

## BI 121 Lecture 8



...We're back & rarin' to go for last 2 weeks!

**I. Announcements** HR & BP Lab 4 tomorrow + **Required Notebook Check**. Turn in today or tomorrow? Q about LM? Please read Blood Chemistry Lab 5 twice < Thurs. Thanks!

**II. Cardiovascular System** LS 2012 ch 9, Torstar Books 1984, DC 2013 Module 4, Guyton & Hall (G&H) 2011 +...

A. Circulatory vs Cardiovascular (CV)? cf + parts

LS pp 229, CV vs Lymphatic, DC pp 23, 31

B. CV Pulmonary & Systemic circuits

DC fig 4-1 p 24, LS fig 9-2b p 231

C. Arteries, capillaries, veins G&H +Torstar

D. Varicose veins? Phlebitis? DC

E. ♥ layers, box, chambers, valves, inlets, outlets

LS fig 9-4 p 233, fig 9-2a p 231; DC pp 23-6

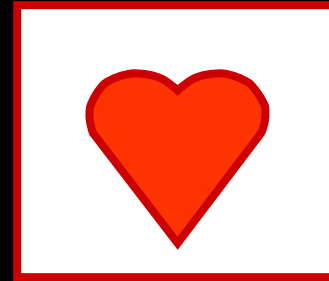
F. Normal vs abnormal blood flow thru ♥ & CV system

Billy has a hole in his ♥ SI Fox 2009 fig 13.16, 13.17

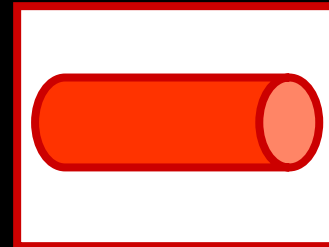


**III. Comments on Midterm & Tests Returned**

***Cardiovascular (CV) = Heart + Vessels + Blood!***



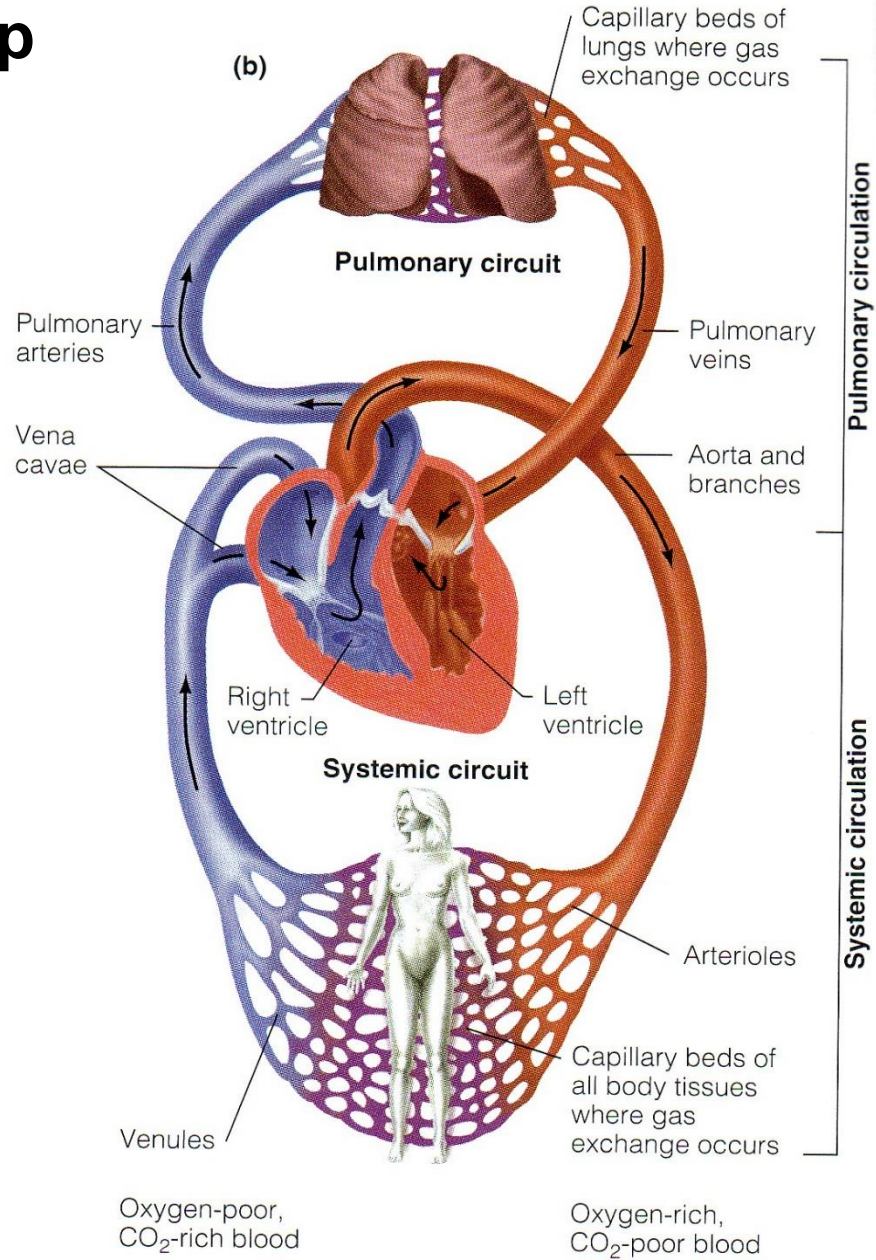
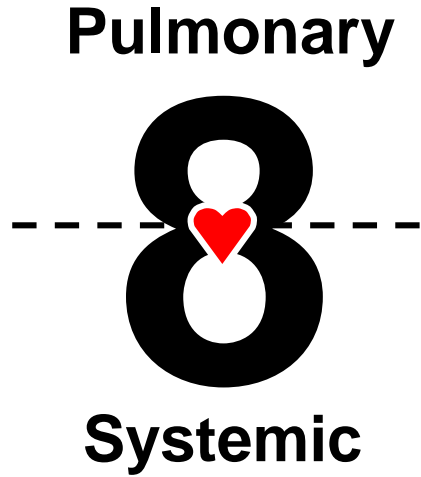
+



