

# **AZ SZÍV (COR) ANATÓMIÁJA**

**HeinzImann Andrea**

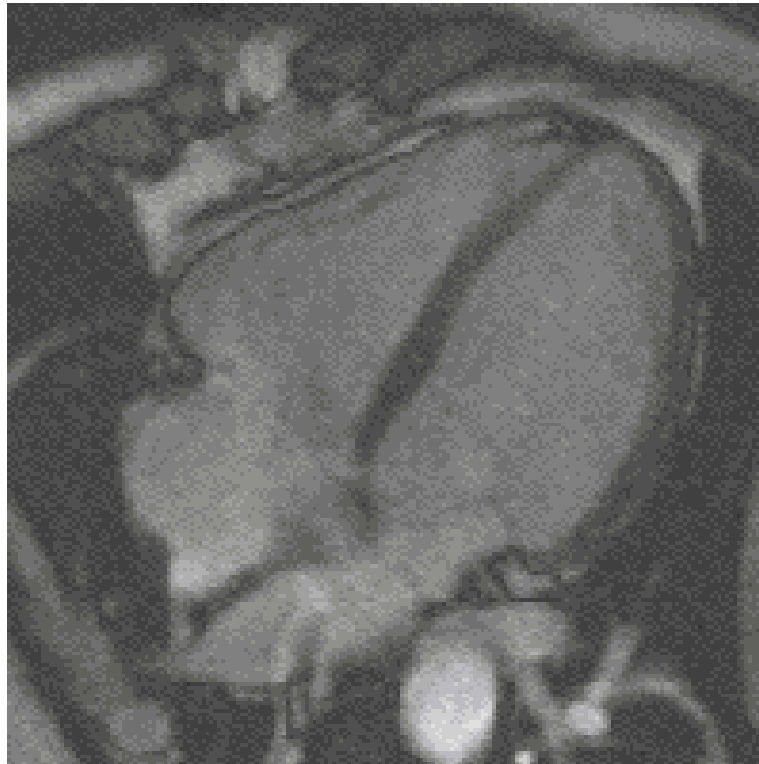
**Állatorvostudományi Egyetem, Anatómiai és Szövetani Tanszék**

**2019. február 14.**

# SZÍV (COR)

## FELADATA:

- keringési rendszer központi szerve
- üreges, izmos falú
- ritmikus összehúzódásokkal pumpálja a vért a vérkeringésébe



Szív működés közben  
(mágneses rezonancia tomográf)  
<https://hu.wikipedia.org>

# SZÍV (COR)

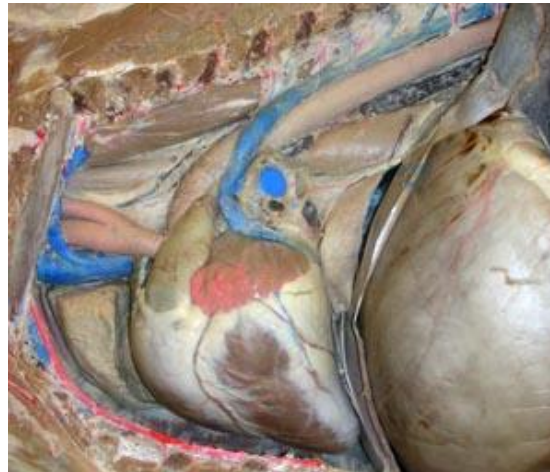
## ELHELYEZKEDÉS:

- mediastinum (gátorüreg) cardiacum
- mellkasban a *sternum* mögött
- mellkas középvonalától balra
- szívburokban (pericardium)



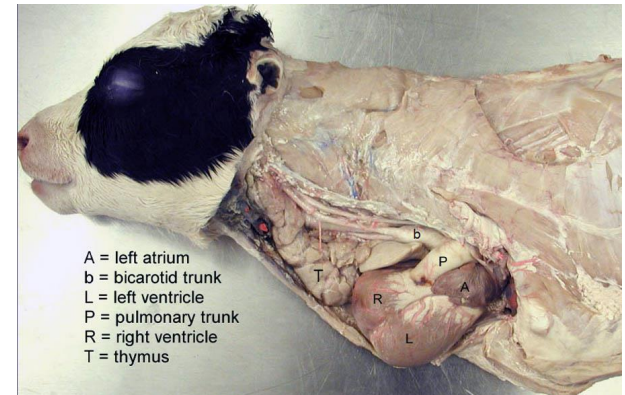
<http://vanat.cvm.umn.edu/carnLabs/Lab11/lmg11-2.html>

**kutya**



<http://vanat.cvm.umn.edu/ungDissect/Lab10/Lab10.html>

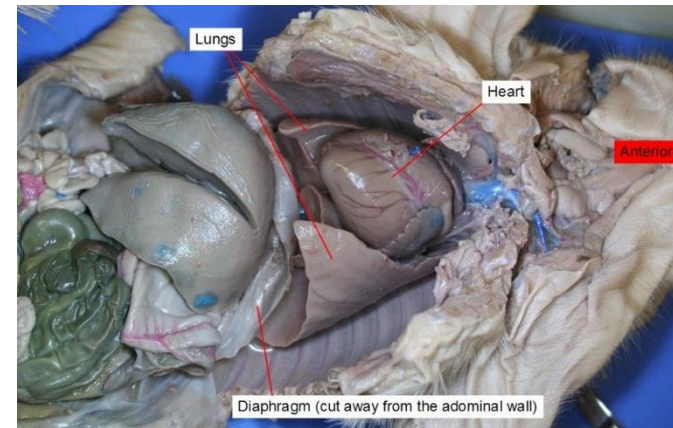
**ló**



A = left atrium  
b = bicarotid trunk  
L = left ventricle  
P = pulmonary trunk  
R = right ventricle  
T = thymus

<http://vanat.cvm.umn.edu/vetAnomal/regThorax/TH3.html>

**kérődző**



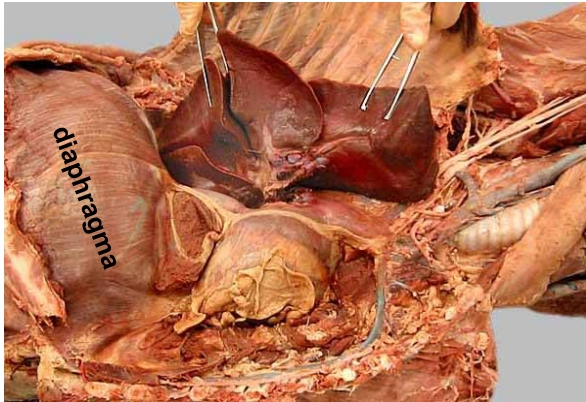
<https://courses.lumenlearning.com/suny-bio2labs/chapter/reading-fetal-pig-dissection/>

**sertés**

# SZÍV (COR)

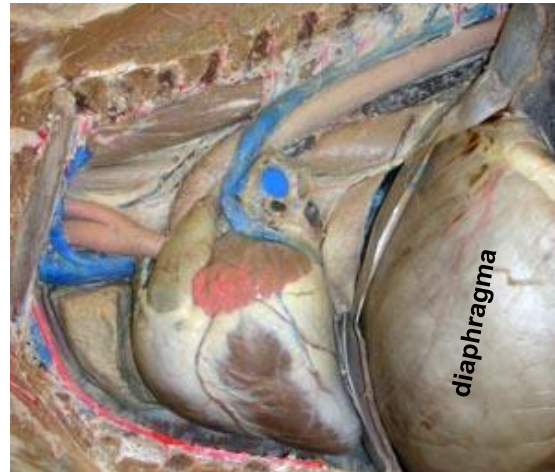
## ELHELYEZKEDÉS:

- jobbról és balról a két tüdő veszi körül
- caudalisan a rekeszizmon (diaphragma) fekszik



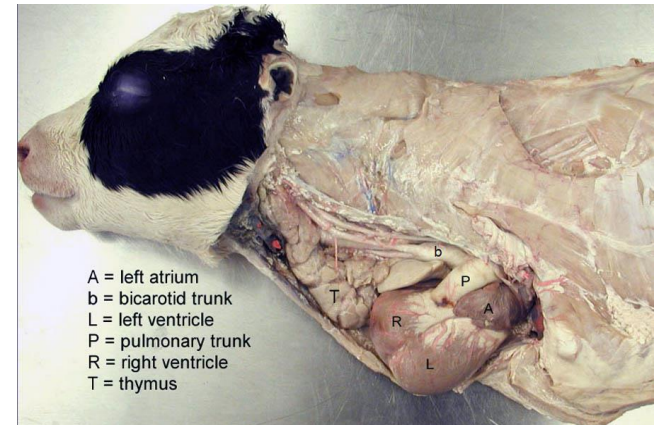
<http://vanat.cvm.umn.edu/carnLabs/Lab11/lmg11-2.html>

**kutya**



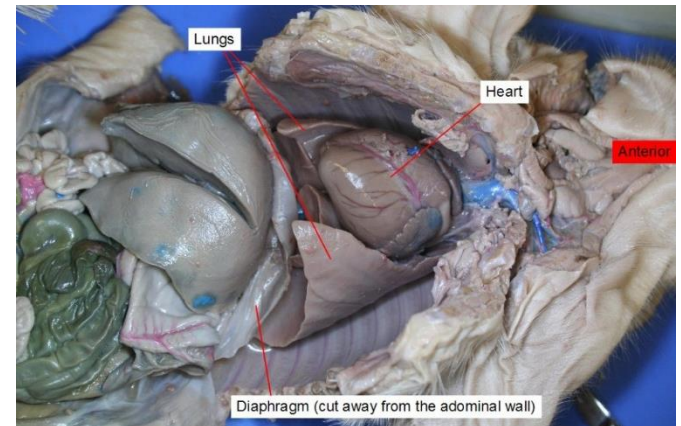
<http://vanat.cvm.umn.edu/ungDissect/Lab10/Lab10.html>

**ló**



<http://vanat.cvm.umn.edu/vetAnomal/regThorax/TH3.html>

**kérődő**



<https://courses.lumenlearning.com/suny-bio2labs/chapter/reading-fetal-pig-dissection/>

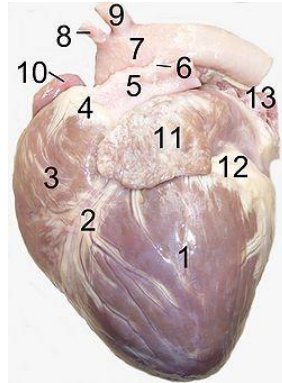
**sertés**



# SZÍV (COR)

**MÉRETEI:**

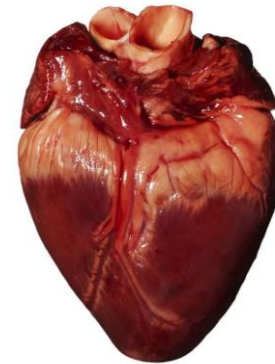
**KUTYA**



**25 – 470 gr**

[https://en.wikipedia.org/wiki/Ligamentum\\_arteriosum](https://en.wikipedia.org/wiki/Ligamentum_arteriosum)

**SERTÉS**



**90 - 500gr**

<https://fineartamerica.com/featured/1-pigs-heart-kevin-curtis.html>

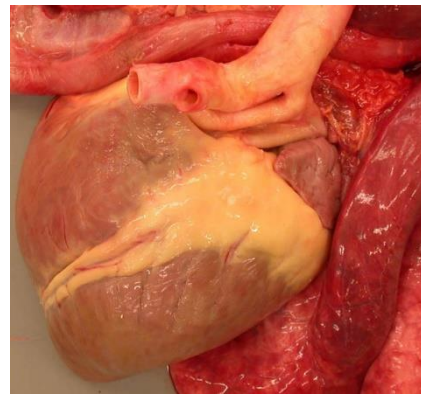
**LÓ**

**KÉRŐDZŐ**



**3,3 kg**

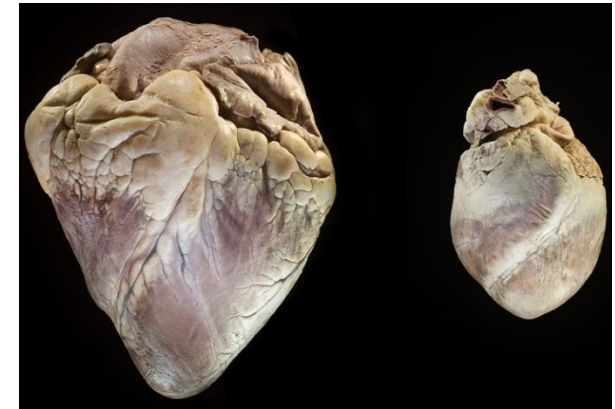
<http://www.frimosa.com/en/products/bovine/heart-bovine.html>



**1,3 – 4,20 kg**

<http://vanat.cvm.umn.edu/ungDissect/Lab10/lmg10-10.html>

**KÉRŐDZŐ**

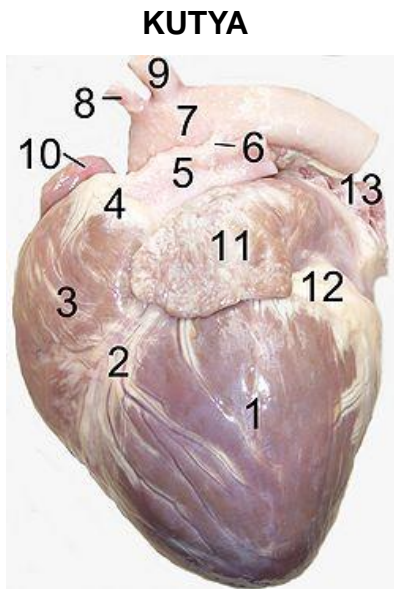


**SERTÉS**

[http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin\\_Corbin/KCorbin\\_heart\\_valves.html](http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin_Corbin/KCorbin_heart_valves.html)

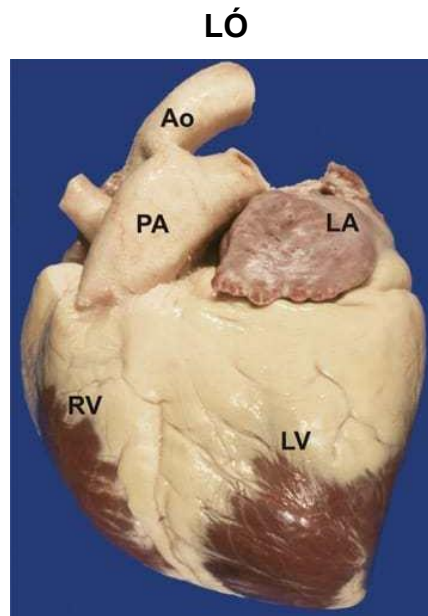
# SZÍV (COR)

## ALAKJA:



**csonkakúp alakú**

[https://en.wikipedia.org/wiki/Ligamentum\\_arteriosum](https://en.wikipedia.org/wiki/Ligamentum_arteriosum)



**lapított kúp alakú**

<https://thehorse.com/115834/the-equine-heart-power-plant-unequaled/>

**KÉRŐDZŐ**



**kúp alakú**

[http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin\\_Corbin/K\\_Corbin\\_heart\\_valves.html](http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin_Corbin/K_Corbin_heart_valves.html)

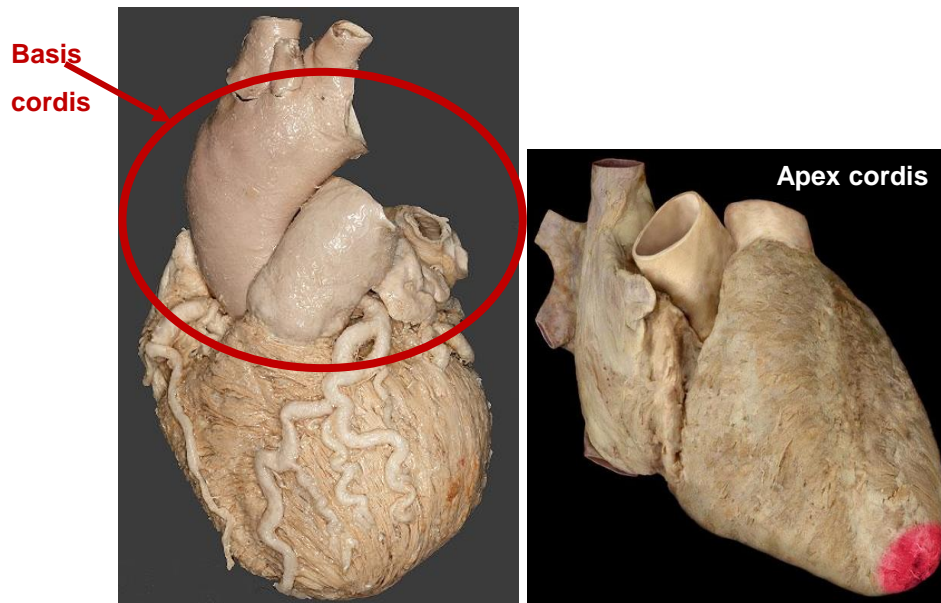
**SERTÉS**

**csonkakúp alakú**

# SZÍV FELÉPÍTÉSE

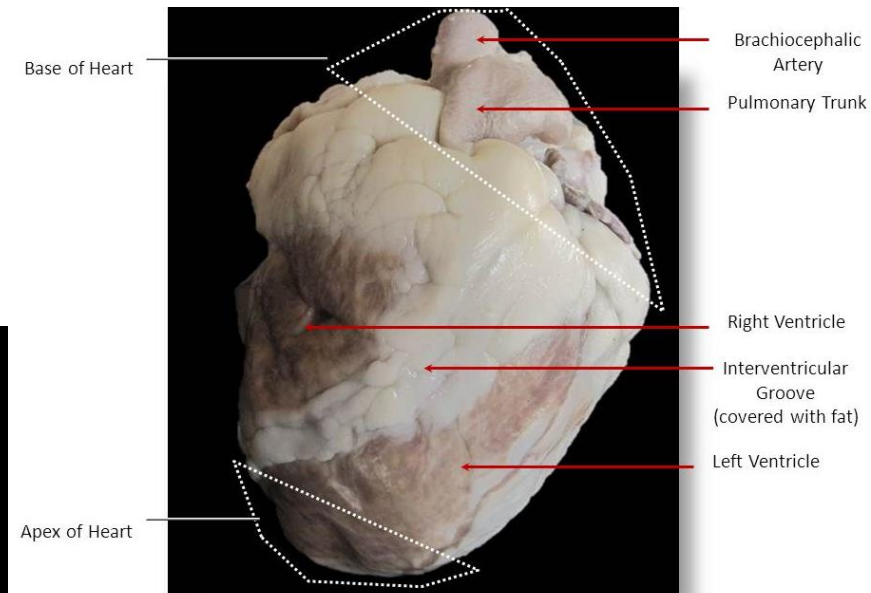
1. szív bázis (BASIS CORDIS) – nagyerek, pitvarok, fülcsék

2. szívcsúcs (APEX CORDIS) – bal kamra alkotja



humán szív

<https://www.studyblue.com/notes/n/heart-anatomy/deck/10585815>



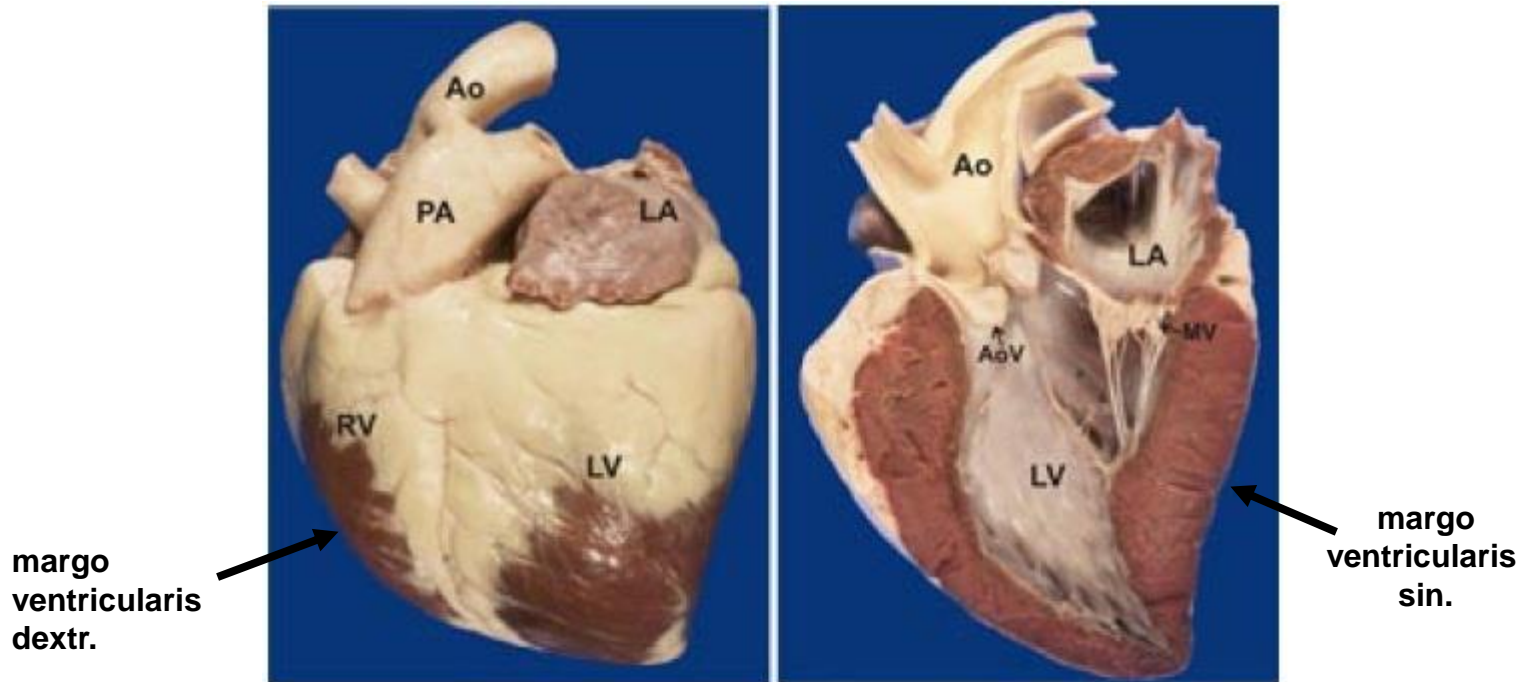
Anterior View of Sheep Heart

© 2010 CD McKenzie & AW Parsons

<https://slideplayer.com/slide/4684907/>

# SZÍV FELÉPÍTÉSE

1. margo ventricularis dextr. – kranialis szél
2. margo ventricularis sin. – kaudális szél – rekeszizmon fekszik



**Left:** Photo shows the outside of a horse heart. **Right:** Photo shows the inside of the left heart. Ao = aorta; PA = pulmonary artery; LA = left atrium; LV = left ventricle; RV = right ventricle; MV = mitral valve; AoV = aortic valve.

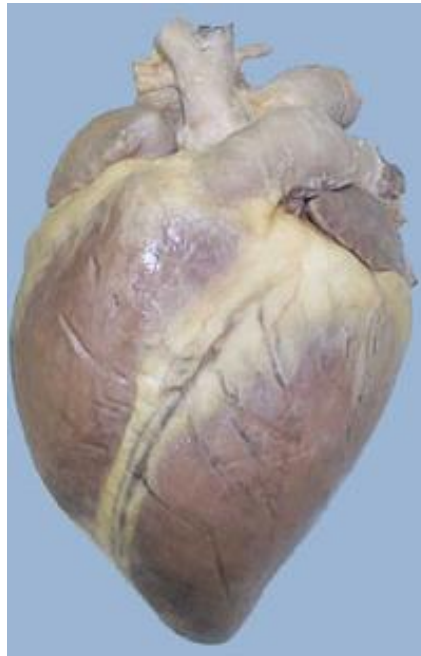


# SZÍV FELÉPÍTÉSE

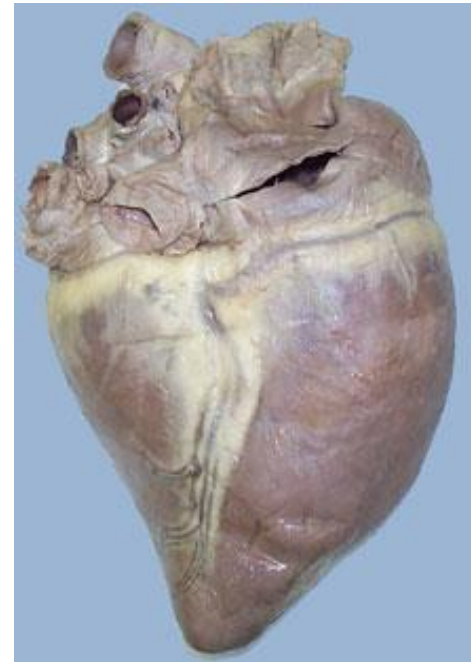
**FESZÍNEI:**

**a) facies auricularis (bal felszín)**

**b) facies atrialis (jobb felszín)**



**Facies auricularis**



**Facies atrialis**

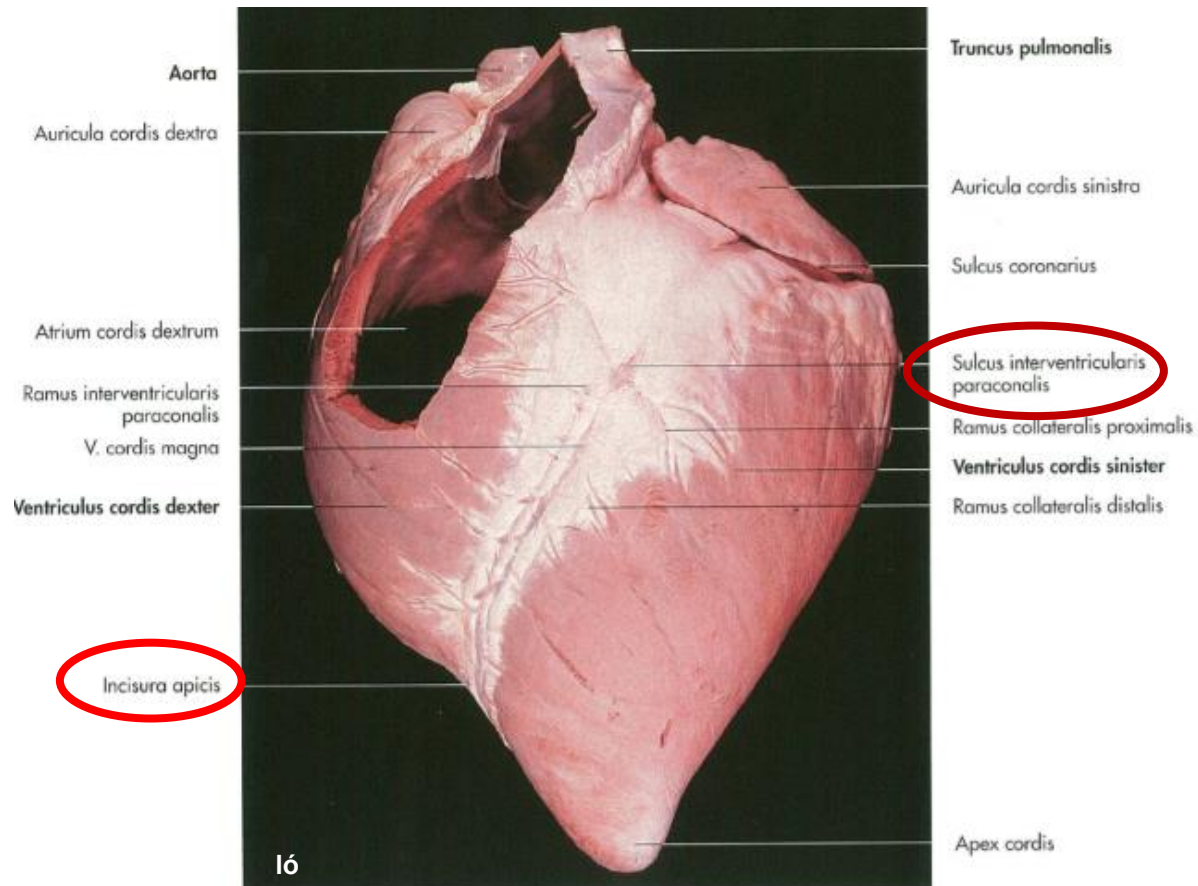
**ló szív**

<http://www.thinklikeahorse.org/index-5.html>

# SZÍV FELÉPÍTÉSE

## FACIES AURICULARIS:

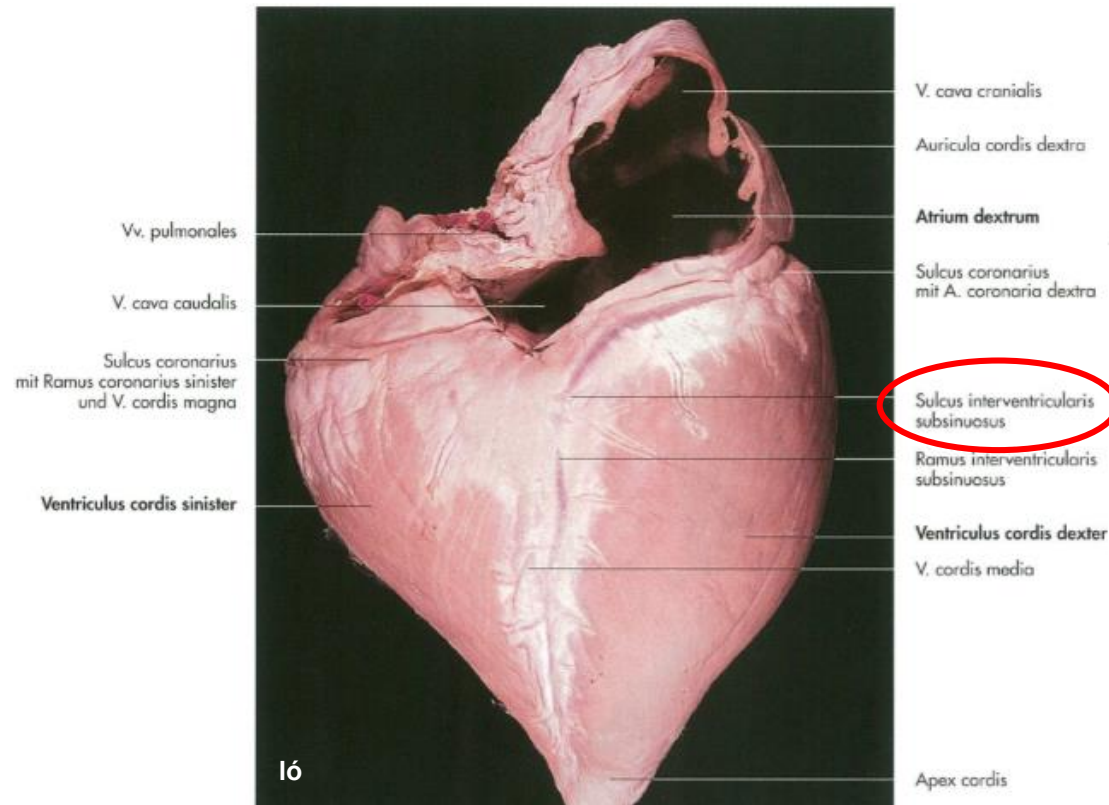
- **sulcus interventricularis paraconalis**
- **incisura apicis cordis**



# SZÍV FELÉPÍTÉSE

## FACIES ATRIALIS:

- **sulcus interventricularis subsinuosus**



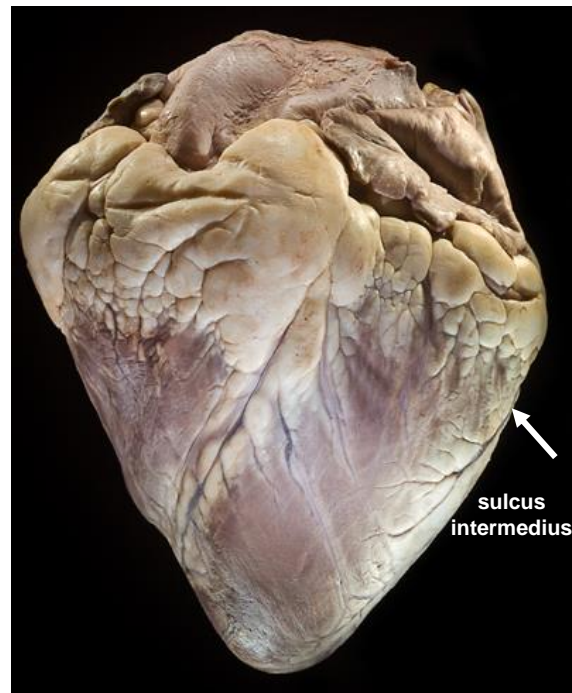
# SZÍV FELÉPÍTÉSE

**KÉRŐDZŐ:**

**SULCUS INTERMEDIUS:**

- margo ventricularis sin.

**KÉRŐDZŐ**



[http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin\\_Corbin/KCorbin\\_heart\\_valves.html](http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin_Corbin/KCorbin_heart_valves.html)

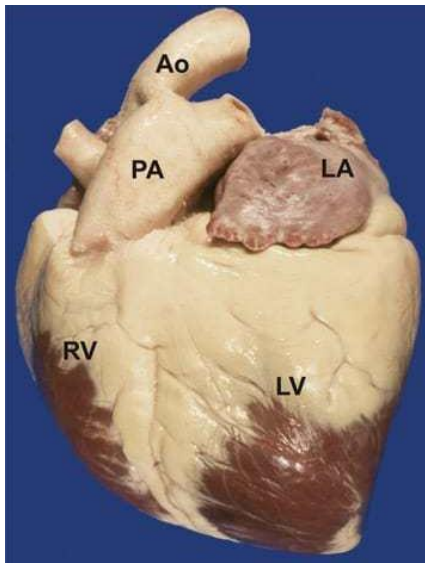


# SZÍV FELÉPÍTÉSE

zsír tölti ki:

- **sulcus interventricularis subarteriosus**
- **sulcus interventricularis subsinuosus**
- **sulcus intermedius (Bo)**

LÓ



<https://thehorse.com/115834/the-equine-heart-power-plant-unequaled/>

KÉRŐDZŐ



SERTÉS

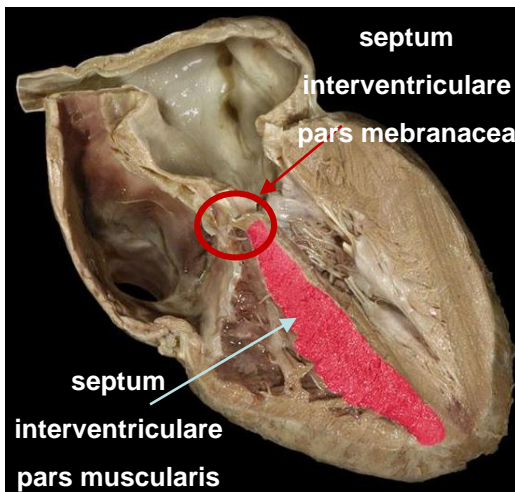
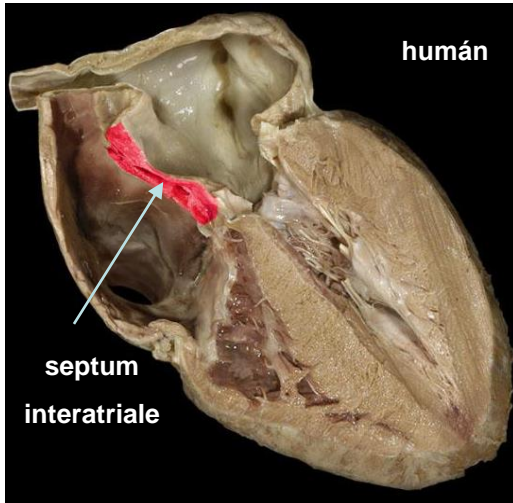


[http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin\\_Corbin/KCorbin\\_heart\\_valves.html](http://www.microscopyuk.org.uk/mag/artnov10macro/Kaitlin_Corbin/KCorbin_heart_valves.html)

# SEPTUM CORDIS (SZÍVSÖVÉNY):

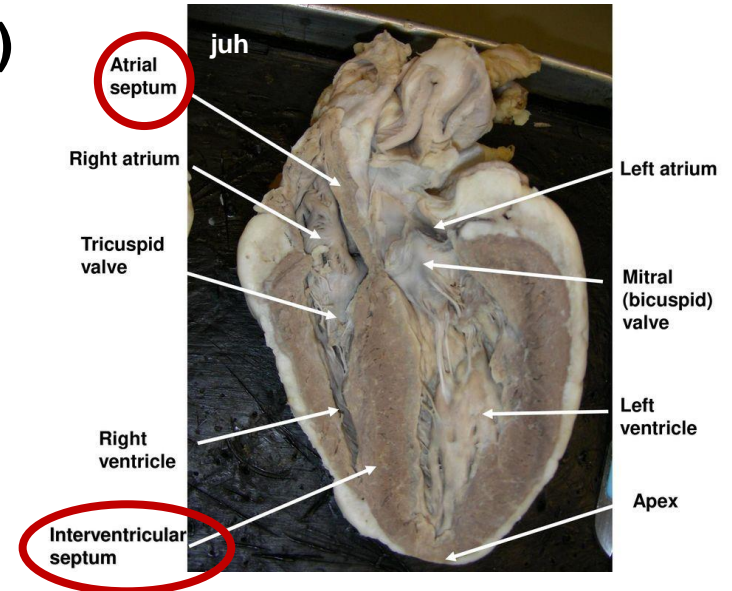
1. jobb szívfél – kisvérkör

2. bal szívfél – nagyvérkör

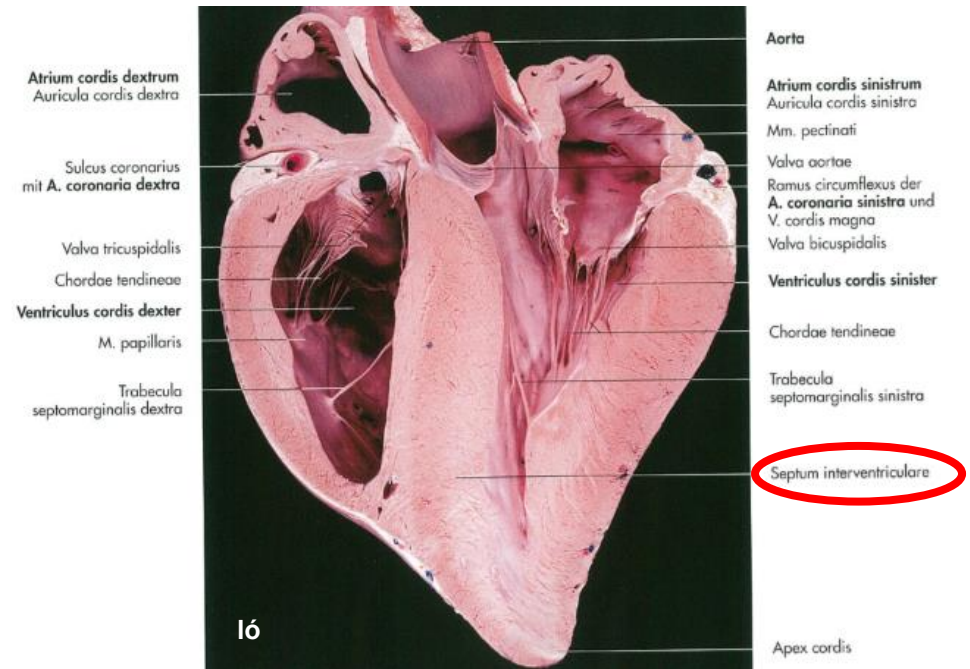


<https://www.studyblue.com/notes/n/heart-anatomy/deck/10585815>

# SZÍV (COR)

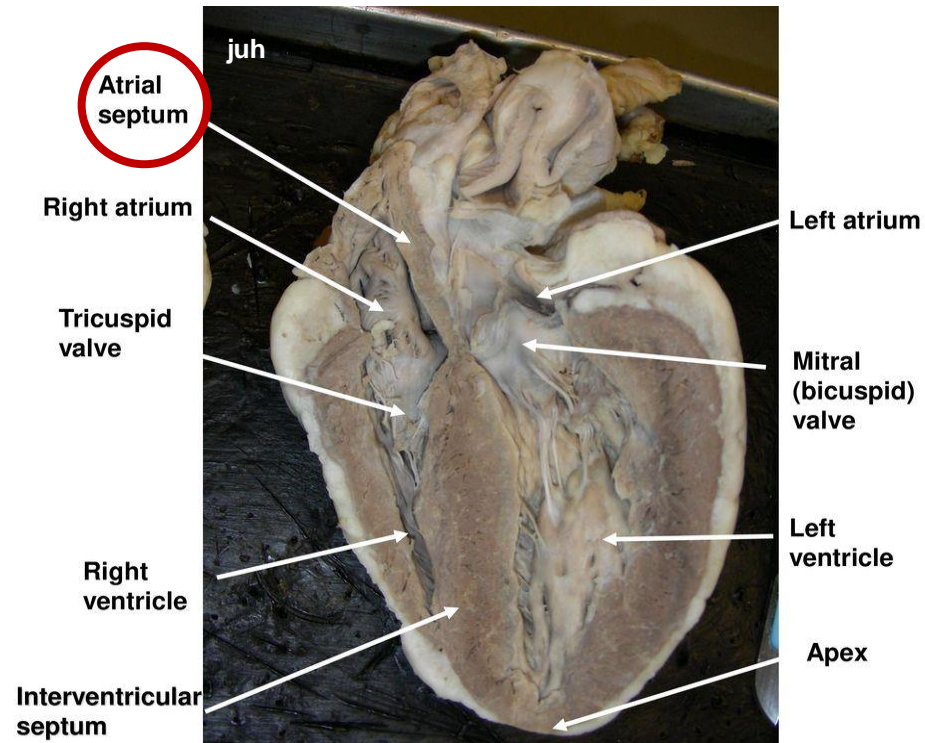


<https://www.topsimages.com/images/sheep-heart-septum-84.html>



# SEPTUM INTERATRIALIE

- jobb és bal pitvar közötti sővény



<https://www.topsimages.com/images/sheep-heart-septum-84.html>



# SEPTUM INTERVENTRICULARE

- jobb és a bal kamra közötti sөvény

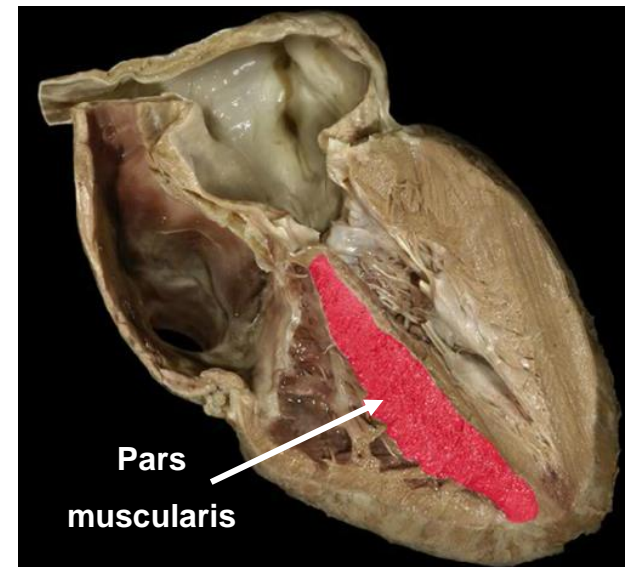
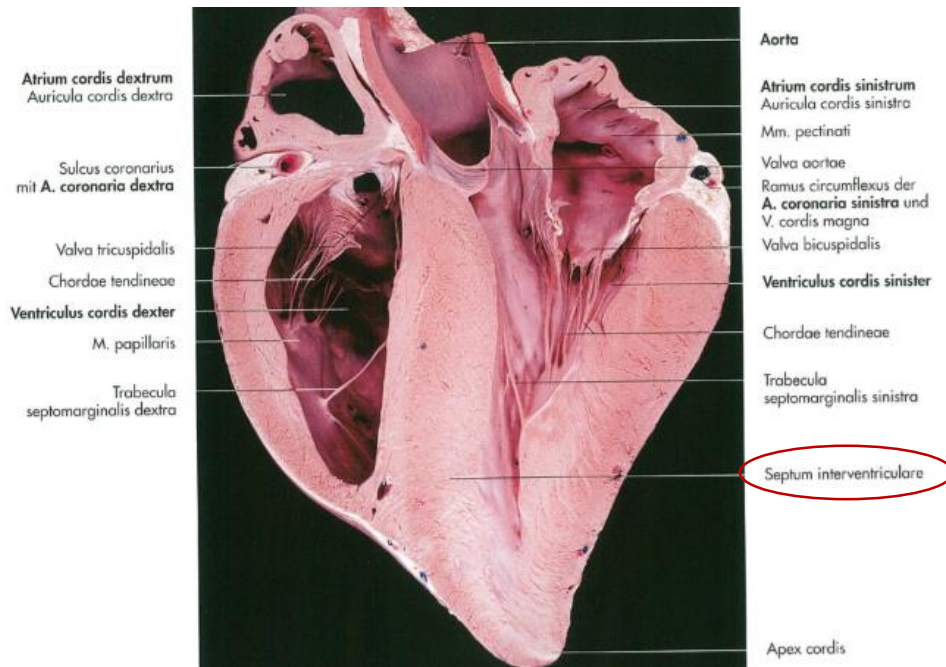
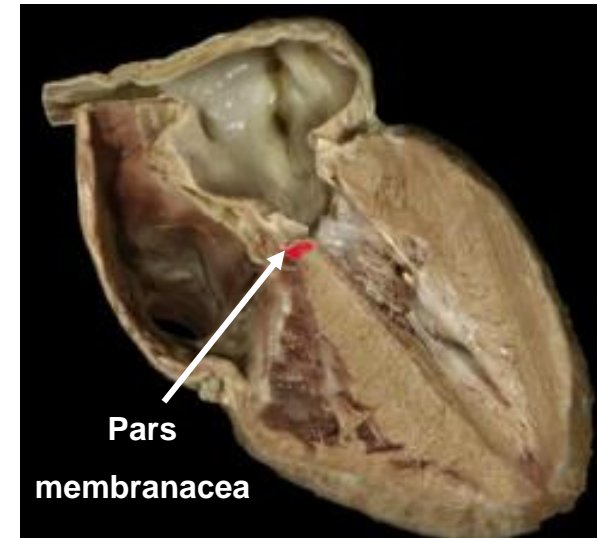
## RÉSZEI:

