

BI 121 Lecture 8



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

I. Announcements HR & BP Lab 4 tomorrow + Required Notebook Check. Include Nutrition Analyses. Q?
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

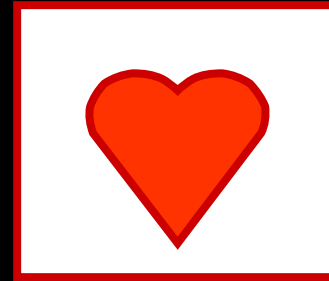
E. ♥ layers, box, chambers, valves, inlets, outlets
LS fig 9-4 p 233, fig 9-2a p 231; DC pp 23-6

F. Normal vs abnormal blood flow thru ♥ & CV system
Billy has a hole in his ♥ SI Fox 2009 fig 13.16, 13.17

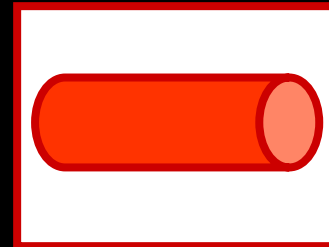


III. Comments on Exam I & Exams Returned

Cardiovascular (CV) = Heart + Vessels + Blood!



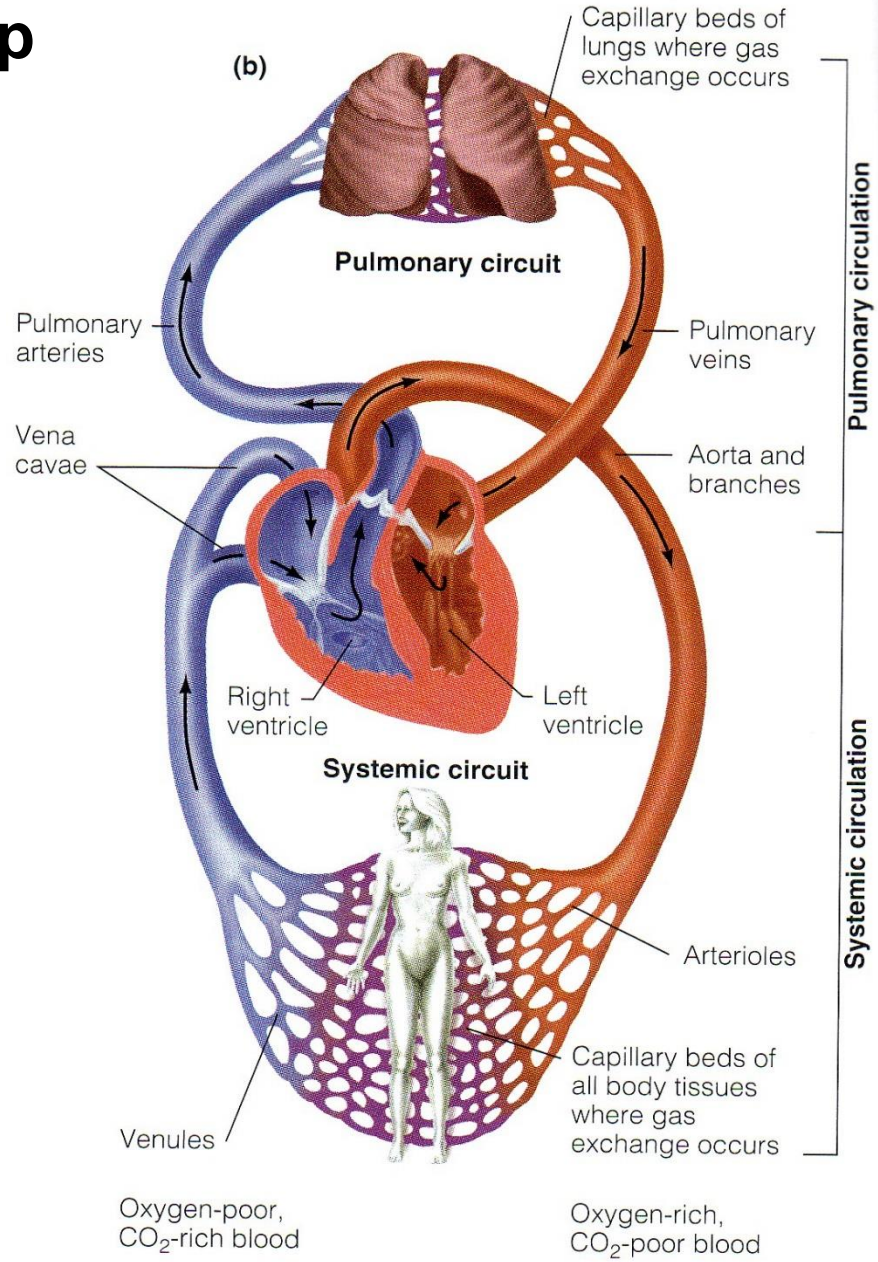
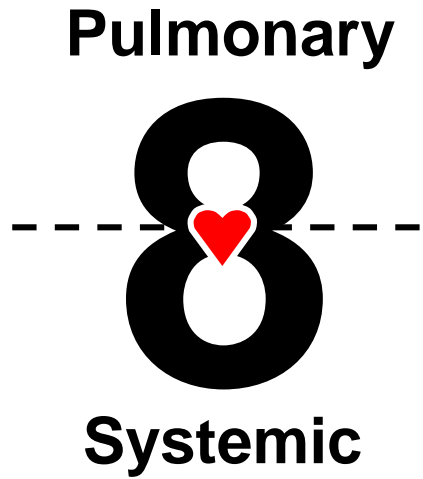
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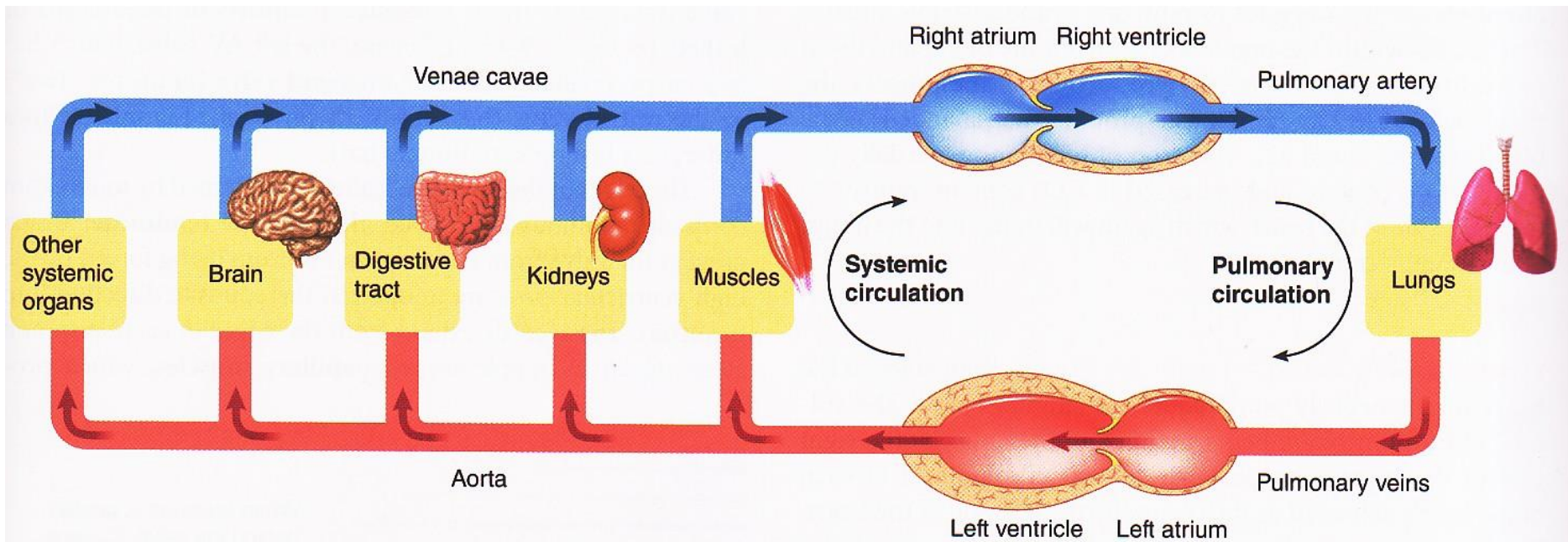
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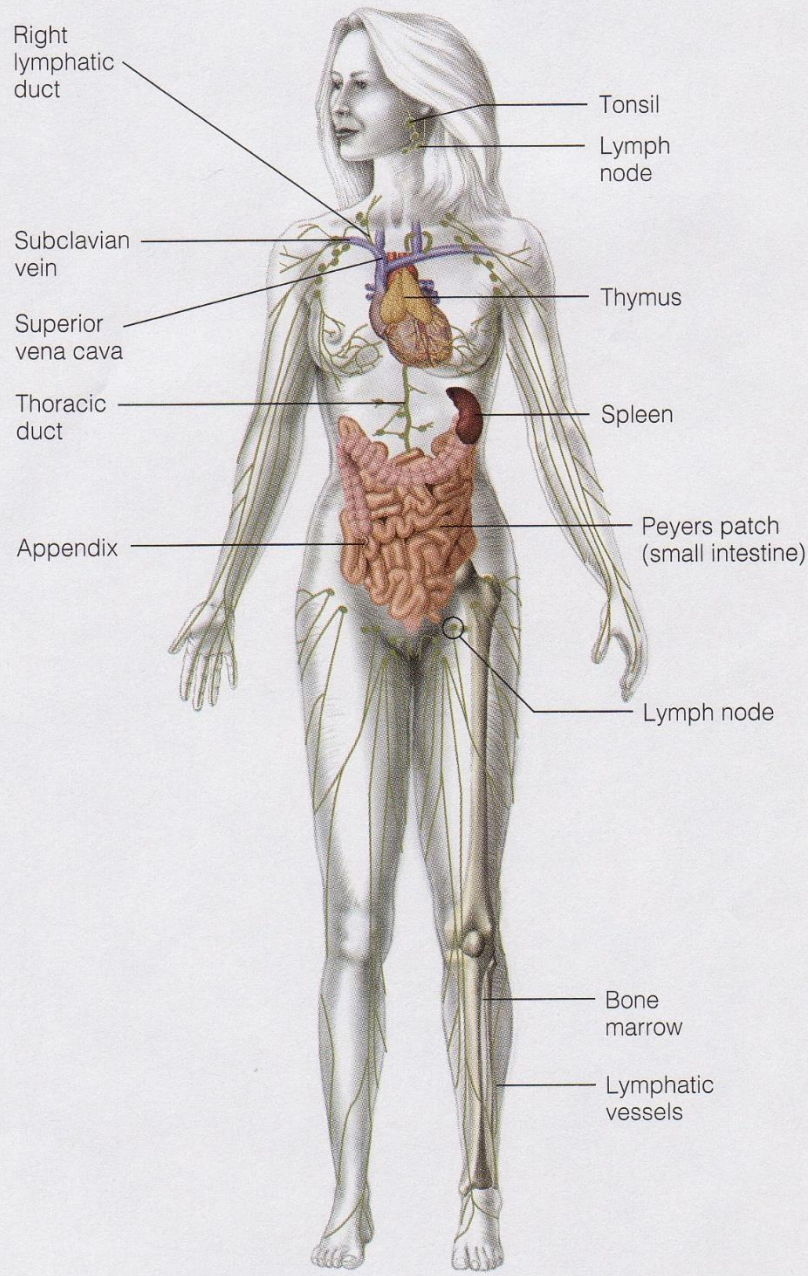


NB: Figure-8 loop



Dual Pump Action & Parallel Circulation



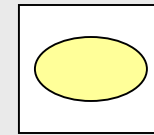


Lymphatic System

1. Lymph Nodes

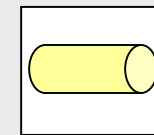
2. Vessels

3. Lymph

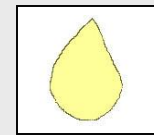


No pump!

