

JANTUNG

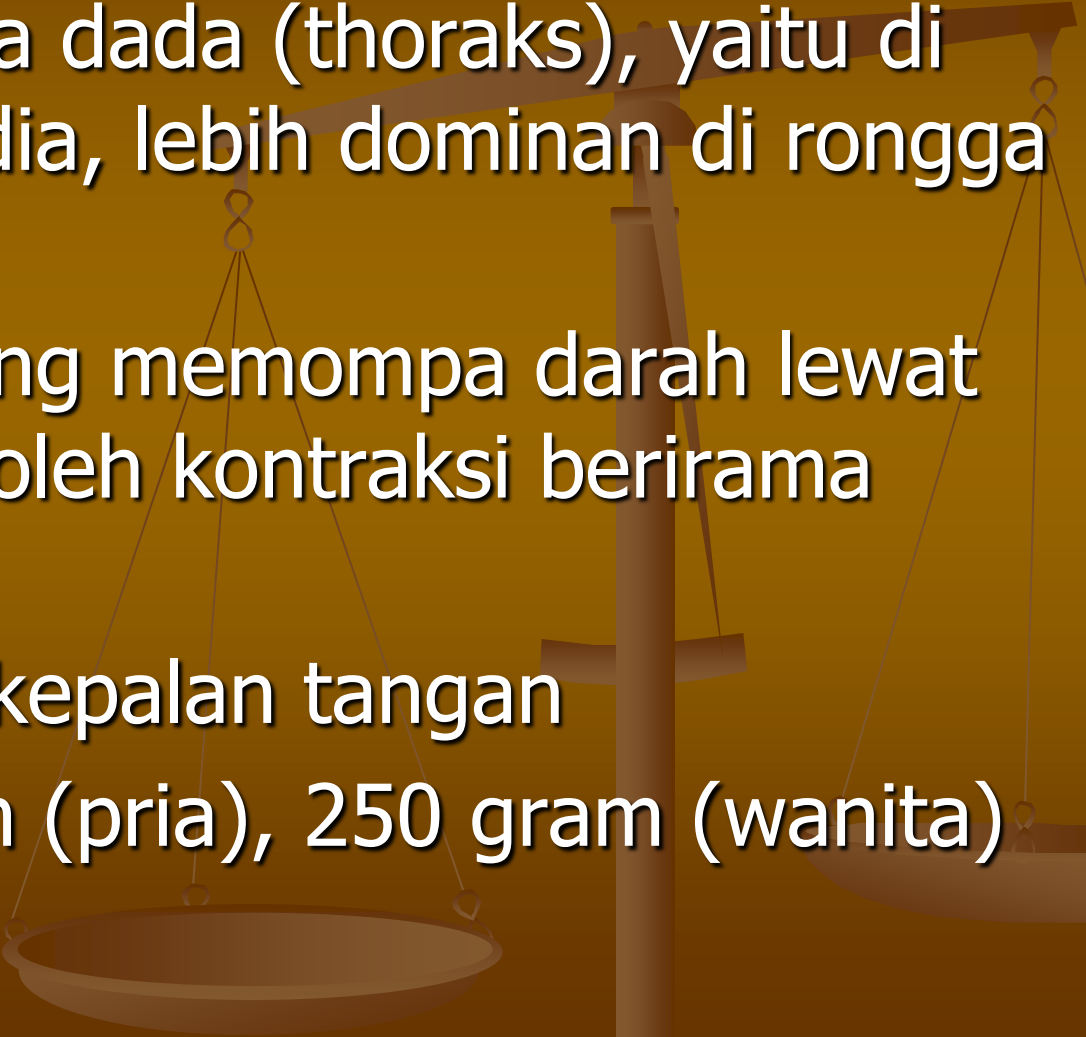


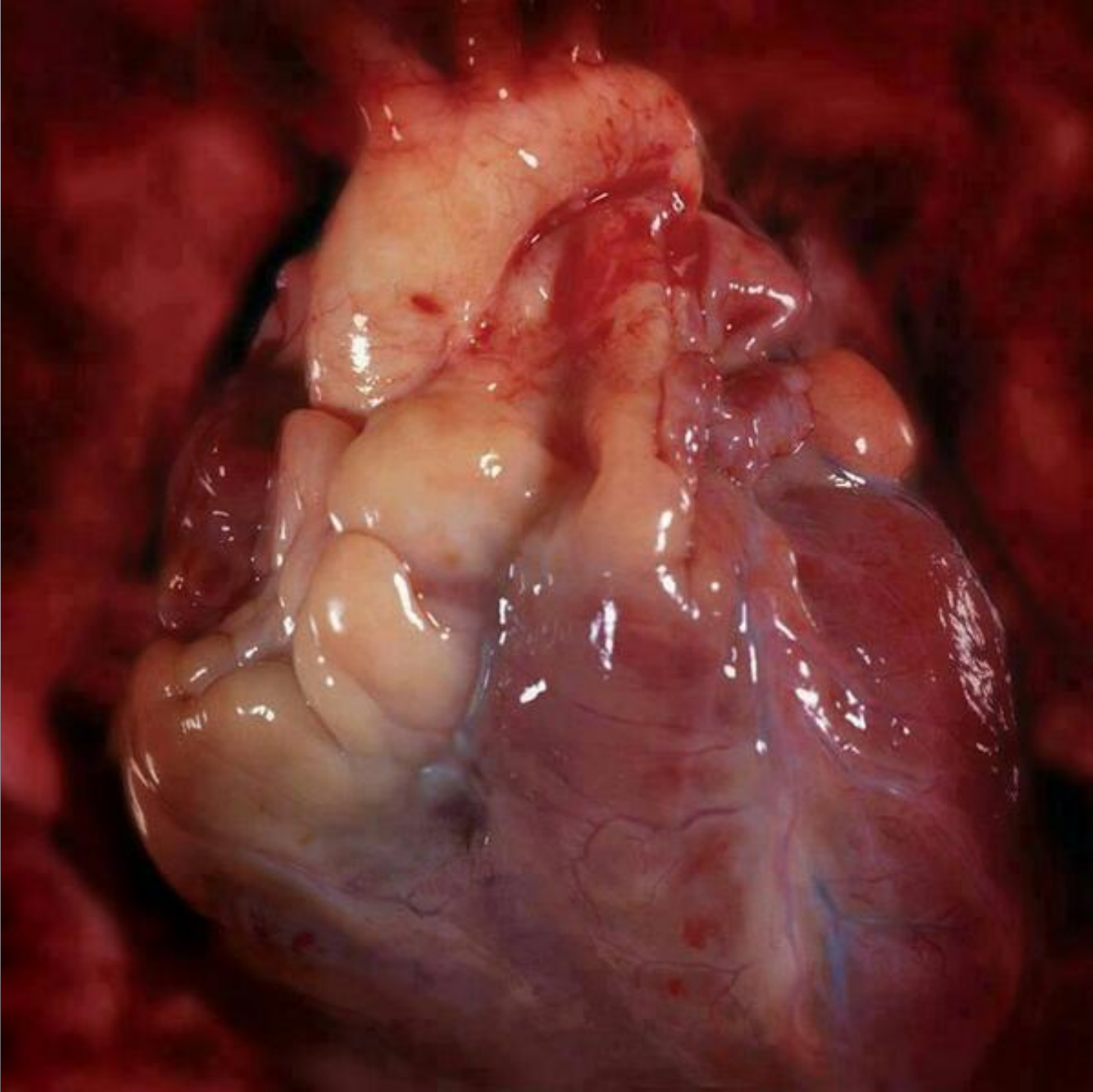
dr. Al-Muqsith, M. Si

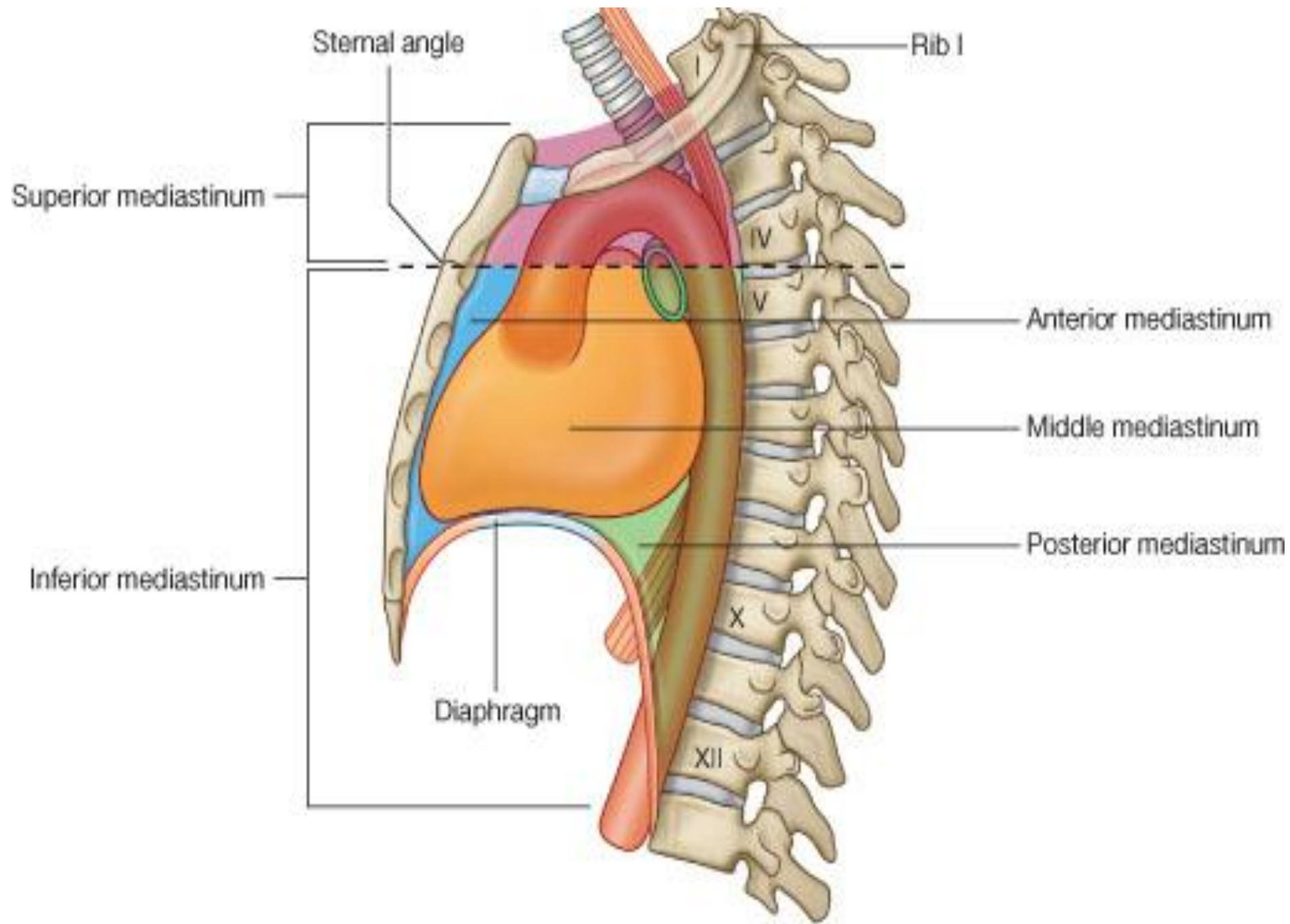
SISTEM SIRKULASI (cardio-vascular)

- Terdiri dari : 1 . Jantung
2 . Pembuluh darah
- Pada VERTEBRATA :
Merupakan sistem tertutup :
Jantung (pemompa) → Arteri (membawa darah dari jantung ke kapiler dan jaringan)
→ Vena(mengembalikan darah ke jantung)
- Kapiler : anyaman pembuluh darah terkecil

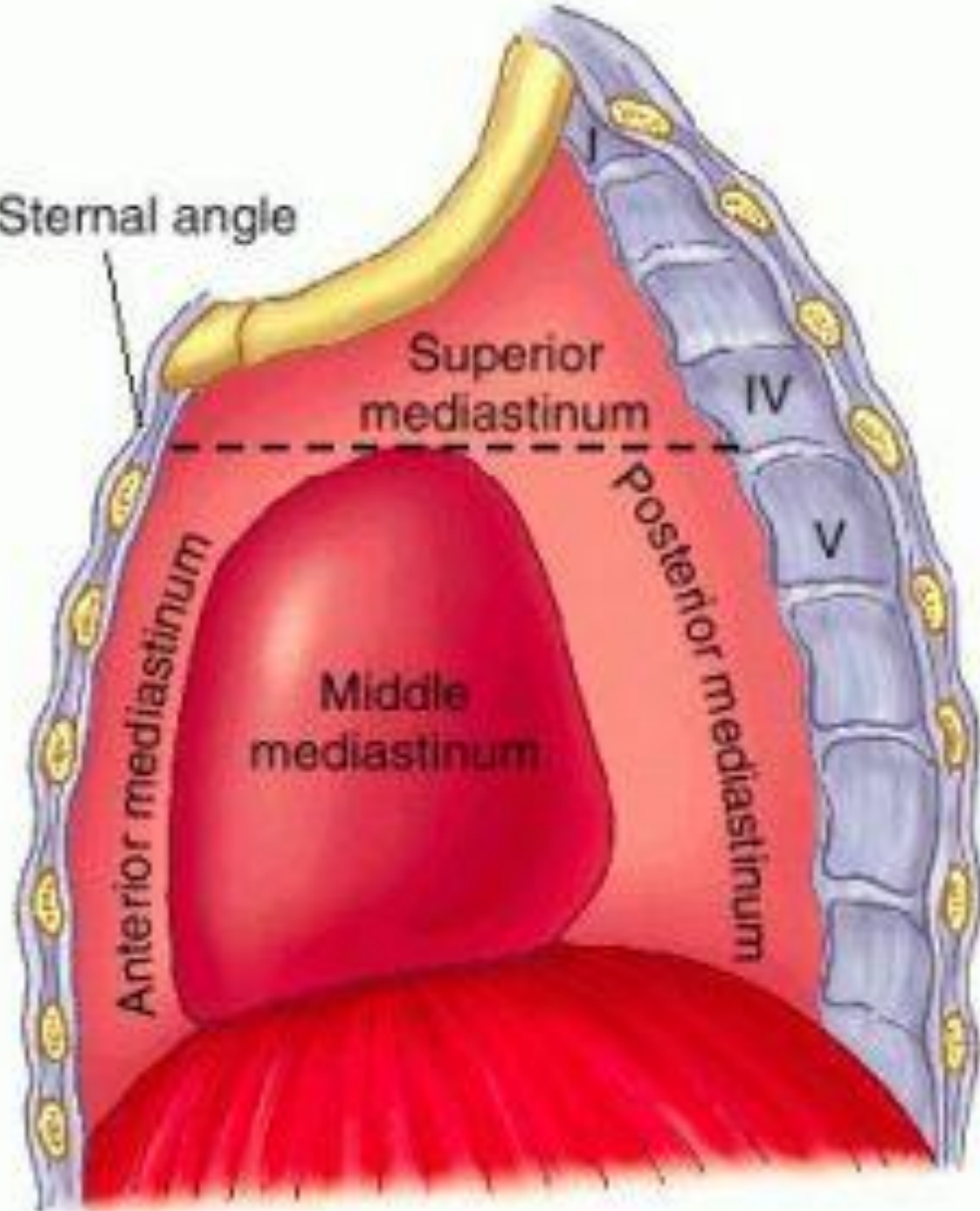
jantung

- Cor, Heart
 - Terletak di rongga dada (thoraks), yaitu di mediastinum media, lebih dominan di rongga dada sebelah kiri
 - Organ berotot yang memompa darah lewat pembuluh darah oleh kontraksi berirama yang berulang
 - Ukuran: sebesar kepalan tangan
 - Berat: 300 gram (pria), 250 gram (wanita)
- 





Sternal angle



MEDIASTINUM

■ Mediastinum Superior

A. Origo M.sternohyoid & M.sternothyroid

B. Thymus

C. Saluran-saluran:

1. Arteriae:

- Arcus aorta
- A. Brachiocephalica
- A. Carotis communis sin.
- A. Subclavia sin.

3. ductus thoracicus

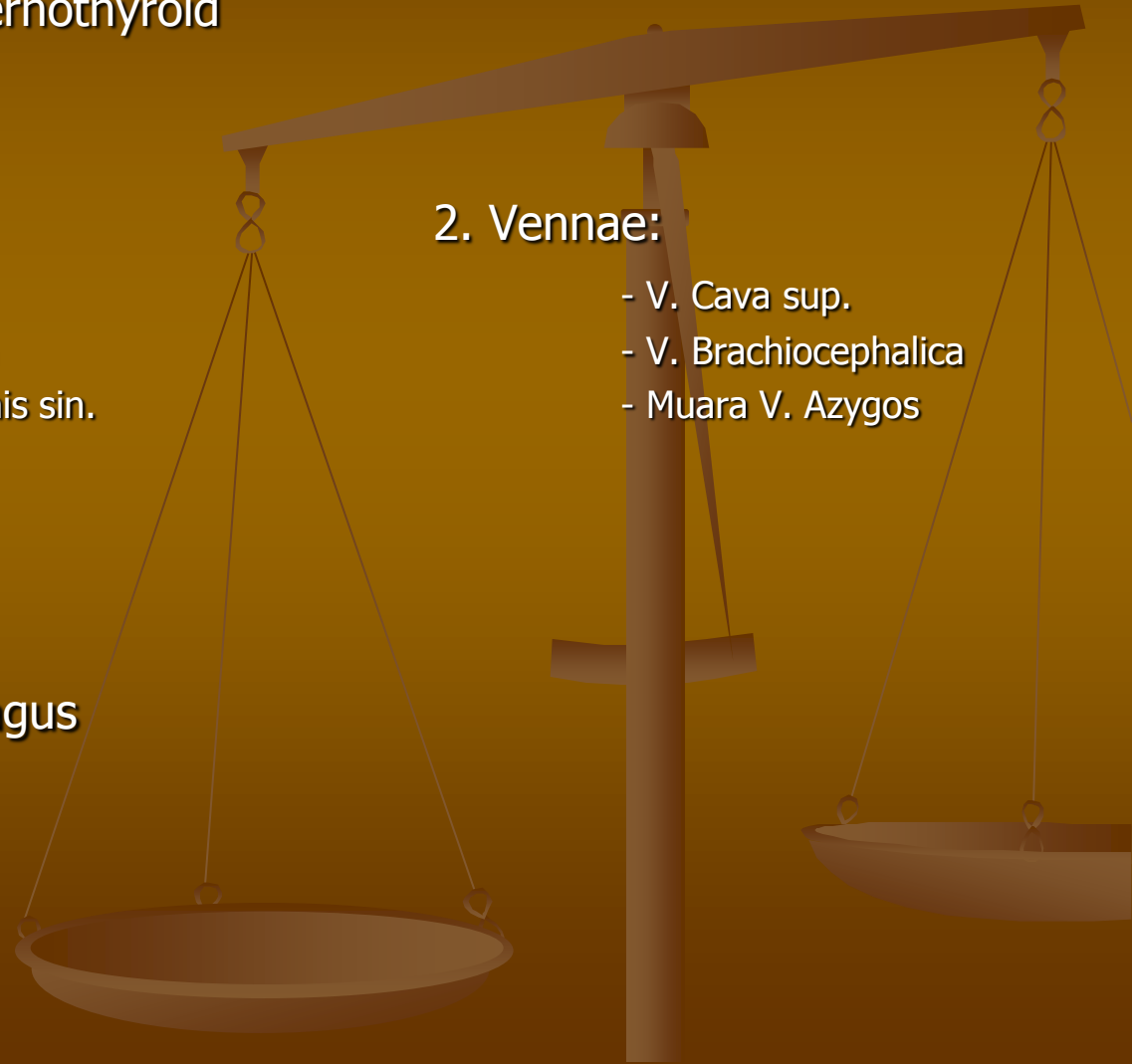
D. Viscera: Trachea & Oesophagus

E. Nervi:

- Nervi vagi dex. et sin.
- Plexus cardiacus
- Nerves recurrens sin.
- Nervi phrenici dex. et sin.