### 1. PARS MUSCULARIS:

- nagyobb részét alkotja
- izmos

### 2. PARS MEMBRANACEA:

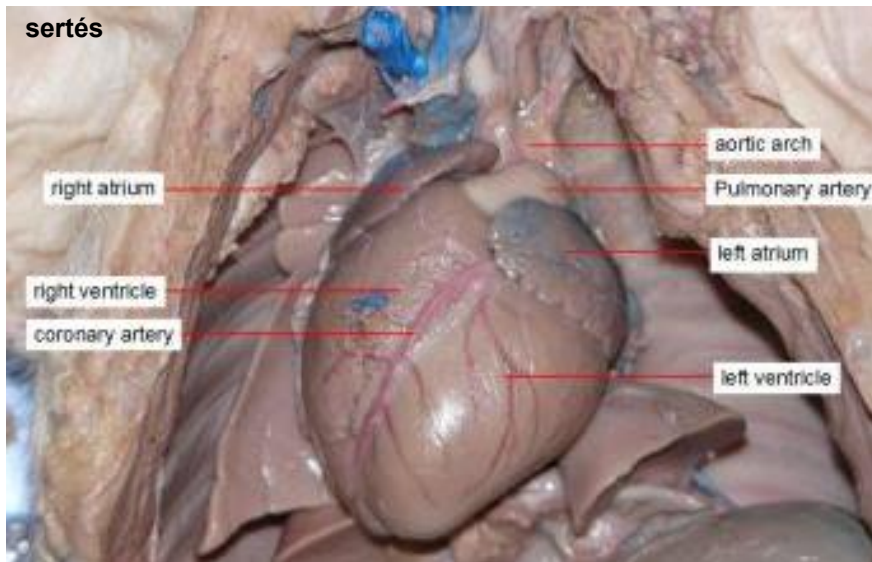
- felső kisebb részét adja
- hártyás



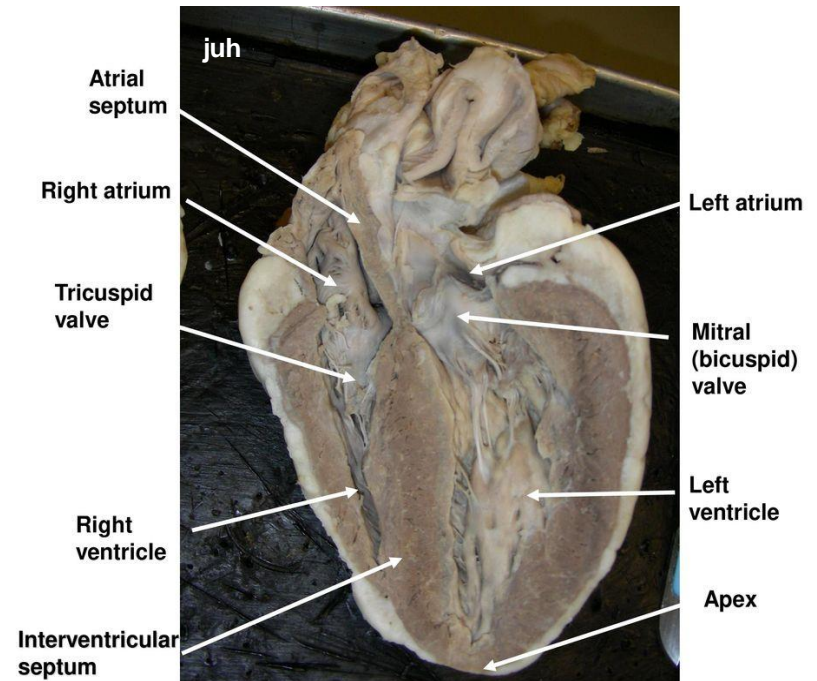


# SZÍV ÜREGEI

- jobb pitvar – atrium dextrum
- bal pitvar – atrium sinistrum
- jobb kamra – ventriculus dexter
- bal kamra – ventriculus sinister



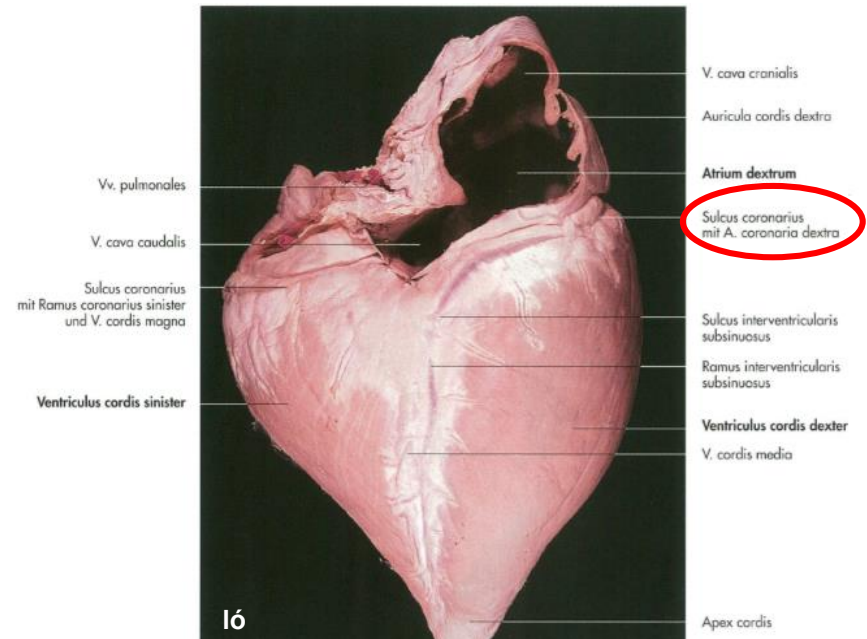
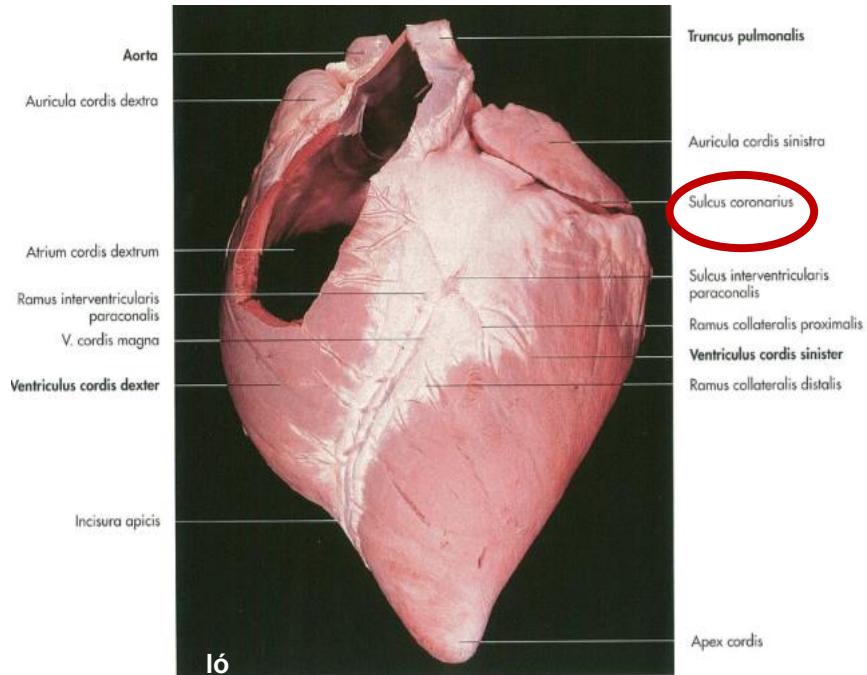
<https://www.imagenesmy.com/imagenes/fetal-pig-coronary-artery-12.html>



<https://www.topsimages.com/images/sheep-heart-septum-84.html>

# SULCUS CORONARIUS

- pitvarok és kamrák közötti határ
- szív artériái és vénái haladnak benne

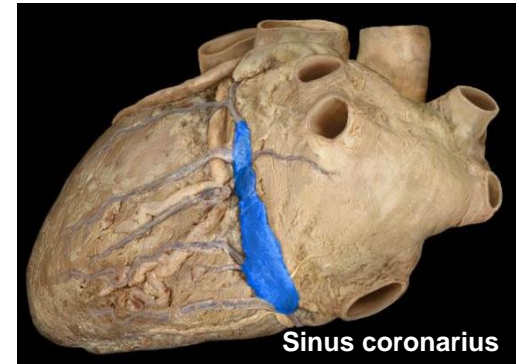


# ATRIUM DEXTRUM

FELADAT:

KISVÉRKÖR RÉSZE!

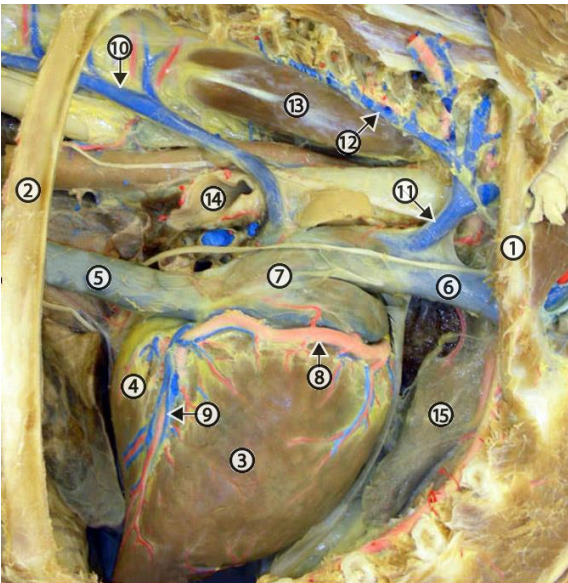
1. vena cava cranialis
2. vena cava caudalis
3. sinus coronarius ömlik bele



humán szív

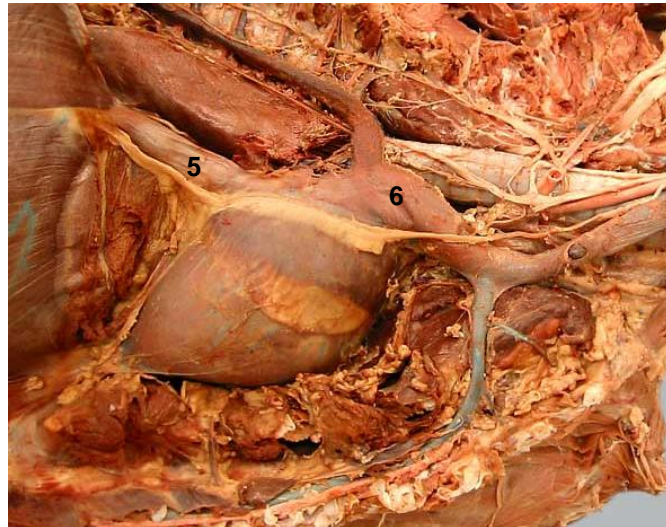
<https://www.studyblue.com/notes/note/n/heart-anatomy/deck/10585815>

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<http://vanat.cvm.umn.edu/ungDissect/Lab10/lmg10-9.html>

kutya



<http://vanat.cvm.umn.edu/carnLabs/Lab11/lmg11-7.html>

5: v. cava caud.

6: v. cava cran.

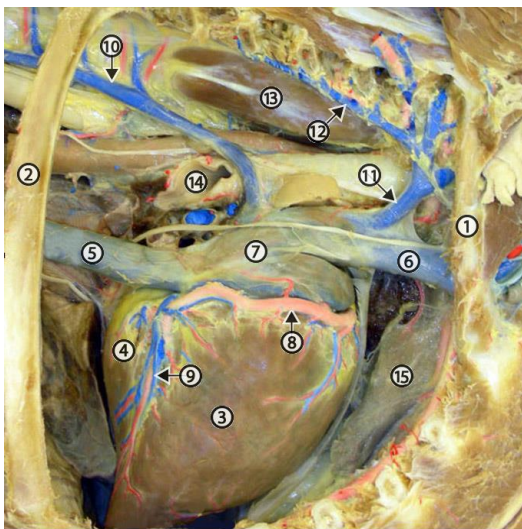


# ATRIUM DEXTRUM

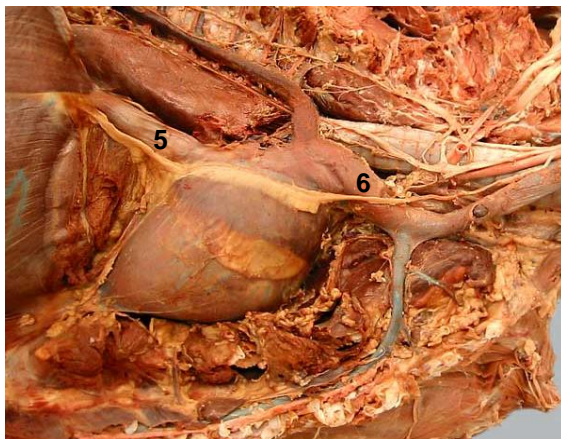
**VENA CAVA CAUDALIS:**

**beömlése: Ostium venae cavae caudalis – Valvula venae cavae caudalis (Valvula Eustachii)**

16



kutya



5: V. cava caud., 6: V. cava cran.

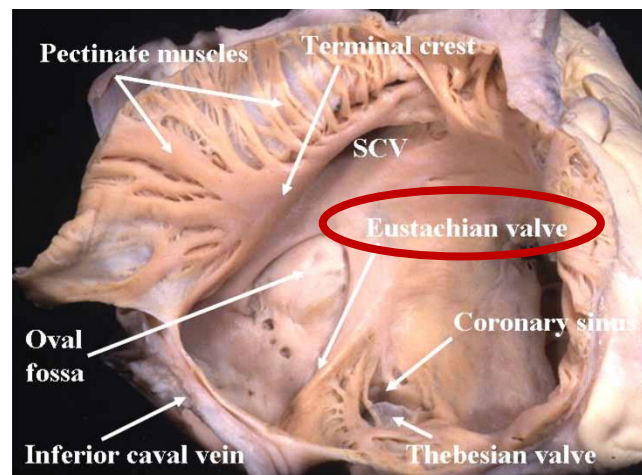
<http://vanat.cvm.umn.edu/ungDissect/Lab10/mg10-9.html>

5: V. cava caud. 6: V. cava cran.

<http://vanat.cvm.umn.edu/carnLabs/Lab11/img11-7.html>



**Bartolomeo  
Eustachii**



menschliches Herz

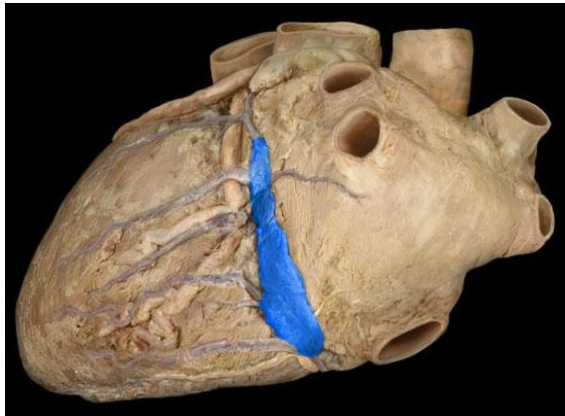
<http://healthyheart-sundar.blogspot.com/2011/03/anatomy-of-heart.html>



# ATRIUM DEXTRUM

## SINUS CORONARIUS:

beömlése: Ostium sinus coronarii – Valvula sinus coronarii (Valvula Thebesii)

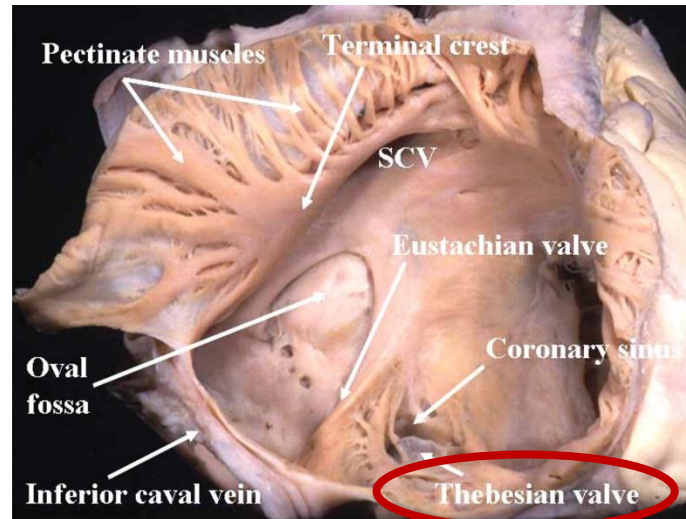


Sinus coronarius (humán szív)

<https://www.studyblue.com/notes/note/n/heart-anatomy/deck/10585815>



Adam Christian  
Thebesius



menschliches Herz

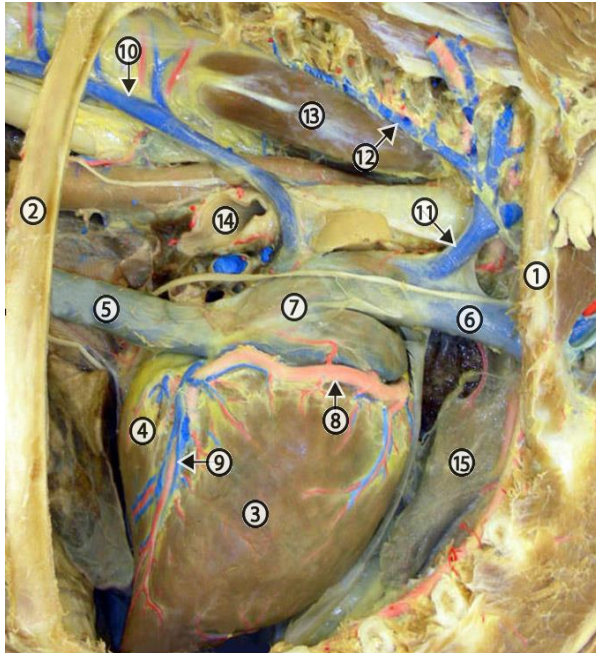
<http://healthyheart-sundar.blogspot.com/2011/03/anatomy-of-heart.html>

# ATRIUM DEXTRUM

VENA CAVA CRANIALIS:

beömlése – Ostium venae cavae cranialis – **nincs benne billentyű**

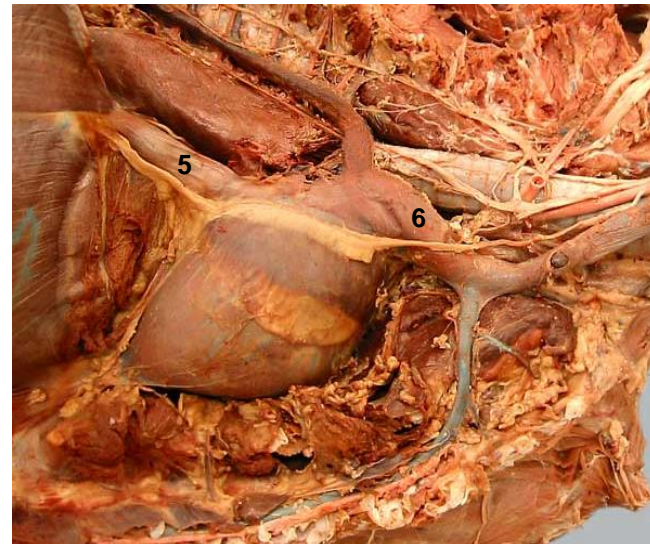
ló



5: V. cava caud., 6: V. cava cran.

<http://vanat.cvm.umn.edu/ungDissect/Lab10/Img10-9.html>

kutya



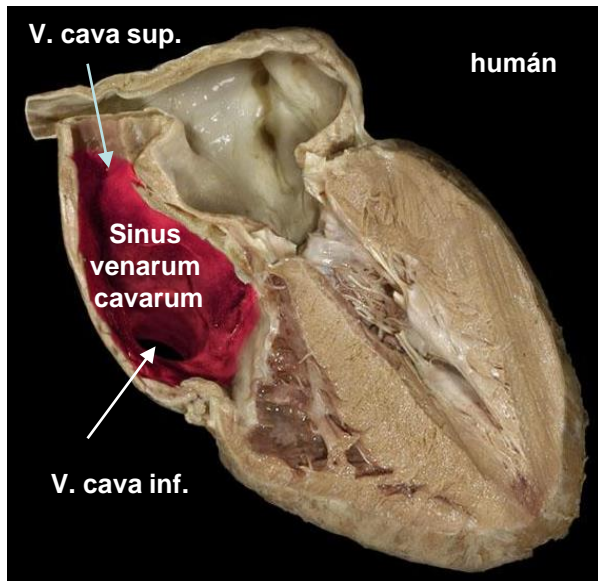
5: V. cava caud. 6: V. cava cran.

<http://vanat.cvm.umn.edu/carnLabs/Lab11/Img11-7.html>

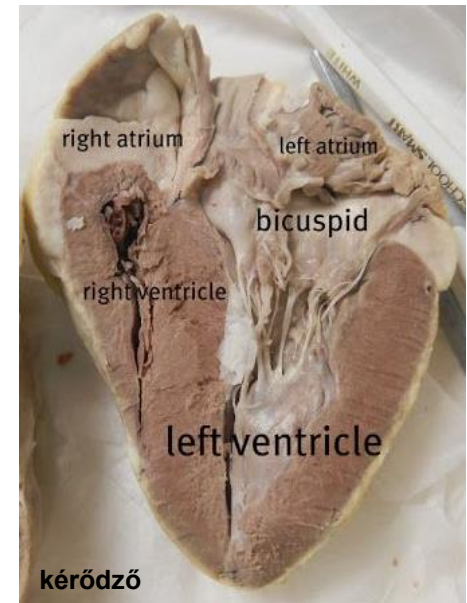
# ATRIUM DEXTRUM

## SINUS VENARUM CAVARUM:

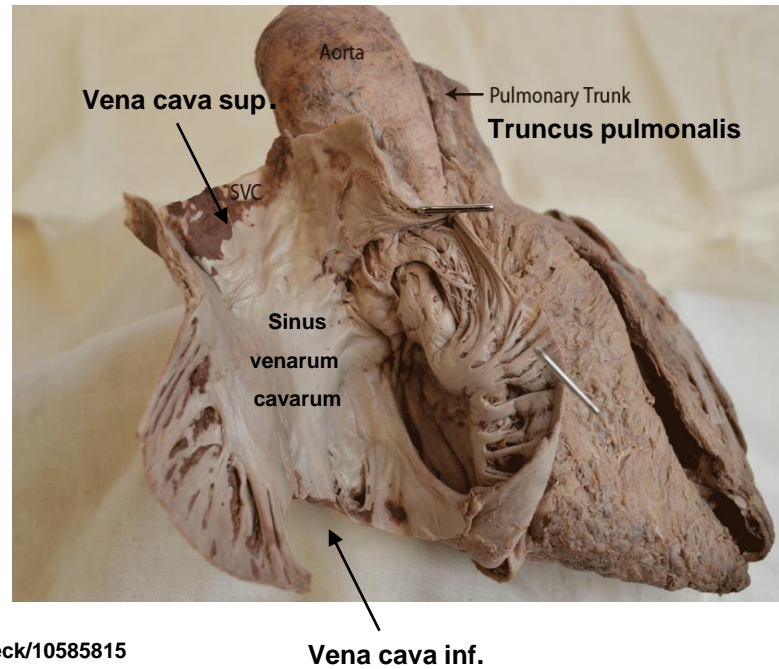
- v. cava cranialis et caudalis összeöleése
- jobb pitvar sima falú részét képezi



<https://www.studyblue.com/notes/note/n/heartanatomy/deck/10585815>



<https://hu.pinterest.com/pin/322570392034018744/>



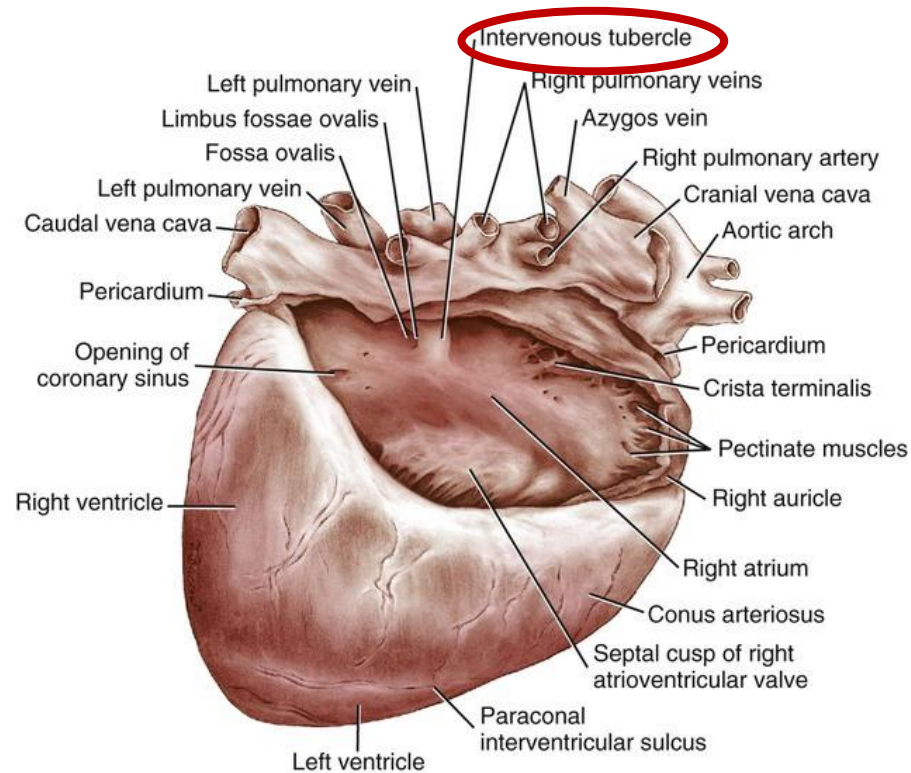
Vena cava inf.



# ATRIUM DEXTRUM

## SINUS VENARUM CAVARUM:

- tuberculum intervenosum





# ATRIUM DEXTRUM

## BELSŐ FALA:

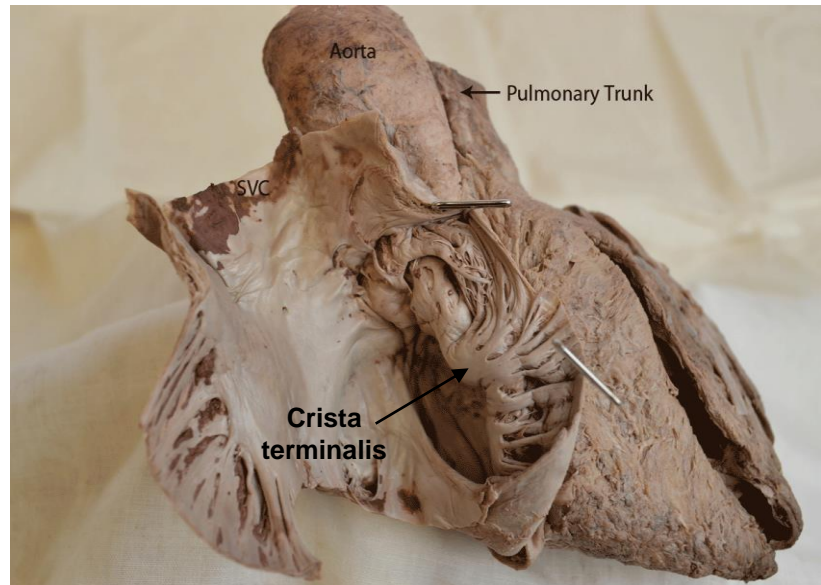
- nagy része sima falú

## CRISTA TERMINALIS:

- kívül sulcus terminálisnak felel meg
- fésű izmok (mm. pectinati) eredésére szolgál



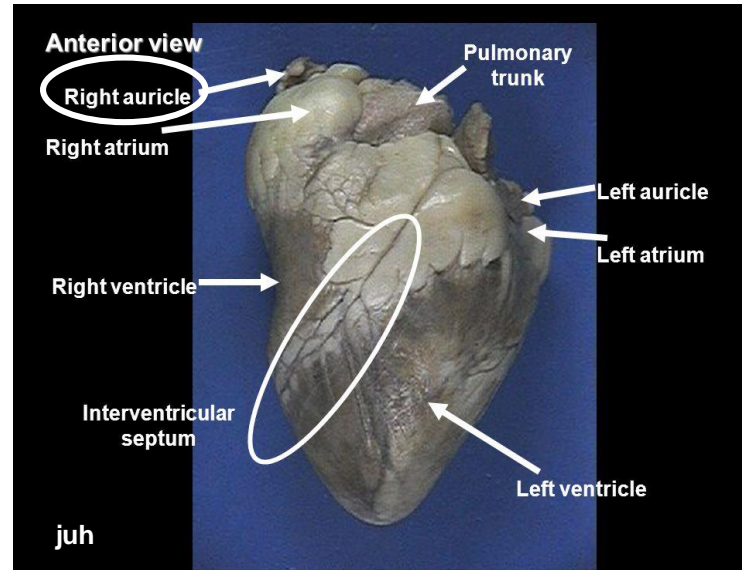
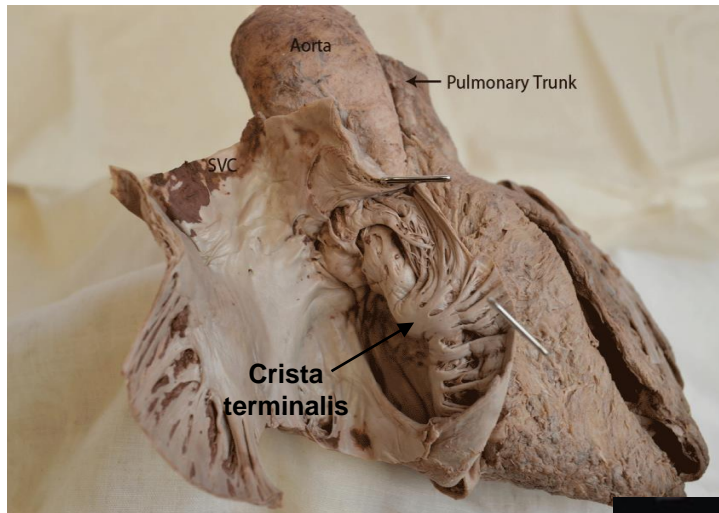
Crista terminalis



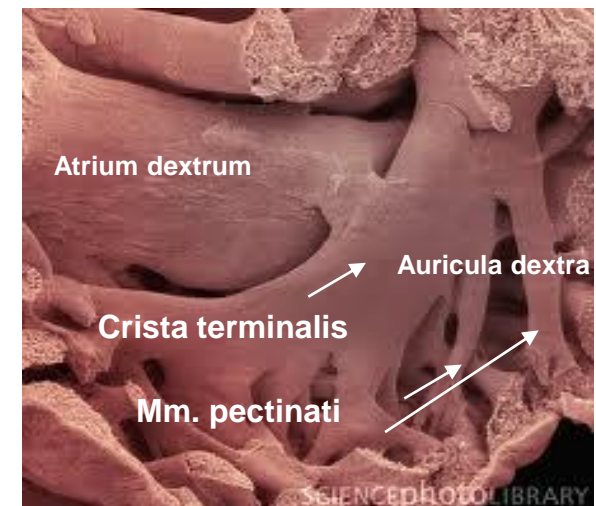
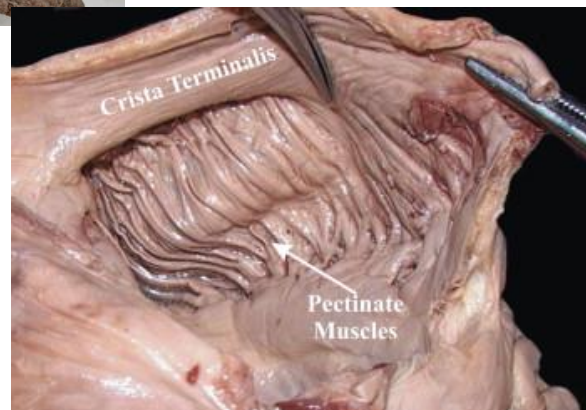
# ATRIUM DEXTRUM

## AURICULA DEXTRA (jobb fülcse)

- vak tasak
- **aortára mutat**
- mm. pectinati
- primitív pitvar maradványa
- **KLINIKAI JELENTŐSÉG**



<https://slideplayer.com/slide/3433850/>



<https://www.sciencedirect.com/science/article/abs/pii/S0940960207001021>



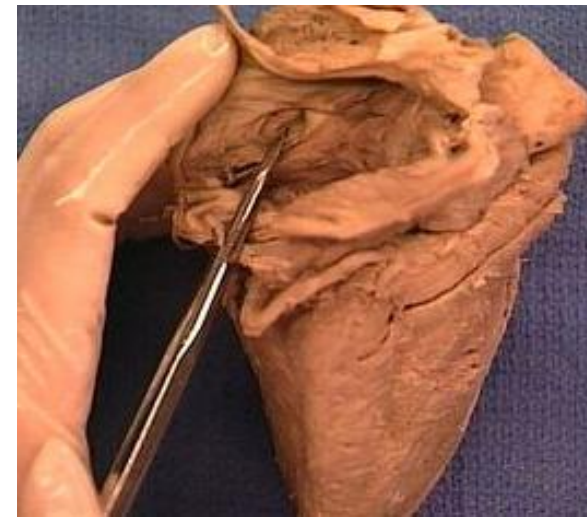
# ATRIUM DEXTRUM

## SEPTUM INTERATRIALE:

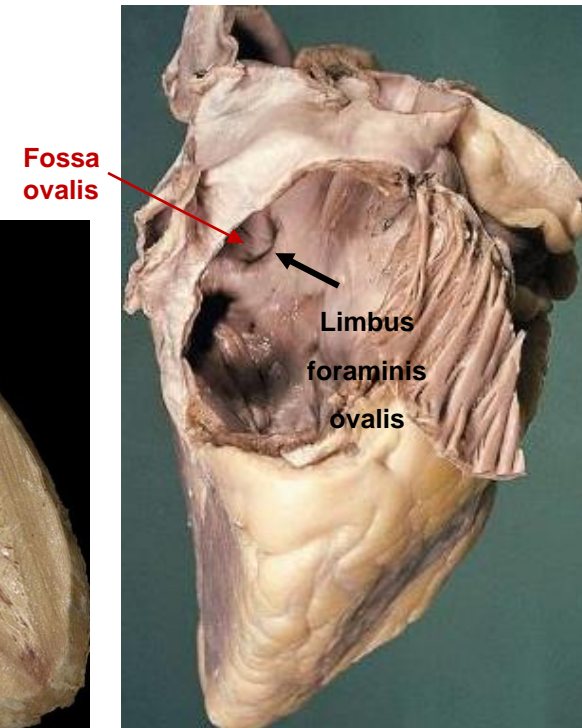
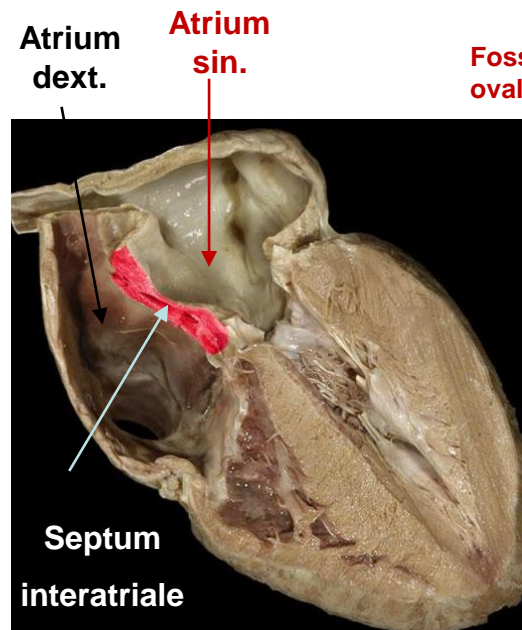
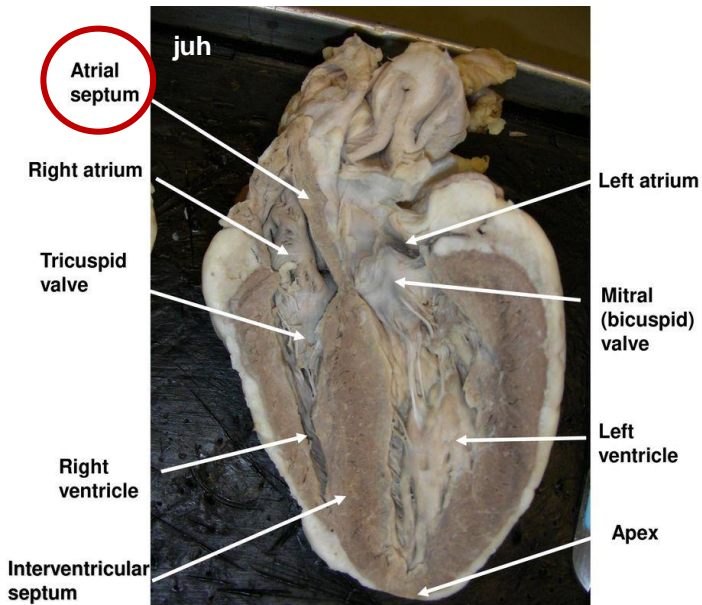
- pitvarok közötti sővény