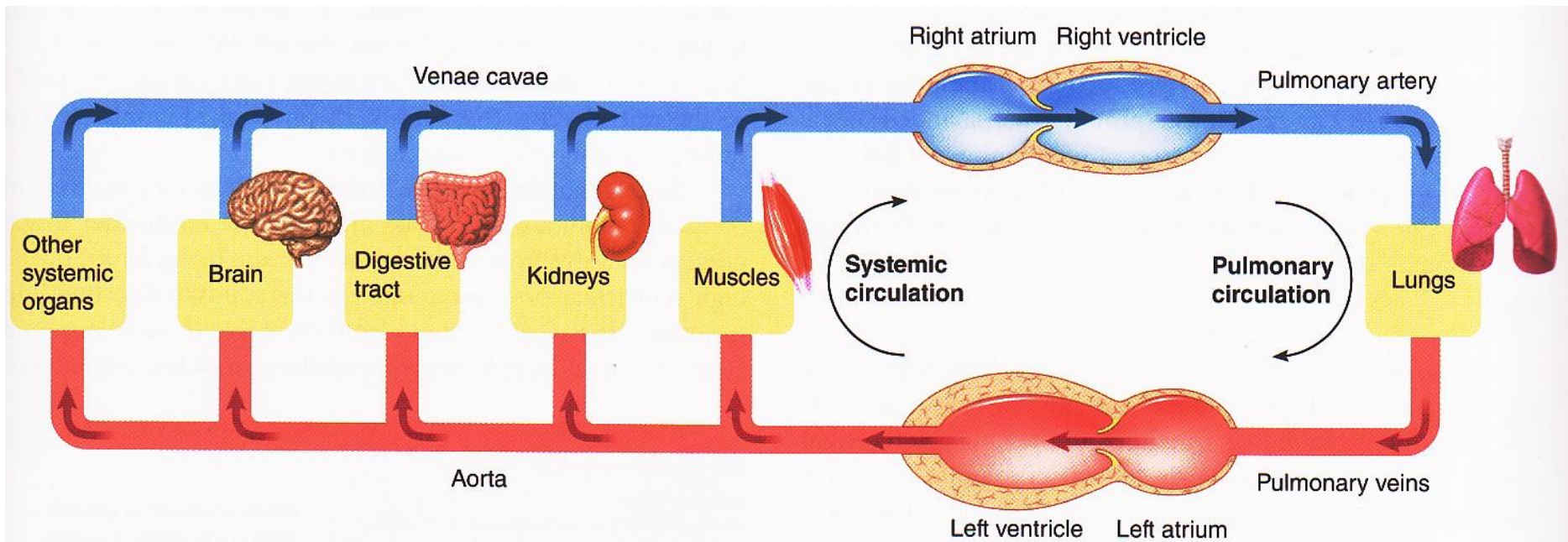
+

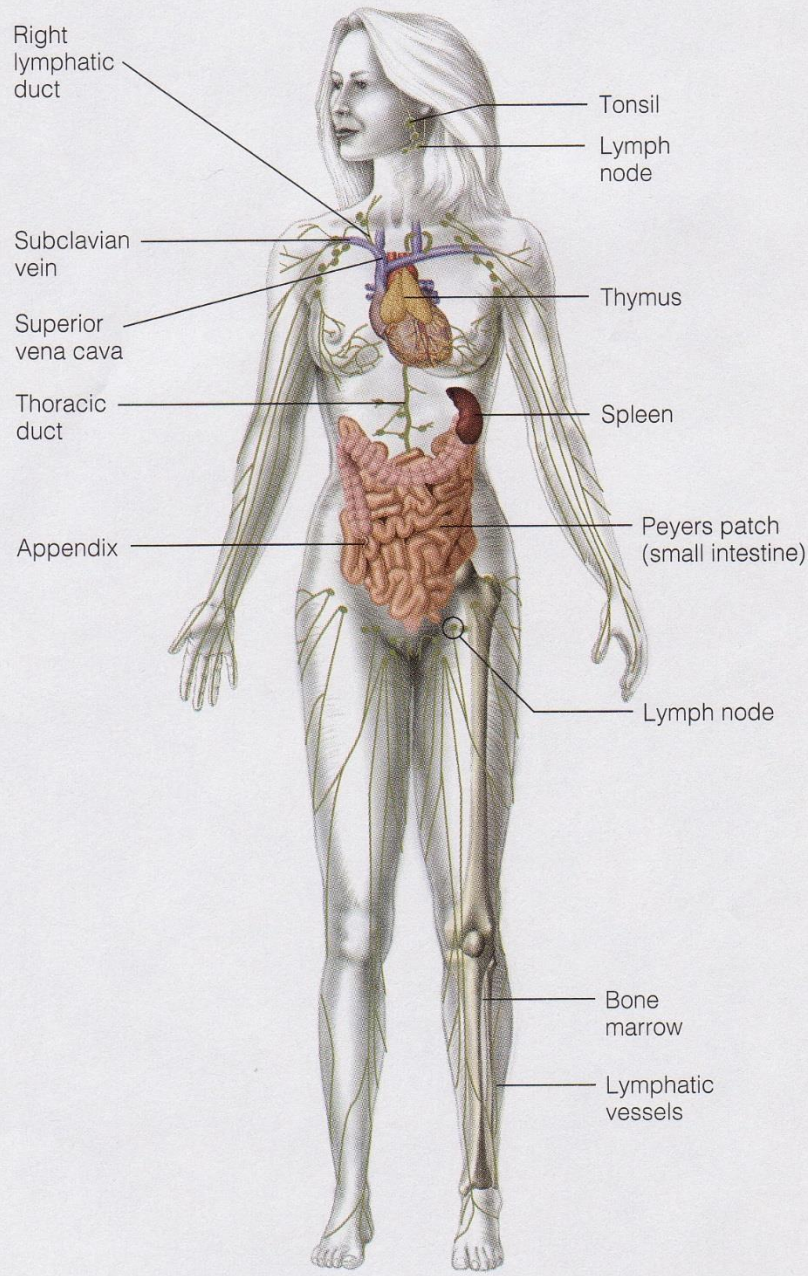


**NB: Figure-8 loop**



# Dual Pump Action & Parallel Circulation



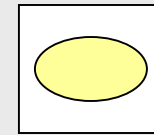


# Lymphatic System

## 1. Lymph Nodes

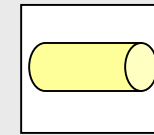
## 2. Vessels

## 3. Lymph

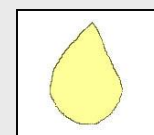


**No pump!**

+



+

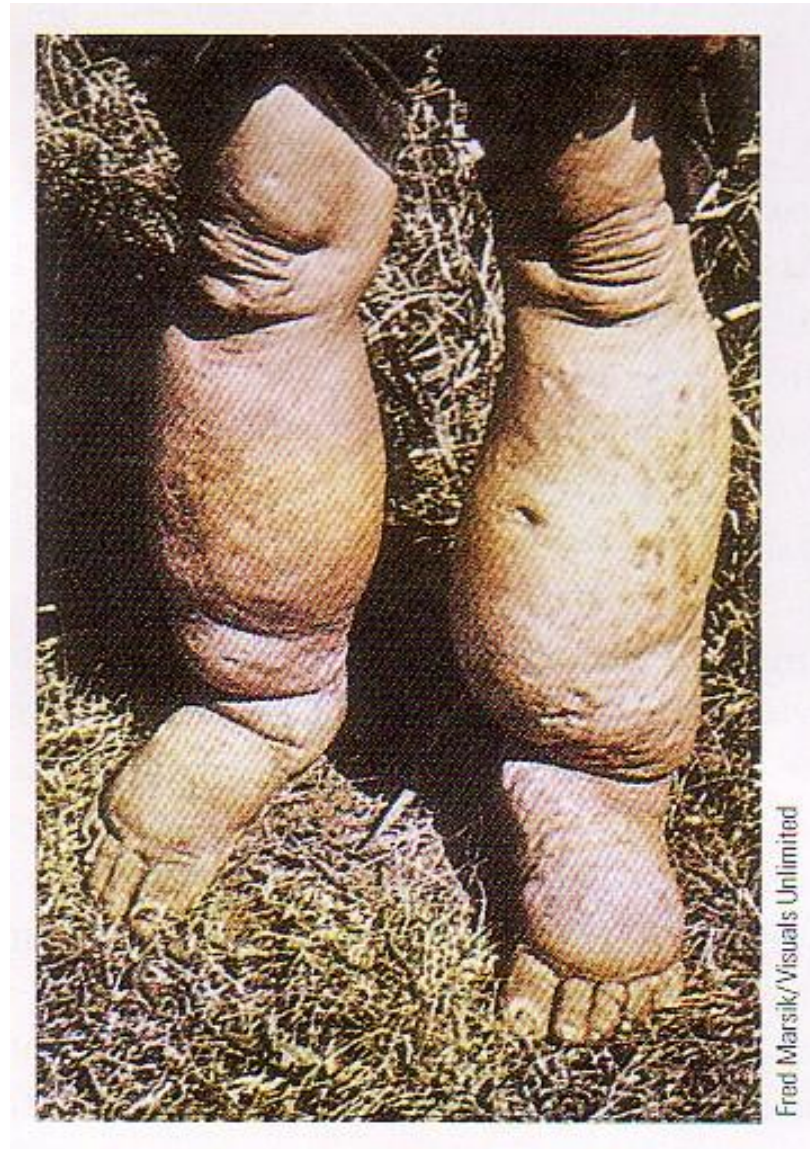


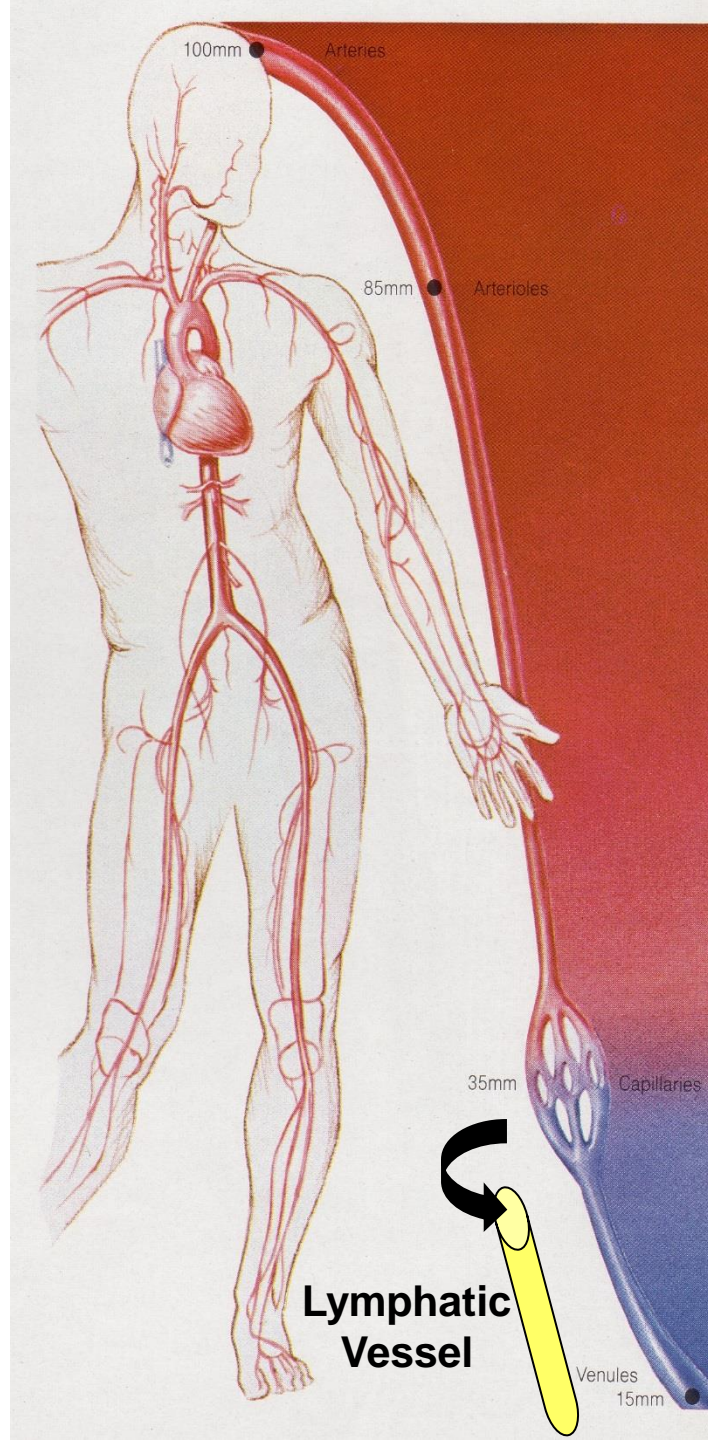
