

# Cardiovascular module: introduction

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# Cardiovascular module

## Tuesday May 7<sup>th</sup>

9.20	Cardiovascular module: introduction	Dr Philip Kilner
10.00	Systems Biology of the Heart: Hope or Hype?	Prof Peter Kohl

## Thursday May 9<sup>th</sup>

9.00	Cardiovascular imaging and reality	Dr Philip Kilner
10.00	Ischaemic heart disease: Assessment and Management	Dr Eliana Reyes.
11.00	Cardiovascular case presentations	Dr JP Carpenter.
2.00	Clinical cardiology.	Dr Aamir Ali:
(3.15	Gary Frost - postponed)	

## For revision:

- 1) The lectures and lecture notes/slides (*but not necessarily this presentation*)
- 2) the 'Cardiovascular medicine' section in the Oxford Handbook of Clinical Medicine

# Objectives (this presentation)

- To gain confidence to engage your own faculties of observation and inquiry.
- To share my attempt to approach a subject (the cardiovascular system) contextually as well as analytically.
- To appreciate the fluent, interconnecting movements of blood through the heart, vessels and microvascular networks of the circulation.

Chest x-ray  
(normal)

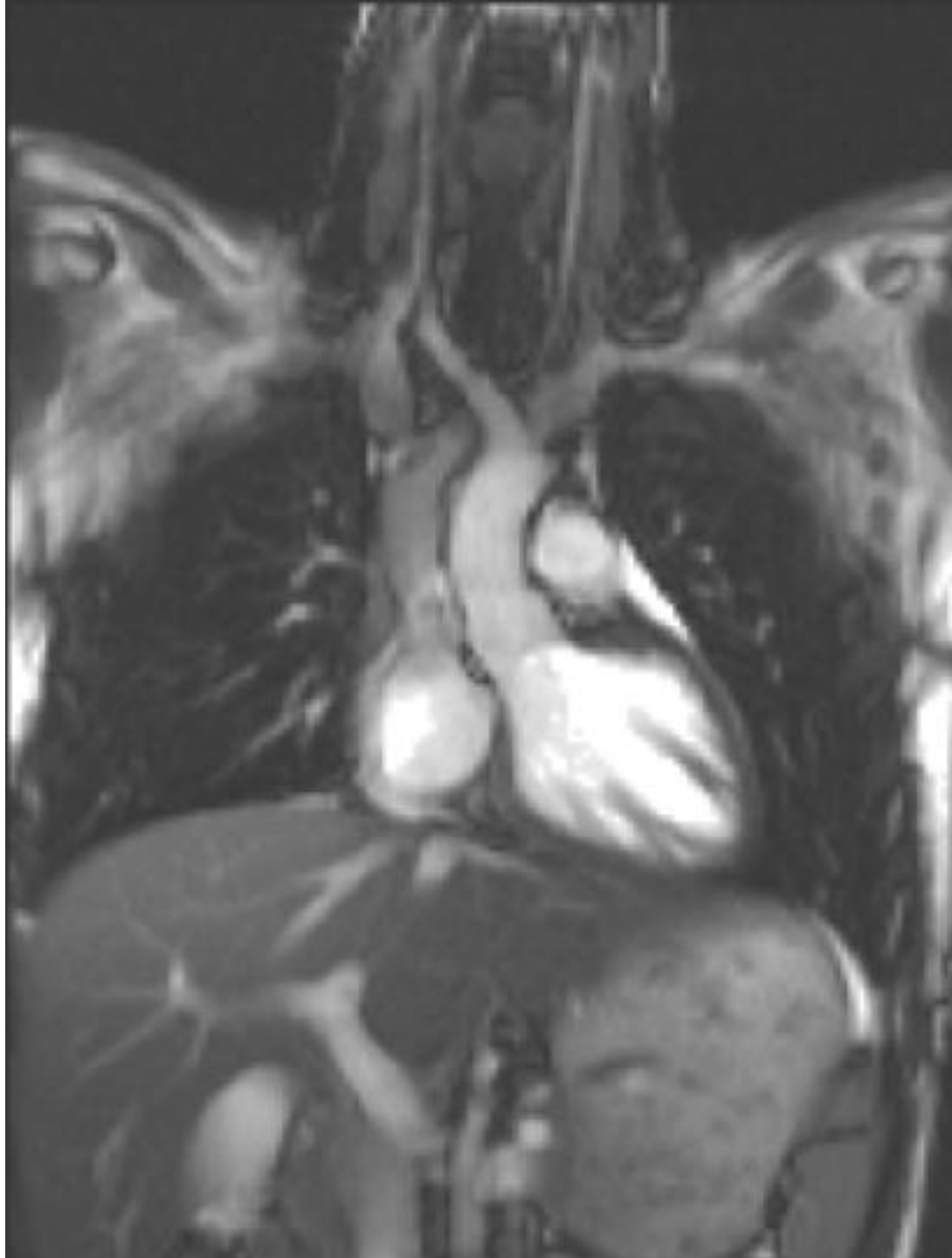


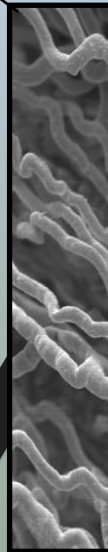
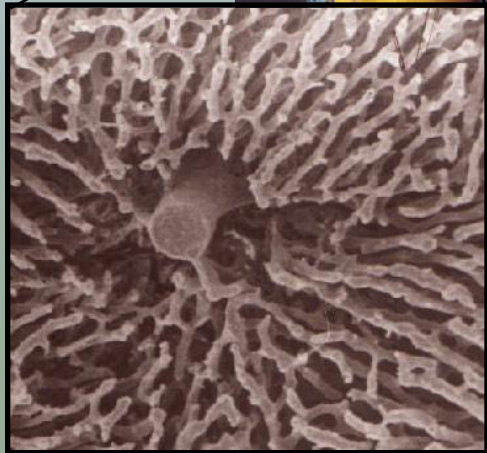
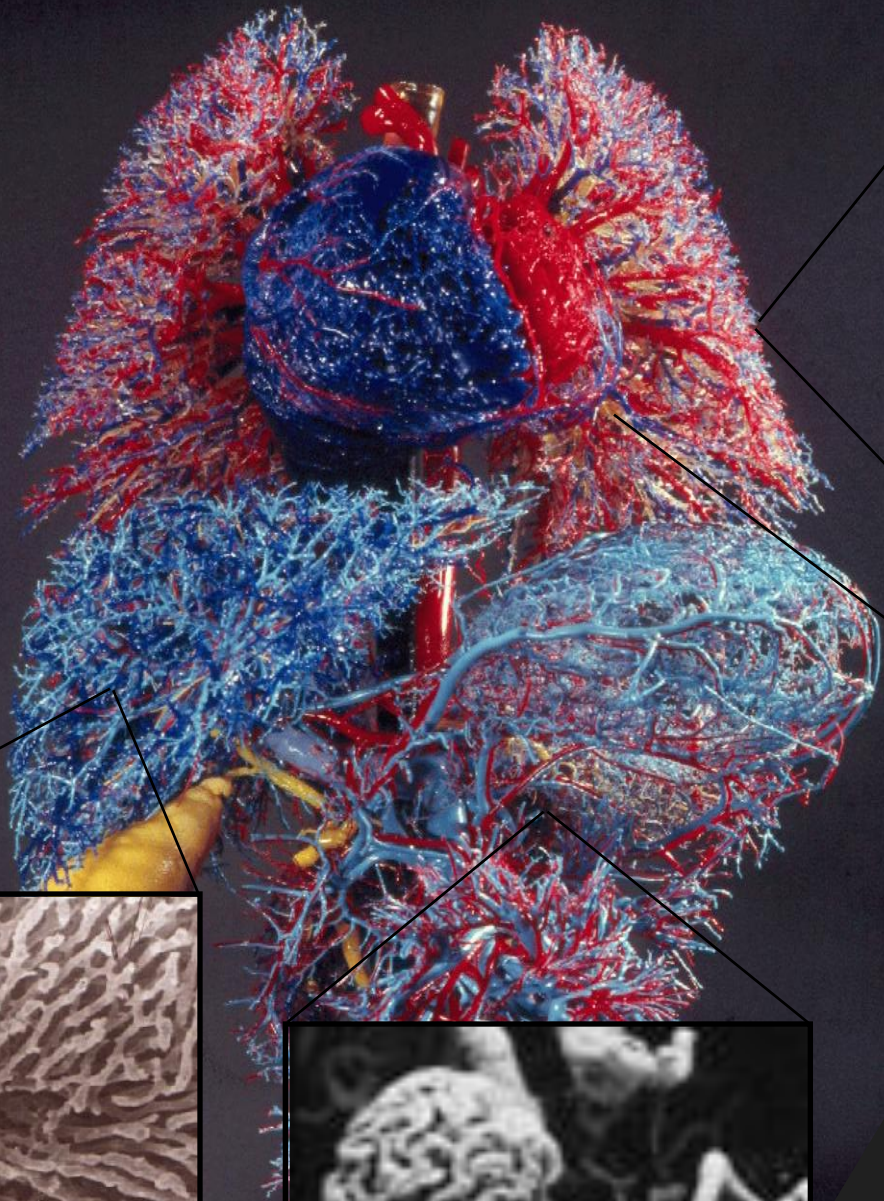