## FOSSA OVALIS:

- foramen ovale maradványa
- limbus foraminis ovalis



Fossa ovalis



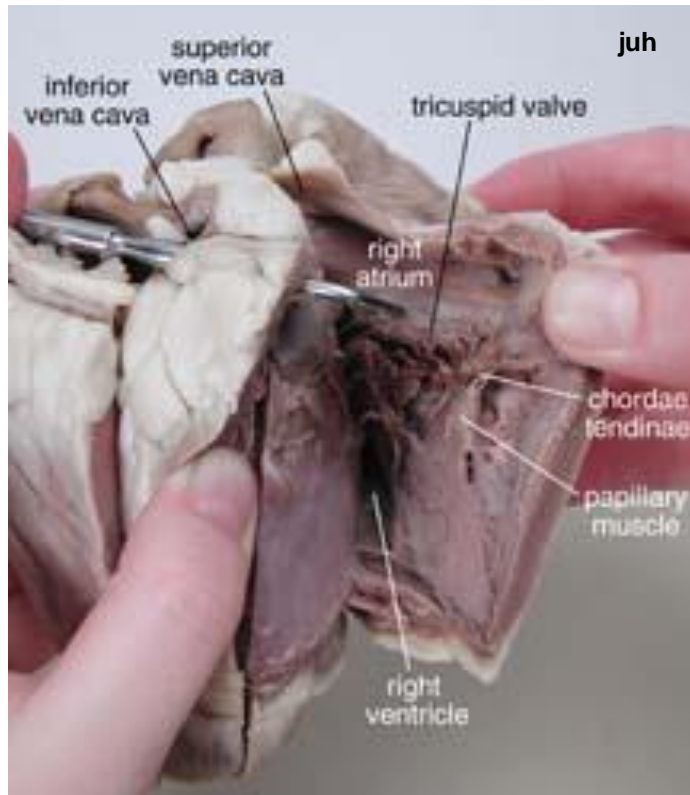
<https://www.topsimages.com/images/sheep-heart-septum-84.html>

<https://www.studyblue.com/notes/n/heart-anatomy/deck/10585815>

# OSTIUM ATRIOVENTRICULARE DEXTRUM (JOBBI PITVAR – KAMRAI SZÁJADÉK)

## FELADAT:

- jobb pitvar és jobb kamra közötti határ
- vitorlás billentyűk zárják

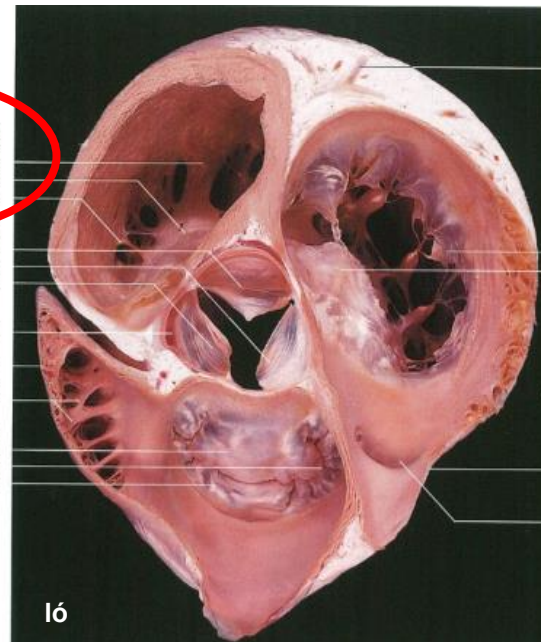


Valva atrioventricularis dextra  
oder tricuspidalis  
Cuspis parietalis  
Cuspis septalis  
Cuspis angularis

Valvula aortae  
Valvula semilunaris septalis  
Valvula semilunaris sinistra  
Valvula semilunaris dextra

A. coronaria dextra  
Auricula dextra  
Mm. pectinati

Valva trunci pulmonalis  
Valvula semilunaris dextra  
Valvula semilunaris sinistra  
Valvula semilunaris intermedia

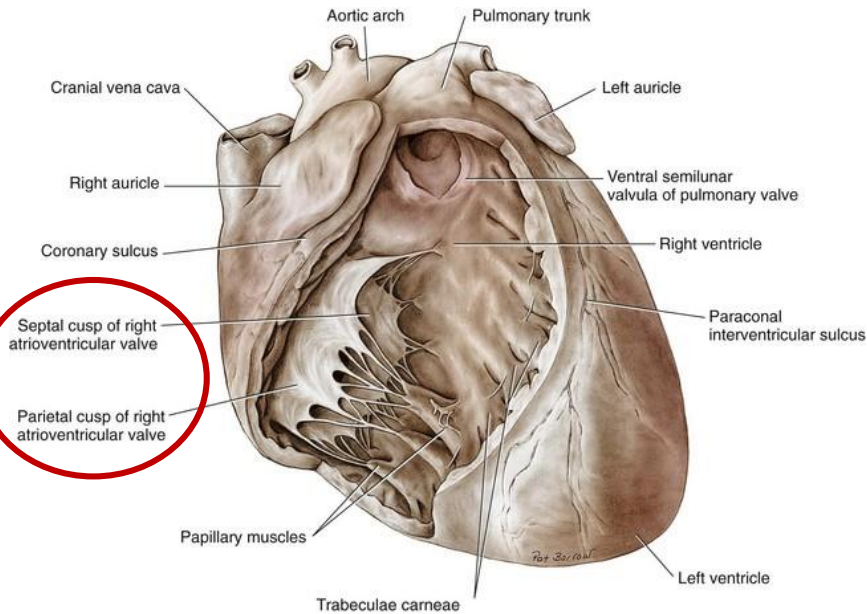




# VALVA ATRIOVENTRICULARIS DEXTRA (VALVA TRICUSPIDALIS)

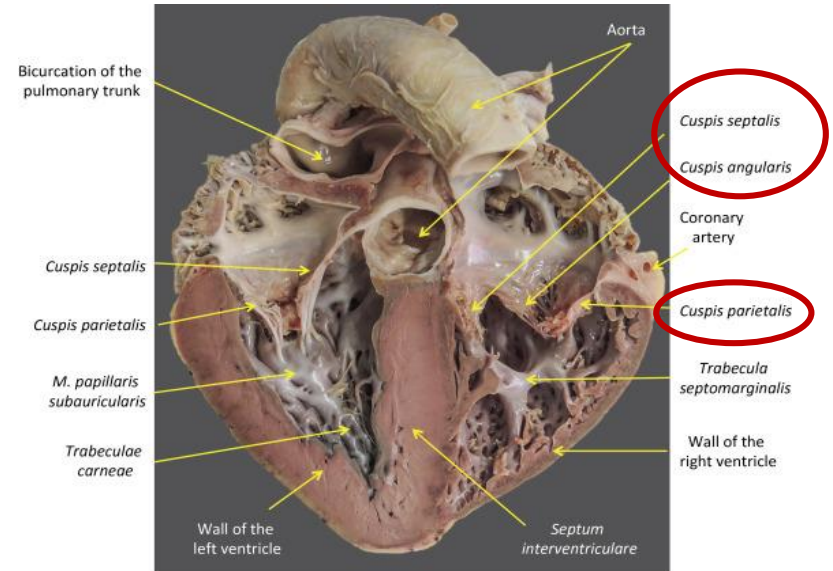
Három vitorla (CUSPIS):

1. **cuspis parietalis**
2. **cuspis angularis**
3. **cuspis septalis**

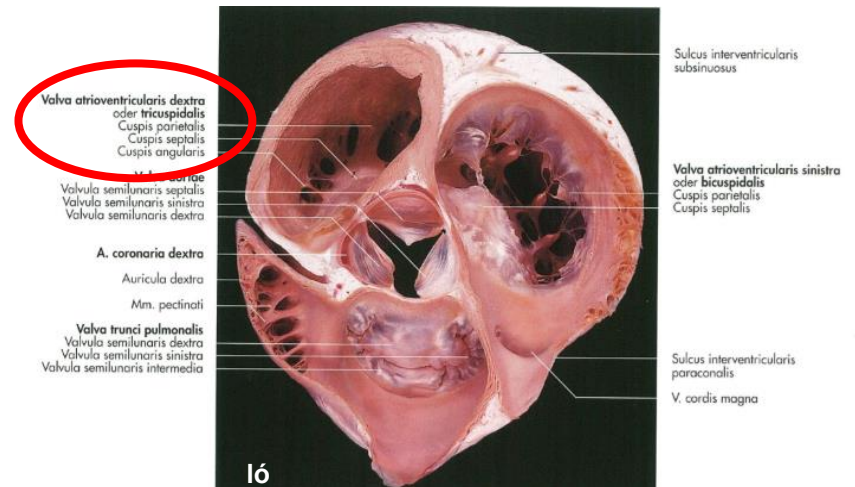


kutya

<https://veteriankey.com/cardiac-surgery/>



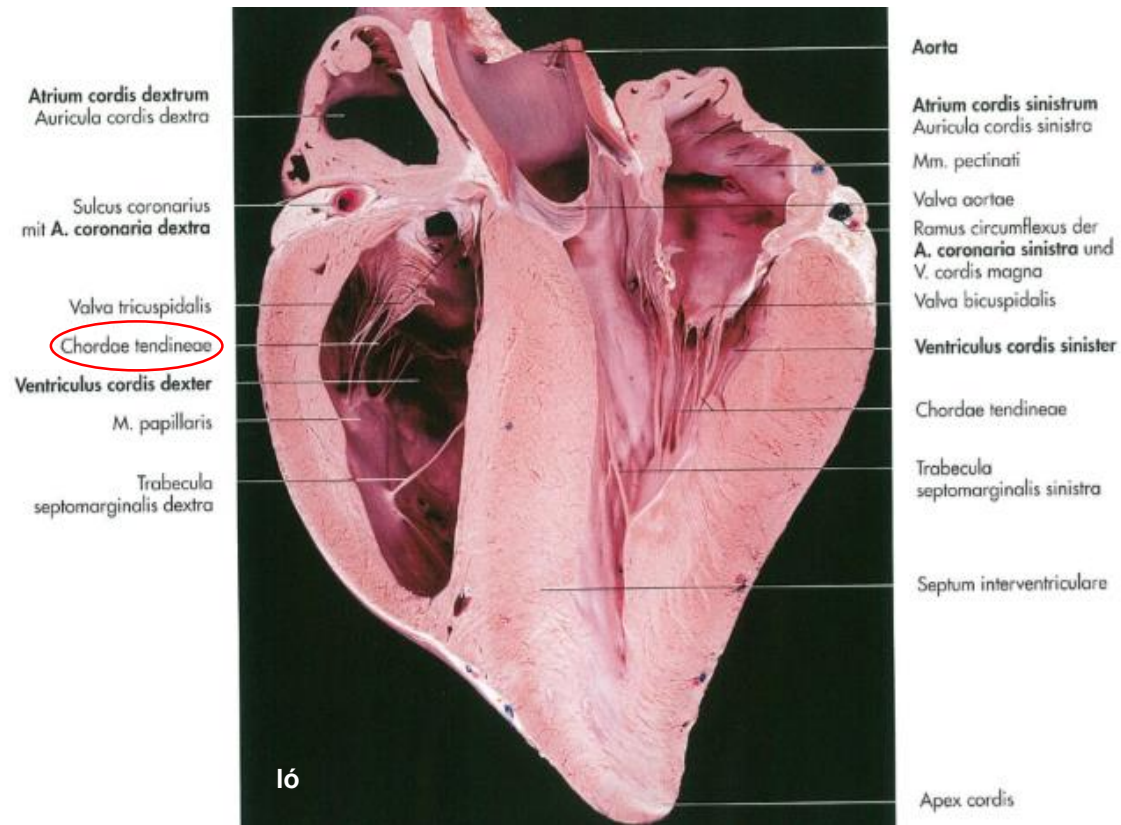
<https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/coronary-sulcus>





# VALVA ATRIOVENTRICULARIS DEXTRA (VALVA TRICUSPIDALIS)

- chordae tendineae – billentyűk rögzítése a papilláris izmokhoz



# ATRIOVENTRIKULARE KLAPPEN

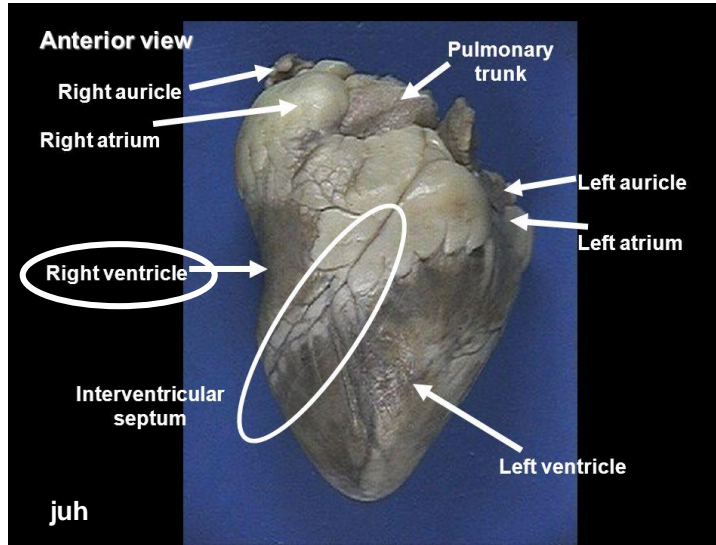


<https://gfycat.com/gifs/tag/heart>

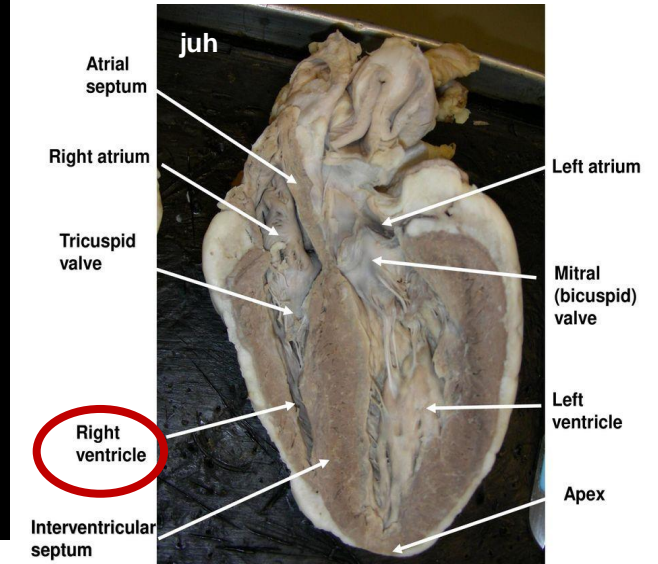
# VENTRICULUS DEXTER

## FALA:

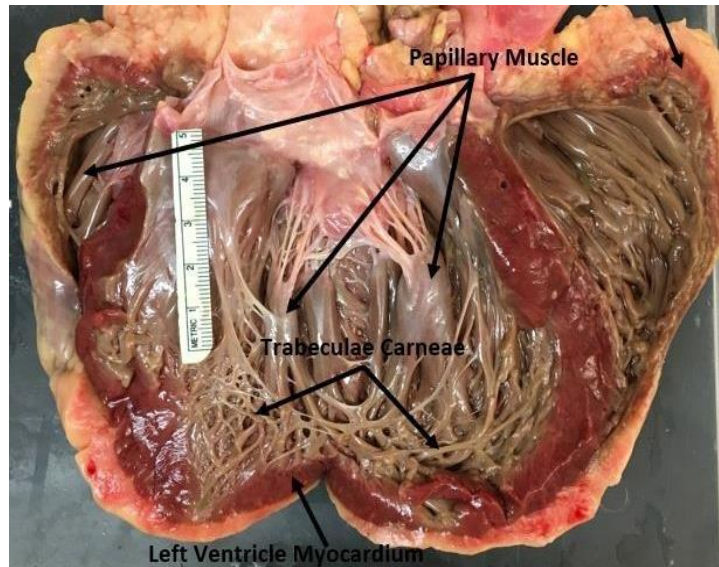
- vékonyabb
- **KISVÉRKÖR RÉSZE**
- chordae tendineae
- trabecula carnea



<https://slideplayer.com/slide/3433850/>



<https://www.topsimages.com/images/sheep-heart-septum-84.html>



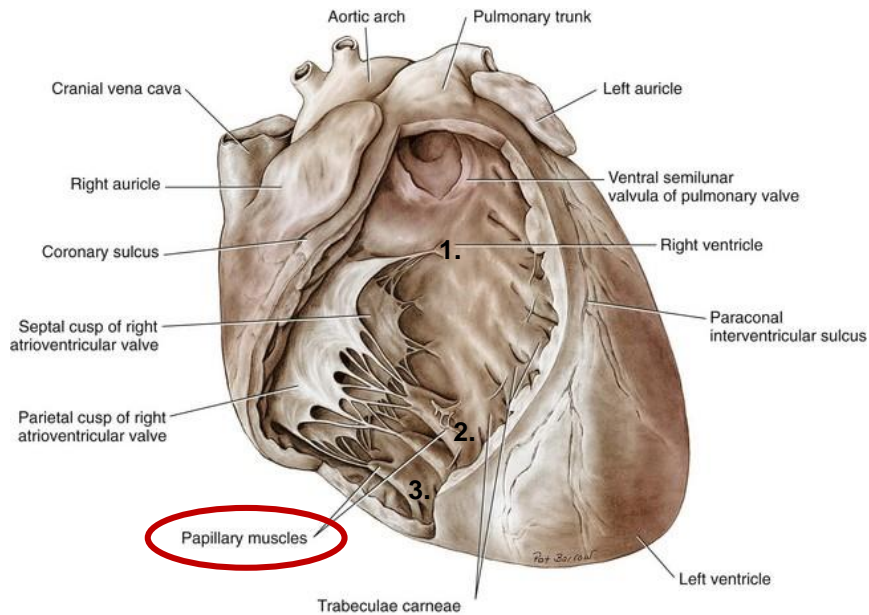
[https://www.researchgate.net/figure/A-representative-human-heart-illustrating-the-trabeculae-carnea-and-myocardium\\_fig1\\_318970068](https://www.researchgate.net/figure/A-representative-human-heart-illustrating-the-trabeculae-carnea-and-myocardium_fig1_318970068)



# VENTRICULUS DEXTER

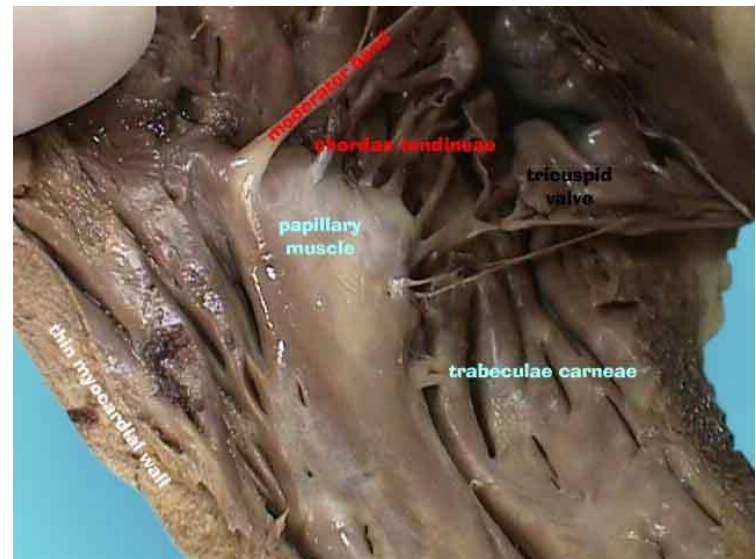
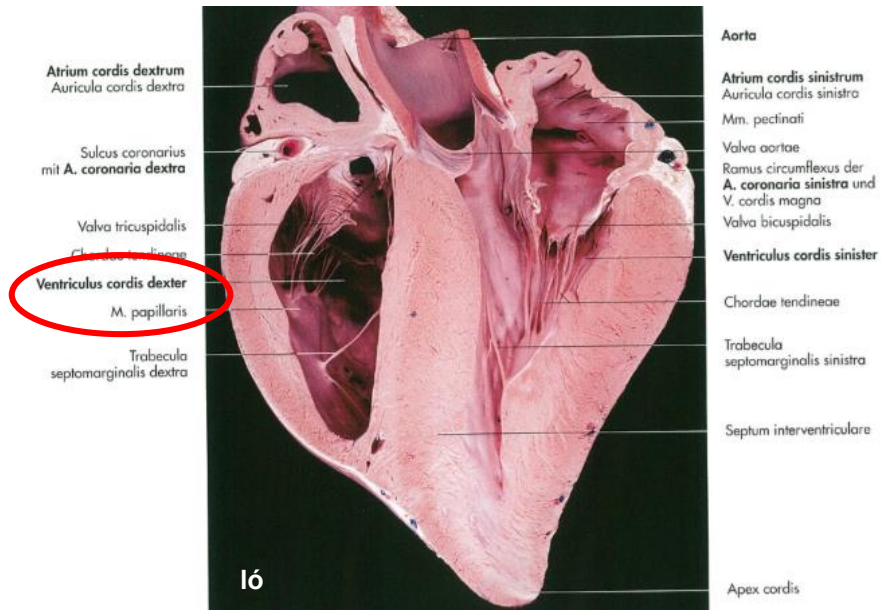
## JOB KAMRA PAPILLÁRIS IZMAI:

1. m. papillaris subarteriosus
2. m. papillaris magnus
3. mm. papillari parvi
4. Sertés: mm. papillari accessorii



kutya

<https://veteriankey.com/cardiac-surgery/>

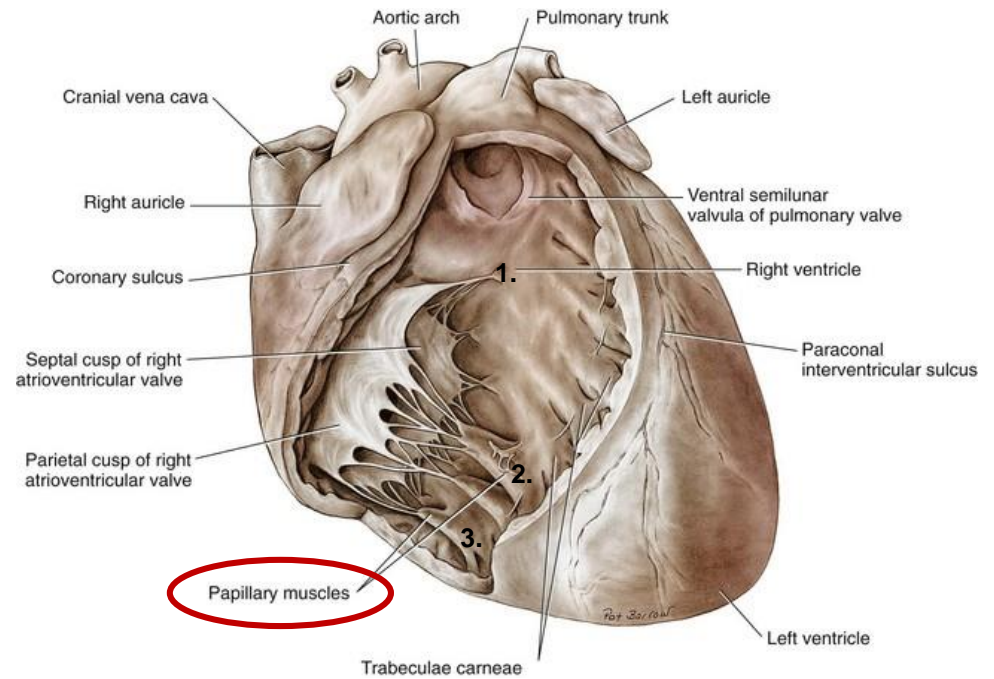


<http://www.kidskunst.info/57/09206-papillary-muscles-sheep-heart.htm>



# VENTRICULUS DEXTER

1. m. papillaris subarteriosus – cuspis angularis
2. m. papillaris magnus – cuspis parietalis
3. mm. papillari parvi – cuspis septalis



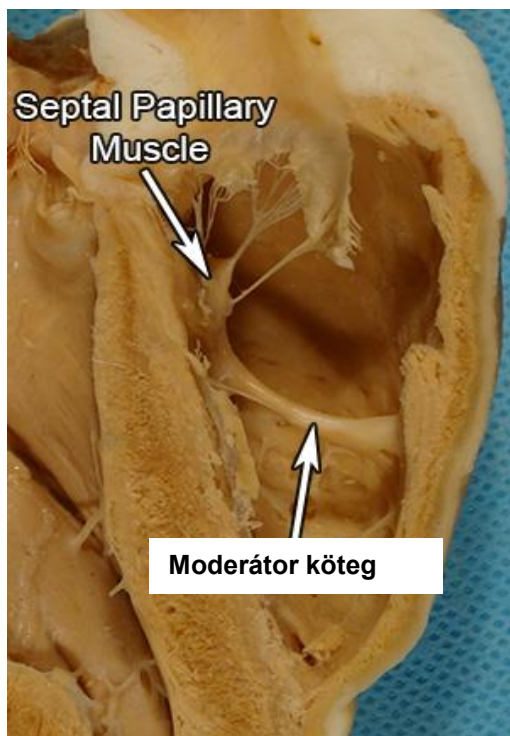
kutya

<https://veteriankey.com/cardiac-surgery/>

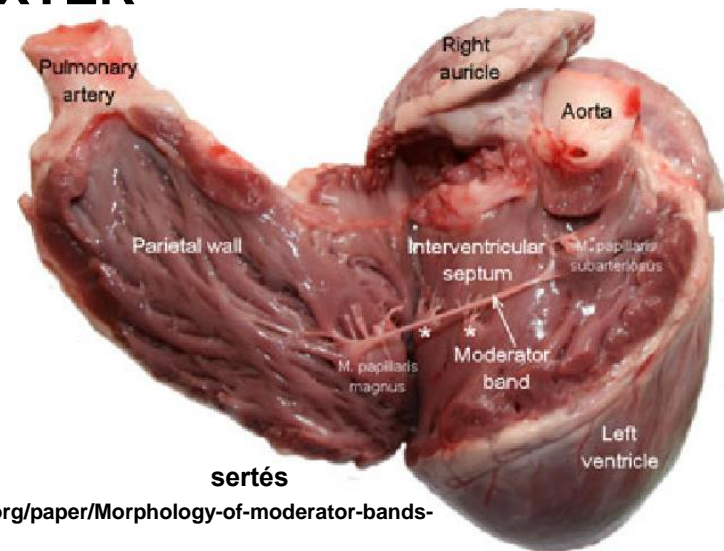
# VENTRICULUS DEXTER

## TRABECULA SEPTOMARGINALIS (MODERÁTOR KÖTEG):

- összeköti a kamra falat a septum interventricularéval
- ingerület vezetése a kamrafalra

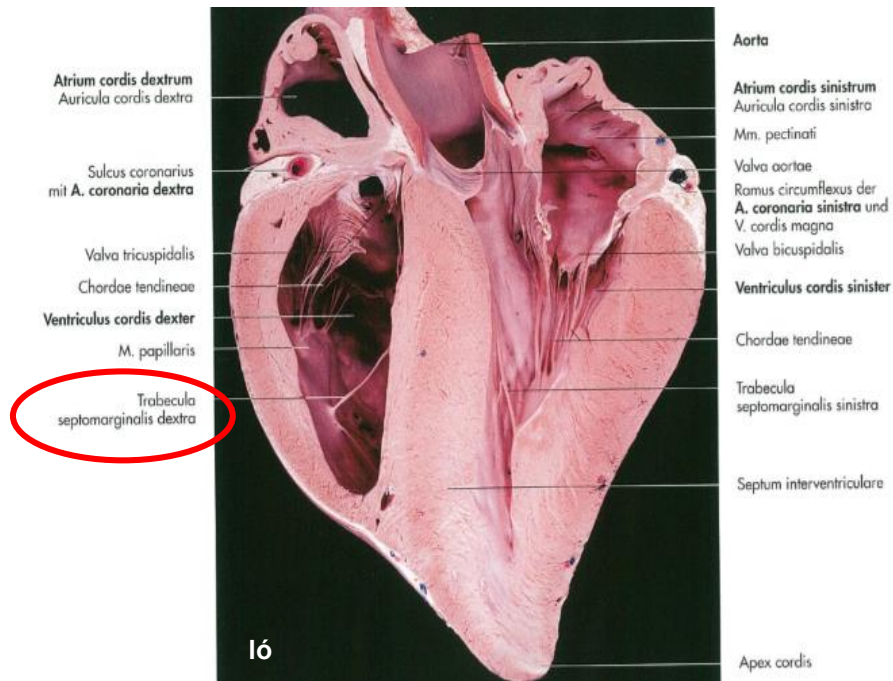


<http://www.vhlab.umn.edu/atlas/comparativ-e-anatomy-tutorial/ventricles.shtml>  
ovine



sertés

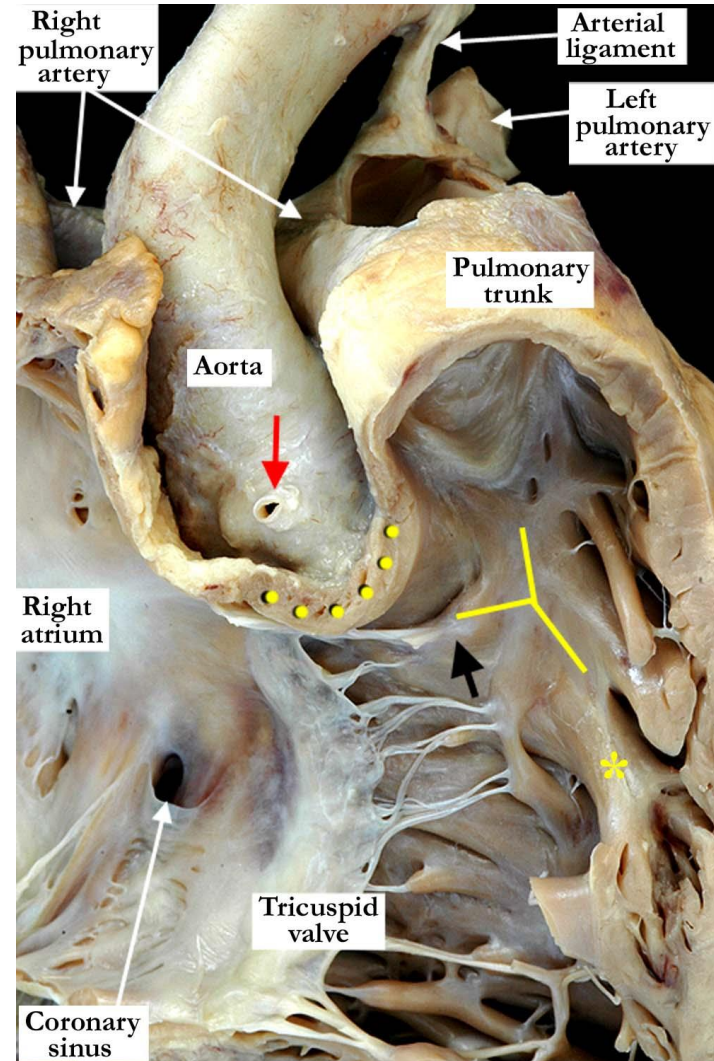
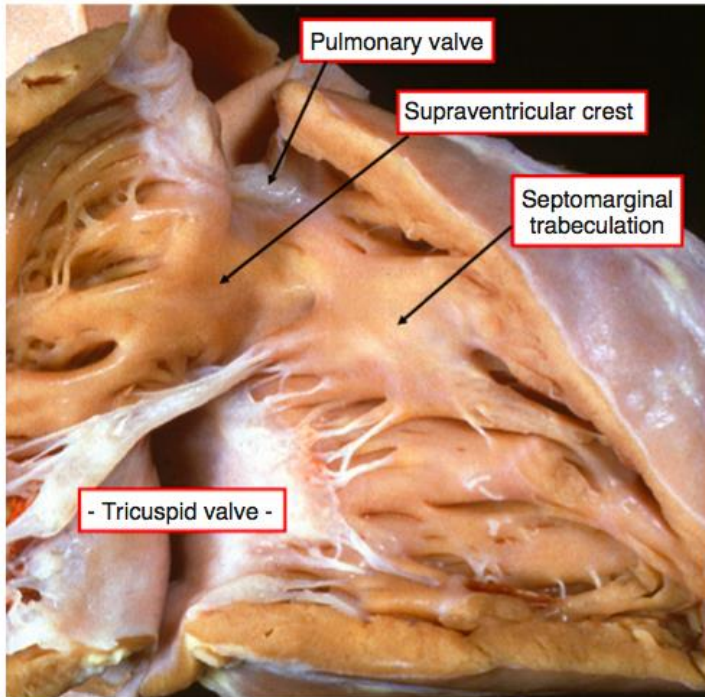
[https://www.semanticscholar.org/paper/Morphology-of-moderator-bands-\(septomarginal-in-Gulyaeva-Roshchevskaya/62b122001a868aeb22066ba7a2de9ddbdf9cc1d/figure/0](https://www.semanticscholar.org/paper/Morphology-of-moderator-bands-(septomarginal-in-Gulyaeva-Roshchevskaya/62b122001a868aeb22066ba7a2de9ddbdf9cc1d/figure/0)



# VENTRICULUS DEXTER

## CRISTA SUPRAVENTRICULARIS:

- **cuspis septalis alatt**



'Y' (yellow lines): Crista supraventricularis

Stern: Moderator band

**Figure 2-18** Opening the right ventricle reveals its muscular roof, the supraventricular crest, which separates the leaflets of the tricuspid and pulmonary valves. The crest inserts to the septum between the limbs of a prominent muscular landmark, the septomarginal trabeculation, or septal band.

<https://sites.google.com/a/pedscards.com/pedscards-com/cardiology-notes/normal-cardiac-anatomy>

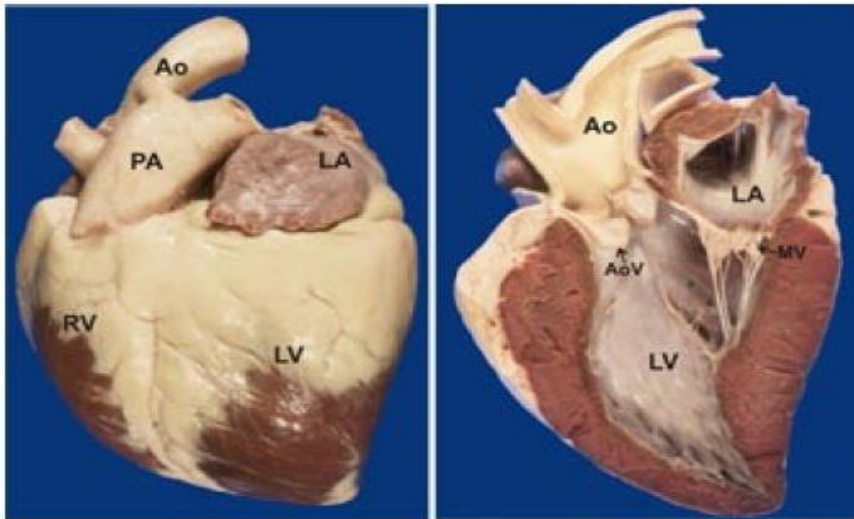
[http://ipccc.net/awg/Normal\\_Heart/Right\\_Heart/NI\\_Cor\\_Pos\\_RA\\_RV/NI\\_Cor\\_Pos\\_RV\\_Parts.html](http://ipccc.net/awg/Normal_Heart/Right_Heart/NI_Cor_Pos_RA_RV/NI_Cor_Pos_RV_Parts.html)



# TRUNCUS PULMONALIS

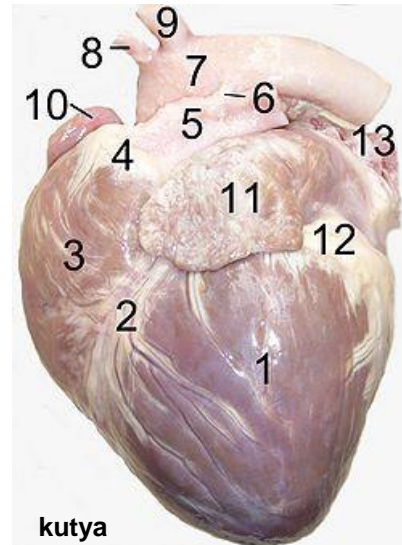
## FELADAT:

- vénás vér szállítása a tüdők felé



**Left:** Photo shows the outside of a horse heart. **Right:** Photo shows the inside of the left heart. Ao = aorta; PA = pulmonary artery; LA = left atrium; LV = left ventricle; RV = right ventricle; MV = mitral valve; AoV = aortic valve.