+



+



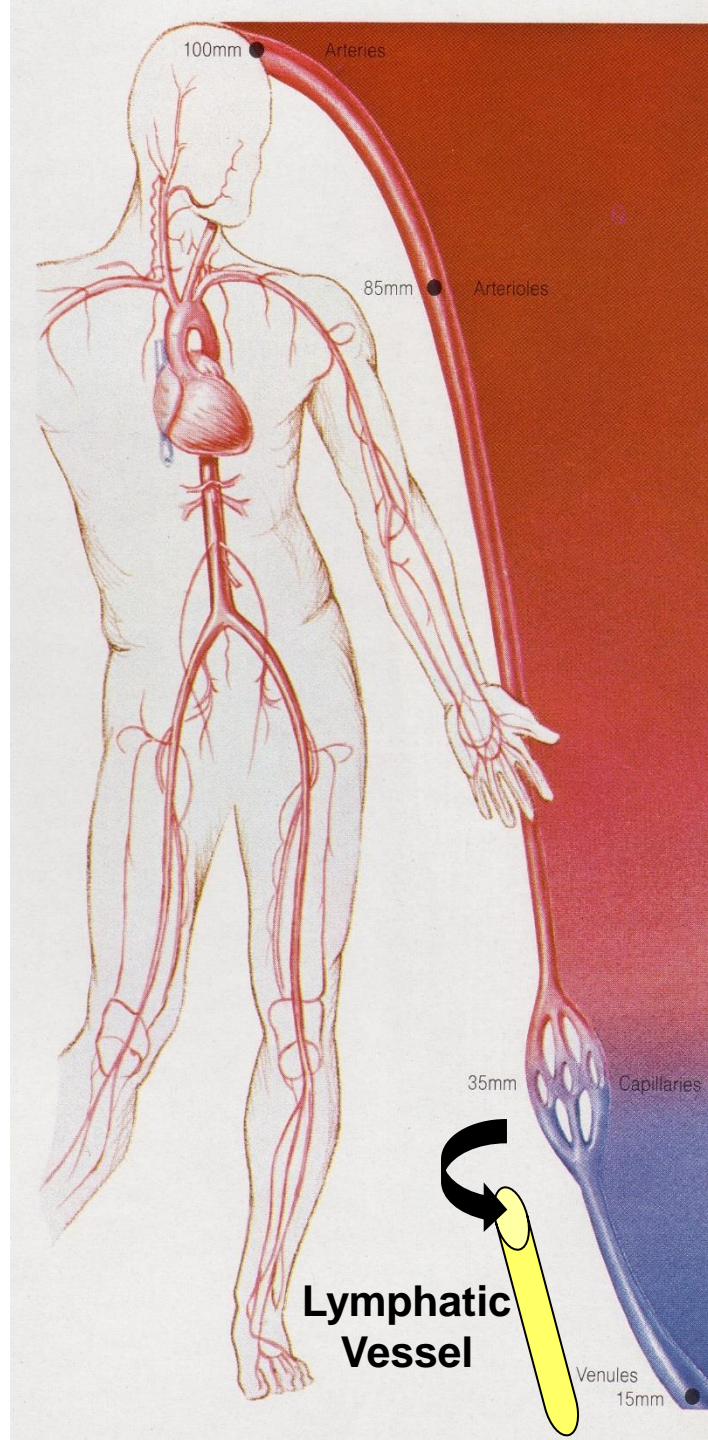
Lymphatic System

**Alternative System of
Circulation
or
Drainage System**

Lymph Vessels || Veins

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

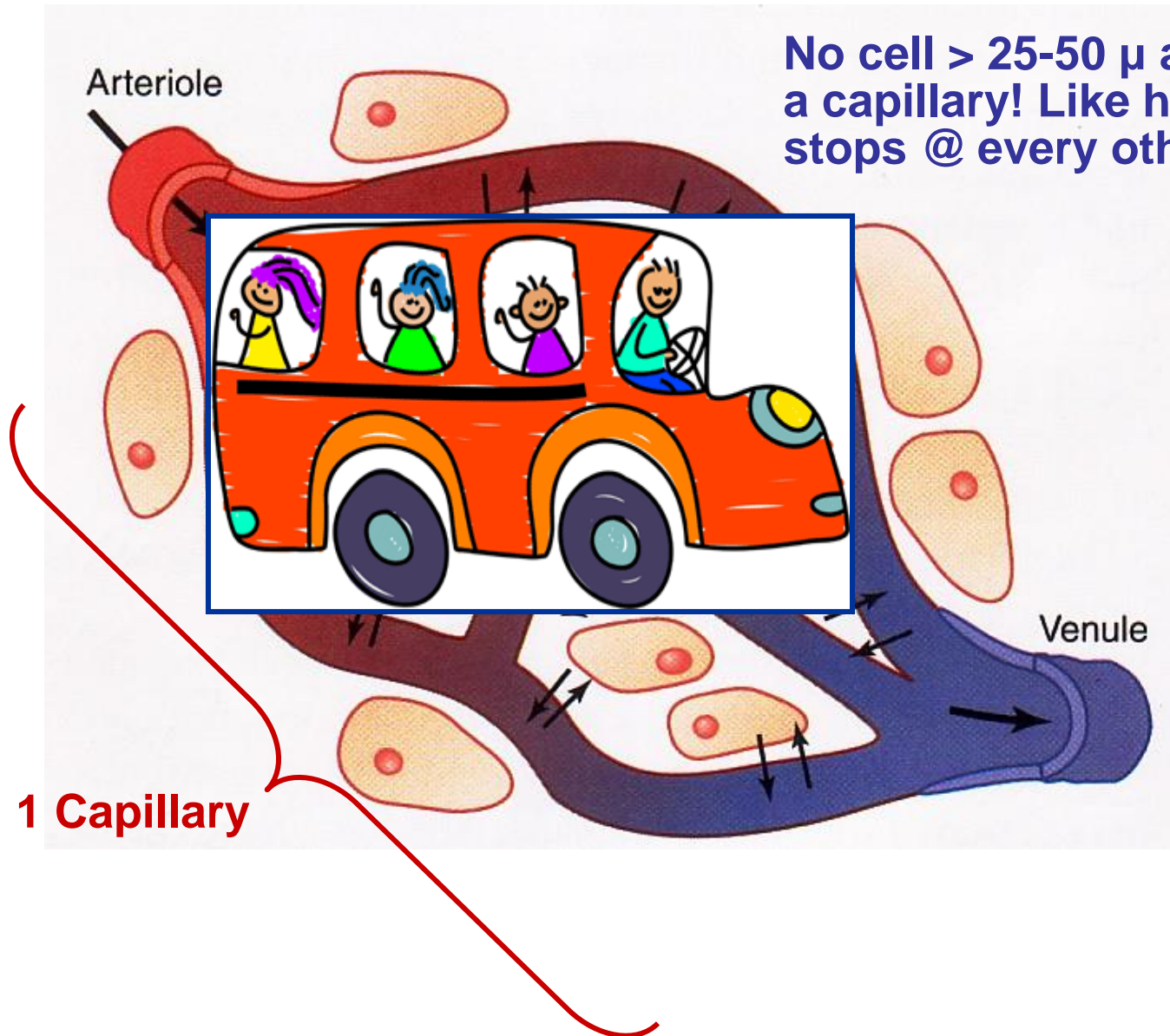




Lymphatics collect run-off & are parallel to venules/small veins!