CT angiography  
(processed by  
Petter QuickCMIV  
Linköping University  
Sweden



Coronal  
cine MRI.  
Normal





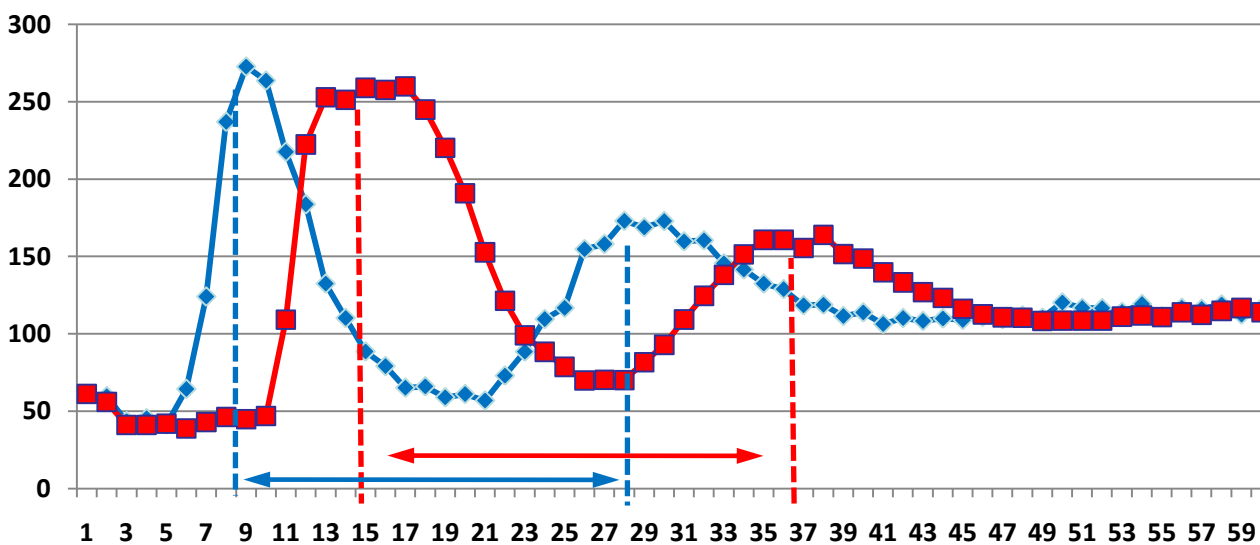


About 10 seconds

20 seconds

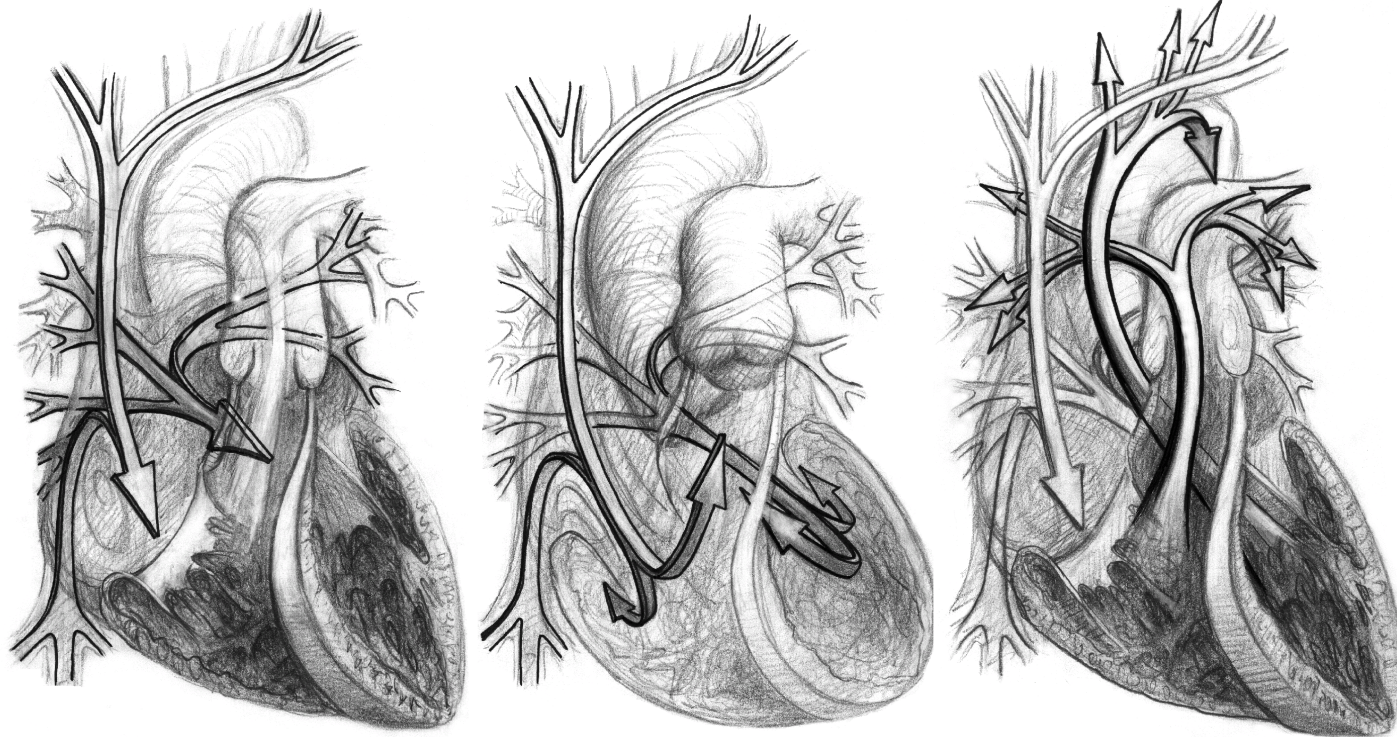
30 seconds

Signal intensity in right ventricle (blue) and left ventricle (red)