<http://ericblackink.info/horse-heart-anatomy.html>



kutya

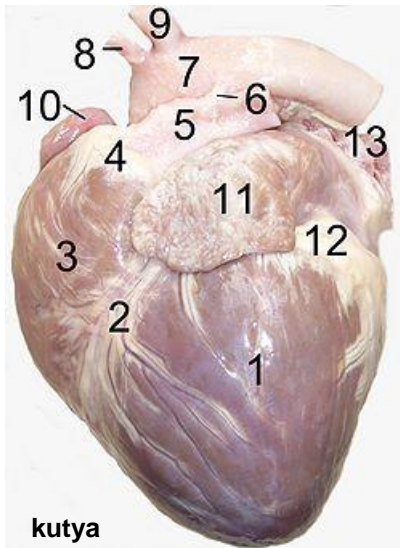
- 1.left ventricle
- 2.anterior interventricular sulcus
- 3.right ventricle
- 4.conus arteriosus
- 5.pulmonary artery
- 6.Ligamentum arteriosum
- 7.aortic arch
- 8.brachiocephalic artery
- 9.left subclavian artery
- 10.right auricle
- 11.left auricle
- 12.fat
- 13.pulmonary vein

[https://en.wikipedia.org/wiki/Anterior\\_interventricular\\_sulcus](https://en.wikipedia.org/wiki/Anterior_interventricular_sulcus)



# CONUS ARTERIOSUS (INFUNDIBULUM)

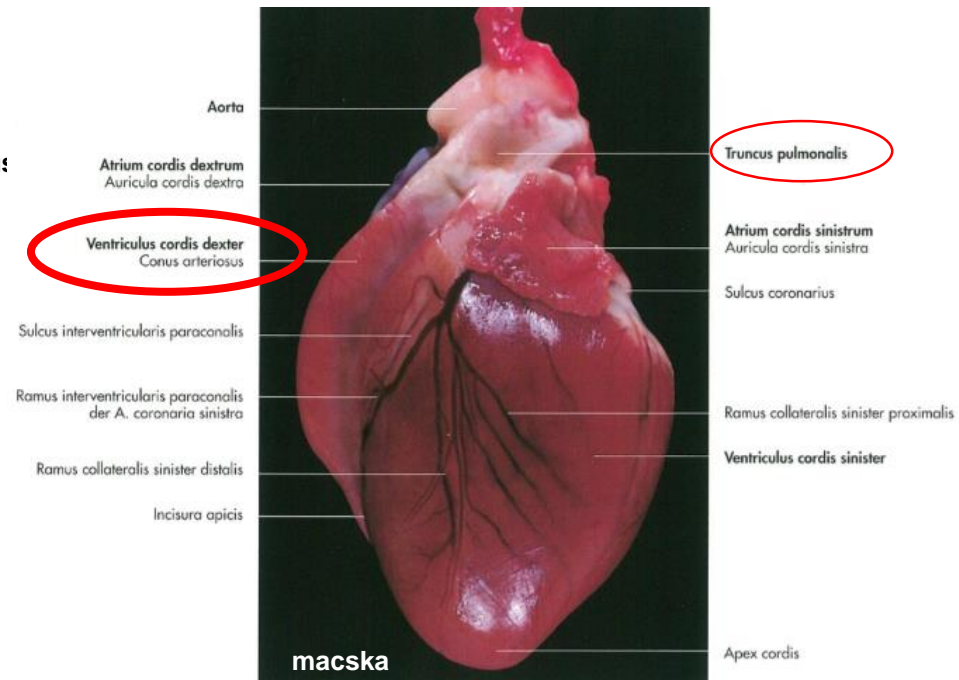
A jobb kamra elülső szárából az üreg fokozatos szűkülésével ered a fő tüdőverőér (truncus pulmonalis) - kívülről kúp alakot kölcsönöz a kamra elülső részének (**conus arteriosus**) - a kamra ürege felől nézve tölcser alakú (**infundibulum**)



kutya

- 1.left ventricle
- 2.anterior interventricular sulcus
- 3.right ventricle
- 4.conus arteriosus
- 5.pulmonary artery
- 6.Ligamentum arteriosum
- 7.aortic arch
- 8.brachiocephalic artery
- 9.left subclavian artery
- 10.right auricle
- 11.left auricle
- 12.fat
- 13.pulmonary vein

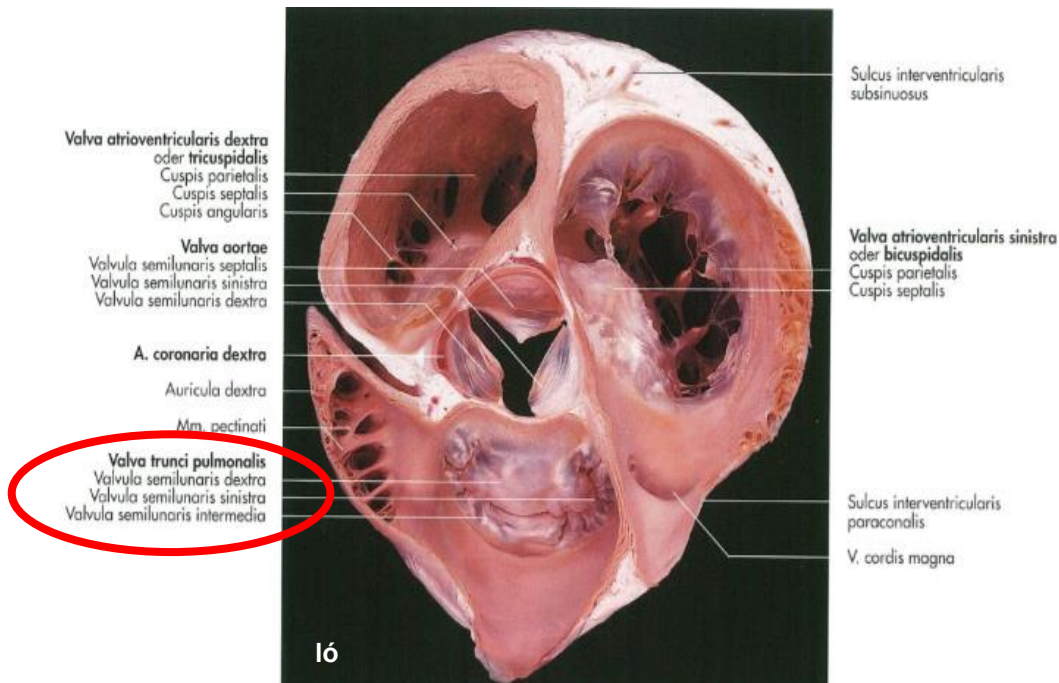
[https://en.wikipedia.org/wiki/Anterior\\_interventricular\\_sulcus](https://en.wikipedia.org/wiki/Anterior_interventricular_sulcus)



macska

# OSTIUM TRUNCI PULMONALIS

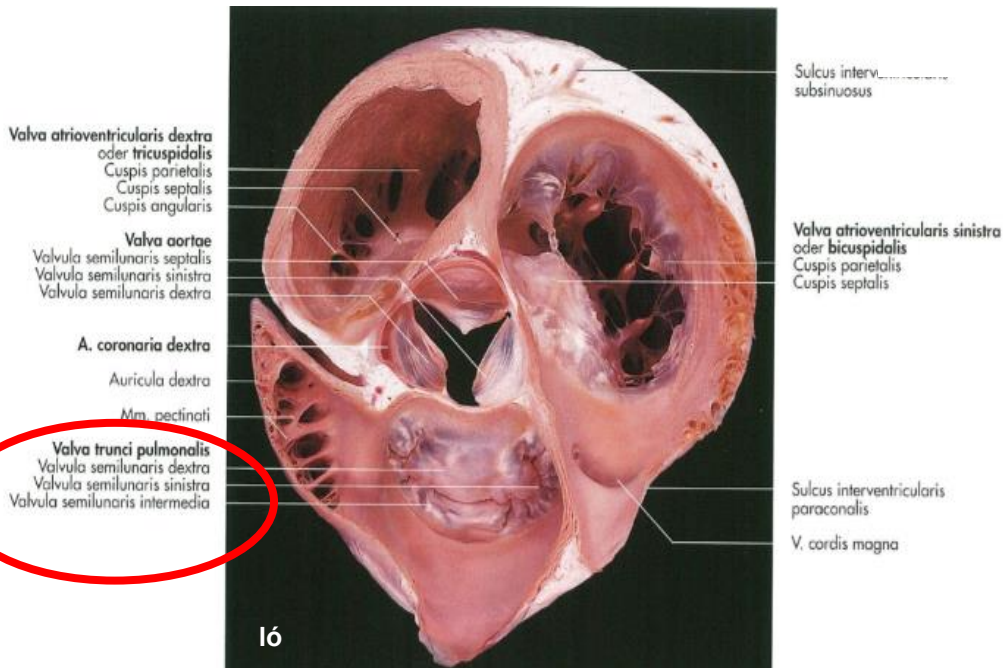
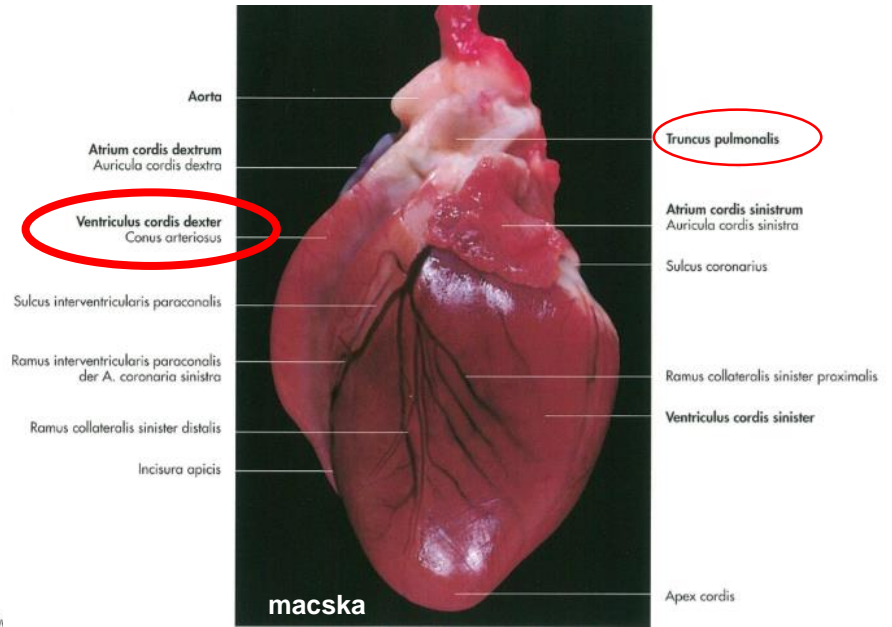
- **truncus pulmonalis szájadéks**
- **vénás vért vezet a truncus pulmonalis felé** Truncus pulmonalis
- **valva trunci pulmonalis – zsebes vagy félholdalakú billentyűk**



# VALVA TRUNCI PULMONALIS

- zsebes billentyűk

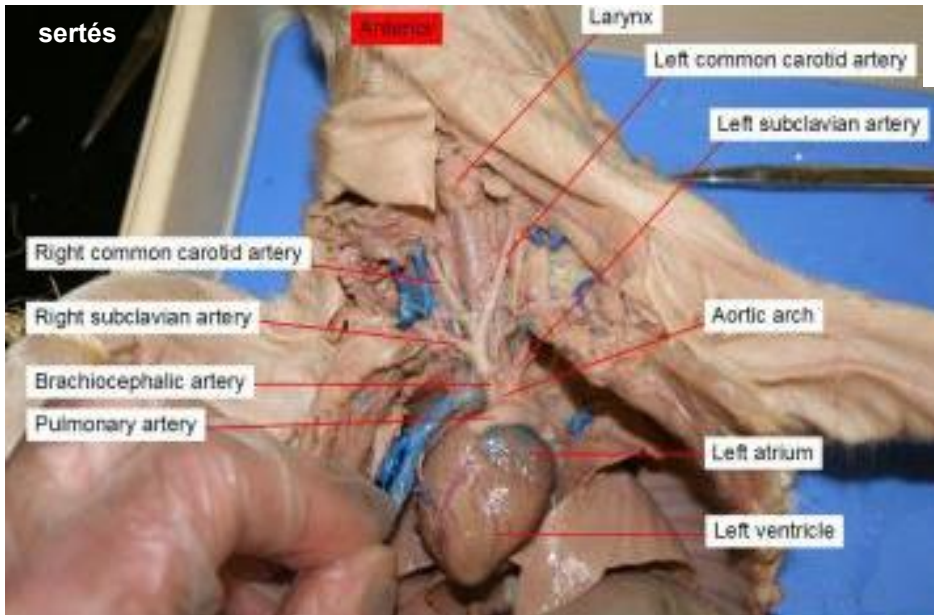
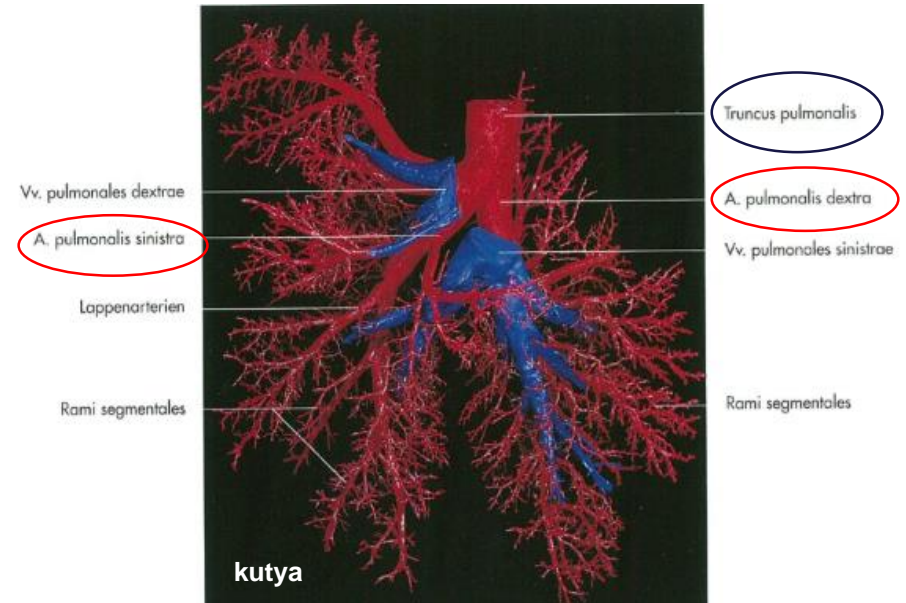
1. valvula semilunaris intermedia
2. valvula semilunaris dextra
3. valvula semilunaris sinistra



# TRUNCUS PULMONALIS

ÁGAI:

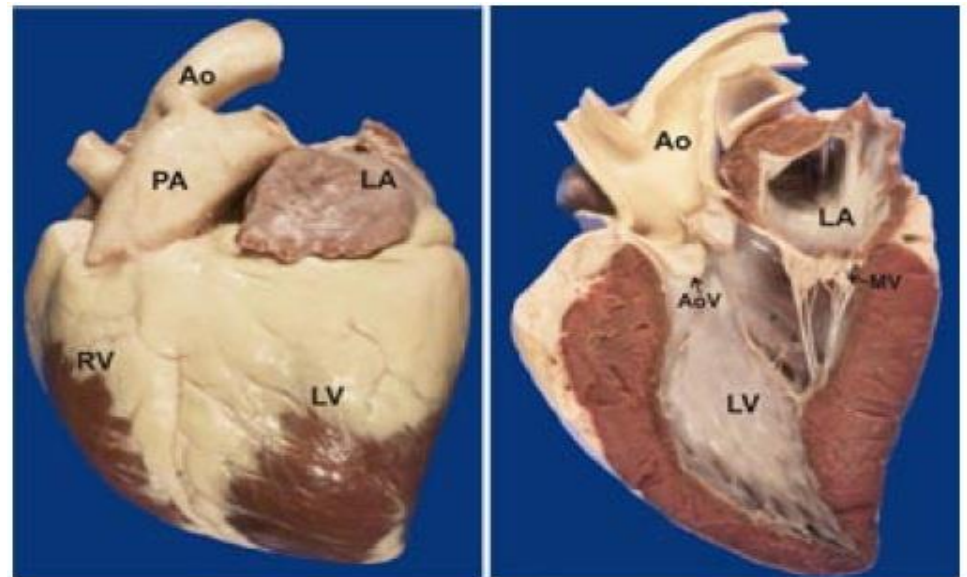
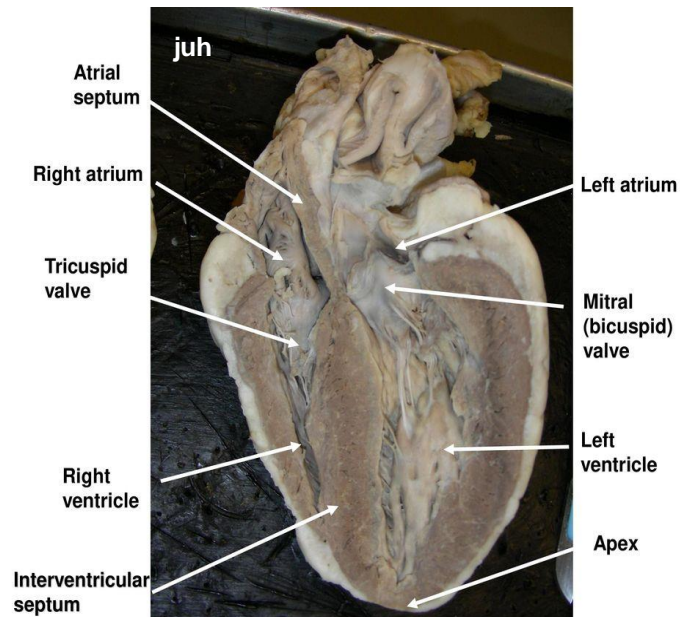
- arteria pulmonalis dext. et sin





# ATRIUM SINISTRUM

- **venae pulmonalesek beömlése**
- **ostium venarum pulmonalium**
- **tüdőkből fogad oxigén dús vért**



**Left:** Photo shows the outside of a horse heart. **Right:** Photo shows the inside of the left heart. Ao = aorta; PA = pulmonary artery; LA = left atrium; LV = left ventricle; RV = right ventricle; MV = mitral valve; AoV = aortic valve.

<https://www.topsimages.com/images/sheep-heart-septum-84.html>

<http://ericblackink.info/horse-heart-anatomy.html>

# ATRIUM SINISTRUM

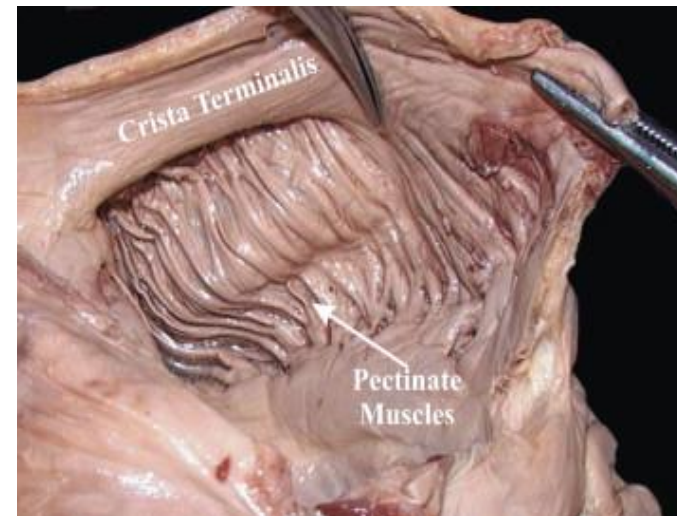
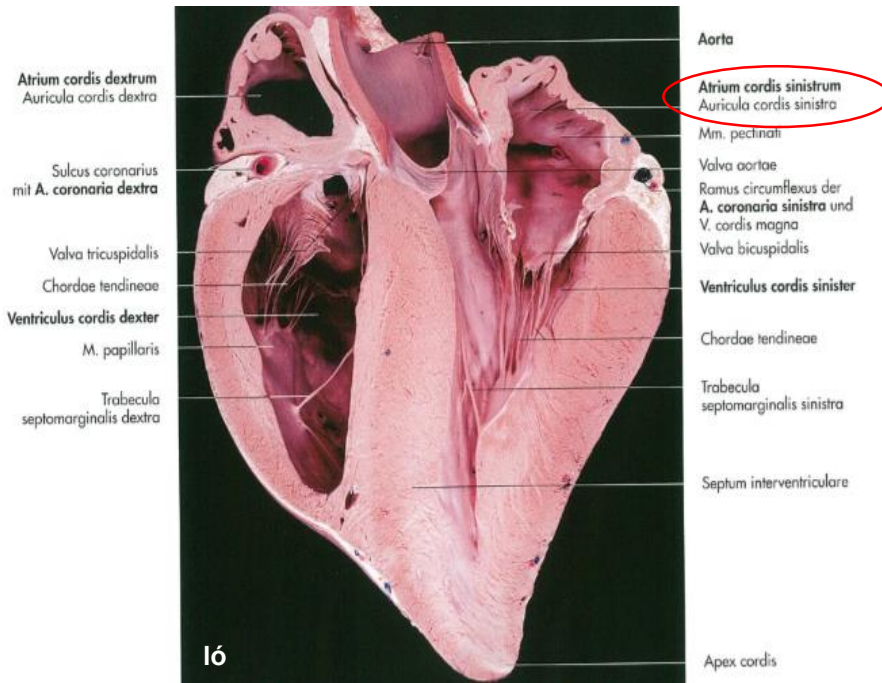
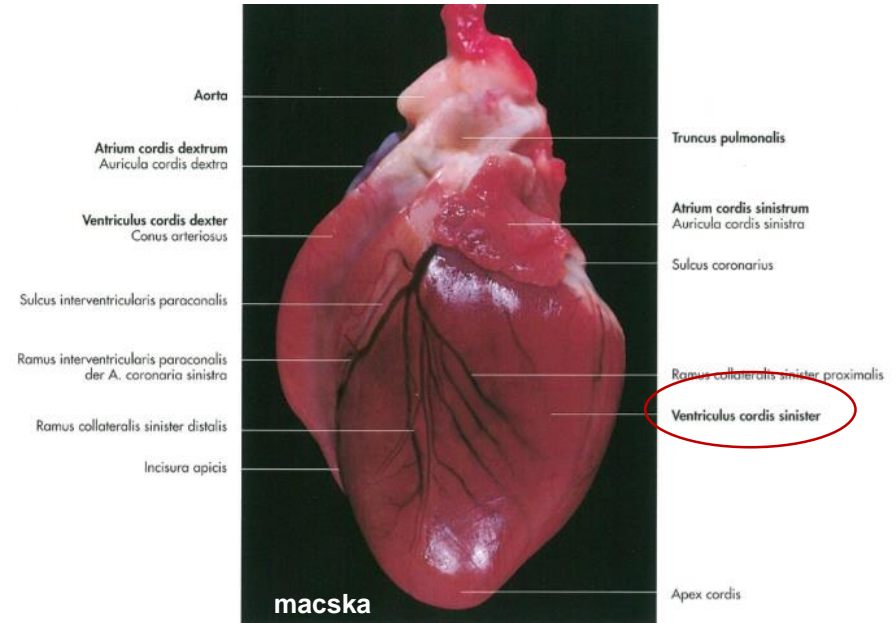
## FALA:

- vékony, sima falú

## CRISTA TERMINALIS:

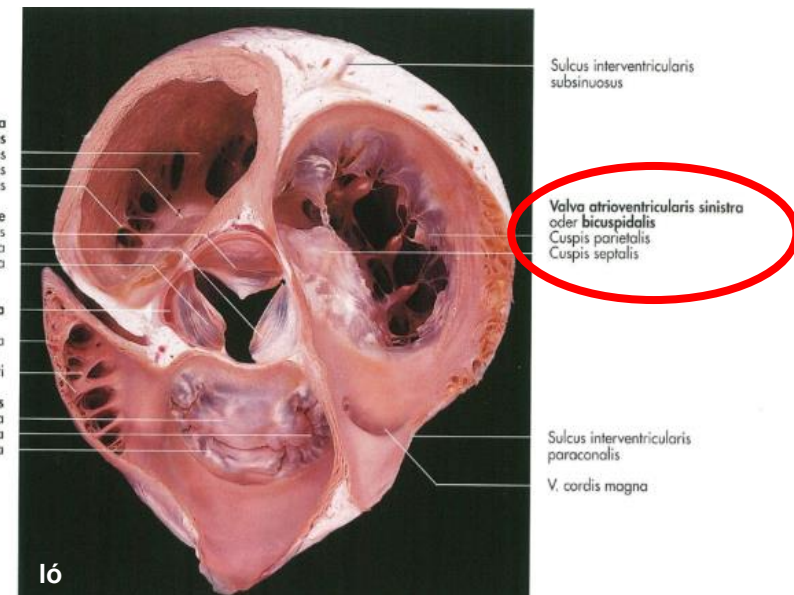
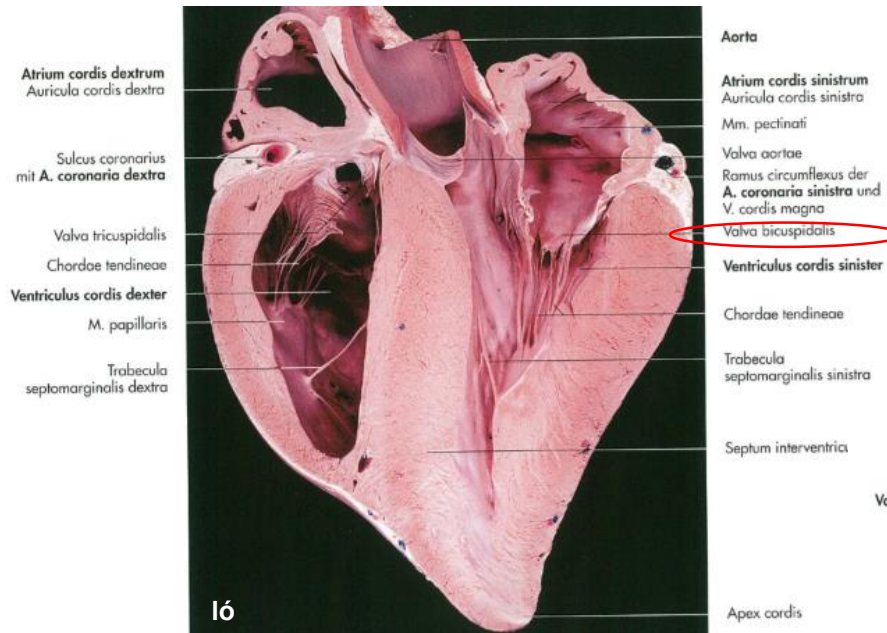
## AURICULA SINISTRA:

- **truncus pulmonalisra mutat**
- mm. pectinati



# OSTIUM ATRIOVENTRICULARE SINISTRUM (BAL PITVAR - KAMRAI SZÁJADÉK)

- bal pitvar és kamra közötti határ
- oxigén dús vér a bal kamrába





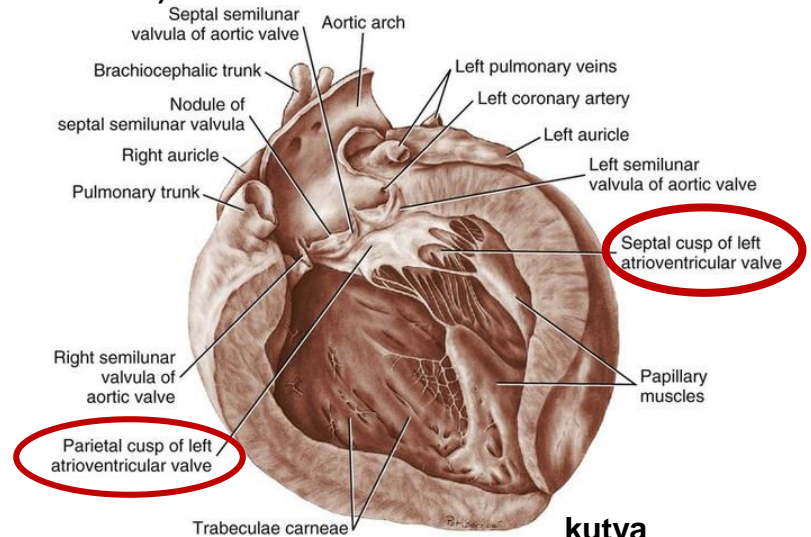
# OSTIUM ATRIOVENTRICULARE SINISTRUM

## VALVA ATRIOVENTRICULARIS SINISTRA (BICUSPIDÁLIS / MITRÁLIS)

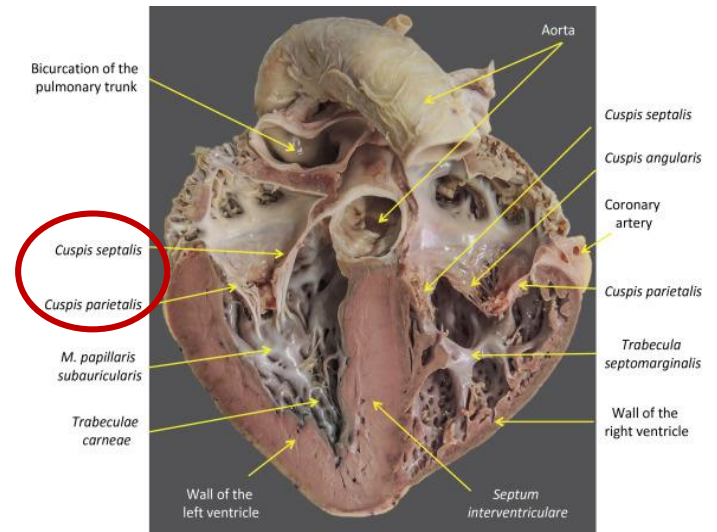
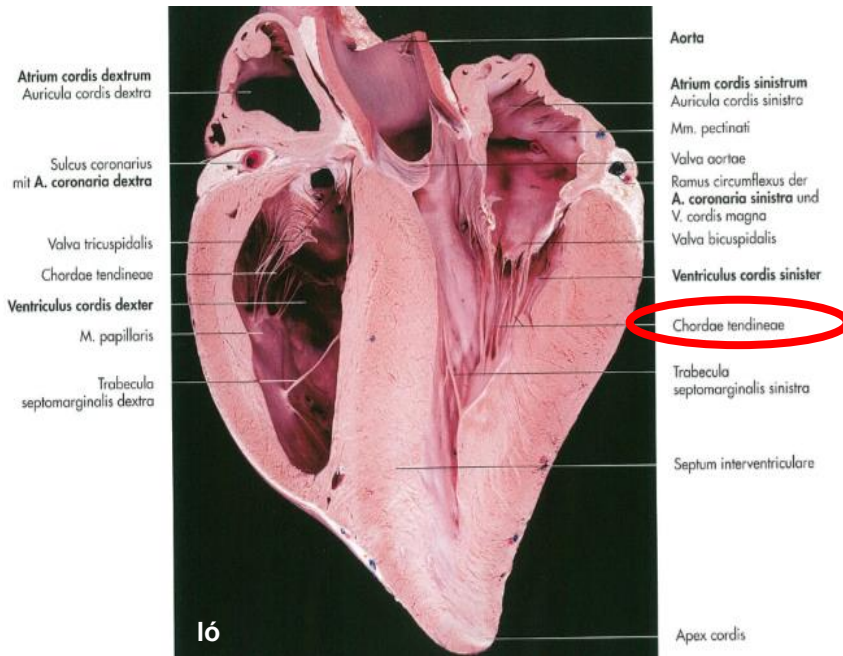
- eredés: anulus fibrosus

## KÉT VITORLA (kutya, ló, kérődző, sertés):

- **cuspis parietalis**
- **cuspis septalis**
- **chorda tendinea**
- **m. papillaris subauricularis et subatrialis**



**kutya**  
<https://veteriankey.com/the-heart-and-arteries/>

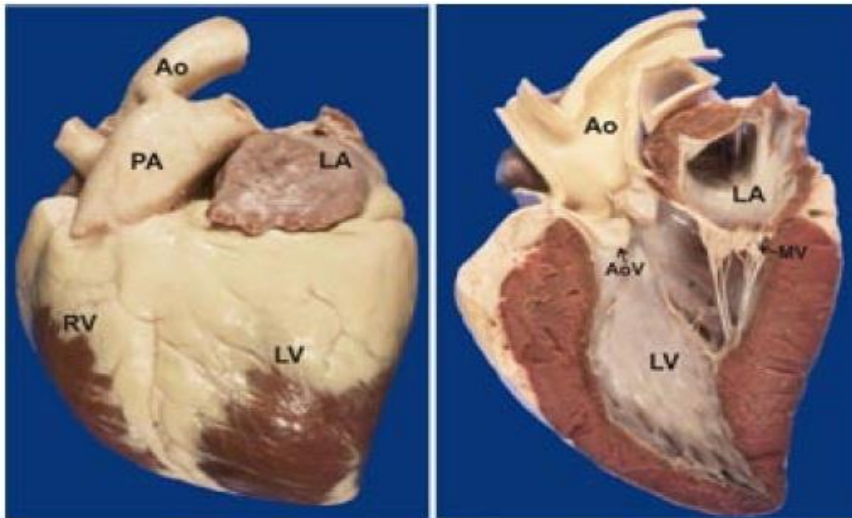
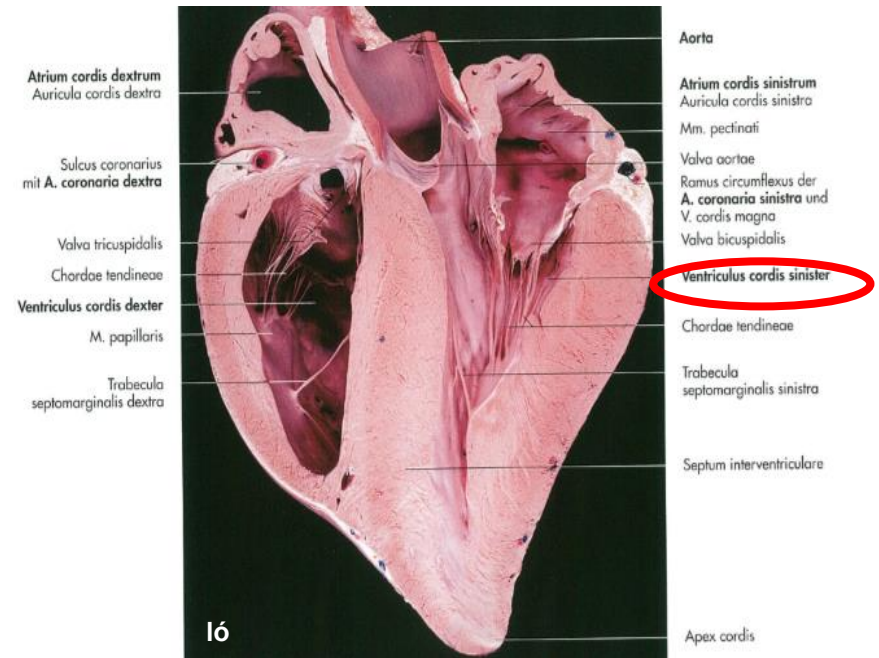


<https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/coronary-sulcus>



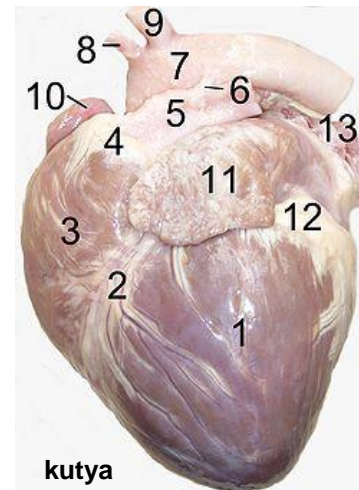
# VENTRICULUS SINISTER

- vastagabb izomfal
- apex cordist képezi
- nagyvérkör



Left: Photo shows the outside of a horse heart. Right: Photo shows the inside of the left heart. Ao = aorta; PA = pulmonary artery; LA = left atrium; LV = left ventricle; RV = right ventricle; MV = mitral valve; AoV = aortic valve.

<http://ericblackink.info/horse-heart-anatomy.html>

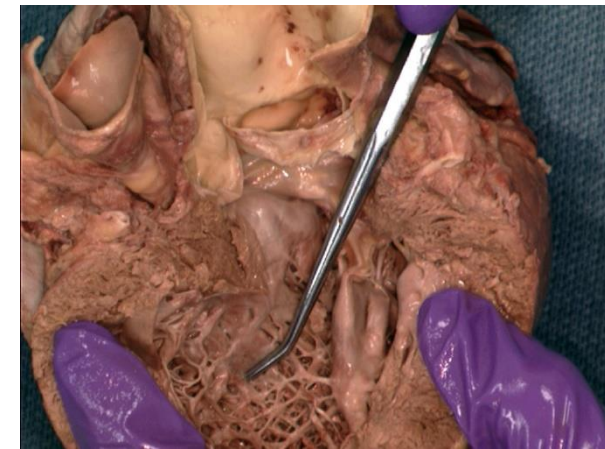


kutya

- 1.left ventricle
- 2.anterior interventricular sulcus
- 3.right ventricle
- 4.conus arteriosus
- 5.pulmonary artery
- 6.Ligamentum arteriosum
- 7.aortic arch
- 8.brachiocephalic artery
- 9.left subclavian artery
- 10.right auricle
- 11.left auricle
- 12.fat
- 13.pulmonary vein

[https://en.wikipedia.org/wiki/Anterior\\_interventricular\\_sulcus](https://en.wikipedia.org/wiki/Anterior_interventricular_sulcus)

# VENTRICULUS SINISTER

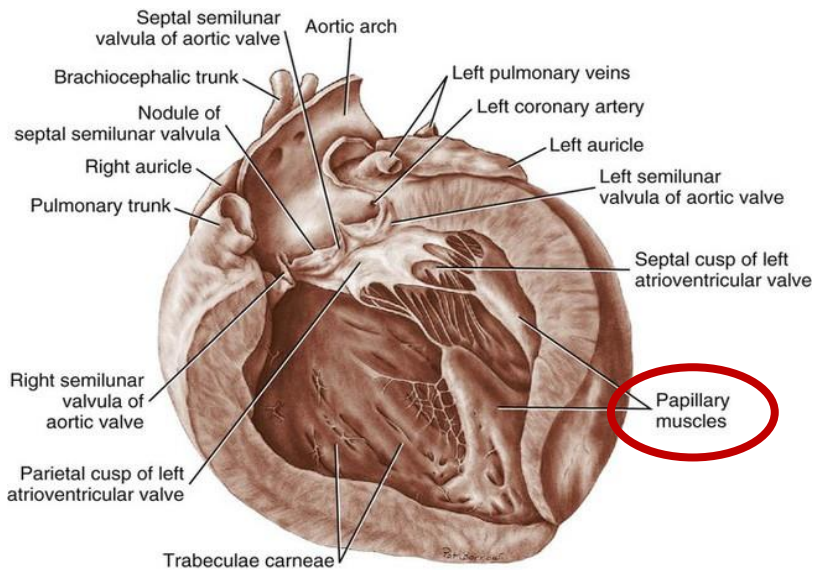


**Trabecula carnea**

[http://www.thebodyonline.net/body\\_view.php?image\\_path=thorax/heart\\_LV\\_trabeculae\\_carneae\\_pin.jpg](http://www.thebodyonline.net/body_view.php?image_path=thorax/heart_LV_trabeculae_carneae_pin.jpg)

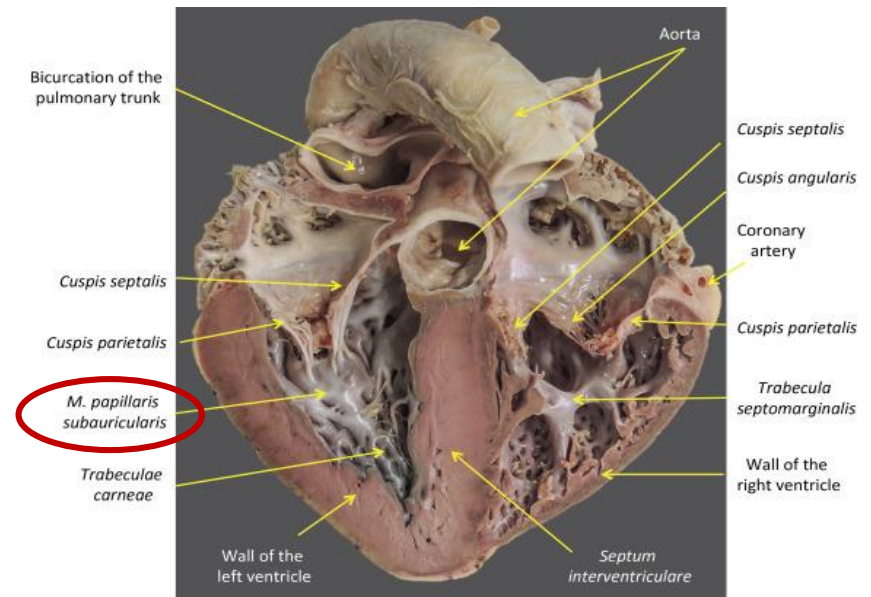
## BELSŐ FALA:

- **trabecula carnea**
- **m. papillaris subatrialis et subauricularis**
- **sertés – mm. papllaris accessorii**



**kutya**

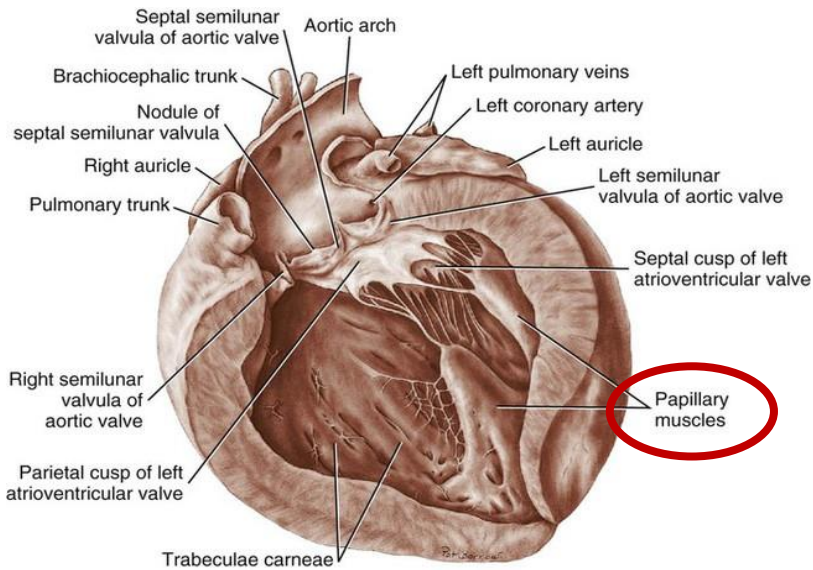
<https://veteriankey.com/the-heart-and-arteries/>



<https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/coronary-sulcus>

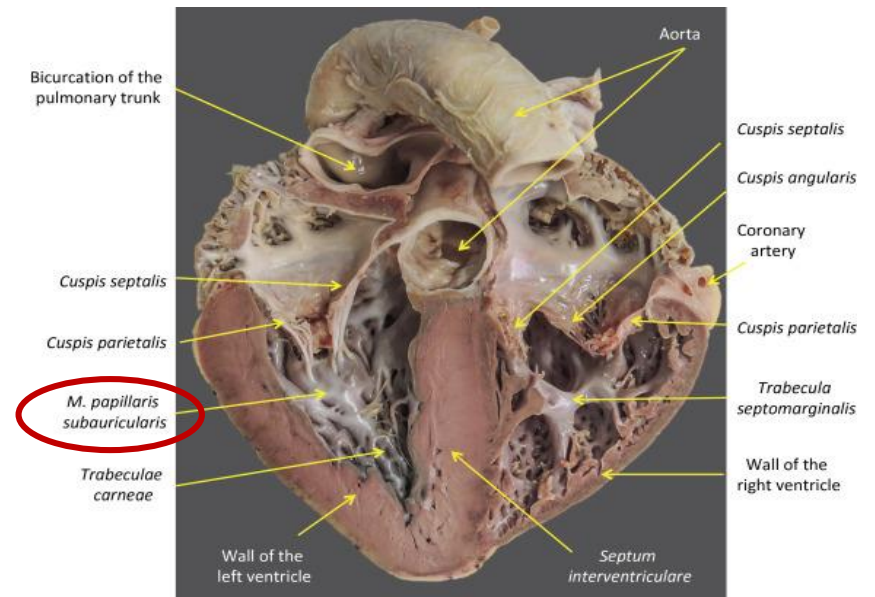
# VENTRICULUS SINISTER

- **m. papillaris subatrialis - cuspis septalis**
- **m. papillaris subauricularis – cuspis parietalis**



kutya

<https://veteriankey.com/the-heart-and-arteries/>

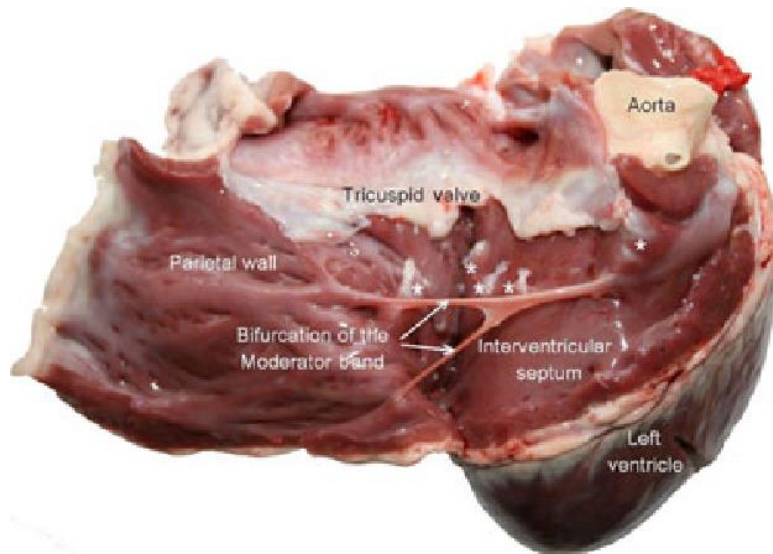


<https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/coronary-sulcus>



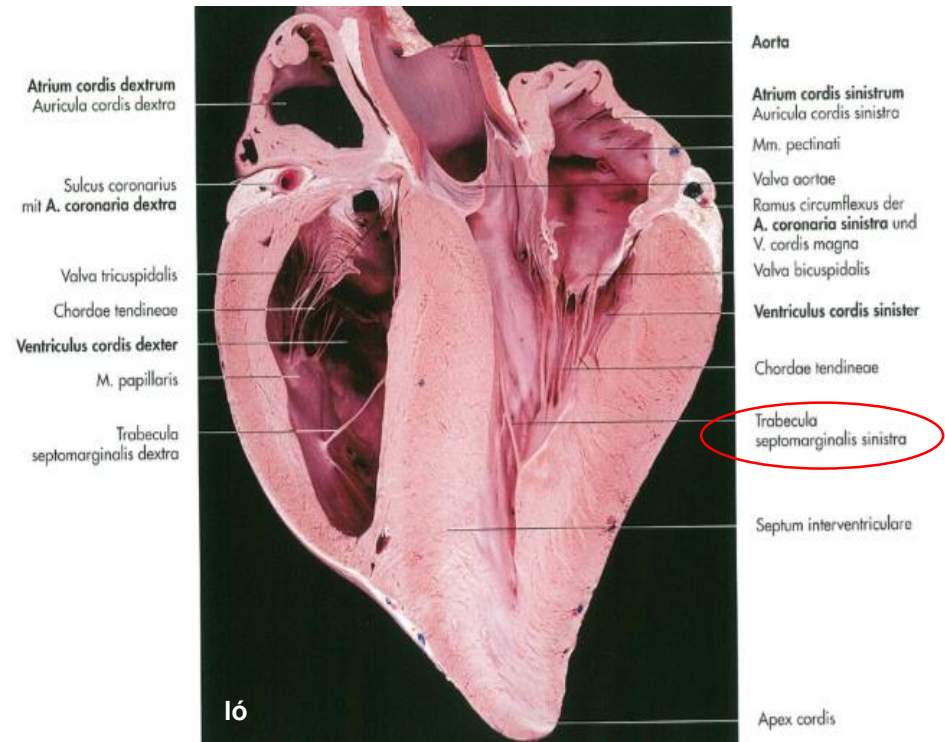
# VENTRICULUS SINISTER

## TRABECULA SEPTOMARGINALIS (MODERÁTOR KÖTEG)



sertés

[https://www.semanticscholar.org/paper/Morphology-of-moderator-bands-\(septomarginal-in-Gulyaeva-Roshchevskaya/62b122001a868aeb22066ba7a2de9ddbfe9cc1d/figure/1](https://www.semanticscholar.org/paper/Morphology-of-moderator-bands-(septomarginal-in-Gulyaeva-Roshchevskaya/62b122001a868aeb22066ba7a2de9ddbfe9cc1d/figure/1)



