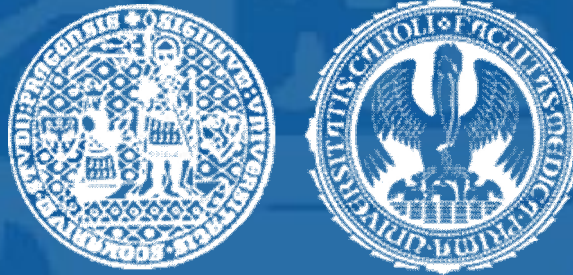


UNIVERSITAS CAROLINA PRAGENSIS

Charles University in Prague – First Faculty of Medicine



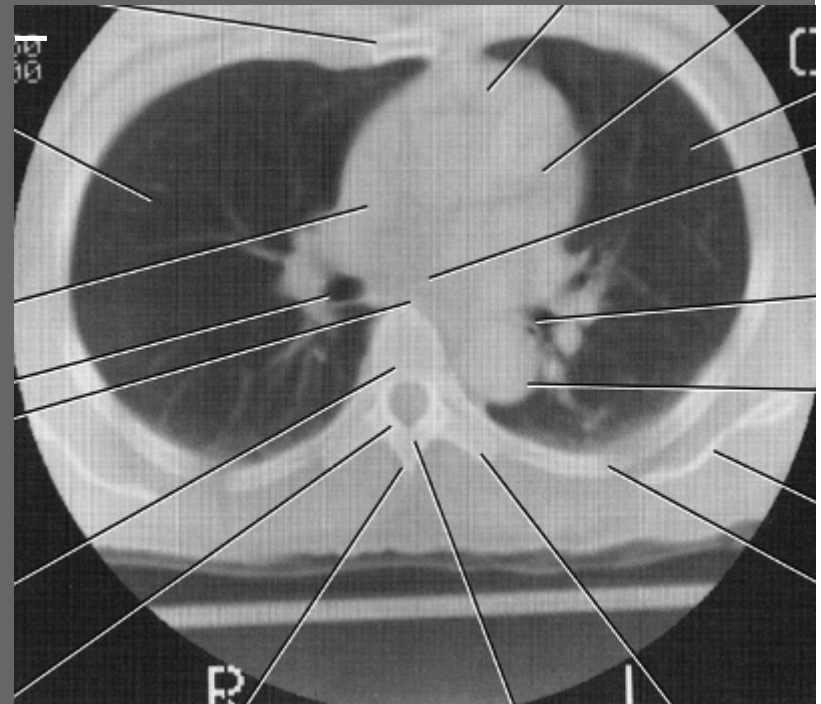
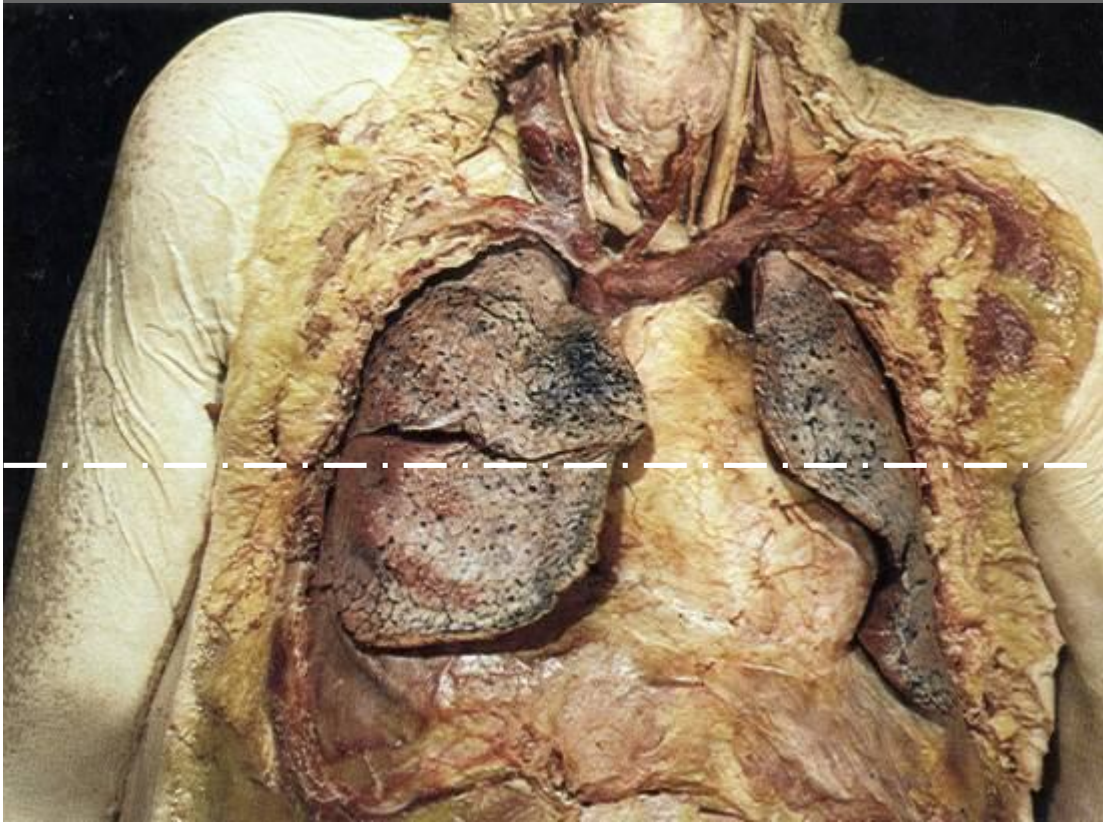
The Heart

15 minute refresher course for the 4th years

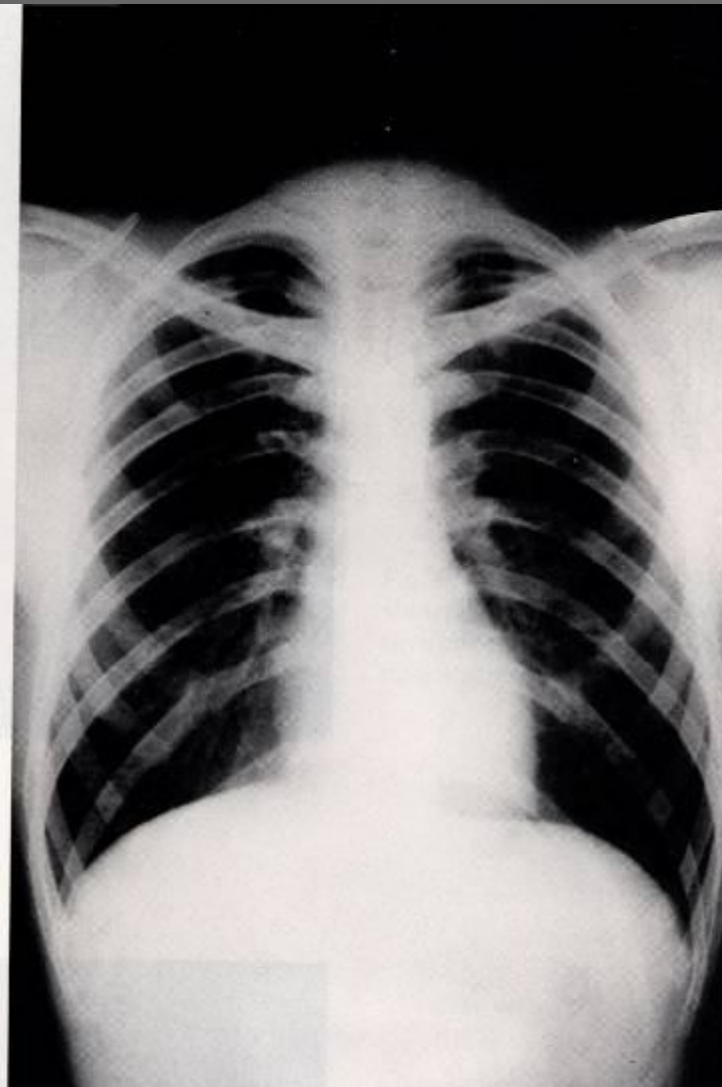
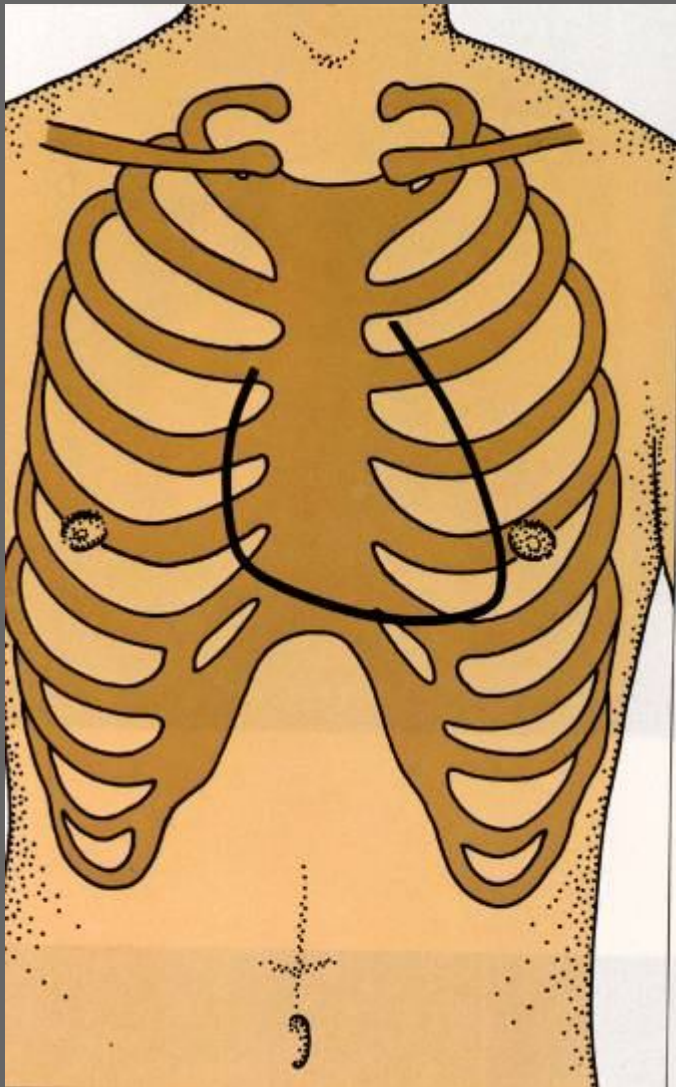
Institute of Anatomy