—◆— RV signal  
—■— LV signal





systole

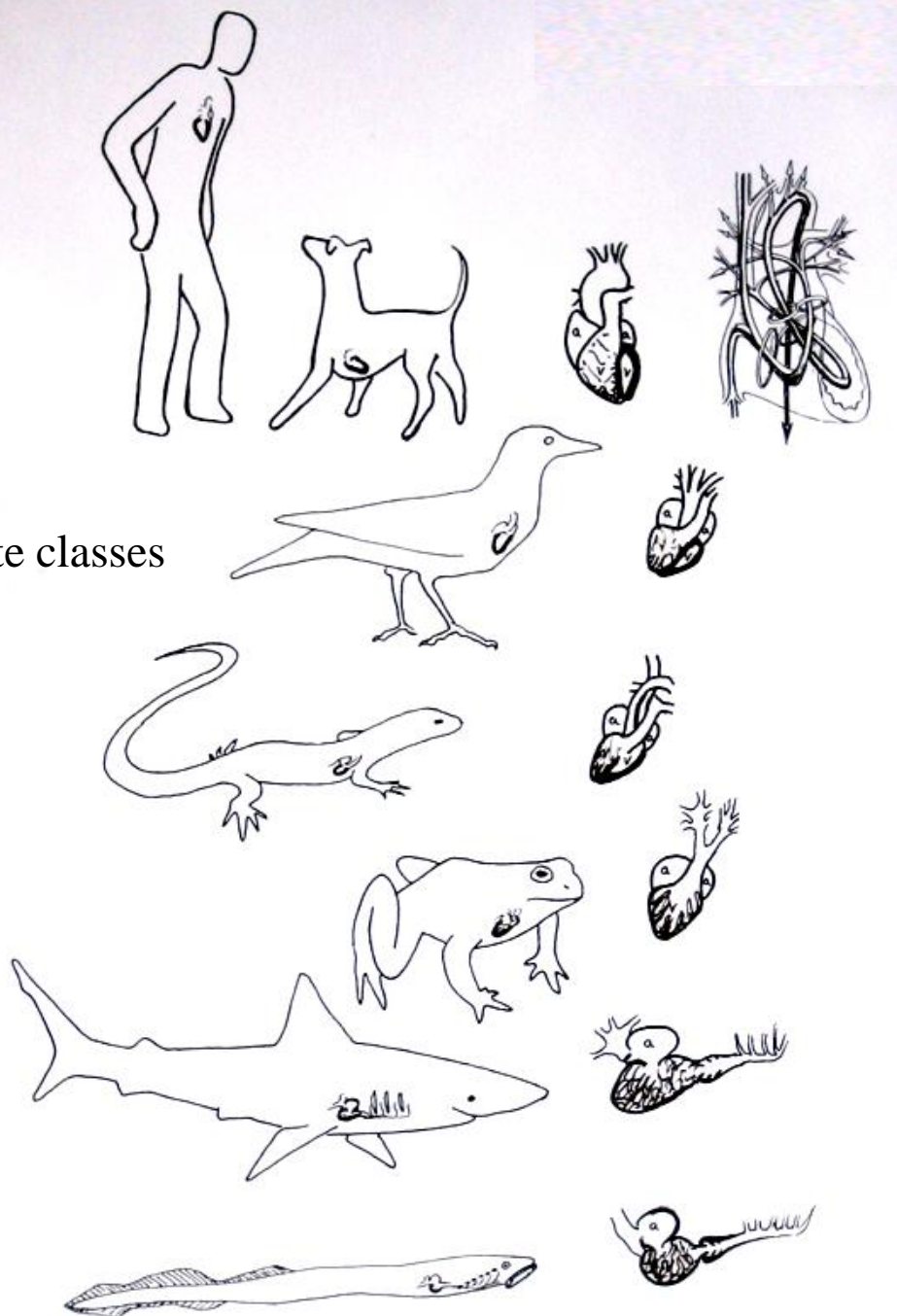


diastole



systole

Vertebrate classes



Progressive septation

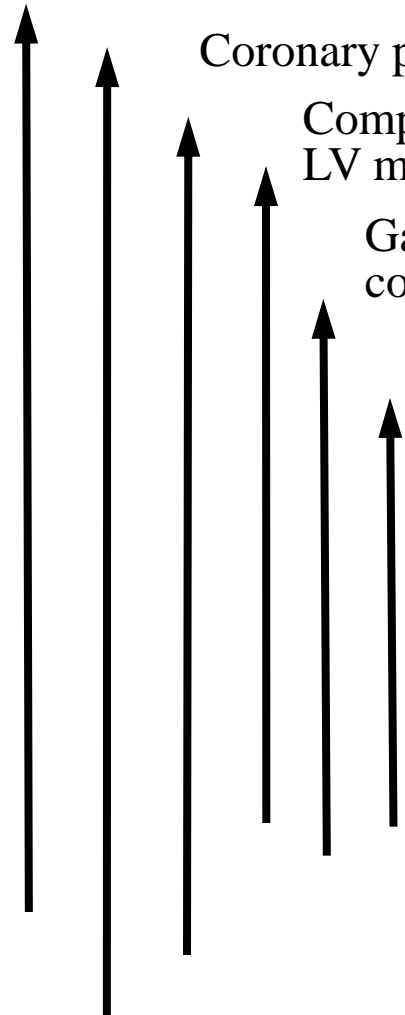
Progressive looping

Coronary perfusion

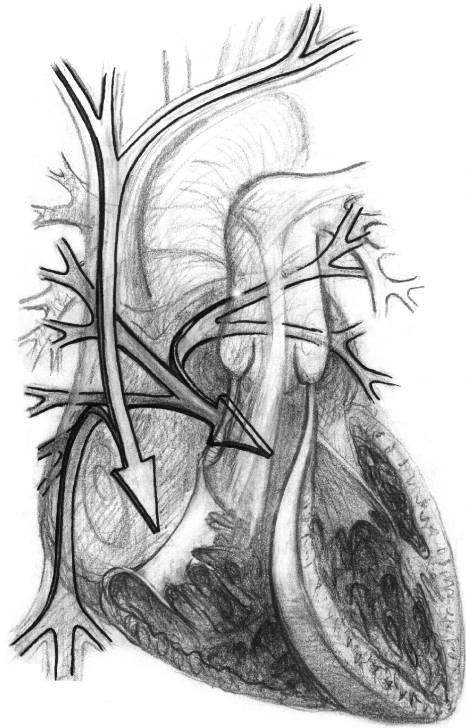
Compaction of LV myocardium

Gain of insulation-conduction system

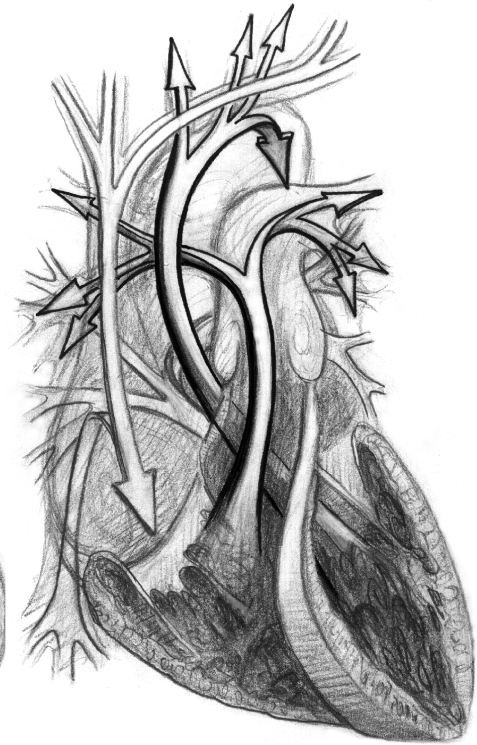
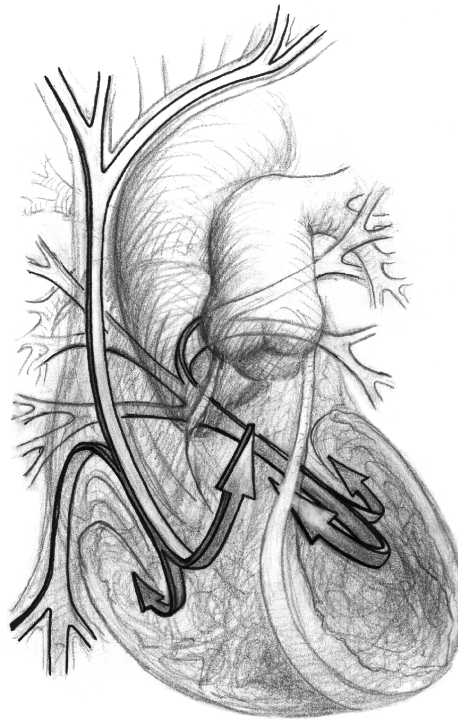
Refinement of valves



