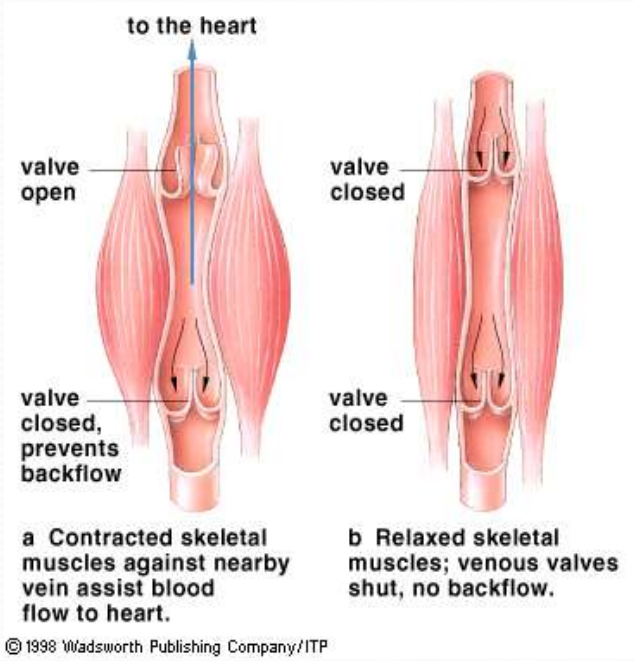


Fox, Stuart I.
Human Physiology 4th
Brown Publishers

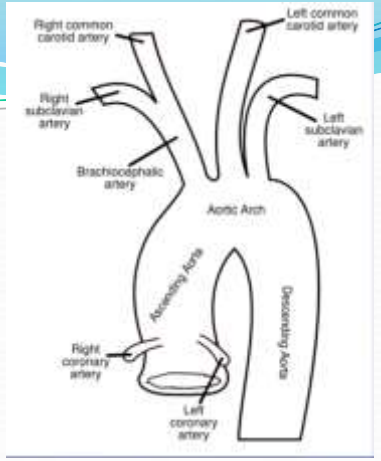
1. Tunica externa: outermost layer (loose ct)
2. Tunica media: middle layer (smooth muscle)
3. Tunica intima: innermost layer, simple squamous epi (endothelium) & ct. Capillaries are all endothelium

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
  - Have one-way valves
  - Low blood pressure



Aortic Arch

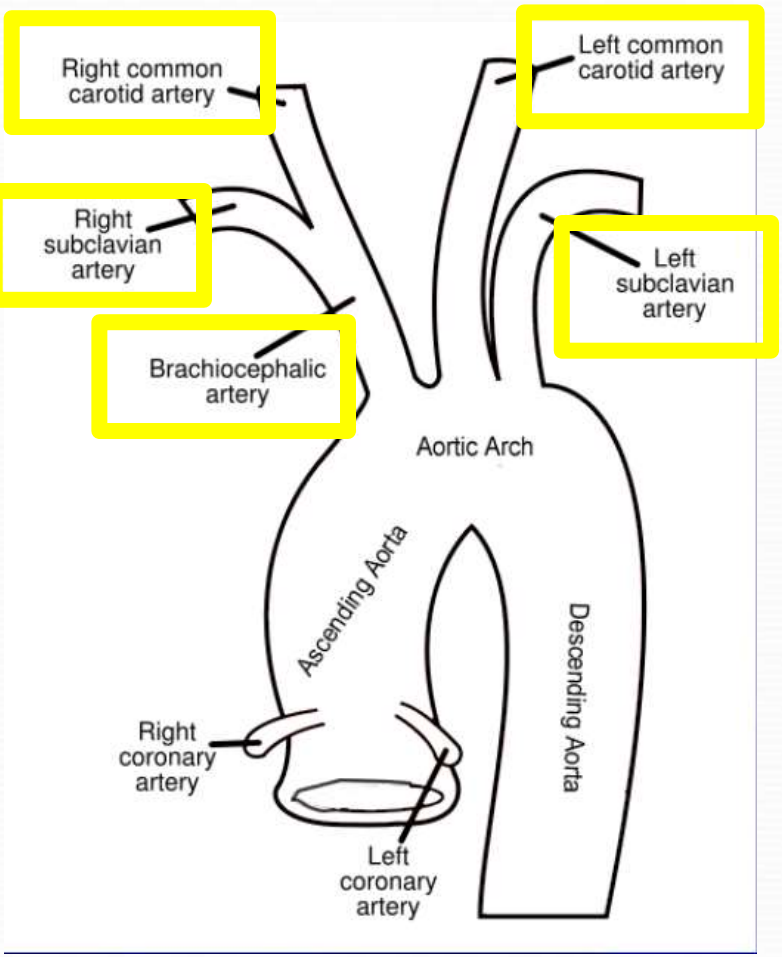


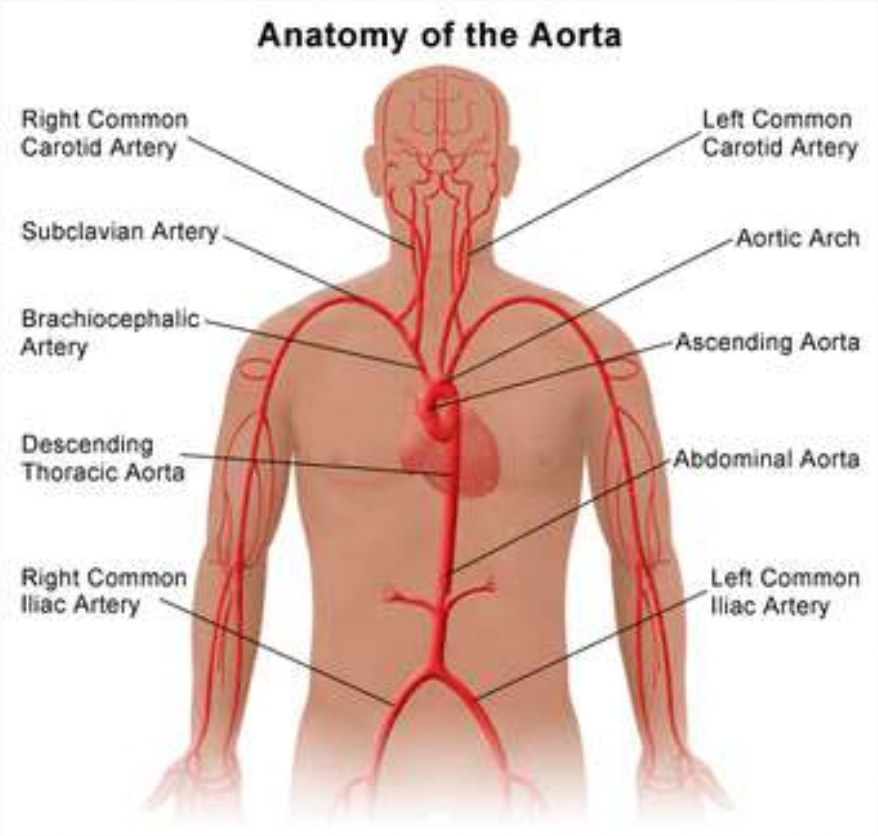
- All main arteries arise from the aorta
- The aorta arches to the left, to clear the pulmonary arteries – the aortic arch
- The "big three"
  - Brachiocephalic trunk (right Common carotid & r subclavian)
  - Left common carotid
  - Left Subclavian

