



- I. Announcements** Tomorrow HR & BP Lab 4 + **Required Notebook Check**. Turn in today? Thurs Blood Chemistry Lab 5. Please read Lab 5 twice prior to Thursday. 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**

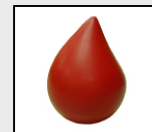
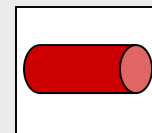
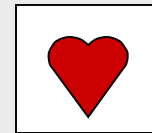
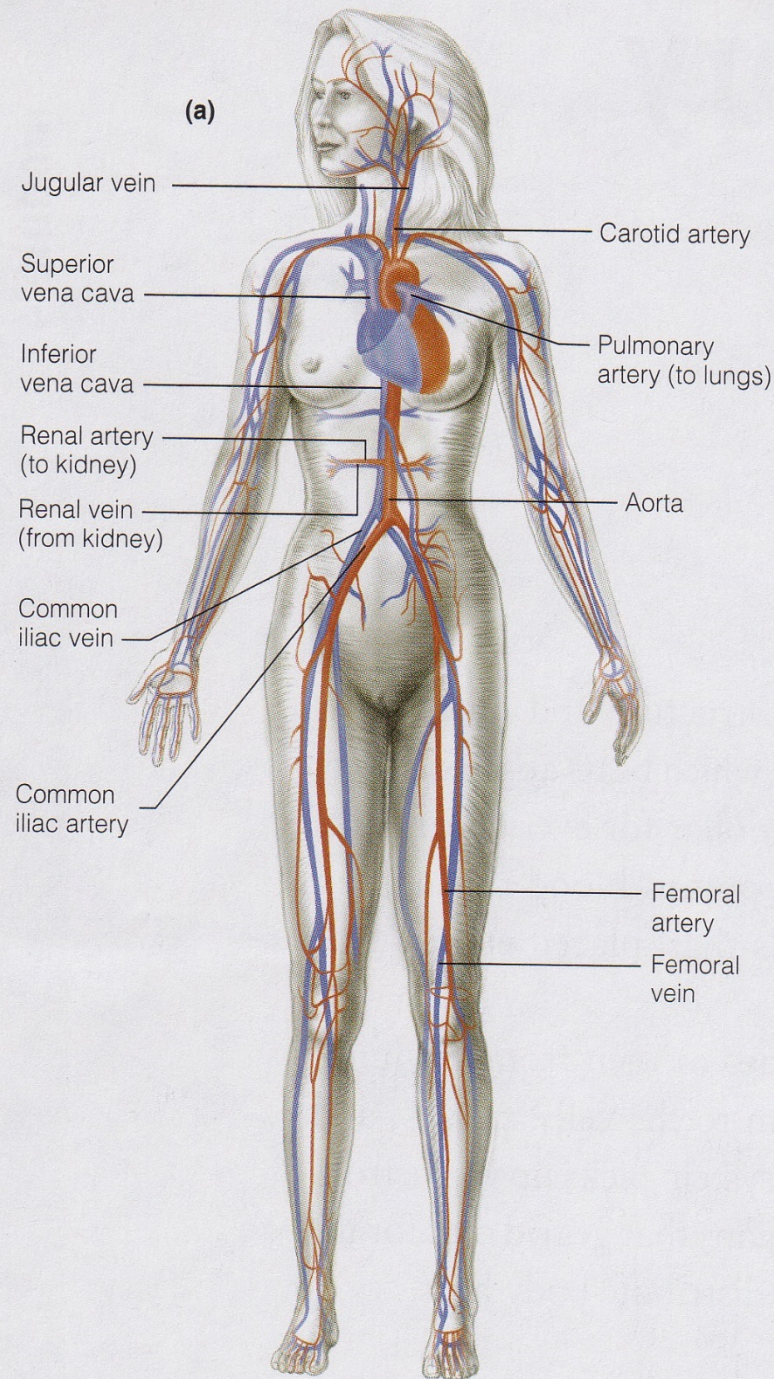


Cardiovascular or CV System

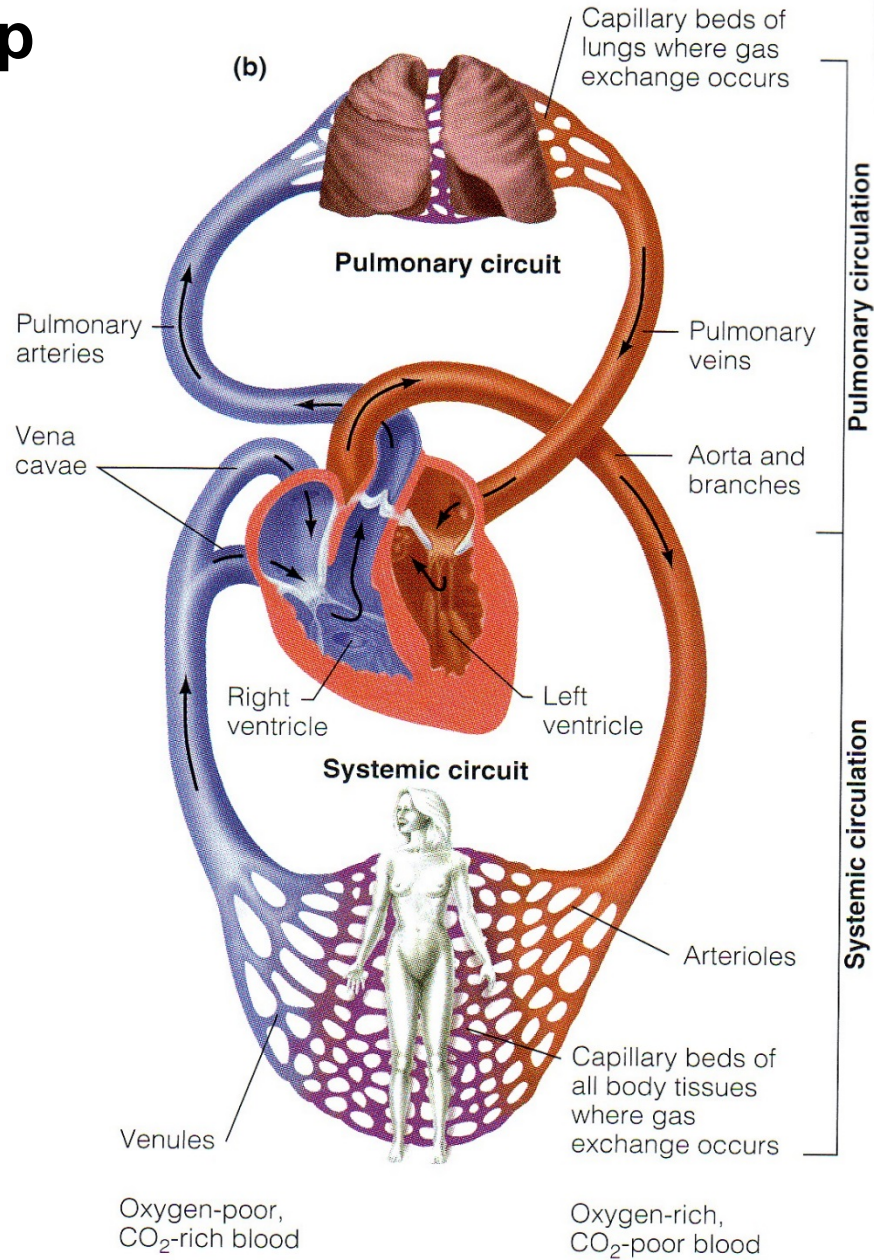
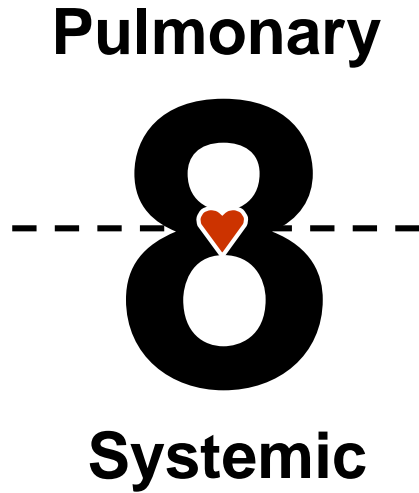
1. Heart