2. Vennae:

- V. Cava sup.
- V. Brachiocephalica
- Muara V. Azygos



MEDIASTINUM

■ Mediastinum Inferior

1. Anterior

- Lemak retrosternal
- Jaringan ikat kendur
- pembuluh darah kecil
- saluran lymphhe
- bbrp lymphonodi kecil

2. Media*

3. Posterior*



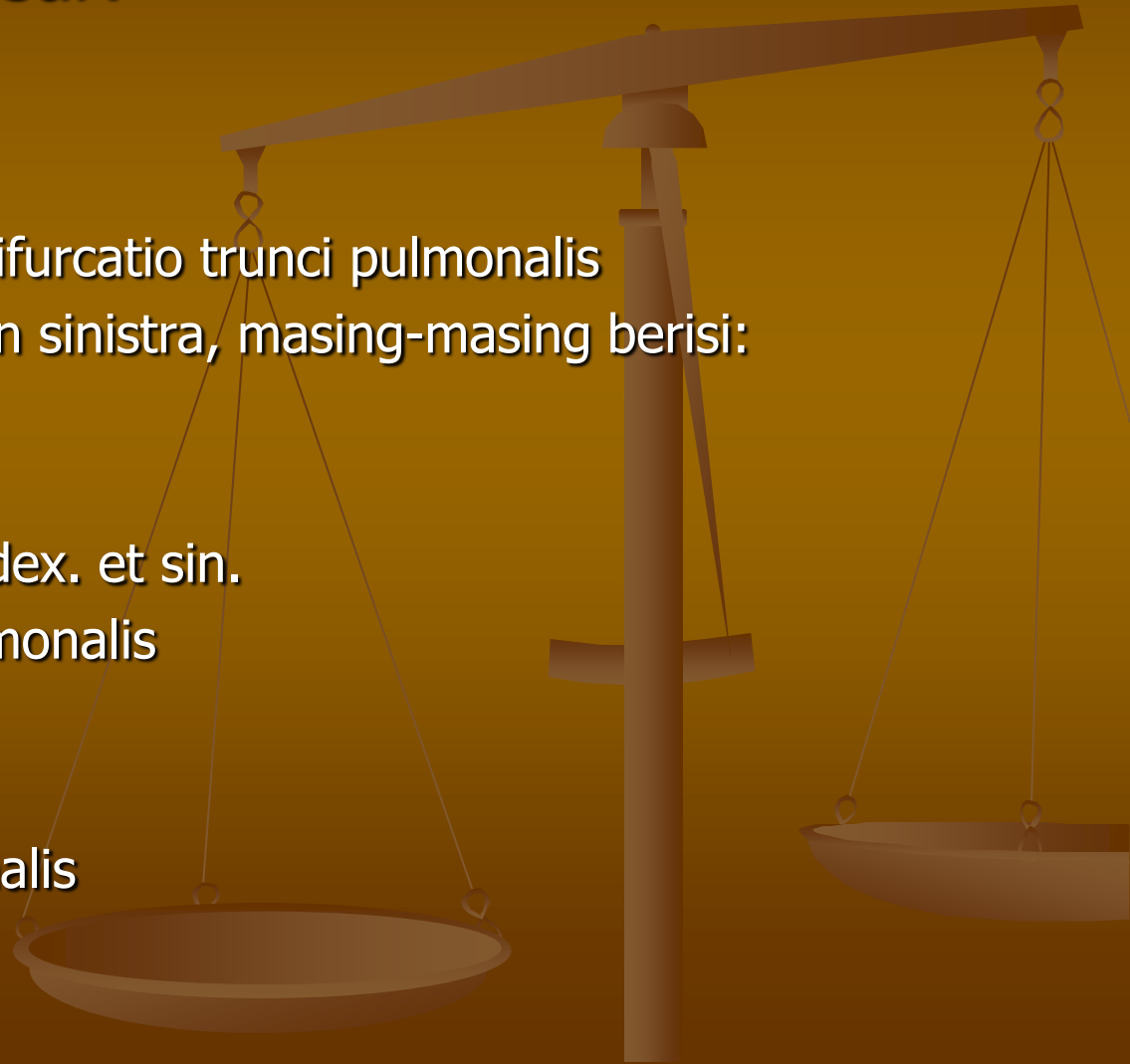
Mediastinum Media

A. Pericardium dan cor

B. Pembuluh darah besar:

- V. Cava sup.
- Aorta ascenden
- Truncus pulmonalis & bifurcatio trunci pulmonalis
- radix pulmonis dextra dan sinistra, masing-masing berisi:
 - + Aa. Pulmonalis
 - + Vv. Pulmonalis
 - + Bronchus primarius dex. et sin.
 - + Plexus nervosus pulmonalis
 - + Aa. Bronchialis
 - + Vv. Bronchialis
 - + Lnn. Bronchopulmonalis

C. Nervi phrenici



Mediastinum Posterior

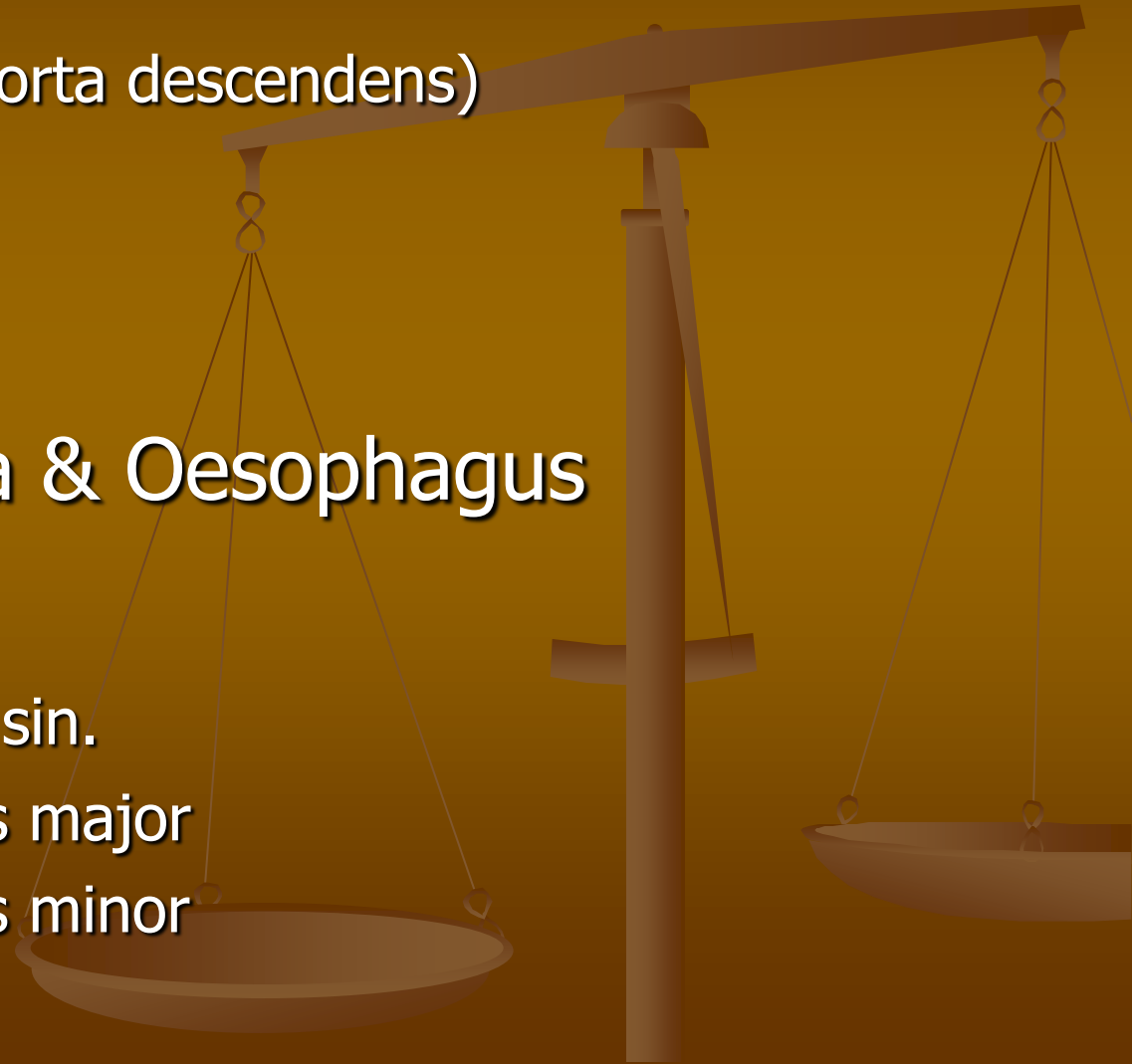
A. Saluran-saluran

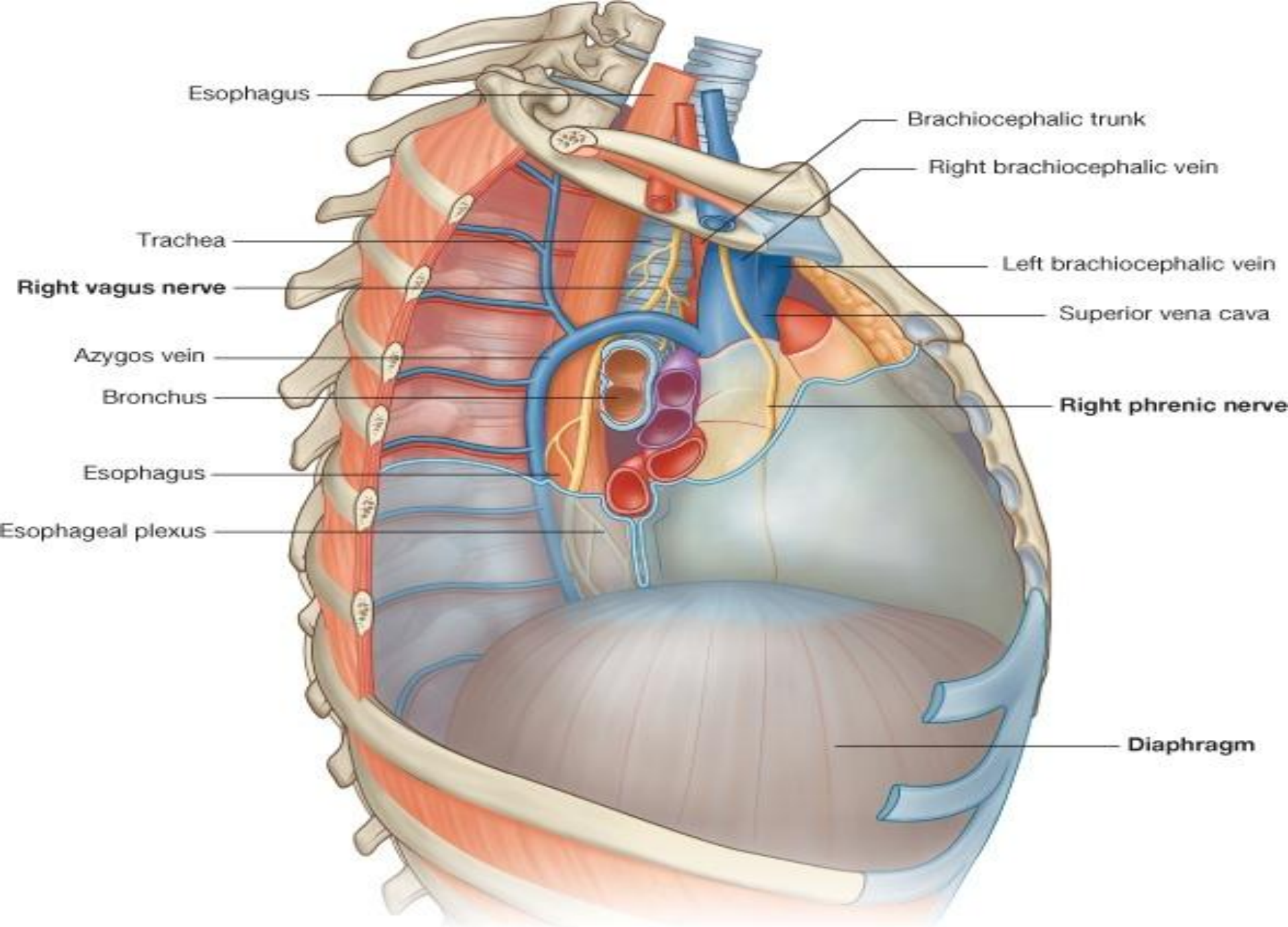
- Aorta thorachalis (Aorta descendens)
- V. Azygos
- V. Hemiazygos
- ductus thoracicus