Author: David Sedmera
Subject: Clinical Anatomy
Date: 6.10. 2009

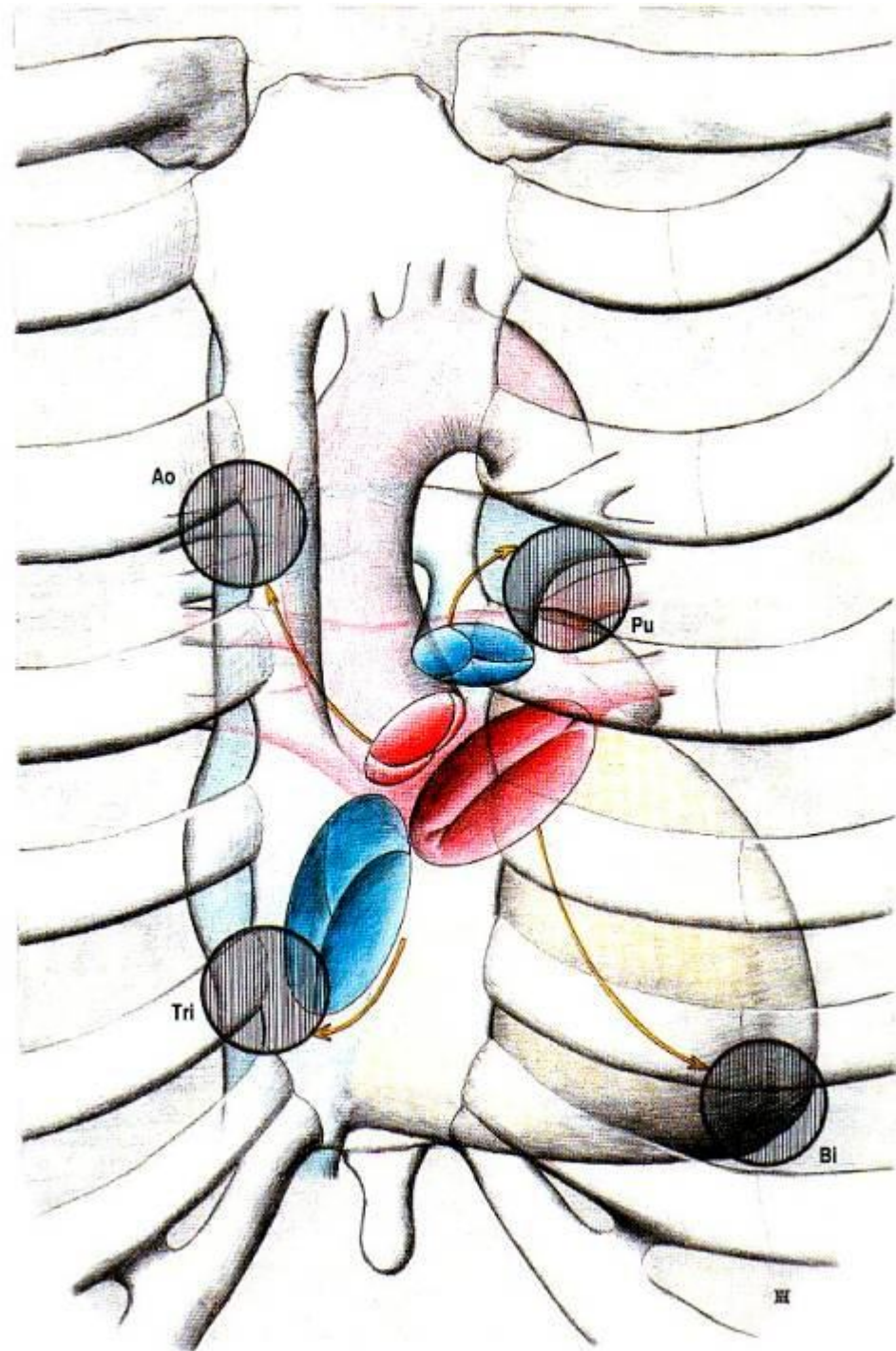
Position of the Heart in the Chest



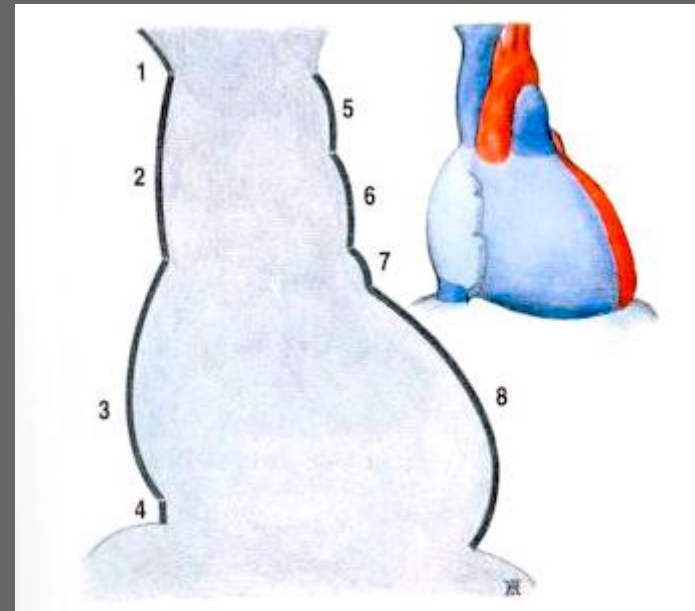
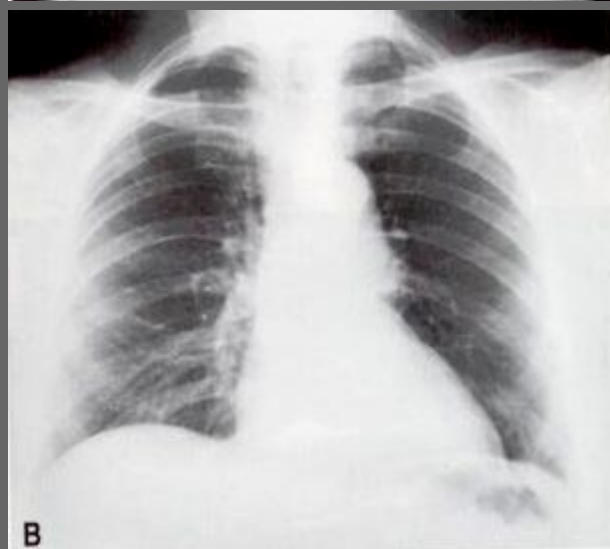
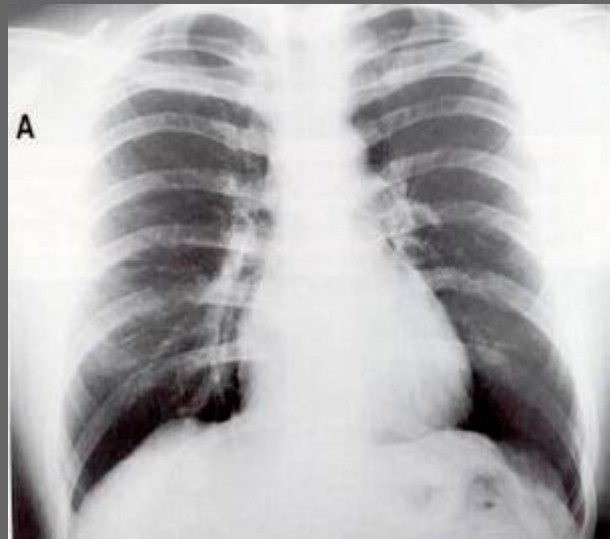
Surface Projection and X-Ray



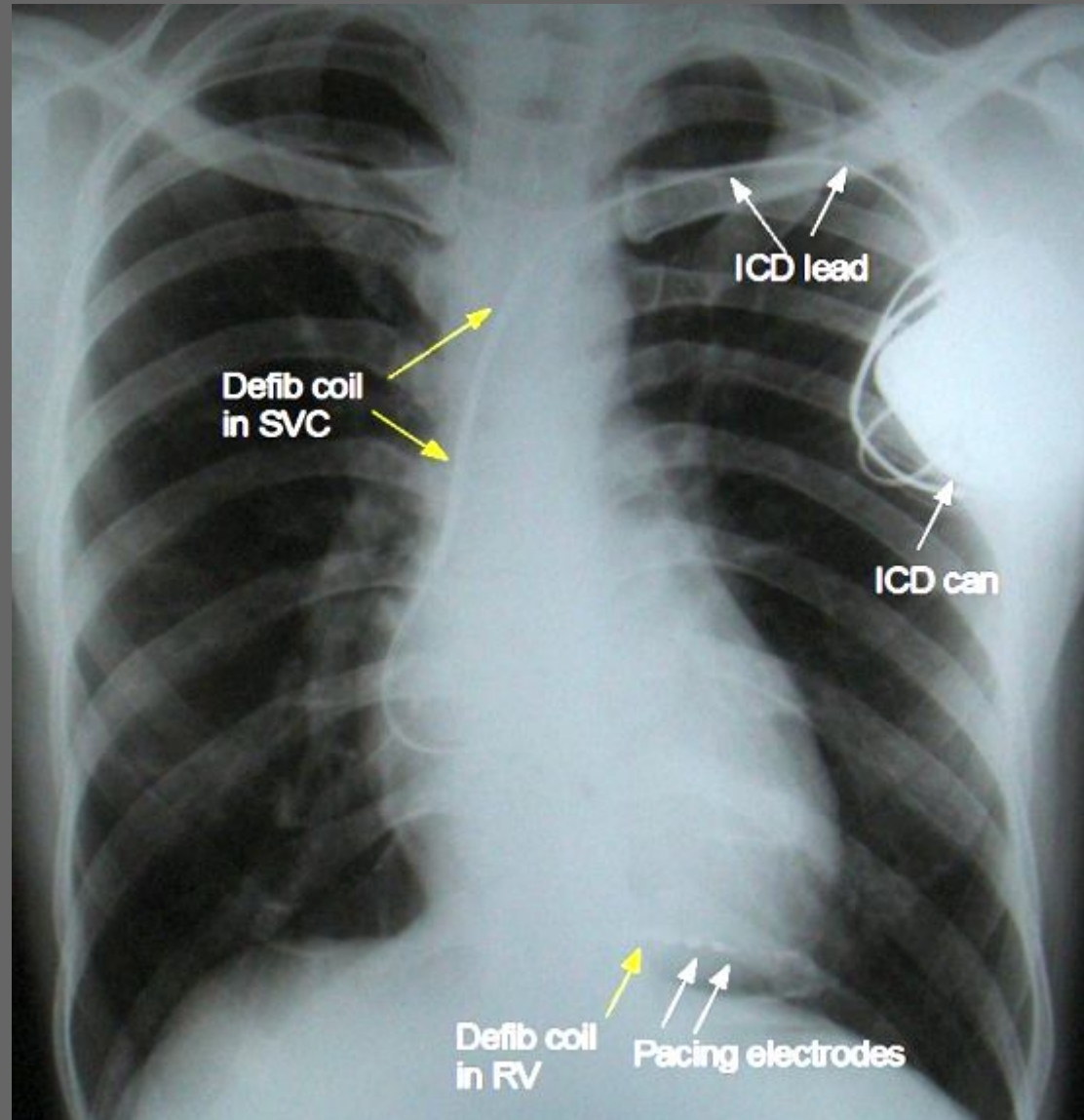
Projection and auscultation points of cardiac valves on body surface