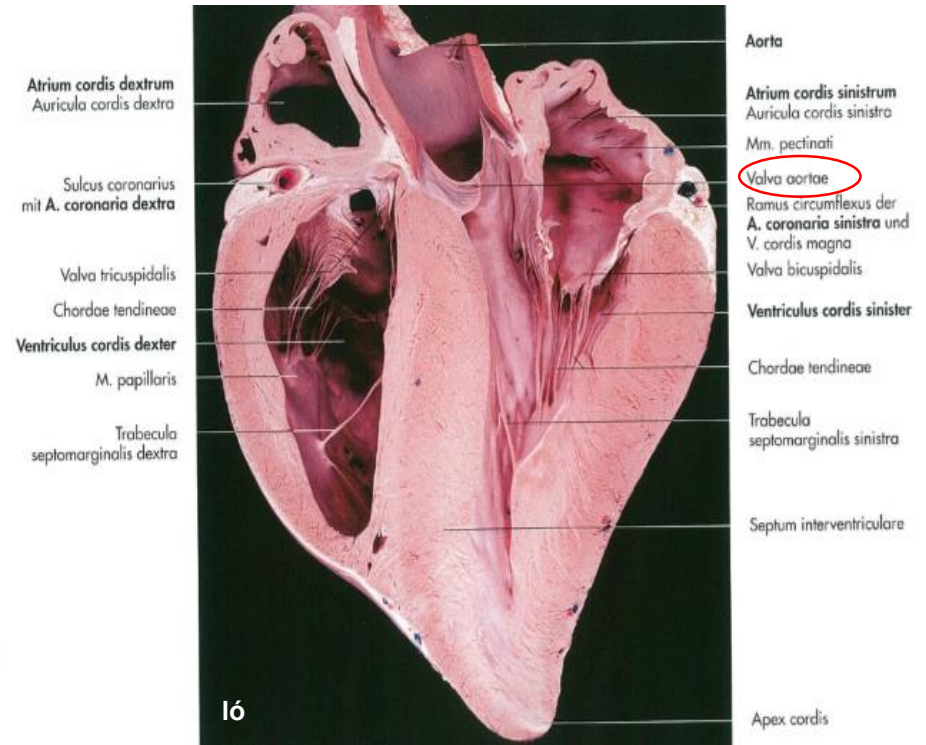
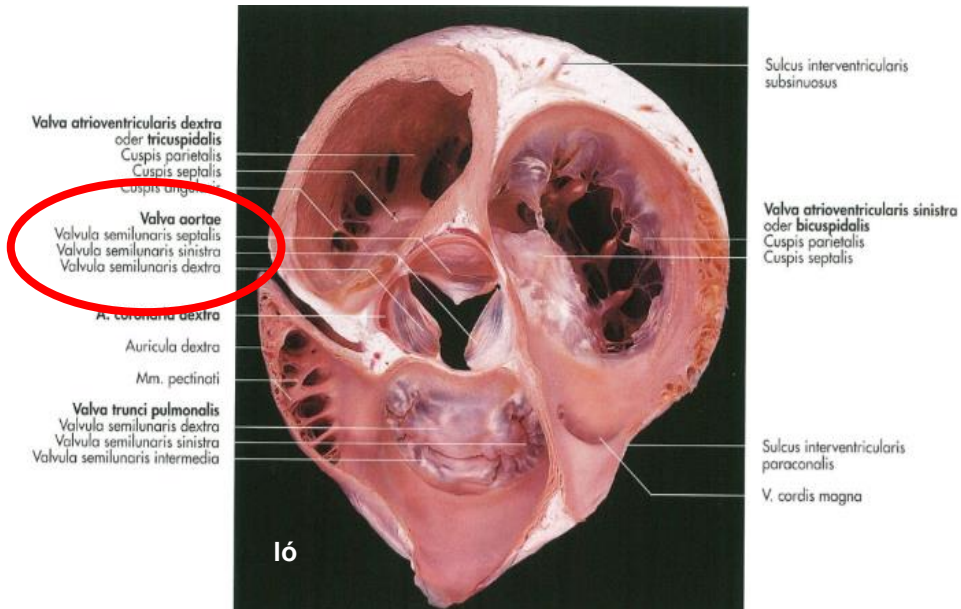
# OSTIUM AORTAE

## VALVA AORTAE:

- zsebes – vagy félhold alakú billentyű
- eredés: anulus fibrosus

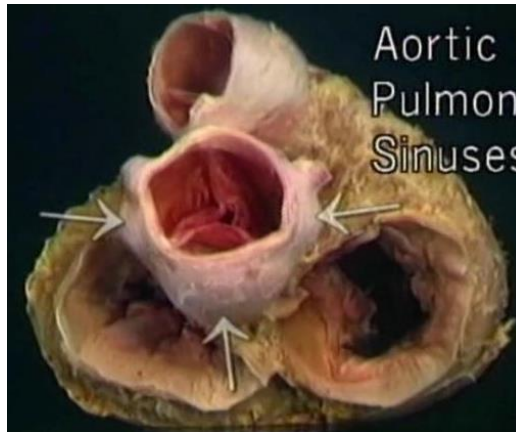
## HÁROM ZSEB:

1. valvula semilunaris septalis
2. valvula semilunaris dextra
3. valvula semilunaris sinistra



# SINUS AORTAE (VALSALVAE)

- az aorta billentyű feletti részének a kiboltosulása
- innen erednek az arteriae coronariaák
- sinus aortae belülről



Bulbus aortae  
A. coronaria sinistra

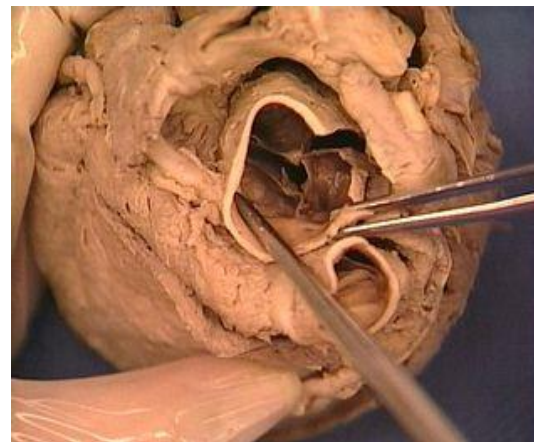
Sinus aortae  
Valva aortae  
Atrium cordis sinistrum  
V. cordis magna  
Valva bicuspidalis  
Chordae tendineae  
Ventriculus cordis sinister  
Epicardium  
Myocardium  
Endocardium



Aorta  
Mm. pectinati  
Atrium cordis dextrum  
Kamus circumflexus a. A. coronaria dextra  
Chordae tendineae a. Valva tricuspidalis  
M. papillaris  
Ventriculus cordis dexter  
Septum interventriculare  
Trabeculae carneae  
Ramus interventricularis paraconalis  
Apex cordis



RCA: Arteria coronaria dextra  
L: Valvula semilunaris sinistra  
R: Valvula semilunaris dextra  
P: Valvula semilunaris posterior  
Pfeile: Arteria coronaria sinistra



A. coronaria dext.

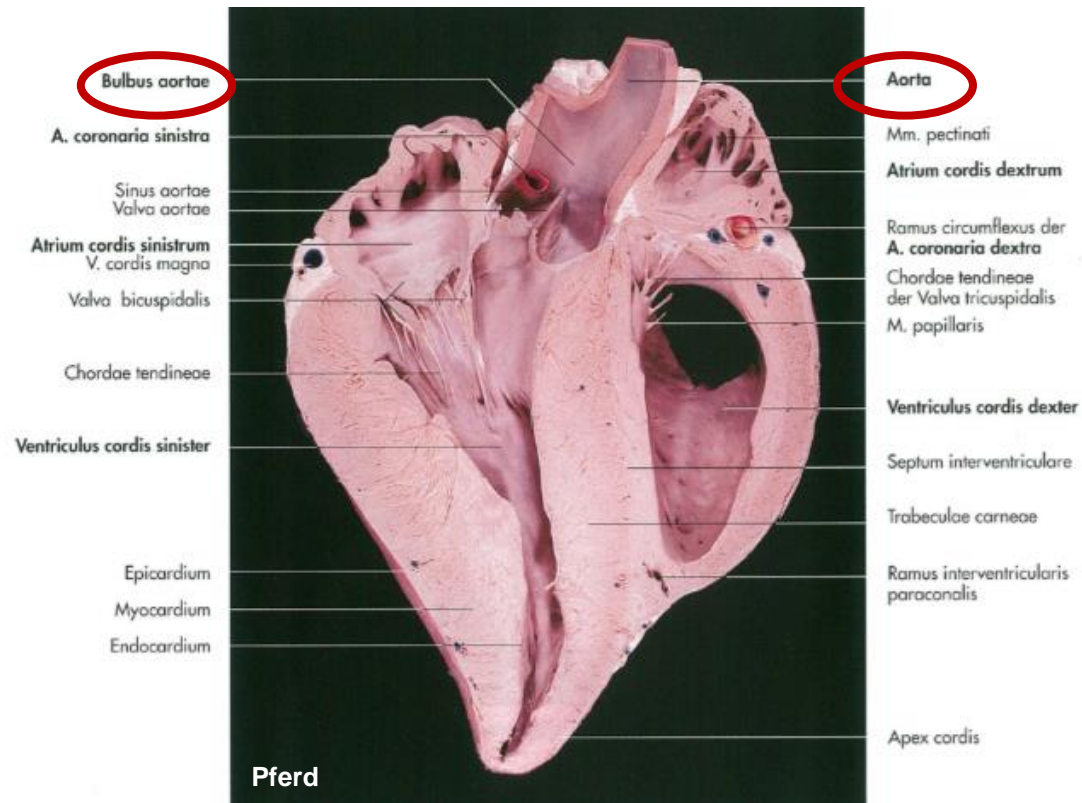


A. coronaria sin.



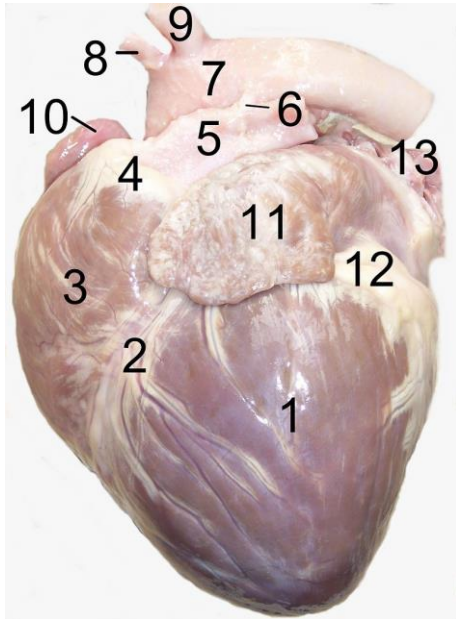
# BULBUS AORTAE

- a sinus aortaenak megfelelő
- az aorta billentyű feletti részének a kiboltosulását kívülről bulbus aortaenak nevezük



# LIGAMENTUM ARTERIOSUM

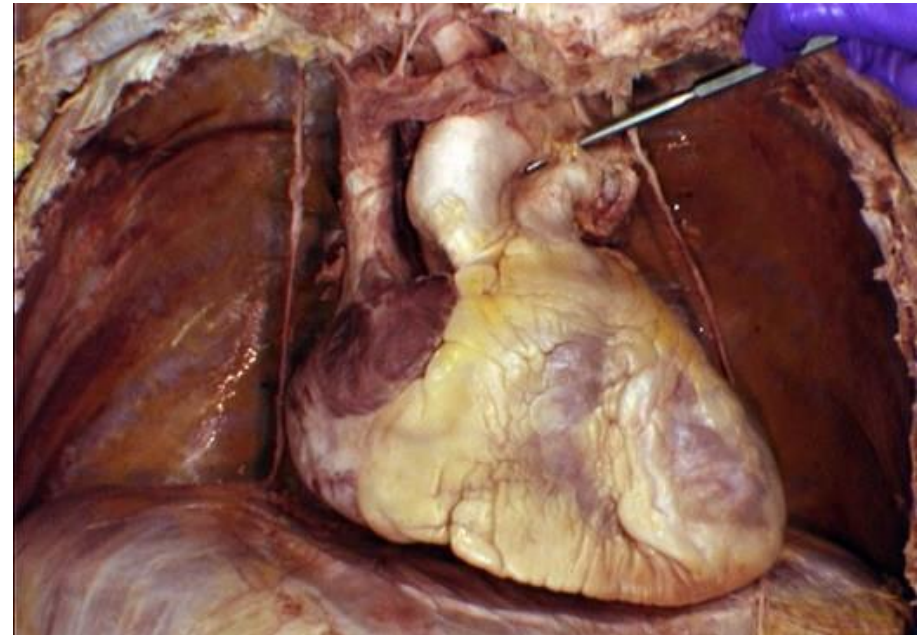
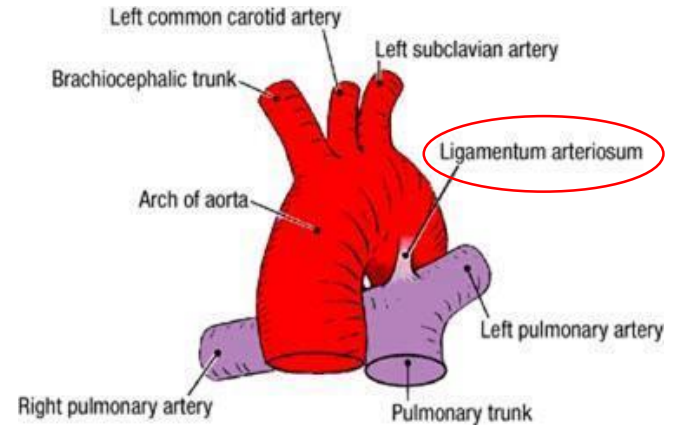
- ductus arteriosus Botalli (Botalló vezeték) maradványa



Heart of dog.

- 1.left ventricle
- 2.anterior interventricular sulcus
- 3.right ventricle
- 4.conus arteriosus
- 5.pulmonary artery
- 6.Ligamentum arteriosum**
- 7.aortic arch
- 8.brachiocephalic artery
- 9.left subclavian artery
- 10.right auricle
- 11.left auricle
- 12.fat
- 13.pulmonary vein

[https://en.wikipedia.org/wiki/Ligamentum\\_arteriosum](https://en.wikipedia.org/wiki/Ligamentum_arteriosum)



<https://badem.co.za/ubuntu-4-curious-case-ligamentum-arteriosum/>

# VALVA TRUNCUS PULMONALIS ET AORTAE

## LUNULA VALVULARUM SEMILUNARUM:

- sarló alakú kollagén rostokból álló képlet a billentyű szabadszélén

## FELADAT:

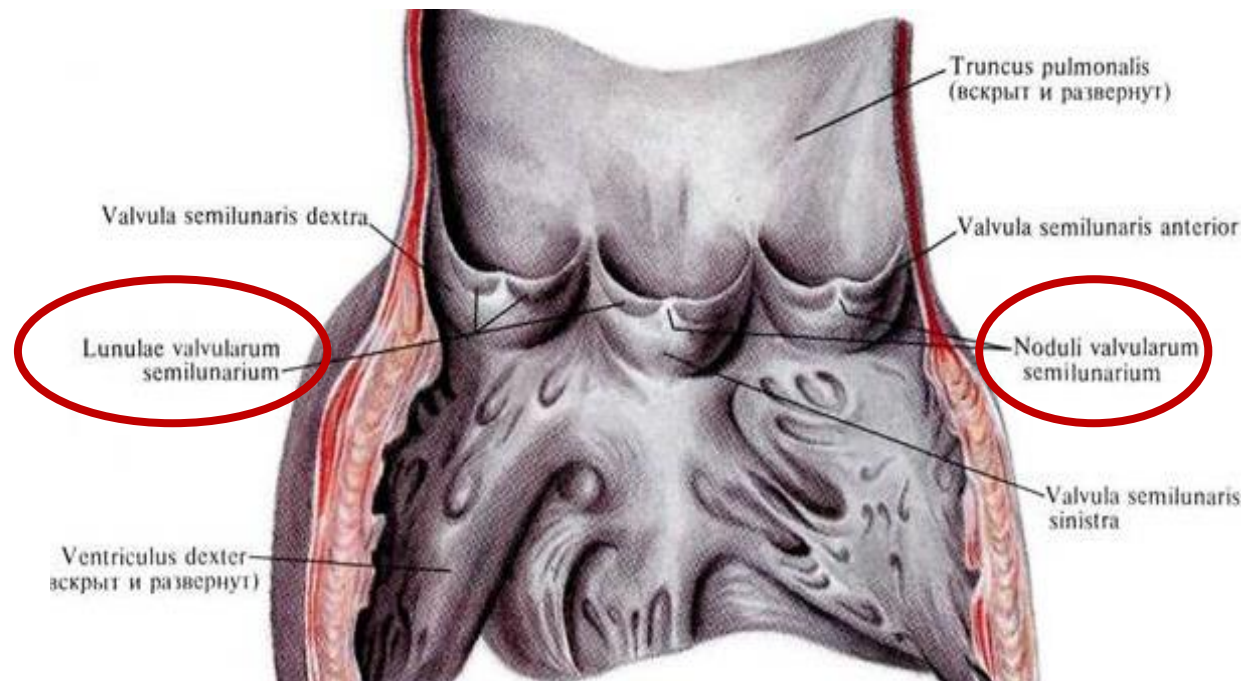
- billentyűk záródását segíti és a billentyűt szilárdítja

## NODULUS VALVULAE SEMILUNARIS:

- kötőszövetes csomó
- billentyű szabad szélén

## FELADAT:

- billentyűk záródását segíti



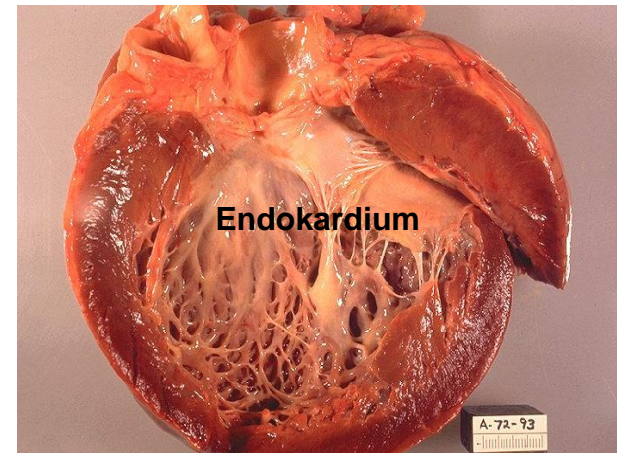
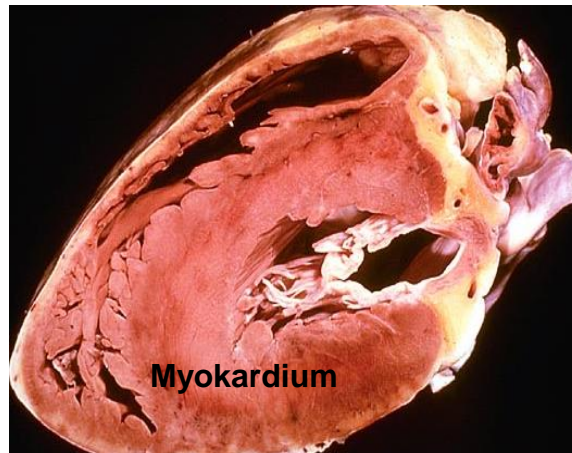
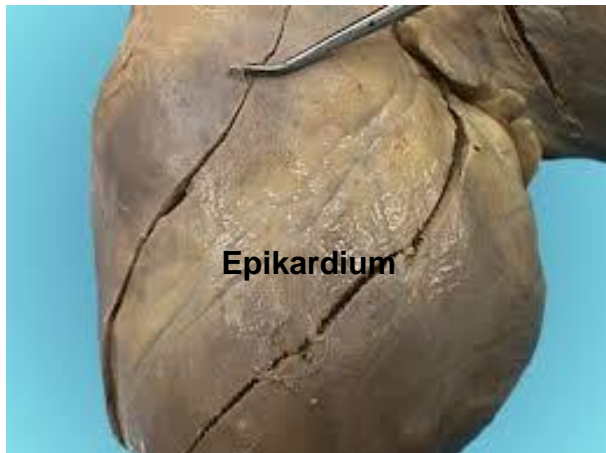
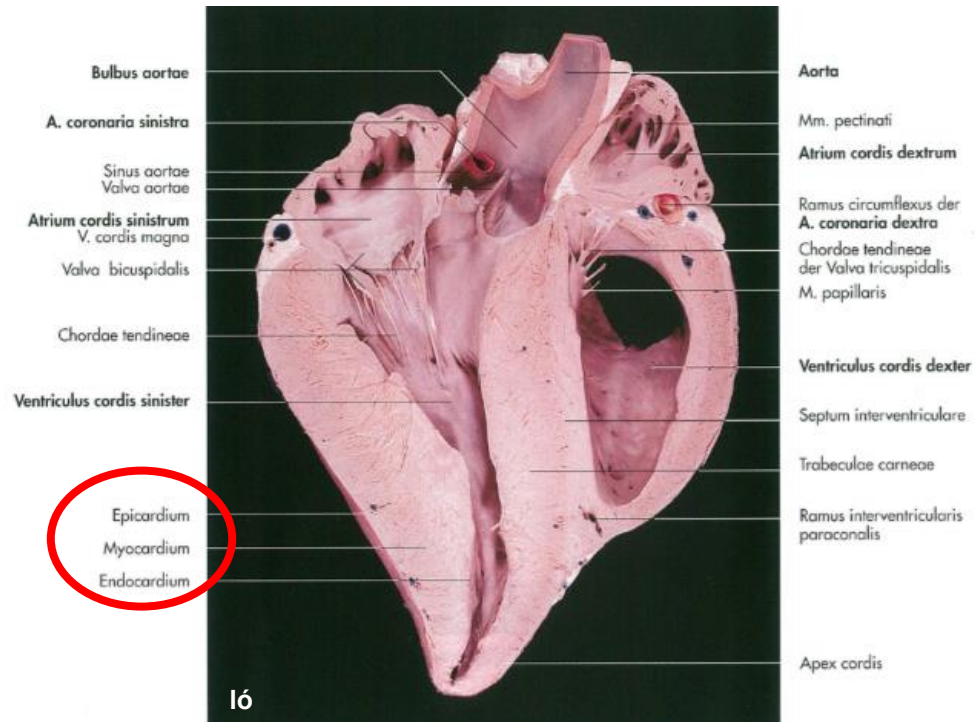


# VALVA TRUNCI PULMONALIS ET AORTAE



[https://en.wikipedia.org/wiki/Heart\\_valve](https://en.wikipedia.org/wiki/Heart_valve)

# SZÍVFAL SZERKEZETE

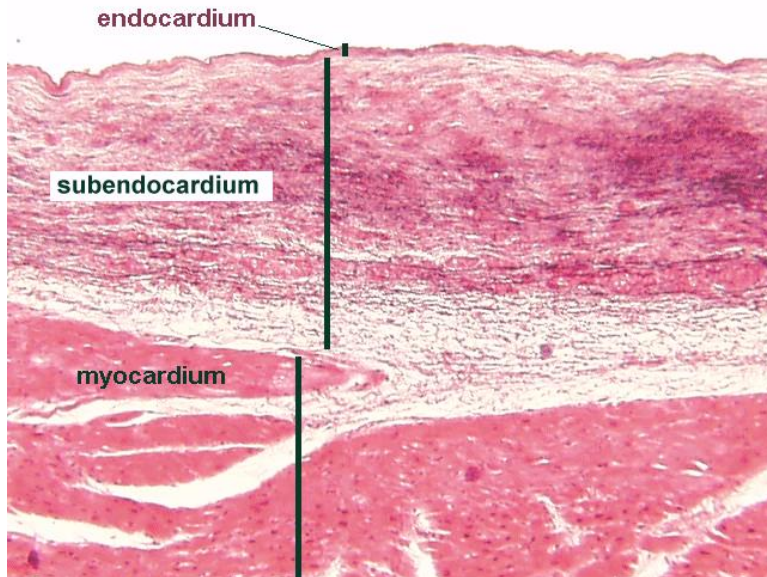


# ENDOCARDIUM

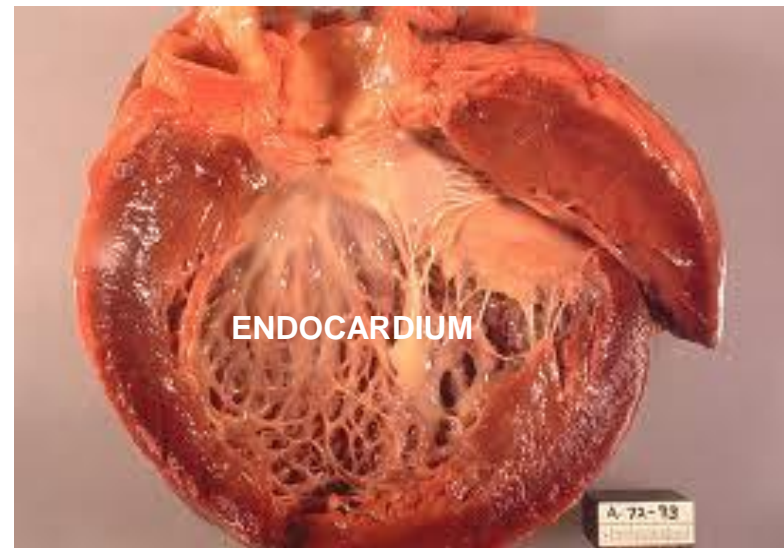
- szív üregét béleli
- beborítja a papilláris izmokat, trabeculae carneae és a chordae tendineae

## FELÉPÍTÉS:

- egyrétegű laphám – endothel
- subendocardiumban az ingerület vezető rendszer halad
- érmentes
- gazdag beidegzés



<https://www.ouhsc.edu/histology/Text%20Sections/Cardiovascular.html>

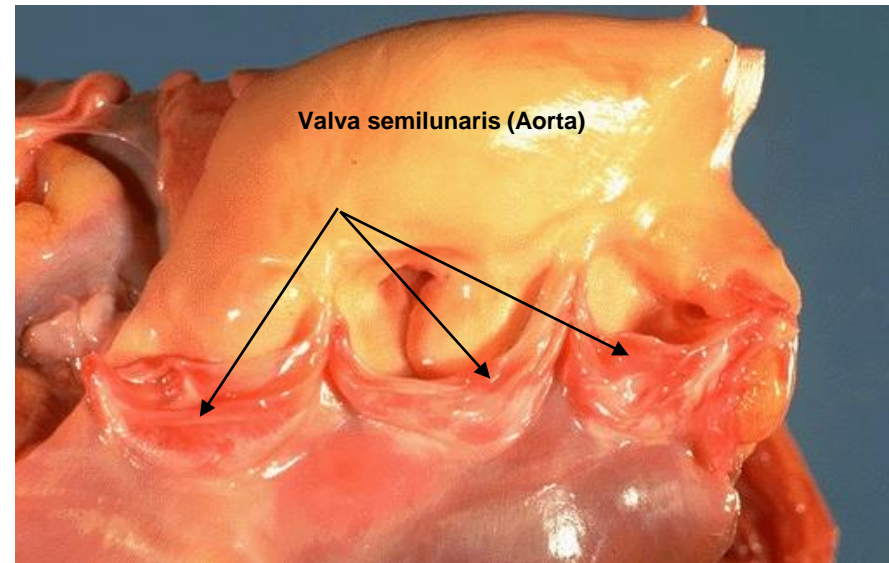
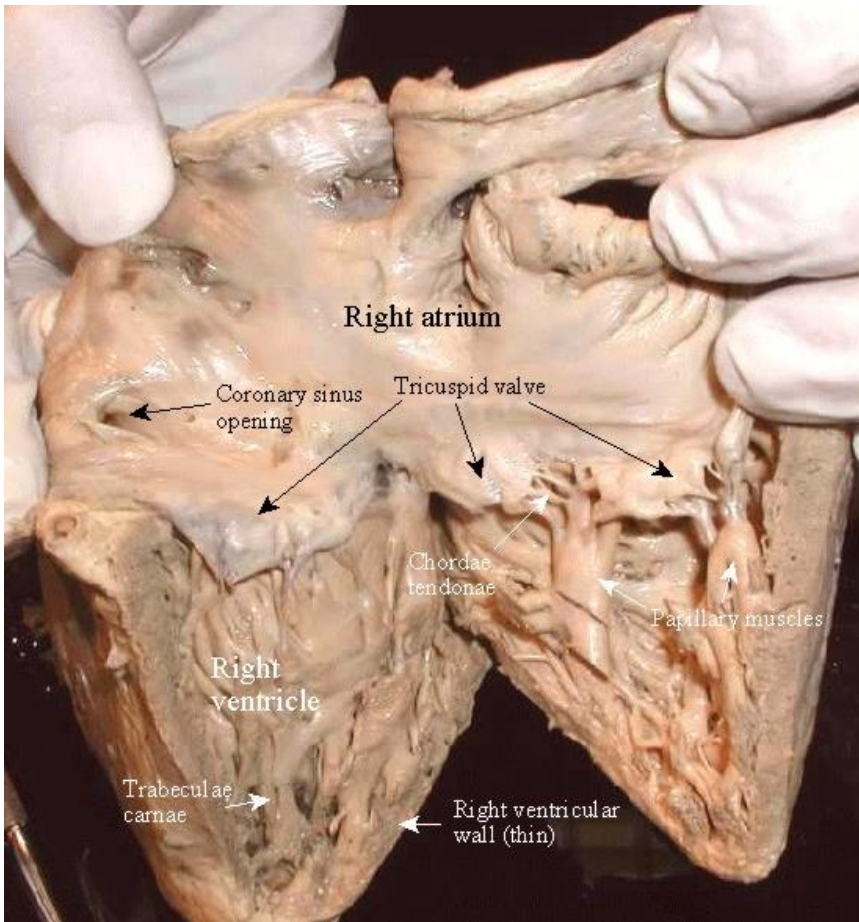


<https://sites.google.com/a/umich.edu/bluelink/curricula/first-year-medical-curriculum/sequence-2-cardiology/session-4-heart/lablink>



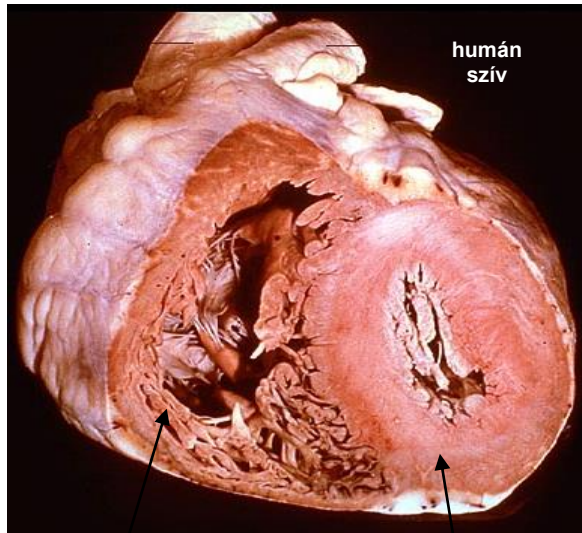
# ENDOCARDIUM

- a billentyűk endocardium kettőzetek



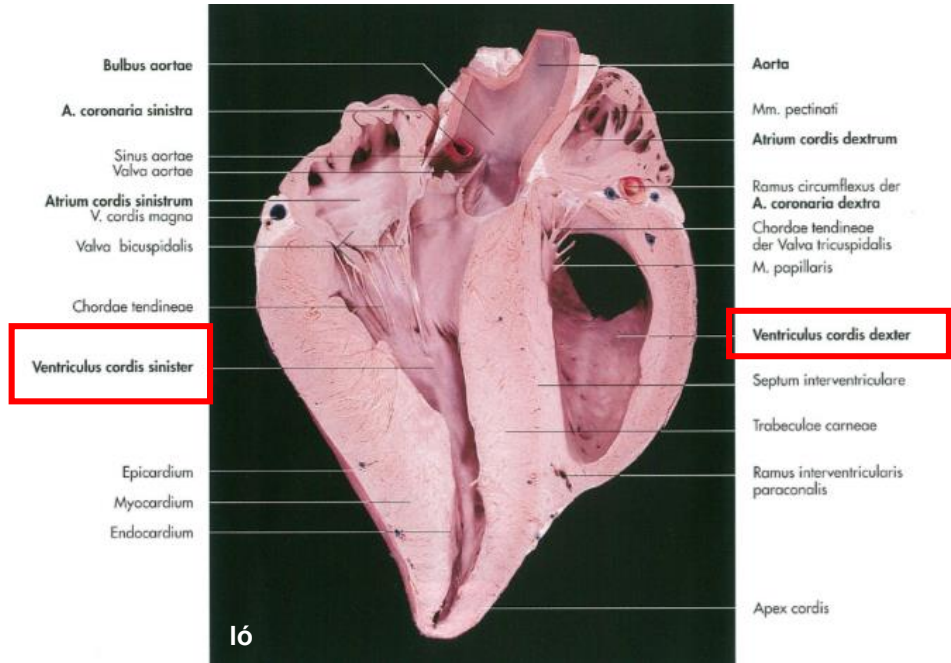
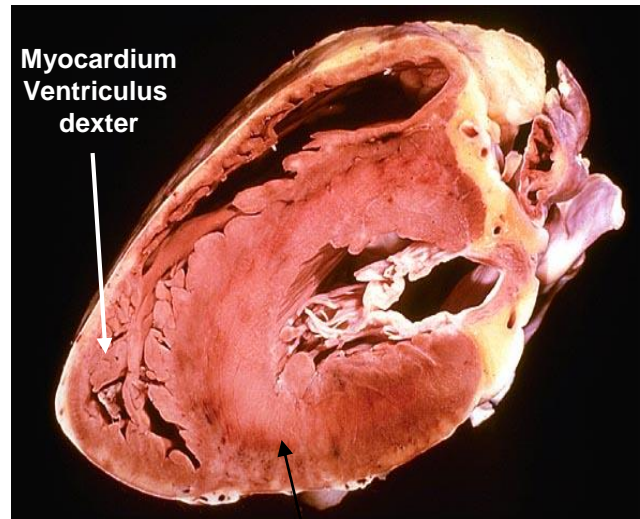
# MYOCARDIUM

- a kamrák vastagságát adja
- pitvarok izomrétege vékonyabb
- bal pitvar izomrétege vastagabb
- szívizomsejtek - munkaizom



Myocardium  
Ventriculus  
dexter

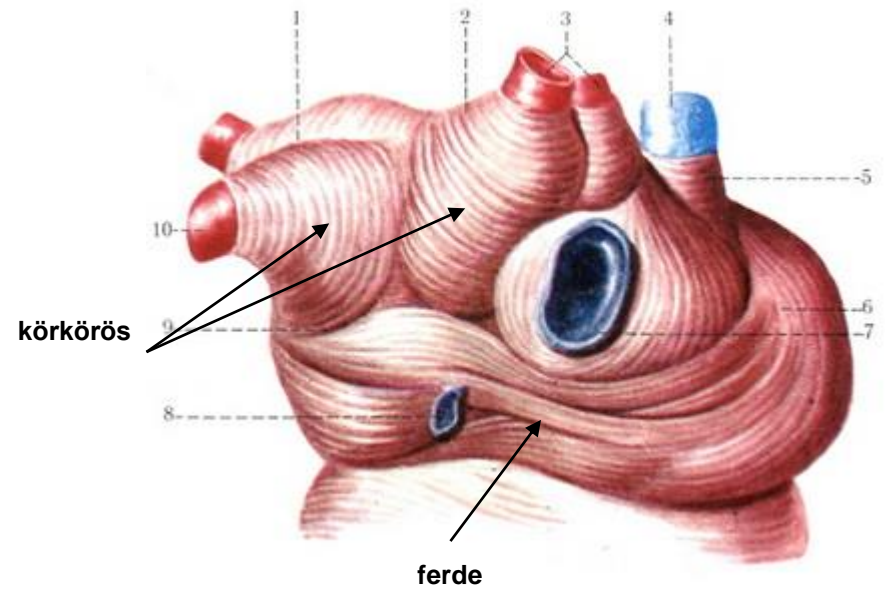
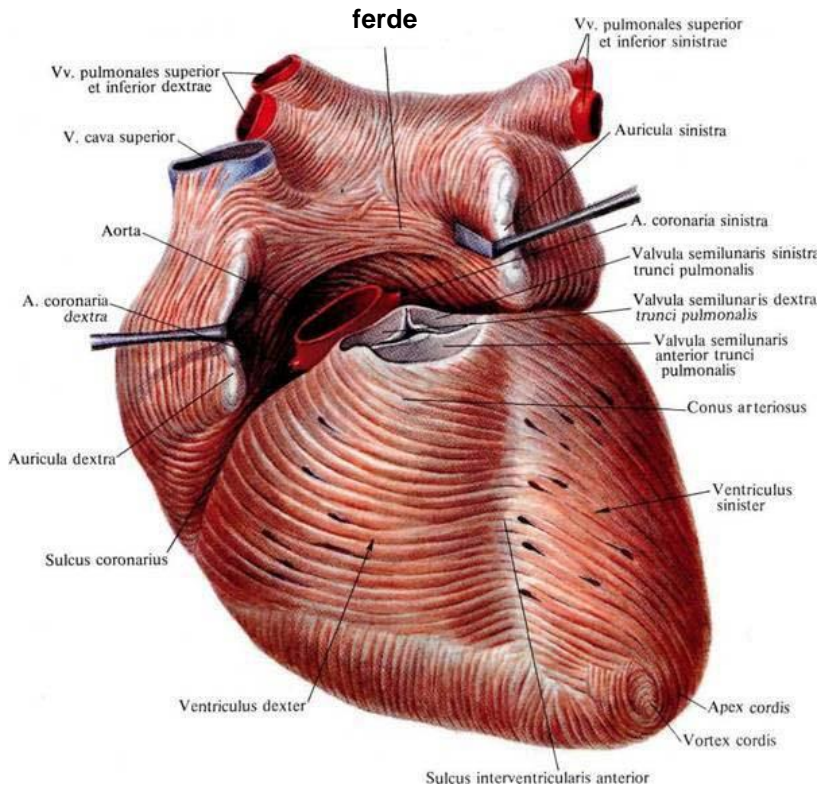
Myocardium  
Ventriculus  
sinister