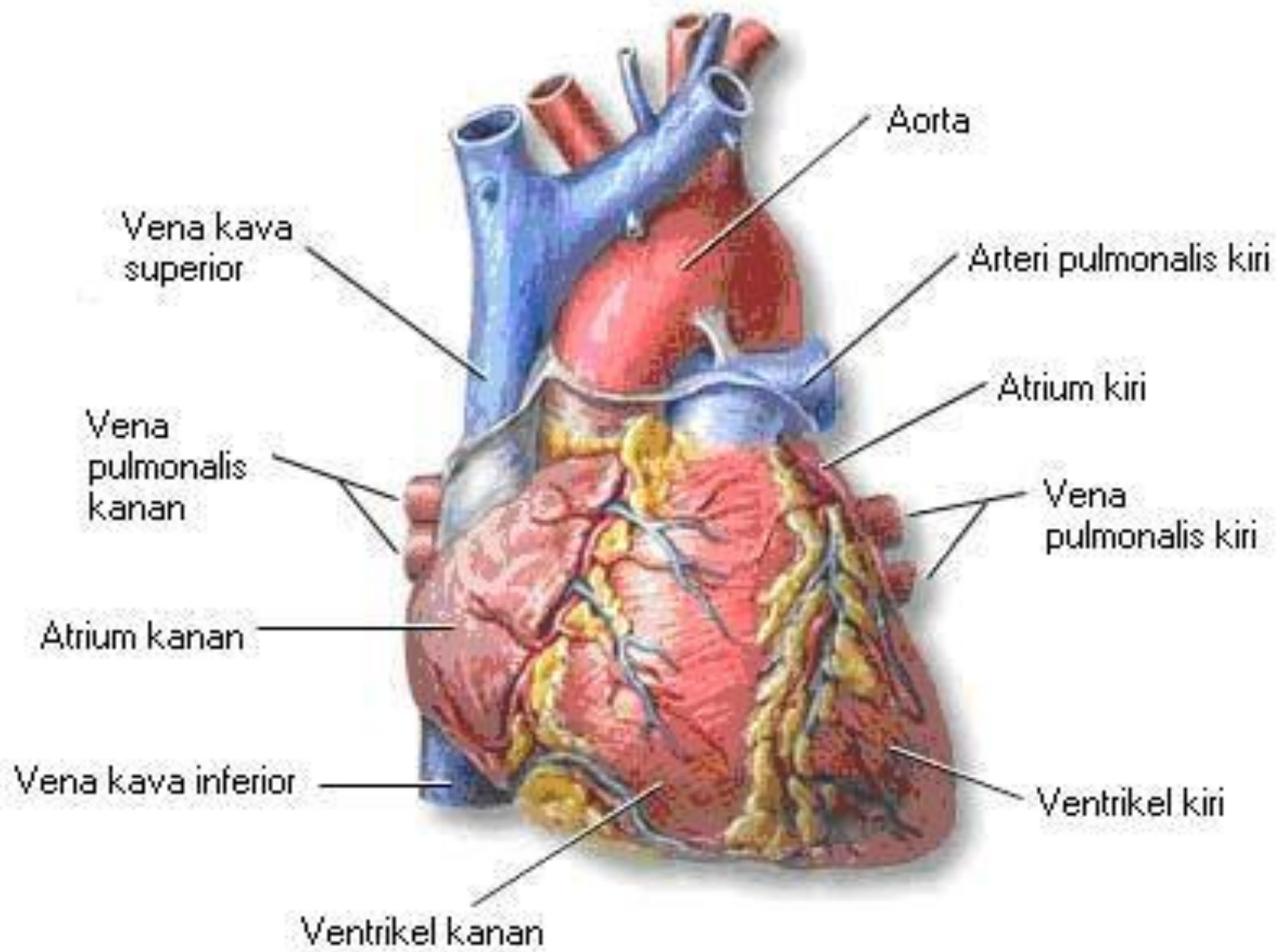
B. Viscera: Trachea & Oesophagus

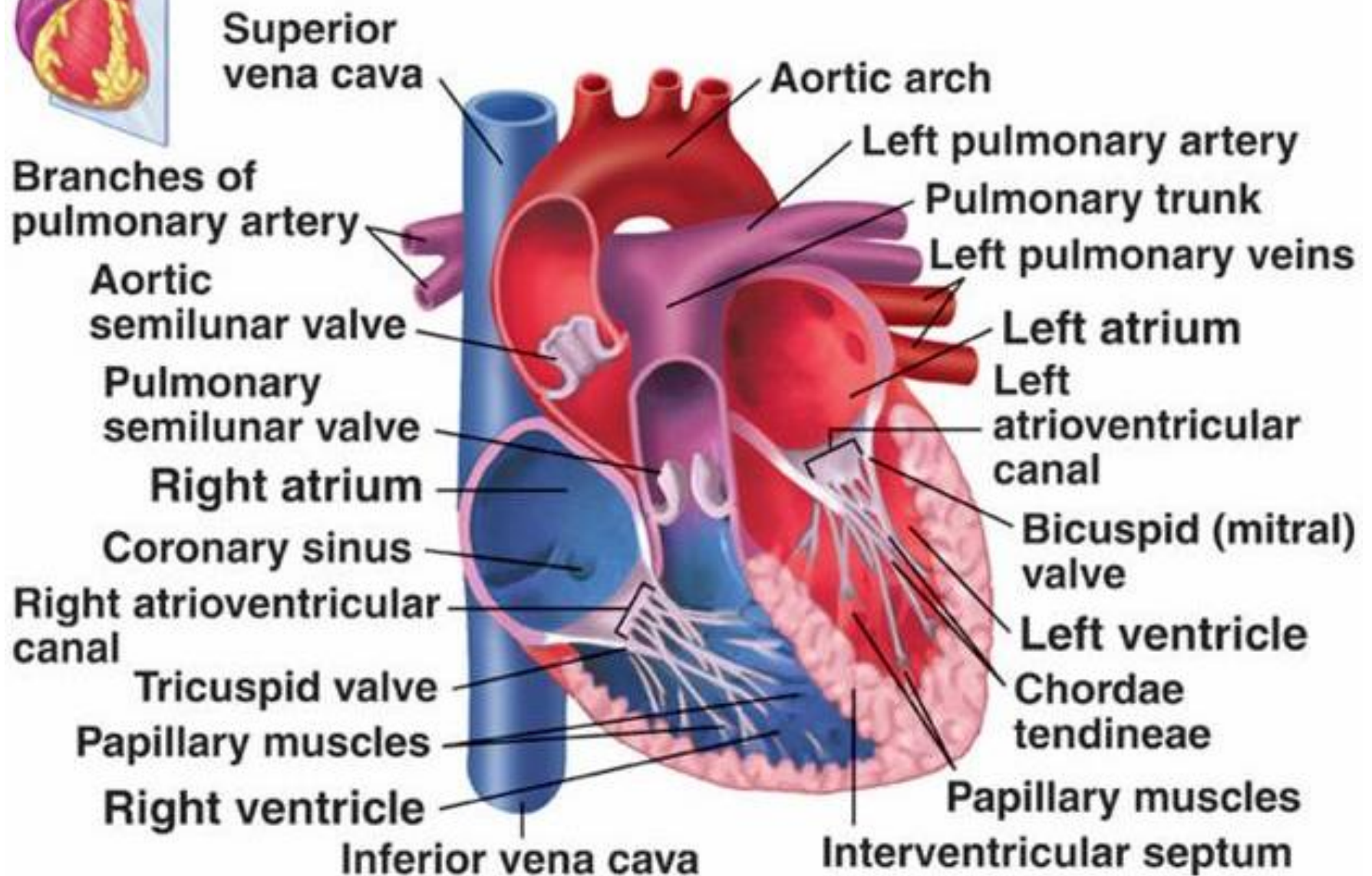
C. Nervi

- Nervi vagus dex. et sin.
- Nervus splanchnicus major
- Nervus splanchnicus minor









Lapisan-lapisan Jantung

- Endocardium
- Miocardium
- Epicardium / Pericardium visceral

Pericardium :

- P. Fibrosum
- P. Serosum

a. P. Parietal

b. P. Visceral / epicardium



cavum pericardii

The diagram consists of two white lines originating from the text 'a. P. Parietal' and 'b. P. Visceral / epicardium'. These lines converge to form a white chevron shape that points towards the text 'cavum pericardii', indicating that the space between these two layers is the pericardial cavity.

Pericardium

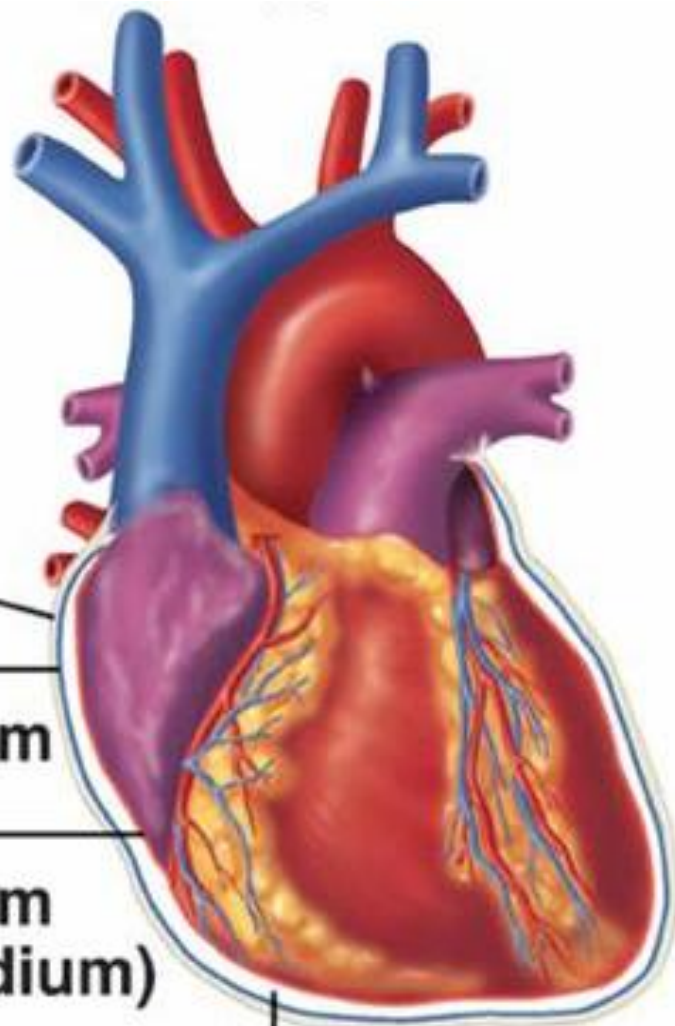
Fibrous pericardium

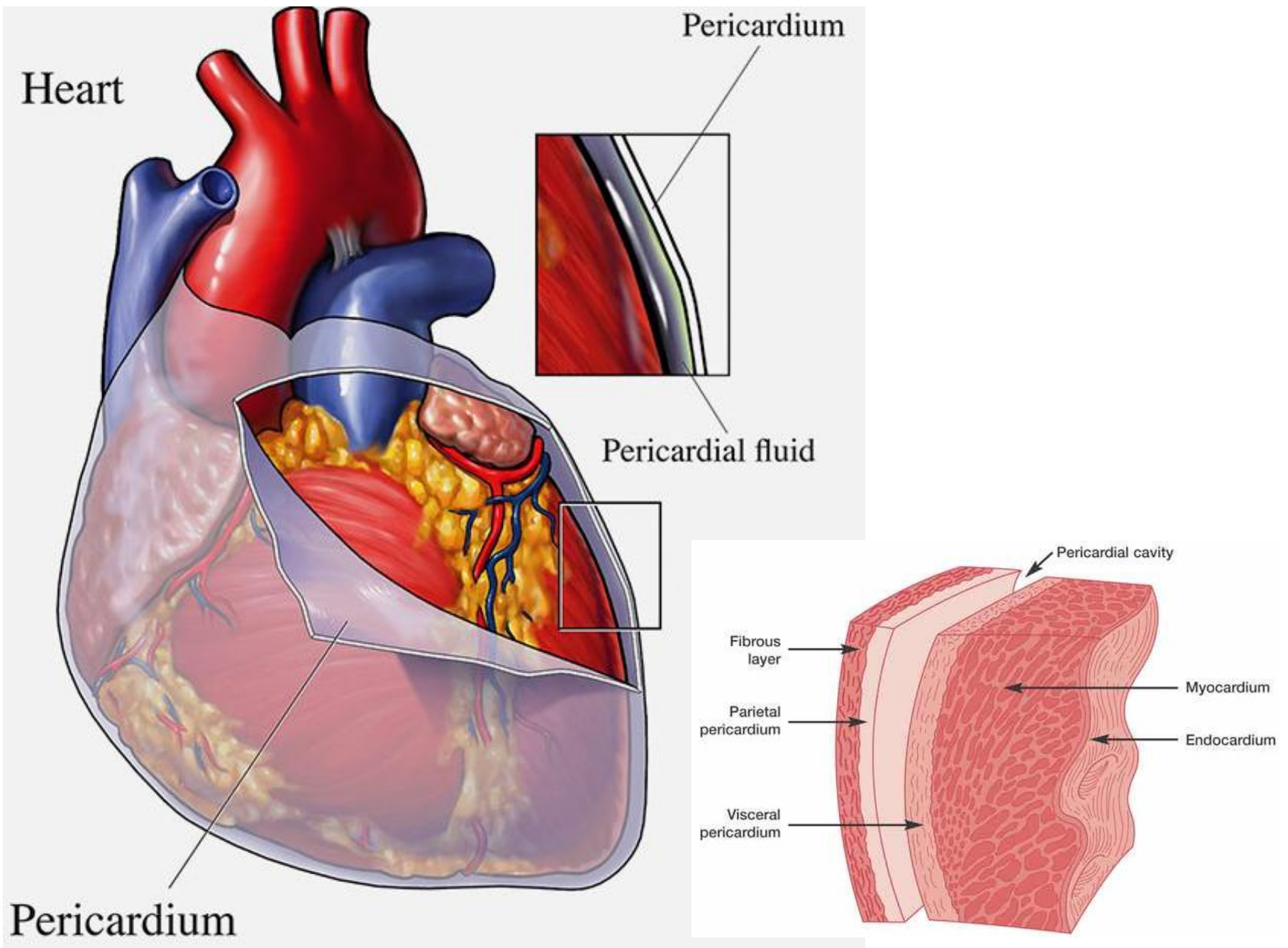
Serous pericardium

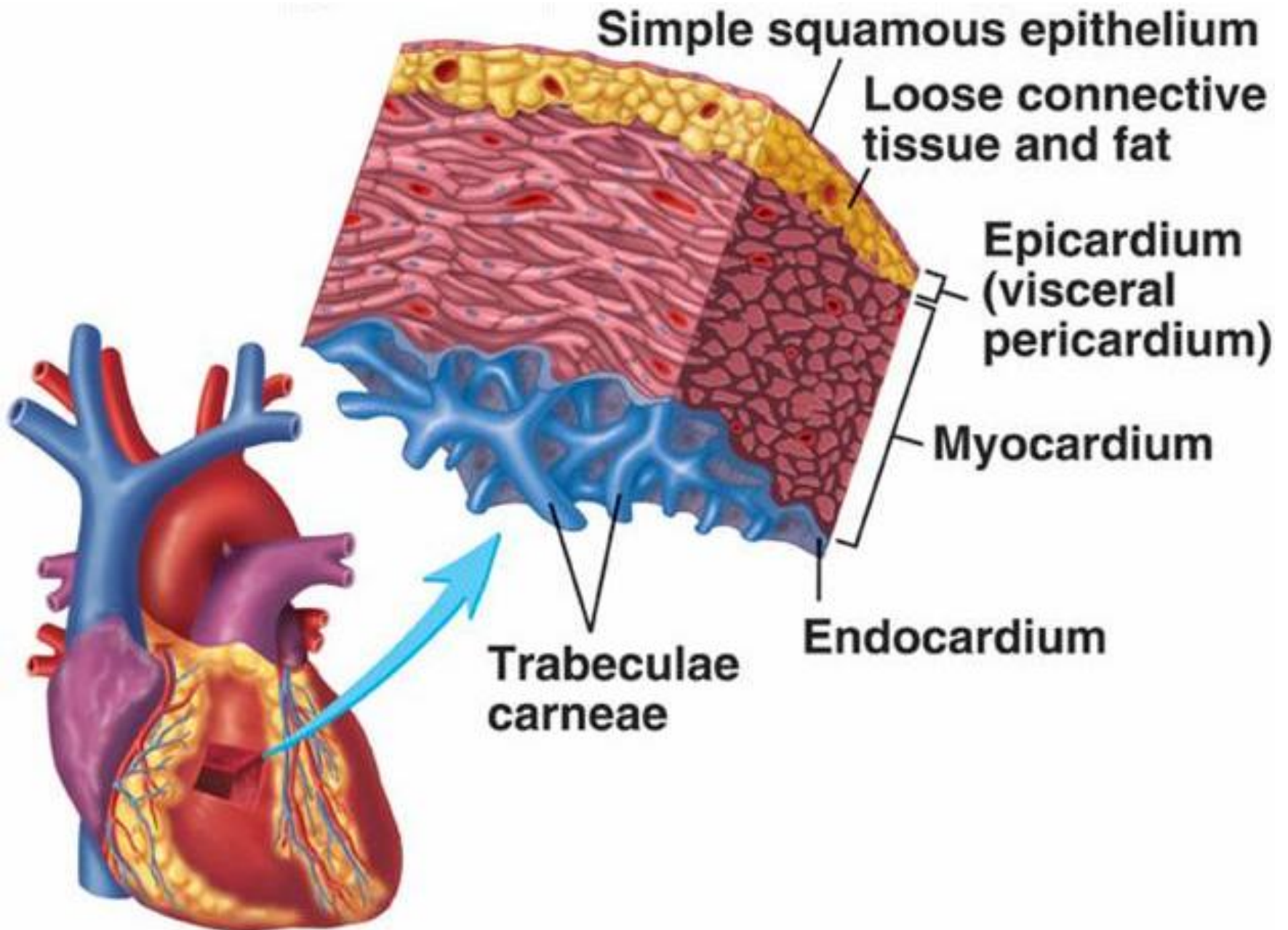
Parietal pericardium

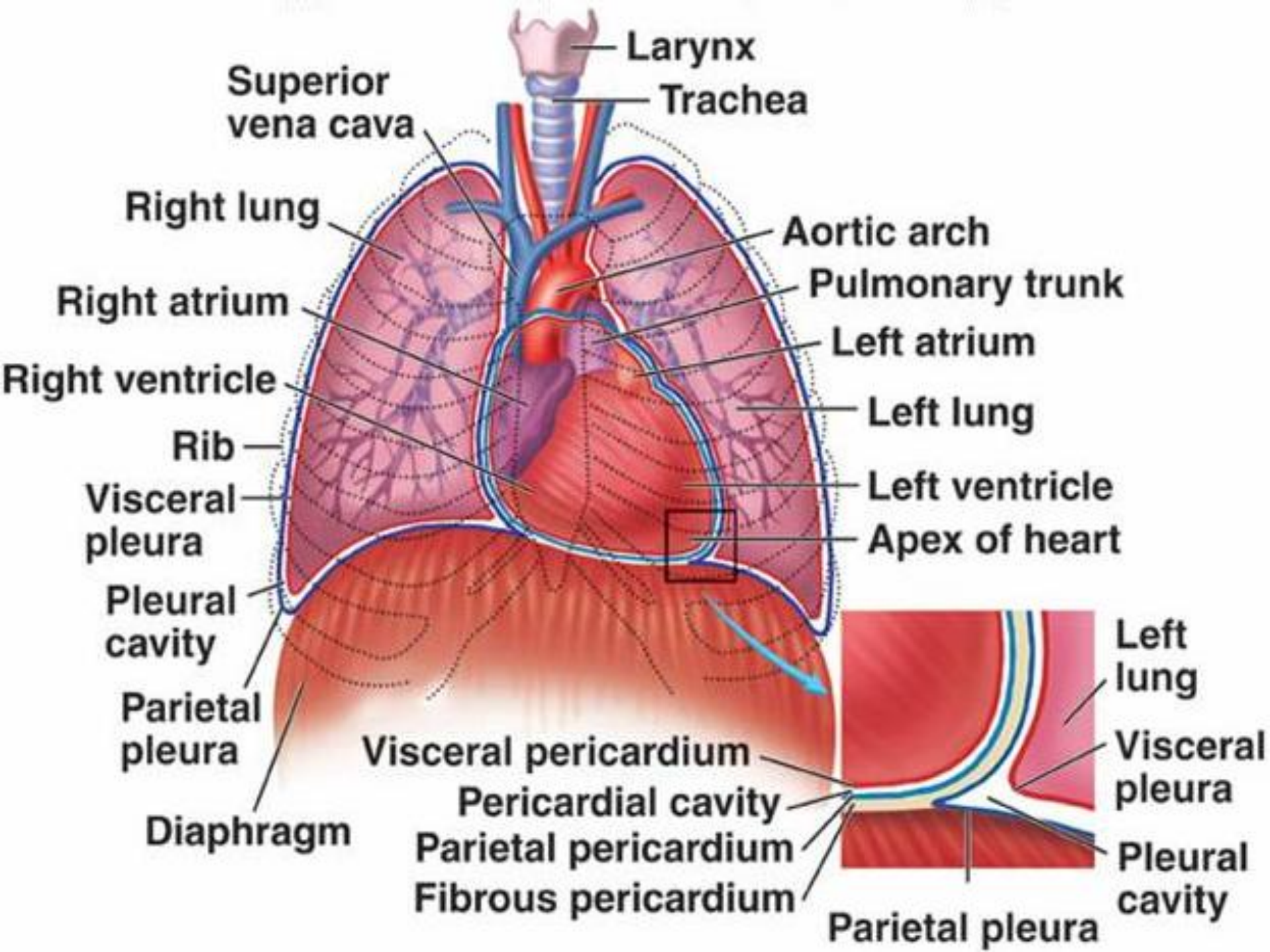
Visceral pericardium
(or epicardium)

Pericardial cavity filled with pericardial fluid









Vascularisasi Pericardium

- Seluruh pericardium:
 - cabang A. Pericardiacophrenica
 - cabang pericardial dari: A. eosophagialis., A. Bronchialis, A. Phrenica sup.