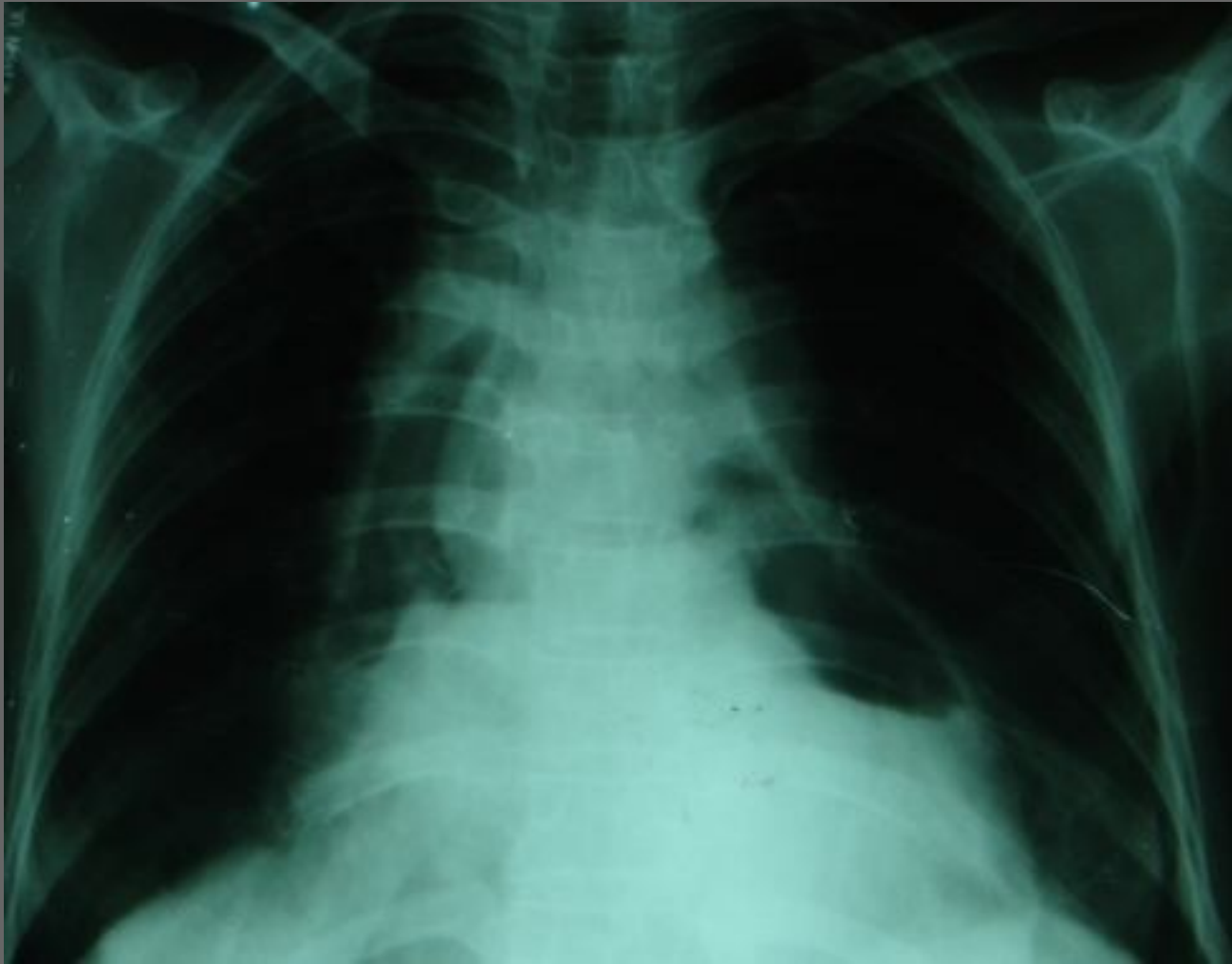
Position of the Heart - X-Ray



Position of the Heart 2. X-ray



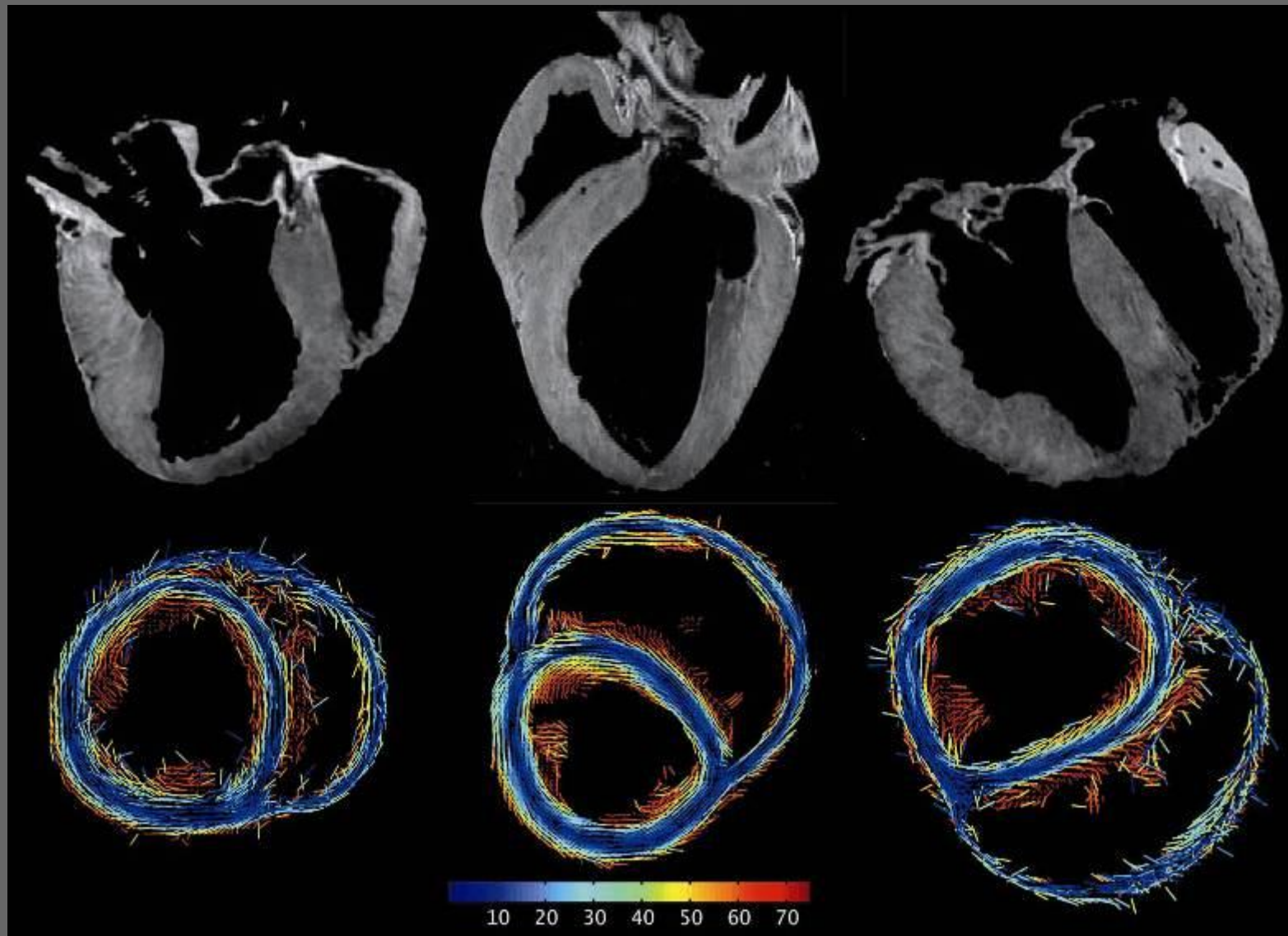
Hydropneumopericardium



Position in the chest - MRI



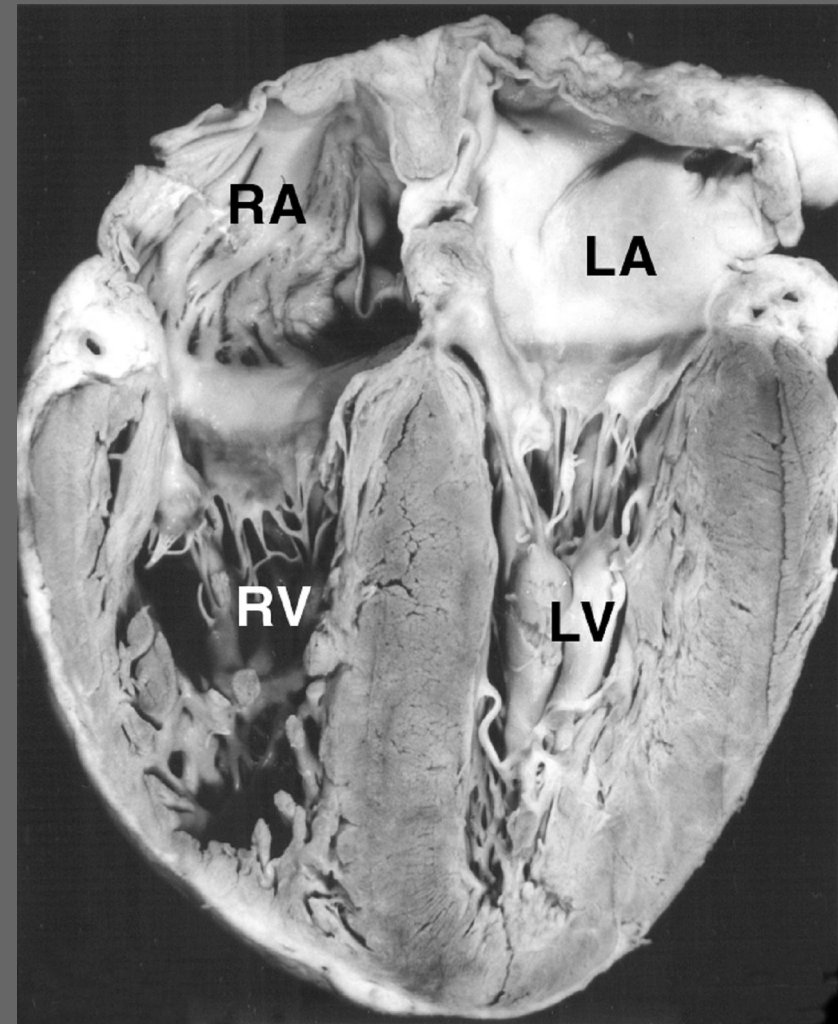
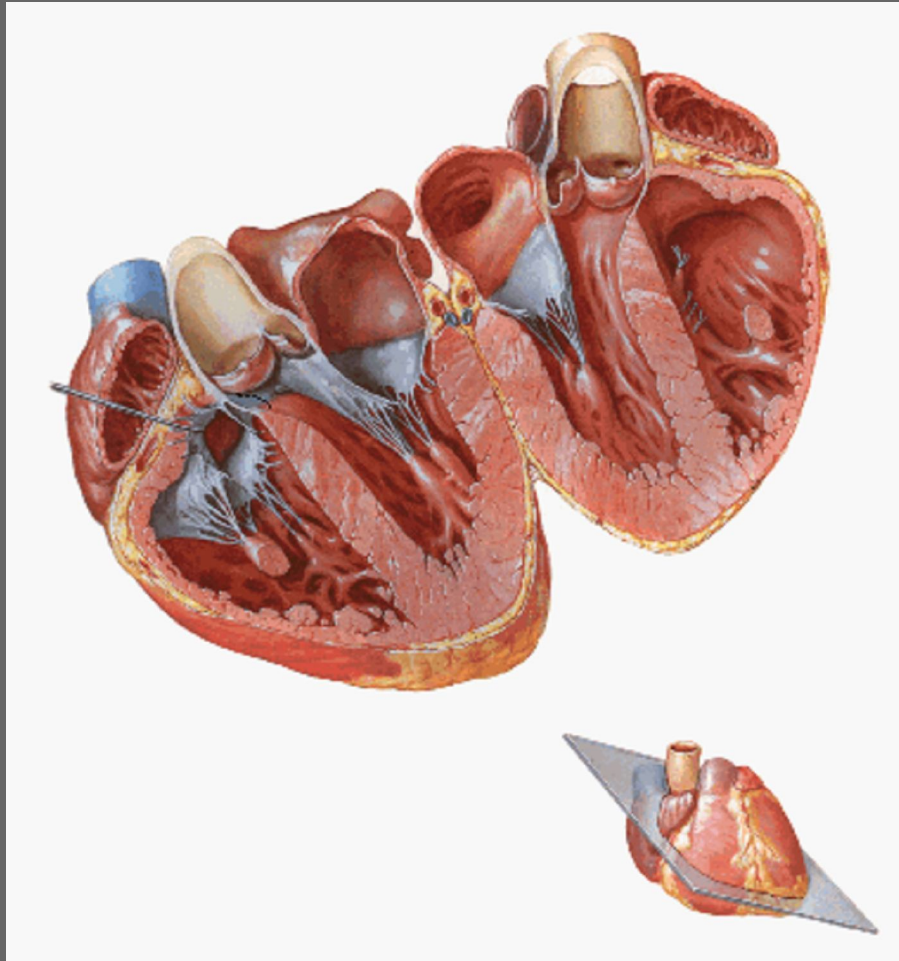
Heart MRI - fiber orientation



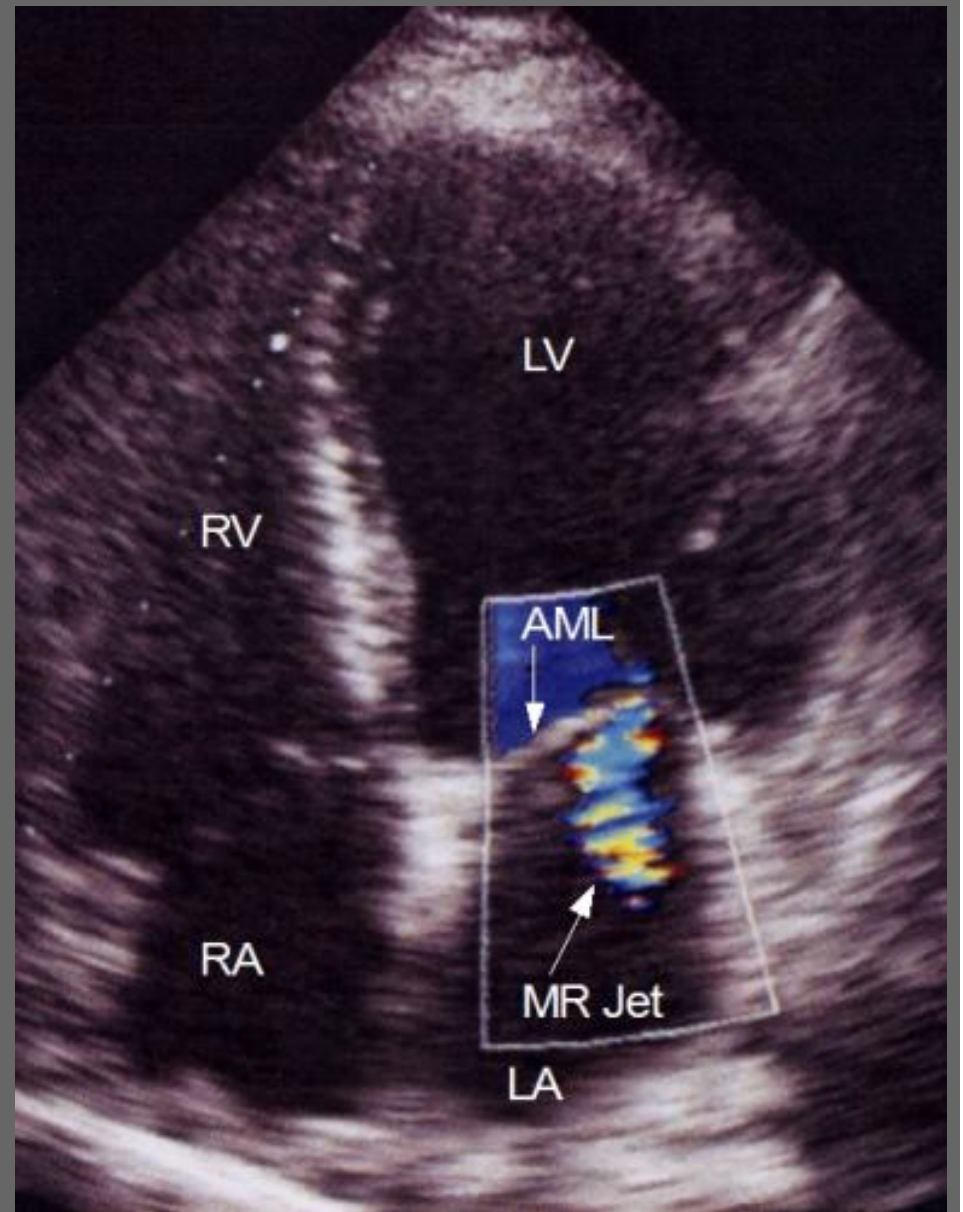
MRI 2.