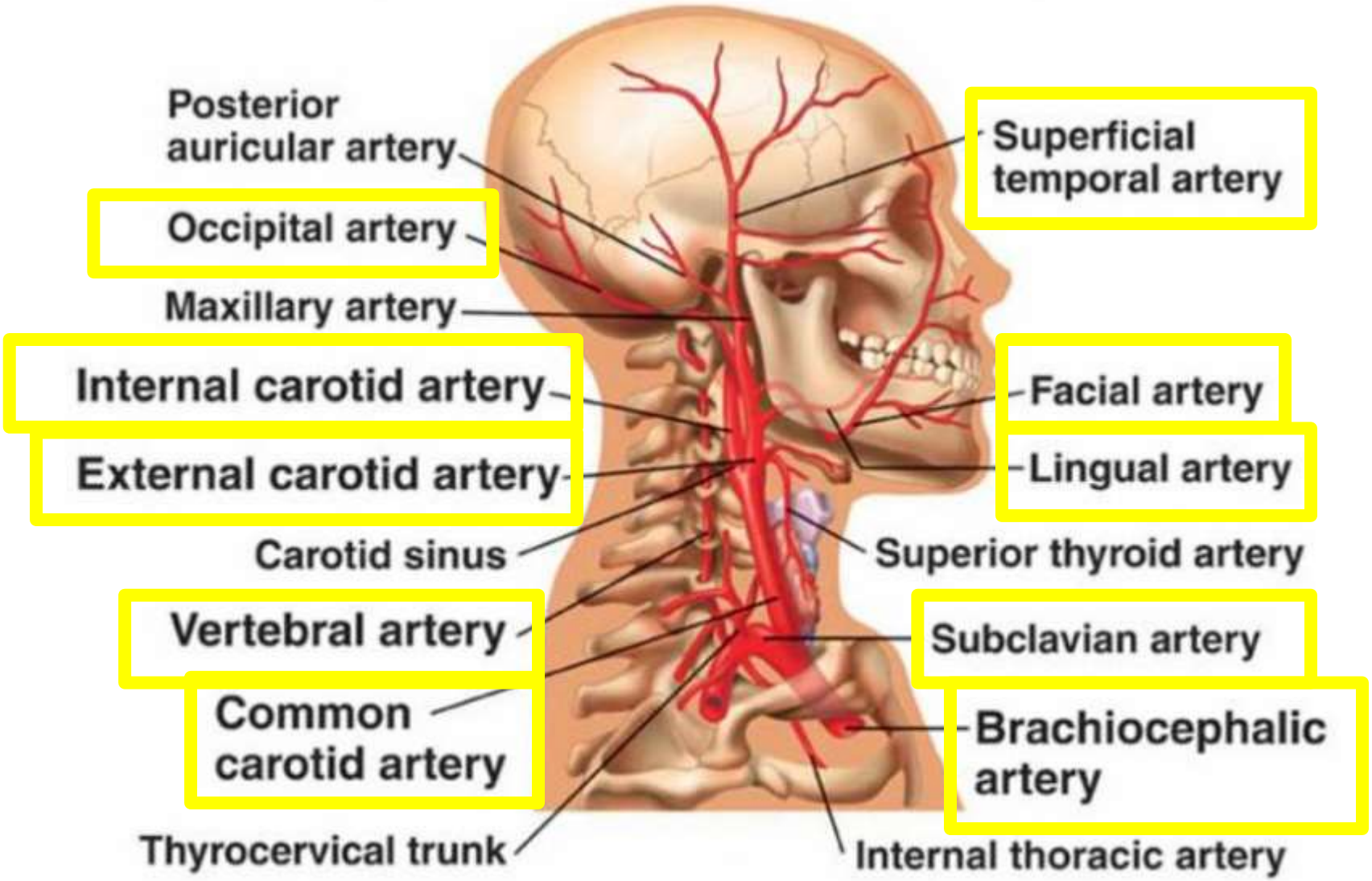
ABC'S of the aortic arch!

Aortic arch gives off the **B**racheiocephalic trunk, then the left **C**ommon **C**arotid, and then the left **S**ubclavian artery

Ascending Aortic Branches

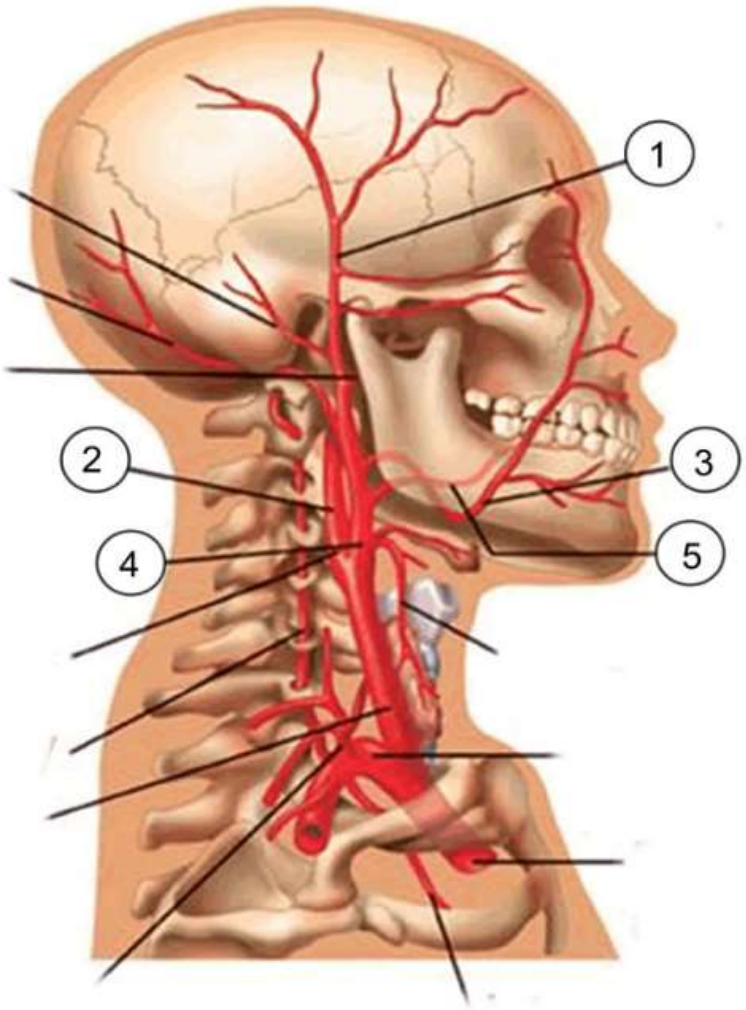





Posterior auricular artery
Occipital artery
Maxillary artery
Internal carotid artery
External carotid artery
Carotid sinus
Vertebral artery
Common carotid artery
Thyrocervical trunk
Superficial temporal artery
Facial artery
Lingual artery
Superior thyroid artery
Subclavian artery
Brachiocephalic artery
Internal thoracic artery

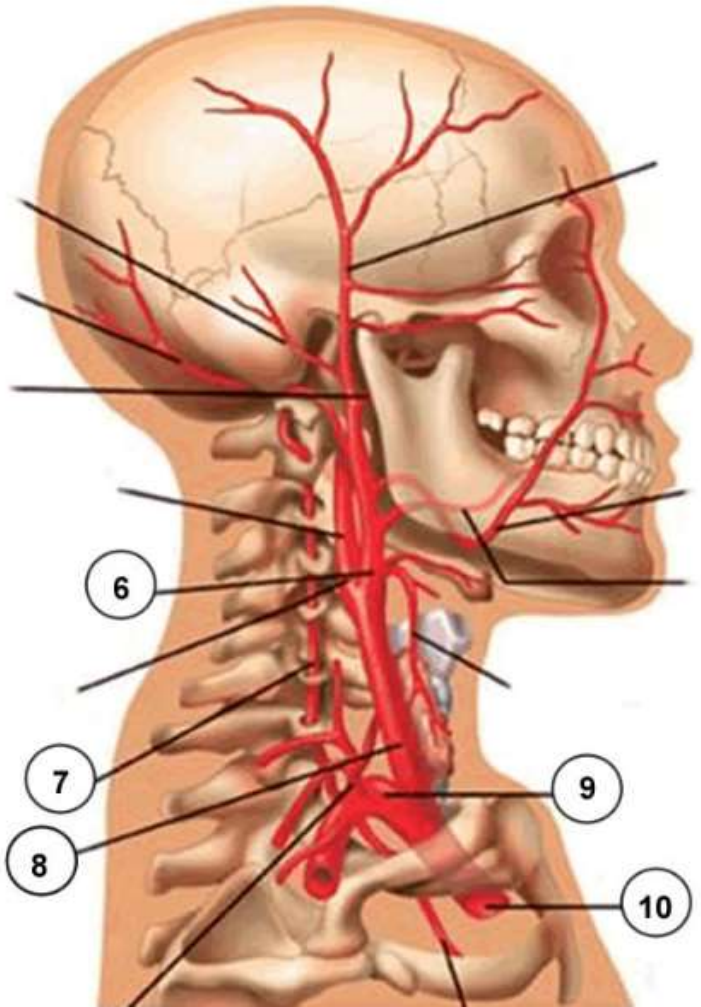
Main Head Arteries (1)

