



# **SYSTEMA VASORUM**

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**(Circulatory system)  
(Angiologia)**

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# Systema Vasorum – Angiology

- ❑ The circulatory system is a responsible organ system that permits blood to circulate and transport nutrients, oxygen, carbon dioxide, hormones, and blood cells to and from the cells in the body to provide continuity of metabolic activity.
  
- ✓ Vas (Lt.) ; Vessel [vasa (pl.)]
- ✓ Angeion (Gr.): Vessel [Angio- (prefix)]
- ✓ Arteria : Artery (A)
- ✓ Arteriae : Arteries (Aa)
- ✓ Arteriola : Small arteries
- ✓ Vena : Vein (V)
- ✓ Venae : Veins (Vv)
- ✓ Venula : Small veins

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- ✓ Cor (Lt.) ; Heart [Cordis (genitive): belongs to heart]
- ✓ Kardia (Gr.) ; Heart

# The Circulatory System and Circulation

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The blood and the lymph (is filtered from the blood) are the transporting liquids in the circulatory system.

The other components are;

- ✓ Spleen, Thymus, Bone marrow
- ✓ The Heart
- ✓ The Blood Vessels
- ✓ The Lymph Nodes
- ✓ The Lymph Vessels

# The Heart-COR-CARDIA

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- The heart is a muscular organ, which pumps blood through the blood vessels of the circulatory system

# Pulse - Pulsation

□ A pulse represents the tactile arterial palpation of the heartbeat by trained fingertips. It is the fluctuation of the wall of arteries during heart pumping. The count of arterial pulse per minute is equivalent to measuring the heart rate

- ✓ Human : 60-90
- ✓ Horse : 28-40
- ✓ Ox : 40-60
- ✓ Sheep : 60-90
- ✓ Goat : 70-90
- ✓ Dog : 70-120
- ✓ Cat : 100-120
- ✓ Poultries : 130-165
- ✓ Canary : 275-350
- ✓ Rat : 380-450

# Pulsation

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- Pulsation can be palpated in any place that allows an artery to be compressed against a bone, such as at the neck (carotid artery) and at the wrist (radial artery) in human, at the groin (femoral artery) in carnivores, at the ventral border of mandible (facial artery) and on foot (dorsalis pedis artery) in large animals.

# Anatomy of the Heart

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- ❑ The shape of the heart resembles that of a pointed and bilaterally flattened cone.
- ❑ It is surrounded by the completely closed serous membran or sac named as pericardium.
- ❑ Apex cordis
- ❑ Basis cordis

# Where is the Heart

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- ❑ The heart is located within the thorax in the medial mediastinum between the two pleural sheet of mediastinum. It is surrounded by the sac, pericardium.
- ❑ Eq. – three out of five (3/5) is in left side, between the 3th to 6th of ribs
- ❑ Ru. and Su. – five out of seven (5/7) is in left side, between 3th to 5th of ribs
- ❑ Car. – four out of seven (4/7) is in left side, between 3th to 7th pf ribs



# Pericardium

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Pericardium is a two layered sac-like serous membran that surrounds the heart.

- it fixes the heart to the mediastinum
- it gives protection against infections
- it provides lubrication during pumping

□ Pericardium fibrosum (outer layer)

□ Pericardium serosum (inner layer)

Lamina parietalis (external sheet)

Cavum pericardii

Liquor pericardii (prevent friction)

Lamina visceralis (epicardium) (internal sheet)

# Pericardium

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# Layers of the Heart Wall

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- ❑ Epicardium (inner layer of pericardium)
- ❑ Myocardium (cardiac muscle)
- ❑ Endocardium (serous membran)

# The outside of the Heart

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- **Facies auricularis – Facies atrialis**
- **Margo cranialis – Margo caudalis**

# The grooves

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- ❑ **Sulcus coronarius**
- ❑ **Sulcus interventricularis paraconalis**  
(Sulcus longitudinalis sinister)
- ❑ **Sulcus interventricularis subsinuosus**  
(Sulcus longitudinalis dexter)
- ❑ **Sulcus intermedius (rum)**

# Inside of the Heart

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- The inside of the heart is divided into four chambers: upper left and right atria; and lower left and right ventricles.

Atrium sinistrum

Septum interatriale

Atrium dextrum

Ostium atrioventriculare sinister

Ostium atrioventriculare dexter

Ventriculus sinister

Septum interventriculare

Ventriculus dexter

# Atrium Dextrum

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- Venae cavae cranialis et caudalis
- Tuberculum intervenosum
- Sinus coronarius (Venae cordis)
- Auricula dextra
- Mm. pectinati
- Septum interatriale
- Foramen ovale - Fossa ovalis
- Ost. atrioventriculare dextrum
- Valva tricuspidalis (direction is below)

# Ventriculus Dexter

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- ❑ Located at the right cranial below part.
- ❑ The wall is thinner but the cavity is larger than the left side.
- ❑ Mm.papillares
- ❑ Chorda tendinea
- ❑ Ost.trunci pulmonalis
- ❑ Valva semilunares (direction is above)



# Atrium Sinistrum

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- ❑ Vv.pulmonales - Ostia venorum pulmonalium
- ❑ Auricula sinistra (the margins is notched)
- ❑ Septum interatriale
- ❑ Valvula foraminis ovalis
- ❑ Ost.atrioventriculare sinistrum
- ❑ Anulus fibrosus
- ❑ Valva bicuspidalis (valva mitralis)

# Ventriculus Sinister

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- Located at the left caudal below part. The wall is thick and muscled.
  - Mm.papillares
  - Chorda tendinea
  - Mm.transversi
  - Ostium aortae
  - Valva semilunares
  - Anulus fibrosus
  - Ossa cordis (in ox)
  - Os cordis (in sheep)
  - Cartilago cordis (horse, pig, dog)
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# Conducting System of the Heart

- The heart is controlled by autonomic fibers of central nervous system
- It also has a self conducting system that is determines the rhythm of the heart. This system consists of two nodes which have been named according to their topography;

- **Nodus sinuatrialis (SA Node)**

Just below the Ost.venae cavae cranialis

- **Nodus atrioventricularis (AV Node)**

Just above the Ost.aortae

- Bundle of His (discovered by Wilhelm His)

Crus dextrum et sinistrum

- Purkinje fibres