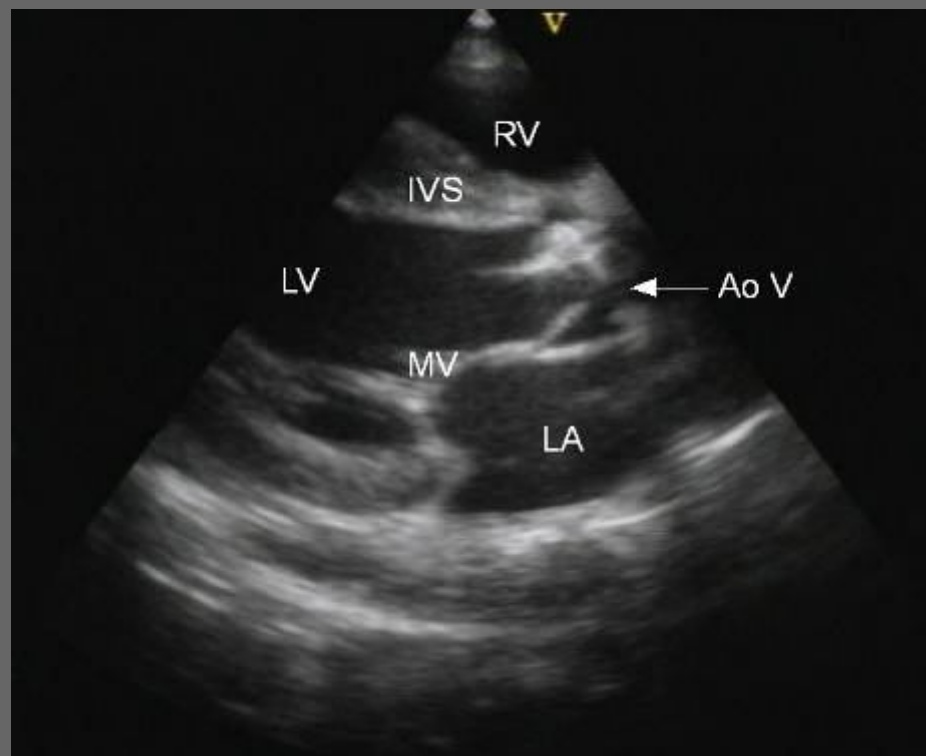
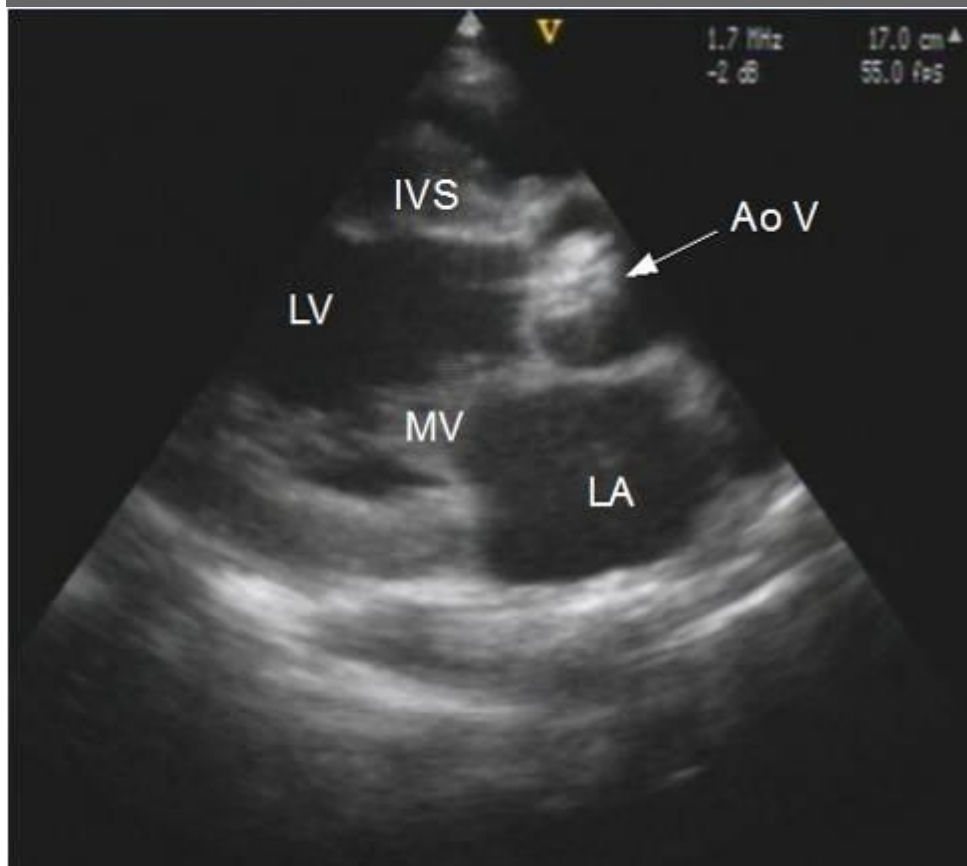
The Cavities: Four-Chamber View



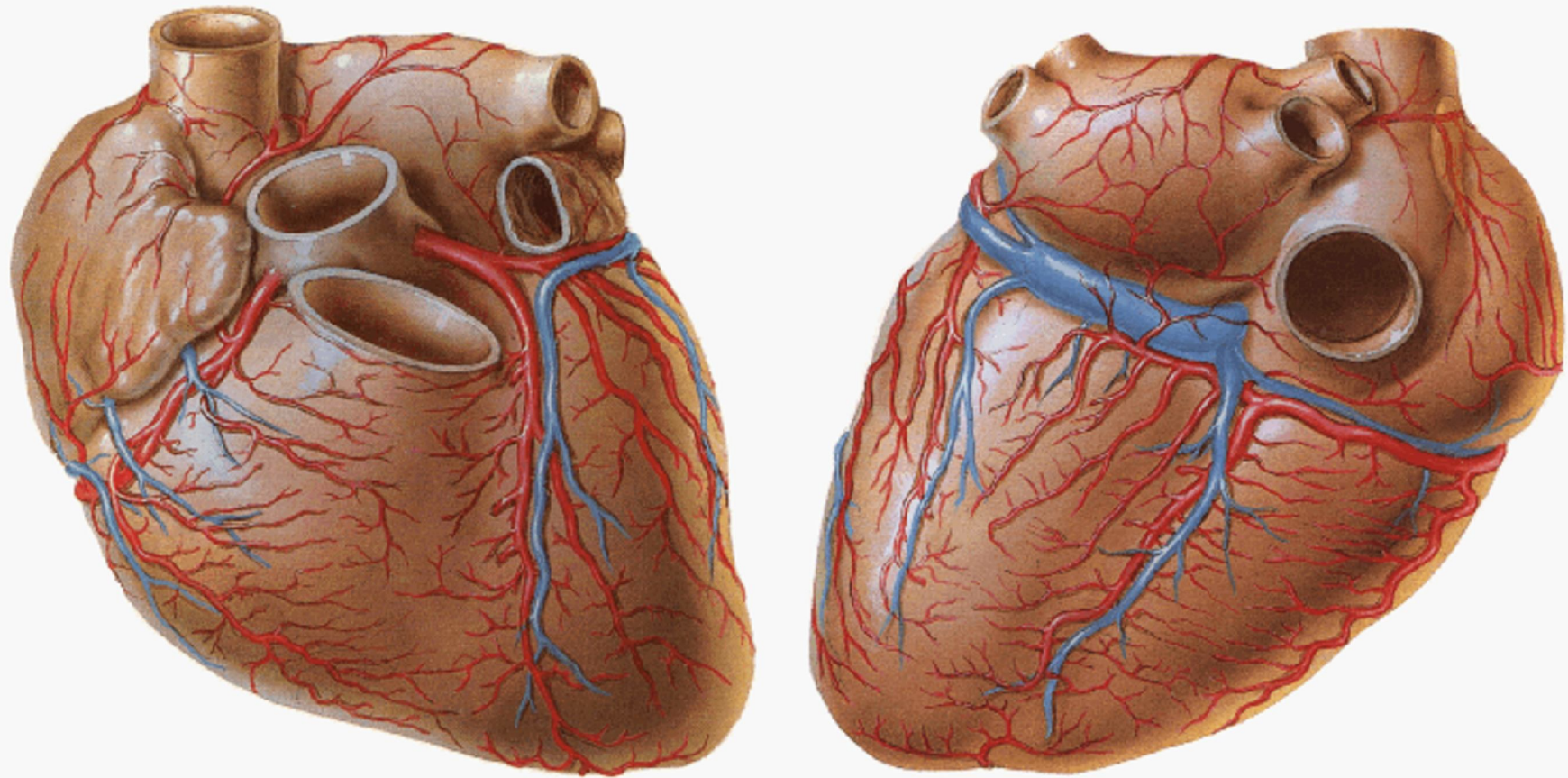
ECHO + Doppler



ECHO – valve pathology



The Blood Supply: Course



Review: Coronary Arteries and Veins

Left coronary artery:

- anterior interventricular branch
 - diagonal branch
- circumflex branch
 - obtuse marginal branch

Right coronary artery:

- artery to SA node
- RV branches
- acute marginal branch
- posterior interventricular branch

Great cardiac vein

Left oblique atrial vein (of Marshall) => coronary sinus

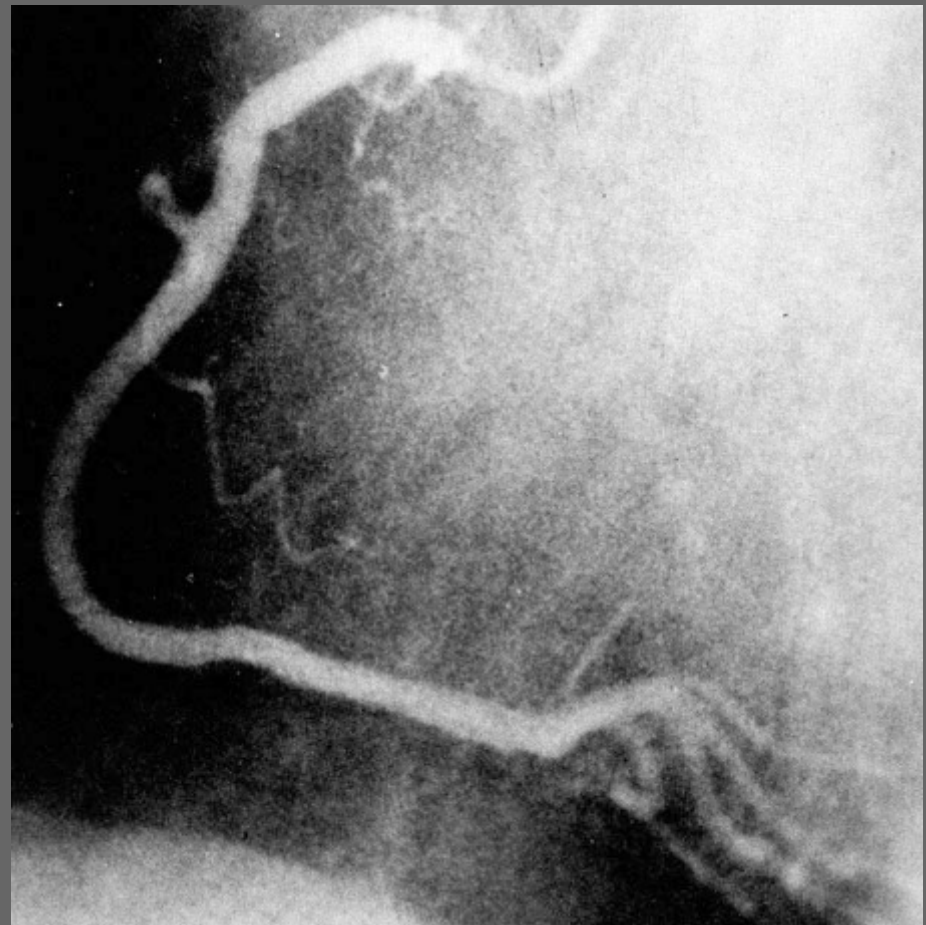
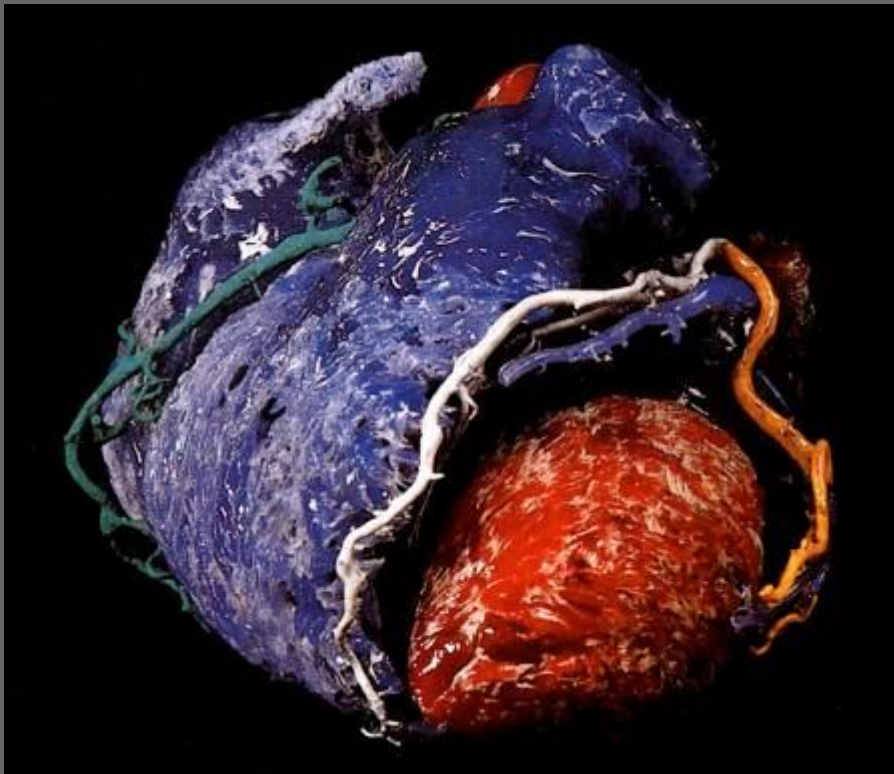
Middle cardiac vein (with posterior interventricular branch)