1. Superficial Temporal
2. Internal Carotid
3. Facial
4. External Carotid
5. ~~Lingual~~

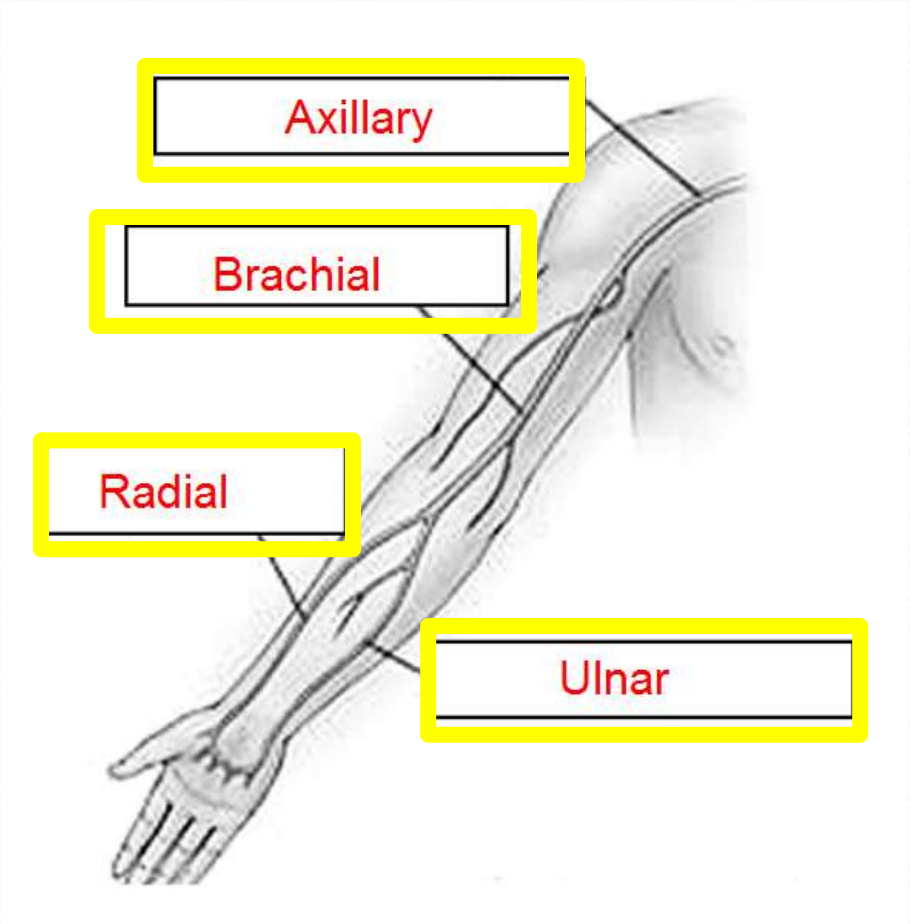


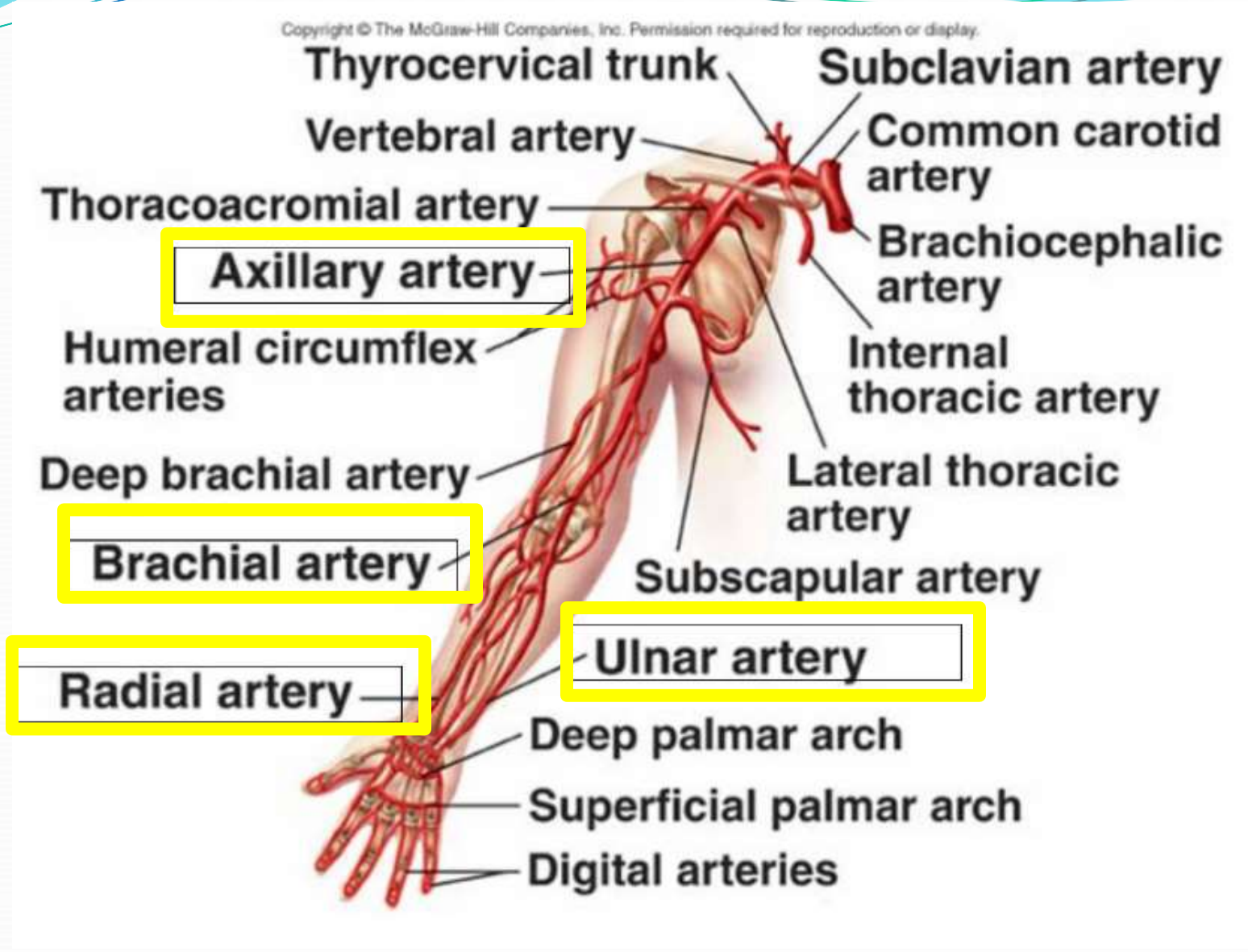
Main Head Arteries (2)