Kecuali:

Epicardium → cabang A. Coronaria

Innervasi Pericardium

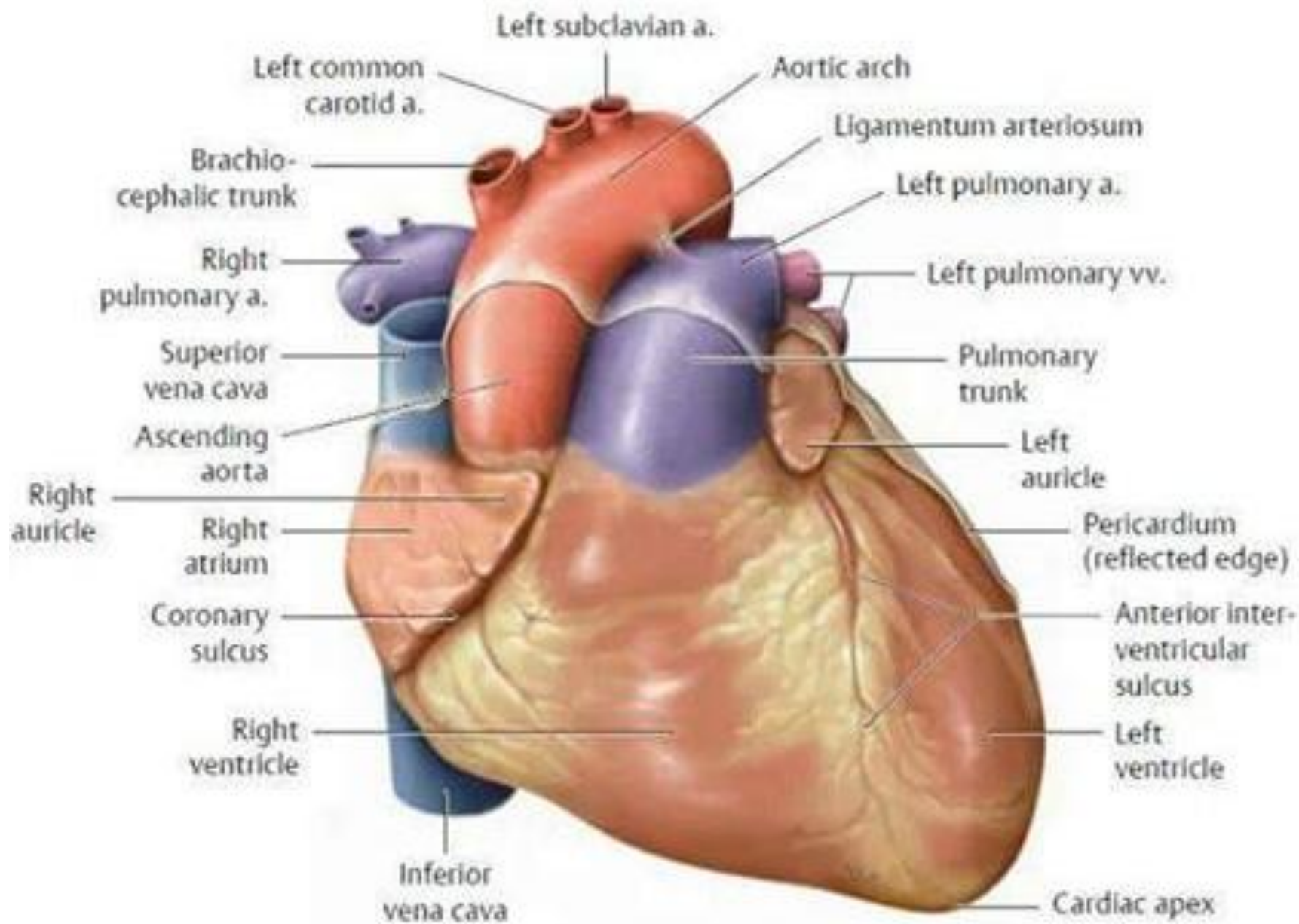
- Seluruh pericardium → serat vasomotor dan sensoris cabang N. Phrenicus

Kecuali:

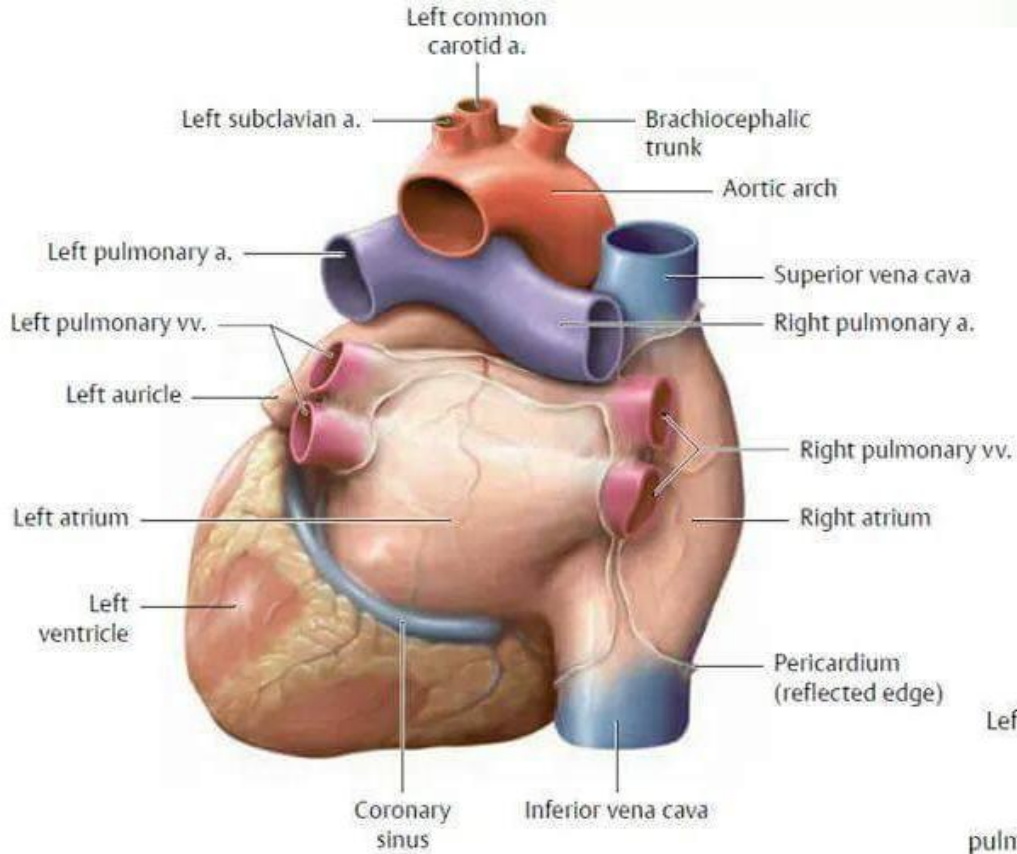
Epicardium → serat vasomotor dan sensoris cabang plexus coronarius

Permukaan Jantung

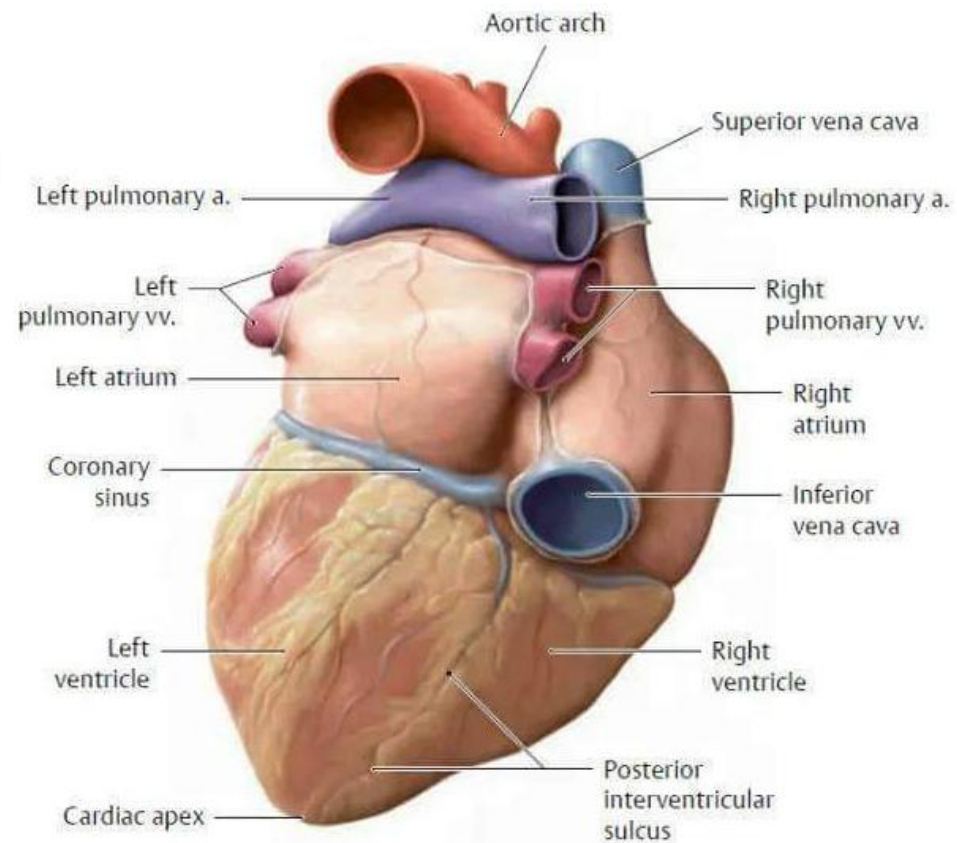
- Apex cordis
- Basis cordis
- Facies anterior (sternocostalis)
- Facies posterior (mediastinalis)
- Facies inferior (diaphragmatica)
- Sulcus coronarius (atrioventricularis)
- Sulcus interventricularis anterior
- Sulcus interventricularis posterior



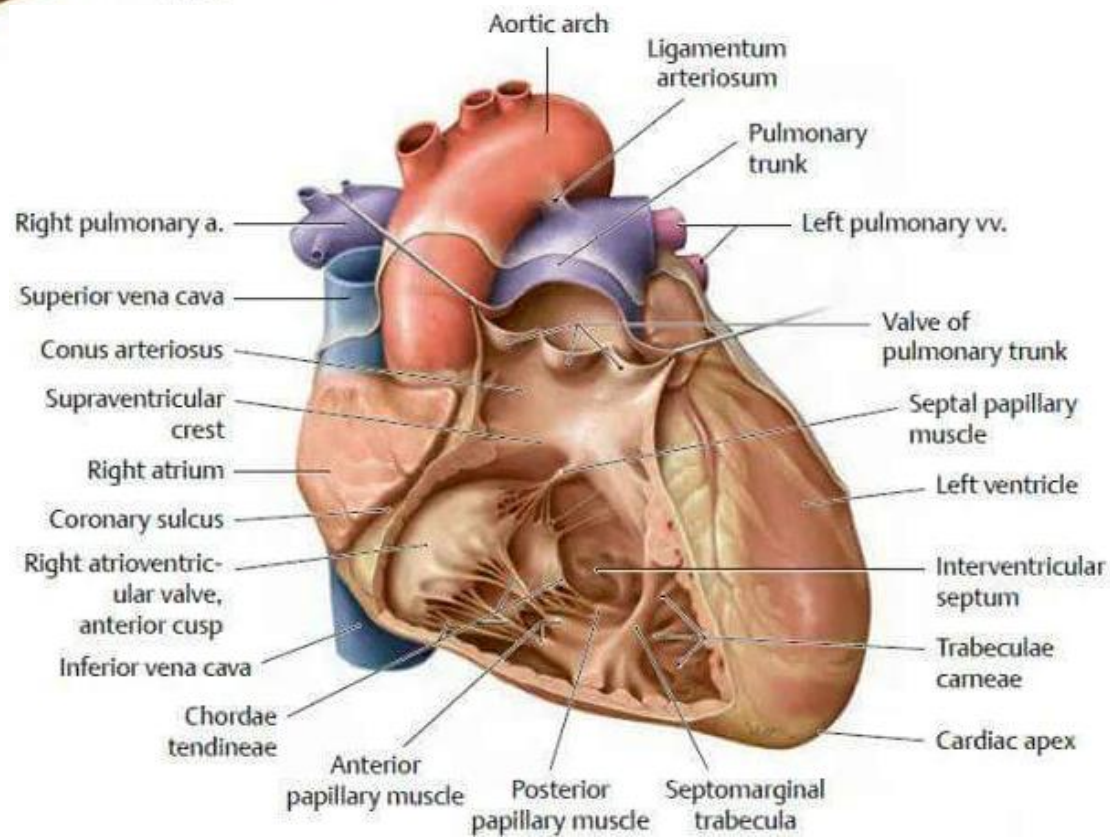
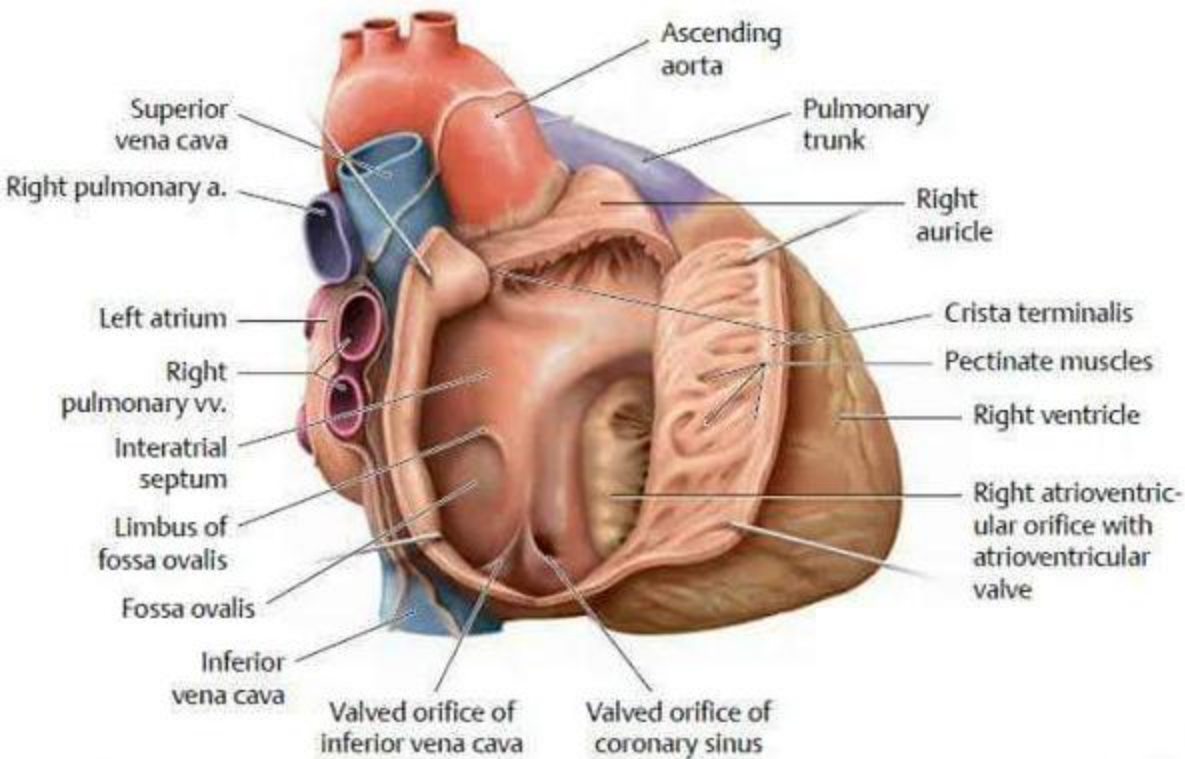
A Anterior (sternocostal) surface.