# **Lymphatic System**

**Alternative System of  
Circulation  
or  
Drainage System**

***Lymph Vessels || Veins***

# ***Lymphatic System Blockage in Elephantiasis from Mosquito-borne Parasitic Filaria Worm***



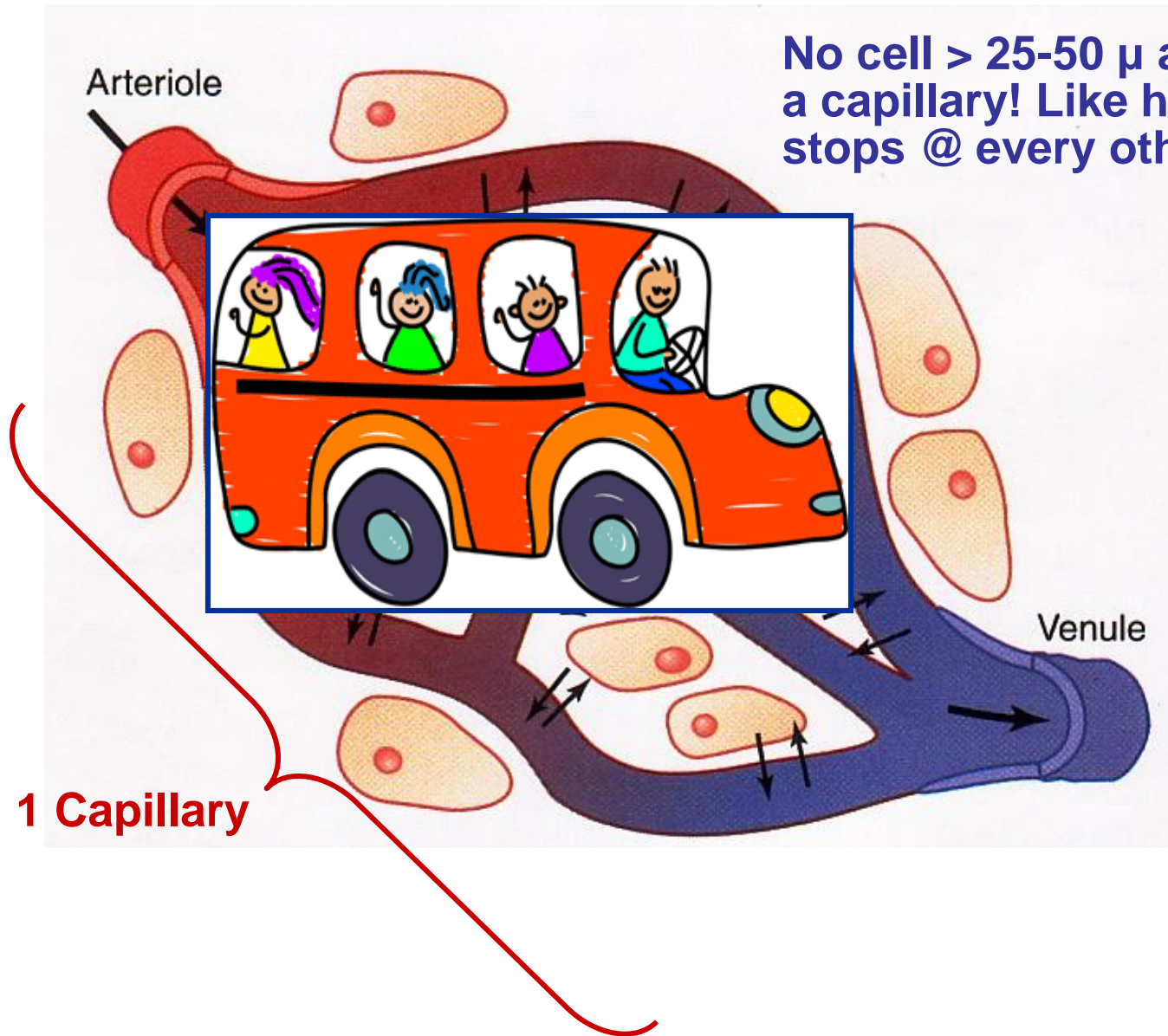


**Lymphatics collect run-off & are parallel to venules/small veins!**

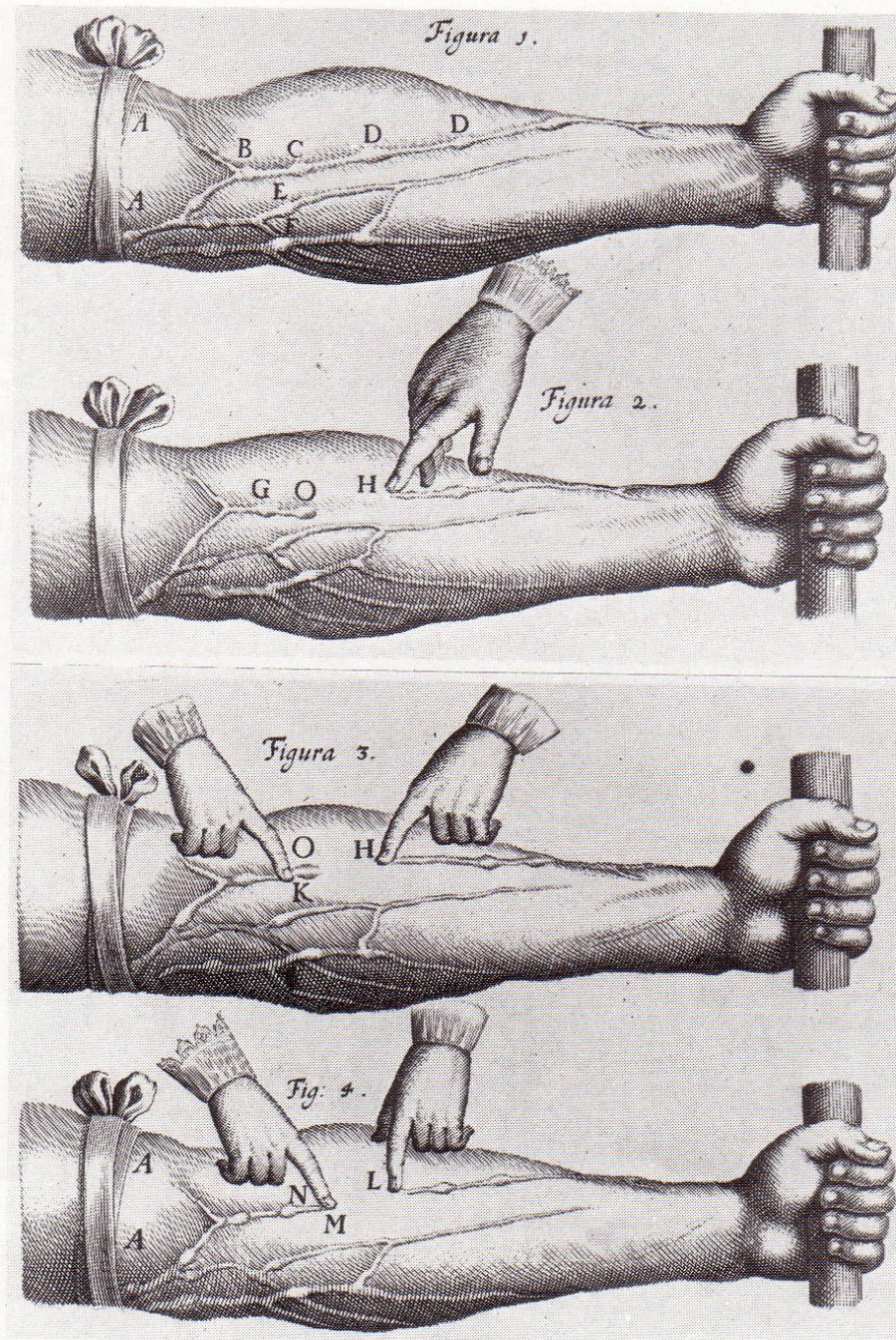




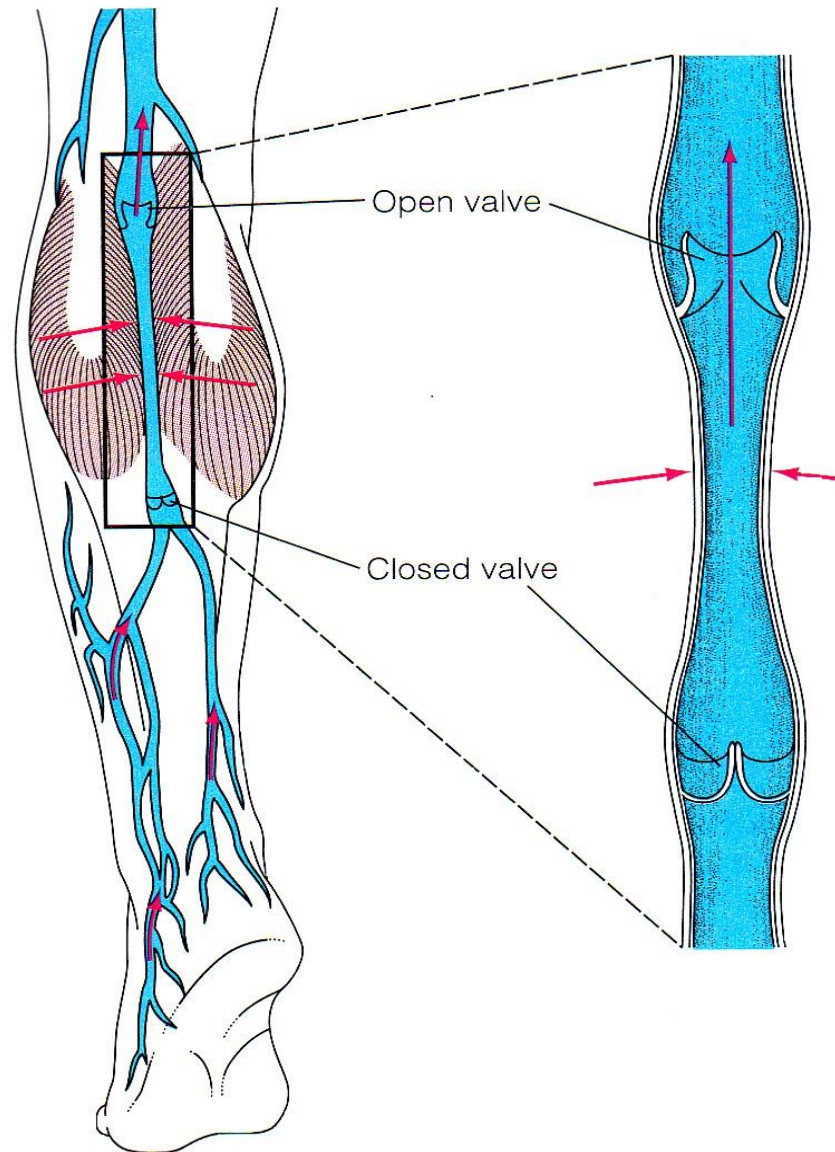
# Microcirculation Exchange: 10 Billion Capillaries!