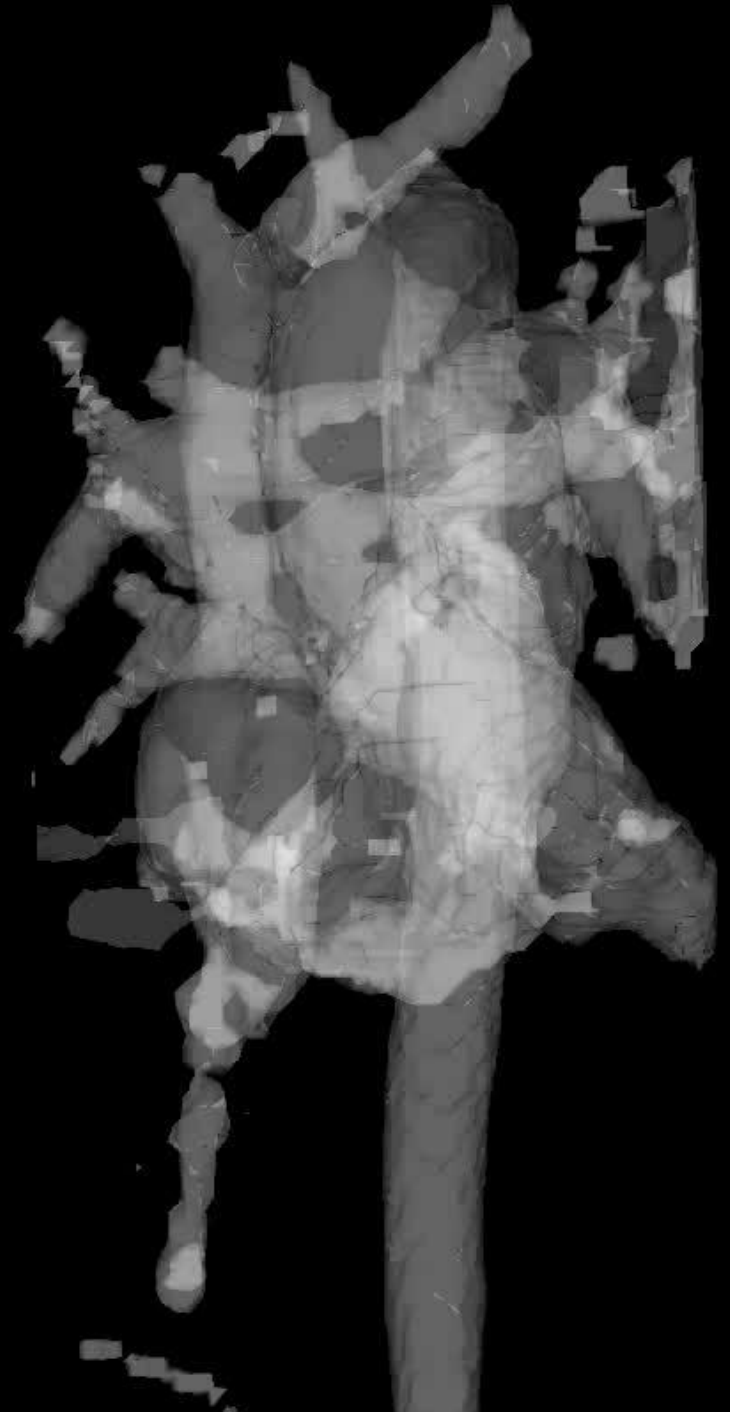
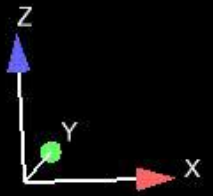




systole



systole

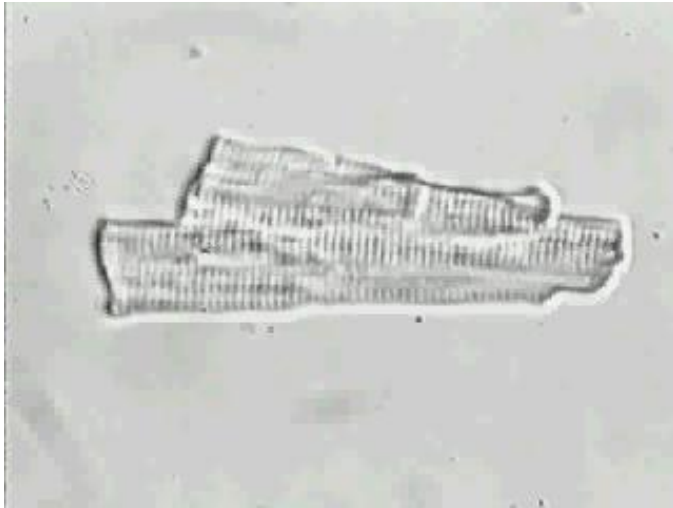




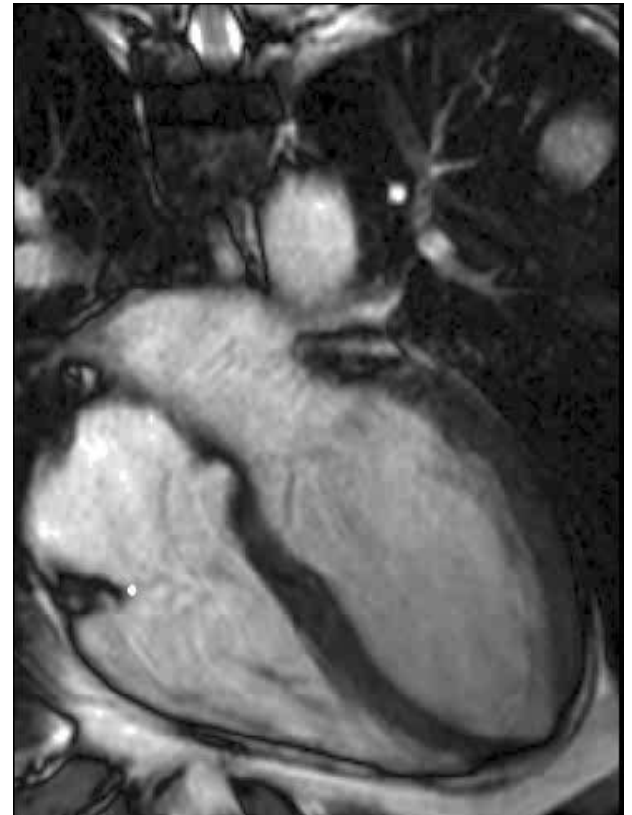
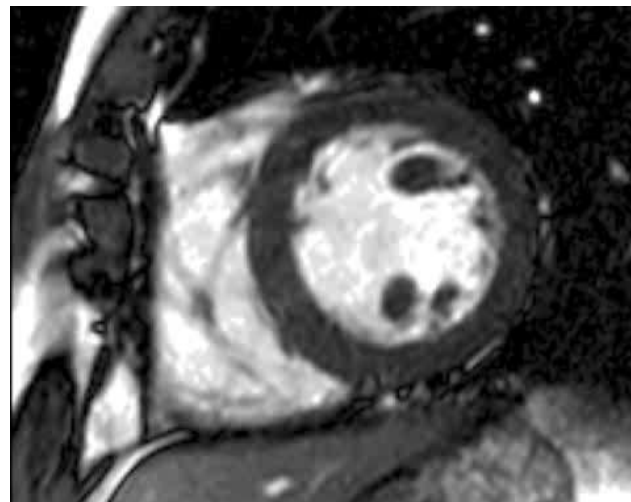