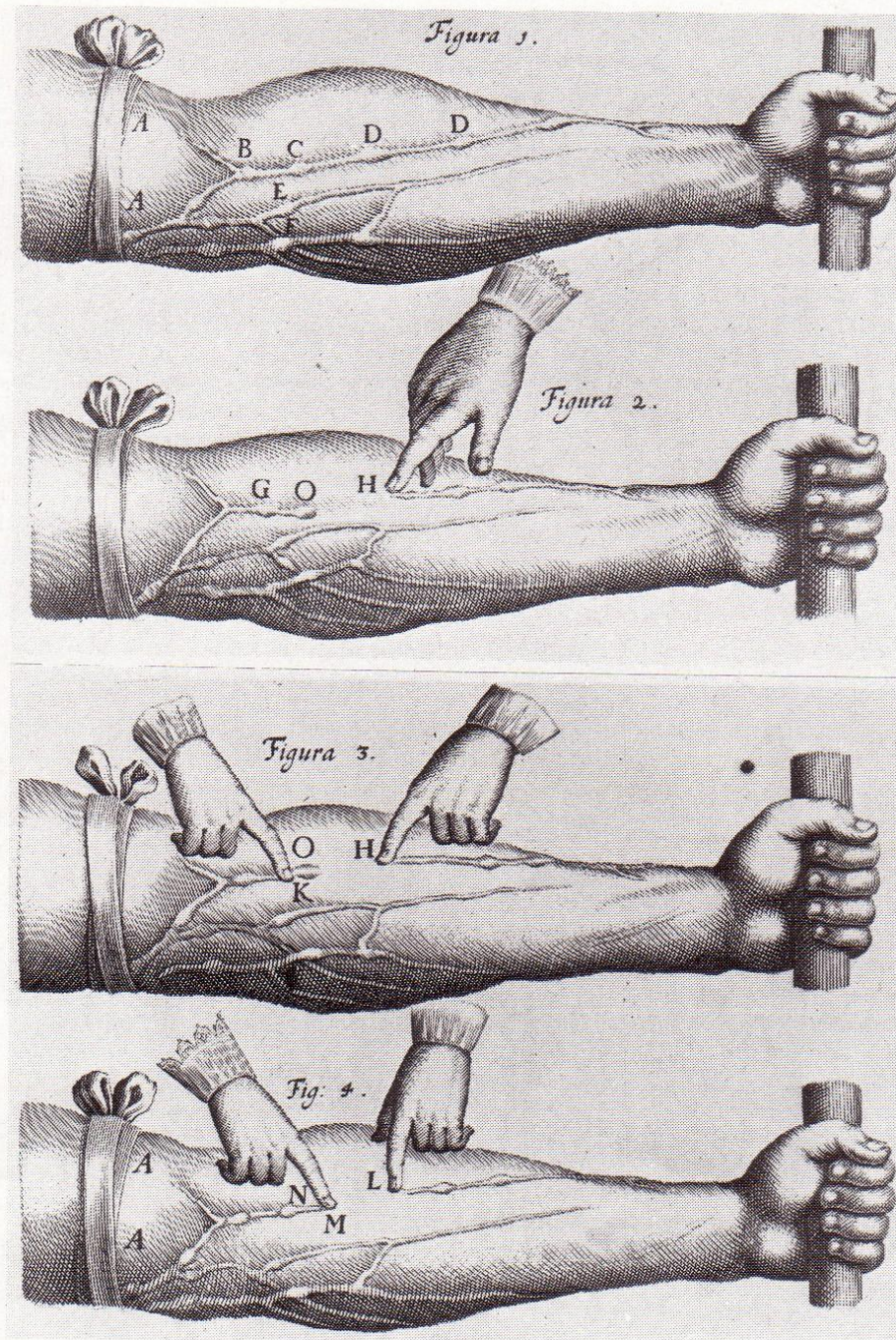


Microcirculation Exchange: 10 Billion Capillaries!

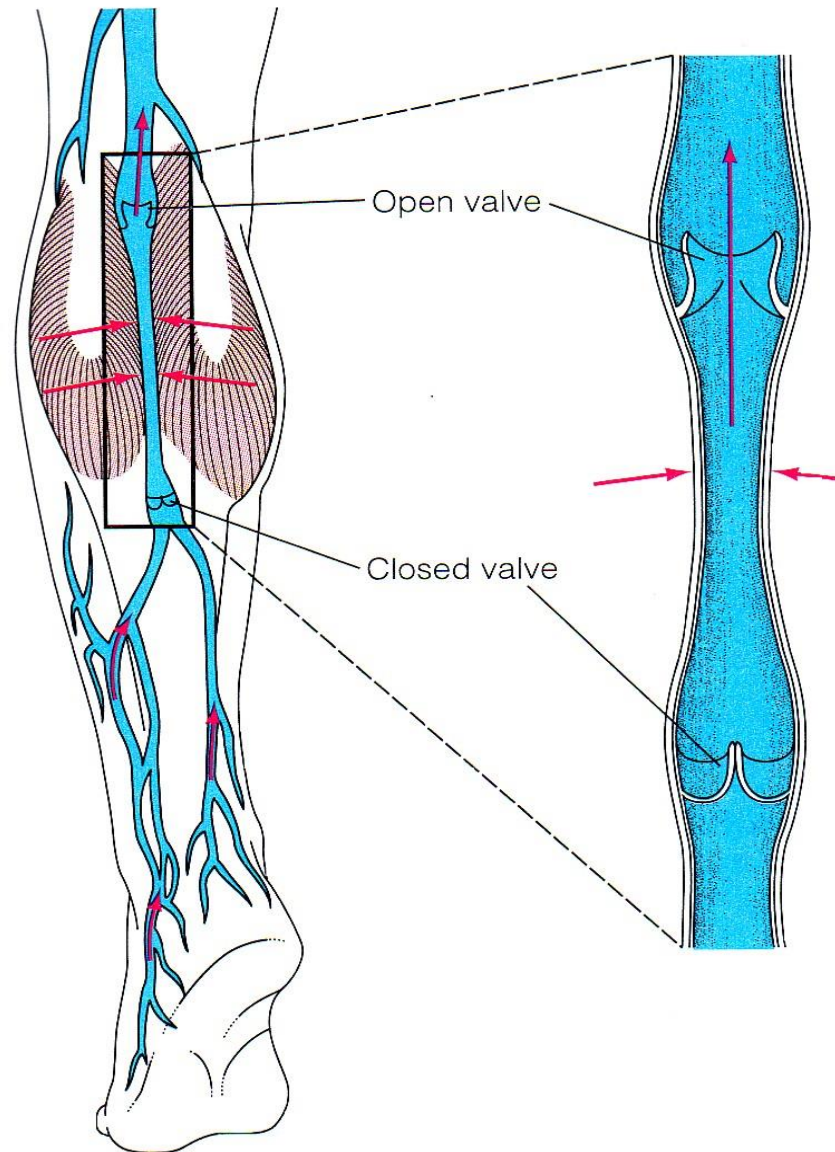


No cell > 25-50 μ away from a capillary! Like having bus stops @ every other block!