**Harvey  
Experiments:  
1-way system  
of venous  
valves!**



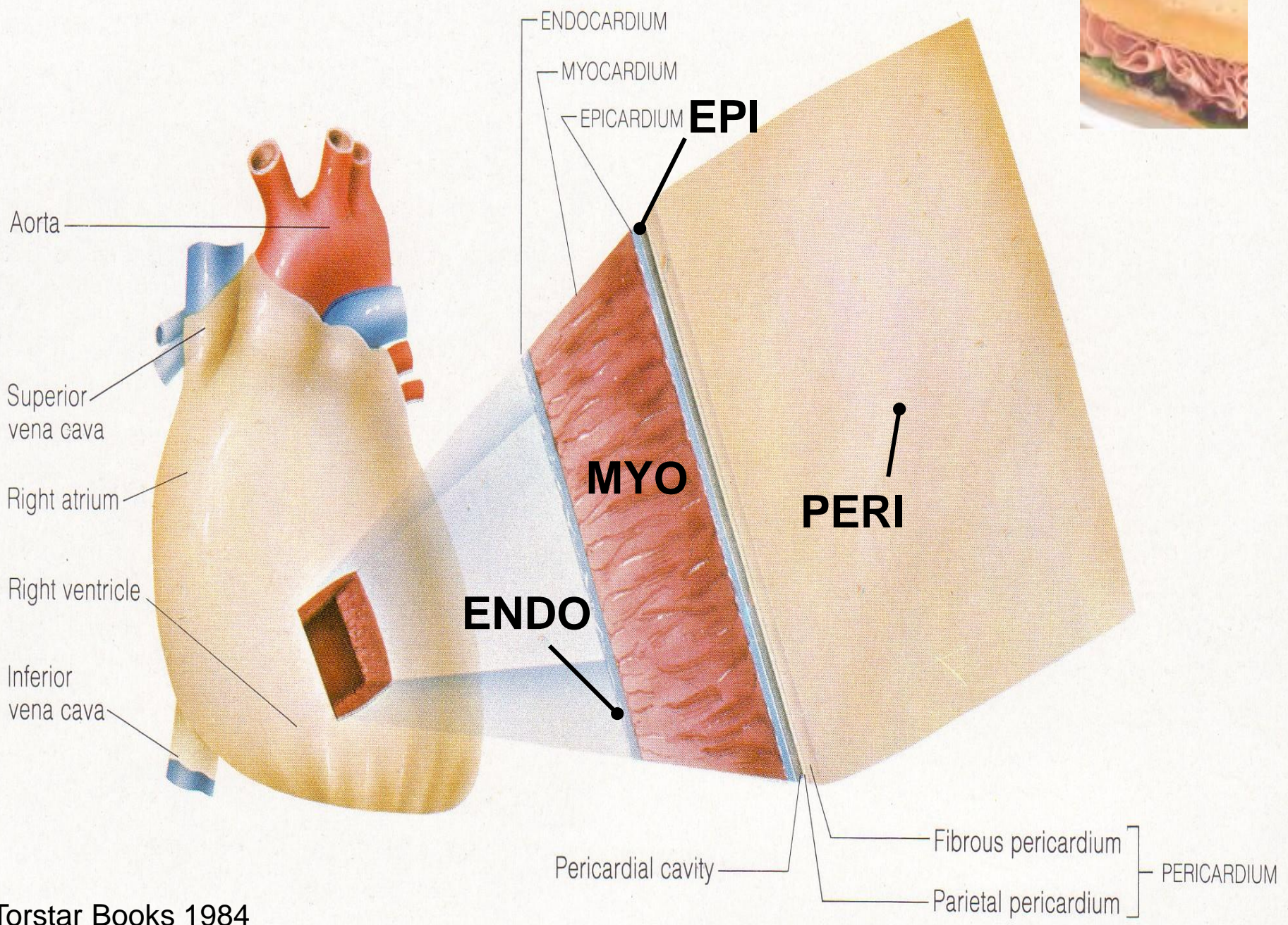
# Skeletal Muscle Pump



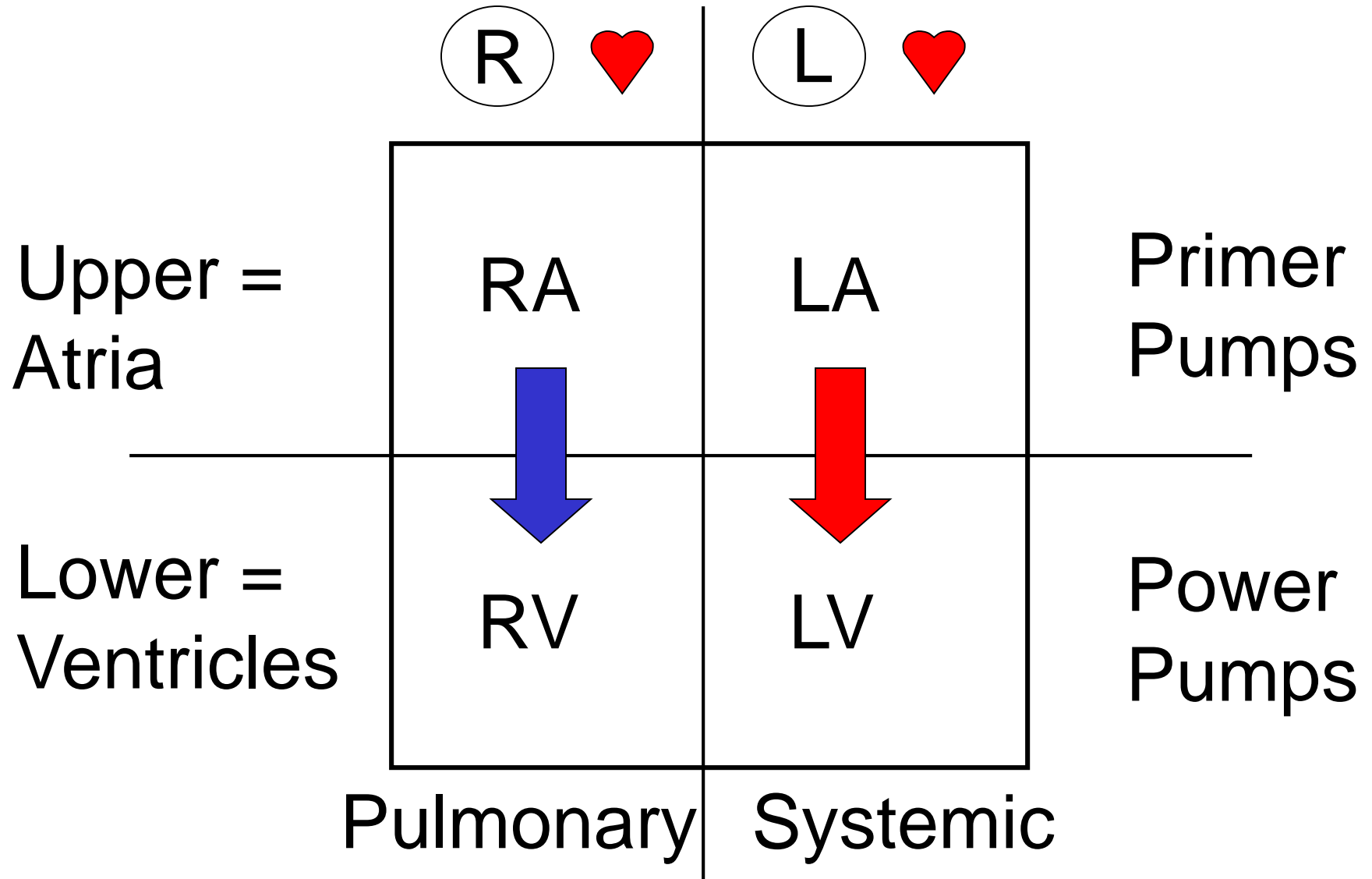


# The Heart

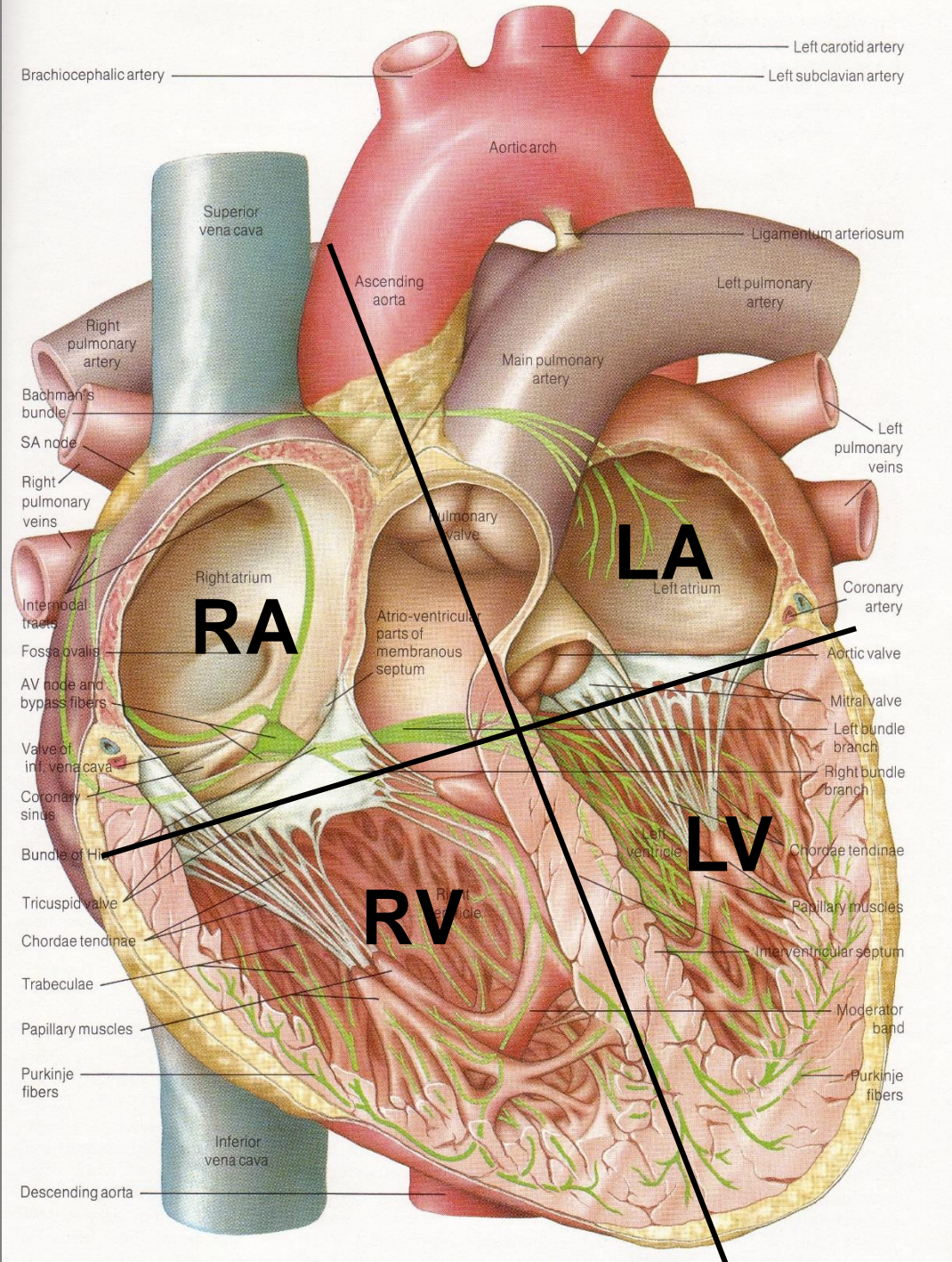
The Living Pump



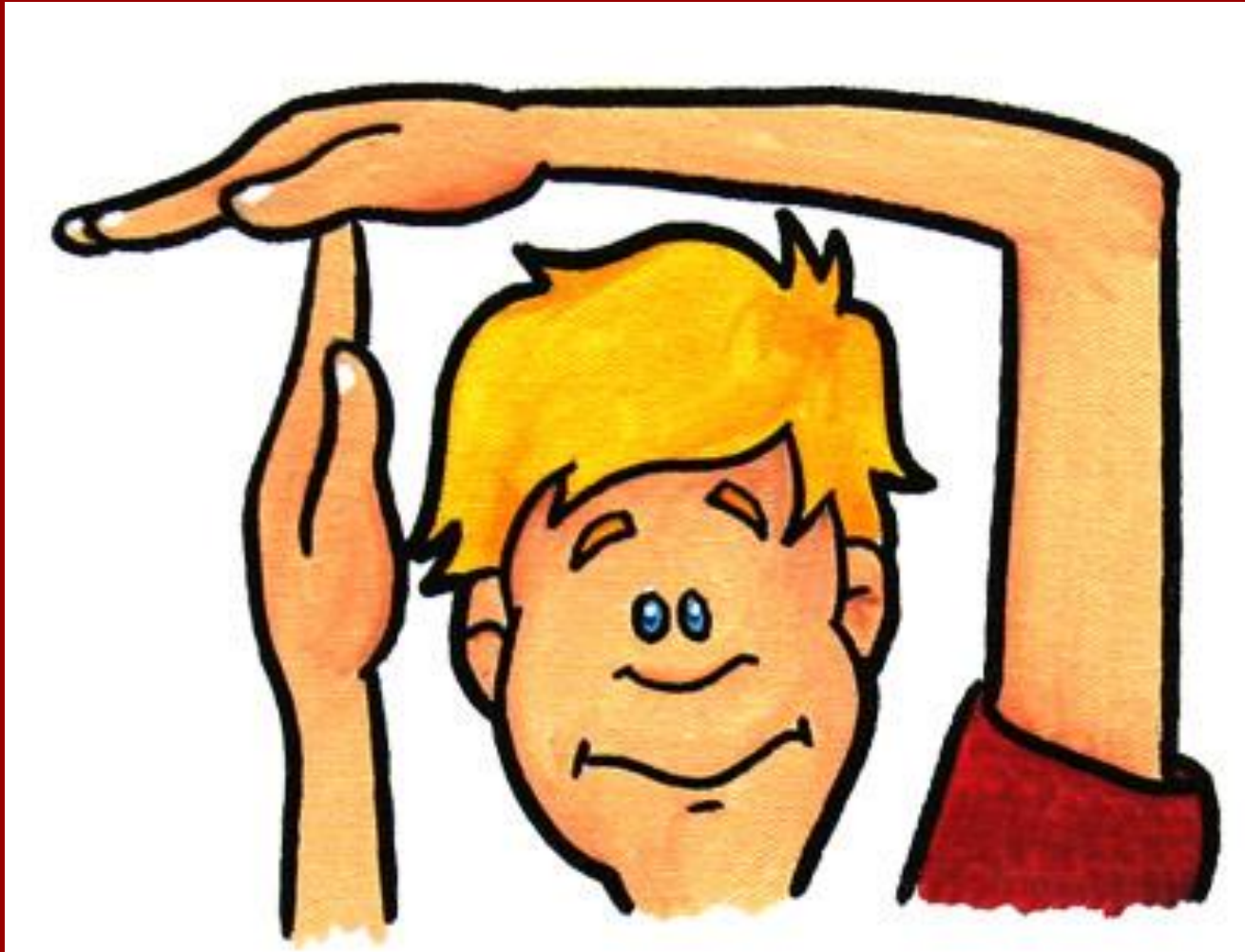
Human  = 4-chambered box?  
2 separate pumps?



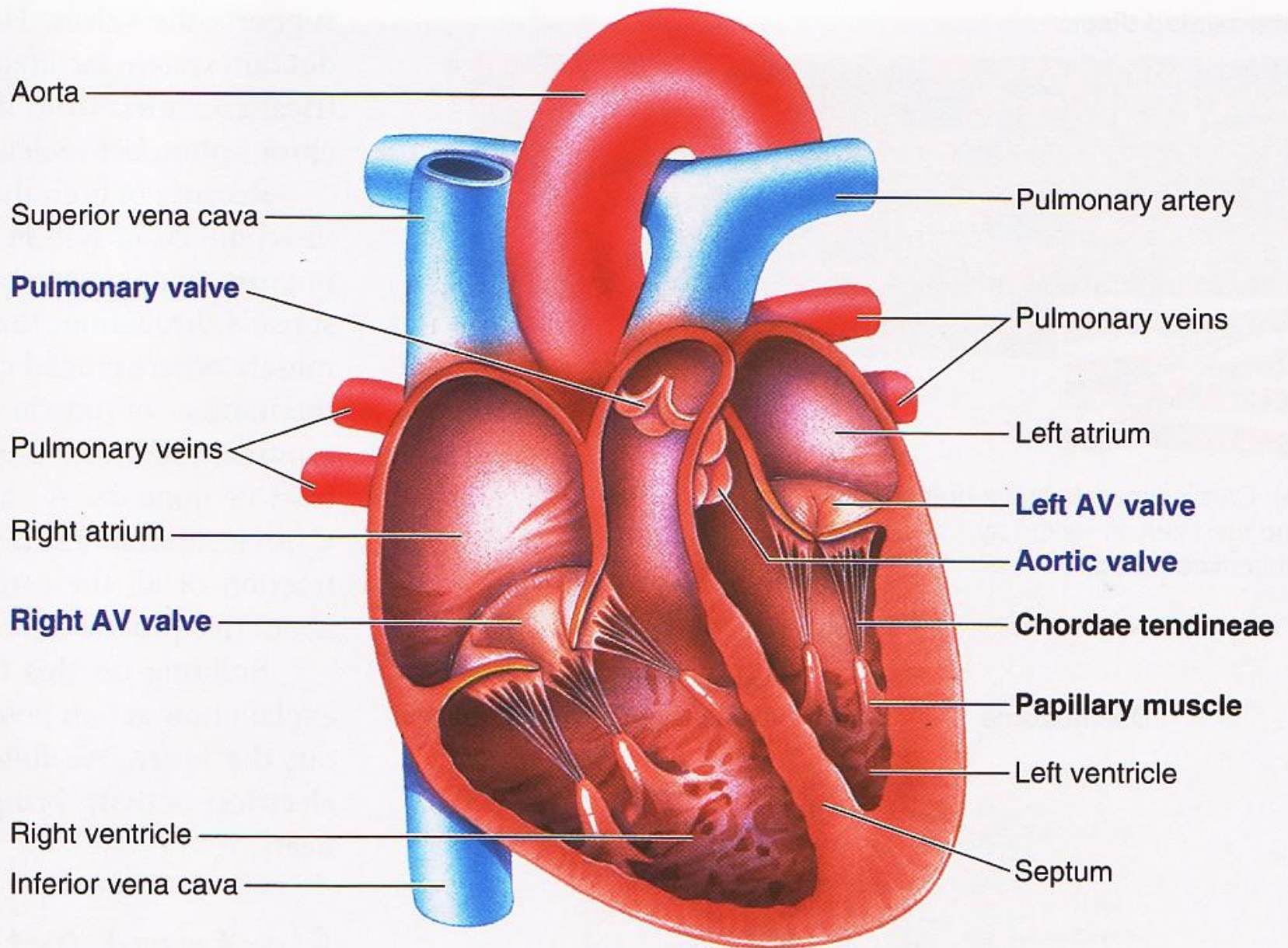




***Time-out for Questions!***



***+ Brief Break!