**Cardiac MRI.**

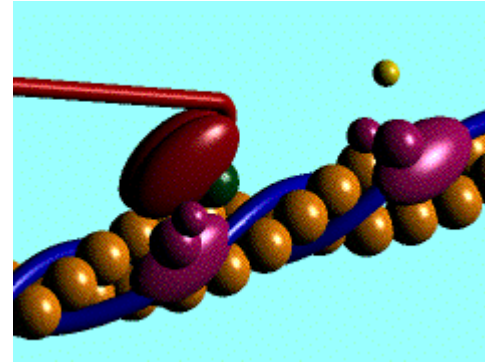
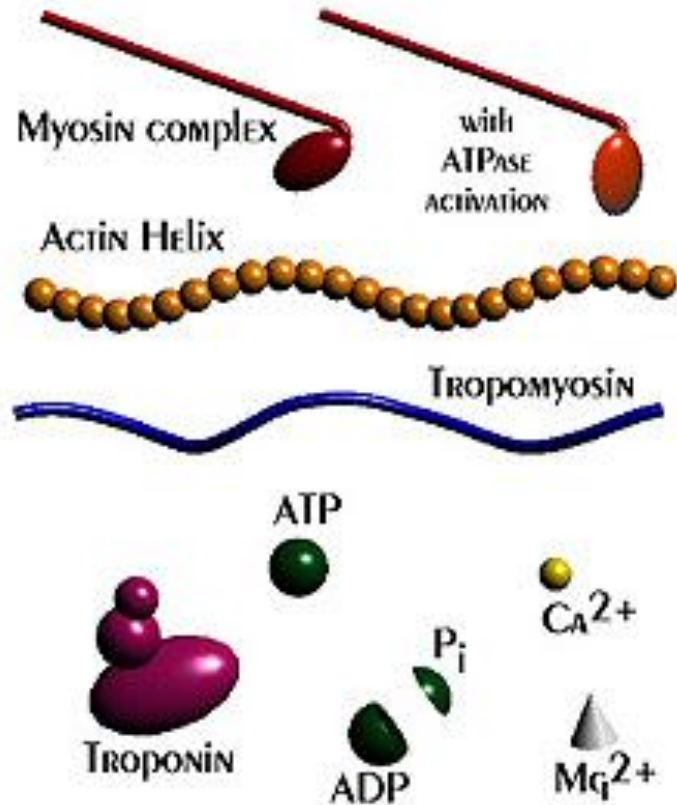
Normal LV inflow and outflow valves

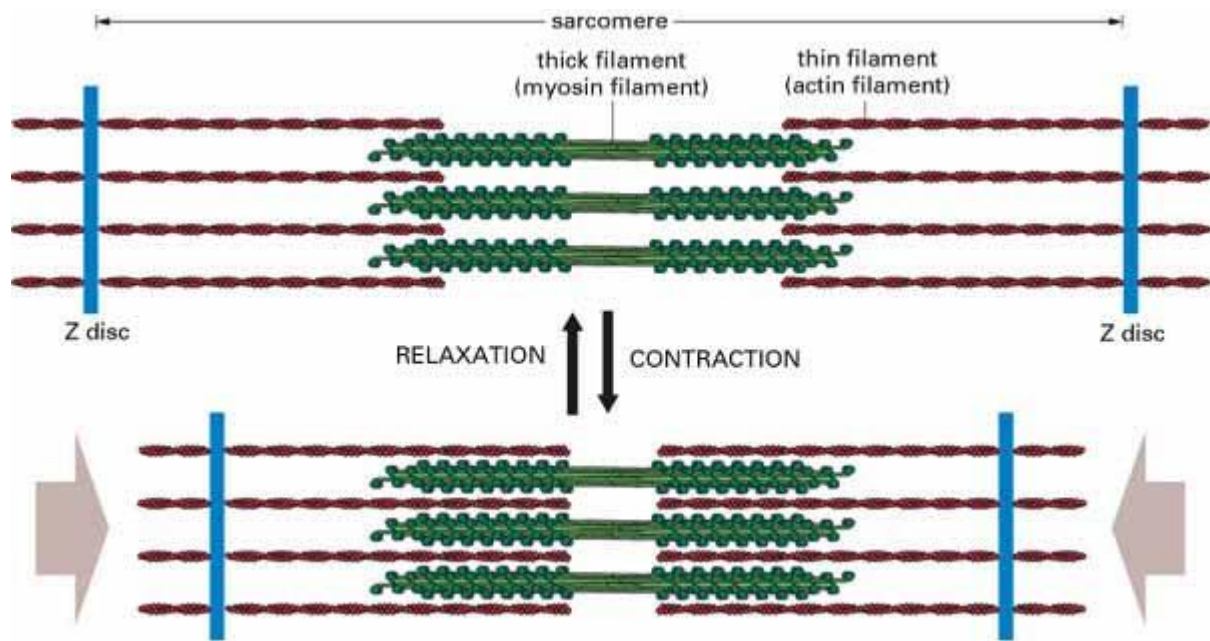
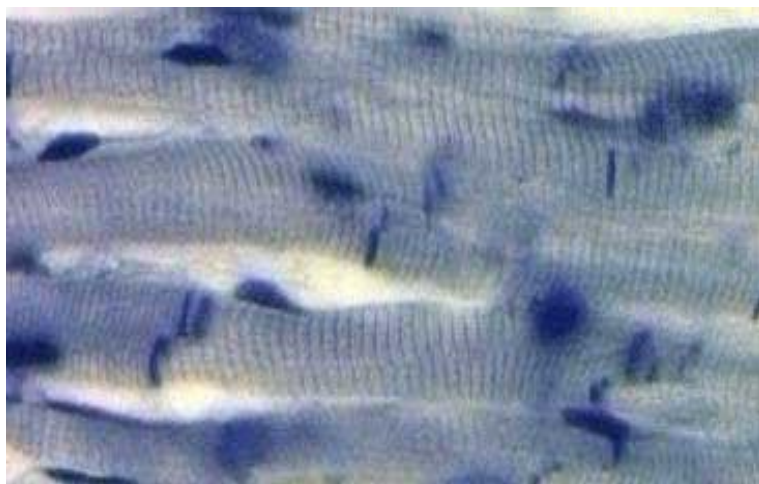


An isolated myocyte and the intact heart seen in long and short axis views by MRI



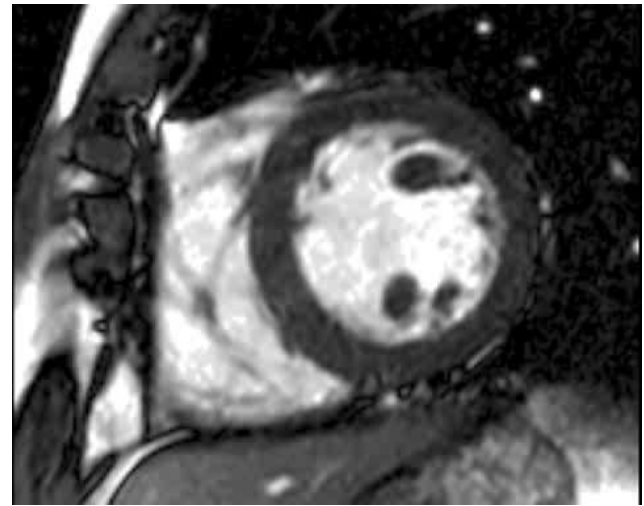
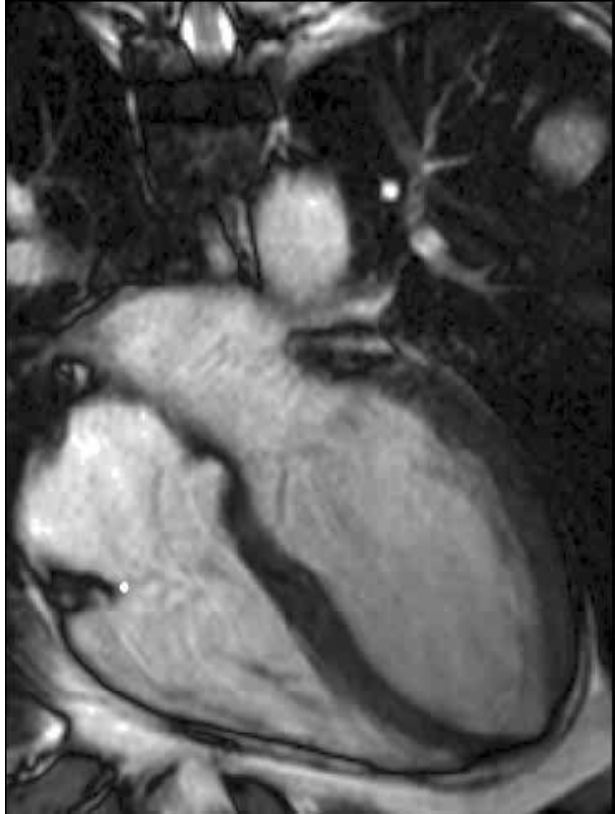
# 'cartoon' of actin-myosin function