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



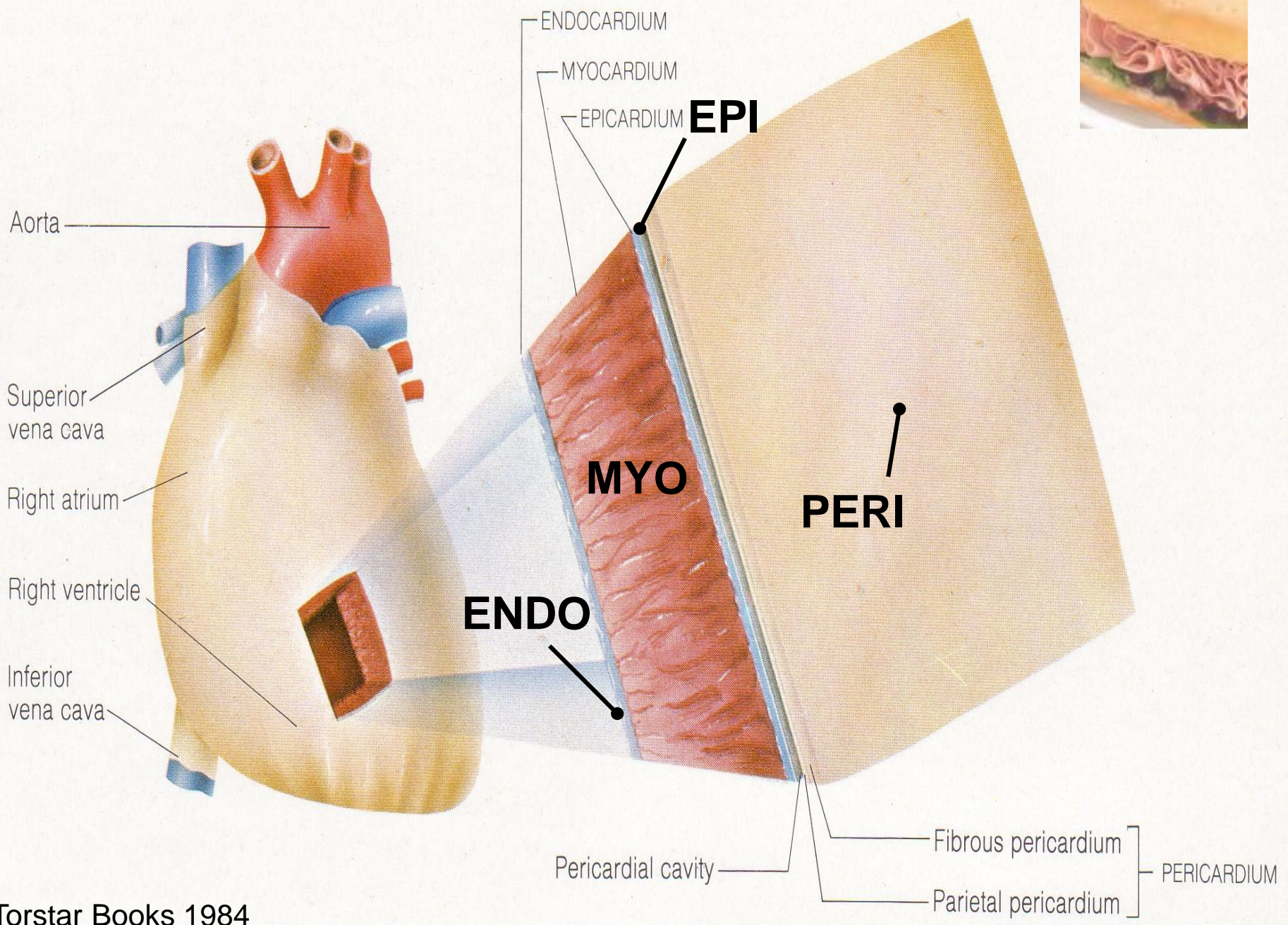
Skeletal Muscle Pump



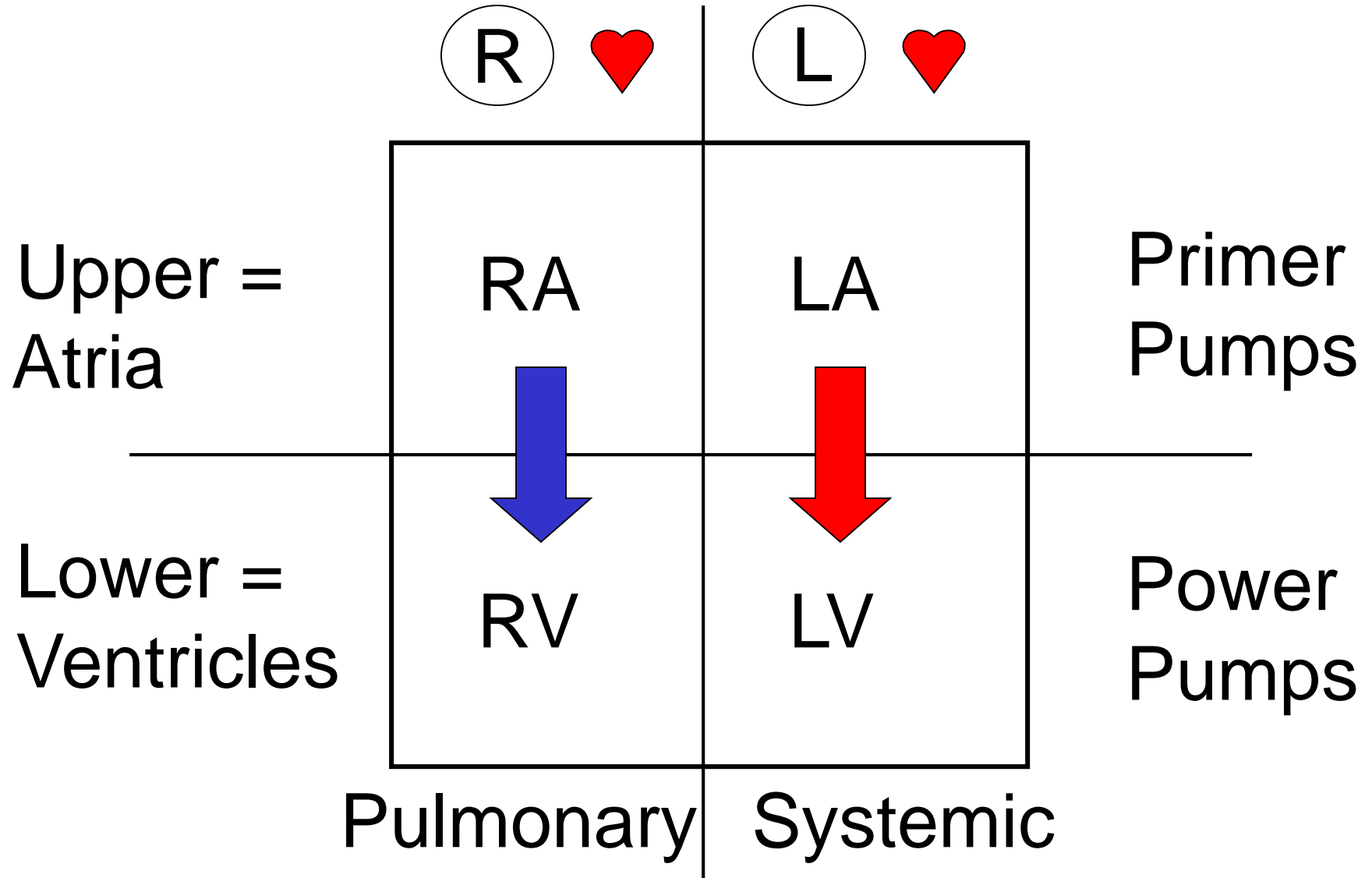


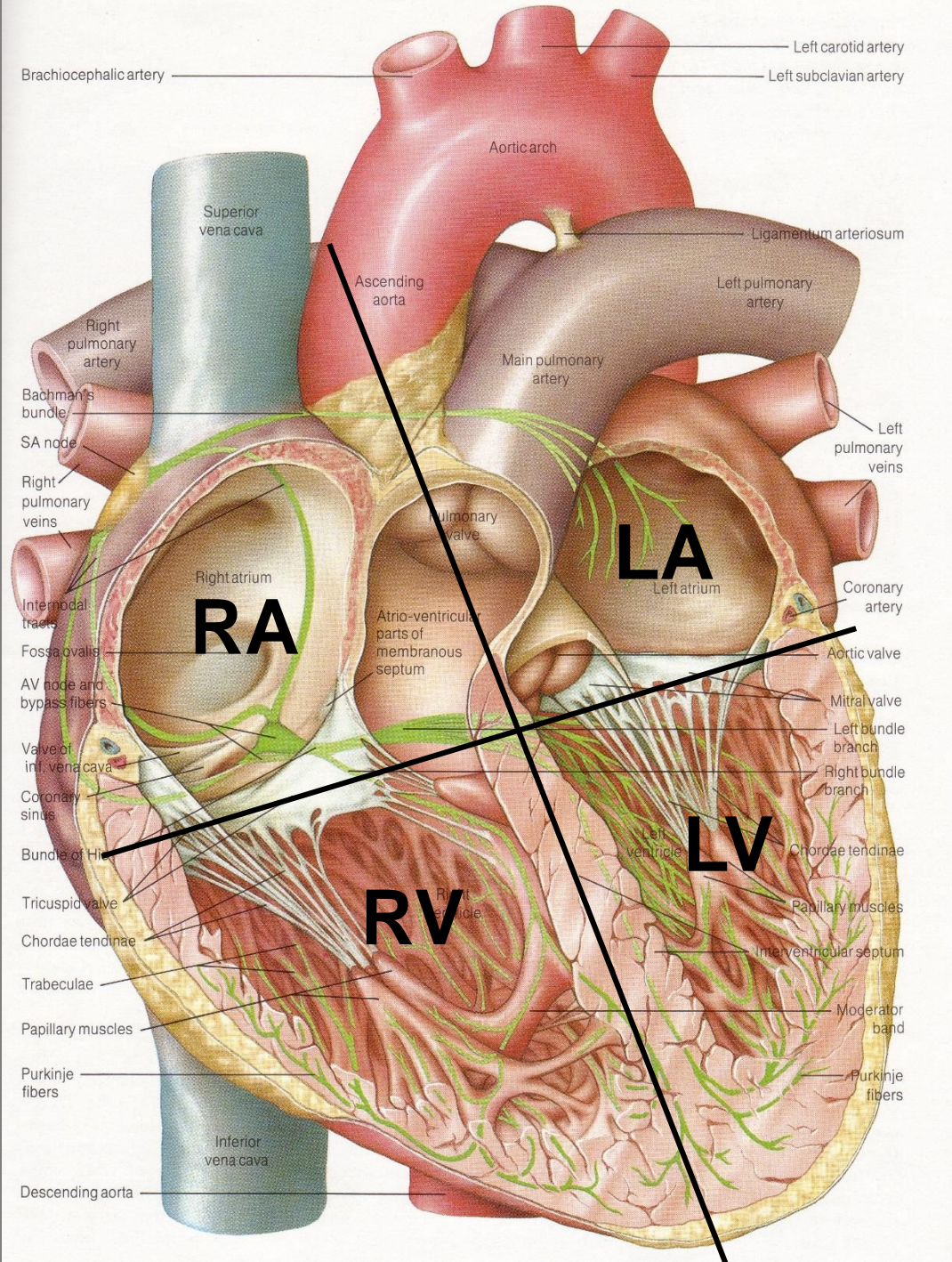
The Heart

The Living Pump

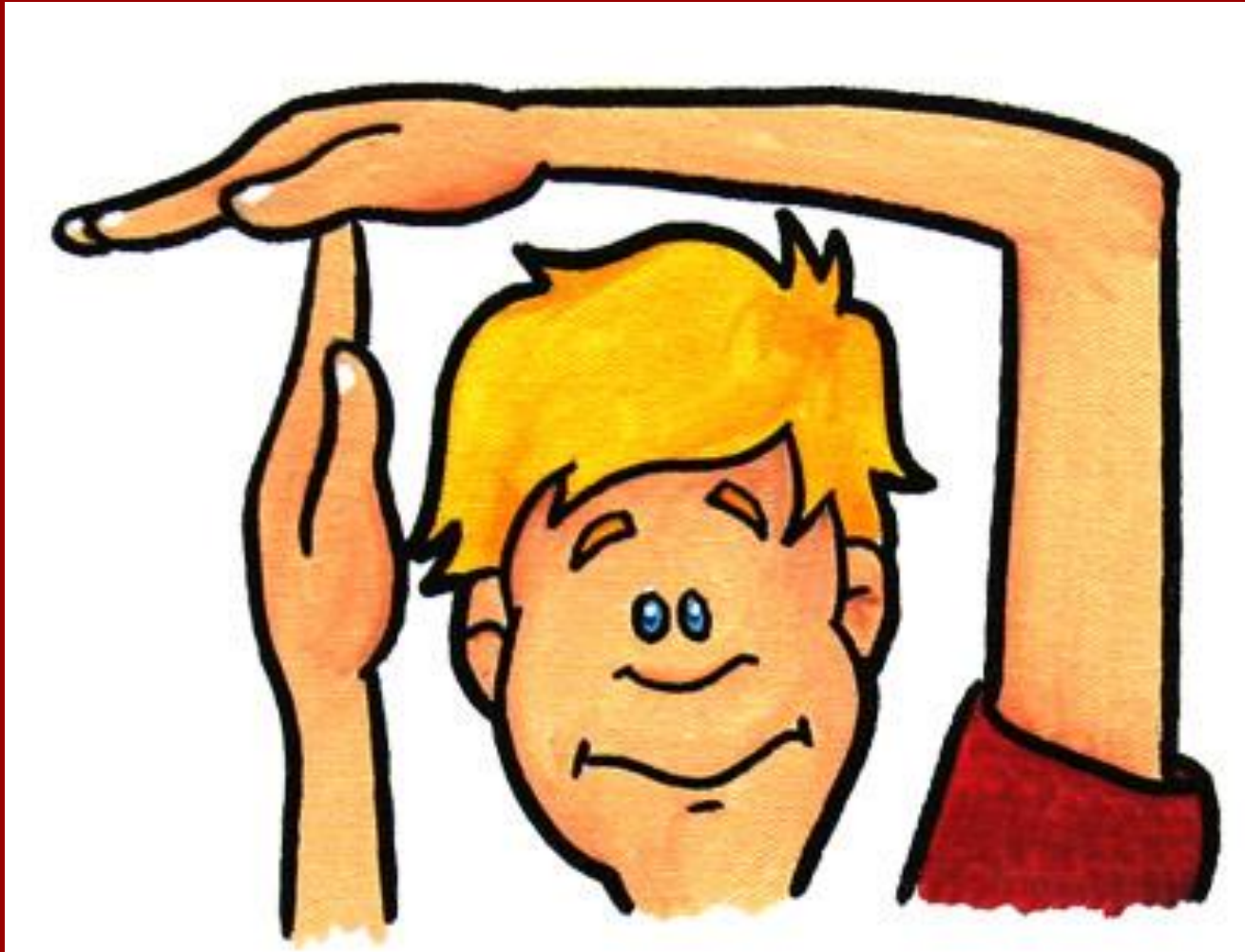


Human  = 4-chambered box?
2 separate pumps?