# PITVAROK IZOMRÉTEGEI

- két rétegű
- a) körkörös - erek körül
- b) ferde

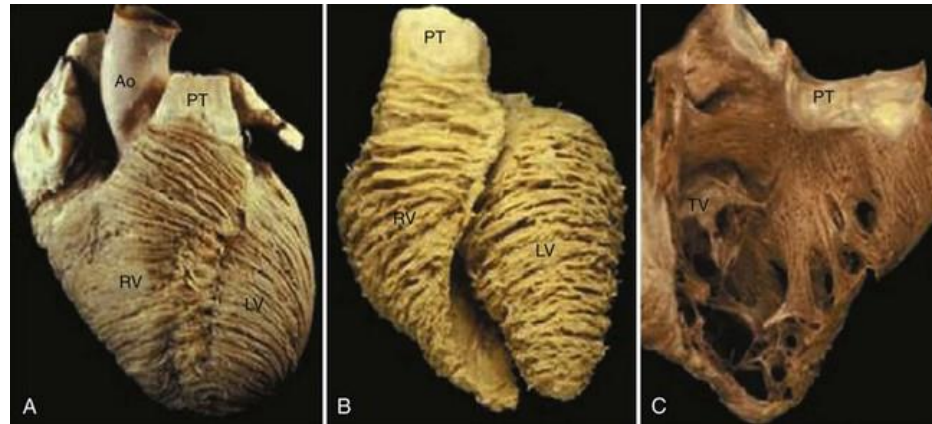




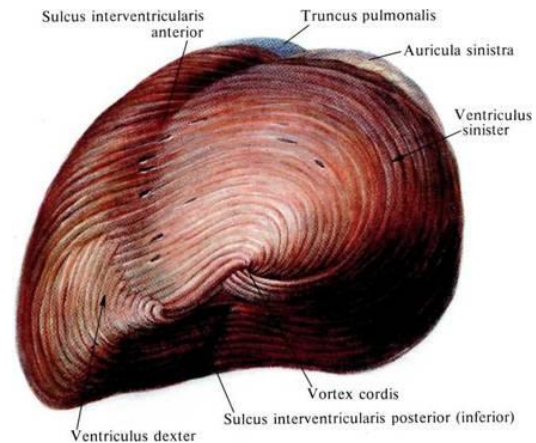
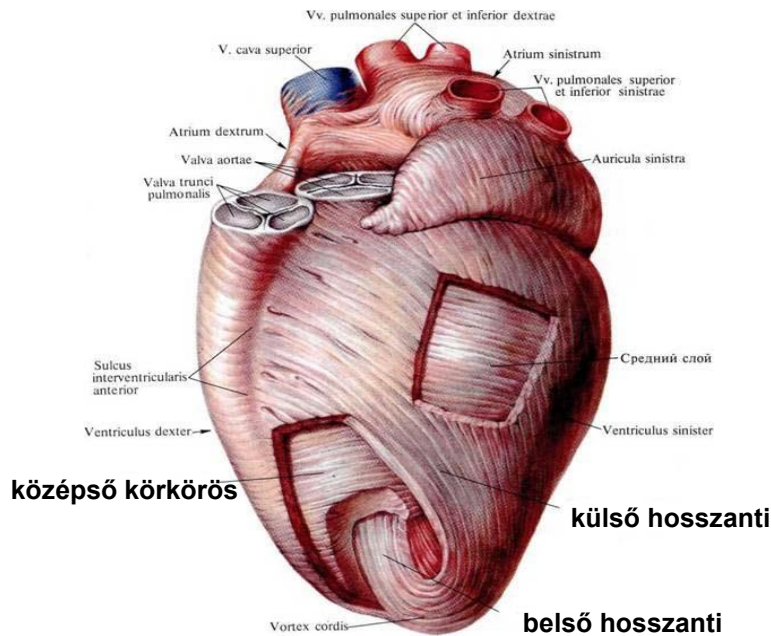
# KAMRA IZOMZAT

három réteg

- külső hosszanti
- középső körkörös
- belső hosszanti



<https://thoracickey.com/two-dimensional-and-three-dimensional-echocardiographic-evaluation-of-the-right-ventricle/>



Lower 1669



<https://www.mdpi.com/2308-3425/5/2/33/htm>

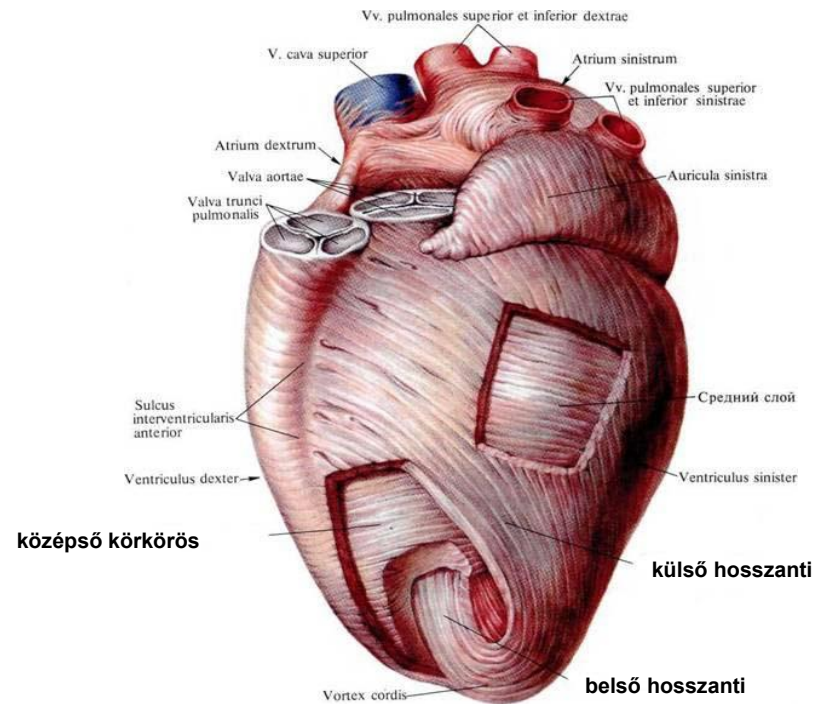
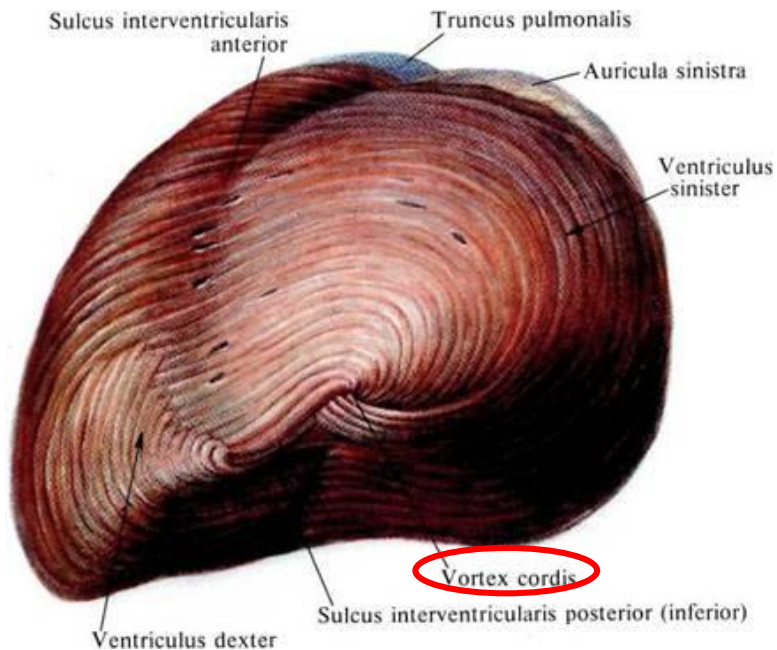
Torrent Guasp 1973

# KÜLSŐ HOSSZANTI IZOM

- mindkét kamra körül
- eredése: anulus fibrosus
- csavar szerűen apex cordis felé fut

## VORTEX CORDIS

- a külső hosszanti izomréteg a szívcsúcsnál a mélybe bukik
- képezi a belső hosszanti izomréteget
- trabecula carneae és a papilláris izmokat

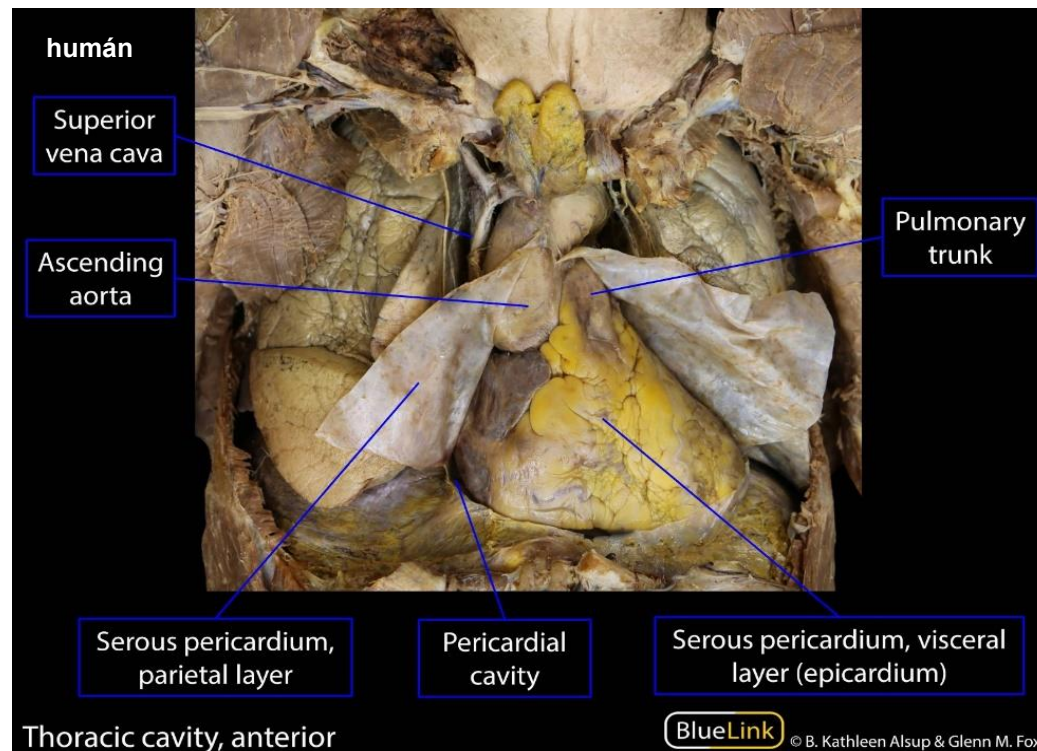


# PERICARDIUM (SZÍVBUROK)

- savós hártya

## 1. PERICARDIUM SEROSUM (EPICARDIUM)

## 2. PERICARDIUM FIBROSUM



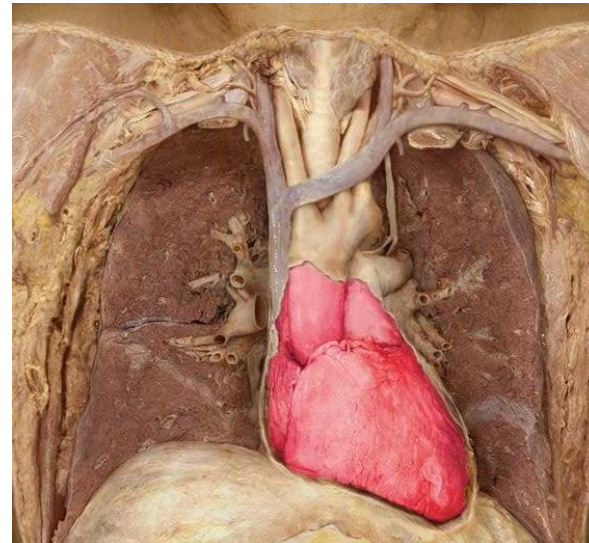
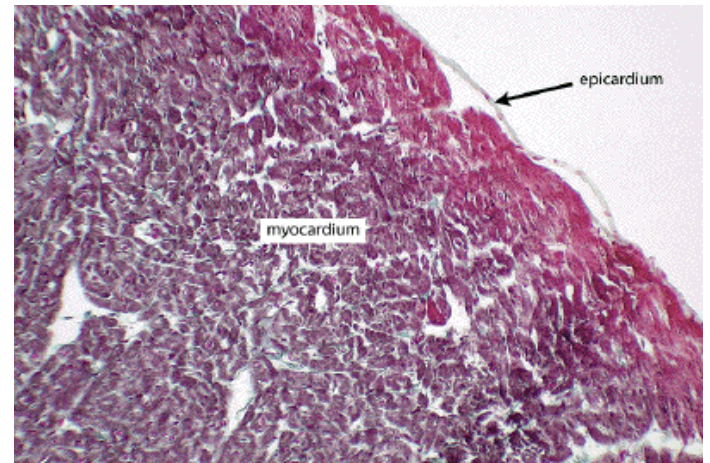


# EPIKARDIUM

## PERICARDIUM SEROSUM:

### 1. Lamina visceralis:

- zsigeri lemez
- szív felszínén direkt



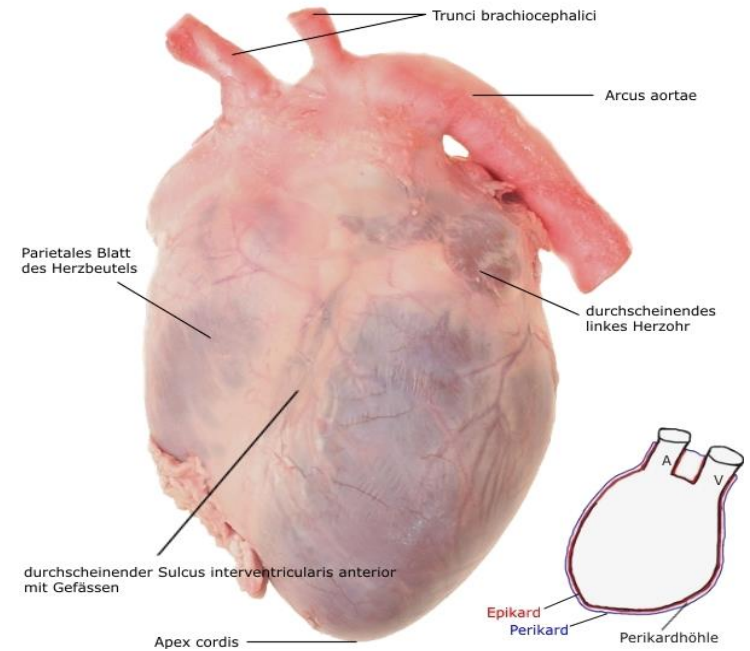
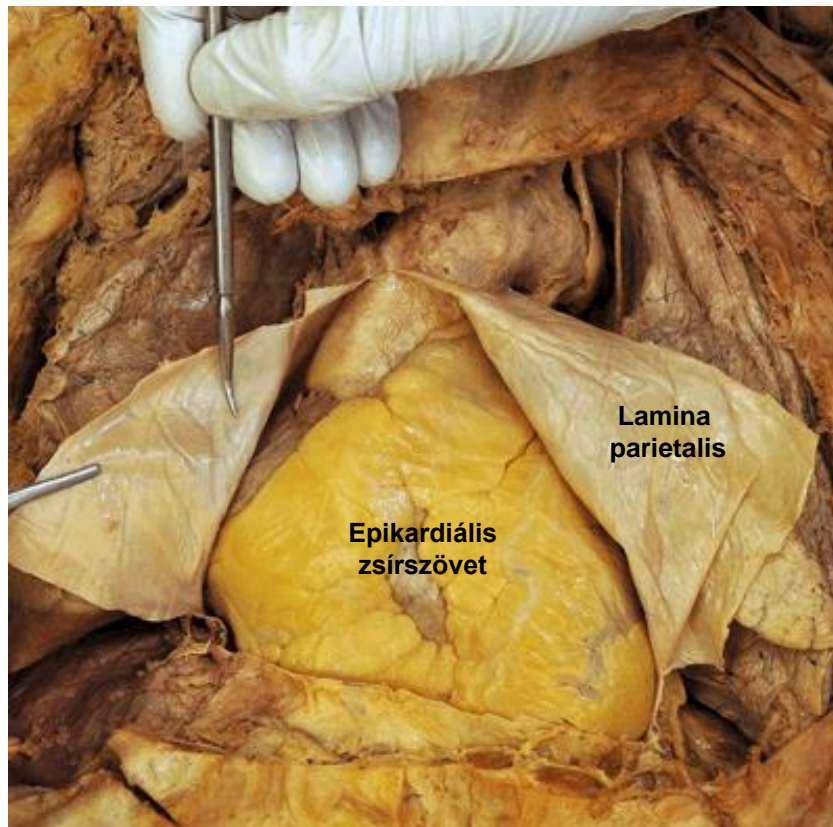
## Lamina visceralis

# EPIKARDIUM

## PERICARDIUM SEROSUM:

### 2. Lamina parietalis:

- a pericardium fibrosum belső felszínével nőtt össze

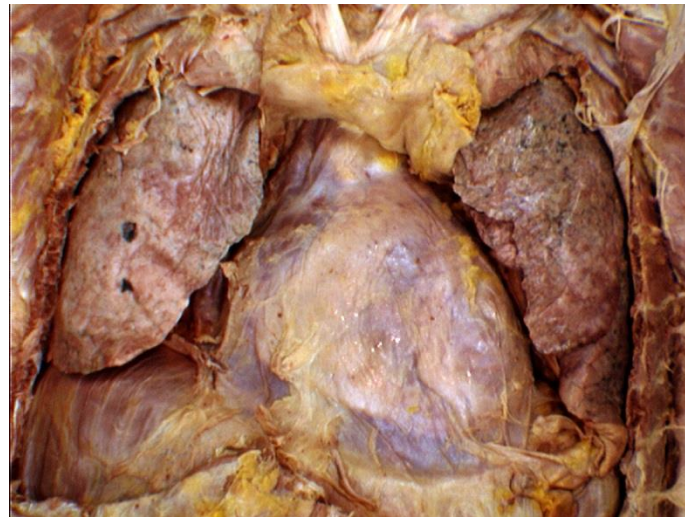
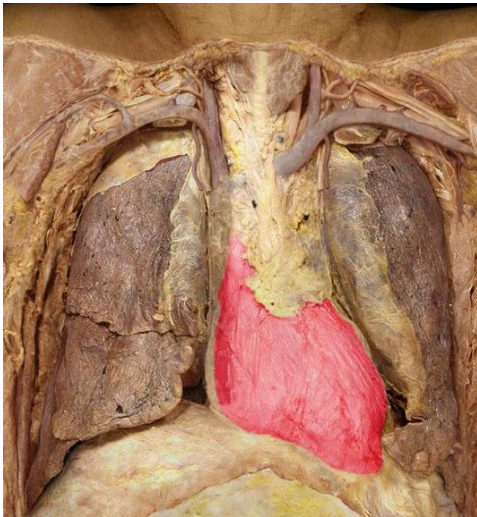




# PERIKARDIUM

## PERICARDIUM FIBROSUM:

- külső kötőszövetes lemez
- diaphragma centrum tendineumával összenőtt



Pericardium fibrosum





# PERIKARDIUM

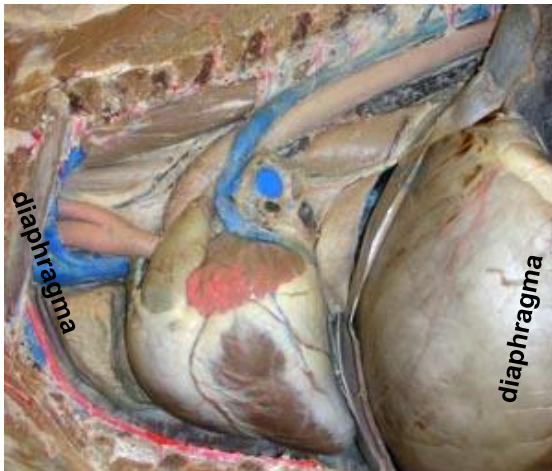
## PERICARDIUM FIBROSUM:

### A. STERNUM ÉS PERICARDIUM FIBROSUM KÖZÖTTI ÖSSZEKÖTTETÉS:

1. kérődző: ligg. sternopericardiaca – bilaterális
2. ló: lig. sternopericardiacum – unilaterális

### B. DIAPHRAGMA ÉS PERICARDIUM FIBROSUM KÖZÖTTI ÖSSZEKÖTTETÉS:

1. kutya, sertés: lig. phrenicopericardium



<http://vanat.cvm.umn.edu/ungDissect/Lab10/Lab10.html>

**Pferd**

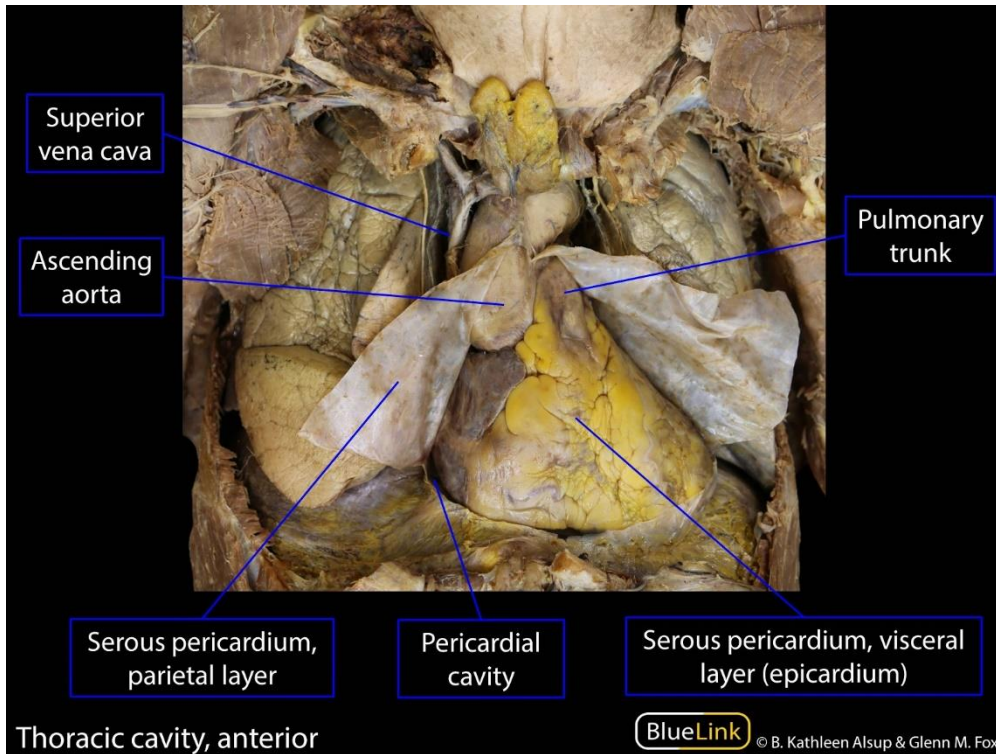


<http://vanat.cvm.umn.edu/carnLabs/Lab11/img11-2.html>

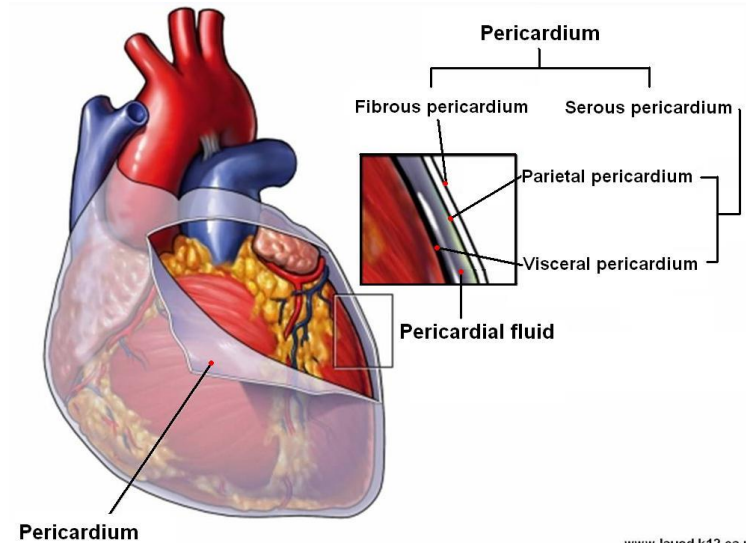
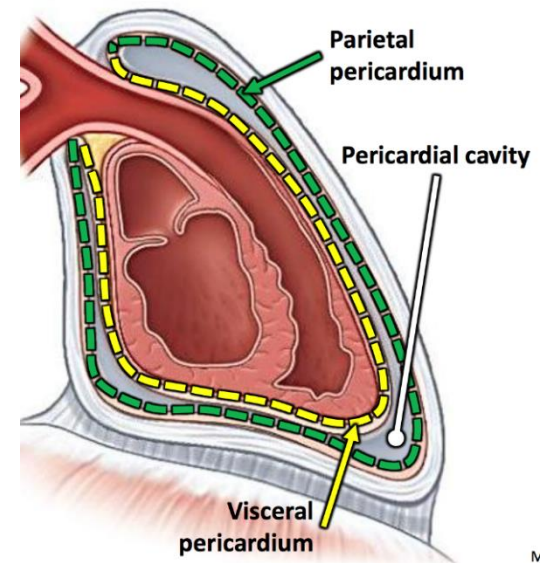
**Hund**

# CAVUM PERICARDII

- lamina parietalis és lamina visceralis közötti térség
- liquor pericardii



<https://sites.google.com/a/umich.edu/bluelink/curricula/first-year-medical-curriculum/sequence-2-cardiology/session-3-superior-mediastinum-and-root-of-neck/lablink>



# PERICARDIUM ÁTHAJLÁSAI

- lamina visceralis és parietalis áthajlik egymásba az erek körül

## ARTÉRIÁS ÁTHAJLÁS:

- aorta – truncus pulmonalis

## VÉNÁS ÁTHAJLÁS:

- vv. pulmonales, v. cava cran. et caud. körül



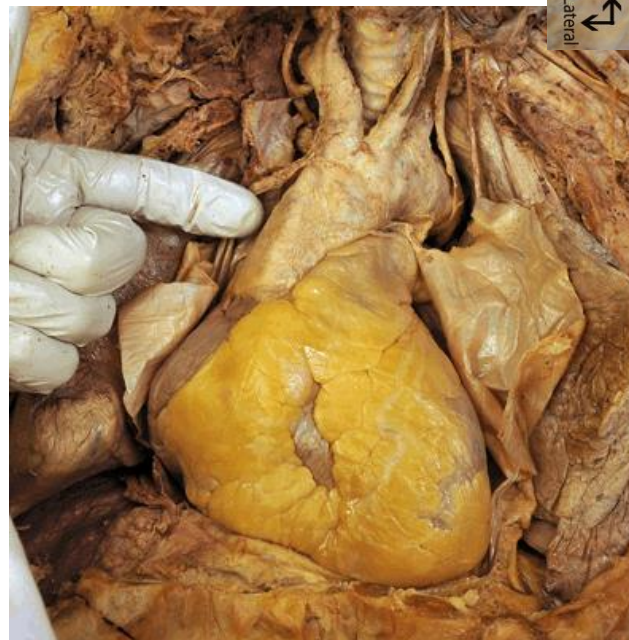
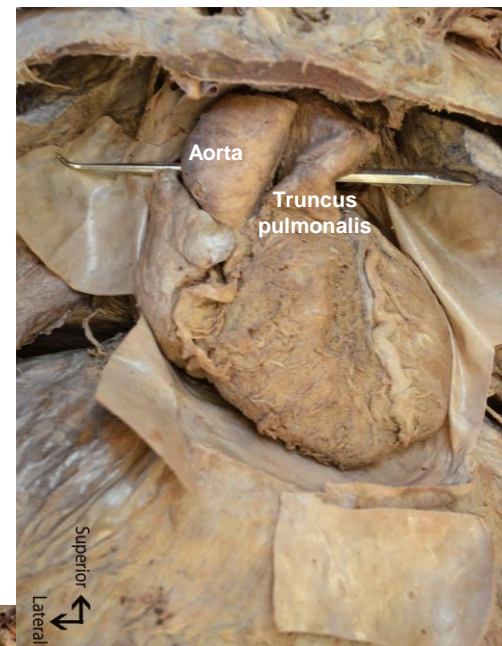
# PERICARDIUM ÁTHAJLÁSA

## SINUS TRANSVERSUS PERICARDII:

- aorta és truncus pulmonalis körül



- 1 - truncus pulmonalis
- 2 - aorta
- 3 - valva aortae (valvula semilunaris dx.)
- 4 - ostium venae cavae sup.
- 5 - atrium dx.
- 6 - ostia venarum pulmonalium
- 7 - auricula sin.
- 8 - valva trunci pulmonalis
- 9 - **sinus transversus pericardii**



## sinus transversus pericardii demonstrációja

<https://www.memorangapp.com/flashcards/91617/Anatomy+2++Mediastinum+and+Adult+Heart/>

# PERICARDIUM ÁTHAJLÁSA

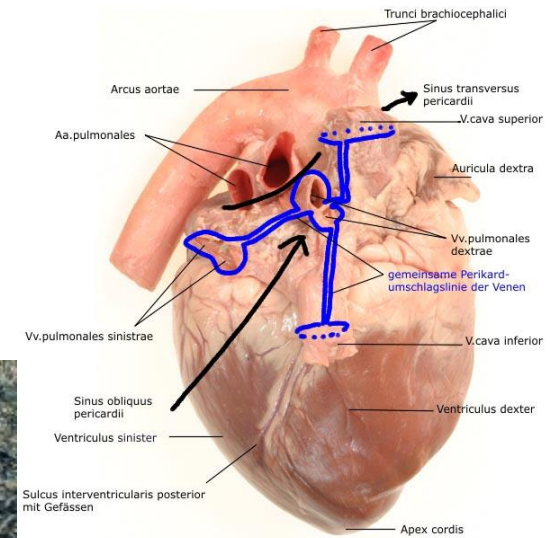
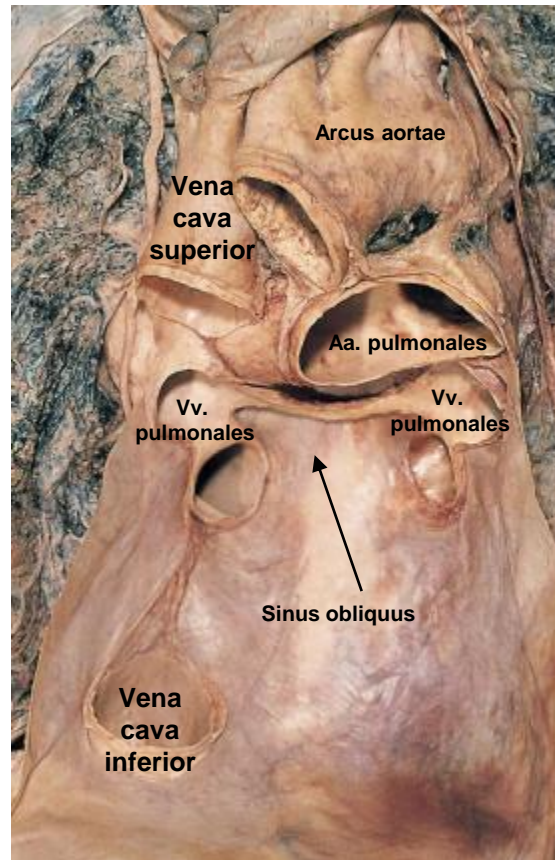
## SINUS OBLIQUUS PERICARDII:

- vv. pulmonalesek és a vena cave caud. et cran. között



sinus obliquus pericardii demonstrációja

<https://www.memorangapp.com/flashcards/91617/Anatomy+2++Mediastinum+and+Adult+Heart/>





# SZÍV VÁZA

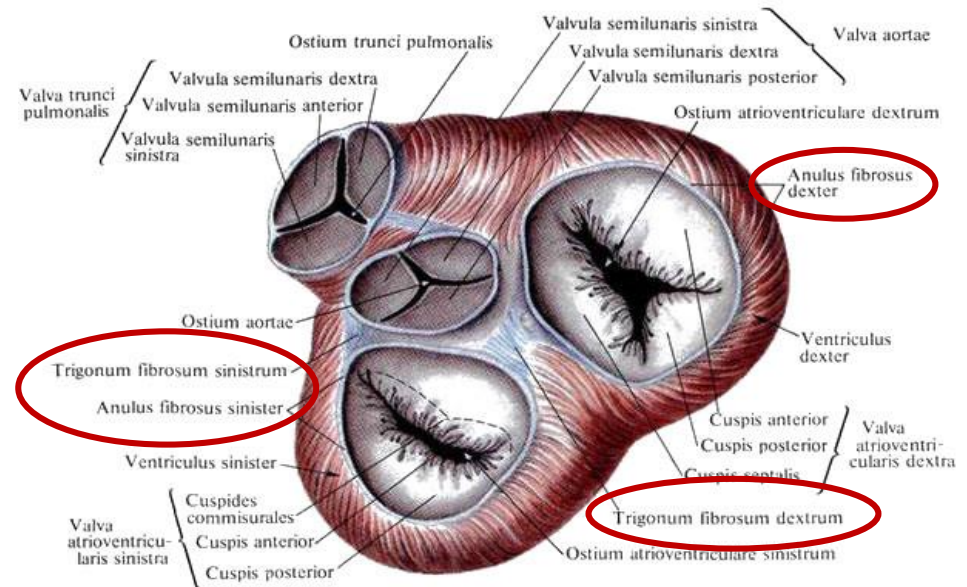
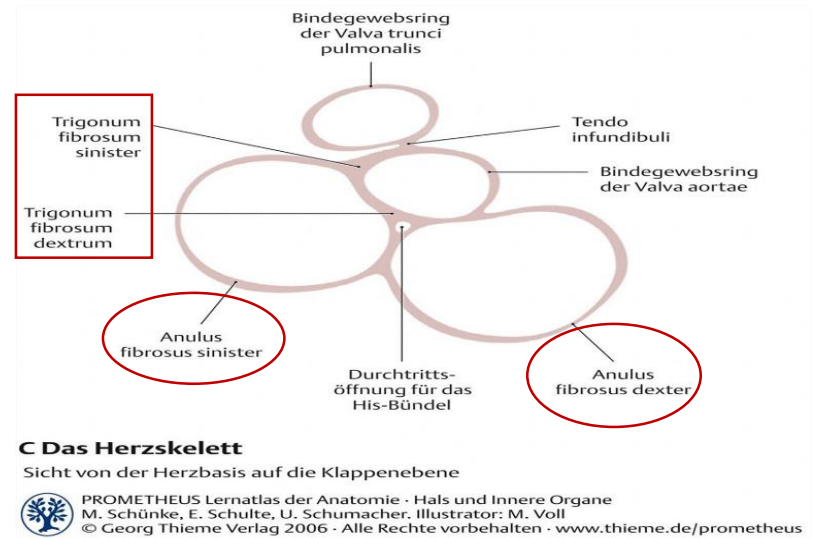
- kötőszövetes

RÉSZEI:

- ANULUS FIBROSUS DEXTER ET SINISTER
- TRIGONUM FIBROSUM DEXTRUM ET SINISTRUM

feladata:

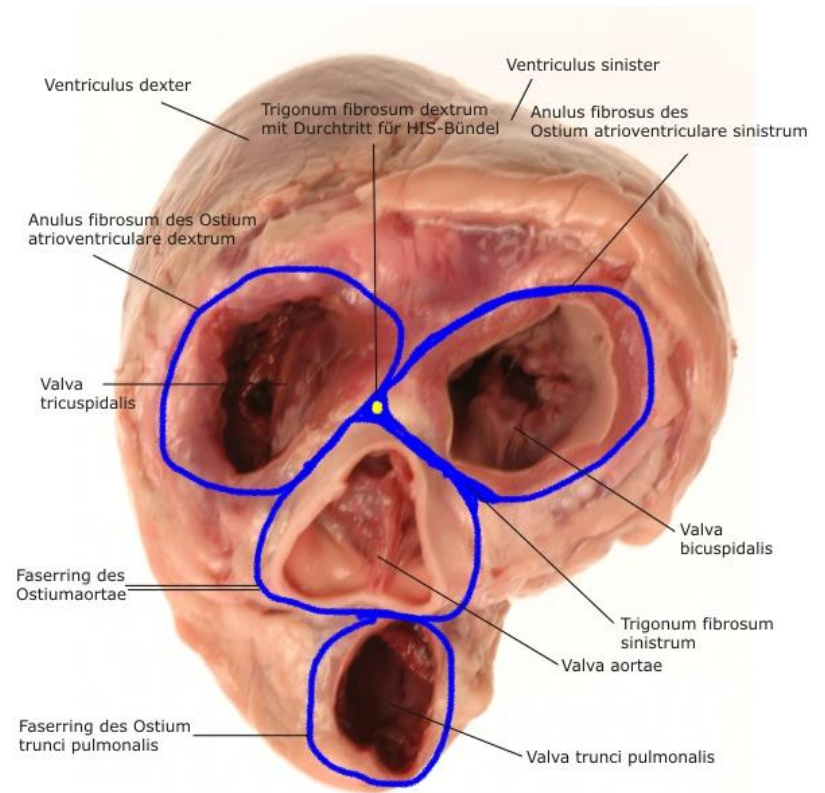
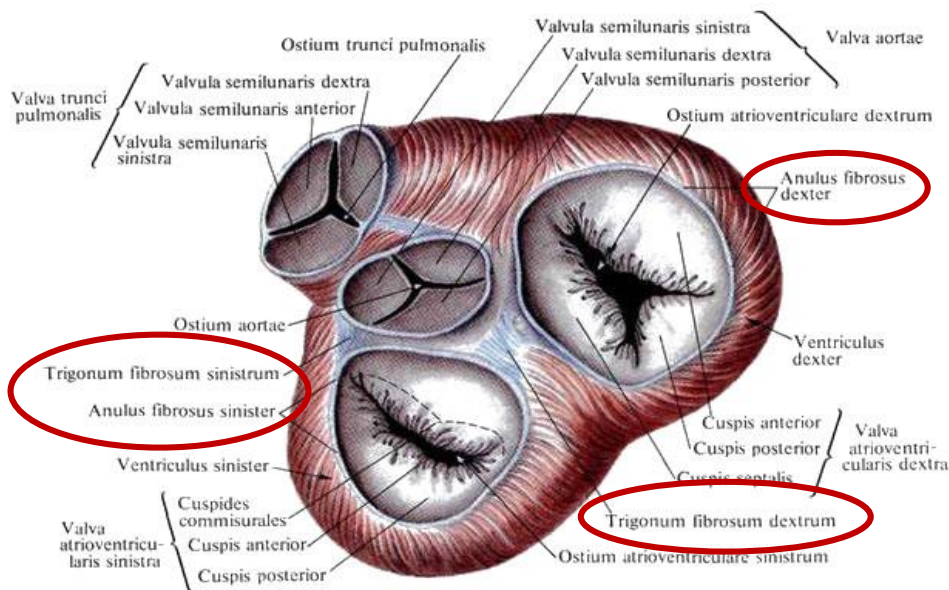
1. pitvar és kamra izomzat elválasztása
2. az ingerületvezető rendszer áthalad rajta
3. pitvar és kamrai izomzat eredése
4. vitorlás billentyűk eredése





# ANULUS FIBROSUS DEXTER ET SINISTER

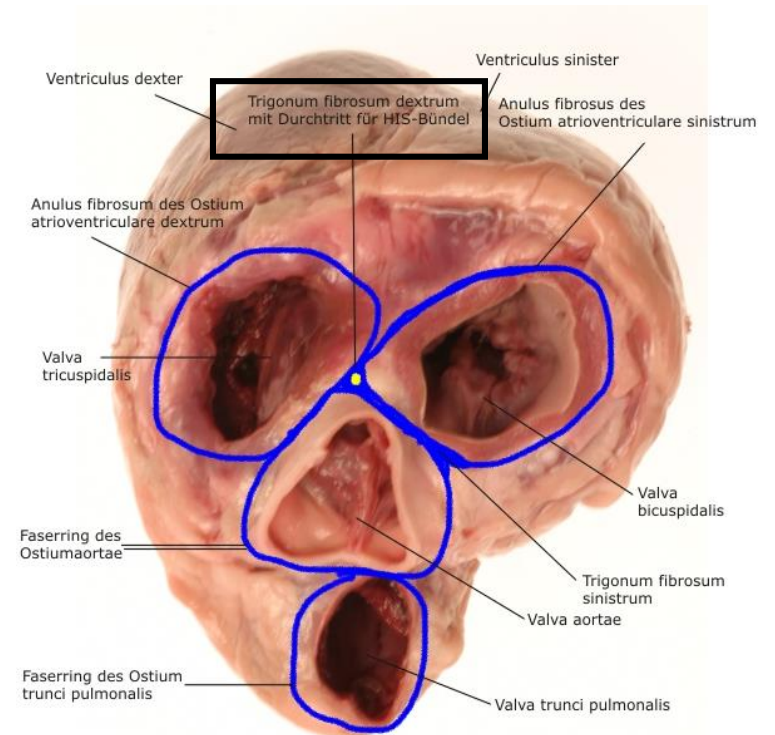
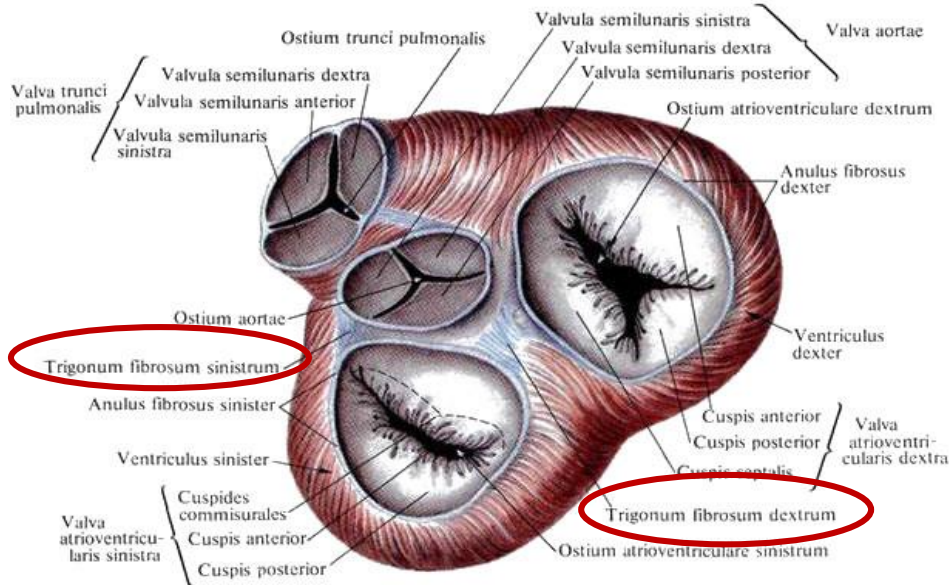
- kötőszövetes gyűrűk a pitvar – kamrai szájadékok körül
- vitorlás billentyűk eredésére szolgál



# TRIGONUM FIBROSUM DEXTRUM ET SINISTRUM

## TRIGONUM FIBROSUM DEXTRUM:

- His – köteg halad át rajta



# ANULUS FIBROSUS

## CHARTILAGO CORDIS:

- két porc

1.kutya

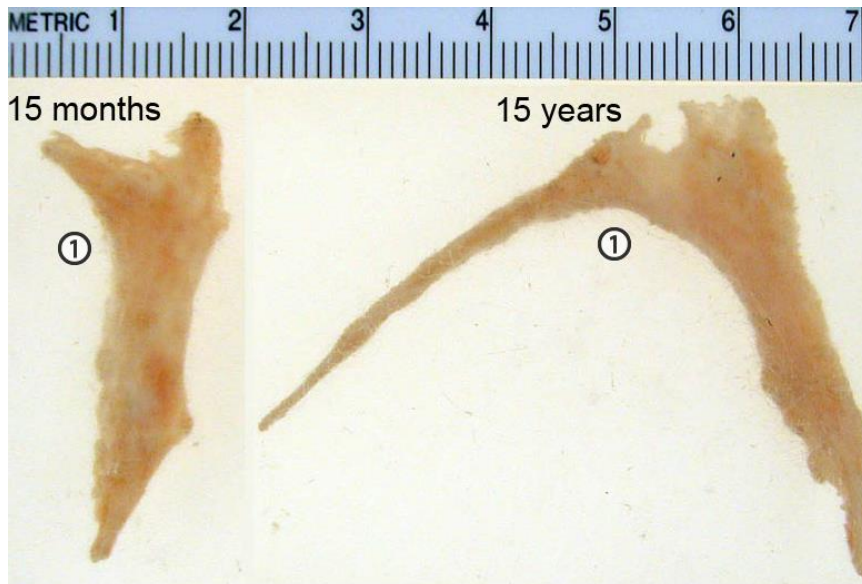
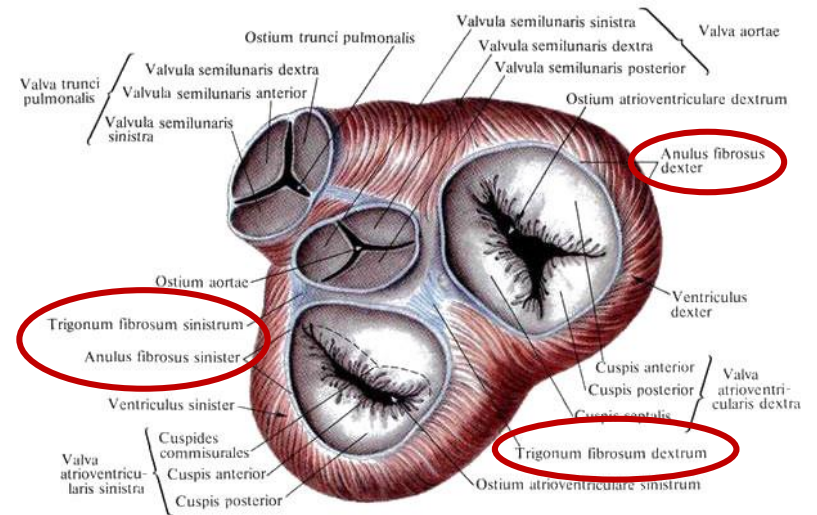
2.sertés

3.ló

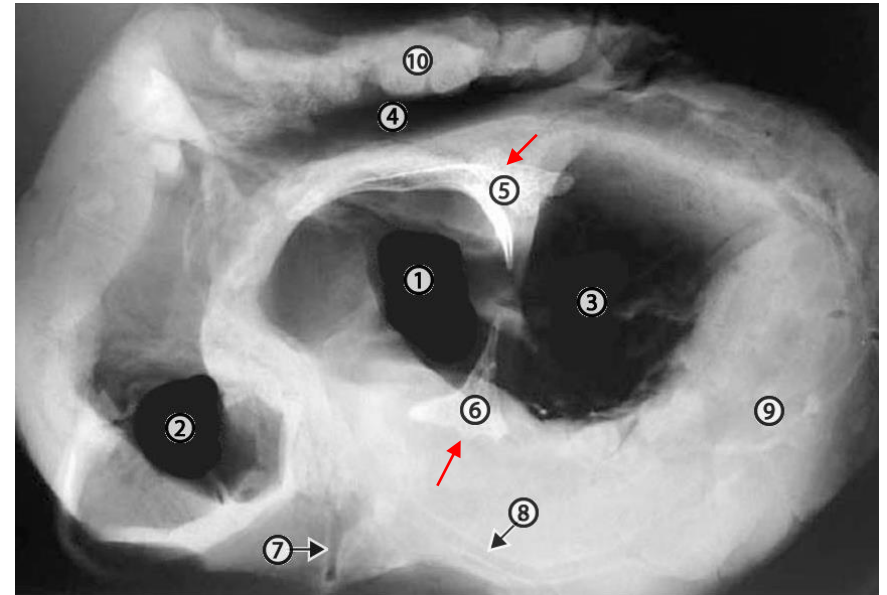
## OSSA CORDIS

- egy nagy és egy kicsi csont

1.szarvasmarha



Ossa Cordis bones from young and old bovine animals. 1, side adjacent to the base of the aorta (see image 10-13).