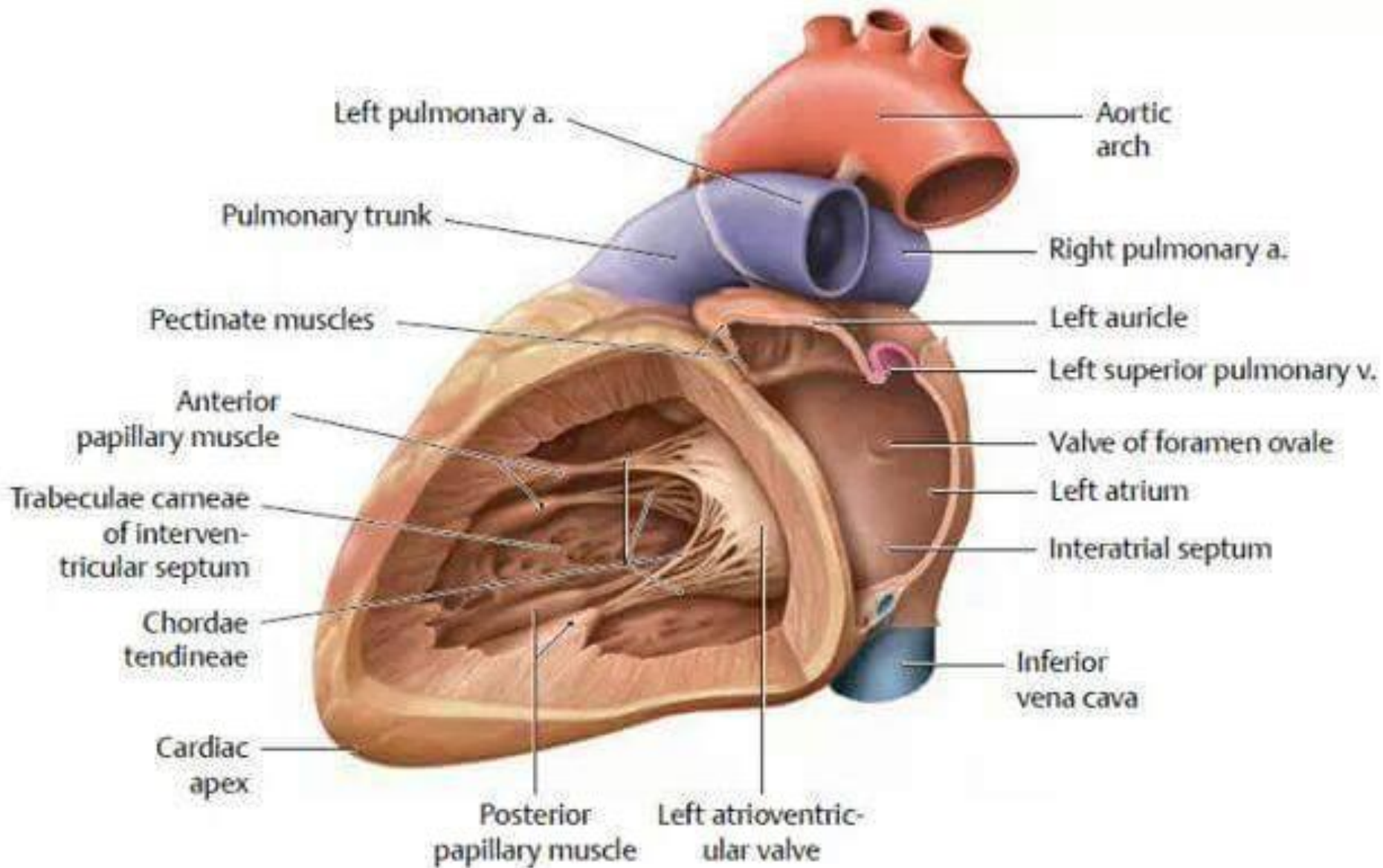


B Posterior surface (base).



C Inferior (diaphragmatic) surface.



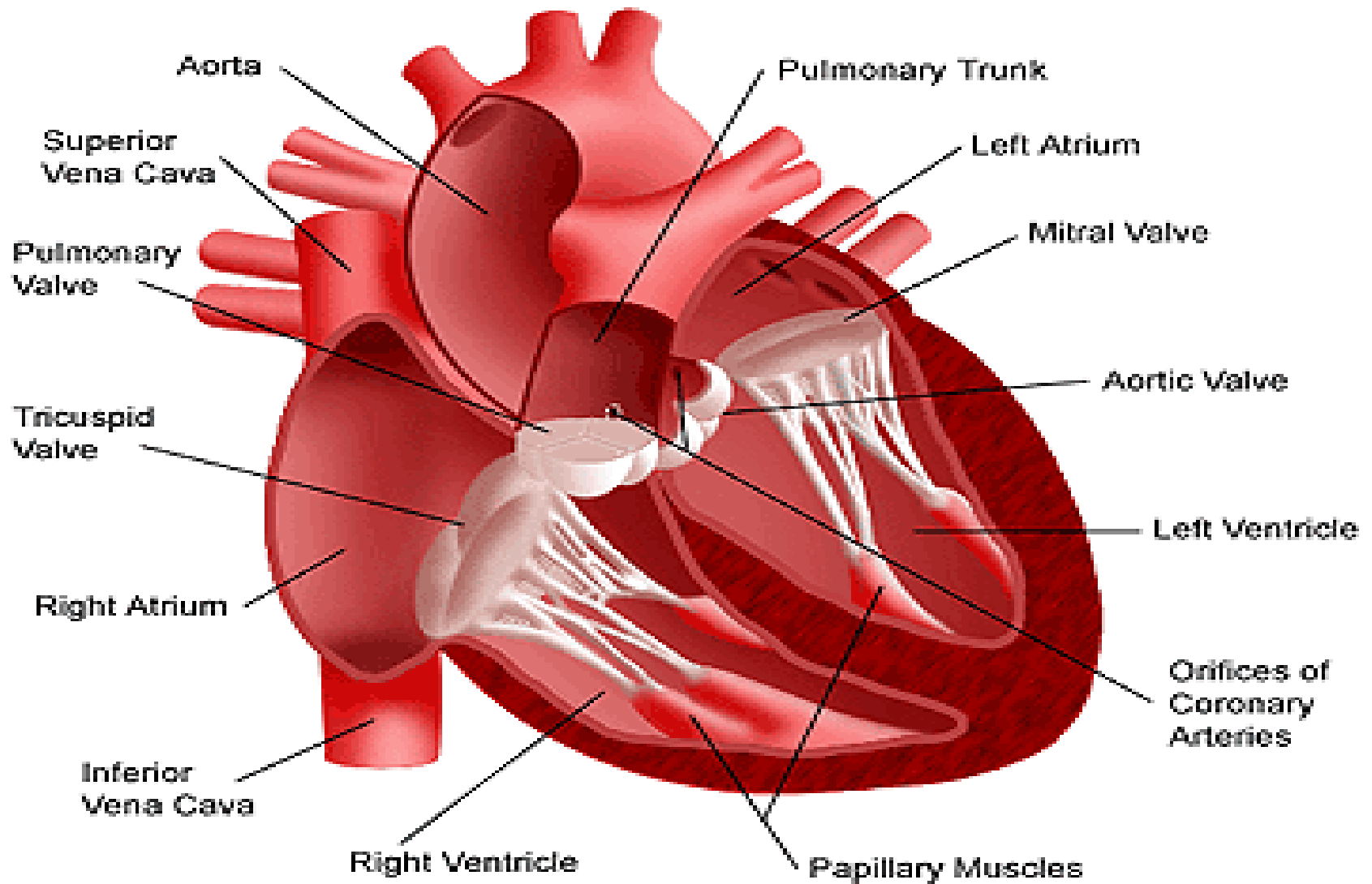


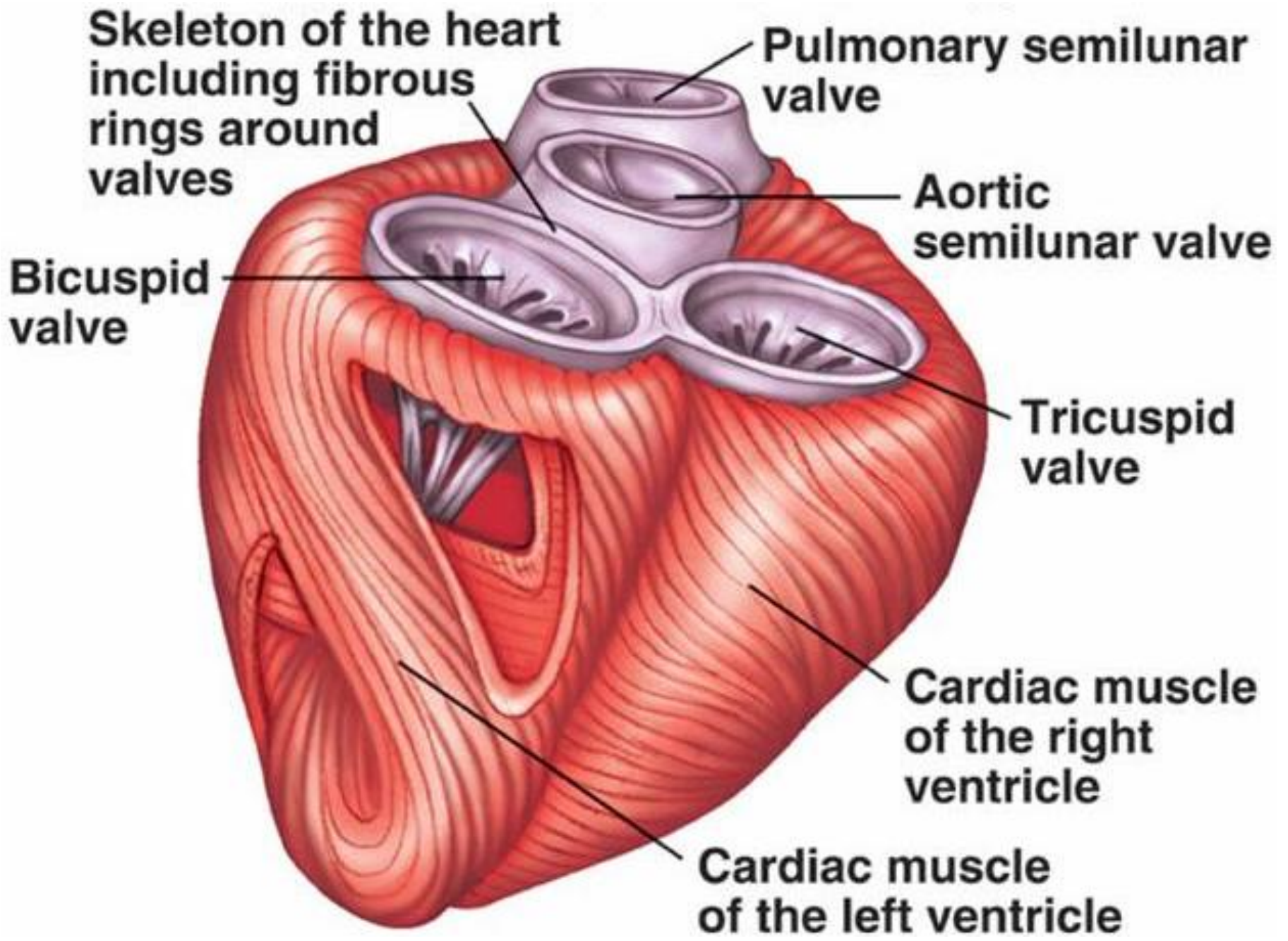
Ruang dan Katup Jantung

- 4 ruang jantung
 - a. 2 Atrium / Serambi
 - b. 2 Ventrikel / Bilik
- 4 katup
 - a. katup atrioventrikular
 - katup tricuspidalis
 - katup bicuspidalis / mitral
 - b. katup semilunar
 - k. trunkus pulmonal
 - k. aorta

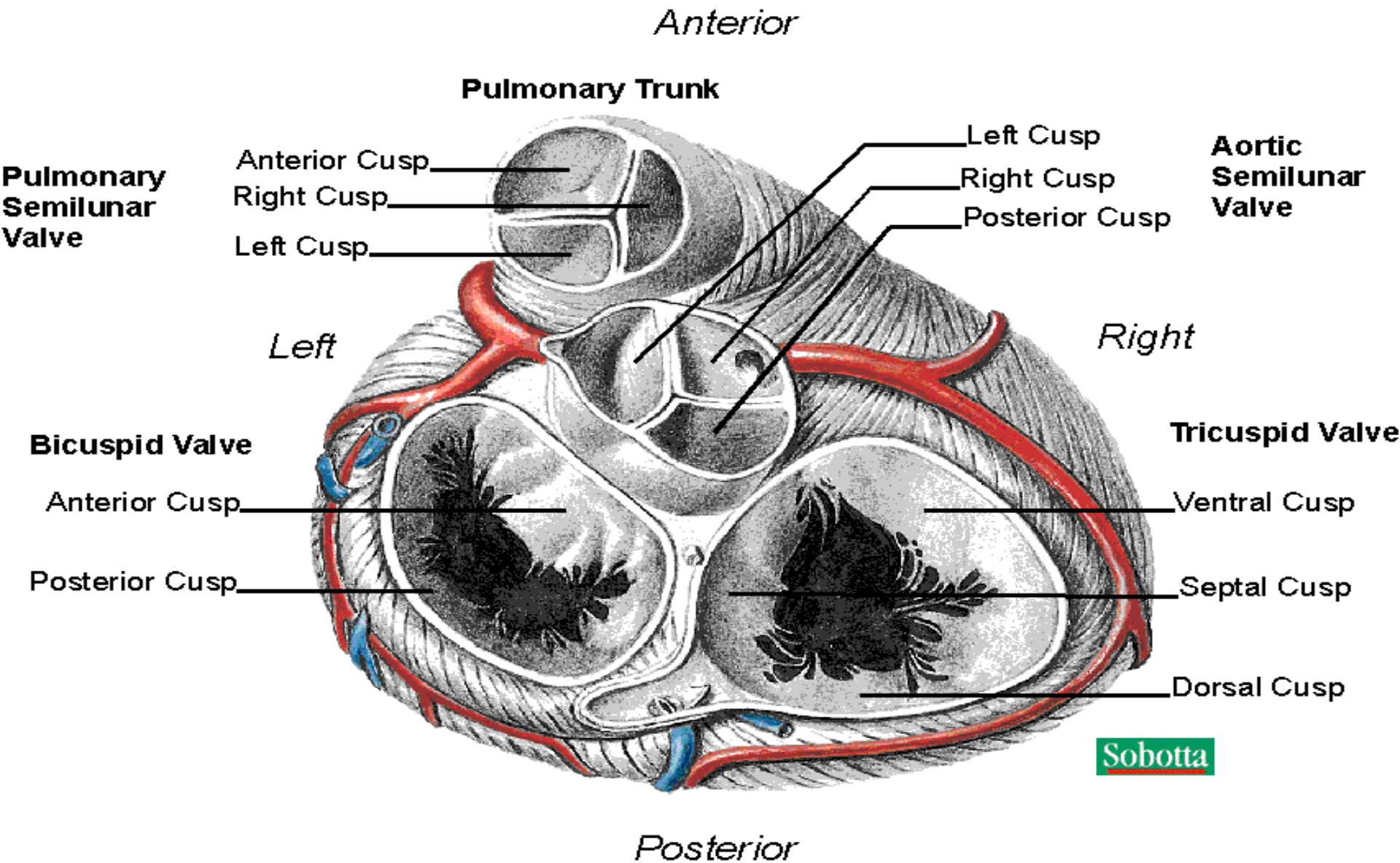


Interior View of the Heart

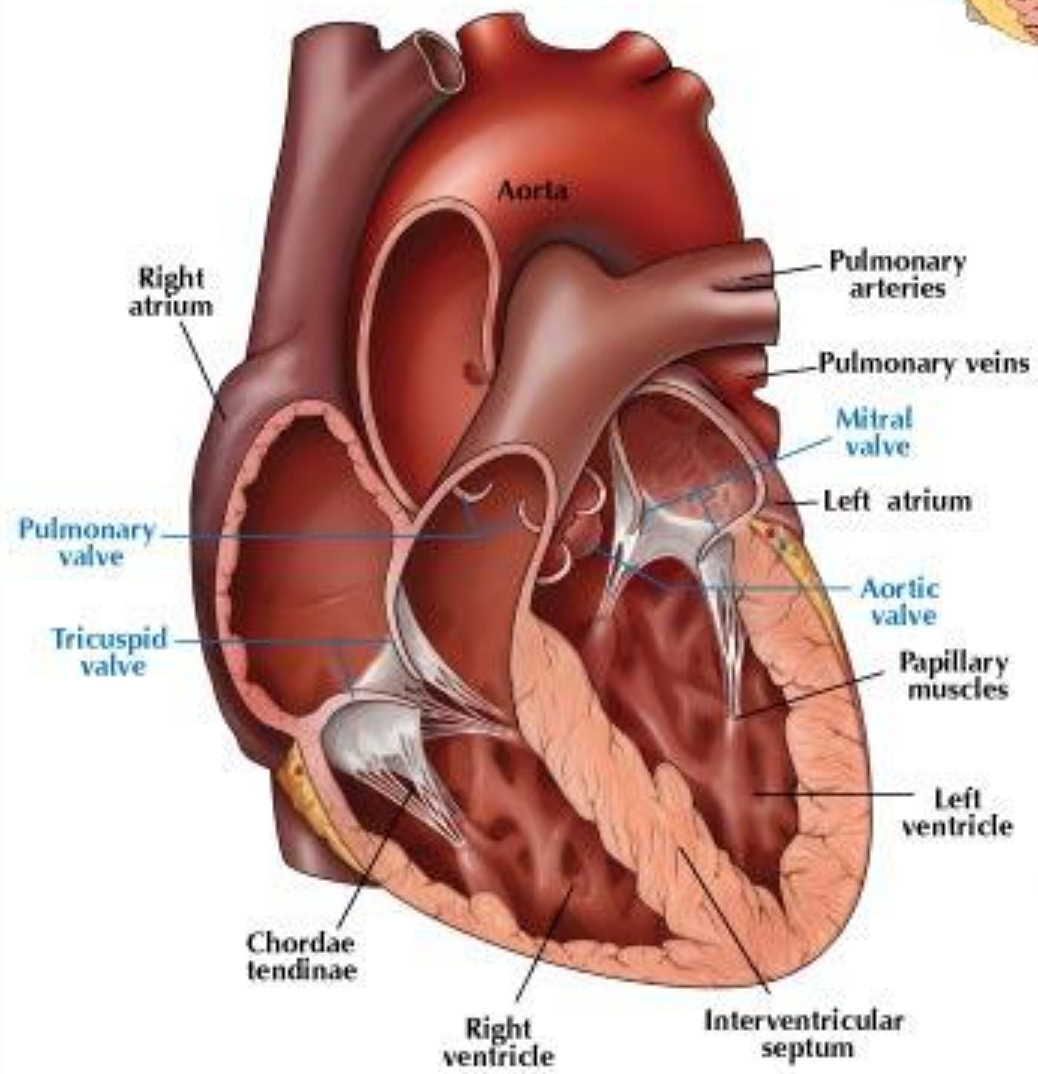




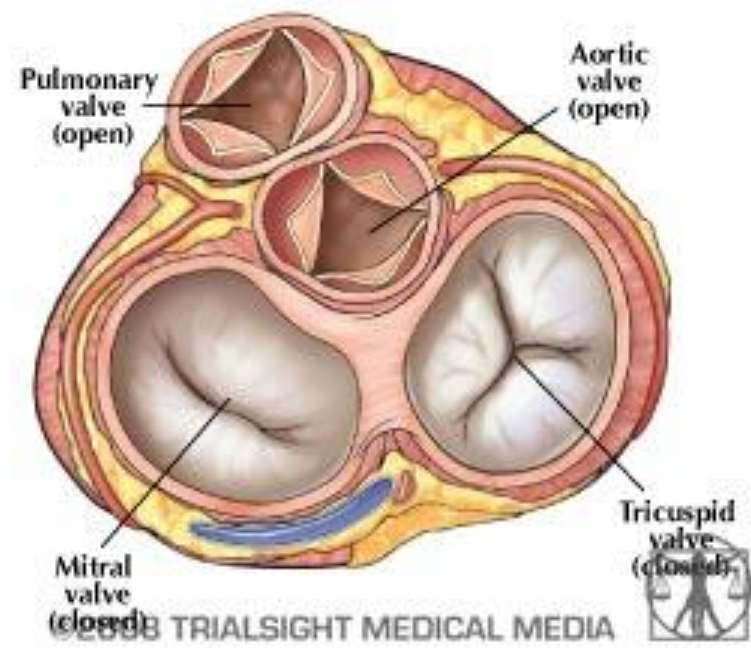
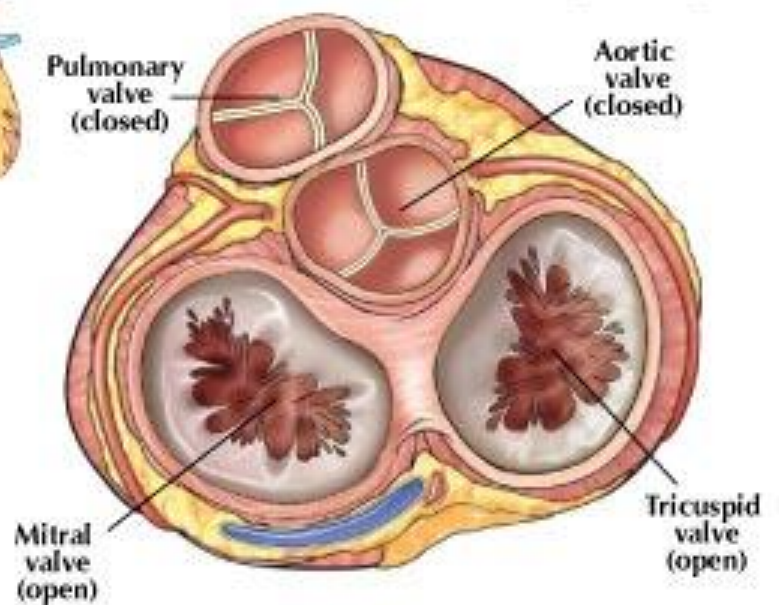
Valves of the Heart Superior View