2. Vessels

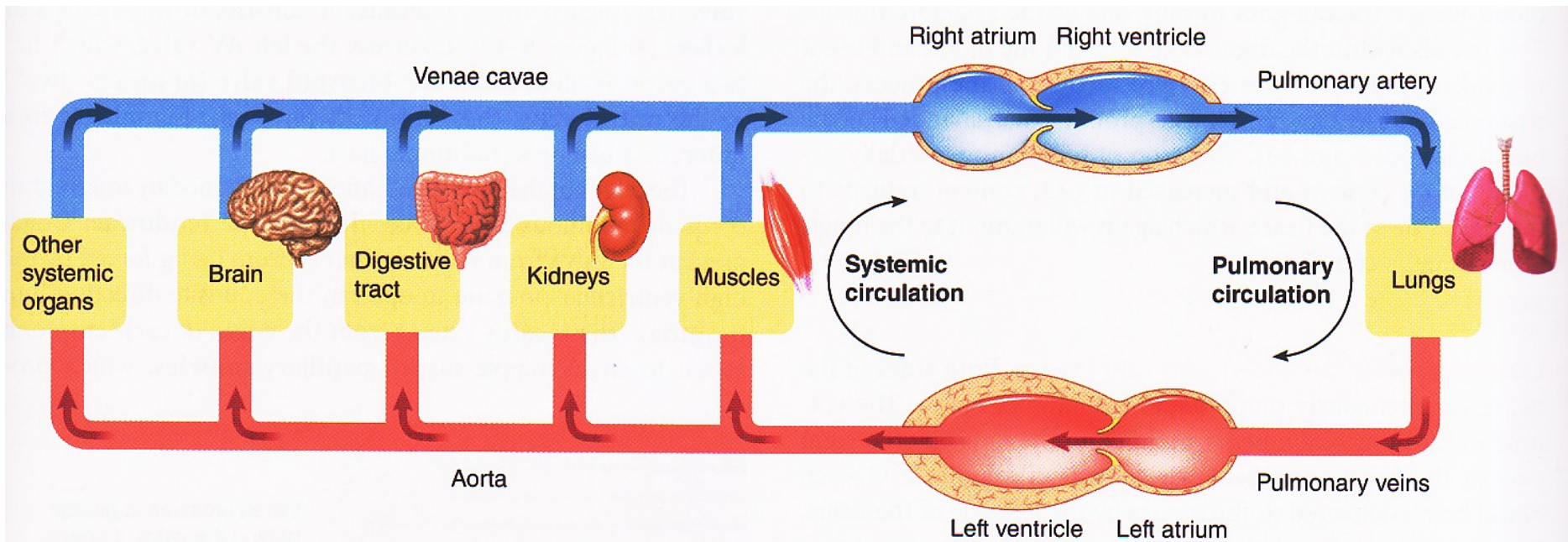
3. Blood

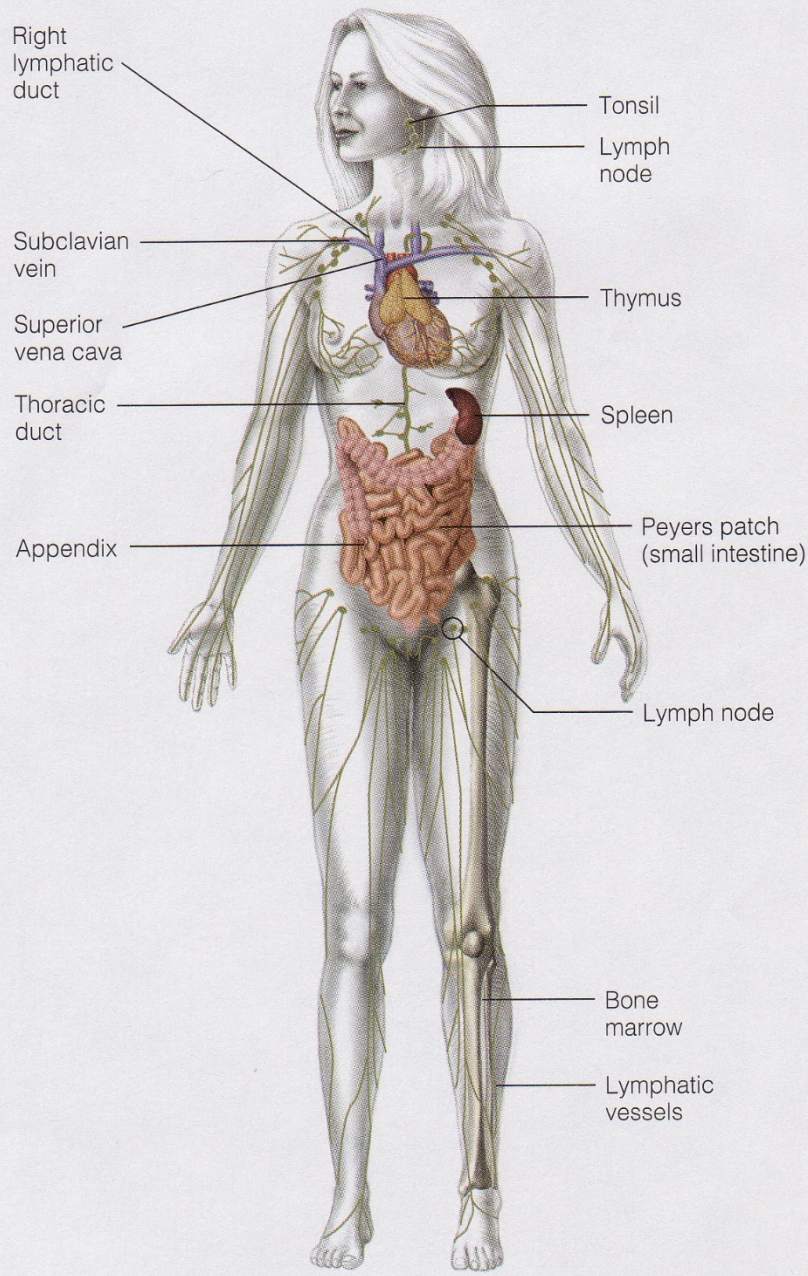


NB: Figure-8 loop



Dual Pump Action & Parallel Circulation



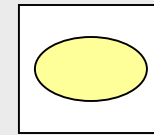


Lymphatic System

1. Lymph Nodes

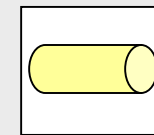
2. Vessels

3. Lymph

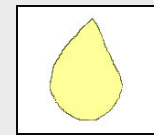


No pump!