6. External Carotid
7. Vertebral
8. Common Carotid
9. Subclavian
10. Brachiocephalic



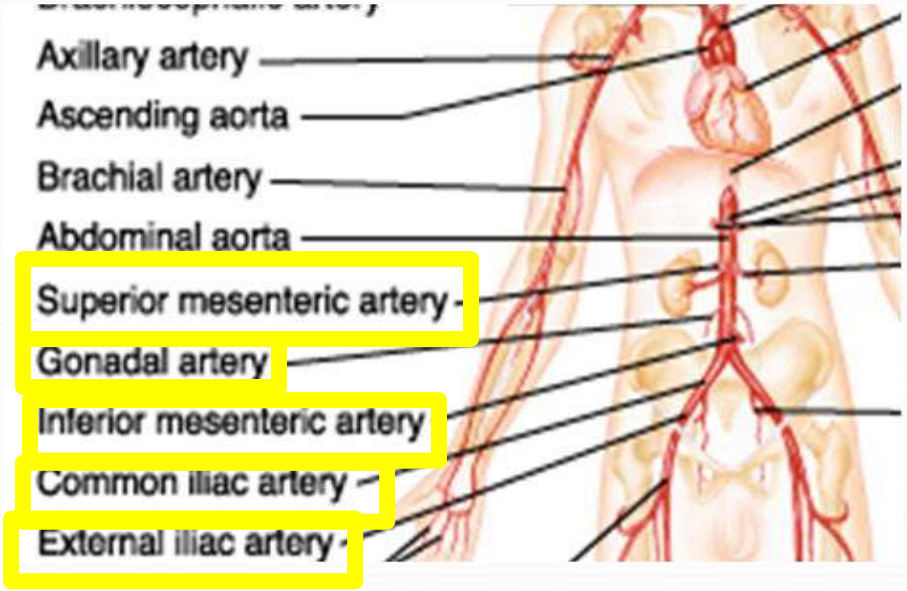
Main Arteries of the Arm



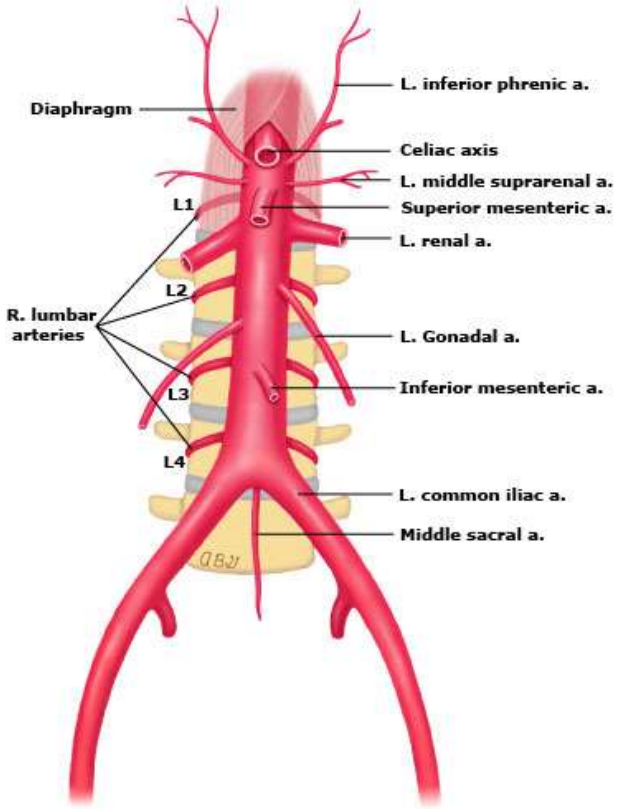


Descending Aorta Branches

- 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



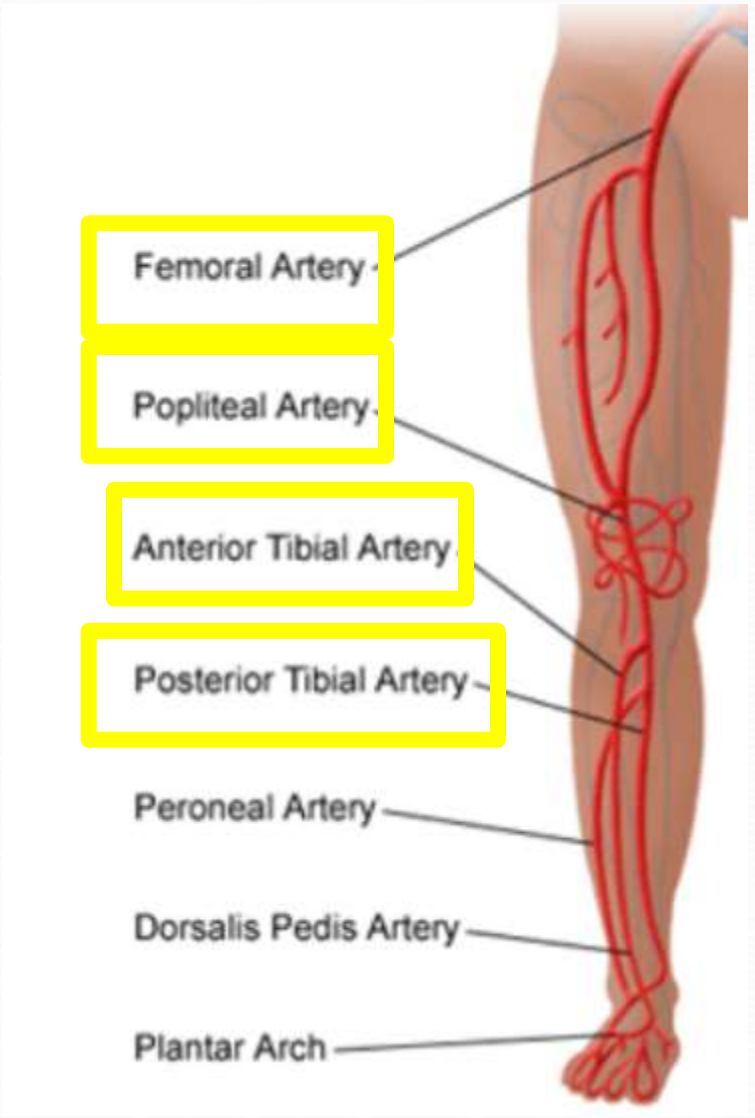
Canned Soup Really Good In Cups



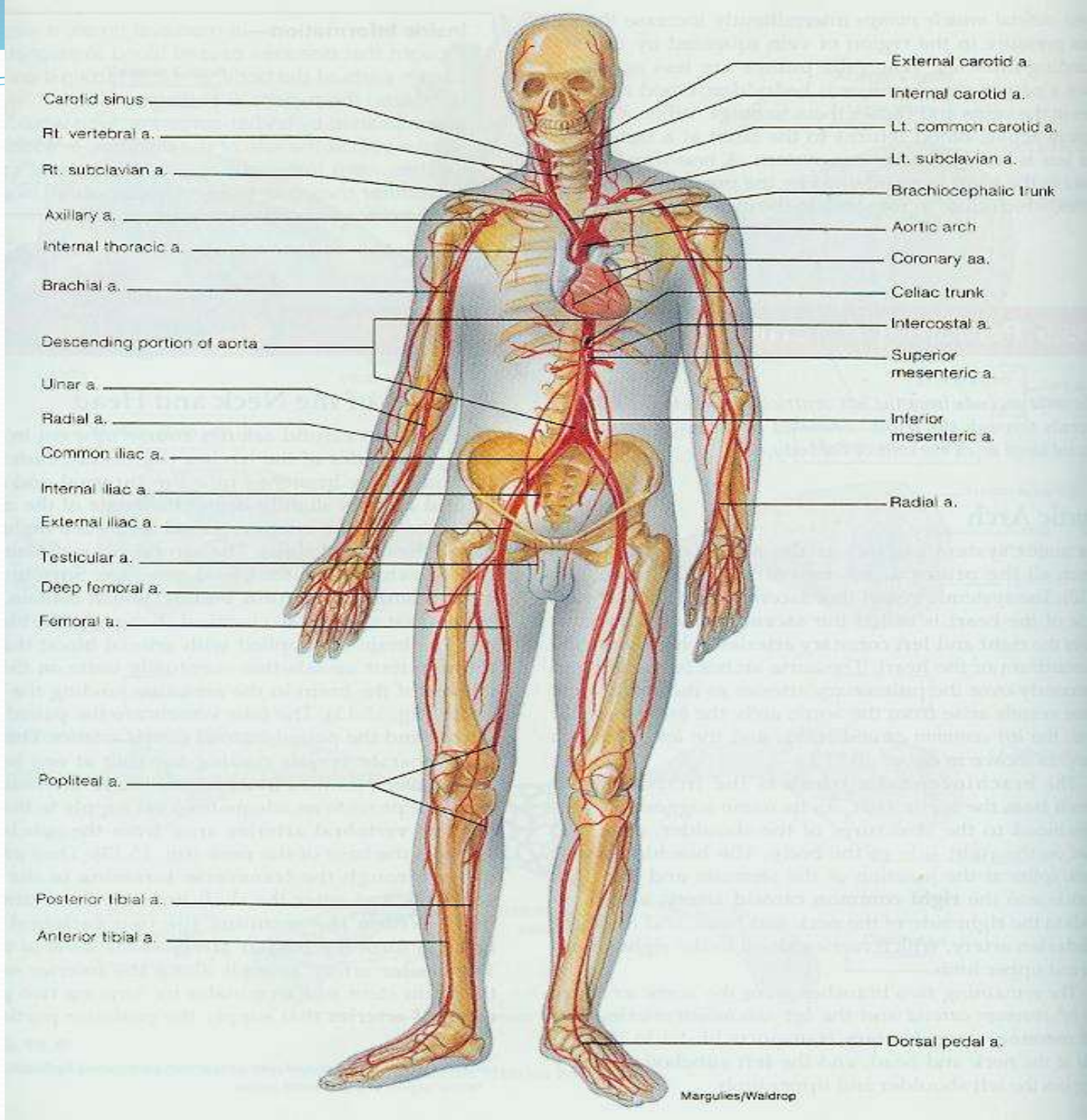
Celiac trunk – just below the diaphragm
Superior mesenteric artery – the guts
Renal arteries – the kidneys
Gonadal arteries – gonads
Inferior mesenteric artery – large intestine
Right & left **C**ommon iliac – divide for legs