Small cardiac vein

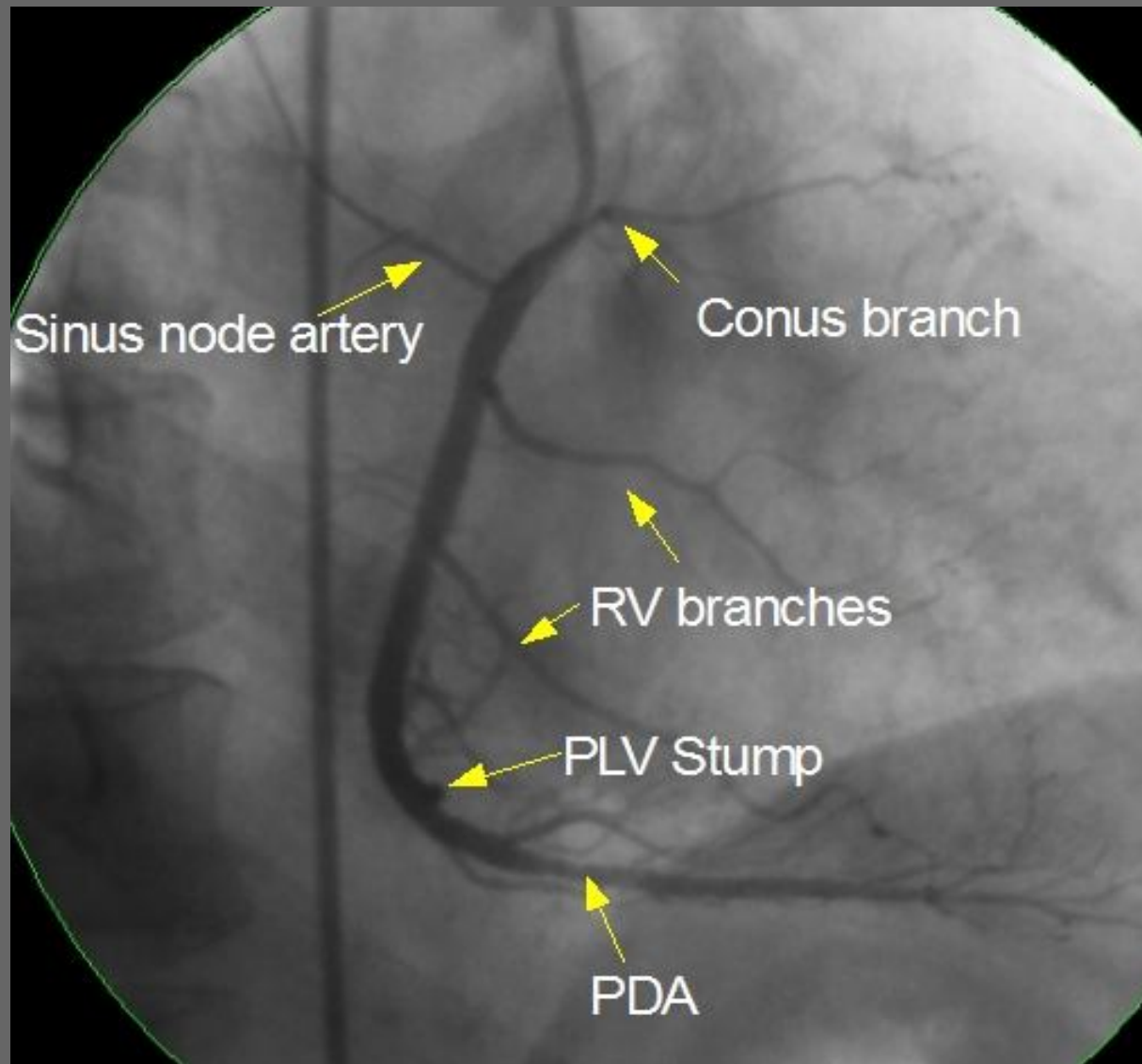
Anterior cardiac veins (to right atrium)