***



**(a)** Location of the heart valves in a longitudinal section of the heart

# Heart Valves Ensure Unidirectional Blood Flow!



Right AV valve



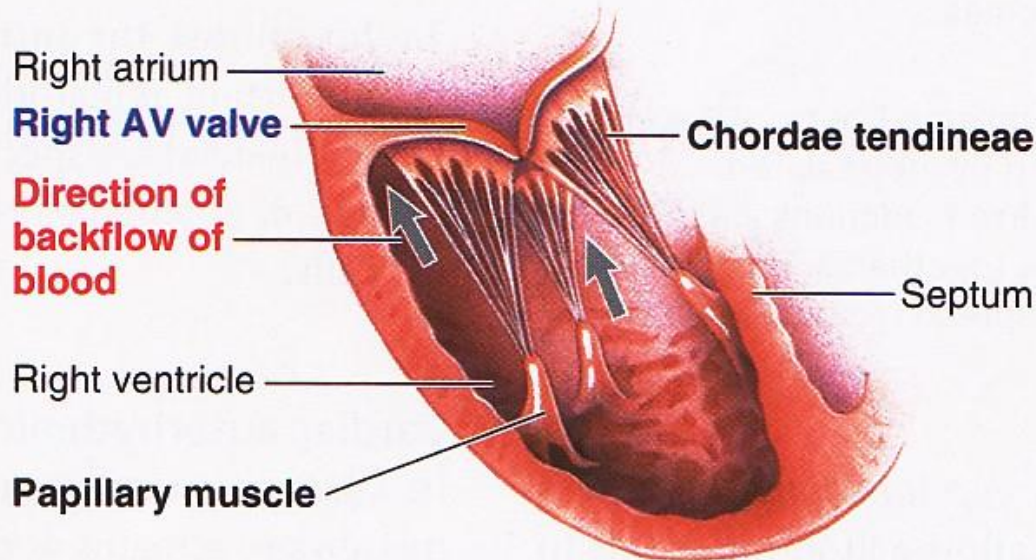
Left AV valve

Mom's valve!



Aortic or pulmonary valve

(b) Heart valves in closed position, viewed from above



(c) Prevention of eversion of AV valves

● **FIGURE 9-4** Heart valves.

Valves must be normal & healthy to work well!



Human ♥ = 4 unique valves?  
2 valve sets?