Main Leg Arteries

- Femoral artery
- Popliteal artery
- Anterior/Posterior tibial artery
- Fibular artery – Not pictured



The Big Picture

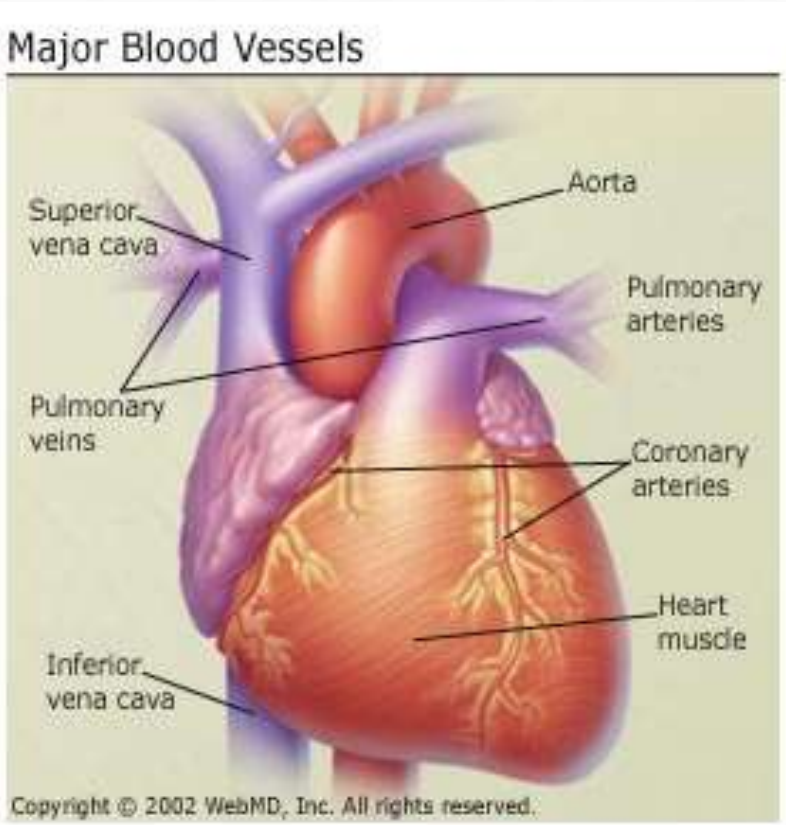


Main Veins

1. Superior Vena Cava
2. Inferior Vena Cava

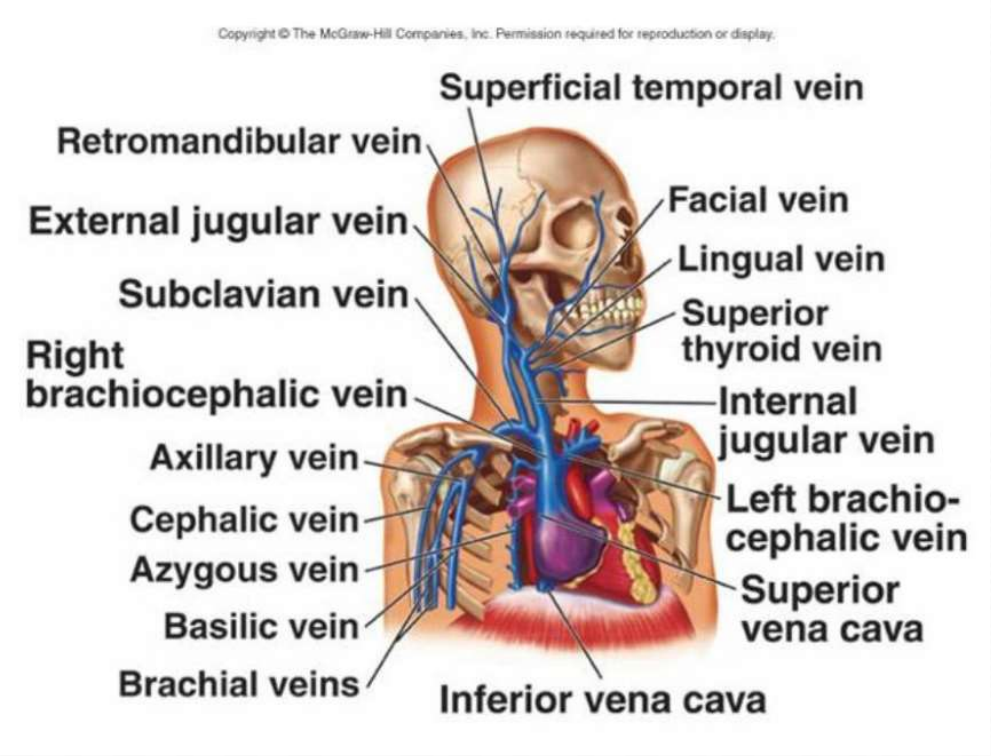
The SVC drains the head and arms…