Thebesian veins

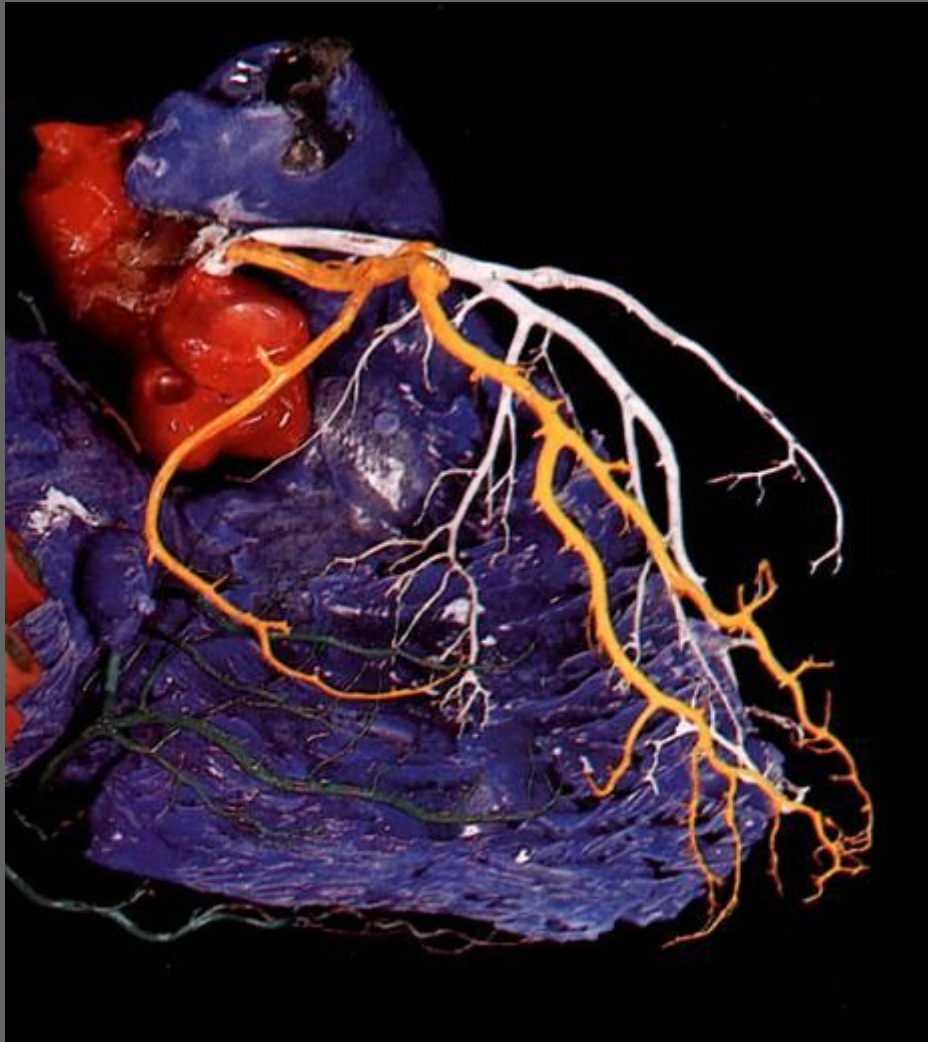
The Blood Supply: X-ray - right



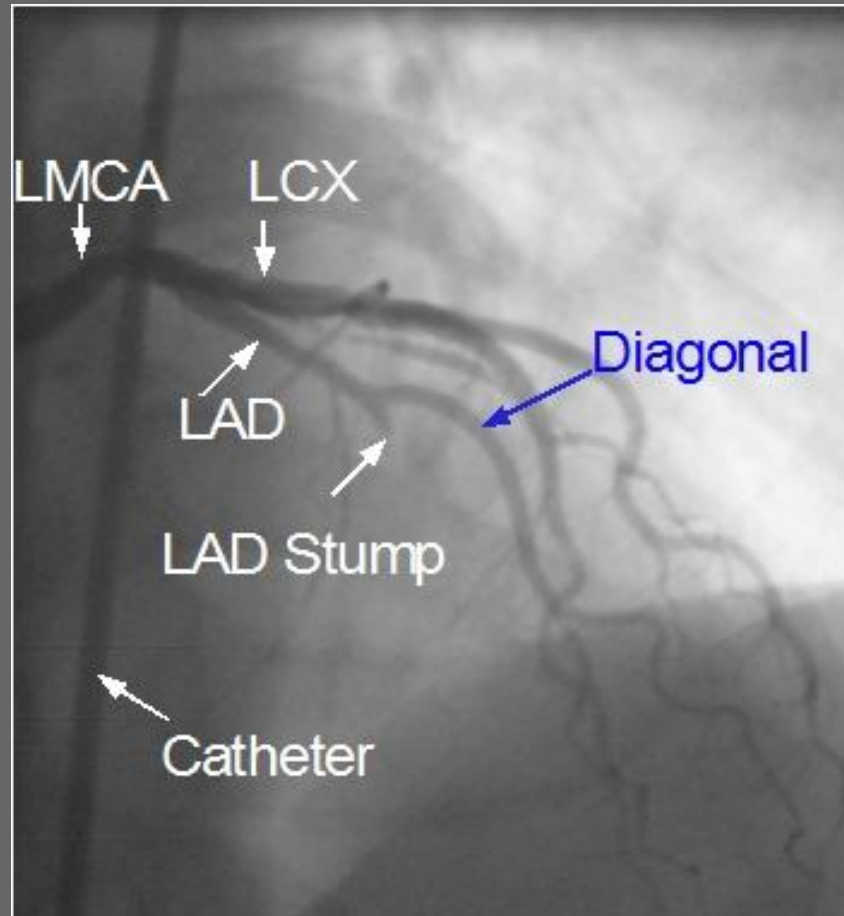
RCA coronarography



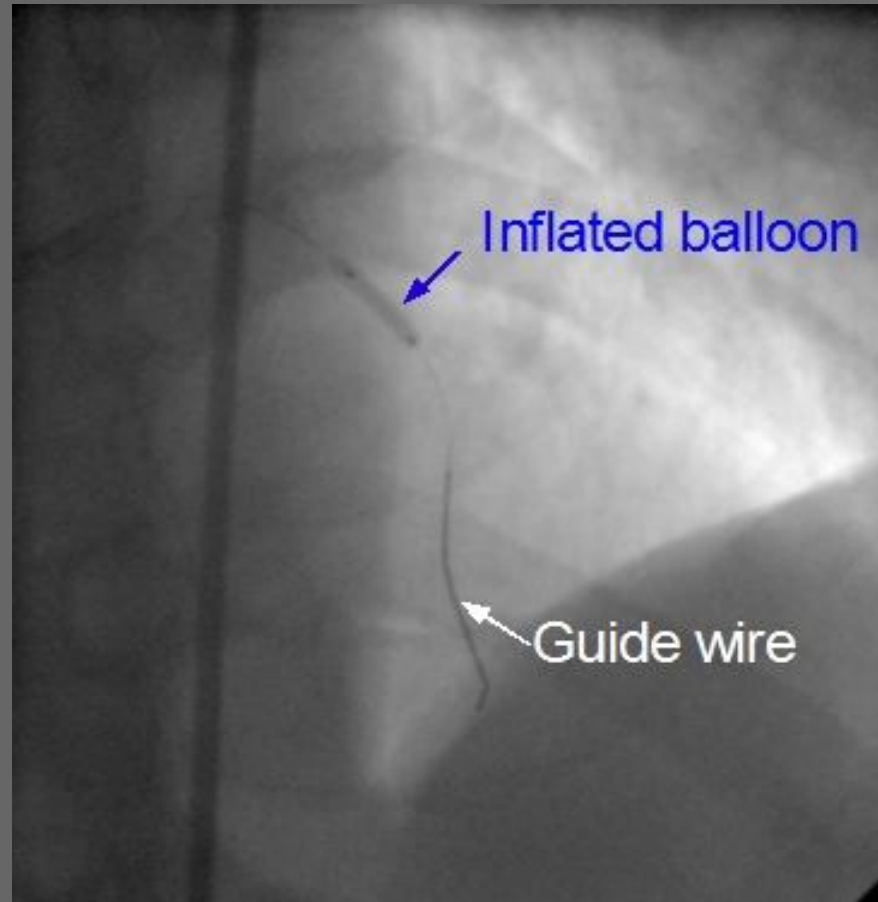
The Blood Supply: X-ray - left



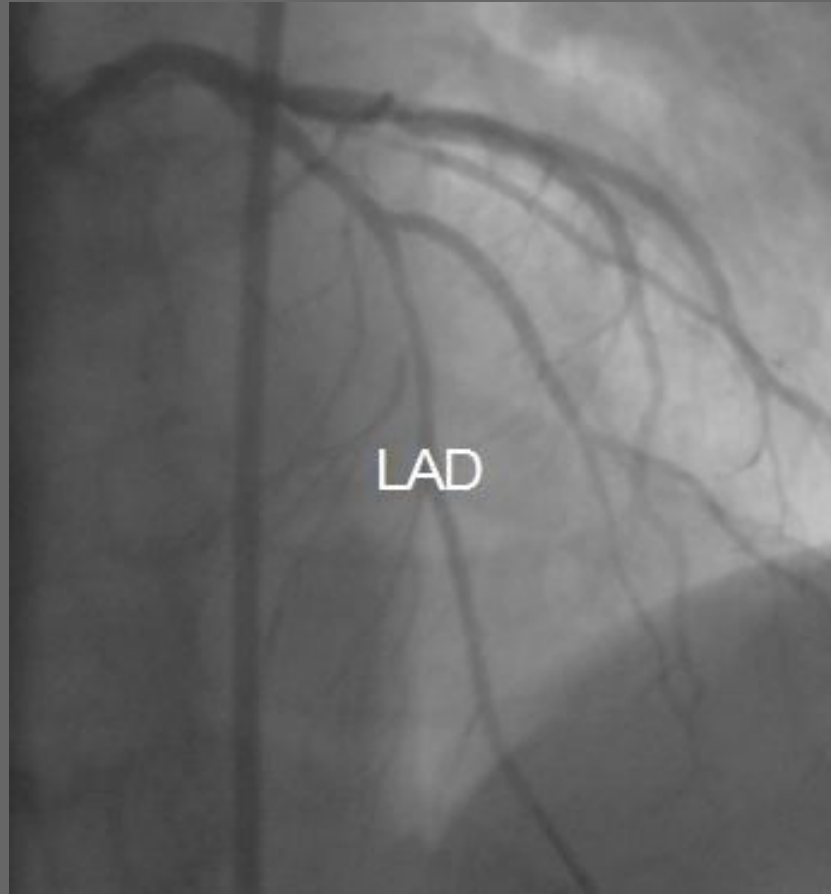
LCA coronarography



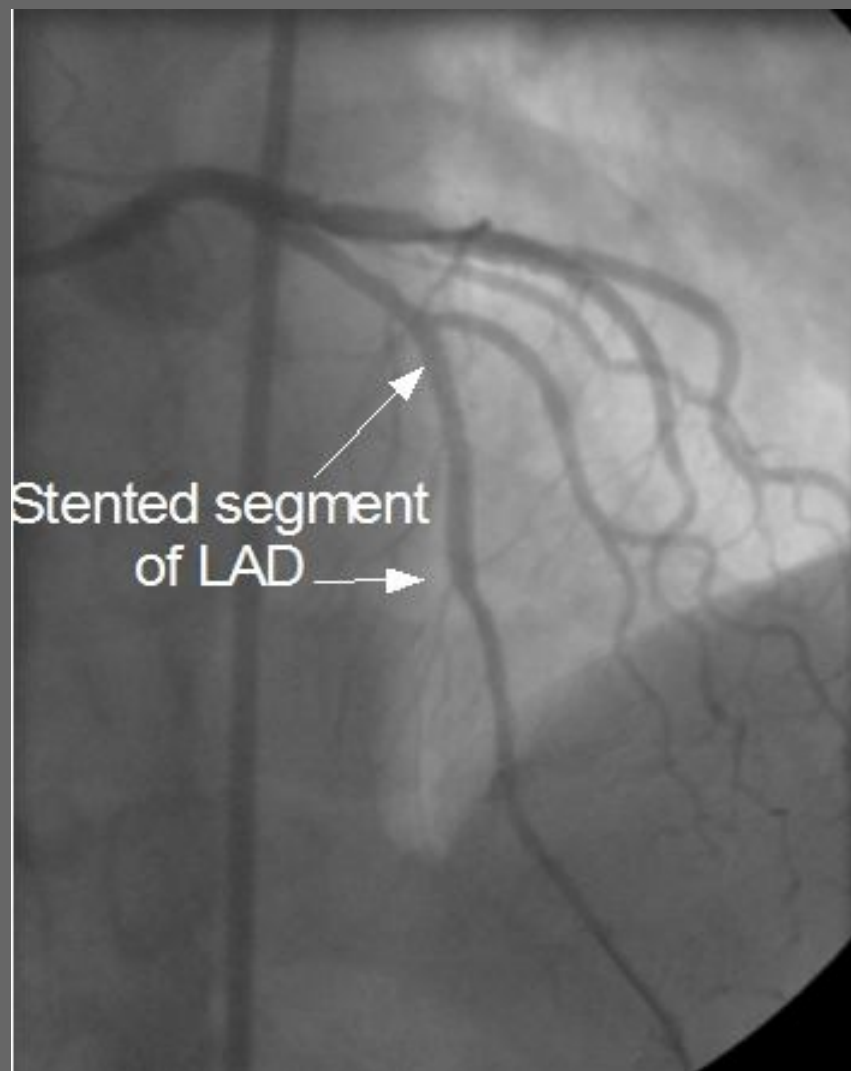
Balloon inflated



Reperfusion after inflation



Stenting



The Innervation

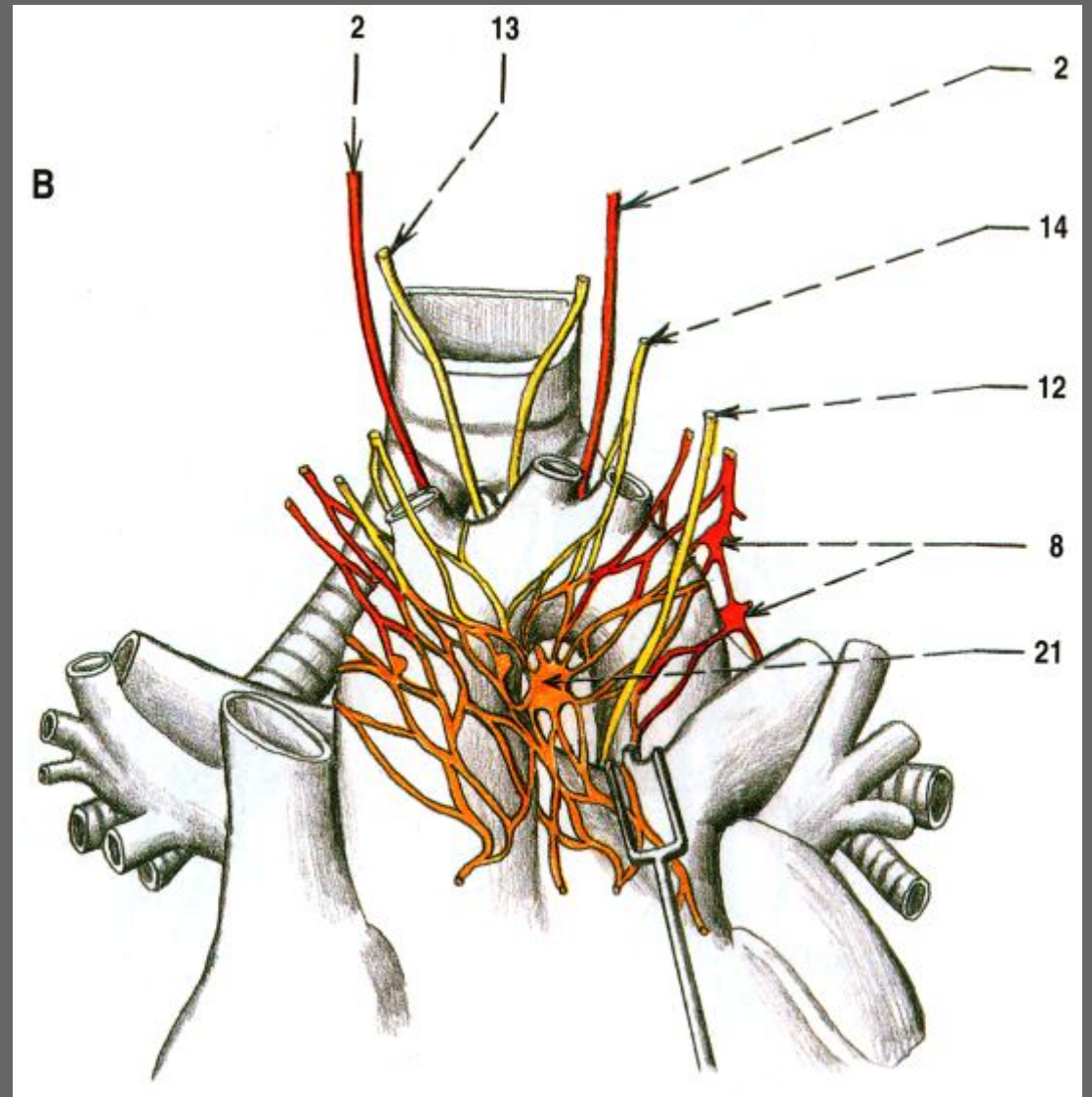
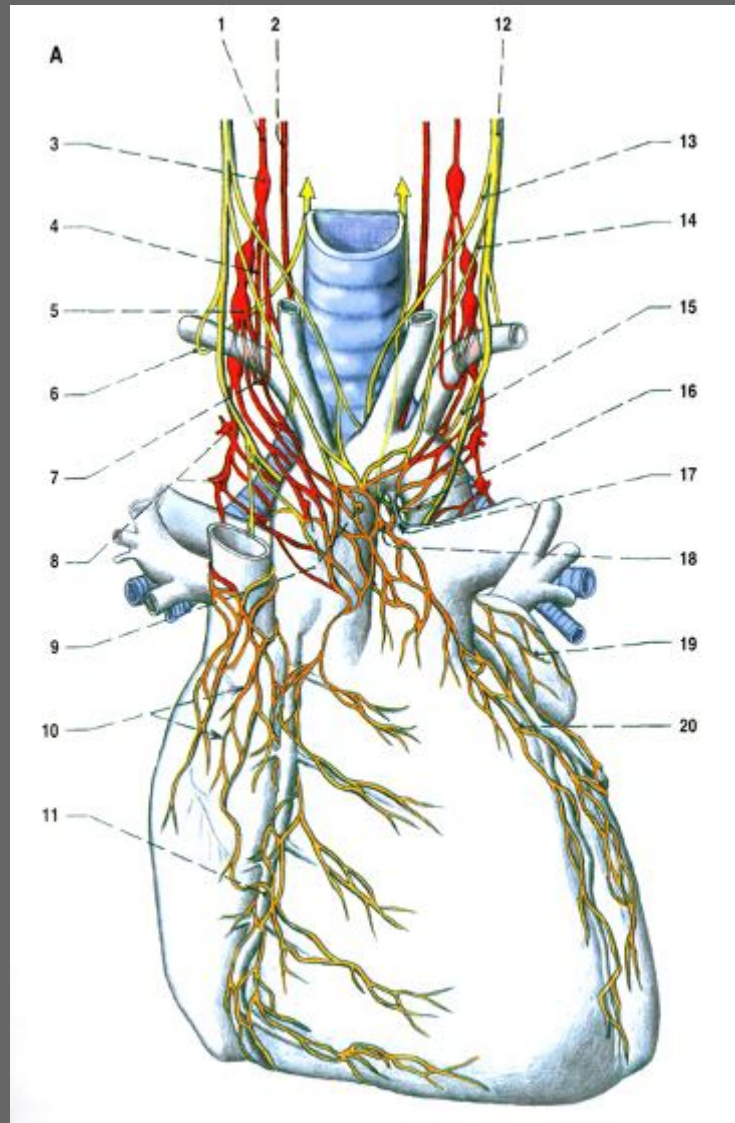
Parasympathetic: n. X (vagus) - rr. cardiaci

Stimulation slows down the rate (S-A node), conduction (A-V node) and decreases force of contraction (via coronary vasoconstriction).

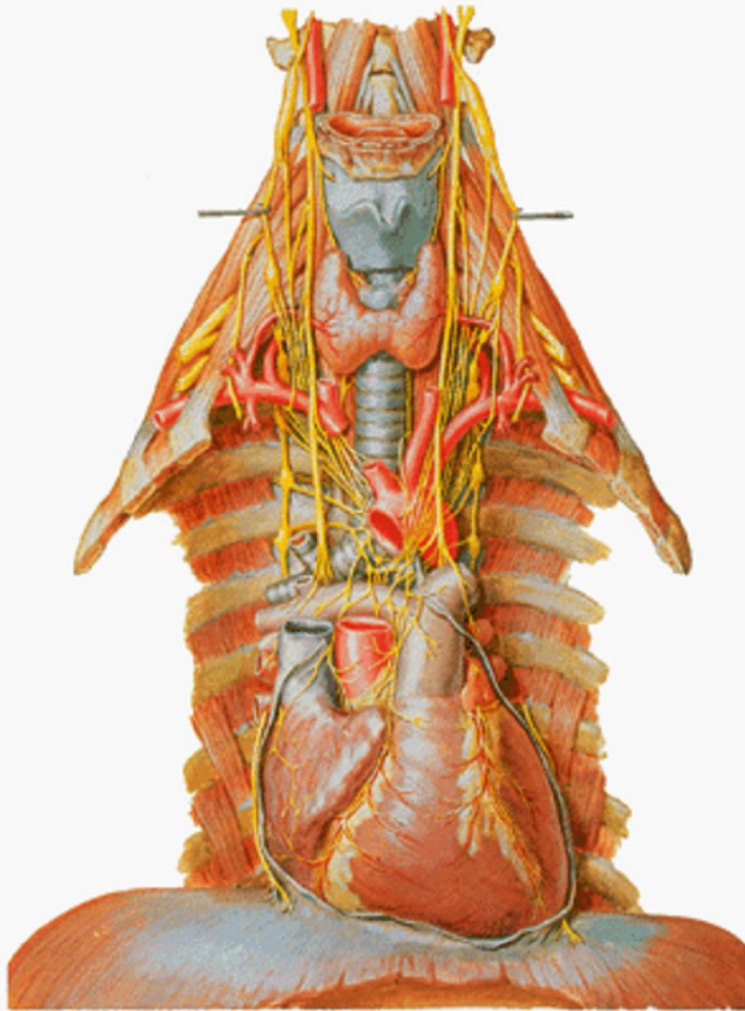
Sympathicus comes from C and T region via cardiac plexus together with coronary arteries - **nn. cardiaci**

Stimulation increases heart rate (S-A node), shortens A-V delay, increases force of contraction (directly) and dilates coronary arteries. Afferent fibers carry pain (MI).