Radiograph of a horizontal section through a bovine heart at the level of the coronary groove. 1, aortic lumen; 2, pulmonary valve lumen; 3, left AV valve lumen; 4, right AV valve lumen; 5, large os cordis bone; 6, small os cordis bone; 7, paraconal branch of the left coronary artery; 8, circumflex branch of the left coronary artery; 9, thick wall of left ventricle; 10, thin wall of right ventricle.



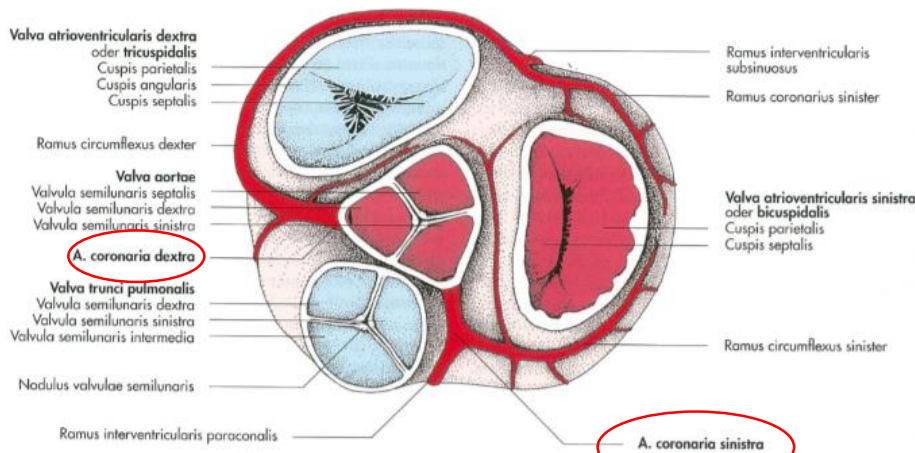
# A SZÍV VÉRELLÁTÁSA

## VASA PRIVATA:

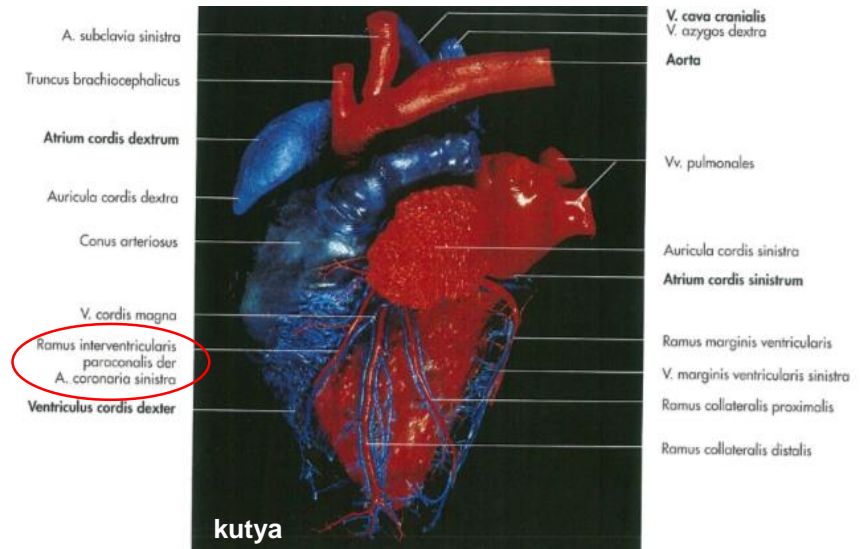
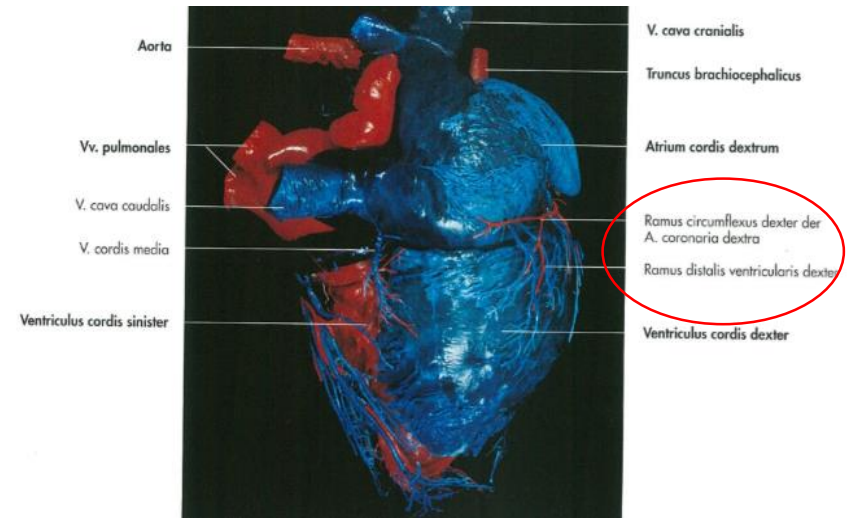
- szív saját erei
- **ARTERIA CORONARIA DEXTRA ET SINISTRA**

## VASA PUBLICA:

- **kisvérkörhöz tartozó erek**



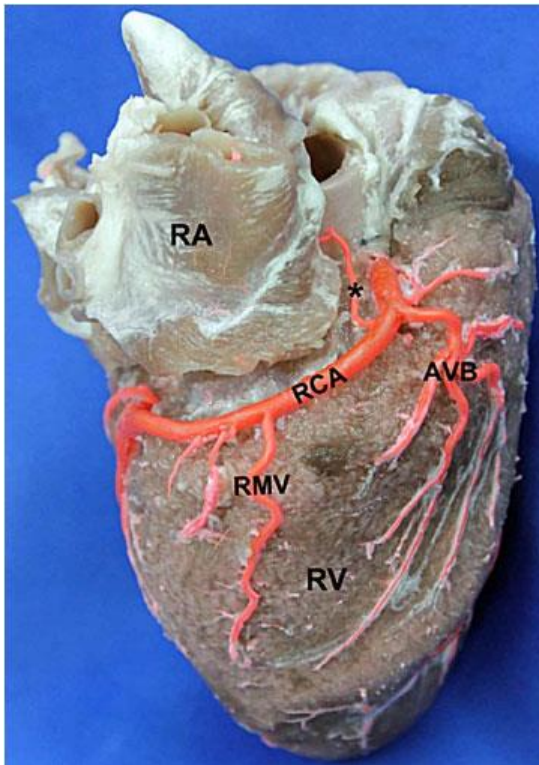
ló



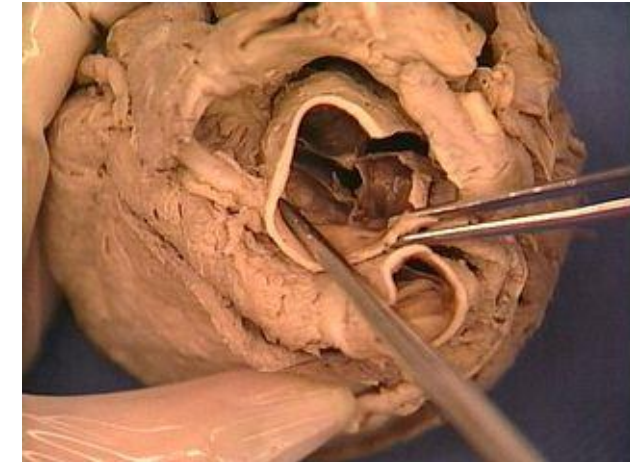
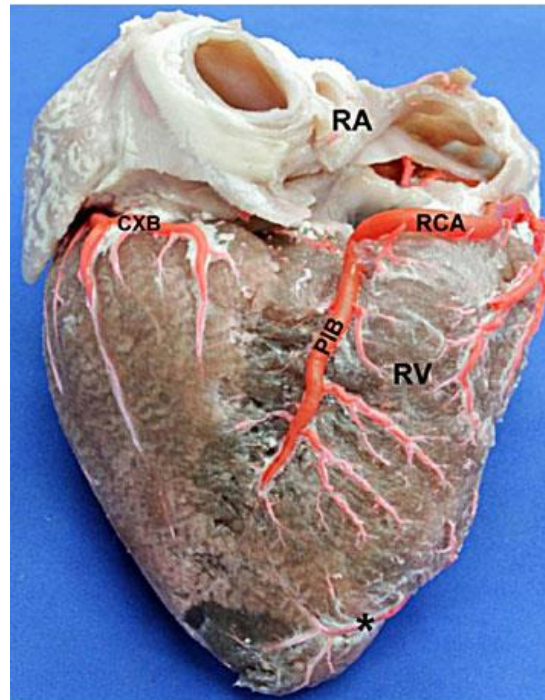
kutya

# ARTERIA CORONARIA DEXTRA

- eredés sinus aortae dexter
- sulcus coronarius dexter - R. circumfelxus dext.



RA: Atrium dext.  
 RCA: A. coronaria dext.  
 AVB: R. ventricularis ant.  
 RMB: R. marginalis dext.  
 (\*): R. sinoatrialis



A. coronaria dext.

[International Journal of Morphology](http://dx.doi.org/10.4067/S0717-95022013000400023)

versión On-line ISSN 0717-9502

Int. J. Morphol. vol.31 no.4 Temuco dic. 2013

<http://dx.doi.org/10.4067/S0717-95022013000400023>

Int. J. Morphol., 31(4):1289-1296, 2013.

RV: Ventriculus dext.

RA: Atrium dext.

RCA: A. coronaria dext.

PIB: R. interventricularis post.

CXB: R. circumfelxus

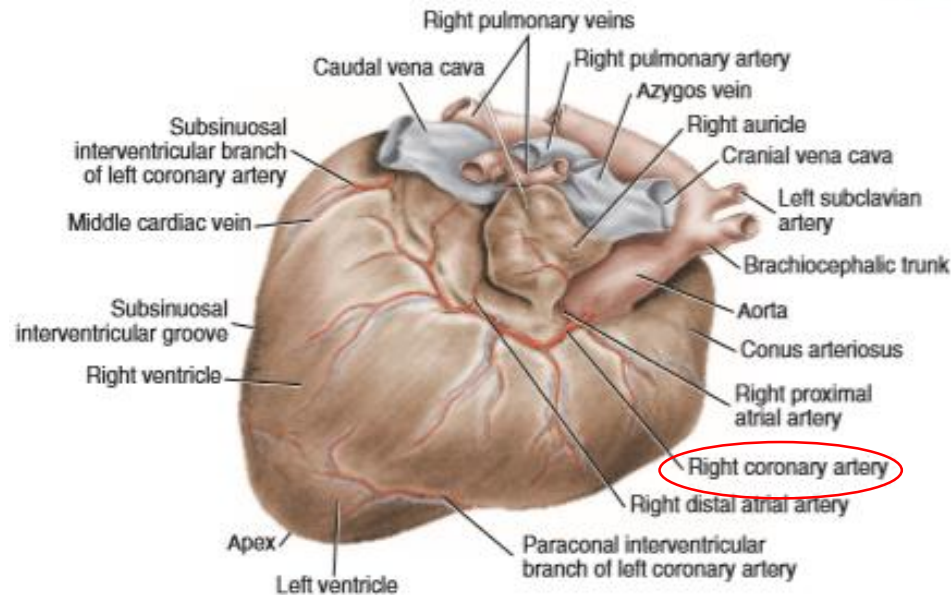
(\*): Ast von dem R.  
 interventricularis ant.

# ARTERIA CORONARIA DEXTRA

RAMUS CIRCUMFLEXUS DEXT.:

HÚSEVŐK, KÉRŐDZŐ:

- sulcus coronarius dext. - sulcus interventricularis subsinuosus magasságában véget ér!!!



kutya



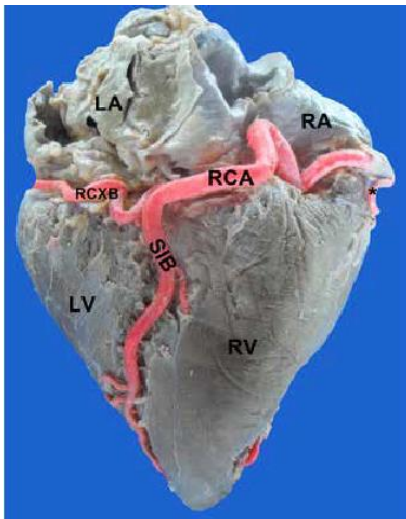
# ARTERIA CORONARIA DEXTRA

RAMUS CIRCUMFLEXUS DEXT.:

LÓ, SERTÉS:

**JOBB DOMINANCIA**

- **sulcus coronarius dext.- sulcus interventricularis subsinuosban, mint ramus interventricularis sunsinosus halad az apex cordisig!!!**



Posterior view of the heart

RA: right atrium

LA: left atrium

RV: right ventricle

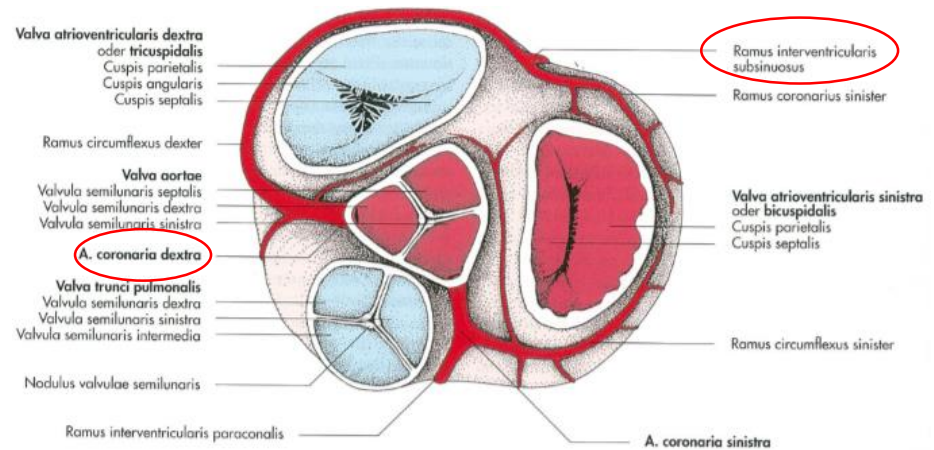
LV: left ventricle

RCA: right coronary artery

SIB: subsinoventricular  
interventricular  
branch ending in the apex

RCXB: right circumflex branch

(\*): right marginal branch



16

# ARTERIA CORONARIA SINISTRA

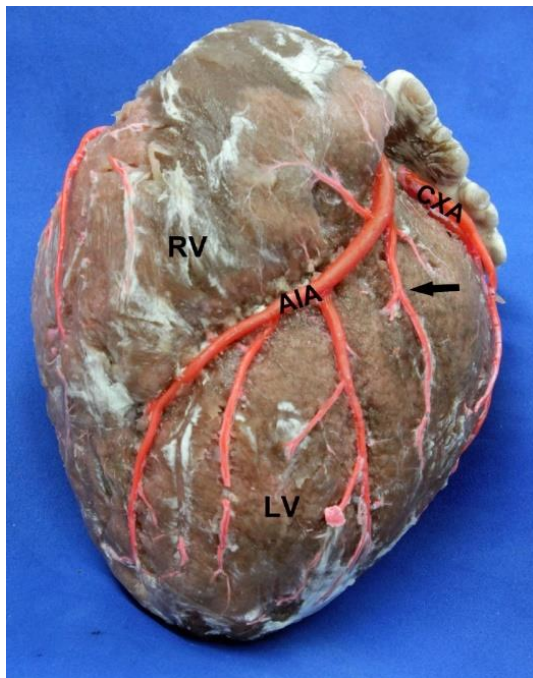
- eredése: sinus aortae sinister

ÁGAI:

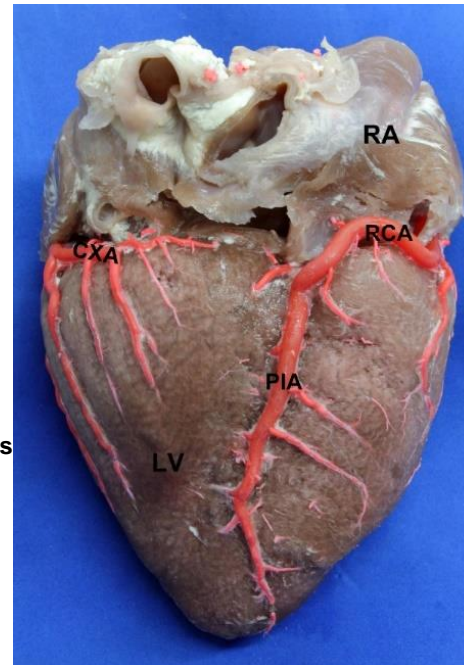
1. RAMUS INTERVENTRICULARIS PARACONALIS
2. RAMUS CIRCUMFLEXUS SIN.



A. coronaria sin.



V: Ventriculus sin.  
 RV: Atrium dext.  
 AIA: R. interventricularis ant.  
 CXA: R. circumflexus  
 Pfeile: R. anterior sup.



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<http://dx.doi.org/10.5935/1678-9741.201400270>

LV: Ventriculus sin.  
 RA: Atrium dext.  
 RCA: A. coronaria dext.  
 PIA: R. interventricularis post.  
 CXA: R. circumflexus

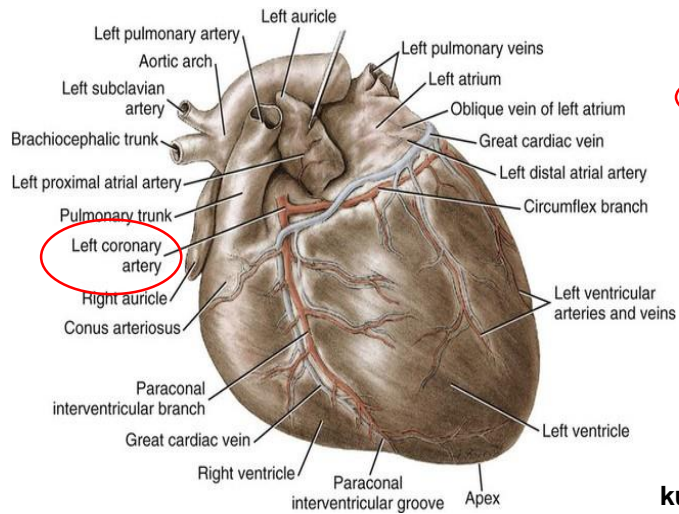
# ARTERIA CORONARIA SINISTRA

**RAMUS CIRCUMFLEXUS SIN.:**

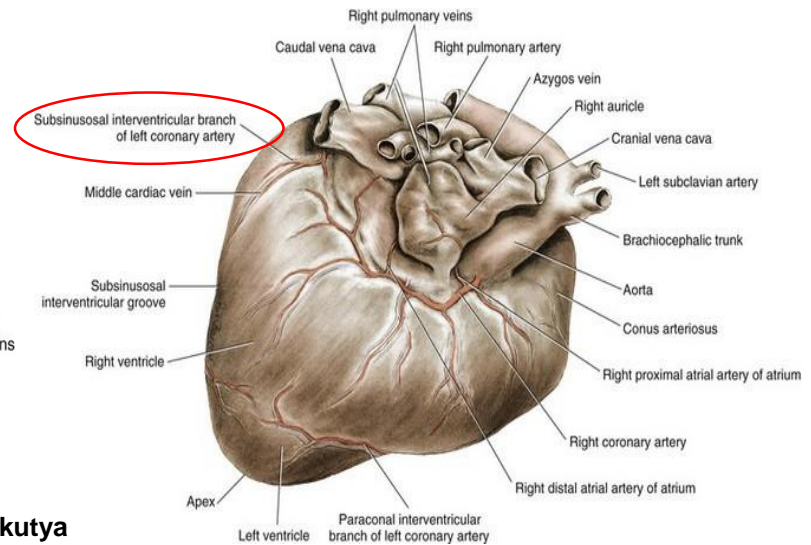
**HÚSEVŐK, KÉRŐDZŐ:**

**BAL DOMINANCIA**

- **sulcus coronarius sin. - sulcus interventricularis subsinosisban, mint ramus interventricularis subsinosis halad az apex cordisig**



kutya



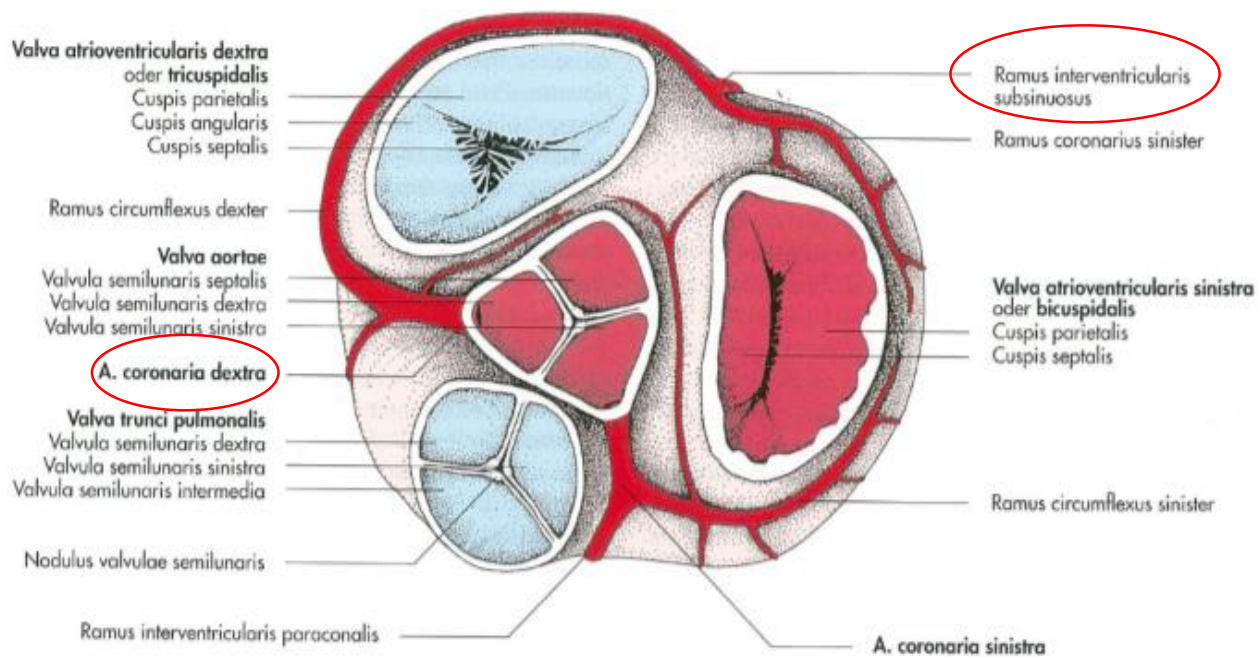


# ARTERIA CORONARIA SINISTRA

RAMUS CIRCUMFLEXUS SIN.:

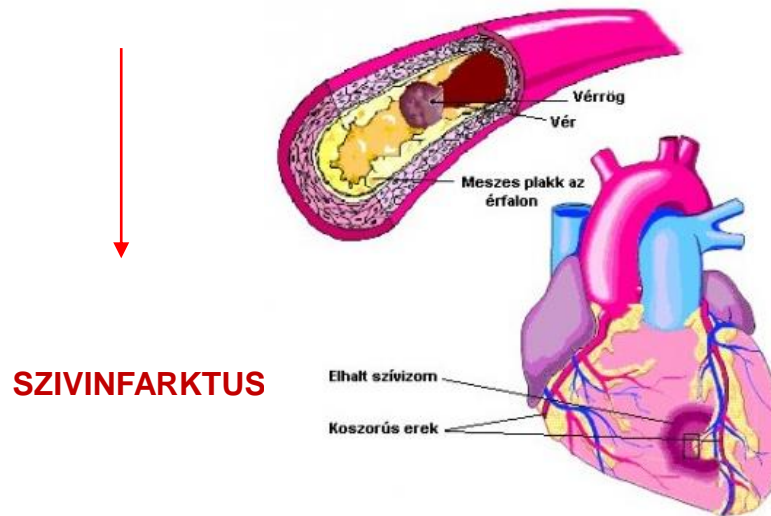
LÓ, SERTÉS:

- sulcus coronarius sin. – sulcus interventricularis subsinuosus magasságában véget ér!!!



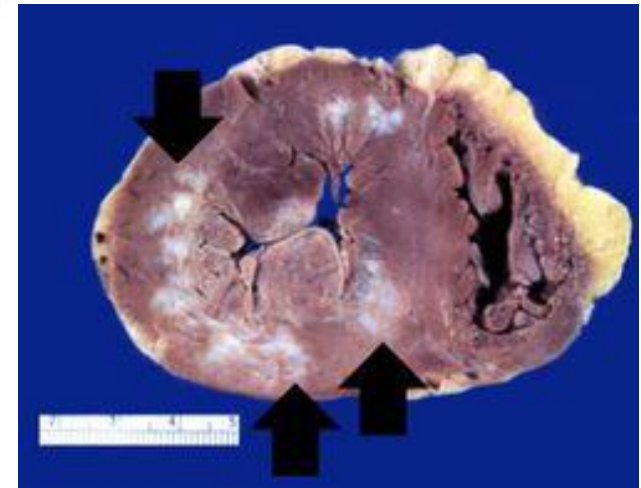
# KORONÁRIÁK

- a koronáriák ágai funkcionális végartériák – nincs köztük anasztomózis



**SZIVINFARKTUS**

- kamrasystole alatt a koronáriákban a véráram kisebb fokú
- kamradyastole alatt az áramlás fokozódik



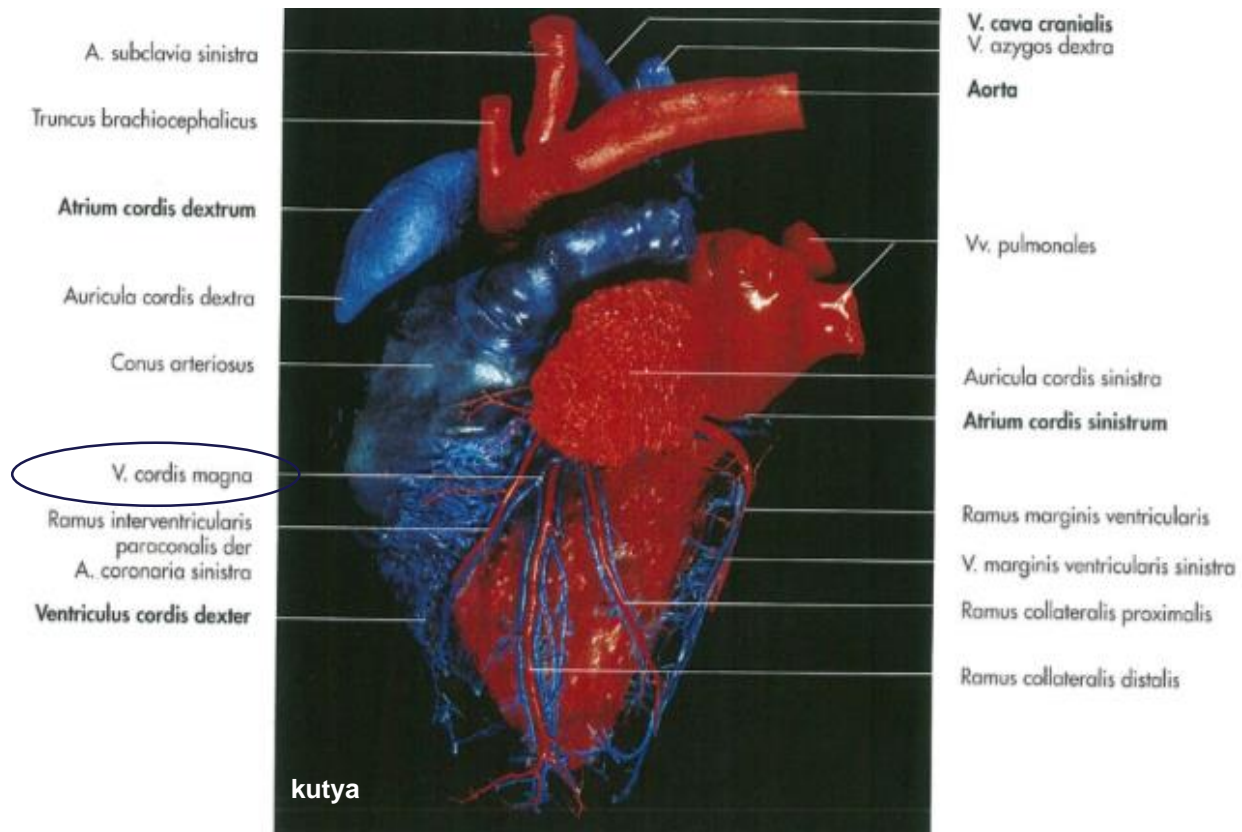
This is a gross photograph of a heart with areas of old healed myocardial infarction (scars) outlined by arrows.

<http://peir.path.uab.edu>

# A SZÍV VÉNÁI (VENAE CORDIS)

## 1. V. CORDIS MAGNA (V. CARDIACA MAGNA):

- sulcus interventricularis paraconalisban
- sinus coronariusba ömlik

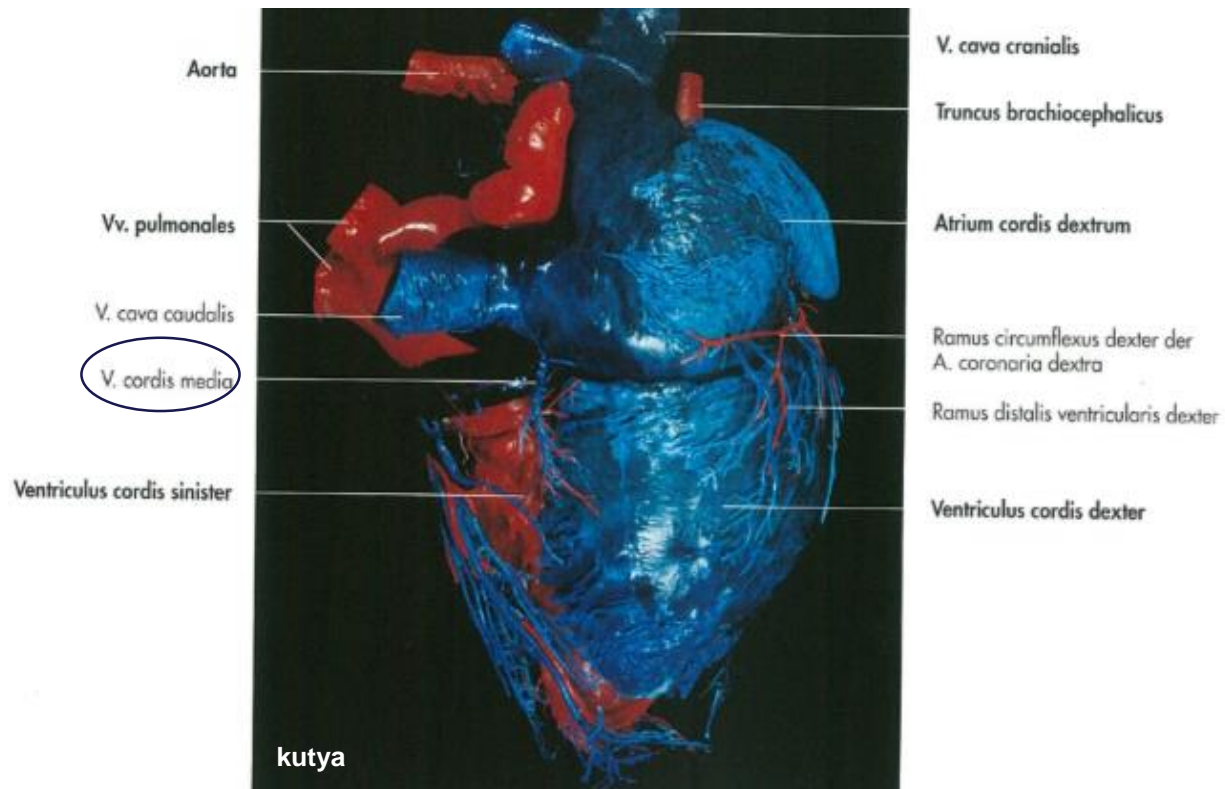




# A SZÍV VÉNÁI (VENAE CORDIS)

## 2. V. INTERVENTRICULARIS POSTERIOR (V. CORDIS MEDIA):

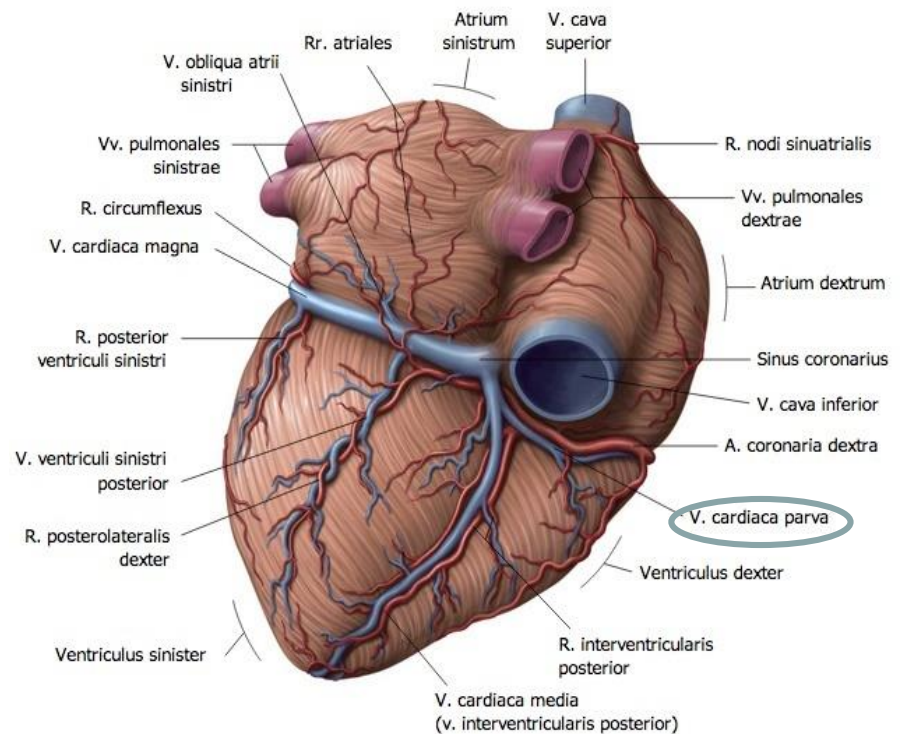
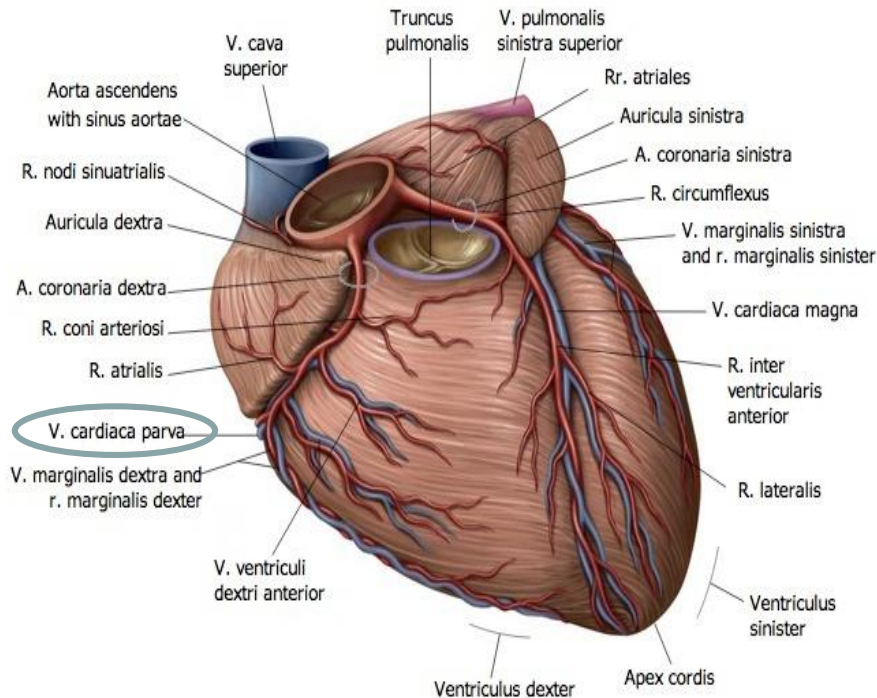
- sulcus interventricularis subsinosisban halad
- sinus coronalisba ömlik



# A SZÍV VÉNÁI (VENAE CORDIS)

## 3. V. CORDIS PARVA (V. CARDIACA PARVA):

- jobb szívfélből szállít vénás vért
- sulcus coronarius jobb oldalán facies atrialison
- sinus coronalisba ömlik