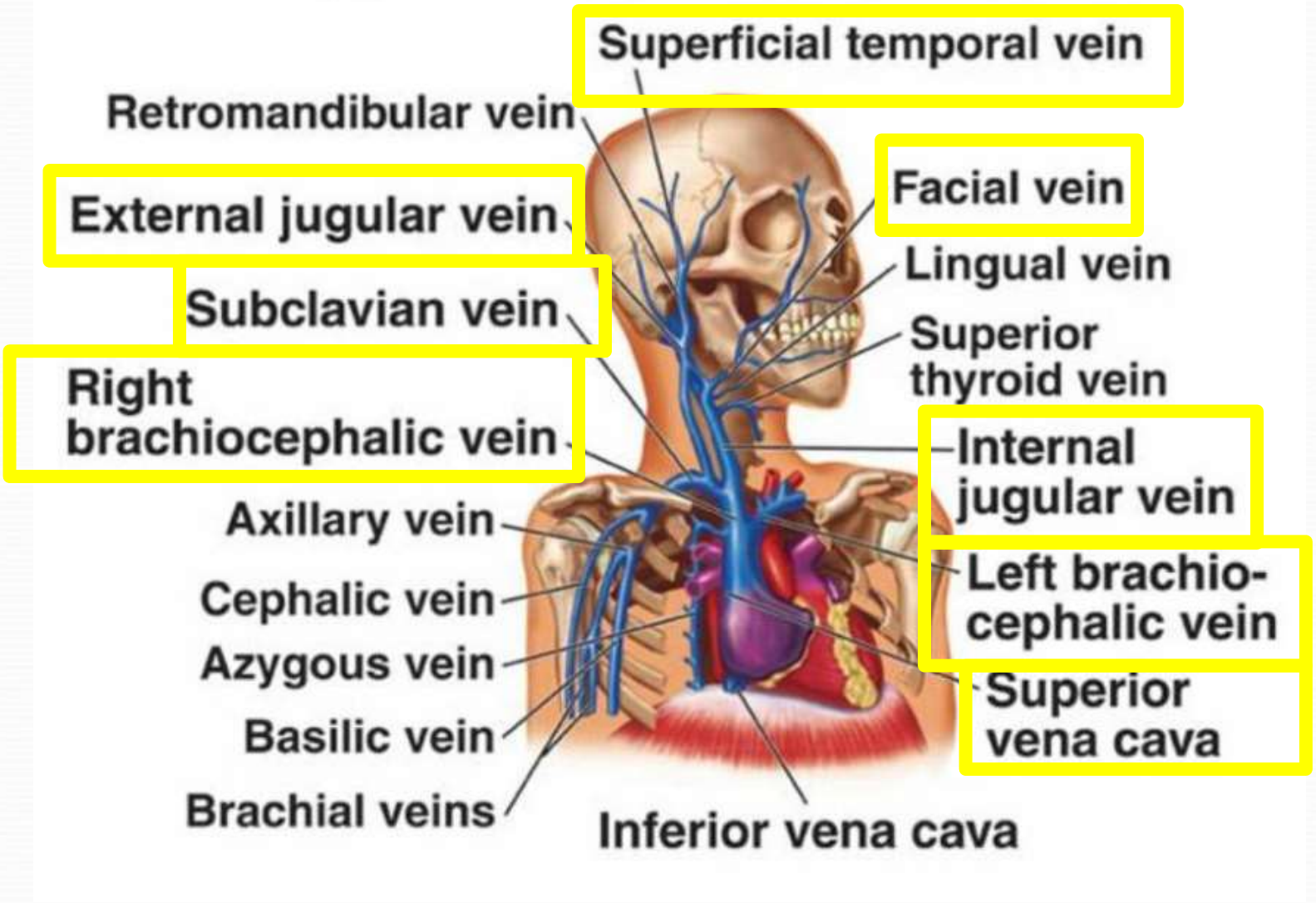
The IVC drains the lower body

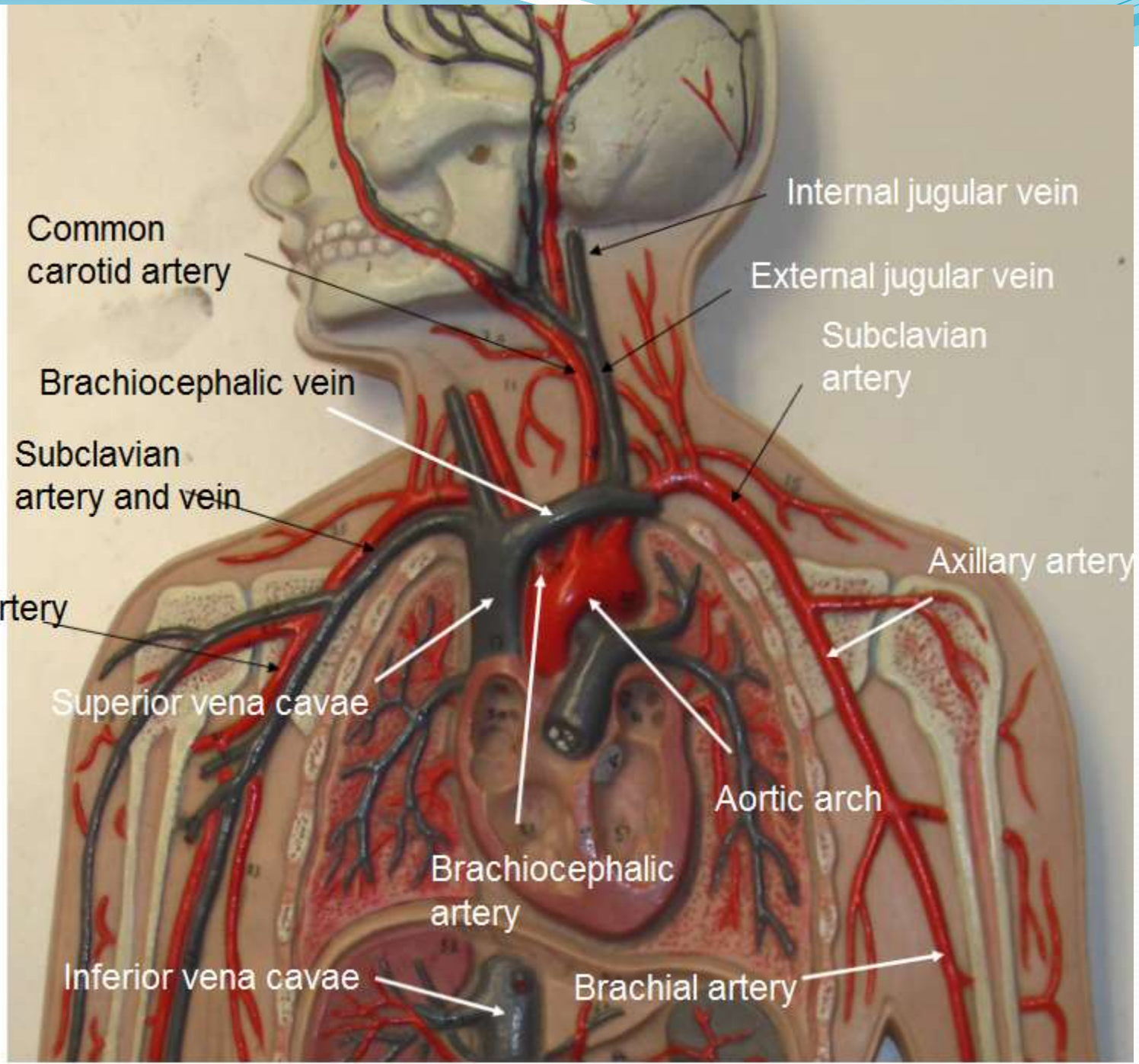


Vein Drain to SVC

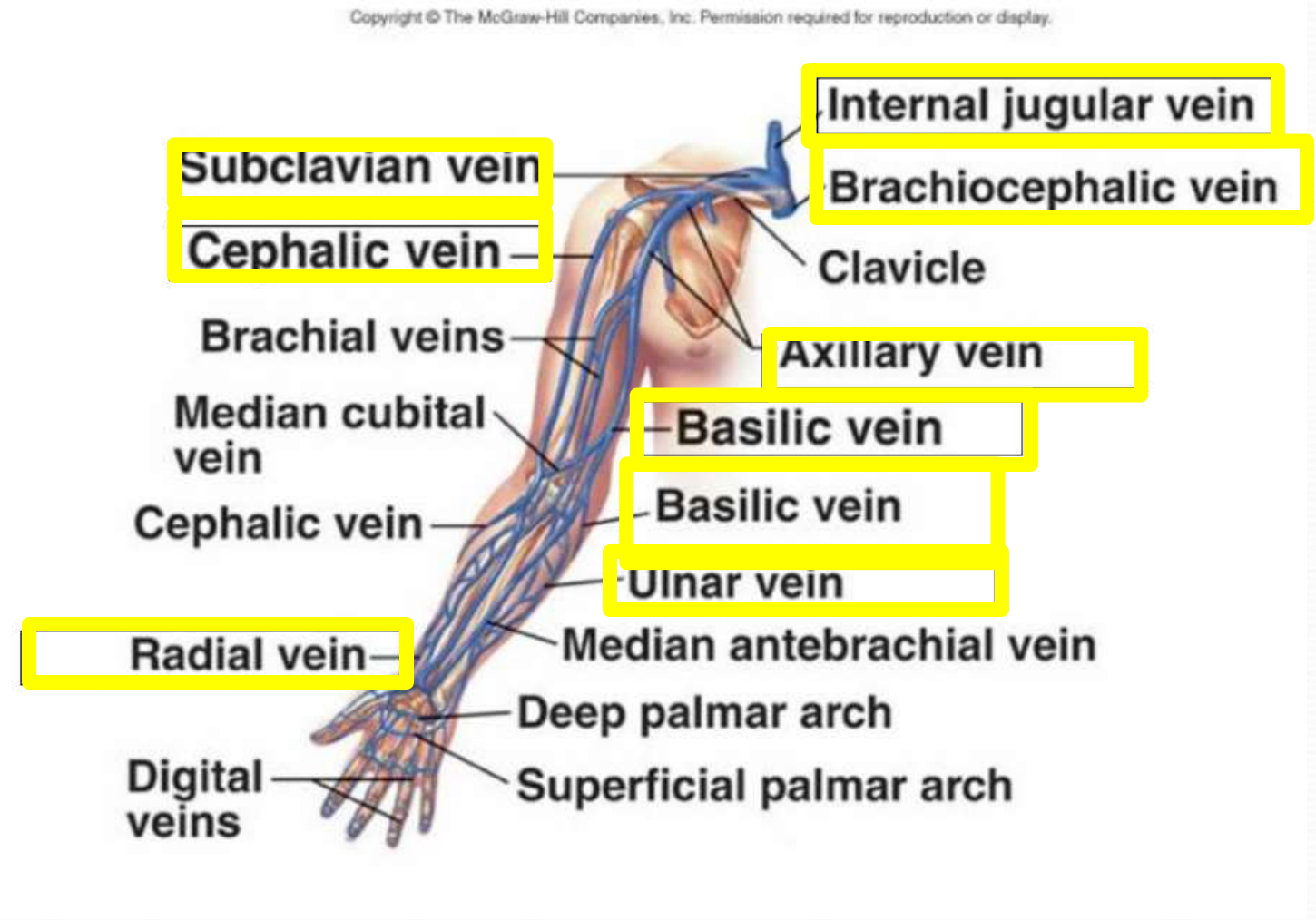
- Right & Left Brachiocephalic Vein
  - Internal Jugular
  - axillary
- Subclavian
  - External Jugular
  - axillary