Semilunar = Half-moon shaped

More  
rigid

1. Pulmonic/Pulmonary
2. Aortic



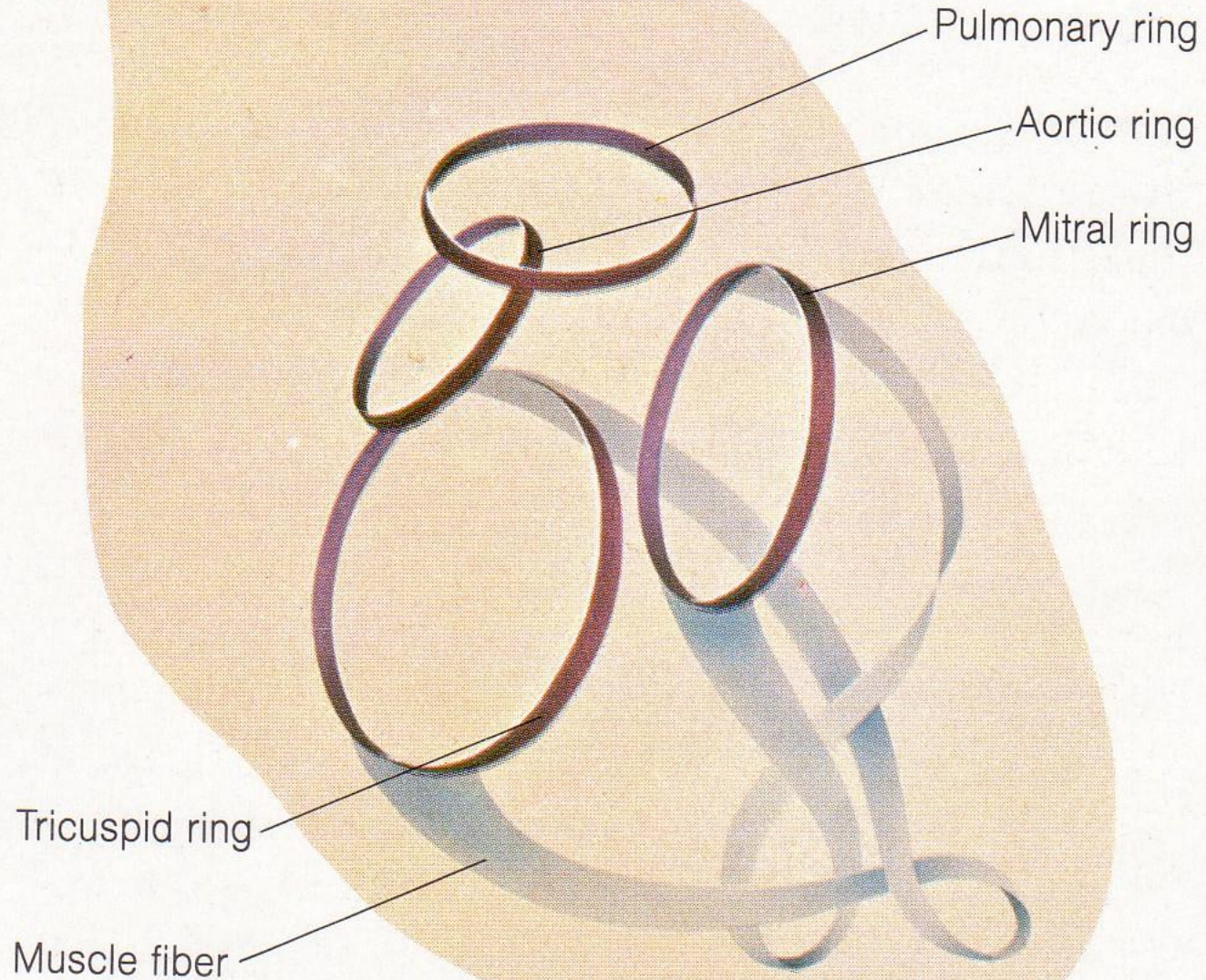
AV = Atrioventricular

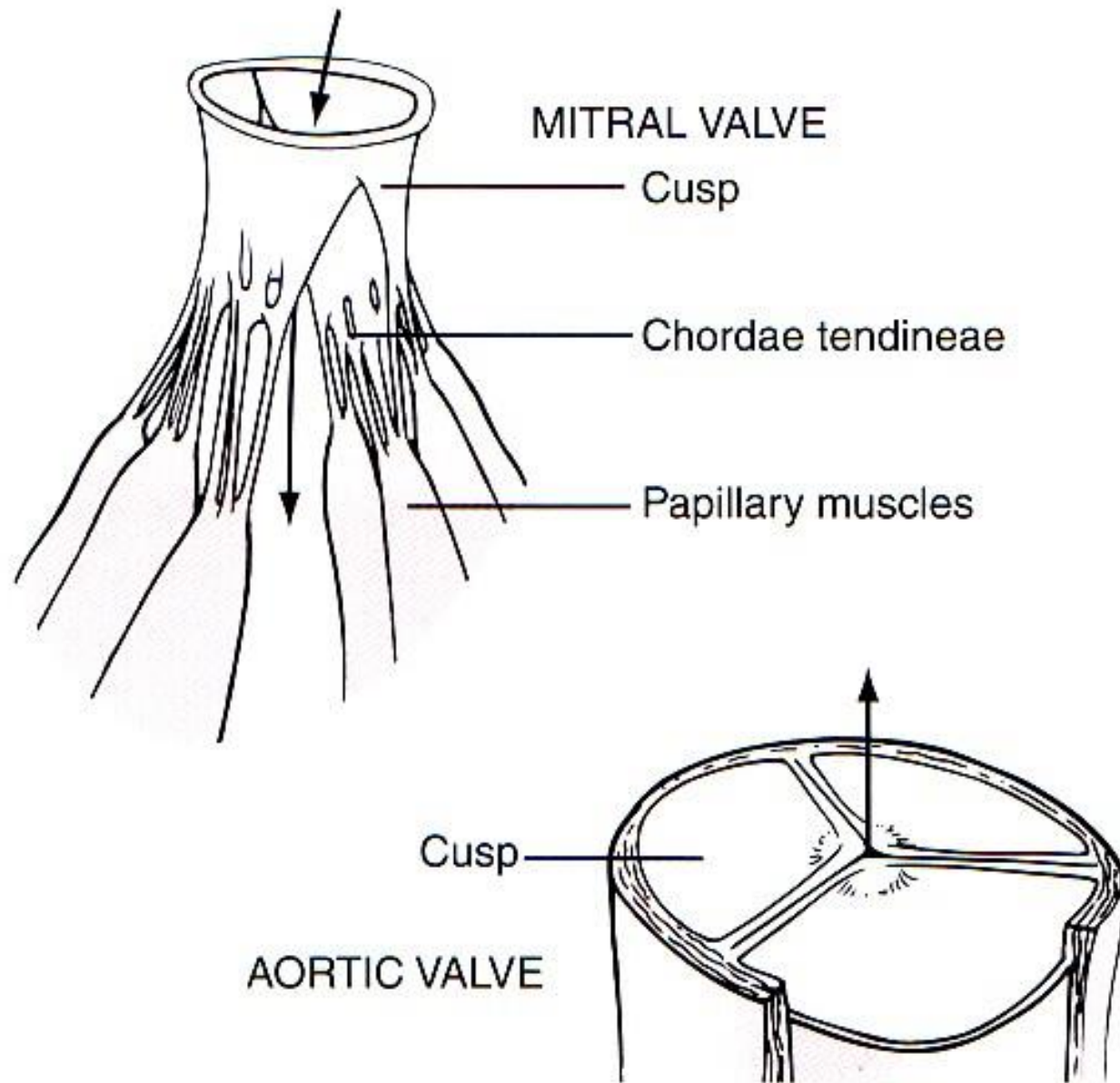
More  
flimsy

3. (R) AV = Tricuspid