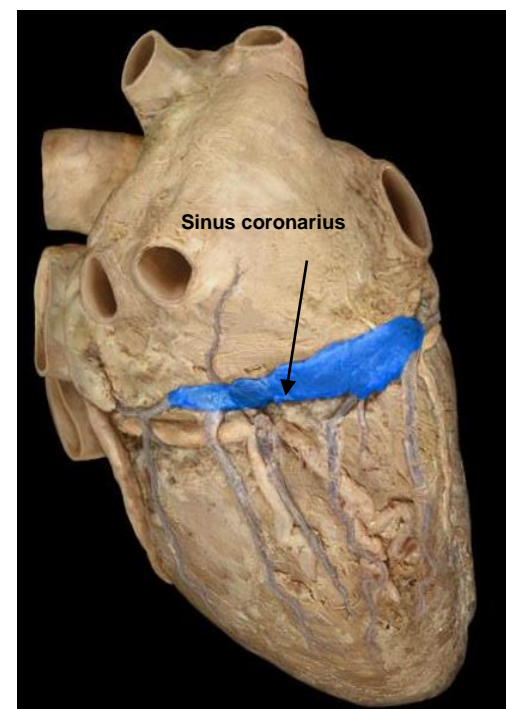
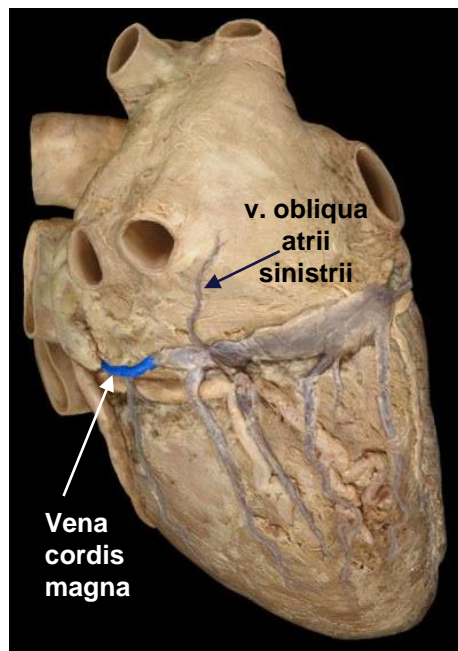
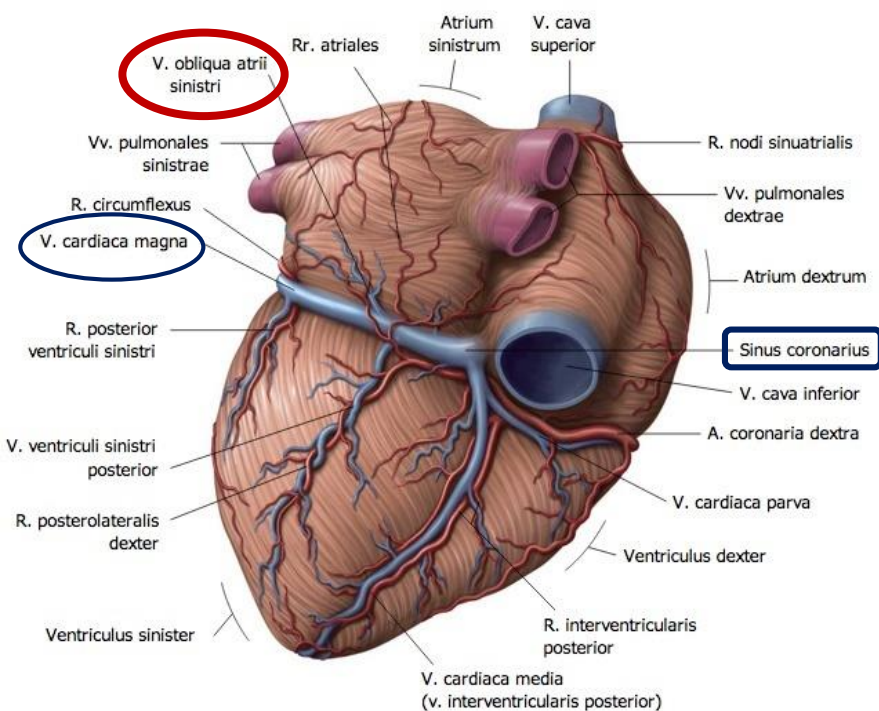
# A SZÍV VÉNÁI (VENAE CORDIS)

## 5. V. OBLIQUA ATRII SINISTRII (MARSCHALL – féle véna):

- KUTYA, LÓ – v. azygos sin. maradványa
- bal pitvar hátsó falán – beleömlik a vena cordis magnába
- v. cordis magna és sinus coronarius közötti határ (KUTYA, LÓ)



John Marshall



humán

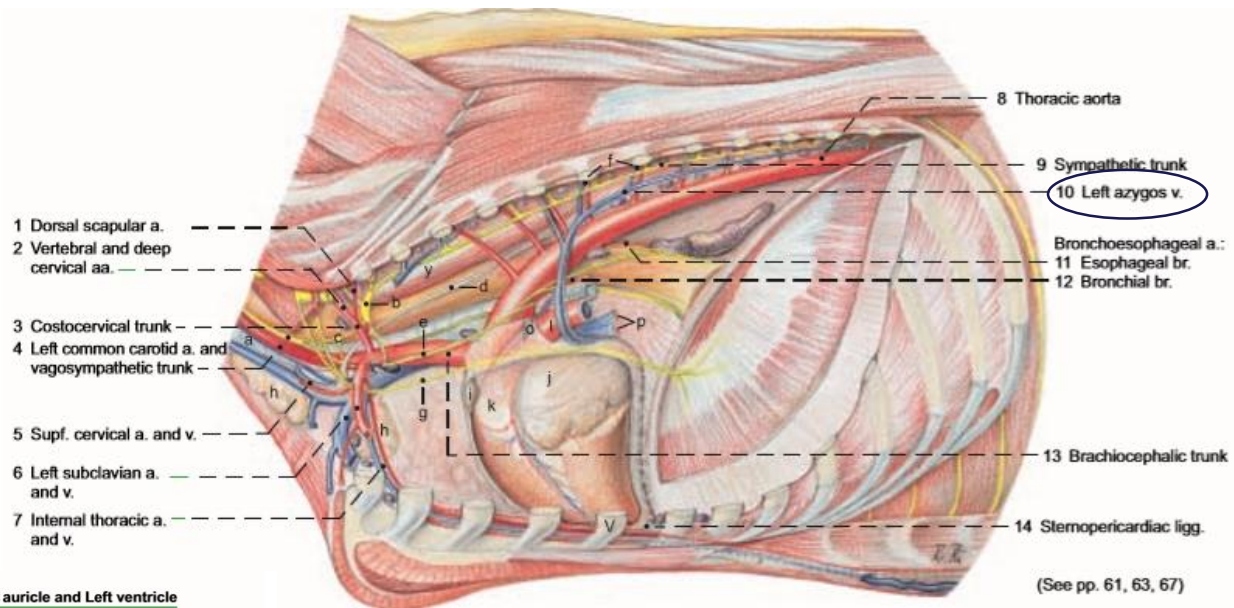


# A SZÍV VÉNÁI (VENAE CORDIS)

## 6. V. CORDIS MAGNA/SINUS CORONARIUS KÖZÖTTI HATÁR:

### KÉRŐDZŐ, SERTÉS:

- v. azygos sin.

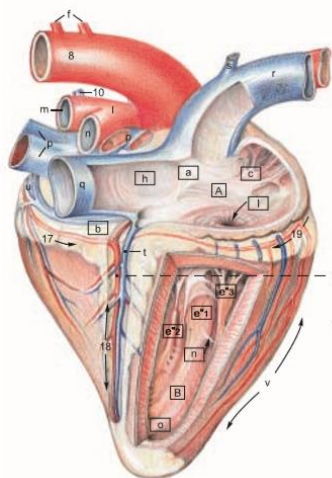


### Right atrium and Right ventricle

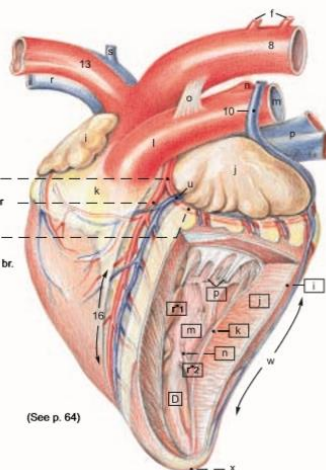
(Atrial surface)

### Left auricle and Left ventricle

(Auricular surface)



- 15 Left coronary a.
- 16 Paraconal interventricular br. and groove
- 17 Circumflex br.
- 18 Subsinuosal interventricular br. and groove
- 19 Right coronary a. and coronary groove



(See p. 64)

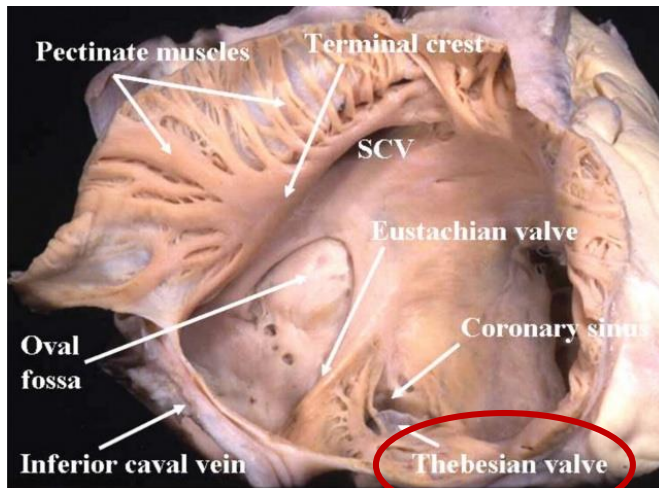
# A SZÍV VÉNÁI (VENAE CORDIS)

## 6. SINUS CORONARIUS:

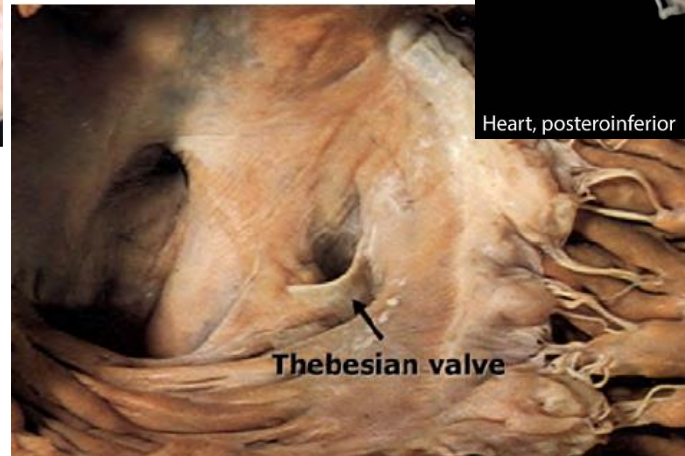
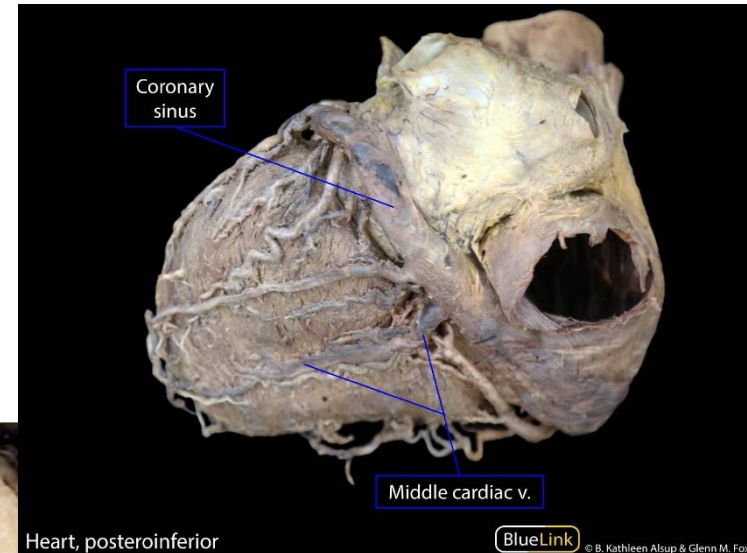
- a szív vénáinak közös összeömlése
- vénás vért szállít a jobb pitvarba
- hátsó felszínen, sulcus coronariusban
- ostium sinus coronarii - valvula sinus coronarii (Valvula Thebesii, Thebesius – féle billentyű)



Adam Christian Thebesius



<http://healthyheart-sundar.blogspot.com/2011/03/anatomy-of-heart.html>



<https://sites.google.com/a/umich.edu/blue-link/curricula/first-year-medical-curriculum/2015-2016-resources/sequence-2-cardiorespiratory/session-4-heart/lablink>

# A SZÍV VÉNÁI (VENAE CORDIS)

## 6. SINUS CORONARIUS:

### BELEÖMLŐ VÉNÁK:

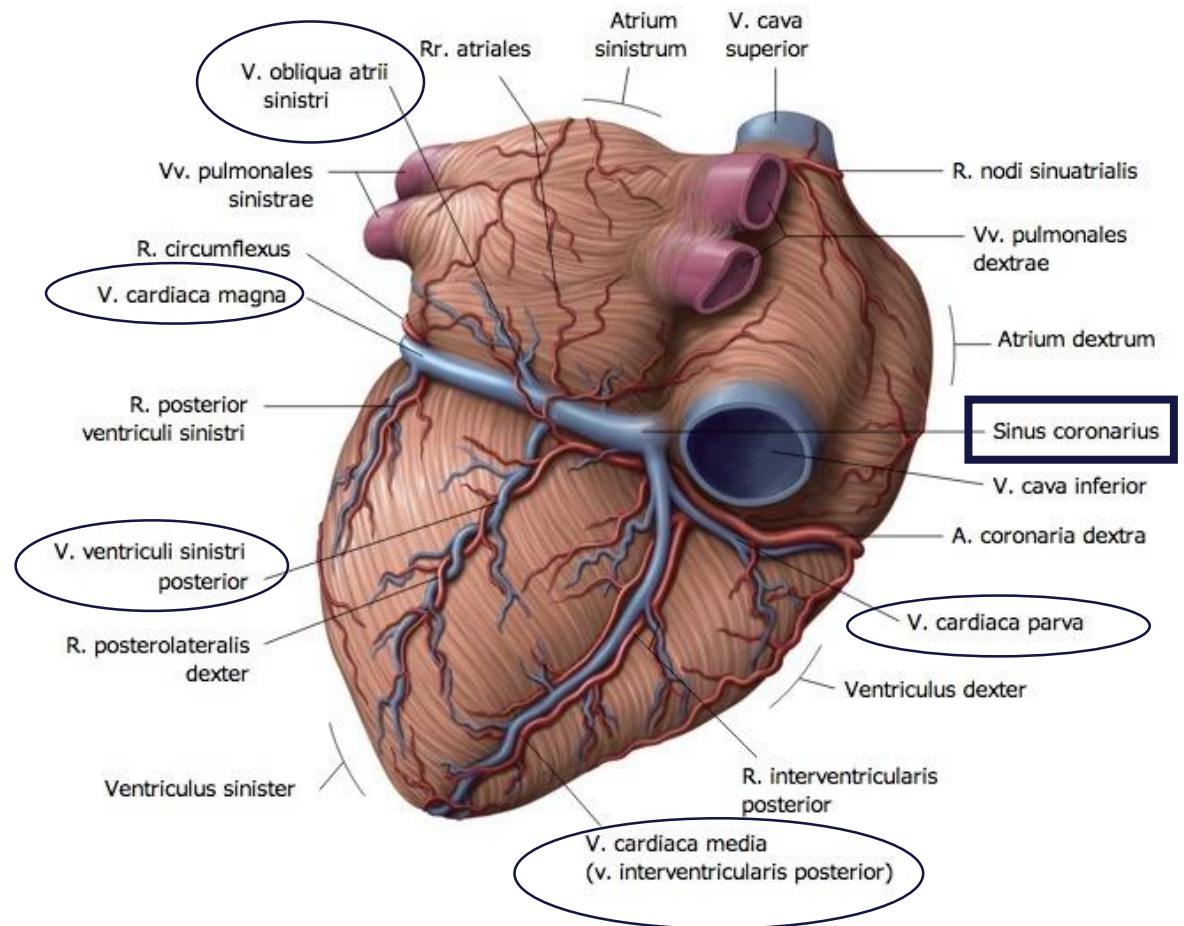
1.vena cardiaca magna

2.vena cardiaca media

3.vena cardiaca parva

4.vena obliqua atrii sinistri

5.KÉRŐDZŐ, SERTÉS:v. azygos sin.

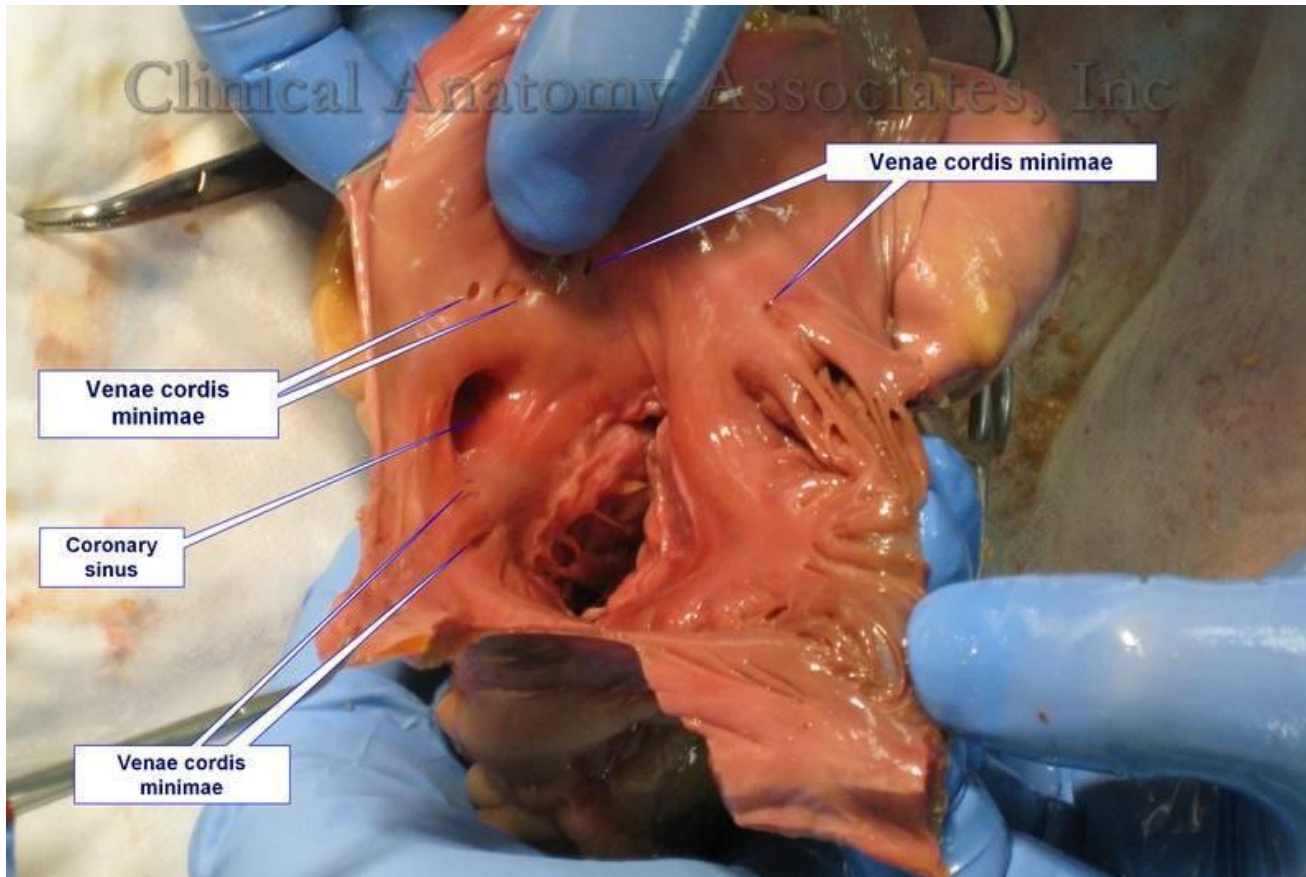




# A SZÍV VÉNÁI (VENAE CORDIS)

Vv. CARDIACAE MINIMAE (THEBESIUS – féle vénák):

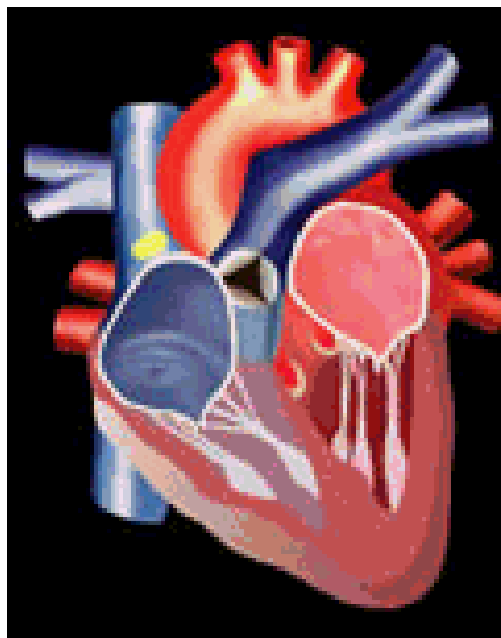
- myocardiumból
- direkt a pitvarokba és a kamrákba ömlenek



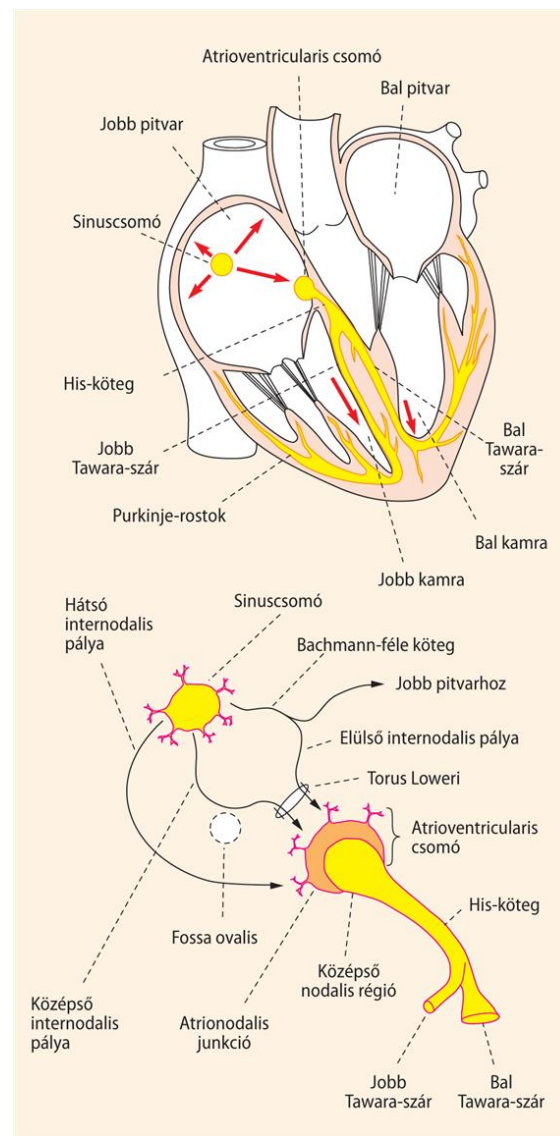
Adam Christian Thebesius

# A SZÍV INGERÜLETKÉPZŐ – ÉS VEZETŐ RENDSZERE

- önálló ingerképző és - vezető rendszerrel rendelkezik
- működéséhez nincs feltétlen szükség külső idegi hatásra



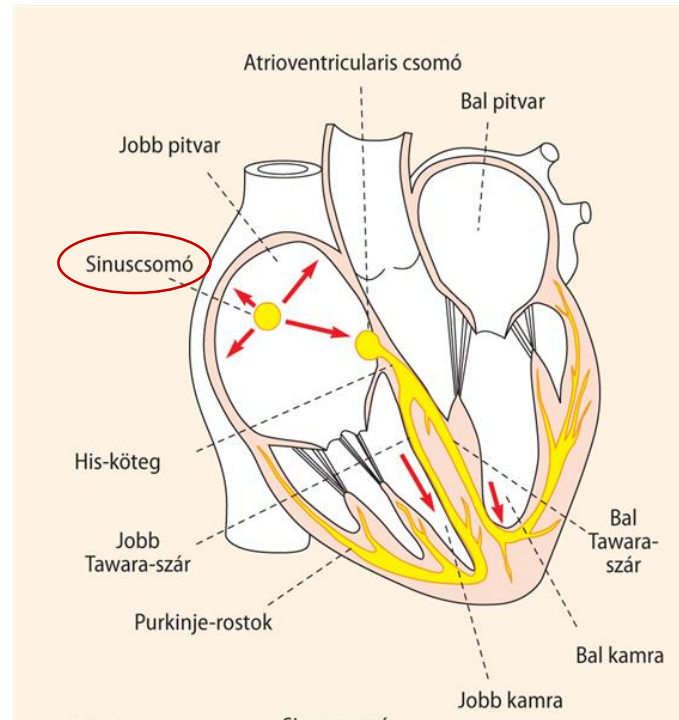
<http://anatomia.uw.hu/ora-035/ora-035-b.gif>



# INGERÜLETKÉPZŐ RENDSZER

RÉSZEI:

1. SINUS CSOMÓ (NODUS SINUATRIALIS, KEITH-FLACK-CSOMÓ)
2. ATRIOVENTRIKULÁRIS CSOMÓ (NODUS ATRIOVENTRICULARIS, PITVAR-KAMRAI CSOMÓ, ASCHOFF-TAWARA-CSOMÓ)



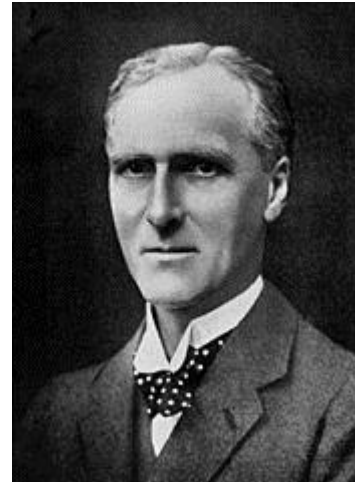


# SINUS CSOMÓ (NODUS SINUATRILAIS)

## KEITH – FLACKSCHEN - CSOMÓ

### ELHELYEZKEDÉSE:

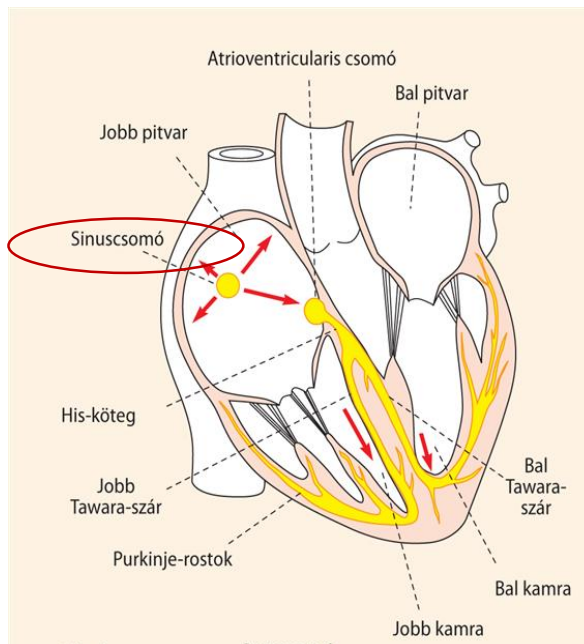
- jobb pitvarban
- sulcus terminalis területén
- v. cava cranialis beömlése magasságában
- elsődleges ingerképző rendszer
- pacemaker sejtek – módosult szívizomsejtek



Sir Arthur Keith



Martin William Flack

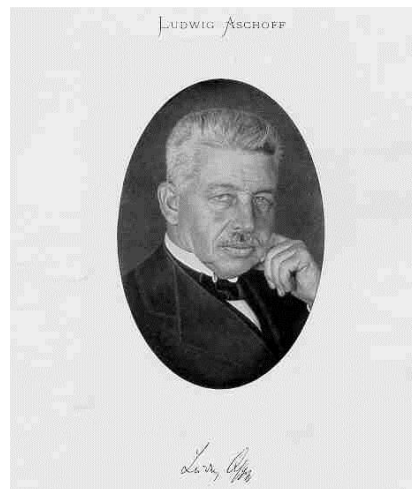
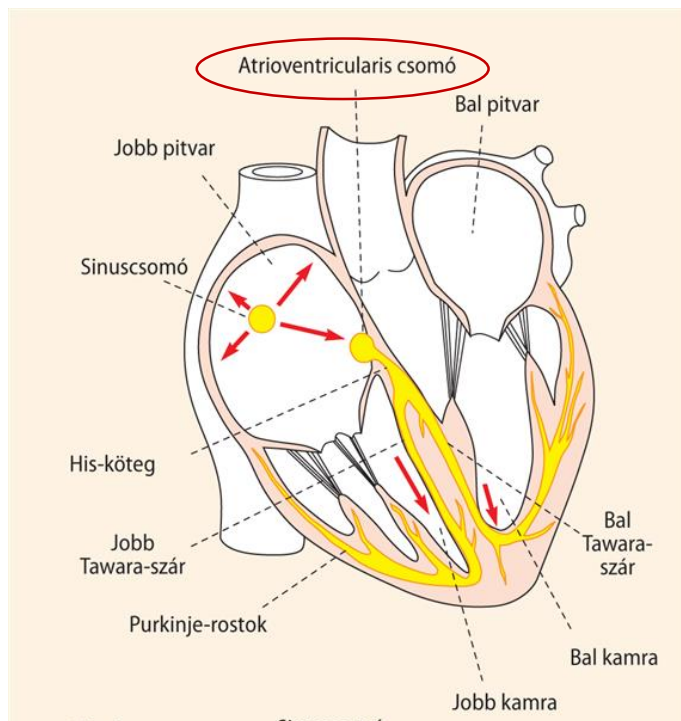


# PITVAR - KAMRAI CSOMÓ

## (NODUS ATRIOVENTRIKULARIS, AV-CSOMÓ, ASHOFF – TAWARA - CSOMÓ)

### ELHELYEZKEDÉS:

- jobb pitvar alsó részén
- septum interatrialéba beágyazva
- sinus coronarius beömlése közelében
- másodlagos ingerképző központ



Karl Albert Ludwig Aschoff



Sunao Tawara

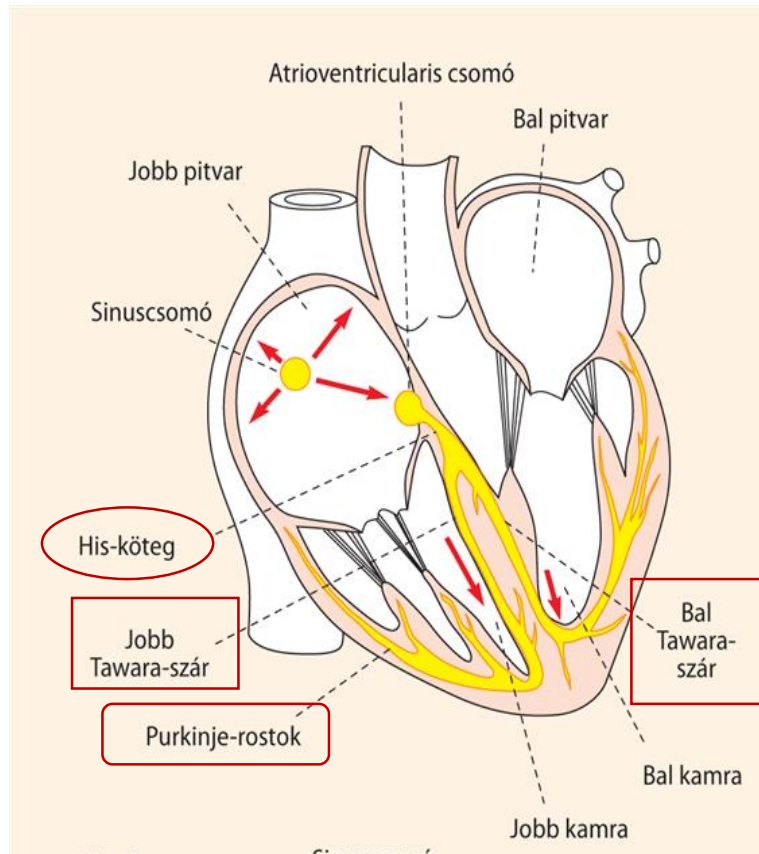
# INGERÜLETVEZETŐ RENDSZER

RÉSZEI:

1. HIS-KÖTEG

2. TAWARA-SZÁRAK

3. PURKINJE-ROSTOK





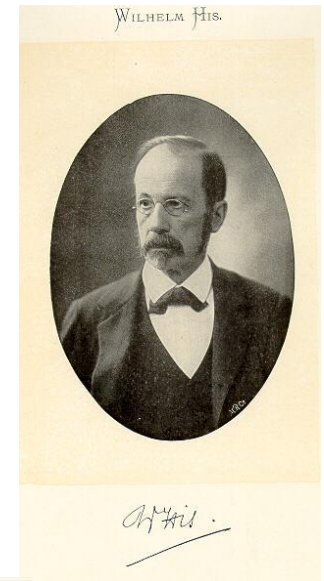
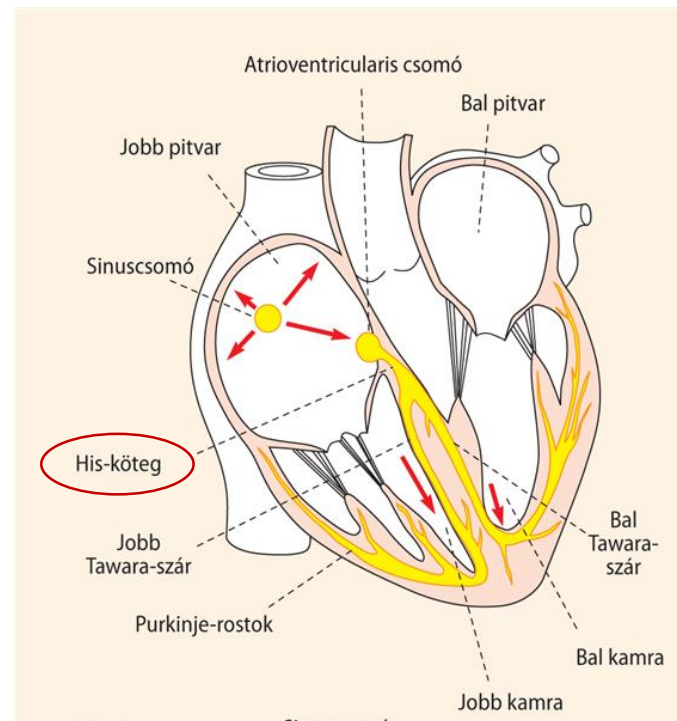
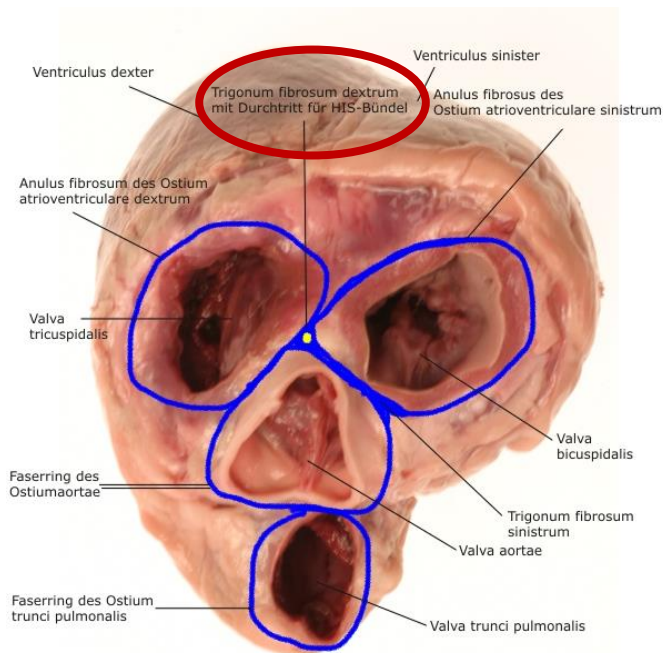
# HIS-KÖTEG (FASCICULUS ATRIOVENTRICULARIS)

•Trigonum fibrosum dextrumon áthalad

- A kamrai sövényben kb 2 cm hosszan lefelé húzódik majd két szára válik:

1.Crus dextrum

2.Crus sinistrum (TAWARA-SZÁRAK)



Wilhelm His

# TAWARA-SZÁRAK

- subendokardiálisan halad a kamra közti sövény mindkét oldalán
- a HIS-köteg folytatás
- két részre oszolva (jobb és bal szár - CRUS DEXTRUM et SINISTRUM) húzódik, majd visszahajlik
- *a bal oldali két vagy több szárra oszlik a septum felső harmadában*

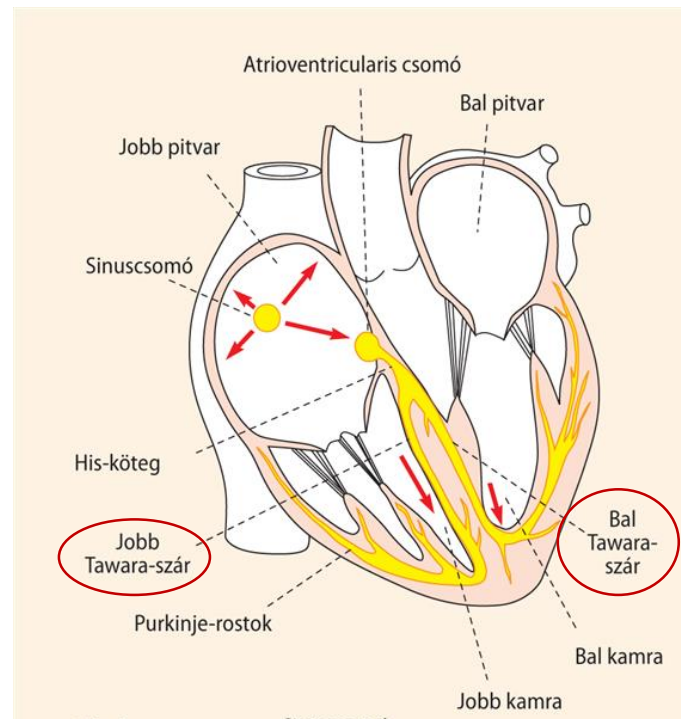
## 1. CRUS DEXTRUM húzódik:

- M. papillaris magnus, parvi et subarteriosus
- Trabecula septomarginalis

## 2. CRUS SINISTRUM húzódik:

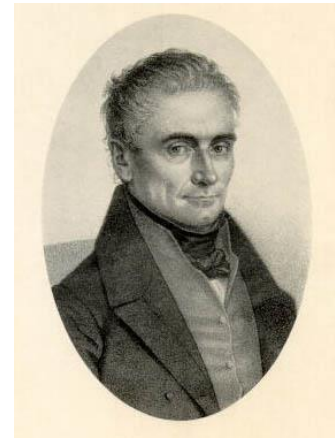
- Trabecula carnea
- Trabecula septomarginalis

## 3. Elágazódása – Purkinje- rostok hálózatát képezi

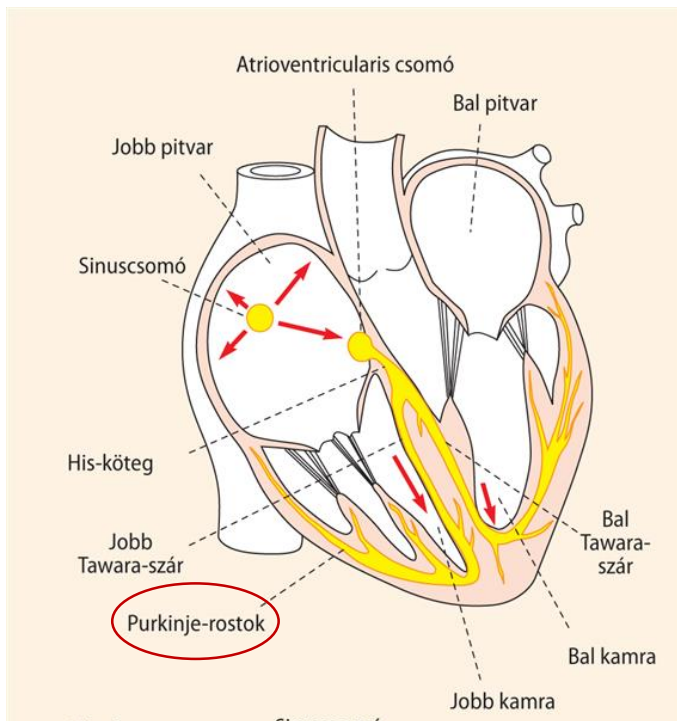


# PURKINJE - ROSTOK

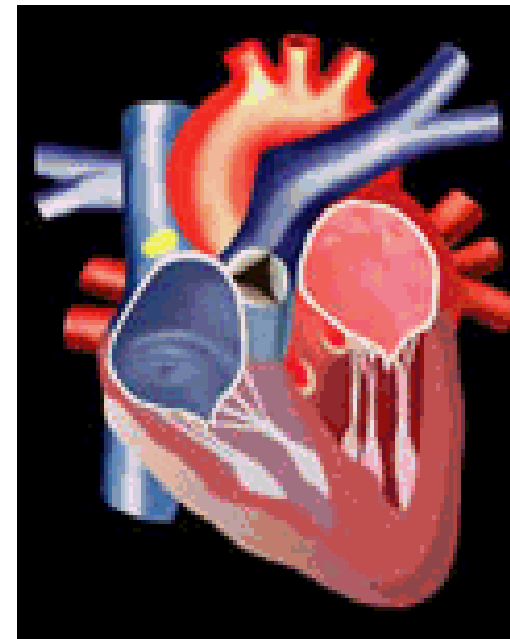
- a Tawara-szárak végén található rostrendszer
- a munkaizomzatnak adja az ingerületet



Jan Evangelista Purkyně



[https://www.tankonyvtar.hu/hu/tartalom/tamop425/2011\\_0001\\_524\\_Elettan/ch05s03.html](https://www.tankonyvtar.hu/hu/tartalom/tamop425/2011_0001_524_Elettan/ch05s03.html)



<http://anatomia.uw.hu/ora-035/ora-035-b.gif>



KÖSZÖNÖM A FIGYELMET!



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- 7. König – Liebich: Veterinary Anatomy of Domestic Mammals, 4th Edition**

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<http://histologyatlas.wisc.edu/>

<http://www.thebodyonline.net/>

[\*\*https://academic.amc.edu\*\*](https://academic.amc.edu)