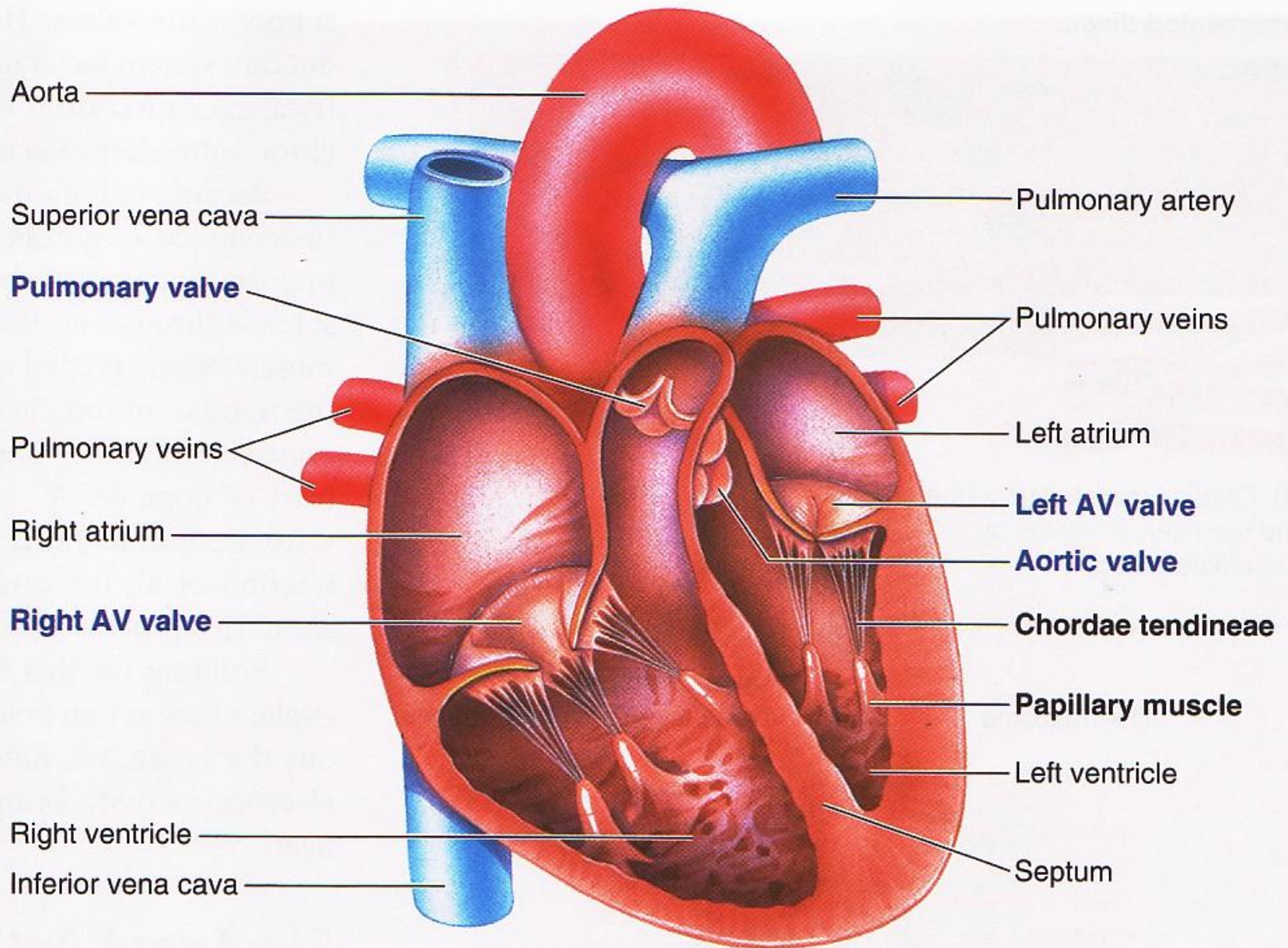




Time-out for Questions!



+ Brief Break!



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

Heart Valves Ensure Unidirectional Blood Flow!



Right AV valve



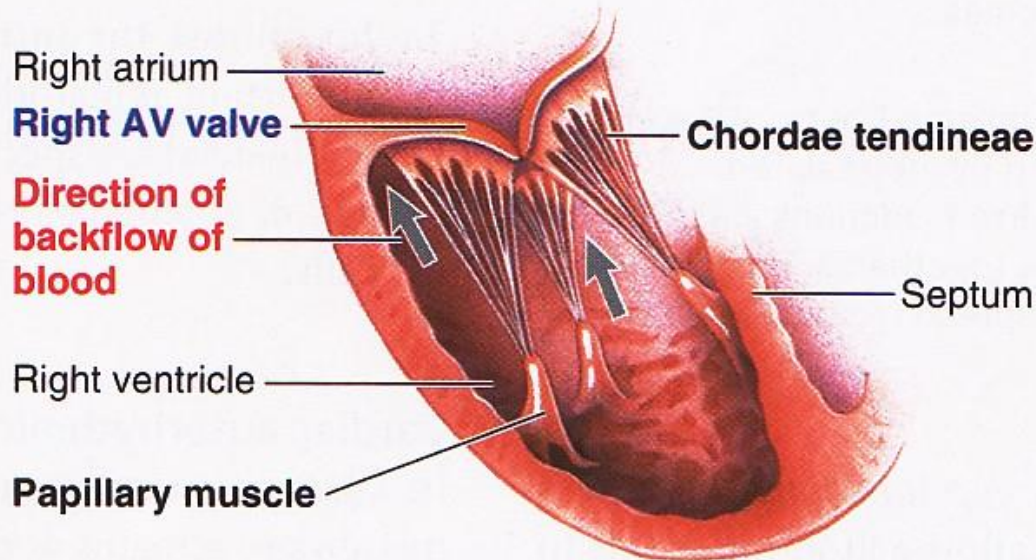
Left AV valve

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.



Human ♥ = 4 unique valves?
2 valve sets?