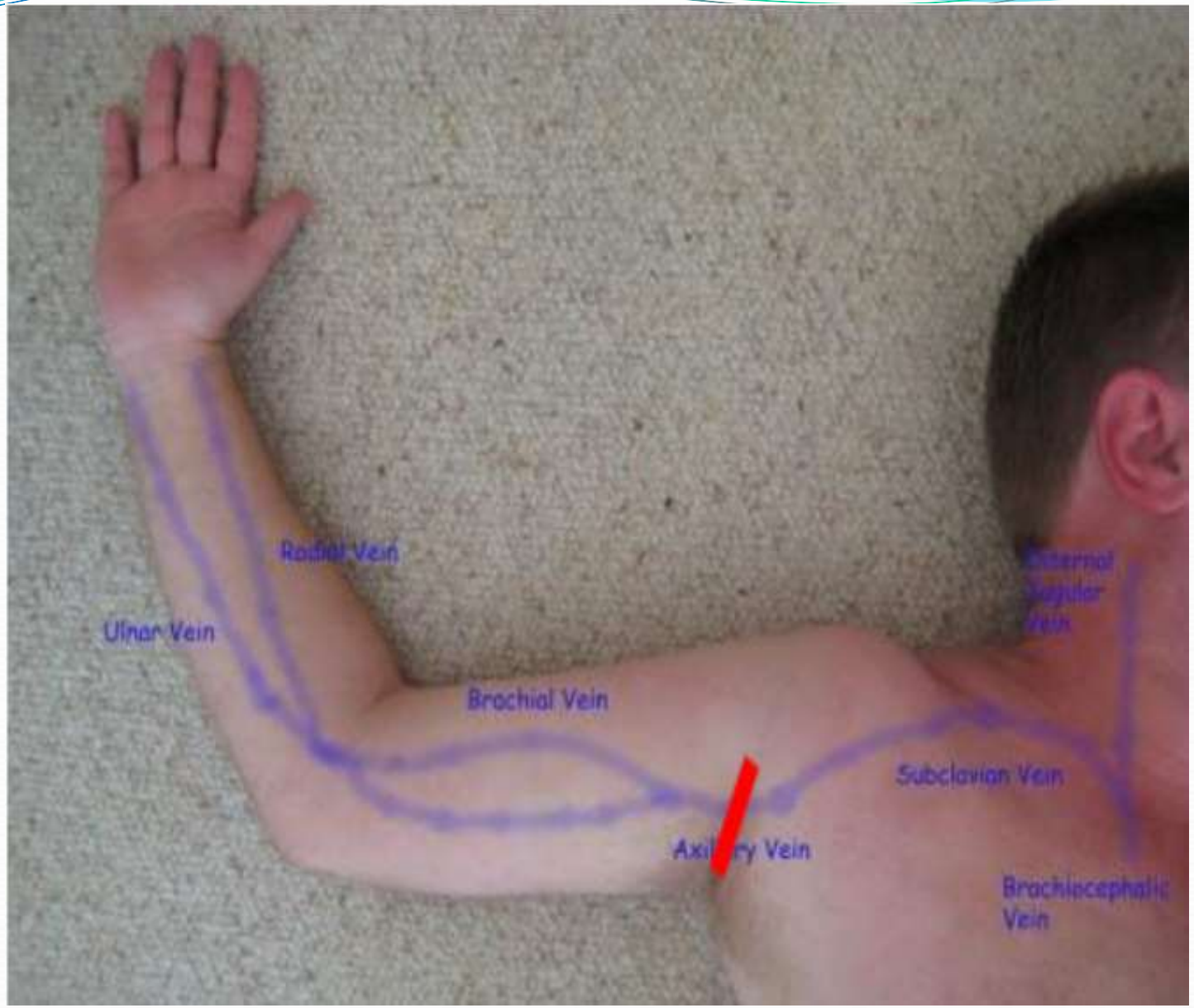




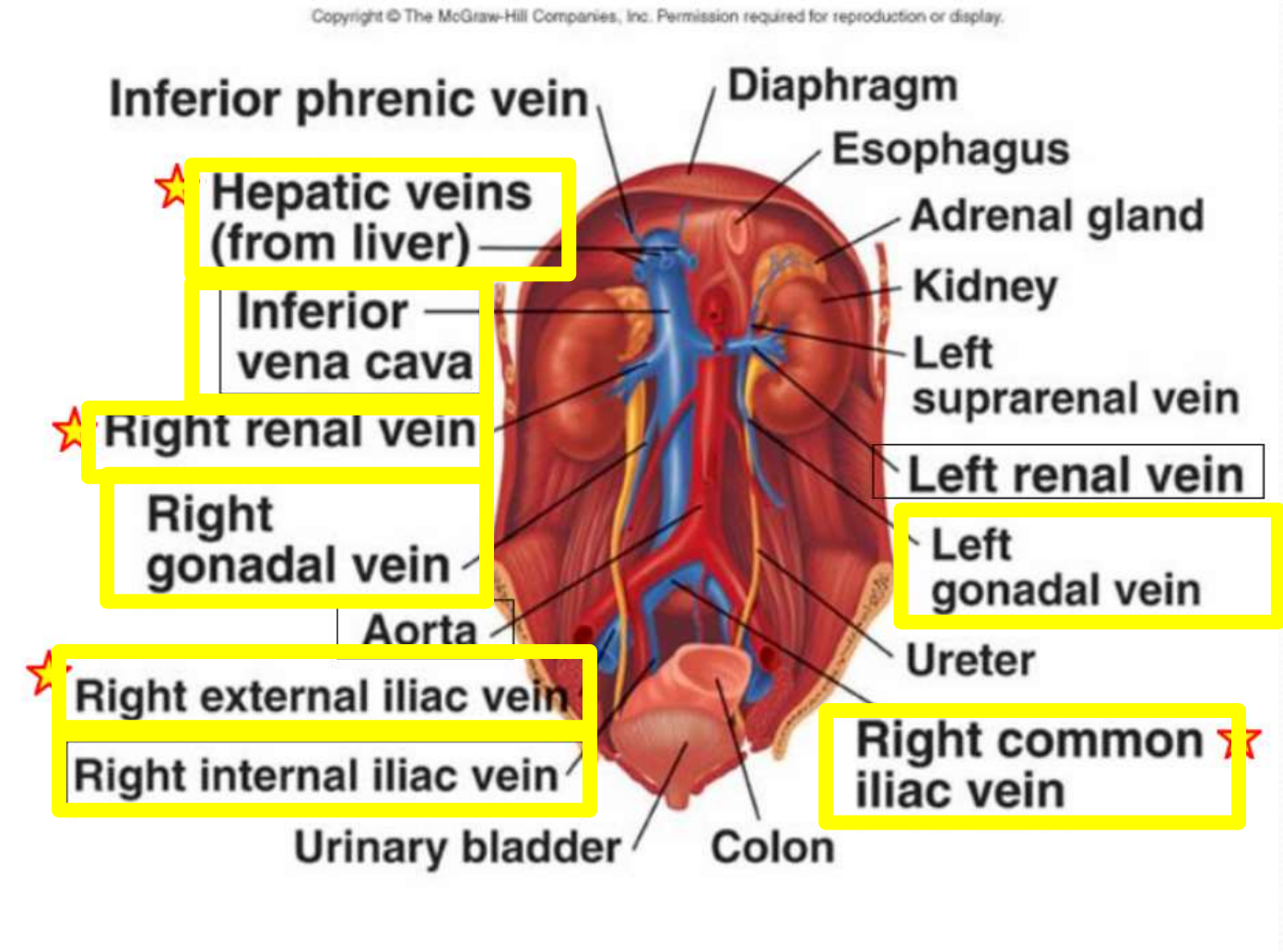

Internal jugular vein
Common carotid artery
External jugular vein
Subclavian artery
Brachiocephalic vein
Subclavian artery and vein
Axillary artery
Axillary artery and vein
Superior vena cavae
Aortic arch
Brachiocephalic artery
Inferior vena cavae
Brachial artery