HEART VALVE ANATOMY

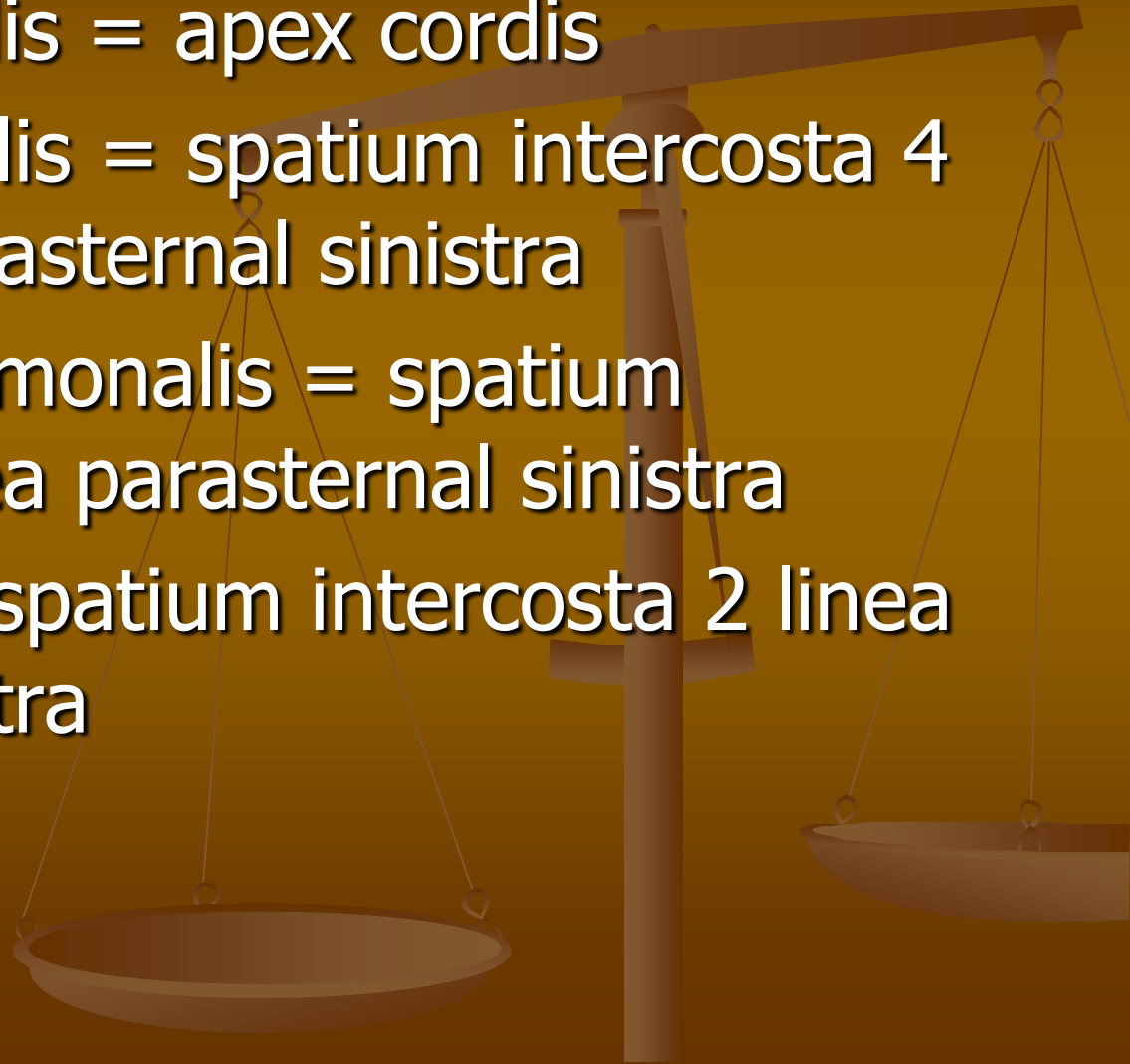


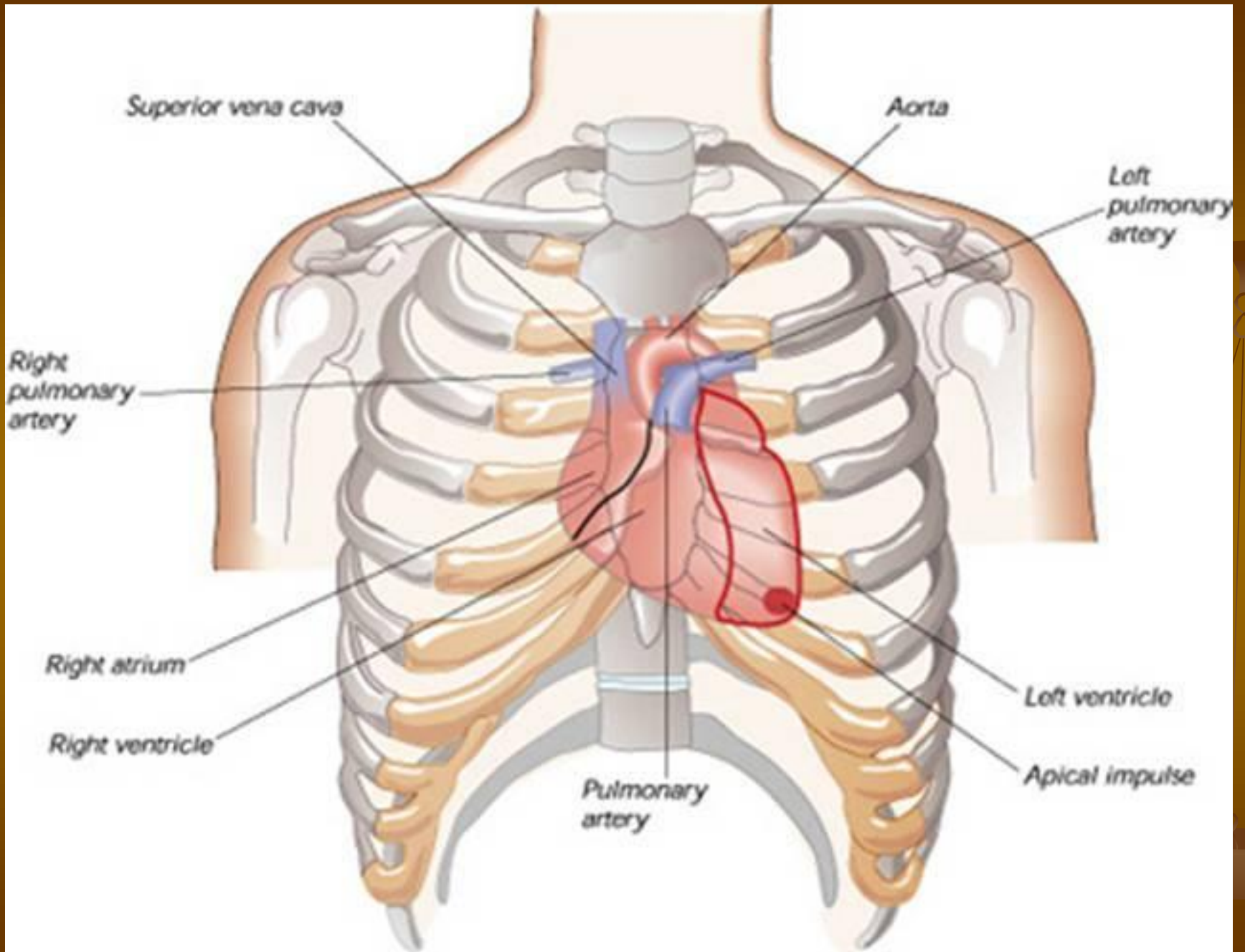
VIEW FROM ABOVE



Auskultasi katup jantung

- Valva bicuspidalis = apex cordis
- Valva tricuspidalis = spatium intercosta 4 atau 5 linea parasternal sinistra
- Valva trunci pulmonalis = spatium intercosta 2 linea parasternal sinistra
- Valva aortae = spatium intercosta 2 linea parasternal dextra





Pembuluh Darah Jantung

Pembuluh Nadi

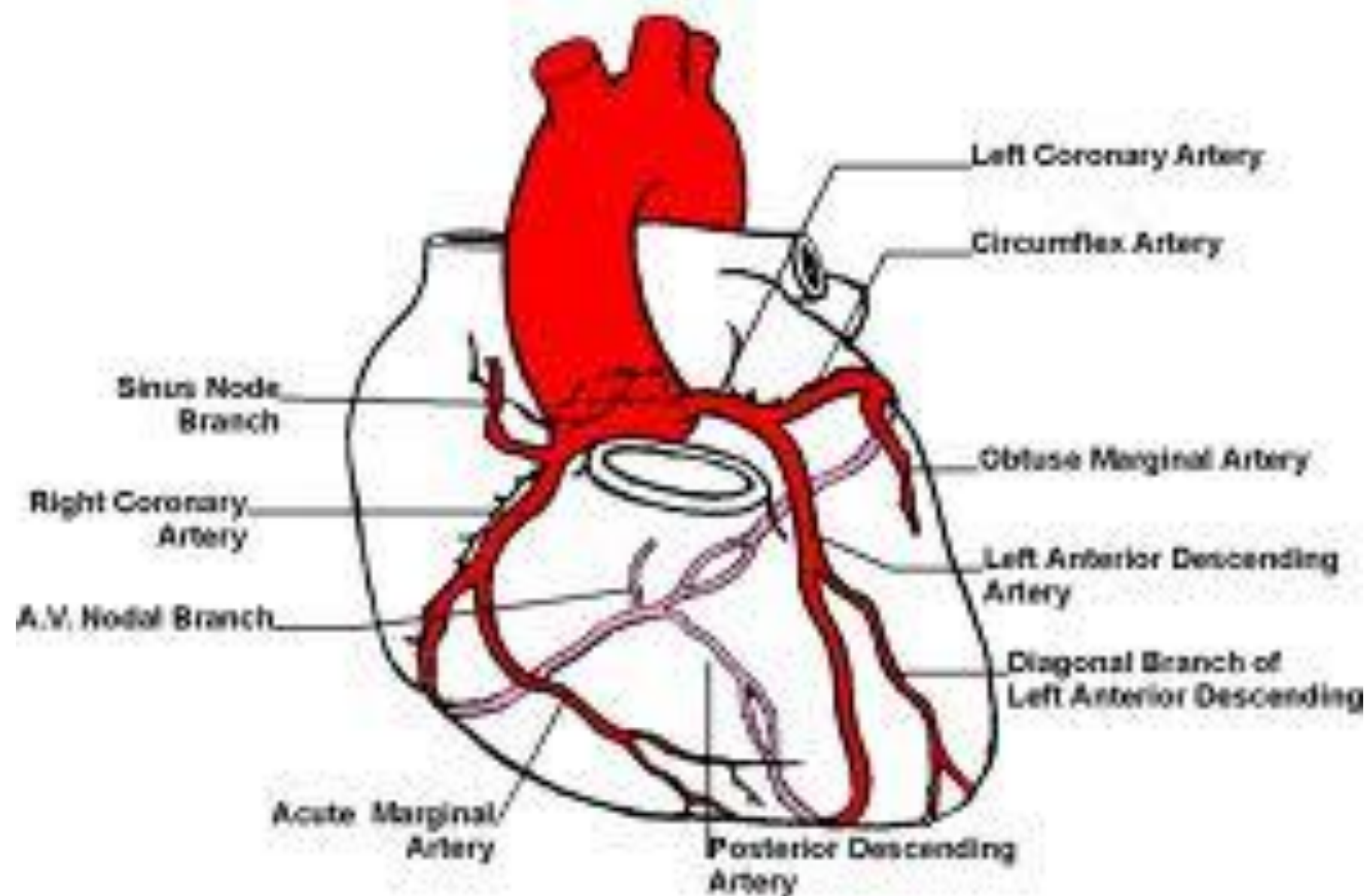
1. A. Coronaria Dextra

- Ramus coni arteriosi
- Ramus nodi sinuatrialis
- Ramus marginalis dextra
- Ramus interventricularis posterior
- Ramus transversus
- Ramus nodi atrioventricularis

2. A. Coronaria Sinistra

- Ramus interventricularis anterior
- Ramus circumflexus
- Ramus nodi sinuatrialis
- Ramus nodi atrioventricularis

Coronary Arteries



Pembuluh Darah Jantung

- **Vena Cordis**

- V. cardiaca magna
- V. cardiaca parva
- V. cardiaca media
- V. obliqua atrii sinistri (Marshall)
- V. posterior ventriculi sinistri
- Vv. Anteriores
- Vv. cordis minimae (Thebesii)

Vena cordis yang bermuara ke dalam sinus coronarius:

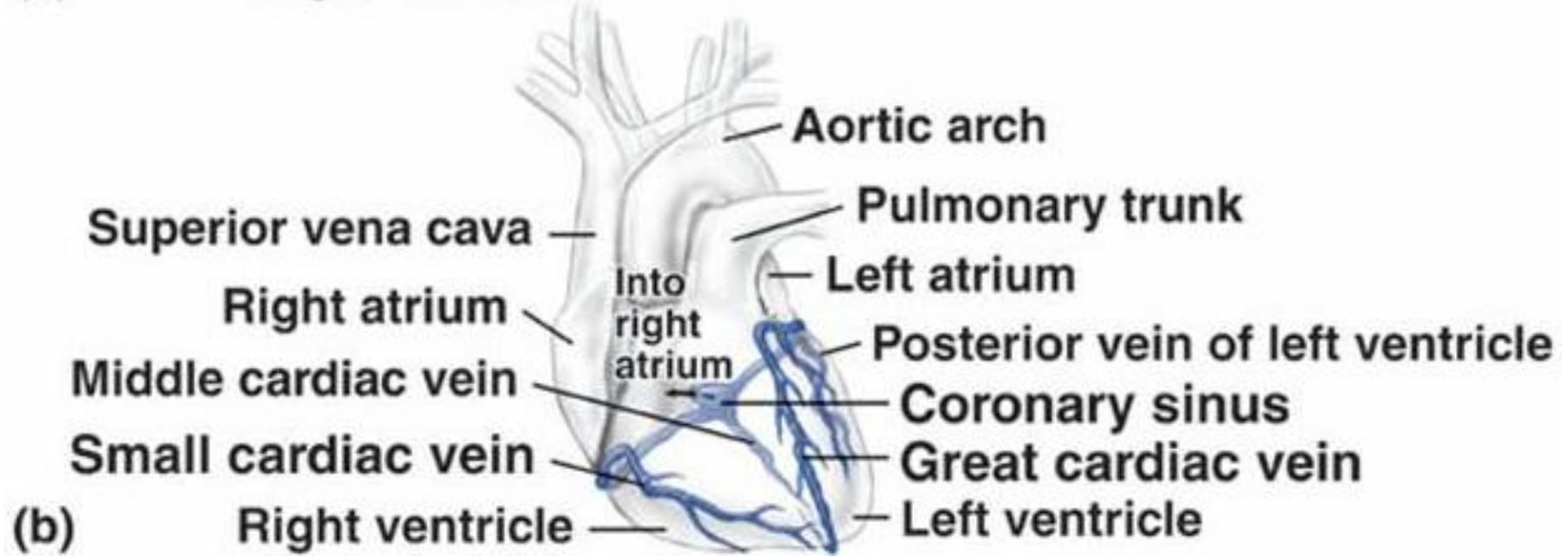
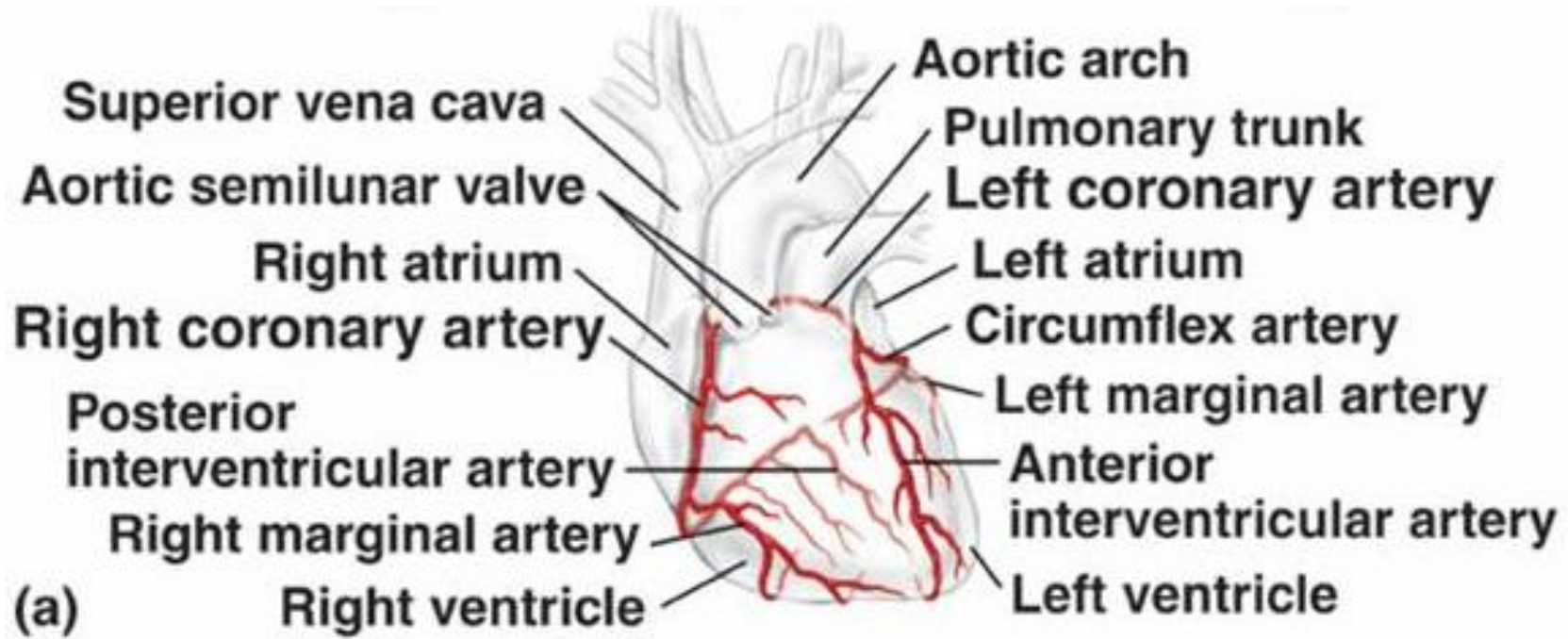
- V. Cordis magna
- V. Cordis media
- V. Cordis parva
- V. Cordis posterior ventriculi sinistra
- V. Cordia obliqua Marshalli