Semilunar = Half-moon shaped

More
rigid

1. Pulmonic/Pulmonary
2. Aortic



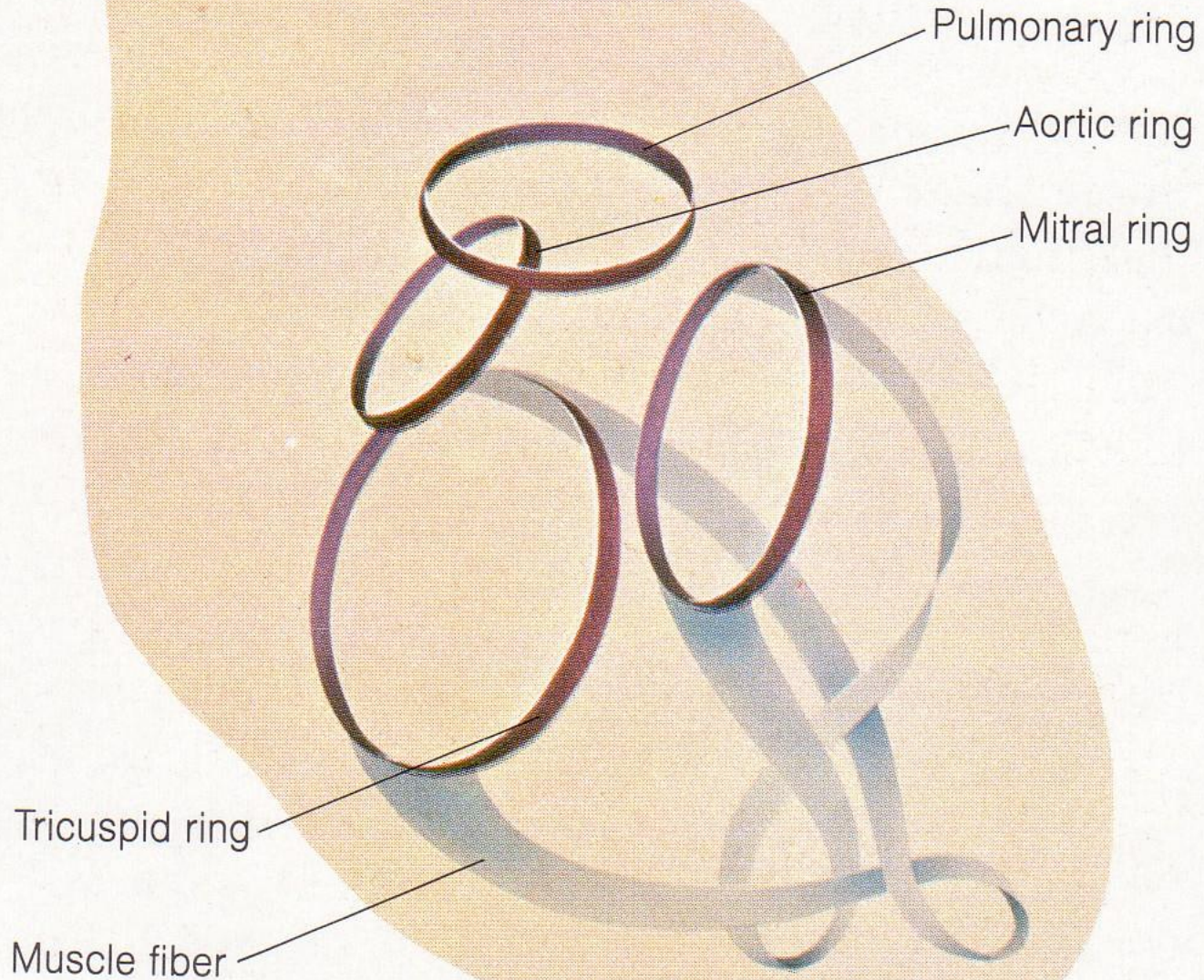
AV = Atrioventricular

More
flimsy

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



Heart Valve Orientation & Scaffolding



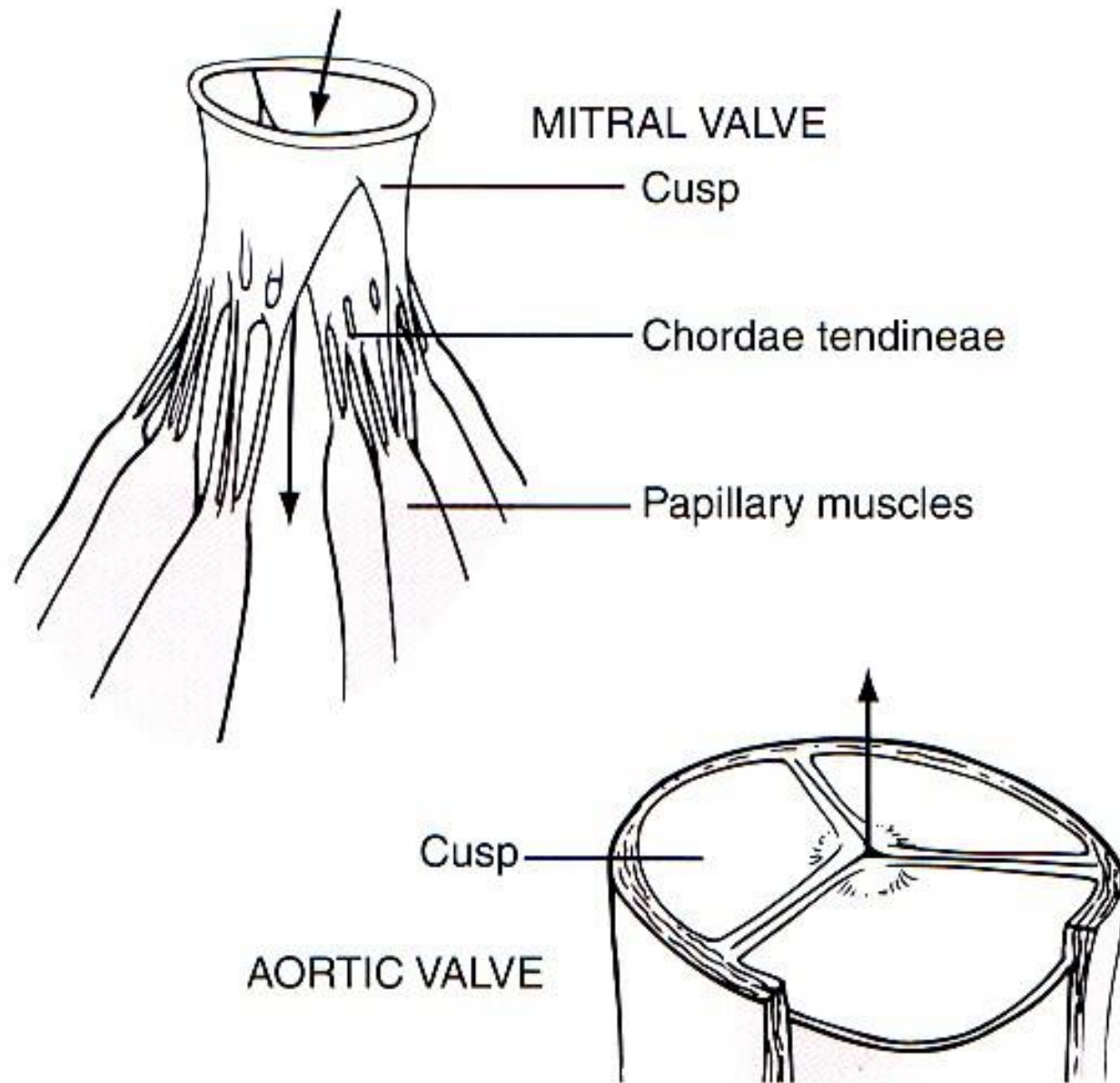
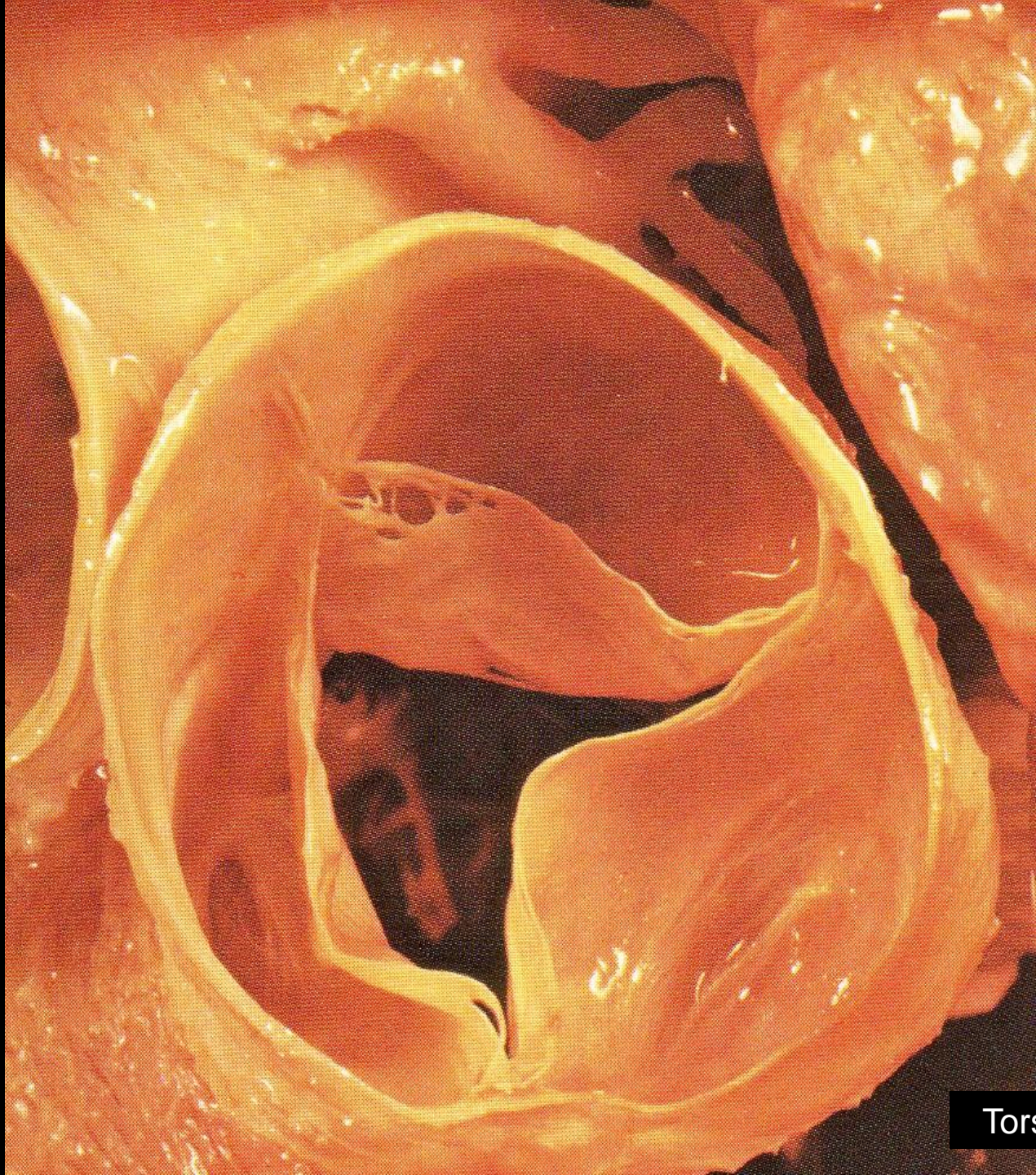
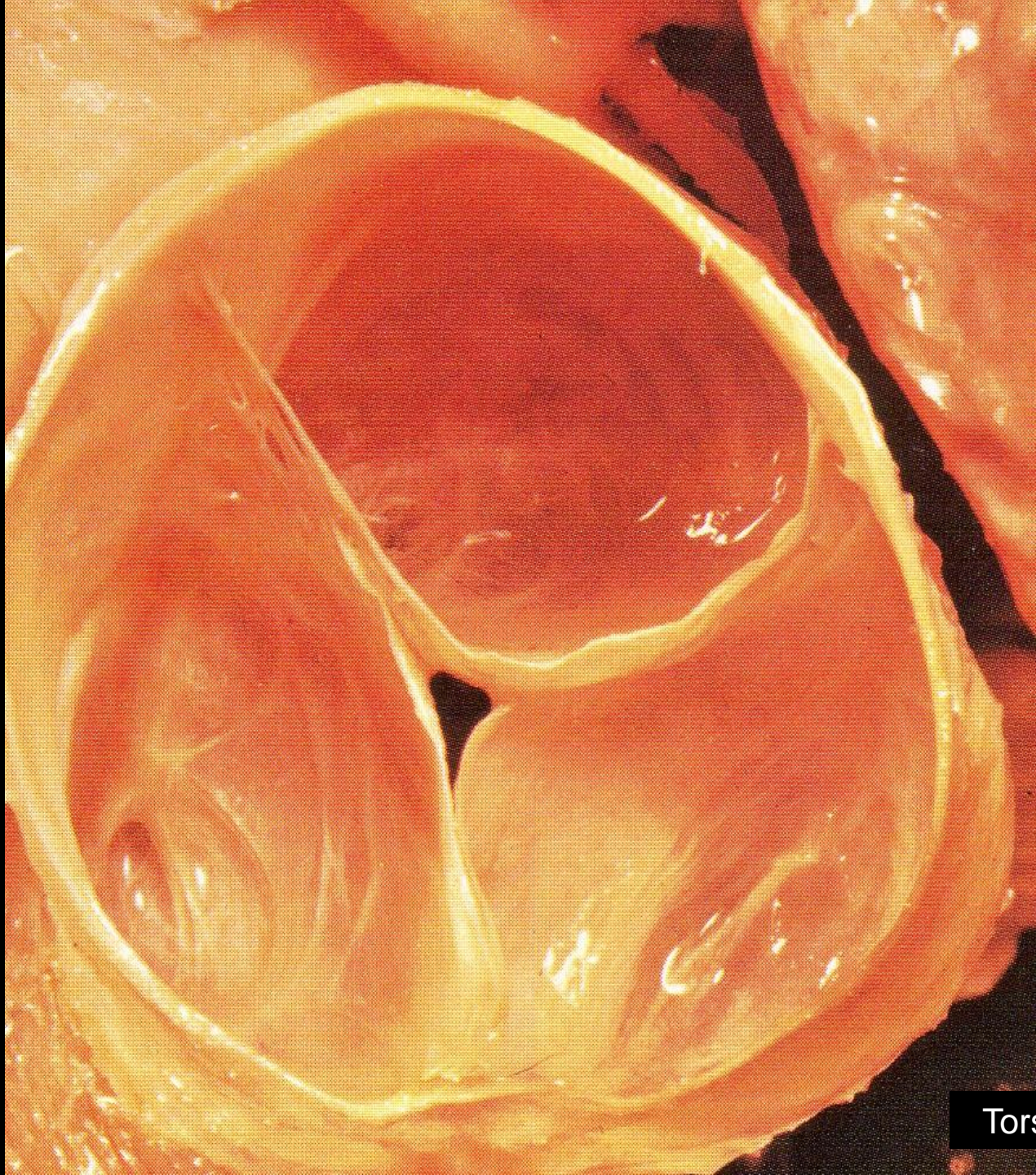
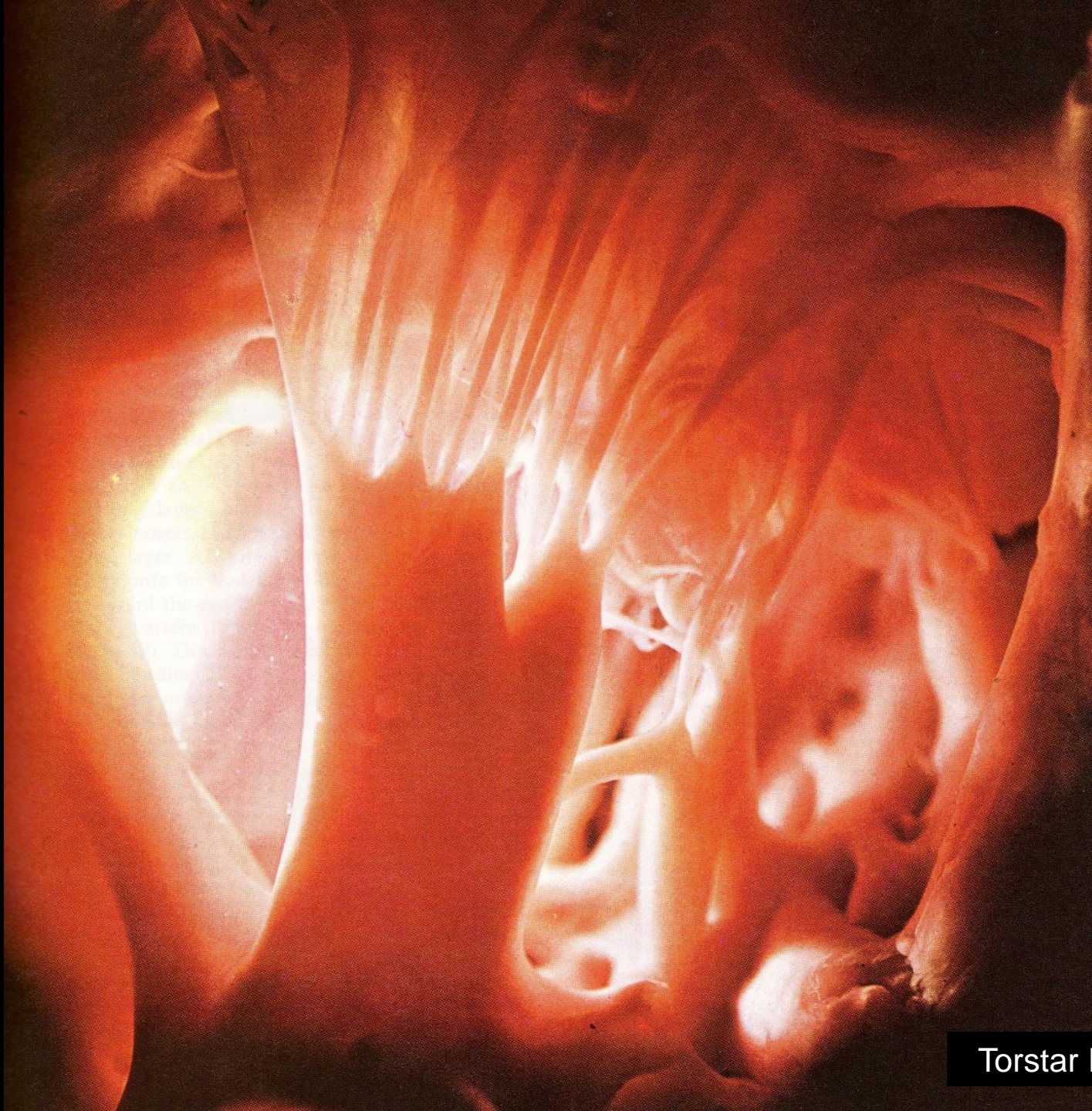