+



+



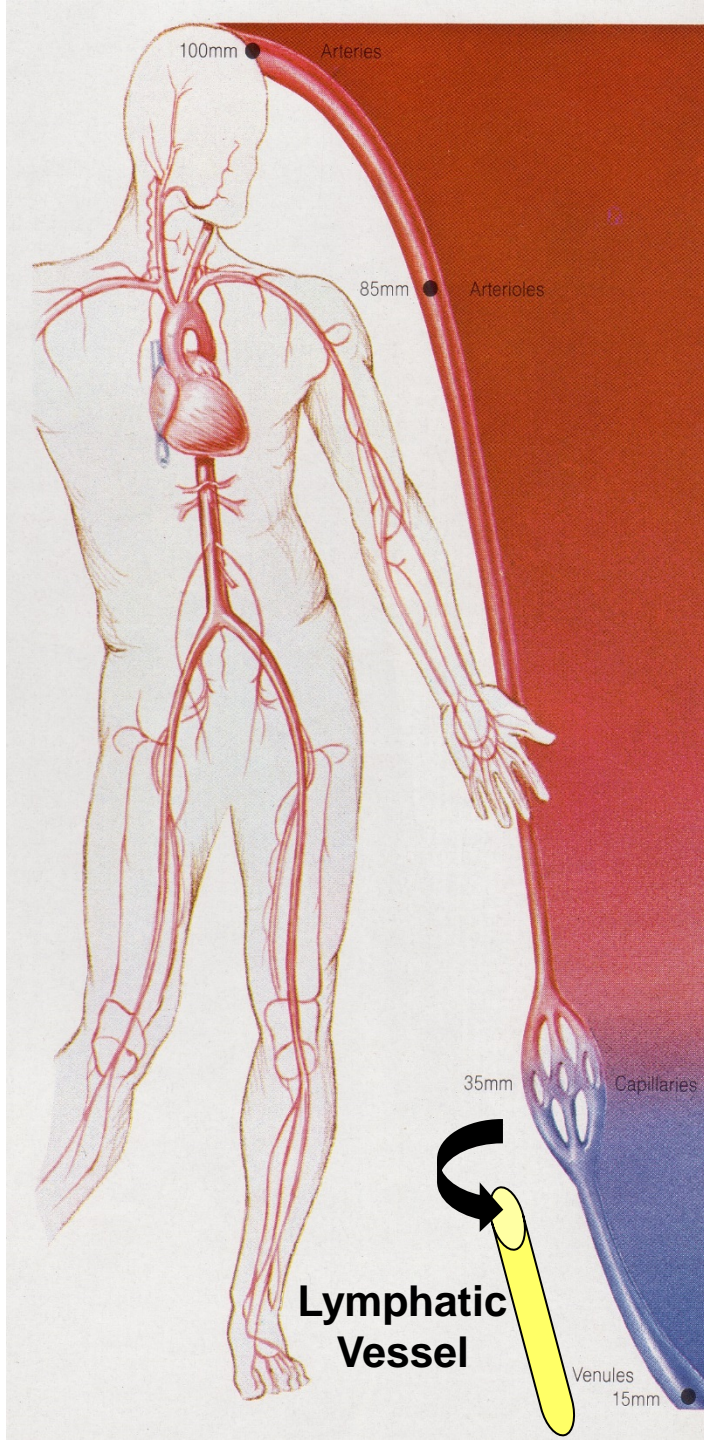
Lymphatic System

**Alternative System of
Circulation
or
Drainage System**

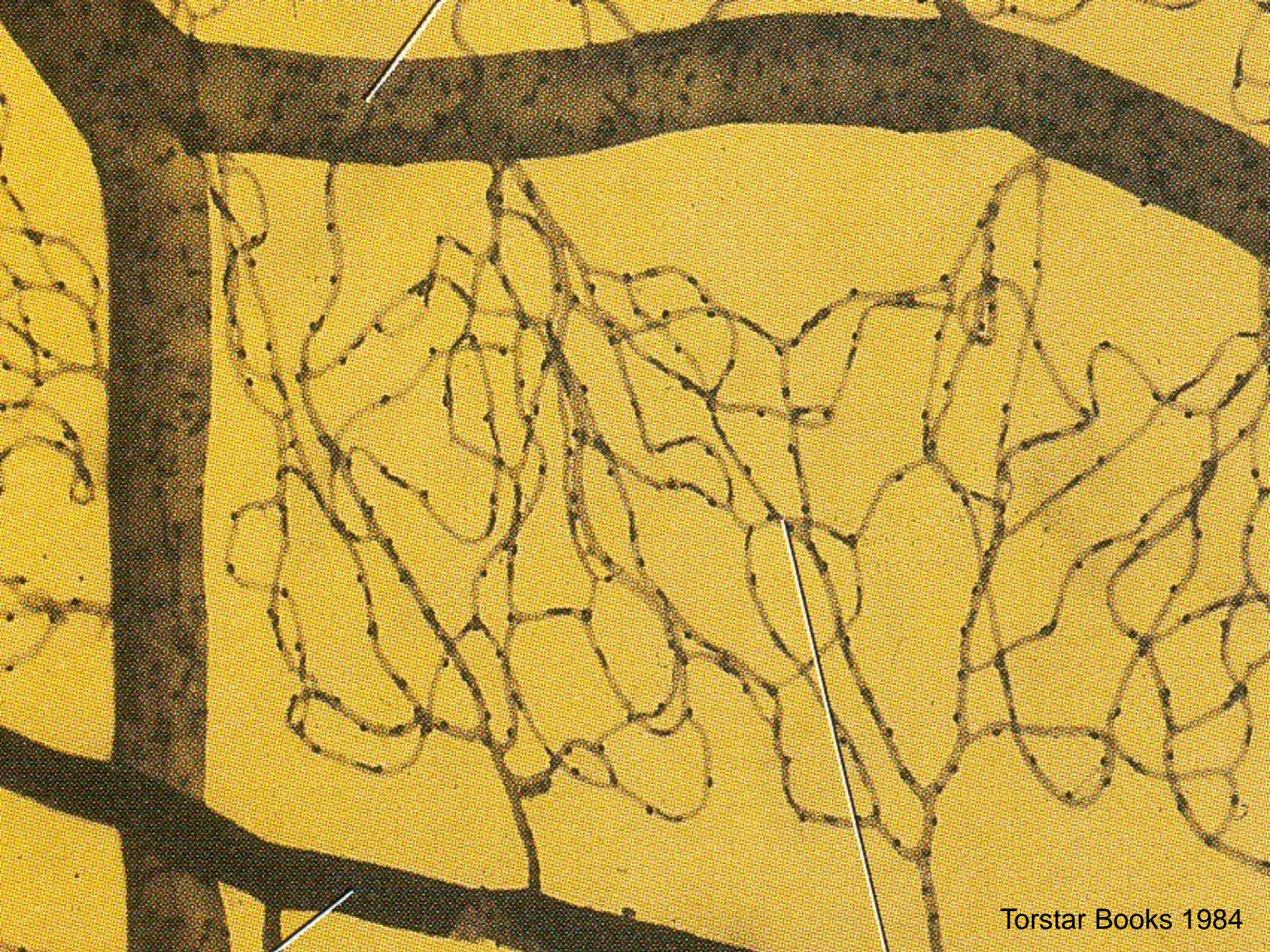