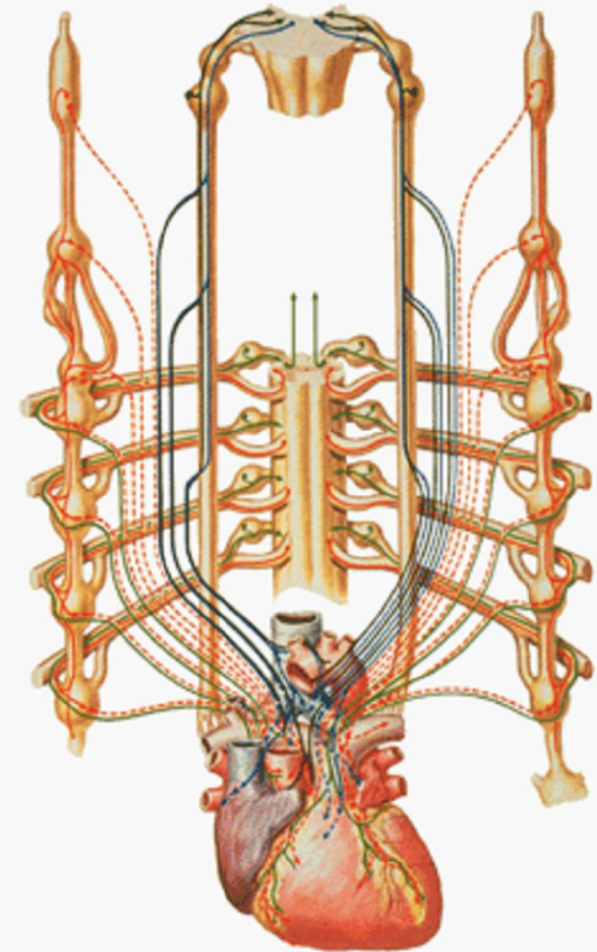
The Innervation



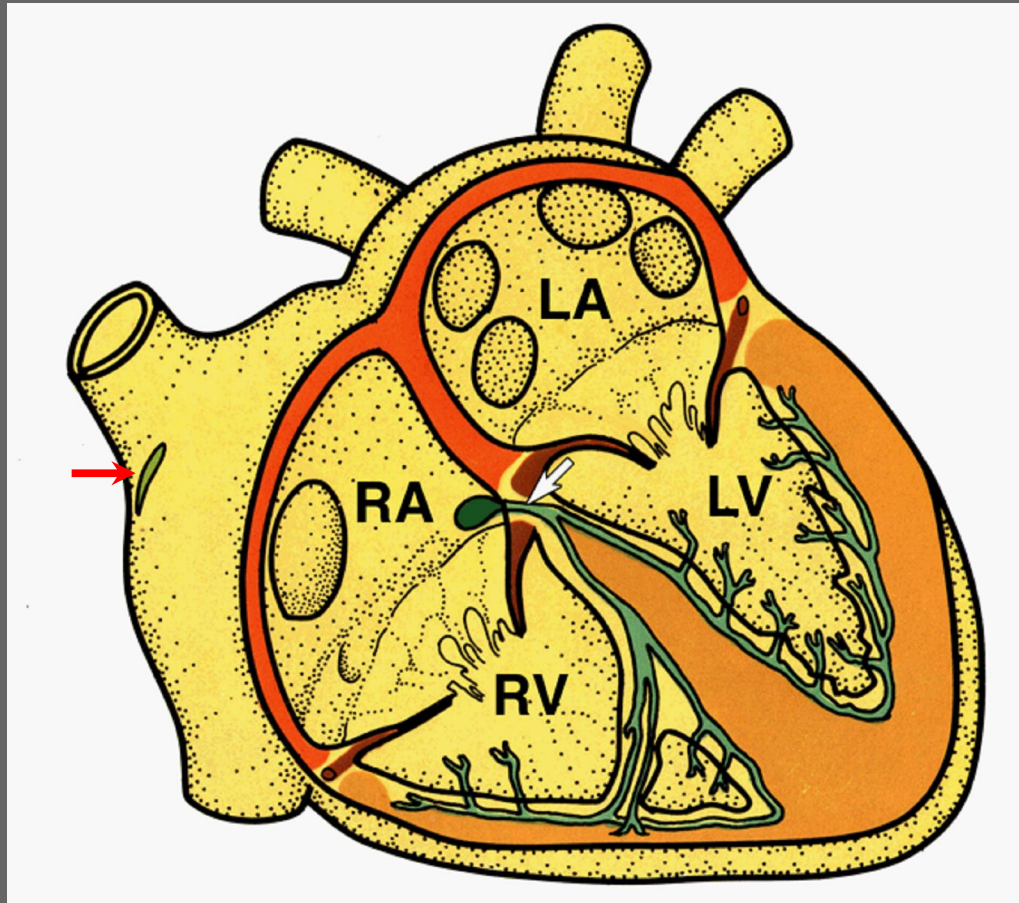
The Innervation



- Sympathetic presynaptic
- - - Sympathetic postsynaptic
- Vagal presynaptic
- - - Vagal postsynaptic
- Sympathetic afferent
- Vagal afferent



The Conduction System



S-A node

(Internodal tracts)