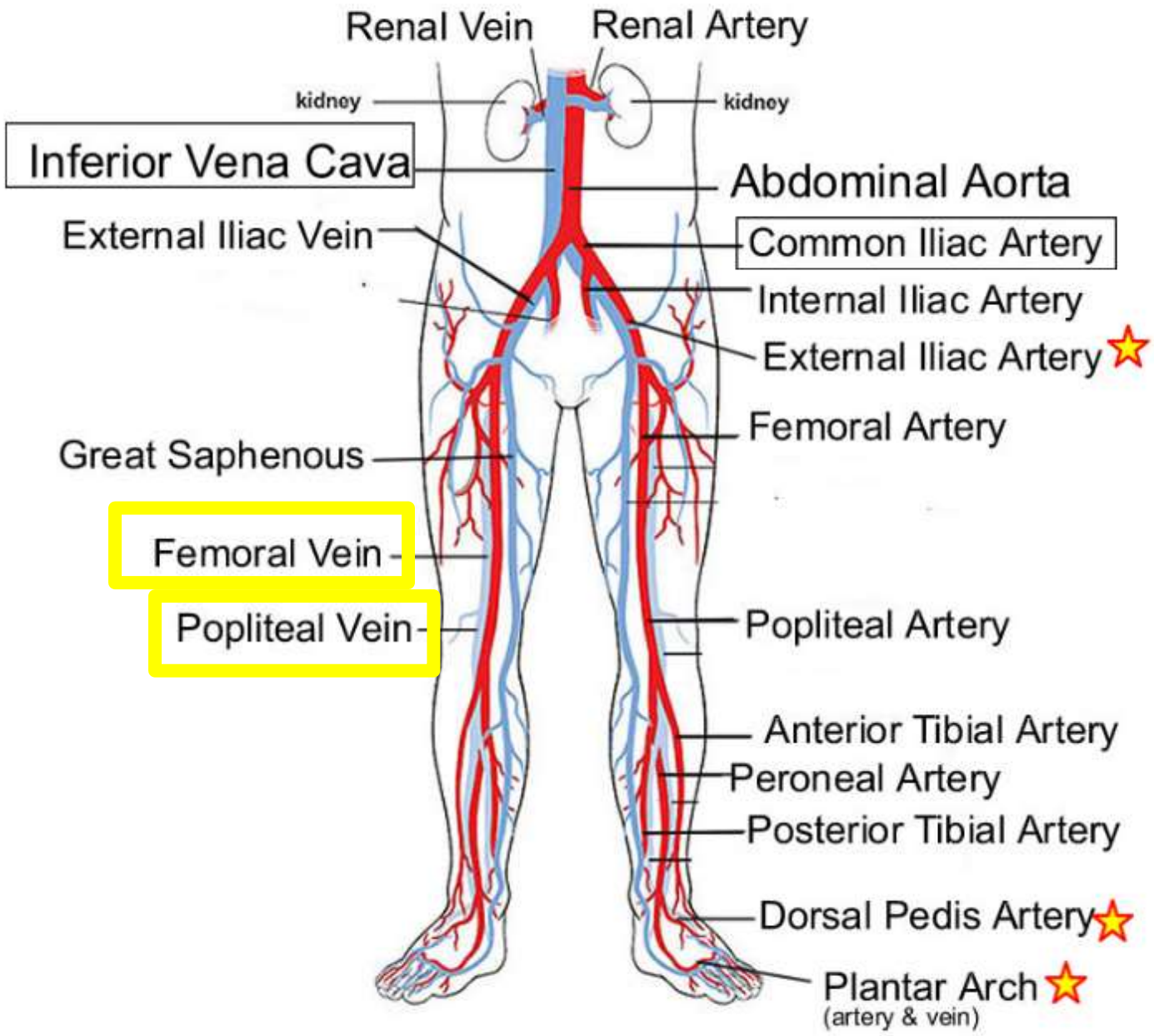
Veins in the Arm

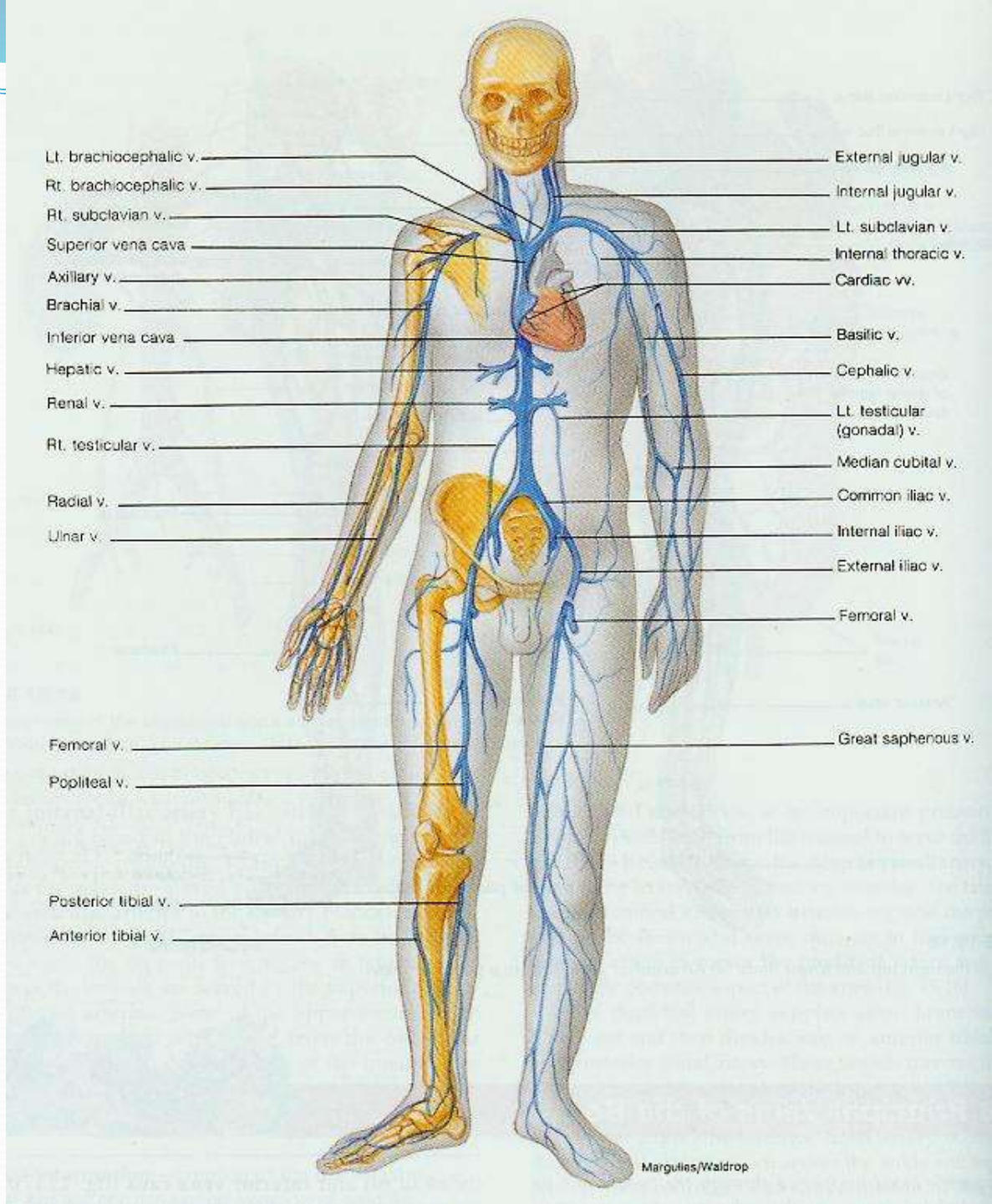



Radial Vein
Ulnar Vein
Brachial Vein
Subclavian Vein
Brachiocephalic Vein

Vein Drain to IVC




Renal Vein
Renal Artery
kidney
kidney
Inferior Vena Cava
Abdominal Aorta
External Iliac Vein
Common Iliac Artery
Internal Iliac Artery
External Iliac Artery
Femoral Artery
Great Saphenous
Femoral Vein
Popliteal Vein
Popliteal Artery
Anterior Tibial Artery
Peroneal Artery
Posterior Tibial Artery
Dorsal Pedis Artery
Plantar Arch
(artery & vein)


Lt. brachiocephalic v.
Rt. brachiocephalic v.
Rt. subclavian v.
Superior vena cava
Axillary v.
Brachial v.
Inferior vena cava
Hepatic v.
Renal v.
Rt. testicular v.
Radial v.
Ulnar v.
Femoral v.
Popliteal v.
Posterior tibial v.
Anterior tibial v.
External jugular v.
Internal jugular v.
Lt. subclavian v.
Internal thoracic v.
Cardiac vv.
Basilic v.
Cephalic v.
Lt. testicular (gonadal) v.
Median cubital v.
Common iliac v.
Internal iliac v.
External iliac v.
Femoral v.
Great saphenous v.
Margulies/Waldrop