FIGURE 9-6

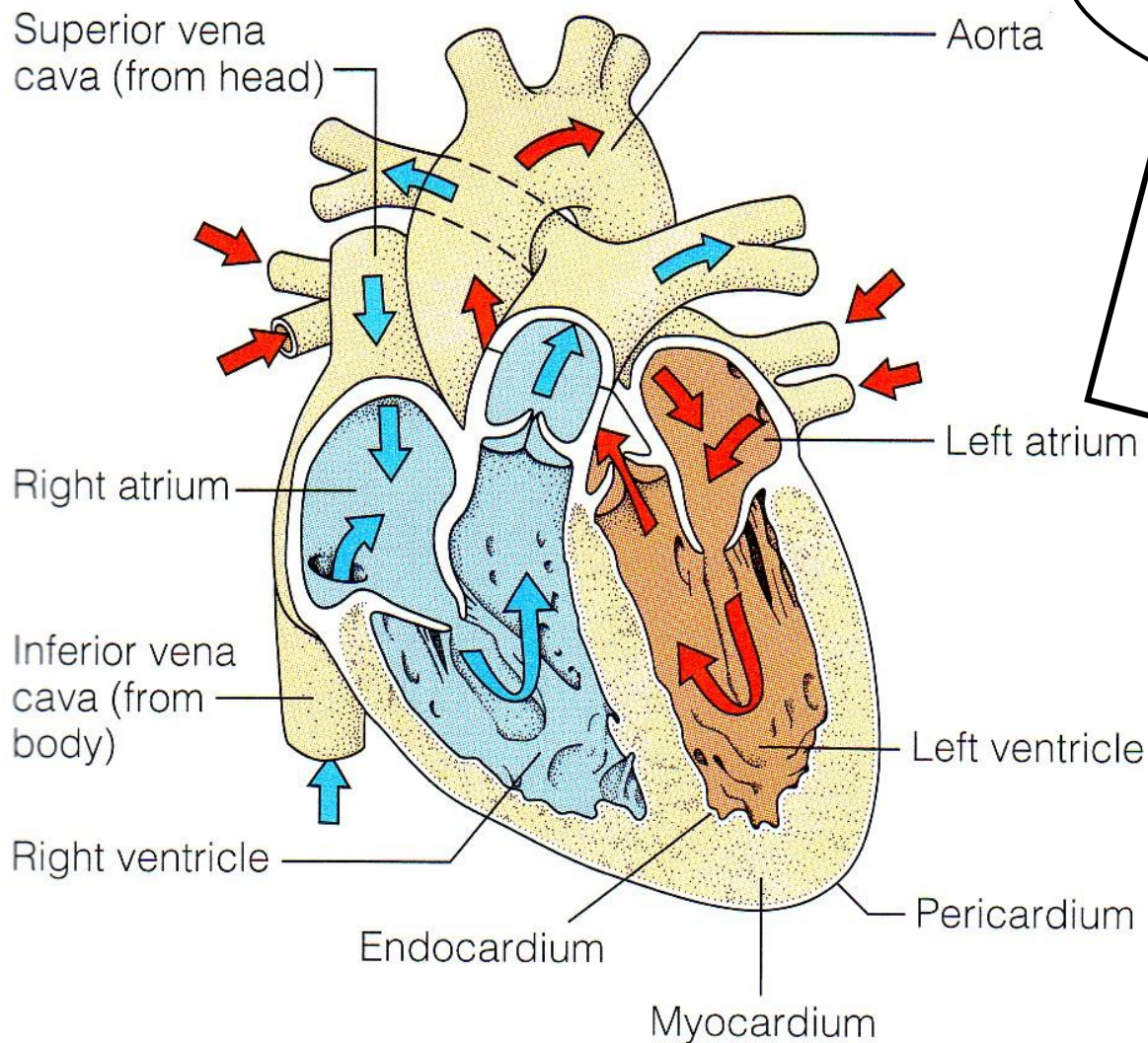
Mitral and aortic valves.