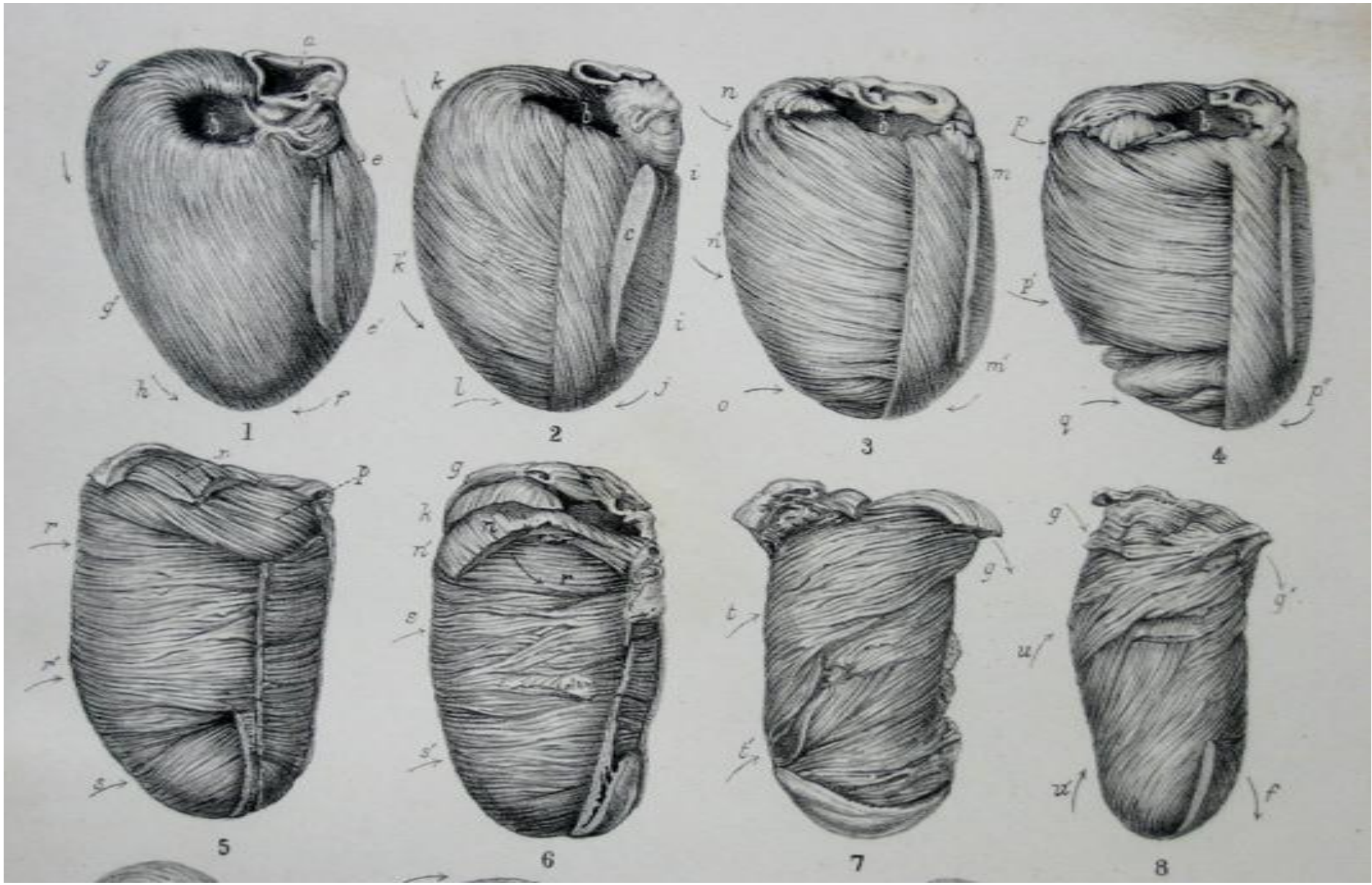




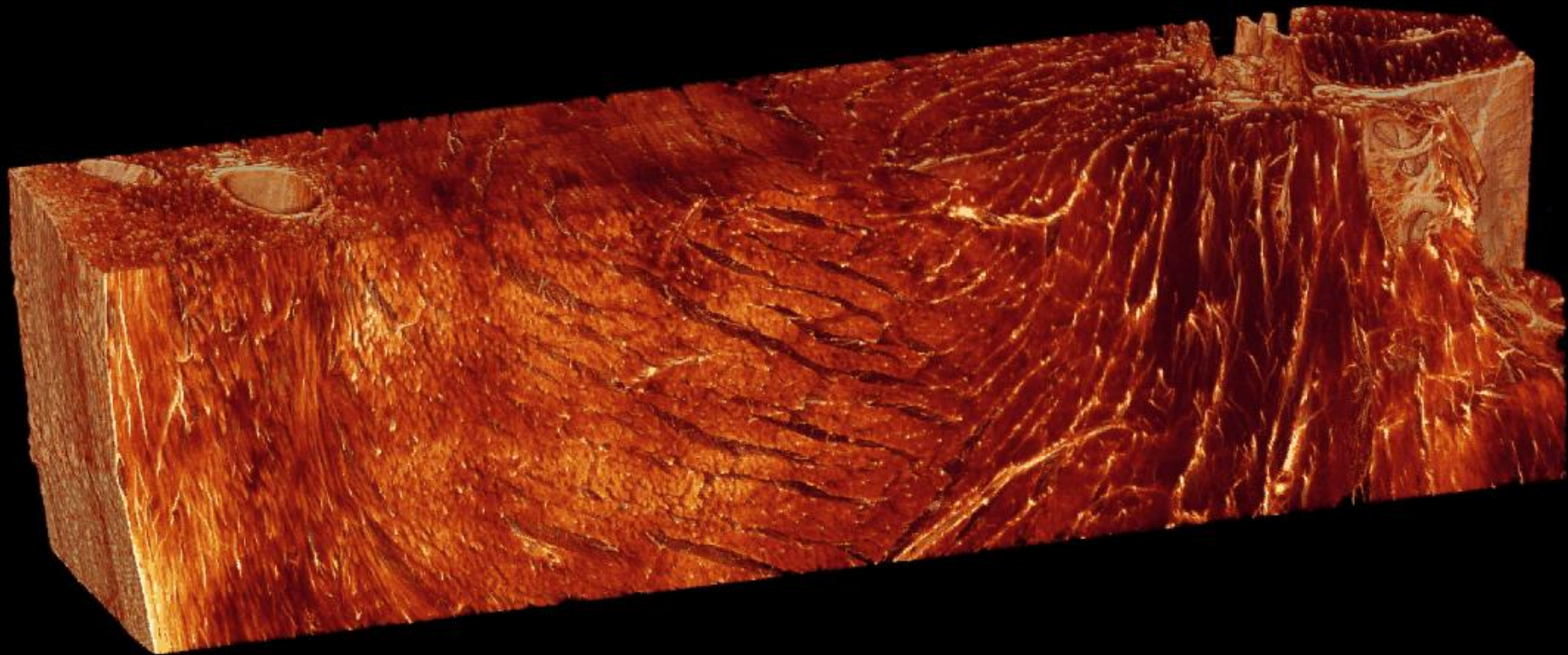
From: <http://carolguze.com/text/102-19-tissuesorgansystems.shtml>