Lymph Vessels || Veins

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

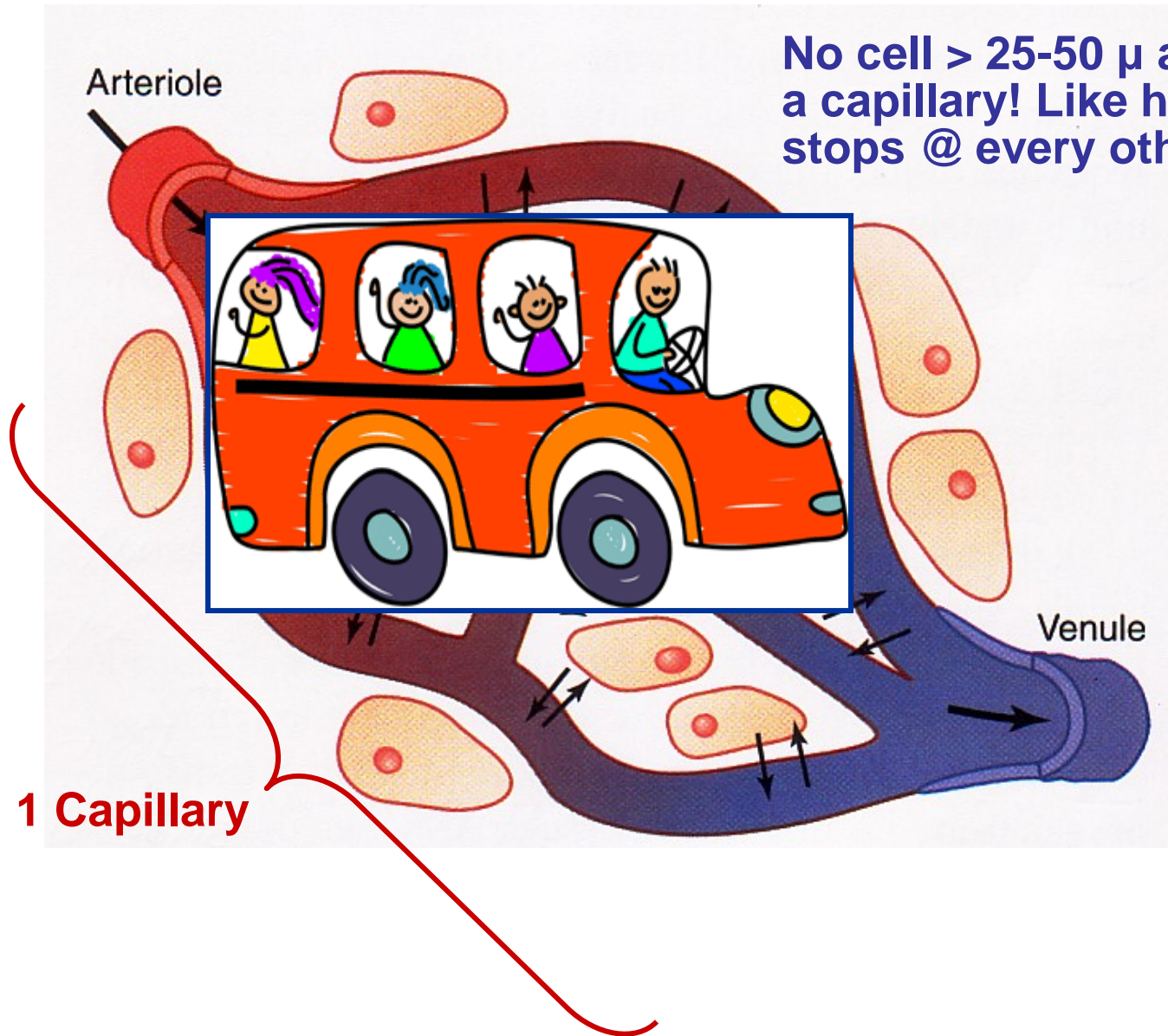




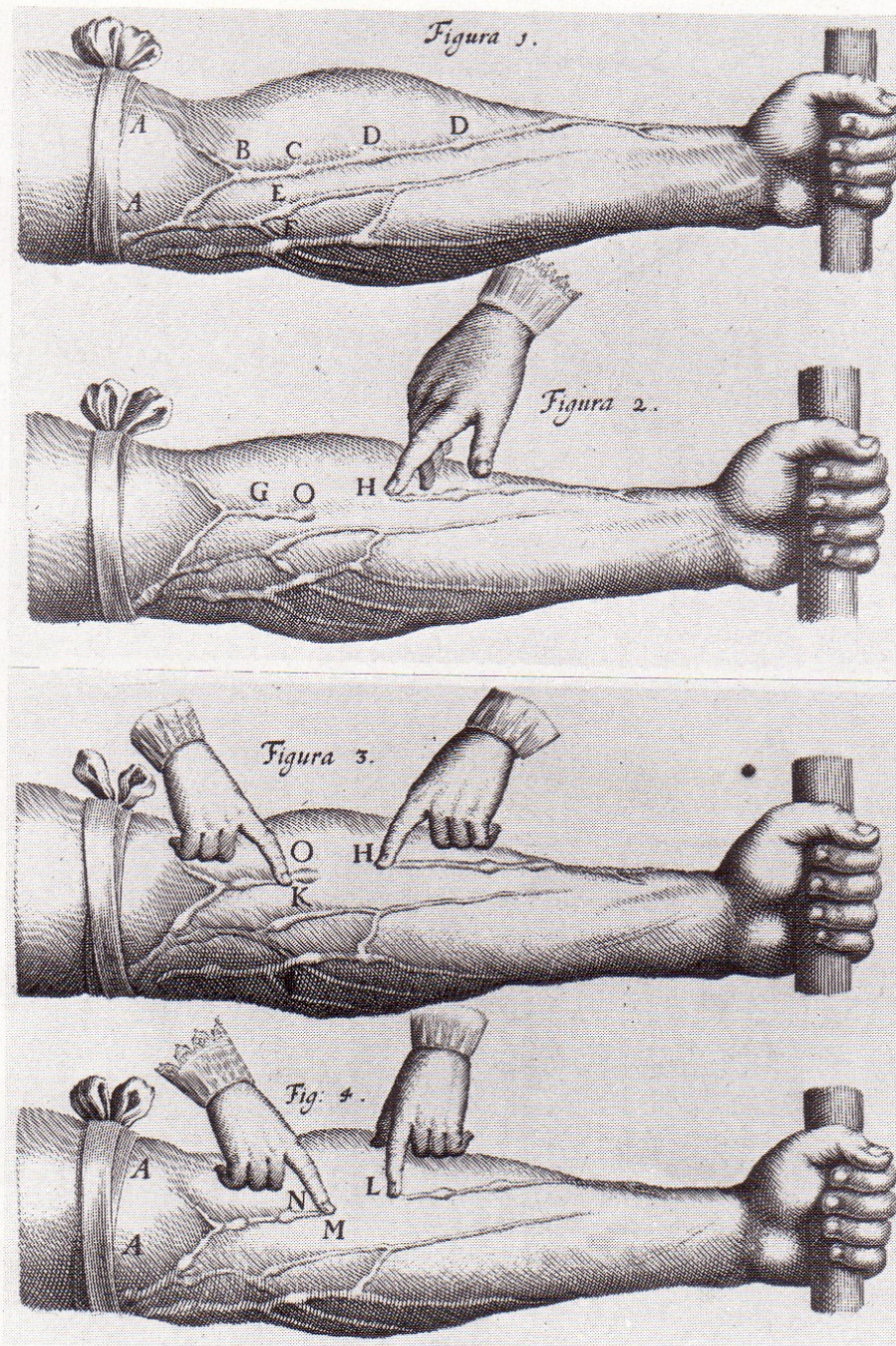