4. (L) AV = Mitral/Bicuspid



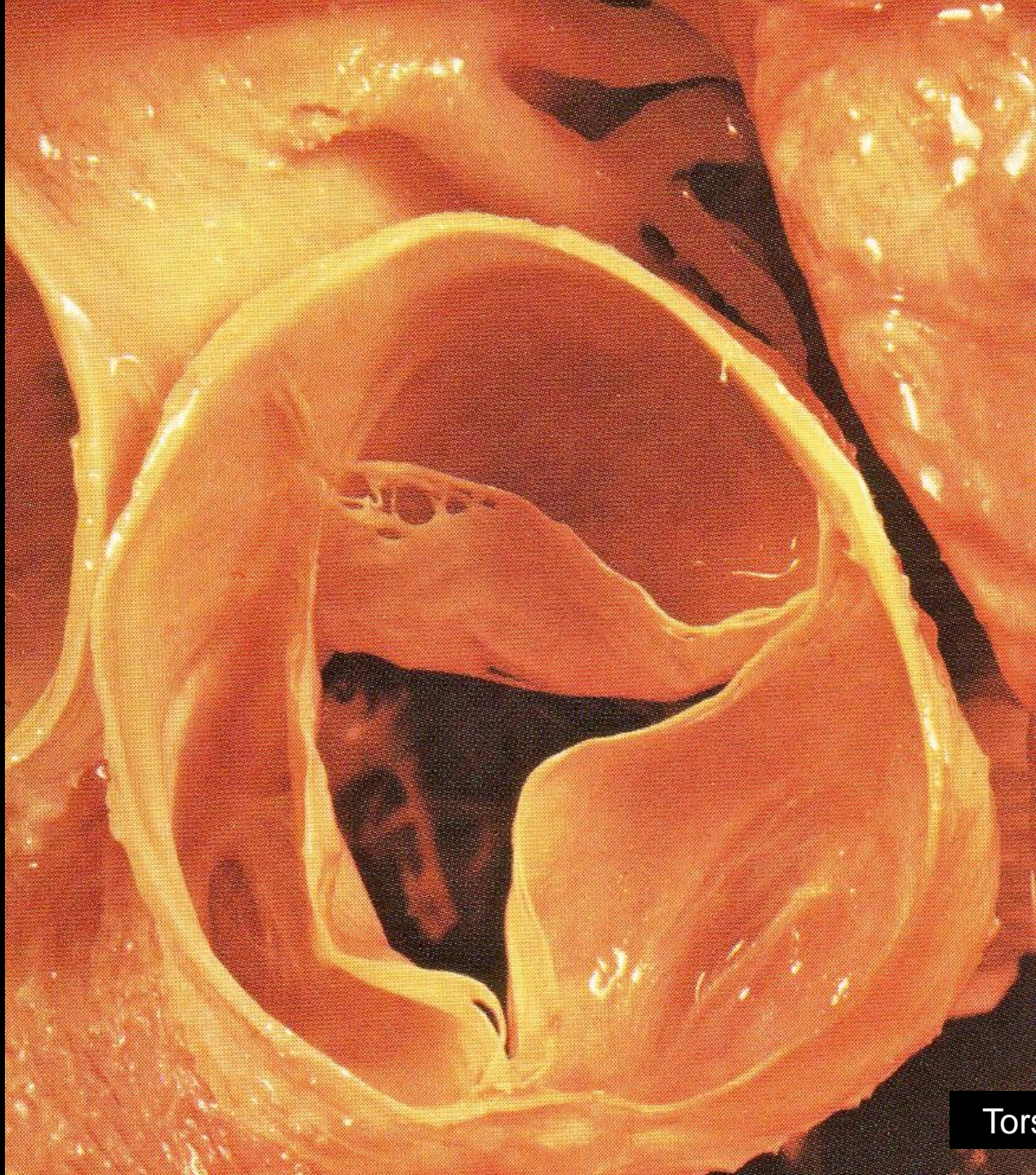
# Heart Valve Orientation & Scaffolding



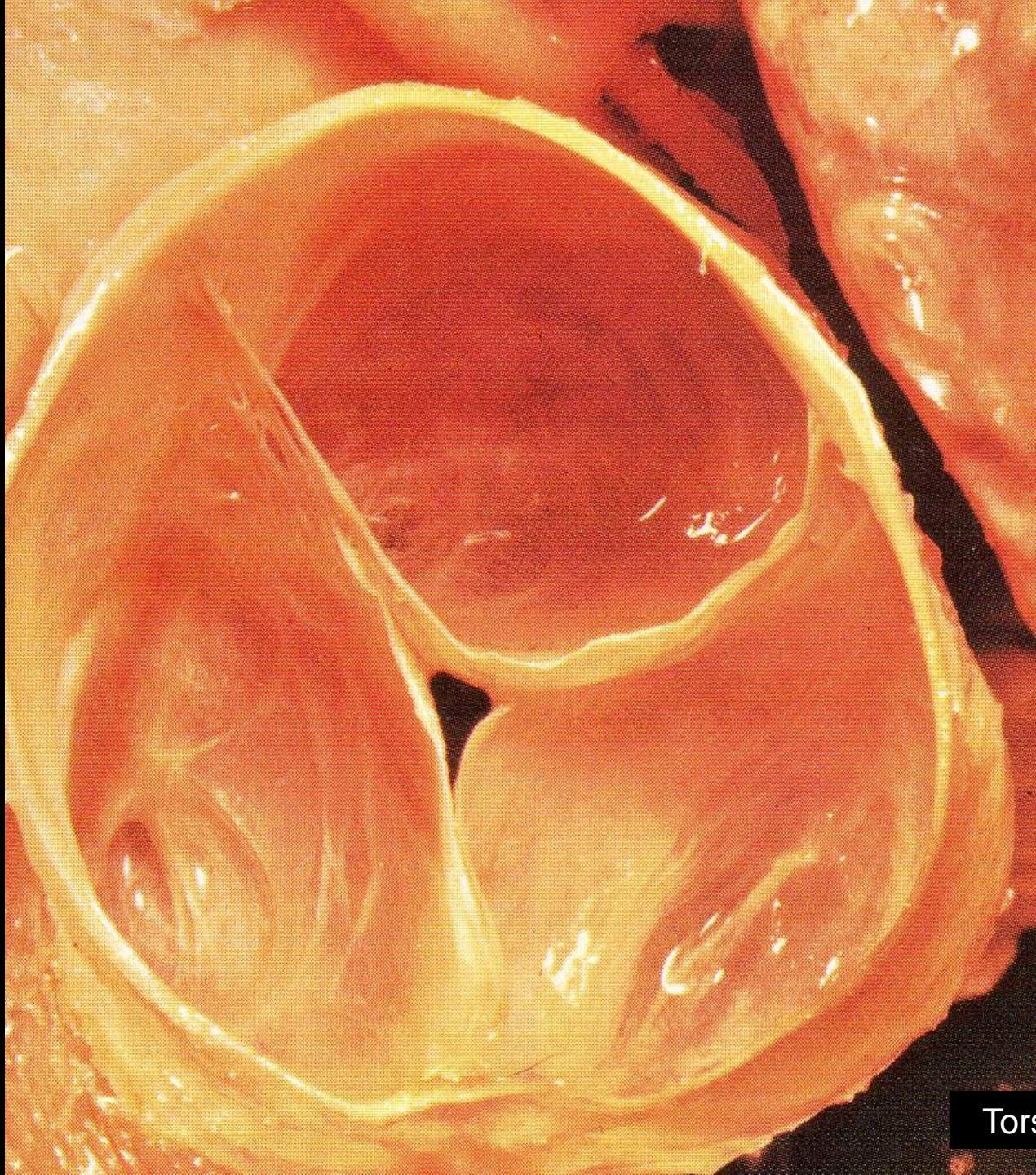


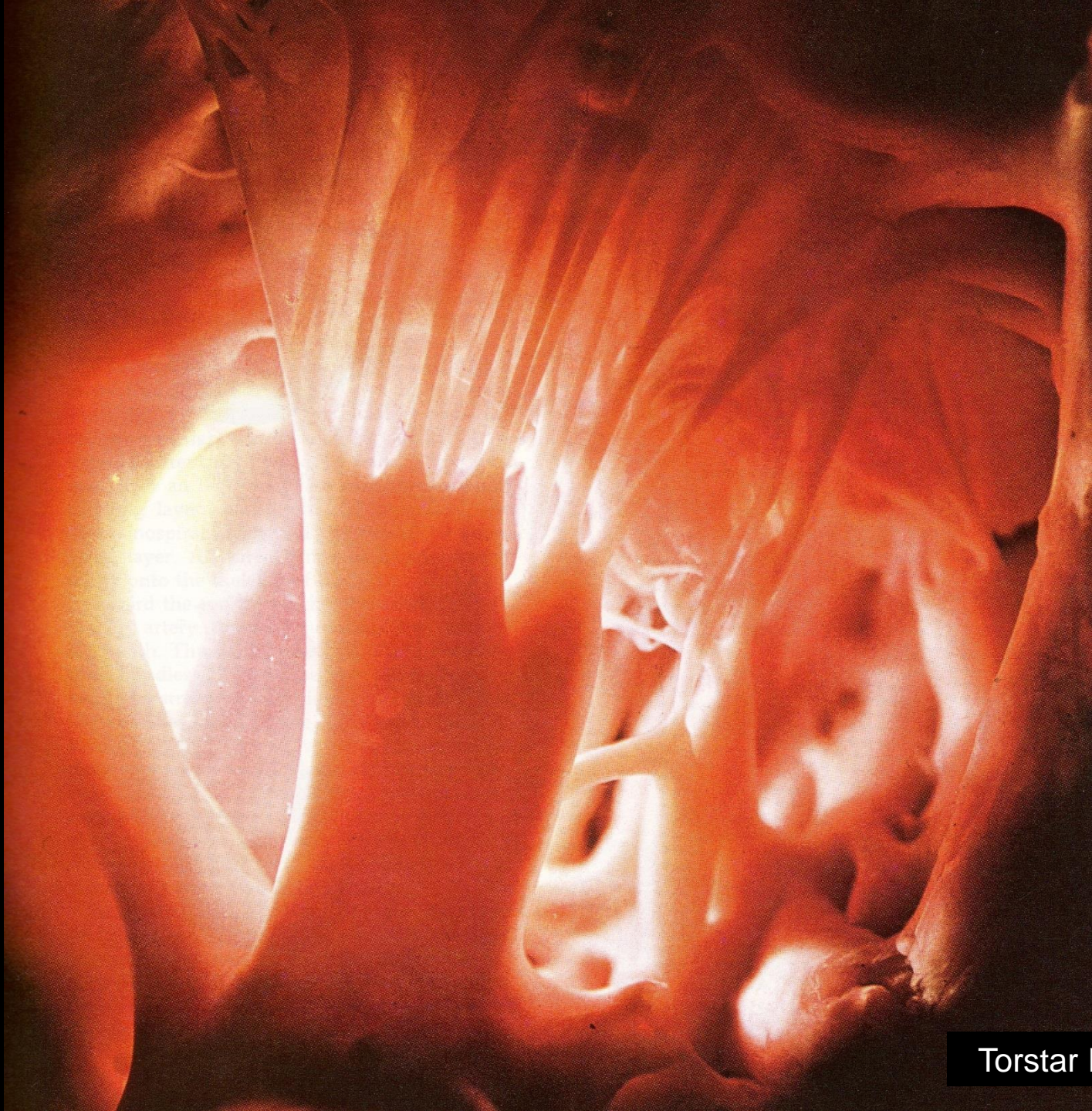
**FIGURE 9-6**

Mitral and aortic valves.