Progressive dissection of sheep heart  
James Bell Pettigrew, 1856



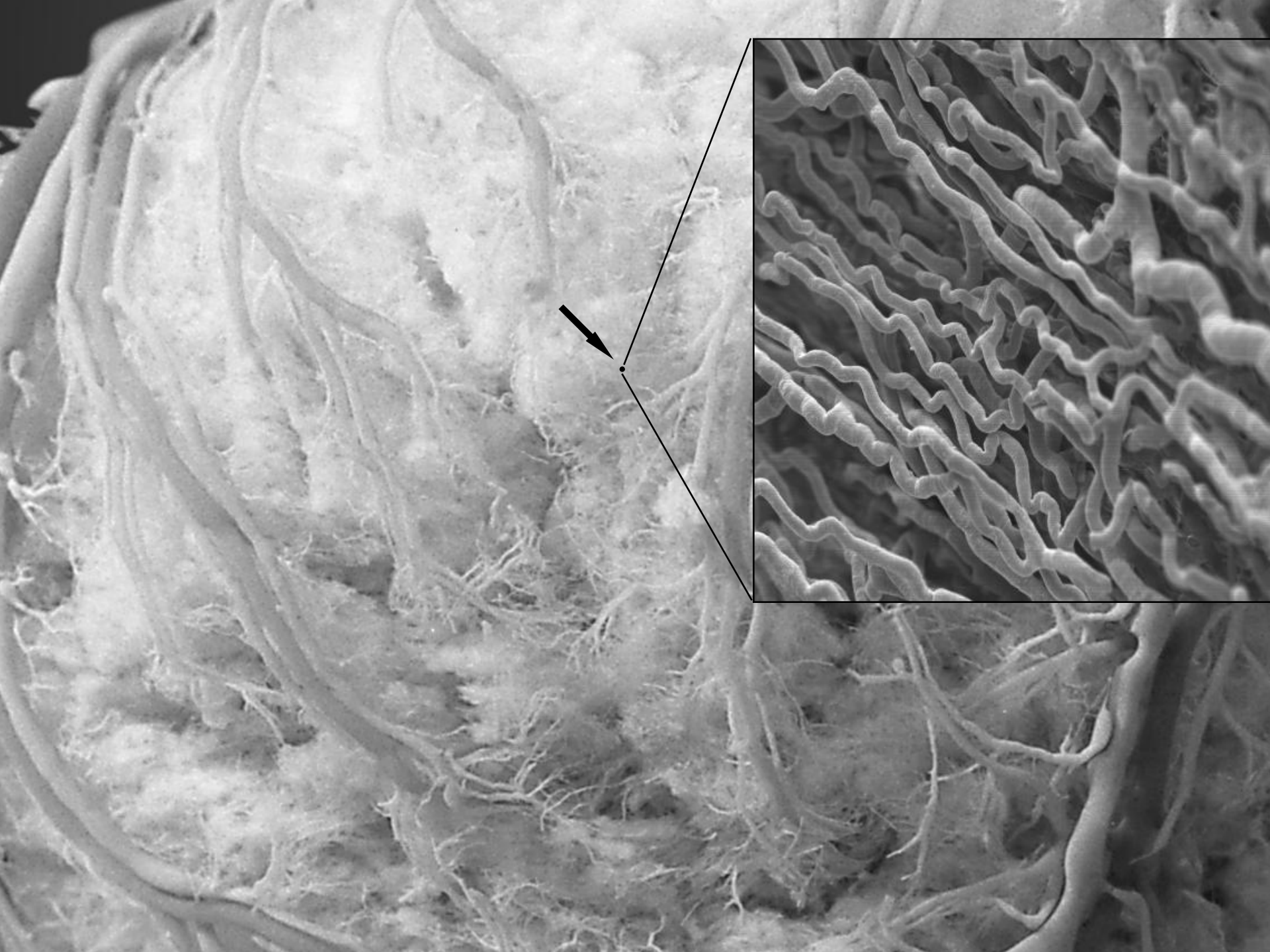
©2005 Structural Imaging : Bioengineering Institute : The University of Auckland

Confocal microscopy, rat myocardium,  
Courtesy of Ian LeGrice and Peter Hunter, Auckland, 2005



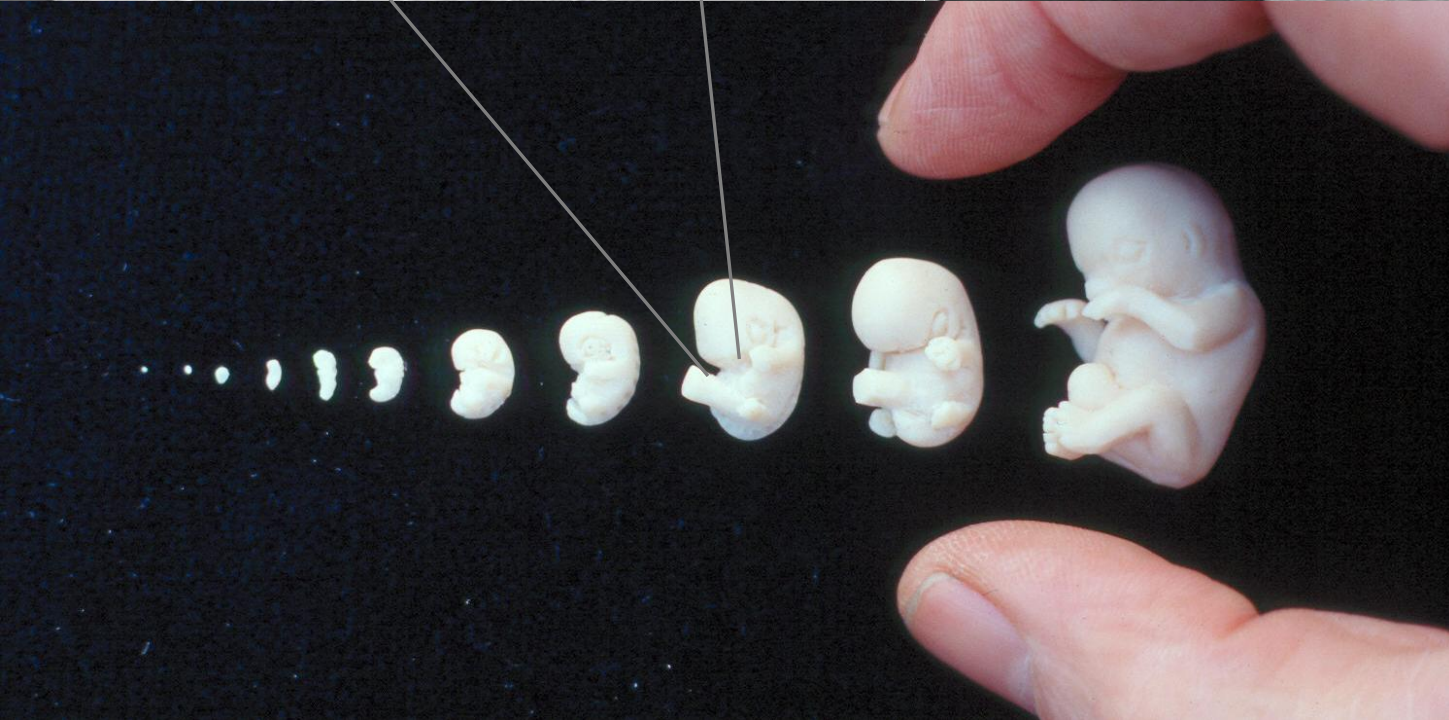
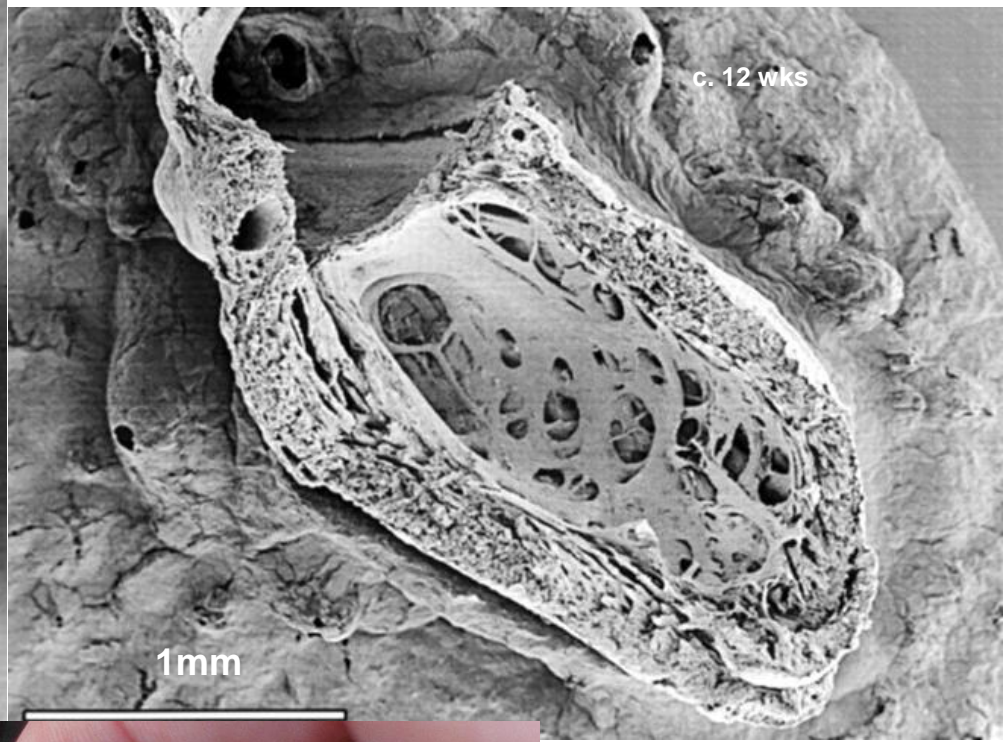
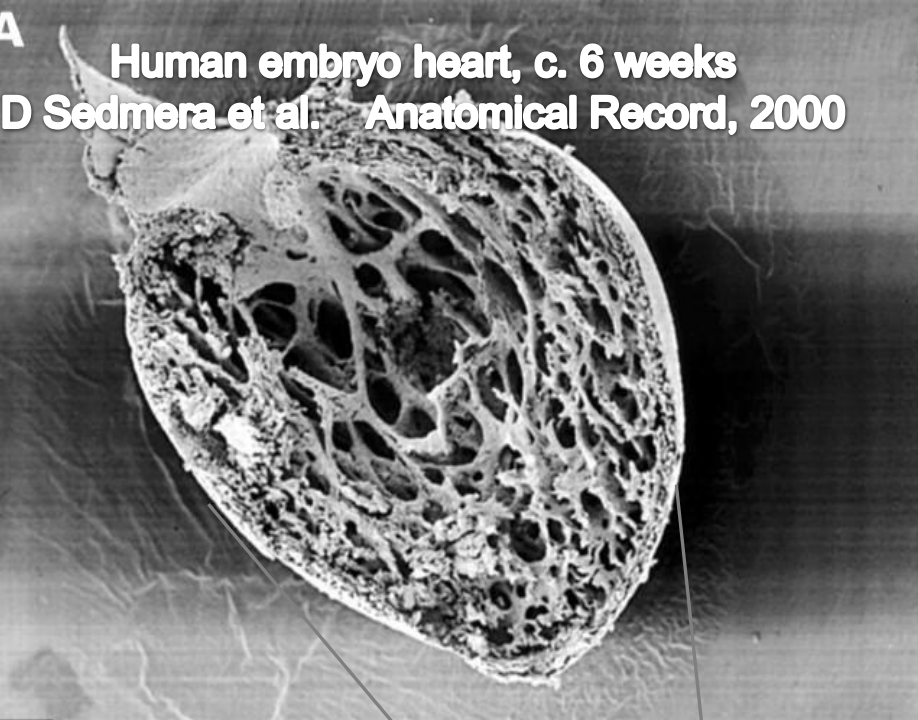
Endovascular canine coronary cast: courtesy of Bernd Minnich, Salzburg.