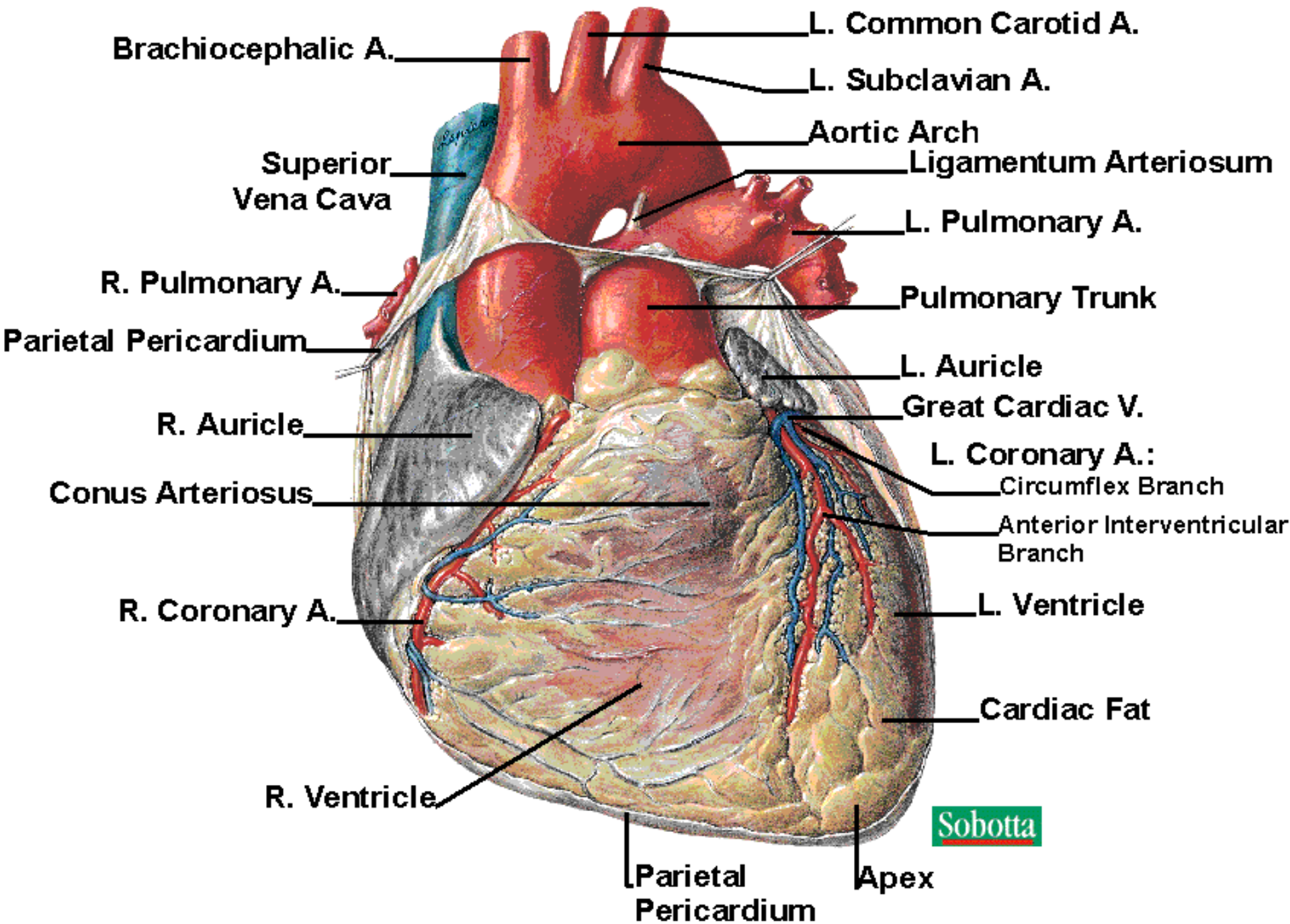
Vena yang bermuara langsung ke ruang jantung:

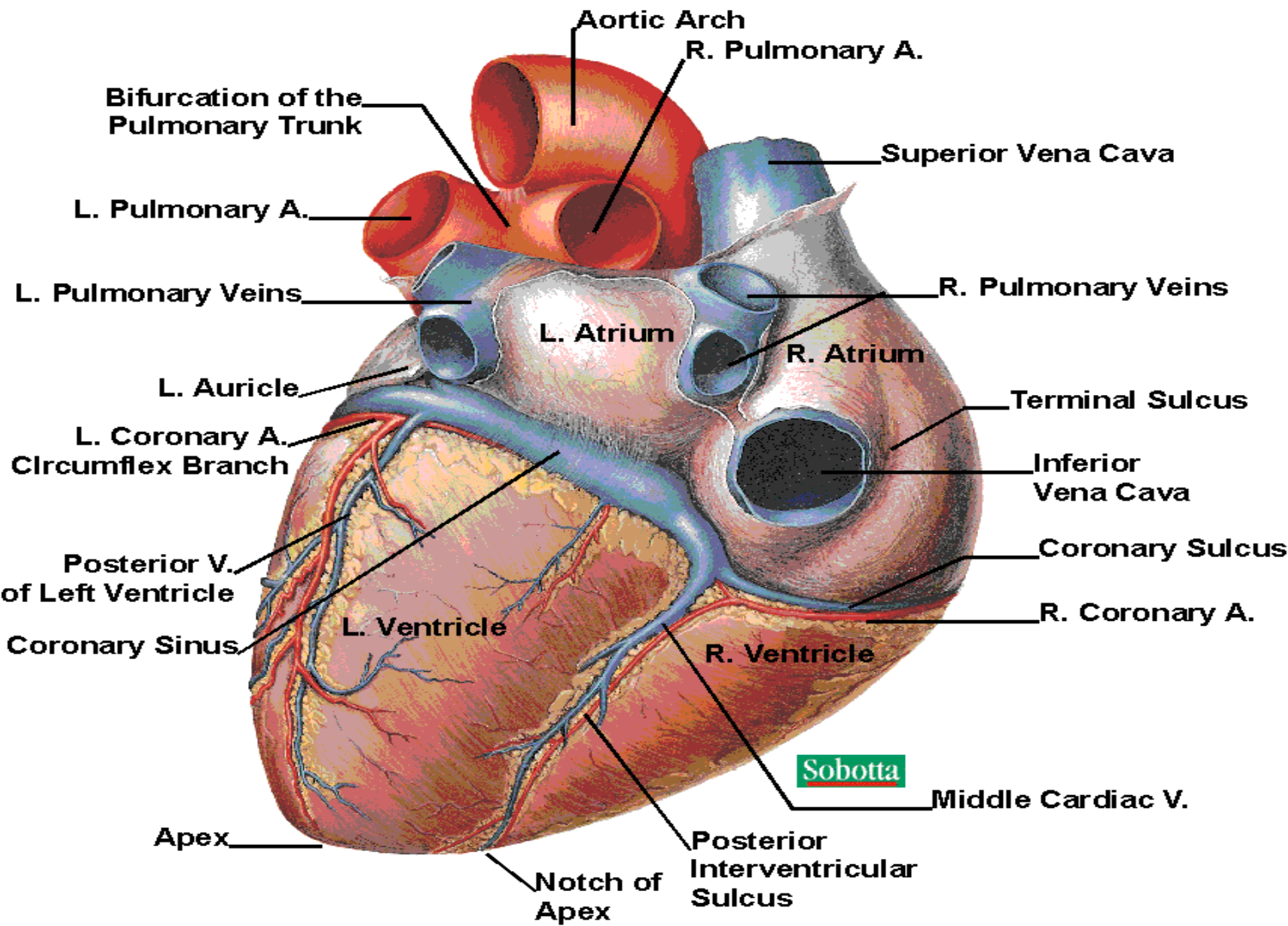
- Vv. Cordis anterior
- Vv. Cordis minimae Thebesii

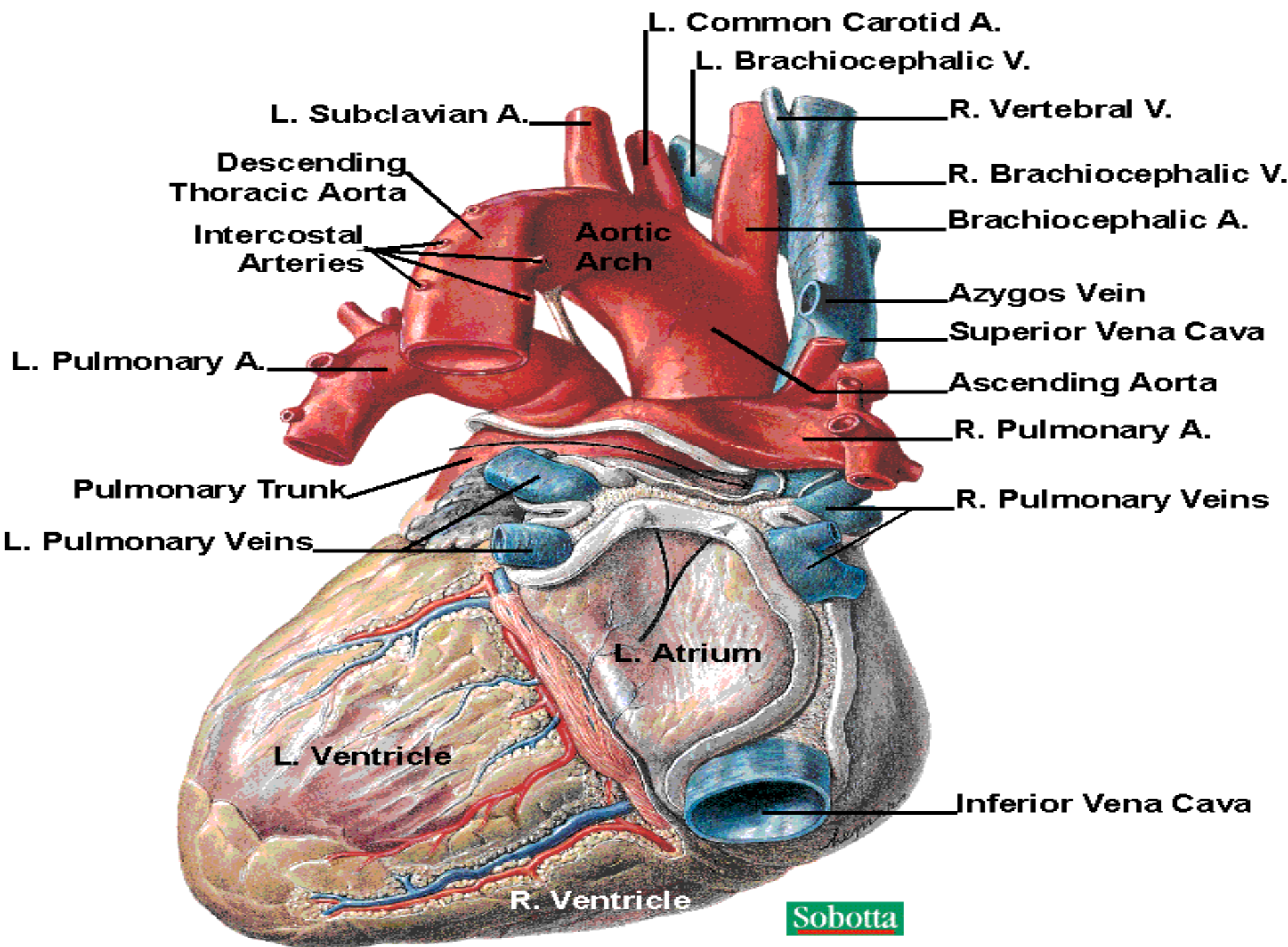
Aorta

- **Aorta Ascenden**
 - A. Coronaria dextra
 - A. Coronaria sinistra
- **Arcus Aorta**
 - Truncus Brachiocephalicus
 - A. Carotis communis sinistra
 - A. Subclavia sinistra
- **Aorta Descenden**
 - Aa. Intercostales posterior
 - Rr. Pericardii
 - Rr. Bronchiales
 - Rr. Oesophageales