Lymphatics collect run-off & are parallel to venules/small veins!



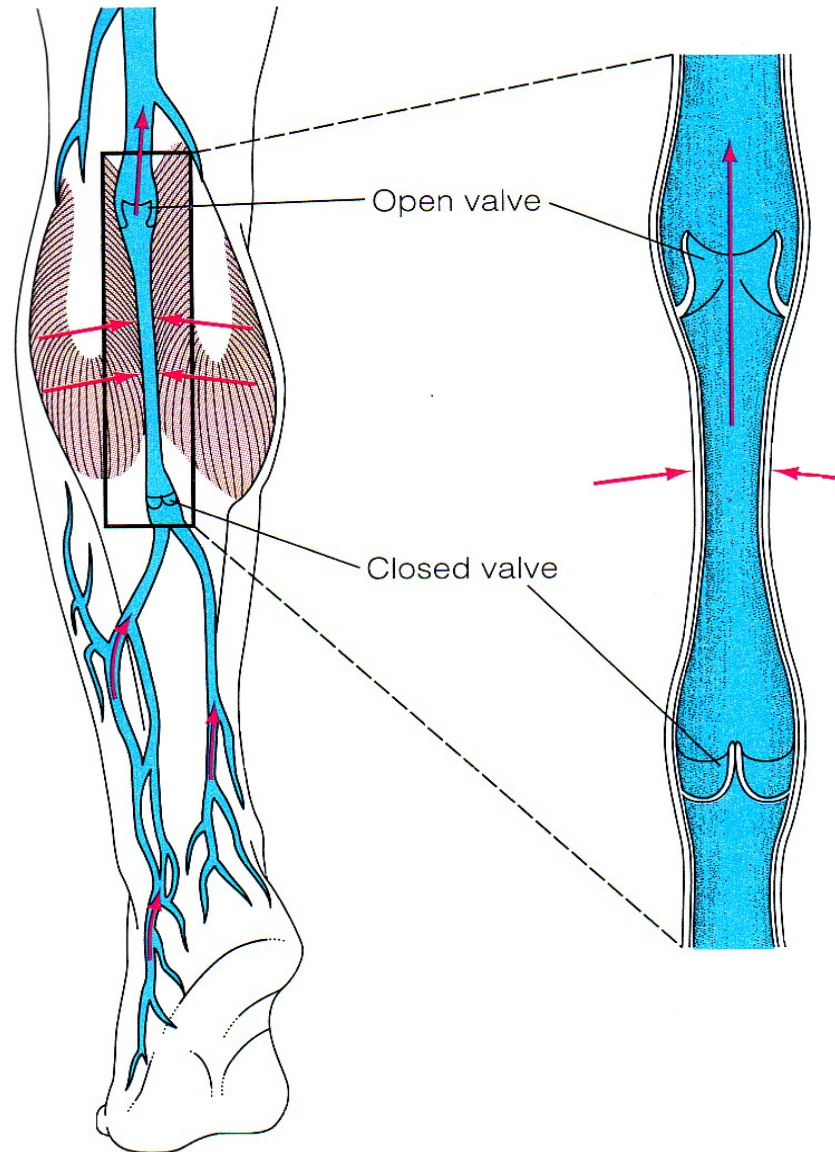
Microcirculation Exchange: 10 Billion Capillaries!