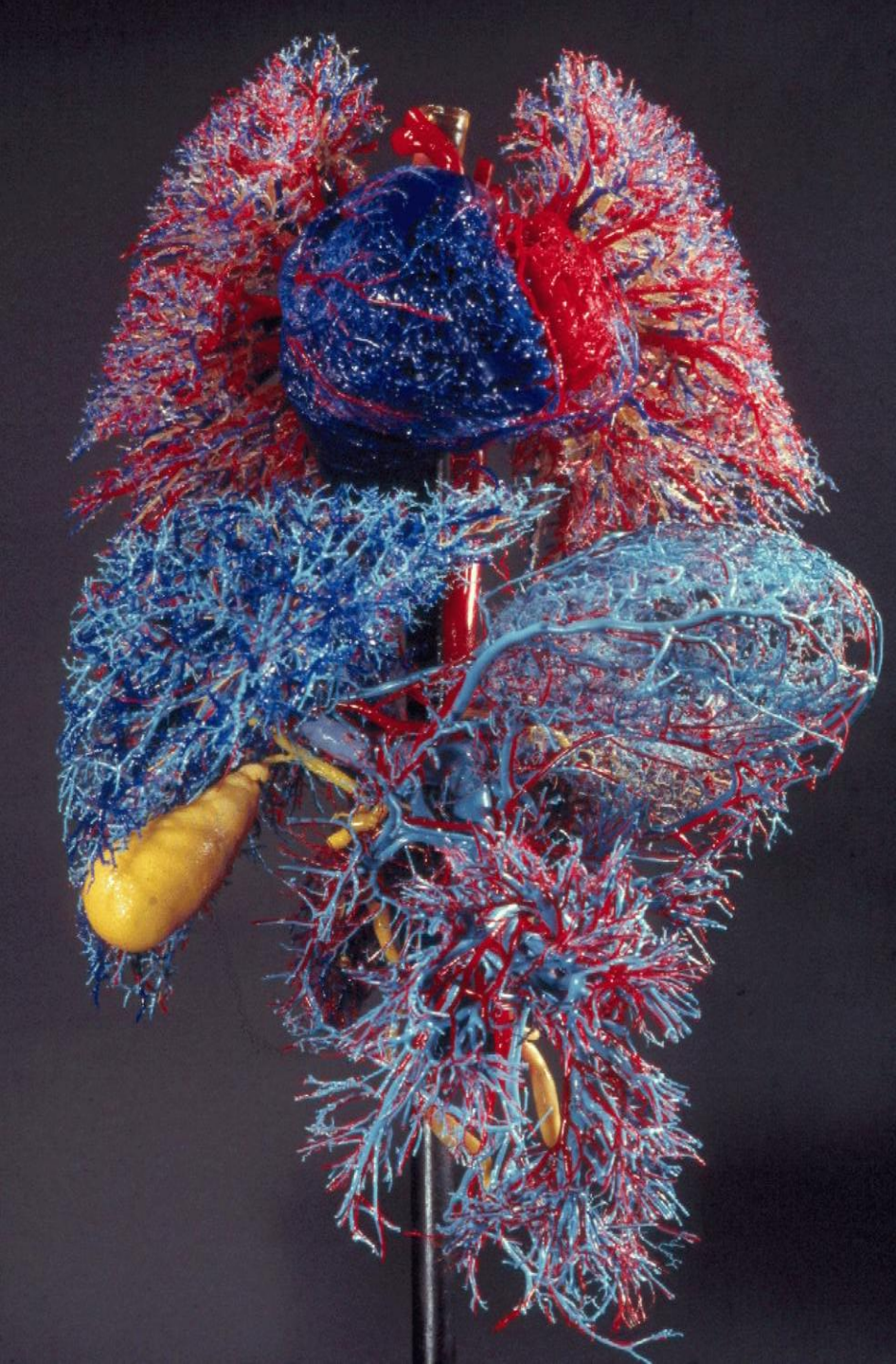


A

Human embryo heart, c. 6 weeks  
D Sedmera et al. Anatomical Record, 2000







Resin cast of blood vessels  
prepared by David Tompsett  
Royal College of Surgeons,  
c. 1964

## **A concluding thought:**

**Perceiving** (e.g. heart sounds, or the appearances of medical images)  
**is an activity of the perceiving subject** (that's you!)

- Take an interest
- Keep practising and observing inquisitively for yourselves,
- and you can gradually come to hear, see and comprehend  
as much as, or more than, an expert.