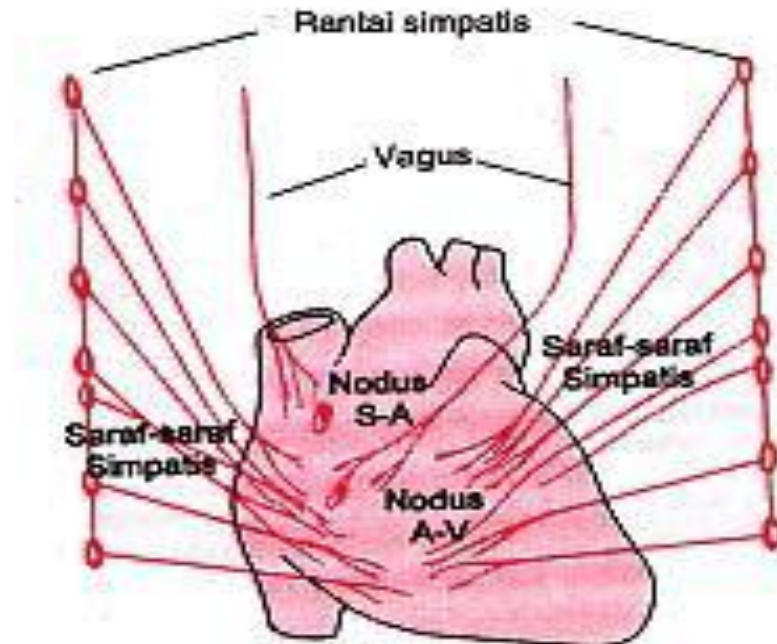






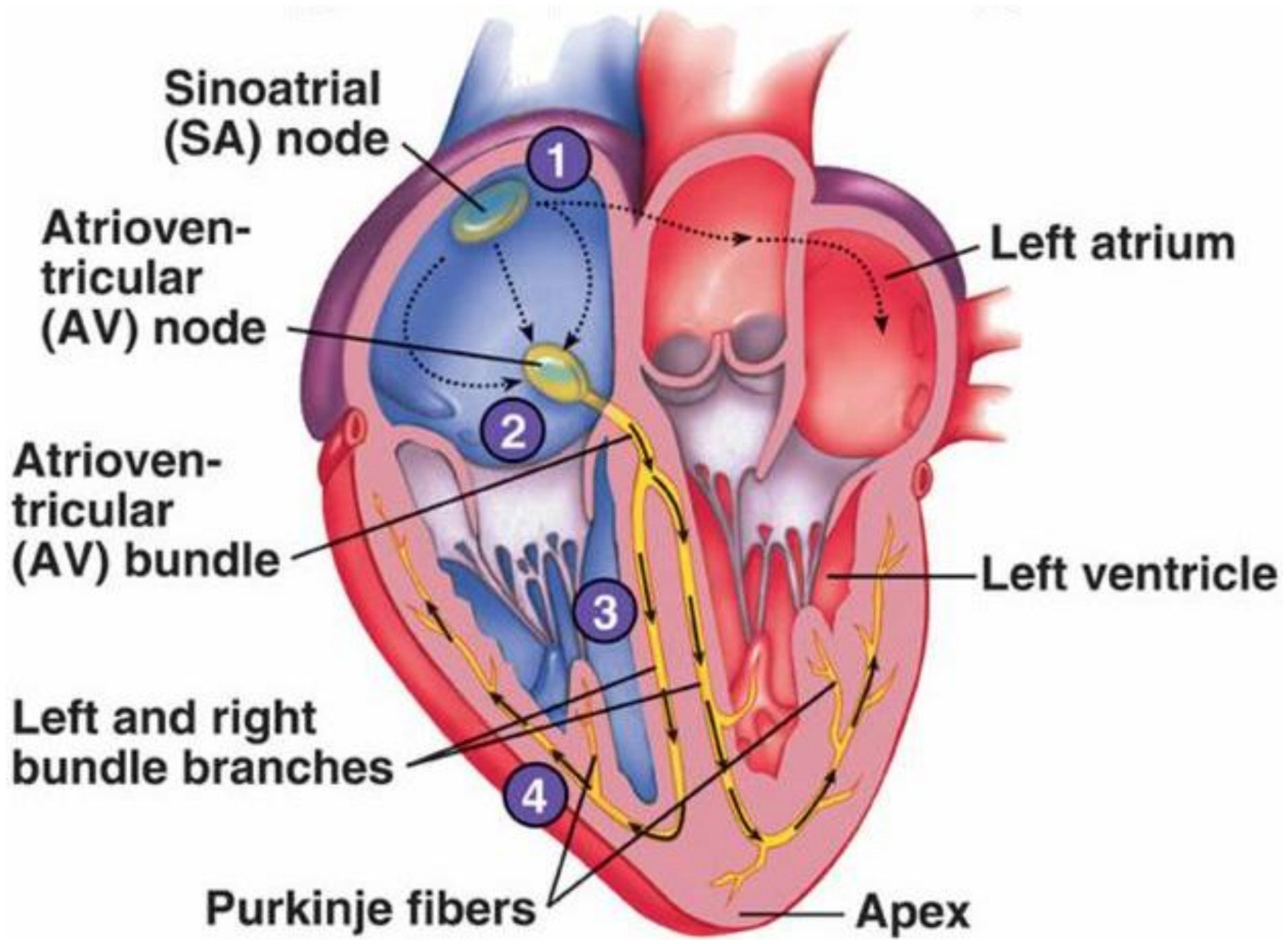
Persarafan Jantung

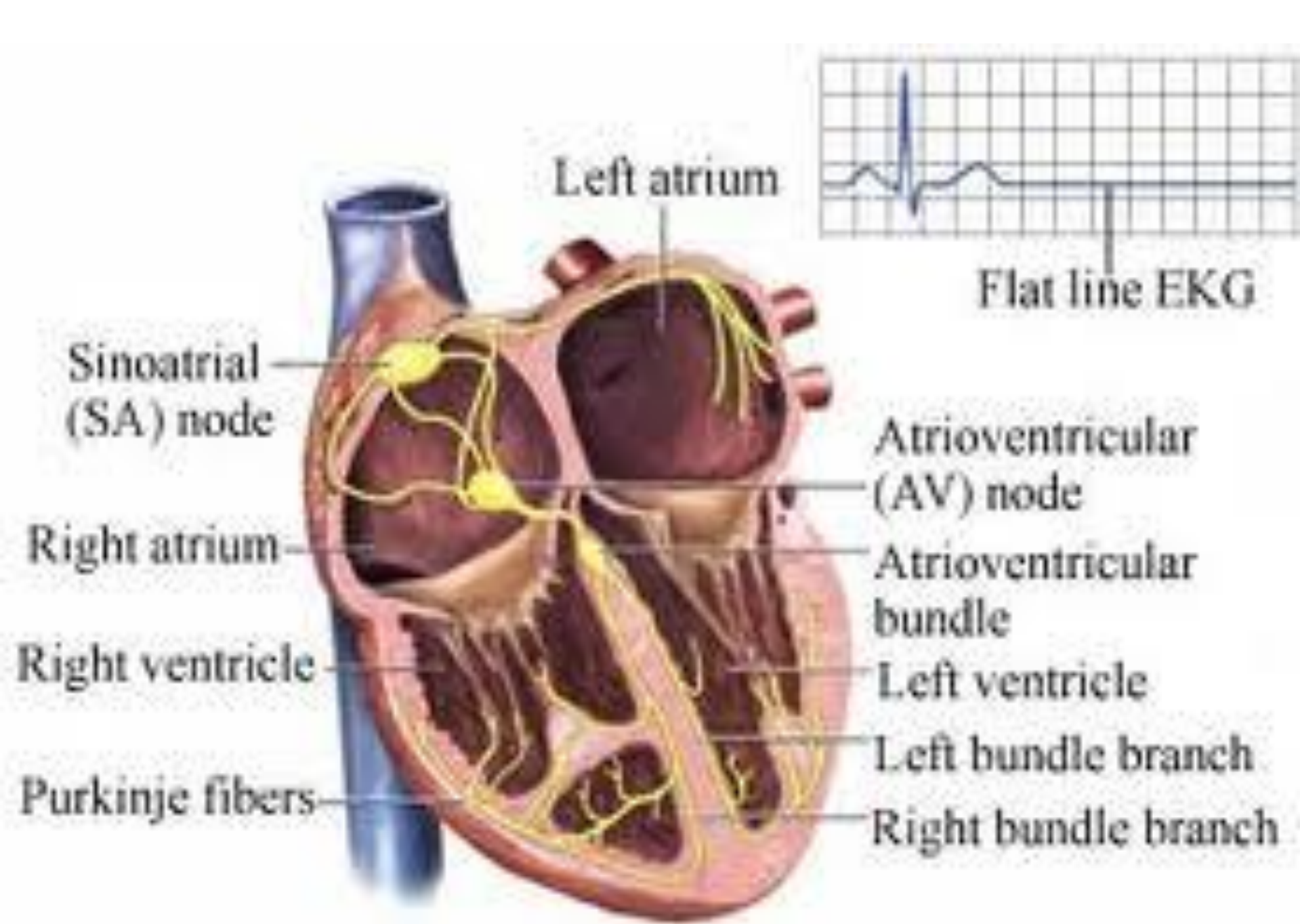
- Trunchus Simpaticus
Simpatis → ventrikel dominan, atrium (nodus SA, AV)
- N. Vagus
Parasimpatis = n.vagus → atrium (nodus SA, AV), sedikit ventrikel



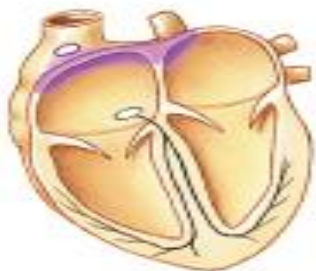
Sistem Listrik Jantung

- ❑ Nodus sinoatrialis (Keith flack)
- ❑ Internodal Pathway
 - Bachman (anterior)
 - Wenkebach (medial)
 - Thorel (posterior)
- ❑ Nodus atrioventrikularis (tawara)
- ❑ Crura fasciculi atrioventrikularis (his of bundle)
- ❑ Plexus Purkinje

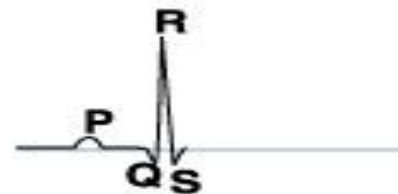




P wave



S wave

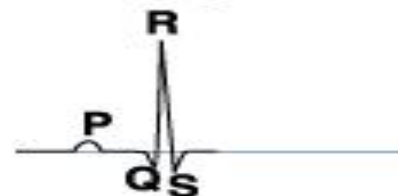


PQ segment



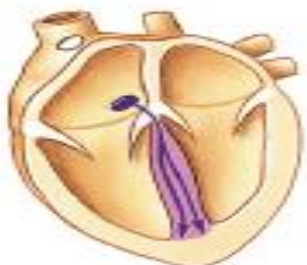
Atria contract

ST segment



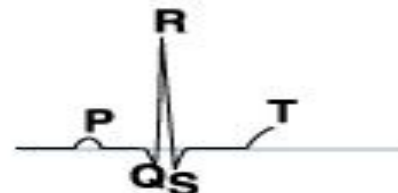
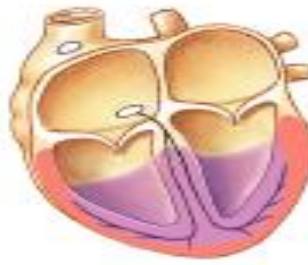
Ventricles contract

Q wave

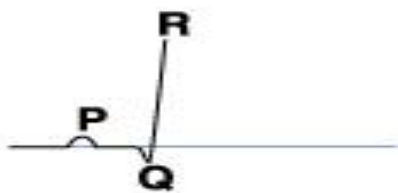


sys

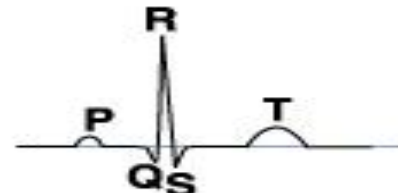
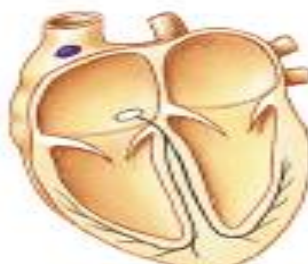
T wave



R wave



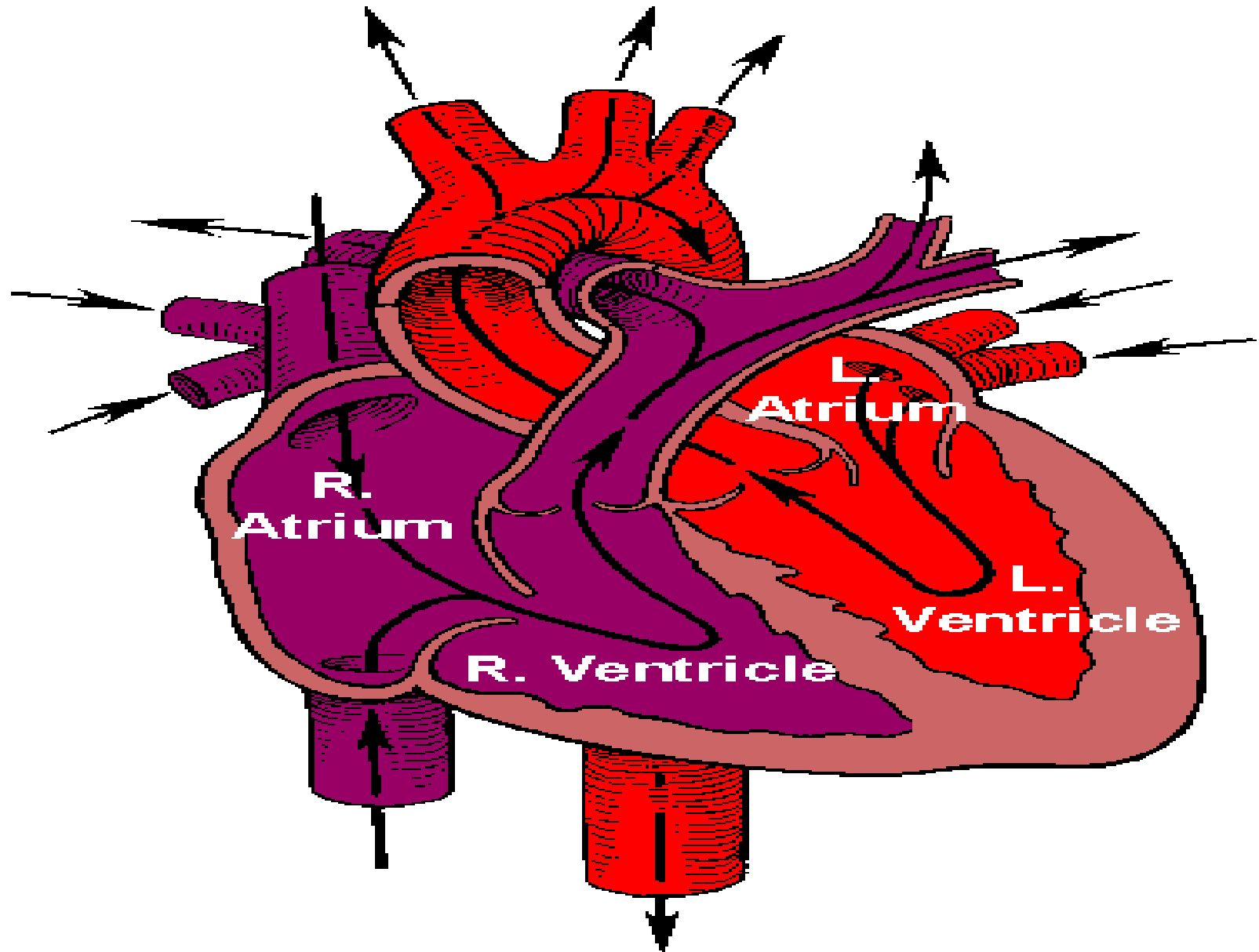
The end



Siklus Peredaran Darah

- Atrium dextra → (k. tricuspidalis) → Ventrikel dextra → (k. semilunar pulmonal) → Arteri pulmonalis → Pulmo → V. pulmonalis → Atrium sinistra → (k. bicuspidalis / mitral) → Ventrikel Sinistra → (k. semilunar aorta) → Aorta → Arteri → Arteriol → Kapiler → Venula → Vena → Vena Cava → Atrium dextra

Blood Flow Through the Heart



Mekanisme Kerja Jantung

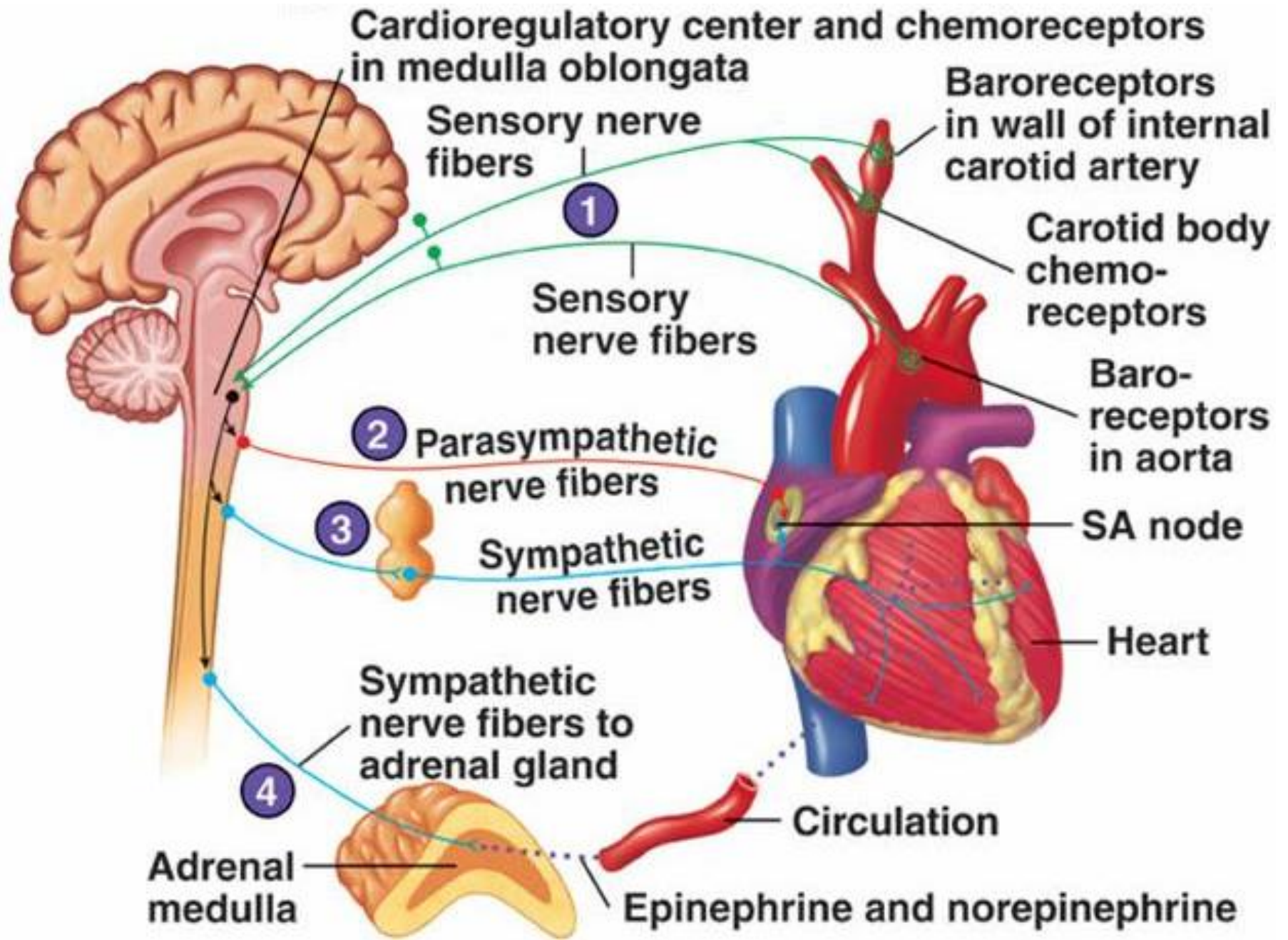
◆ Sistole

- Ventrikel berkontraksi
- Darah keluar dari ventrikel
- Katup Semilunar terbuka
- Katup AV tertutup → BJ 1

◆ Diastole

- Ventrikel relaksasi
- Darah masuk dari atrium ke ventrikel
- Katup AV terbuka
- Katup semilunar tertutup → BJ 2

- Jantung berdenyut (kontraksi) sekitar 70 kali/menit
- Atrium dan ventrikel memiliki volume darah yang sama yaitu sekitar 135 ml
- Saat sistole terjadi, sekitar 70 ml darah dikeluarkan dari ventrikel dan tersisa 65 ml.
- Secara keseluruhan volume darah manusia adalah ± 5 liter (70 kali/menit $\times 70$ ml/kali $\rightarrow 4900$ ml/menit $\sim \pm 5$ liter)
- Setiap denyut jantung berlangsung sekitar 0,85 detik
 - atrium kontraksi, ventrikel istirahat $\rightarrow 0,15$ detik
 - ventrikel kontraksi, atrium istirahat $\rightarrow 0,30$ detik
 - seluruh ventrikel jantung istirahat $\rightarrow 0,40$ detik





TERIMA KASIH