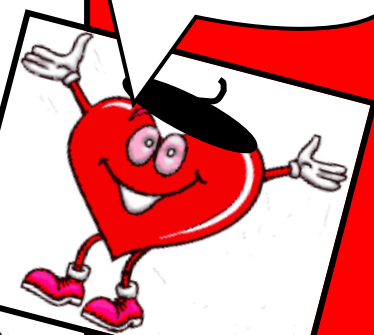




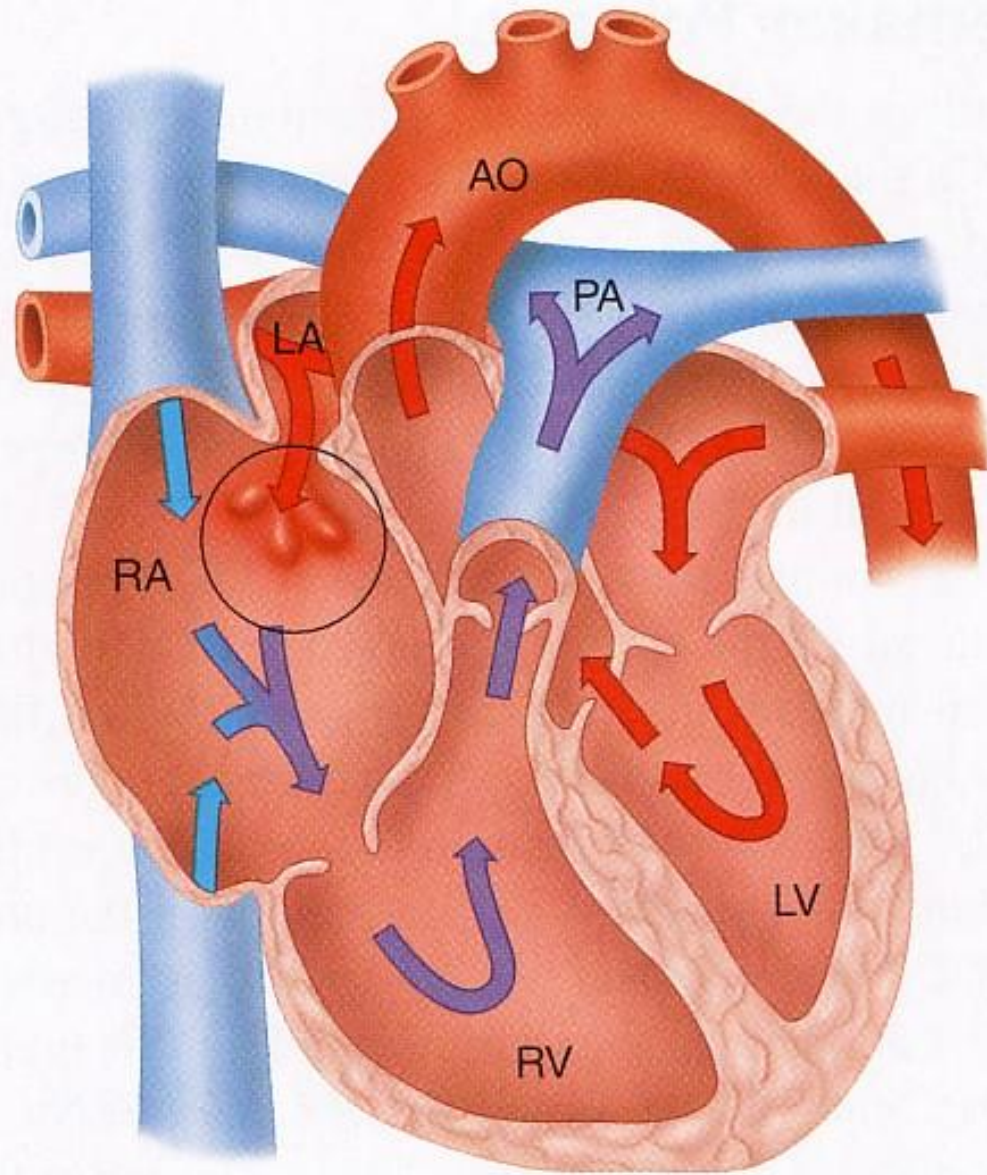
Veins → Atria → Ventricles → Arteries



VAVA!

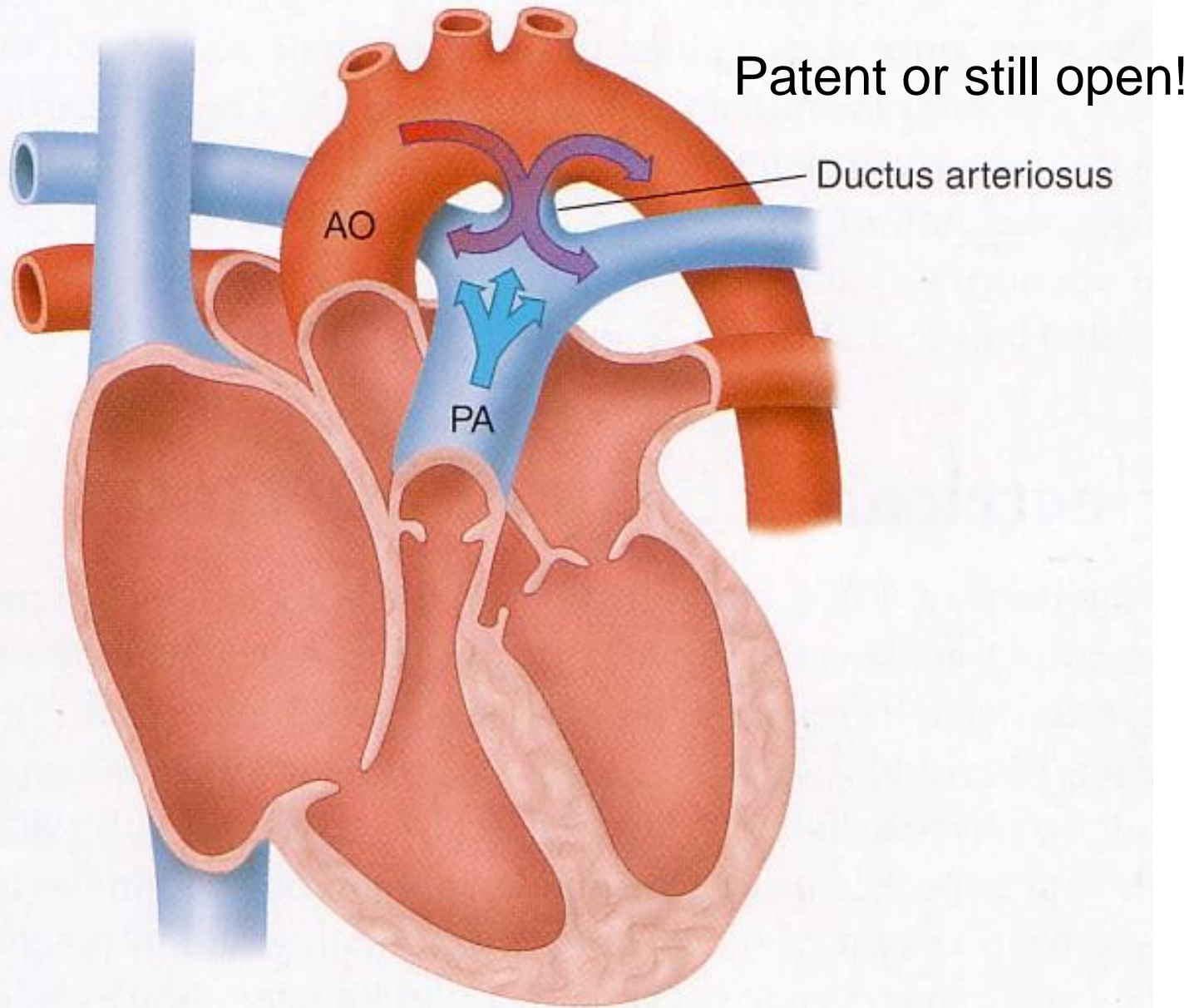


<http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/contraction.html>



SI Fox 2009 fig 13.16 p 419

Septal defect
in atria



WOW!



SUPER



~ TOP 5-10!

EXCELLENT!!



~ TOP 15!

GREAT EFFORT



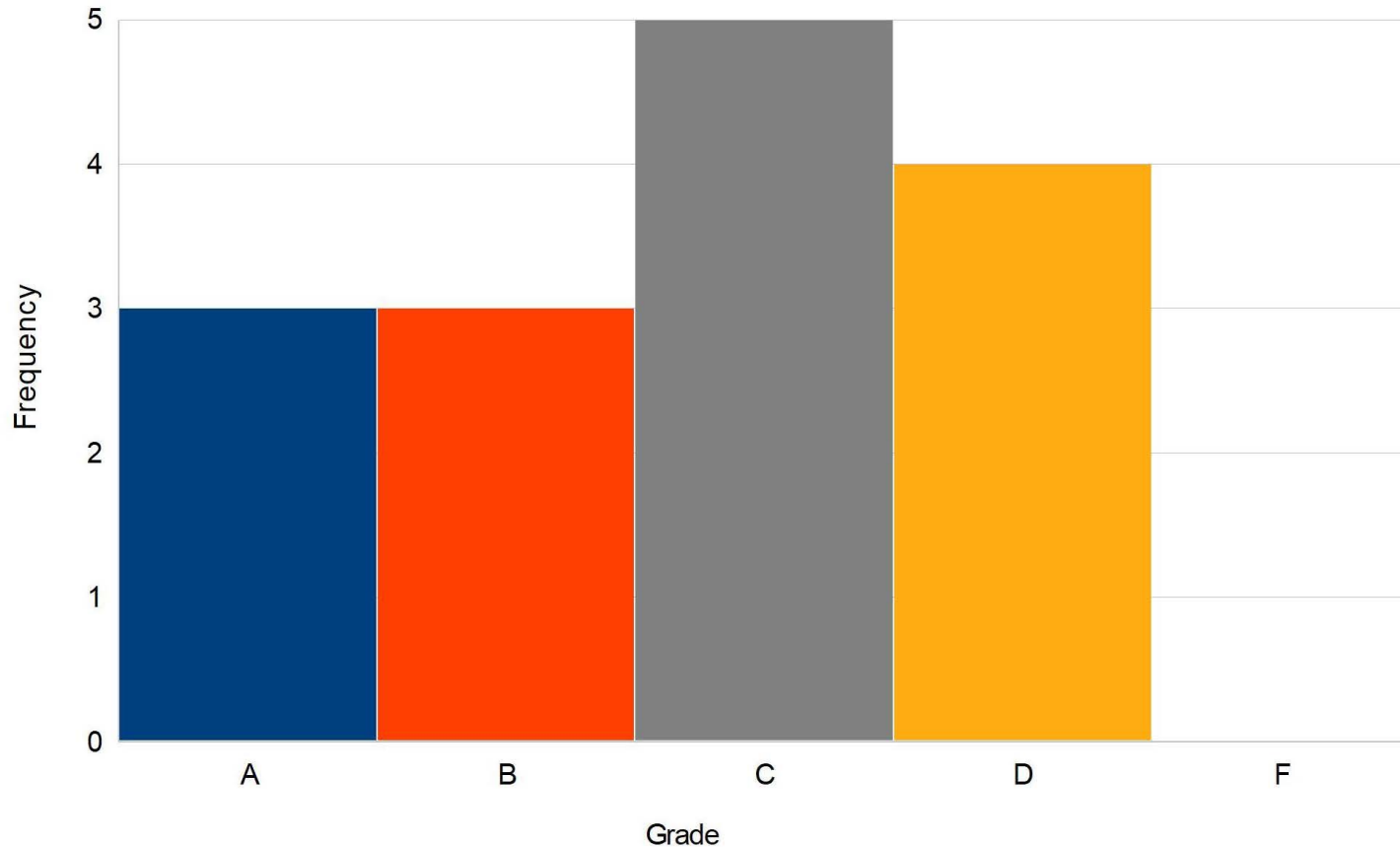
~ TOP 20-25!

Class Frequency Distribution Report for BI 121 Midterm U18, Multiple Choice, Part II

Overall

Mean Score: 78.33%

Grade	Percent Score	Raw Score	Frequency	Percent
A	90.00 - 100.00	36.00 - 40.00	3	20.00
B	80.00 - 89.99	32.00 - 35.99	3	20.00
C	70.00 - 79.99	28.00 - 31.99	5	33.33
D	60.00 - 69.99	24.00 - 27.99	4	26.67
F	0.00 - 59.99	0.00 - 23.99	0	0.00



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