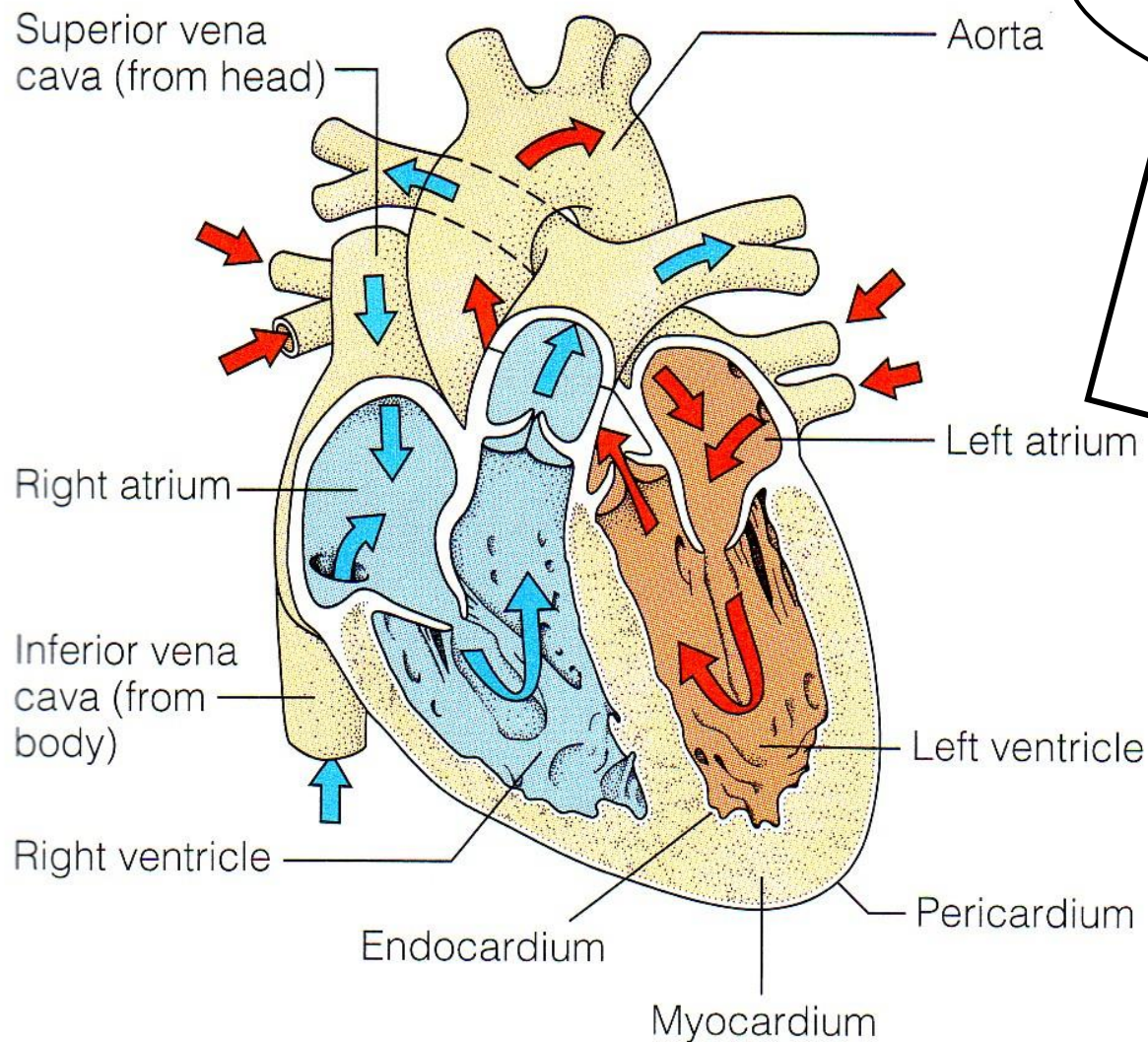




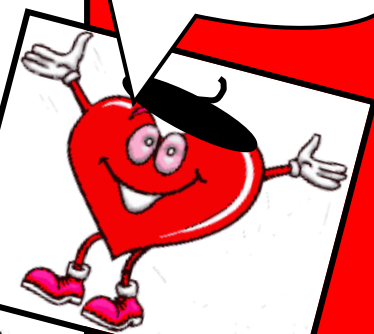




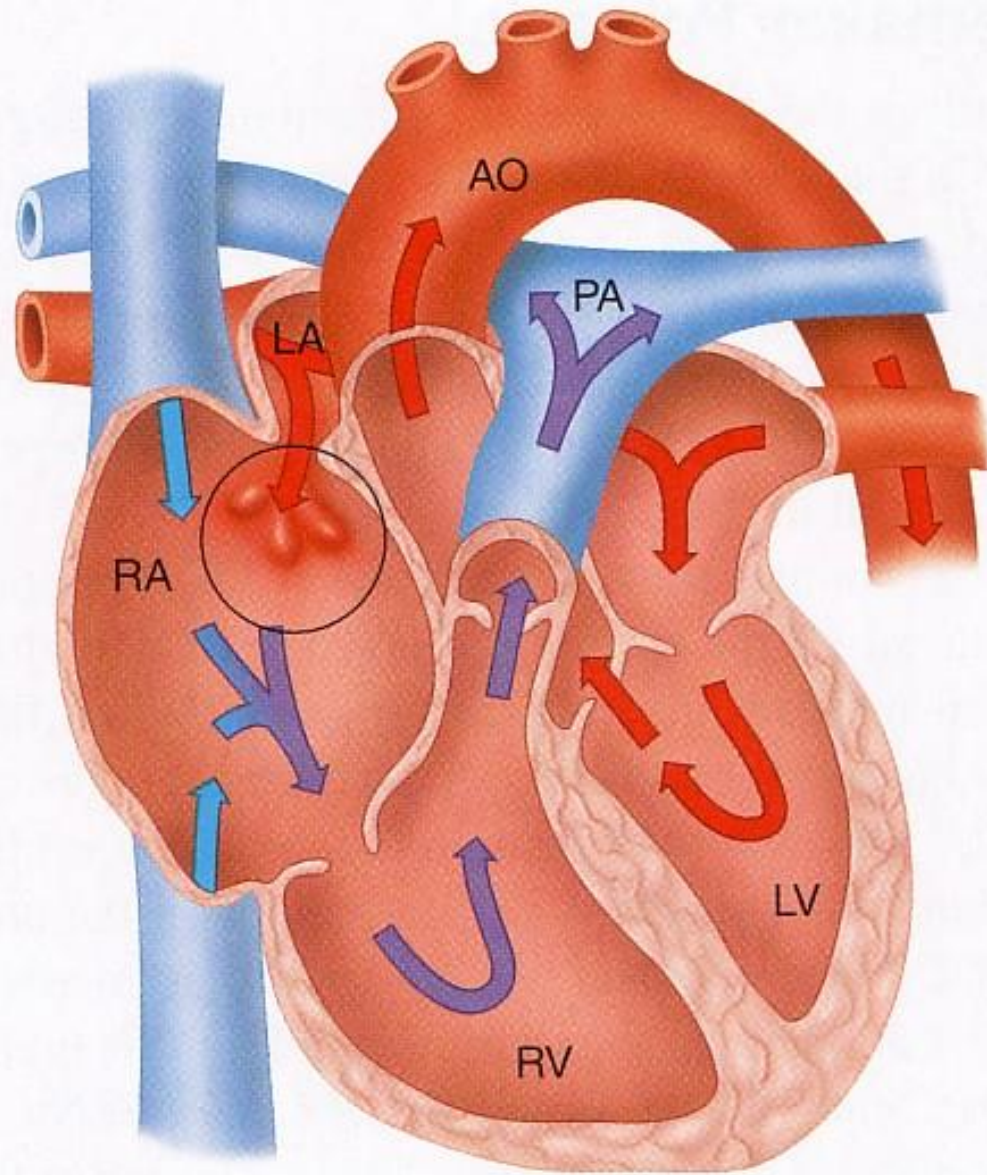
# Veins → Atria → Ventricles → Arteries



VAVA!

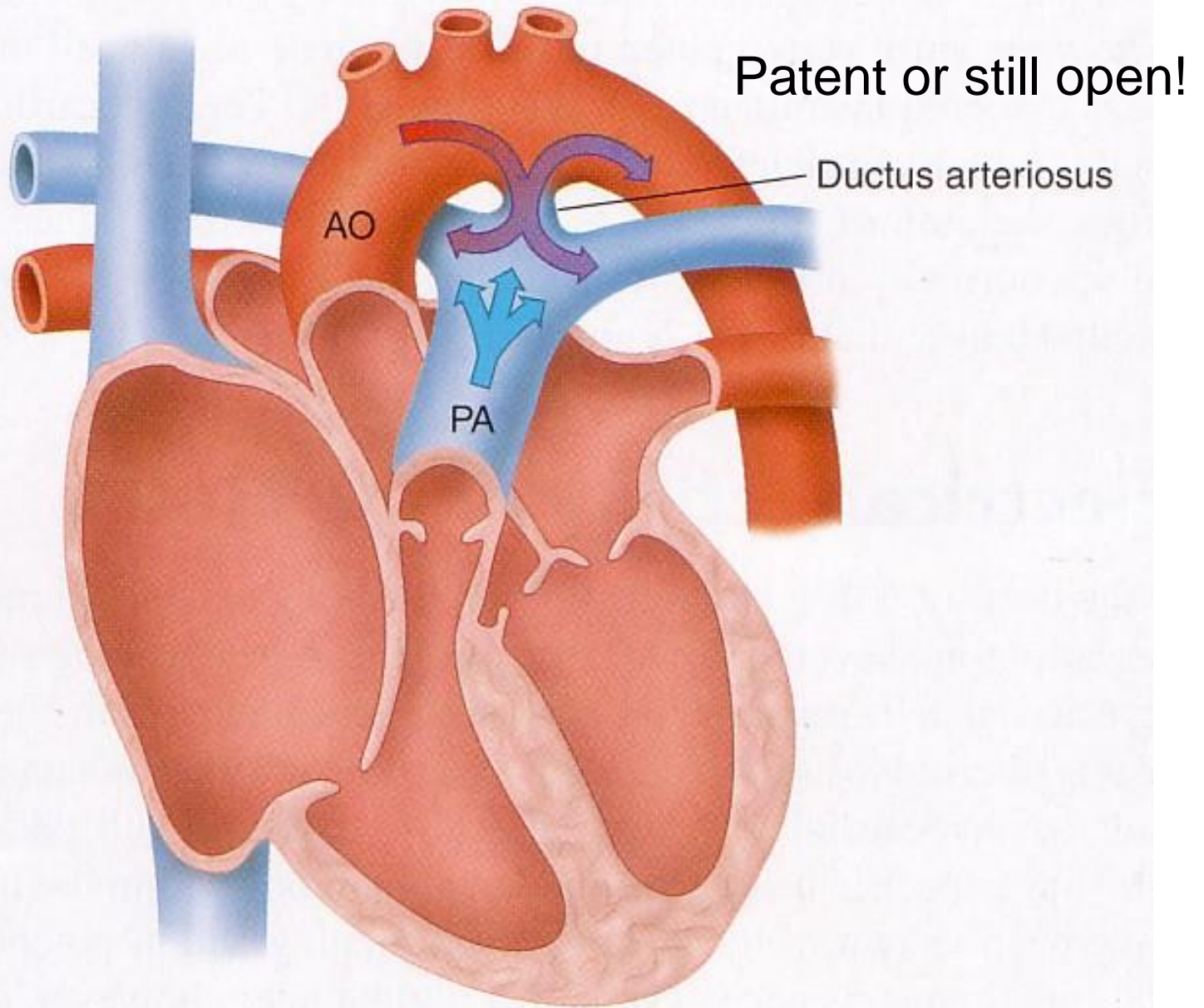


<http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/contraction.html>



SI Fox 2009 fig 13.16 p 419

Septal defect  
in atria



# Class Frequency Distribution Report for BI 121 Midterm U17, Multiple Choice, Part II

Overall

Mean Score: 67.00%

Grade	Percent Score	Raw Score	Frequency	Percent
A	90.00 - 100.00	36.00 - 40.00	1	6.67
B	80.00 - 89.99	32.00 - 35.99	2	13.33
C	70.00 - 79.99	28.00 - 31.99	4	26.67
D	60.00 - 69.99	24.00 - 27.99	1	6.67
F	0.00 - 59.99	0.00 - 23.99	7	46.67