A-V node

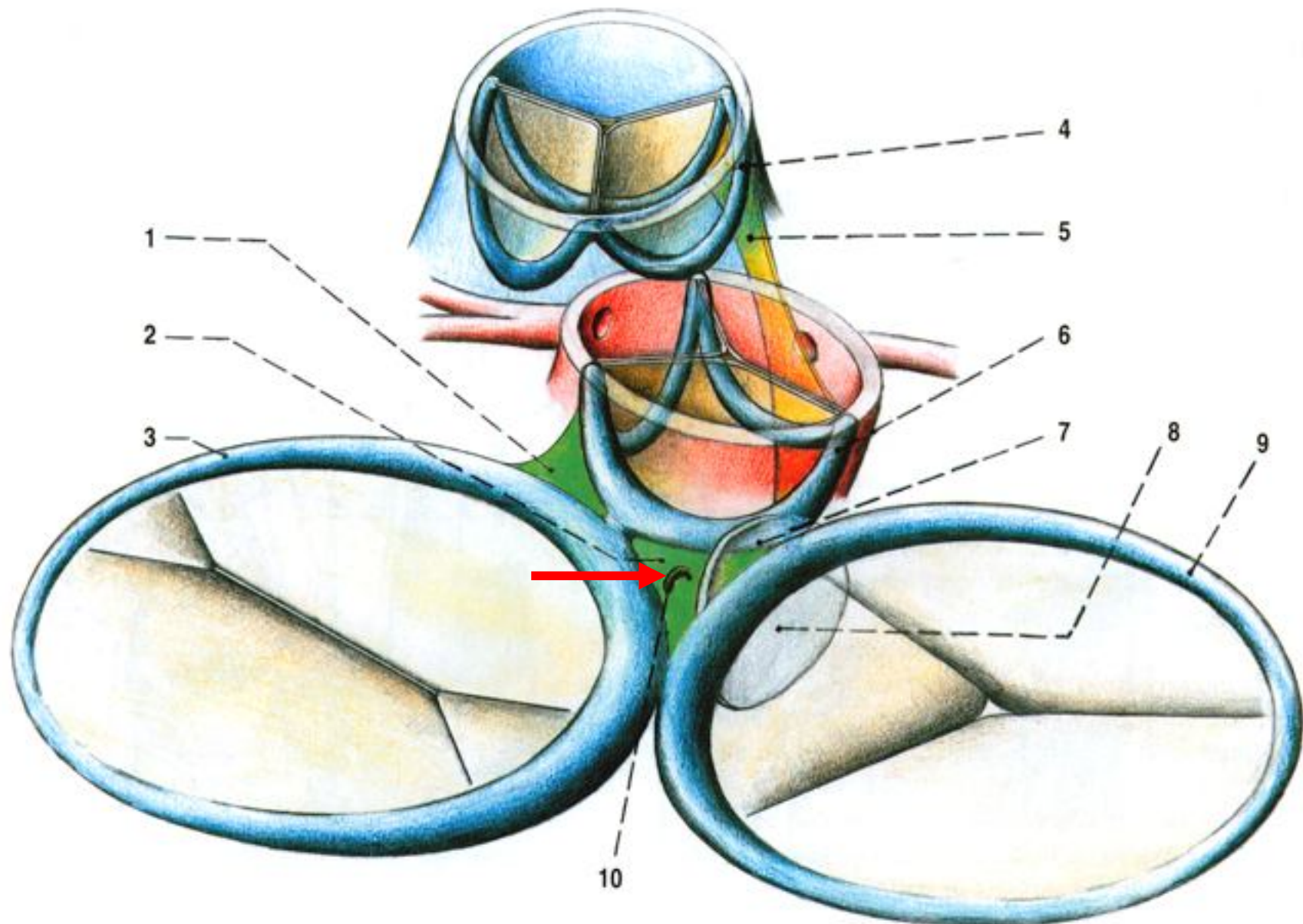
His bundle

Left and Right
bundle branches

Purkinje fibers

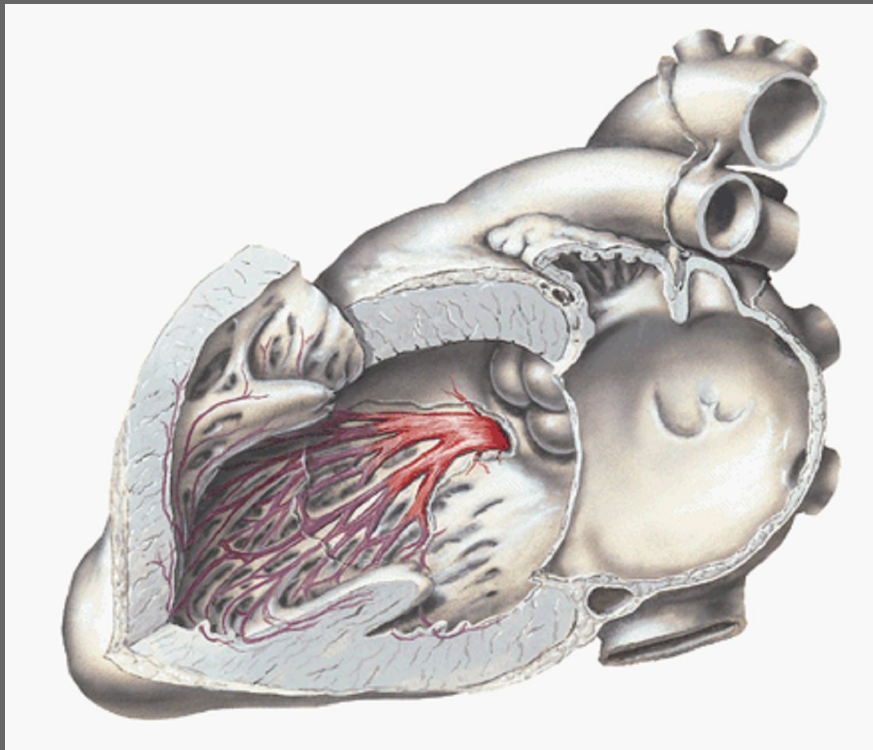
Working myocardium

Electrical insulation

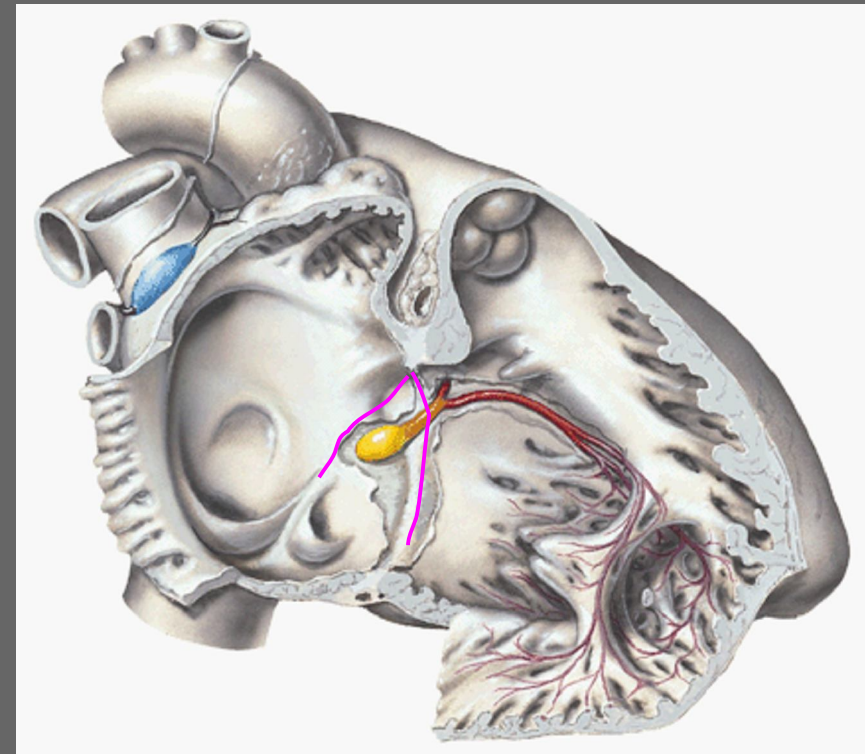


AV node and Bundle Branches

LBB

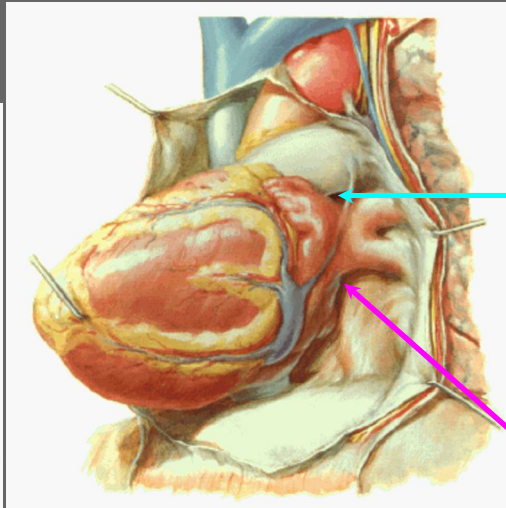
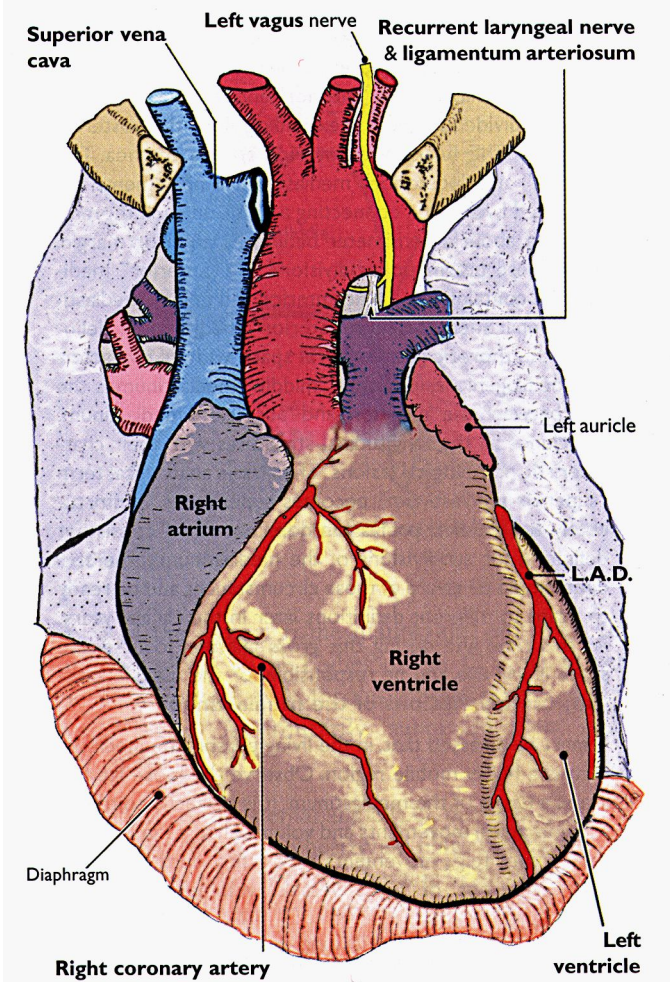


RBB

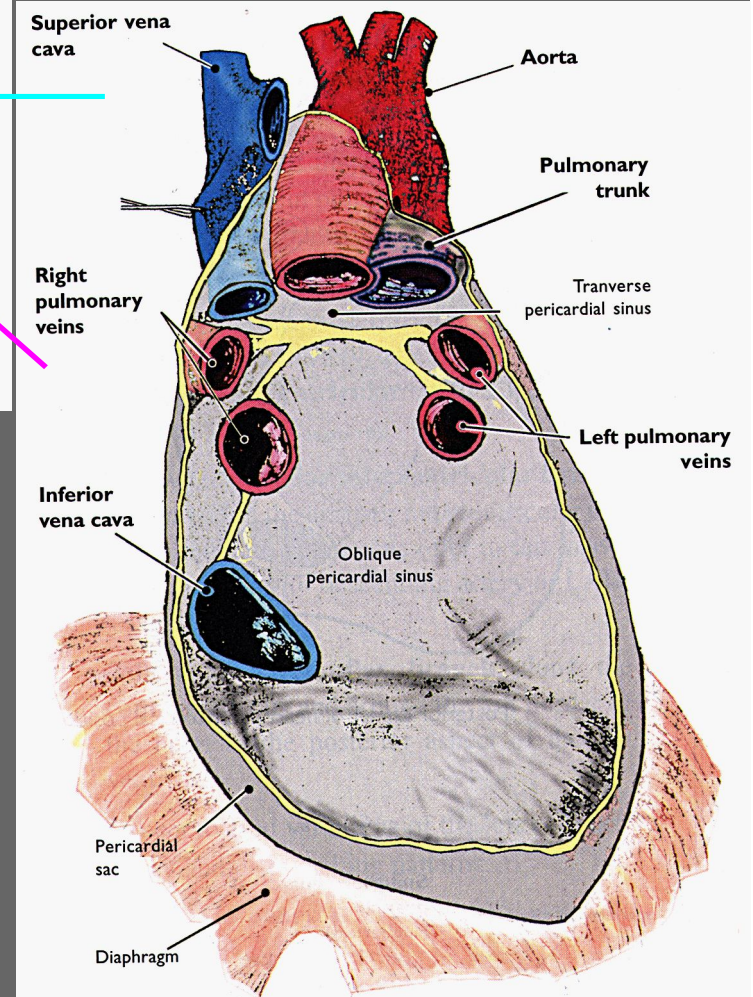


Triangle of Koch: delimited by the coronary sinus valve
->the tendon of Todaro and the anulus of the tricuspid valve.

Pericardial Cavity & Sinuses



- Transverse sinus
- Oblique sinus



Congenital heart disease

Laboratory of molecular embryology
Institute of Anatomy

Cordially invite you to a lecture by

Prof. John E. Foker, MD, PhD

Division of Cardiovascular & Thoracic Surgery, University of Minnesota

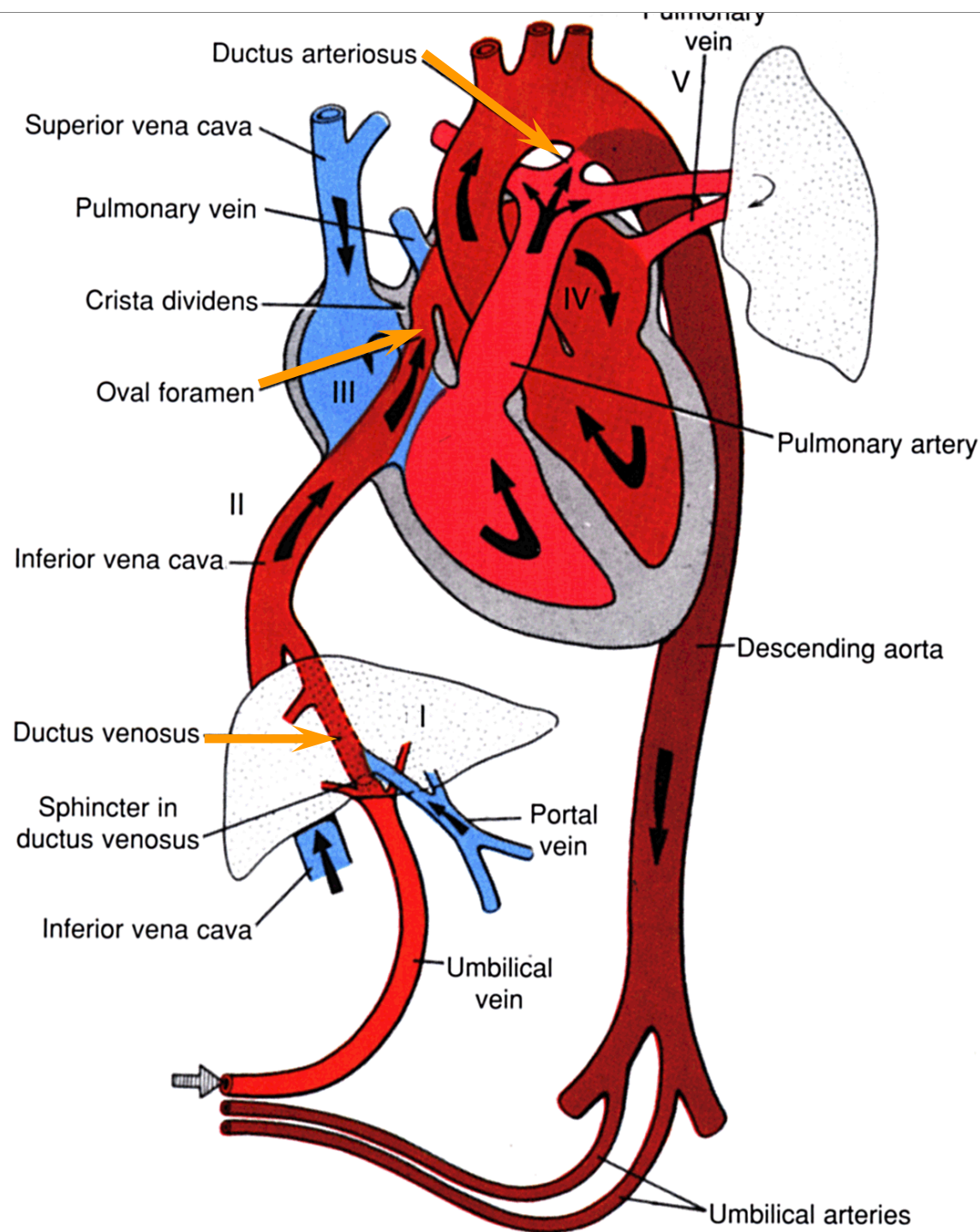
Developmental Biology and Pediatric Cardiac Surgery: Some Practical Applications.

Friday, 16th October 2009 at 12:30

Great Auditorium, Institute of Anatomy, U nemocnice 3

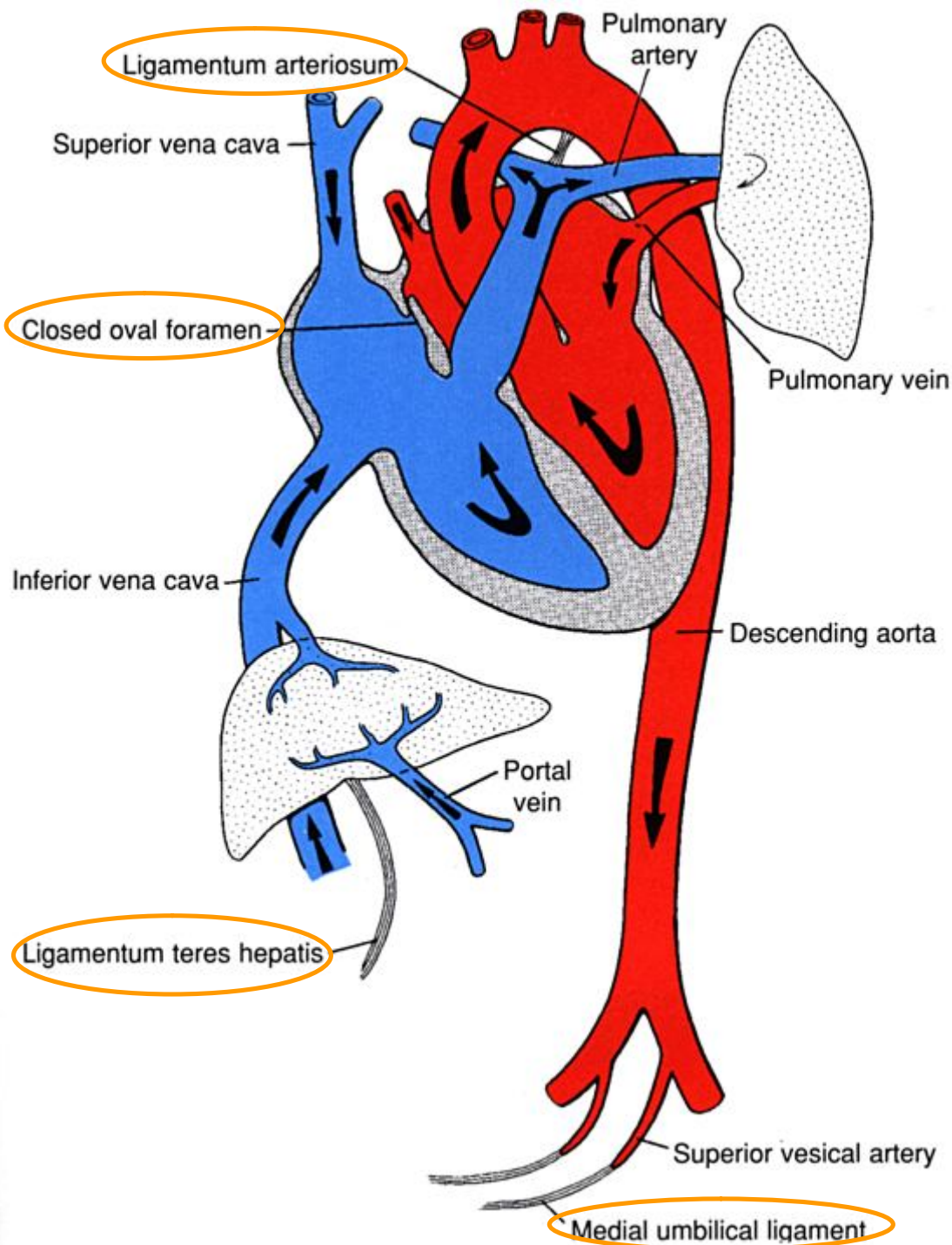
The lecture is particularly suitable for the fourth year students taking their course of Clinical Anatomy as well as for everybody interested in surgery for congenital heart disease.

The lecture and following discussion will be in English.



Fetal and postnatal circulation

in utero



Fetal and postnatal circulation

Remodeling after birth

post partum