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



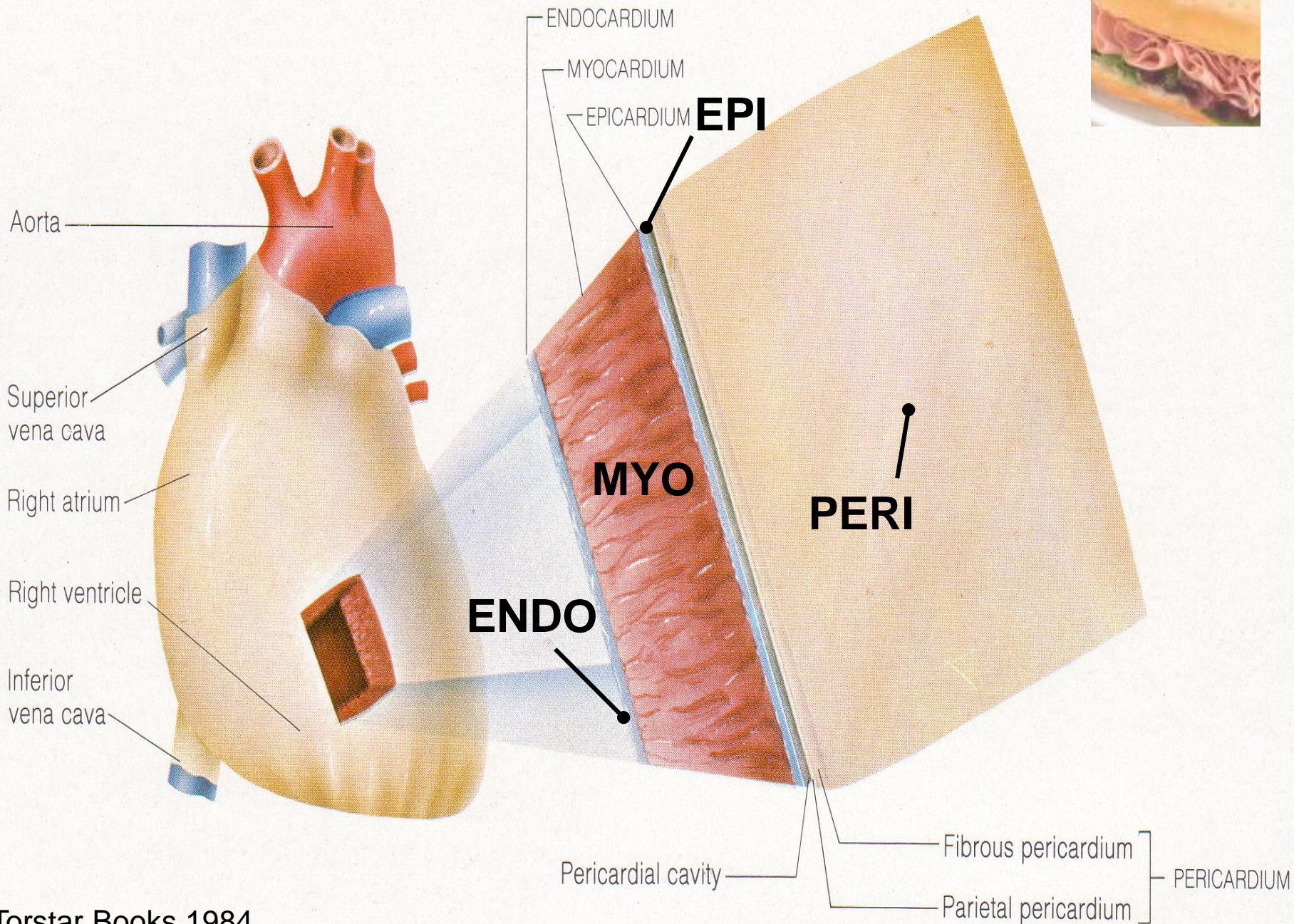
Skeletal Muscle Pump



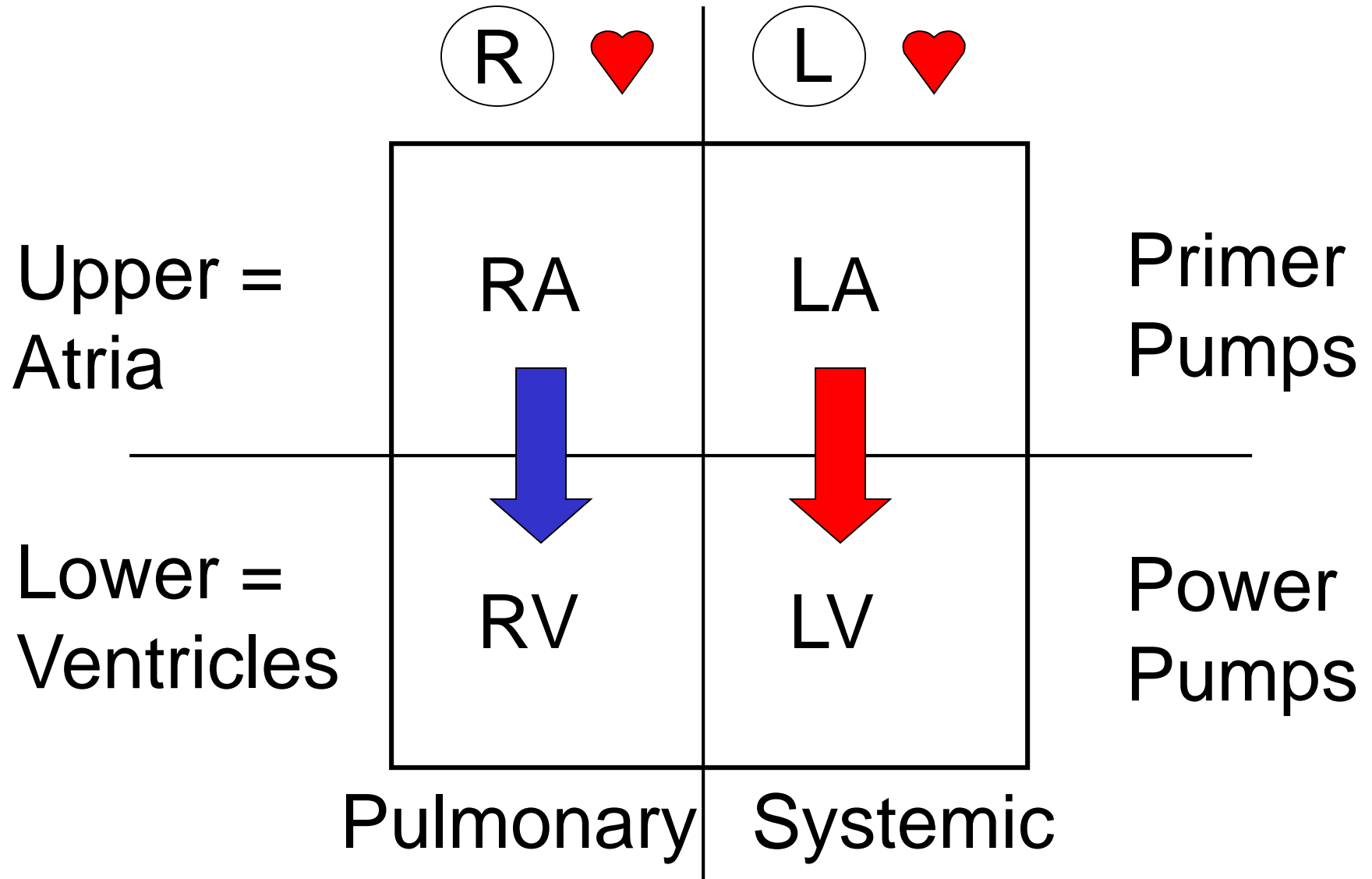


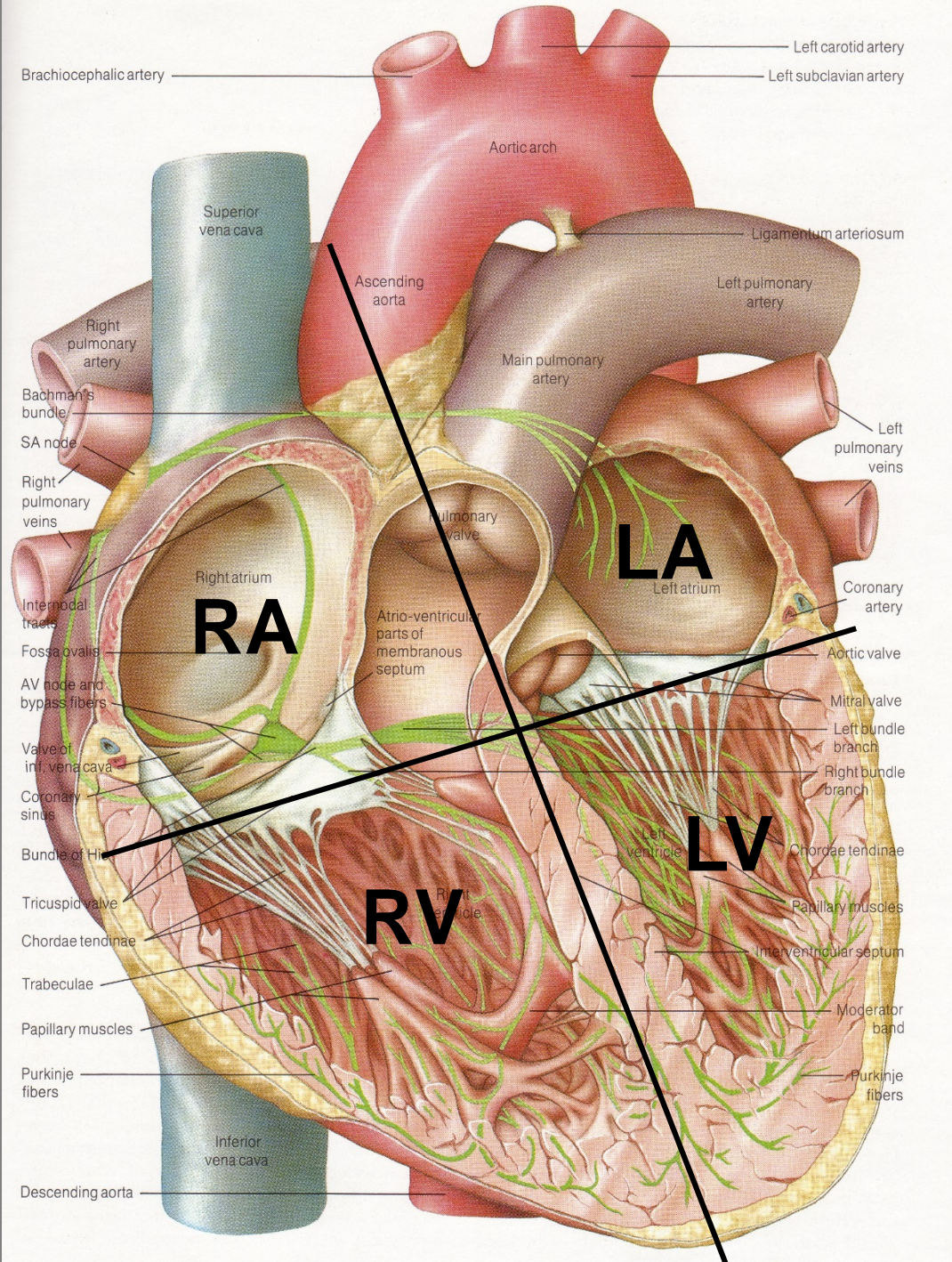
The Heart

The Living Pump

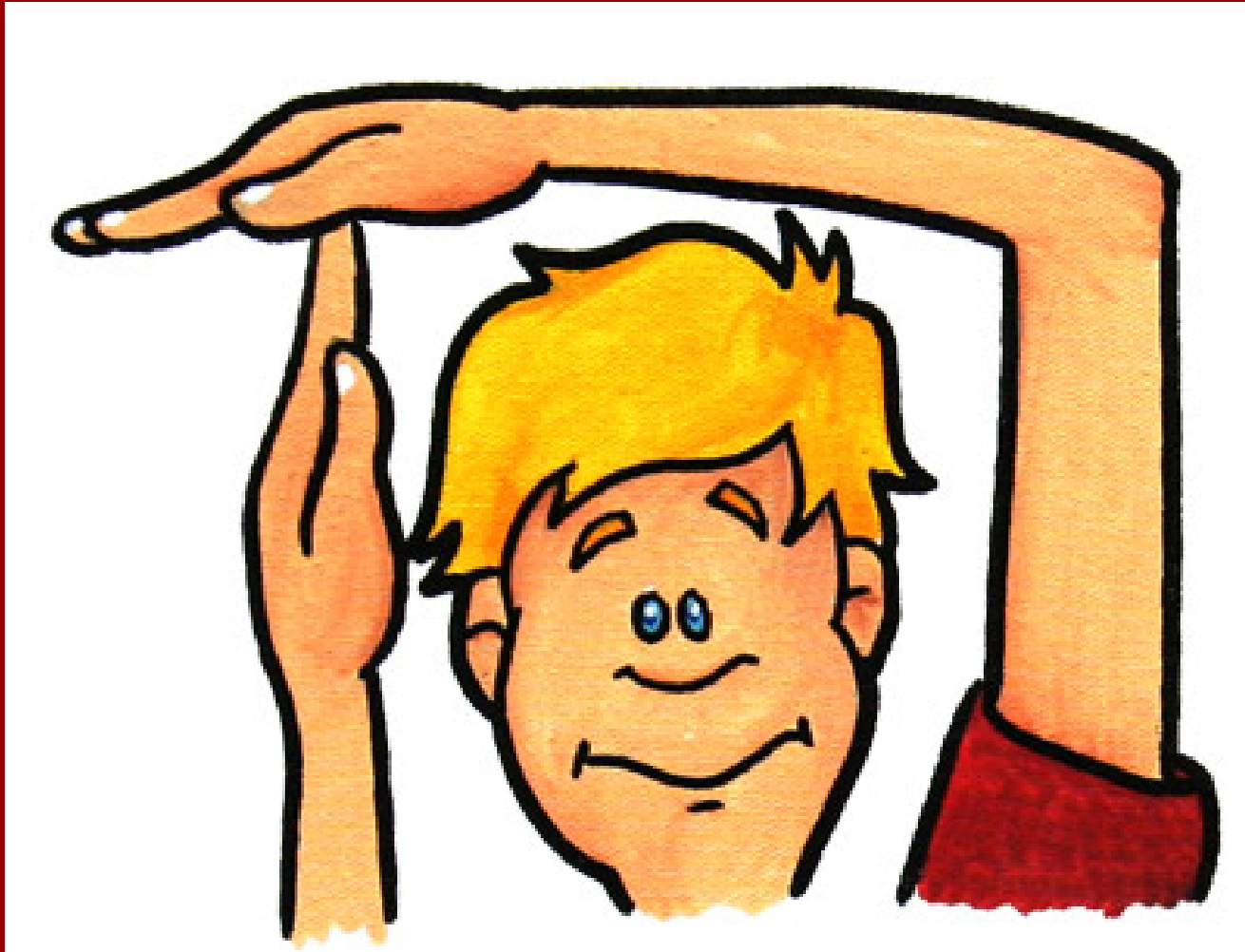


Human  = 4-chambered box?
2 separate pumps?

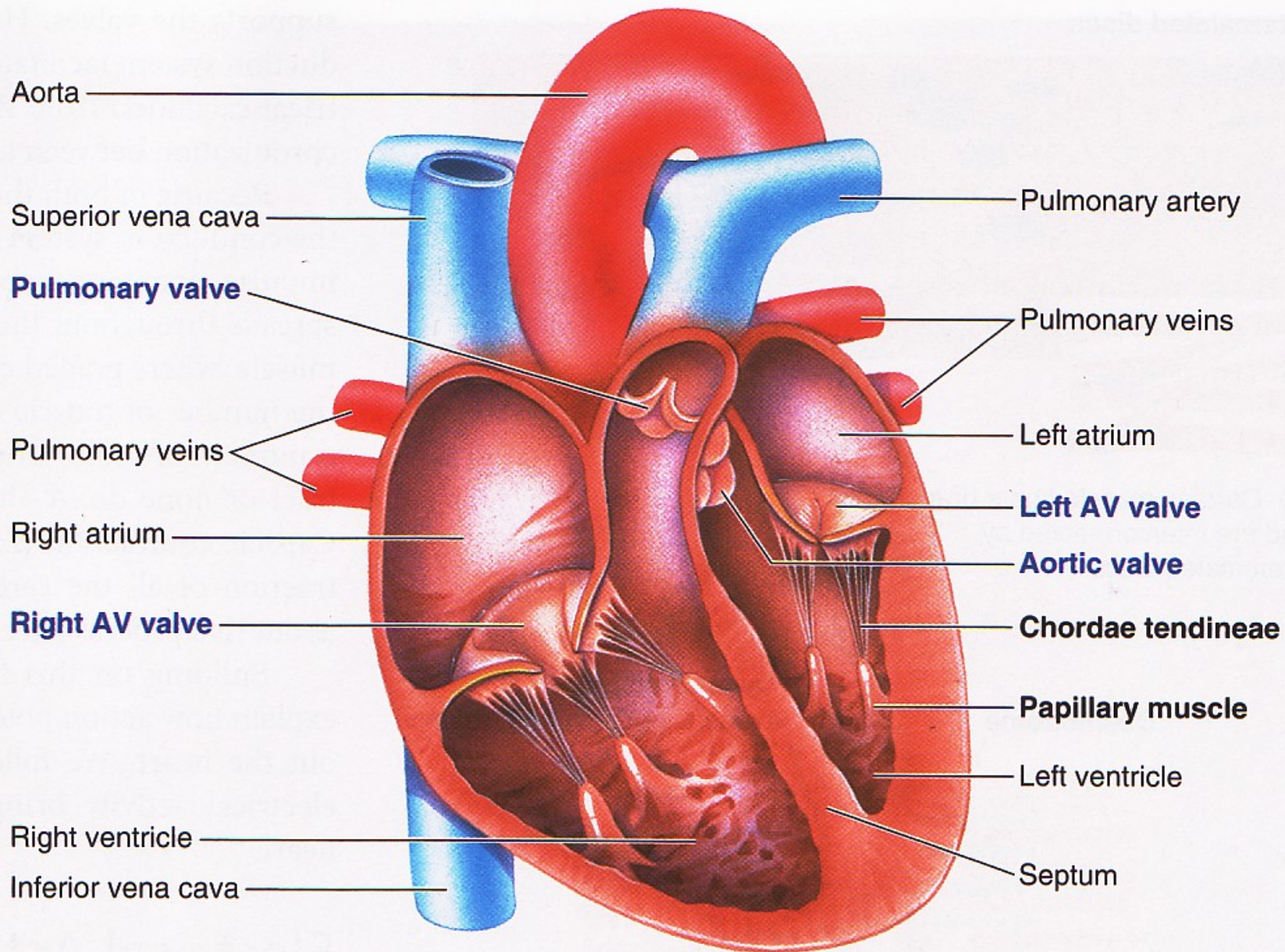




Time-out for Questions!

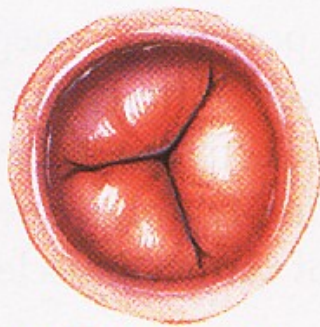


+ Brief Break!

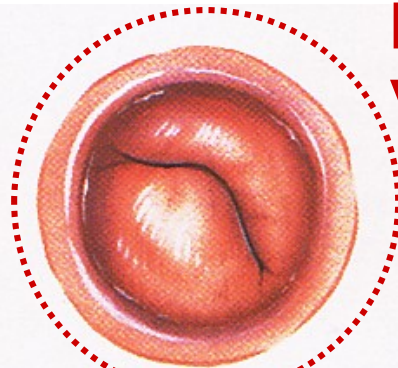


(a) Location of the heart valves in a longitudinal section of the heart

Heart Valves Ensure Unidirectional Blood Flow!



Right AV valve



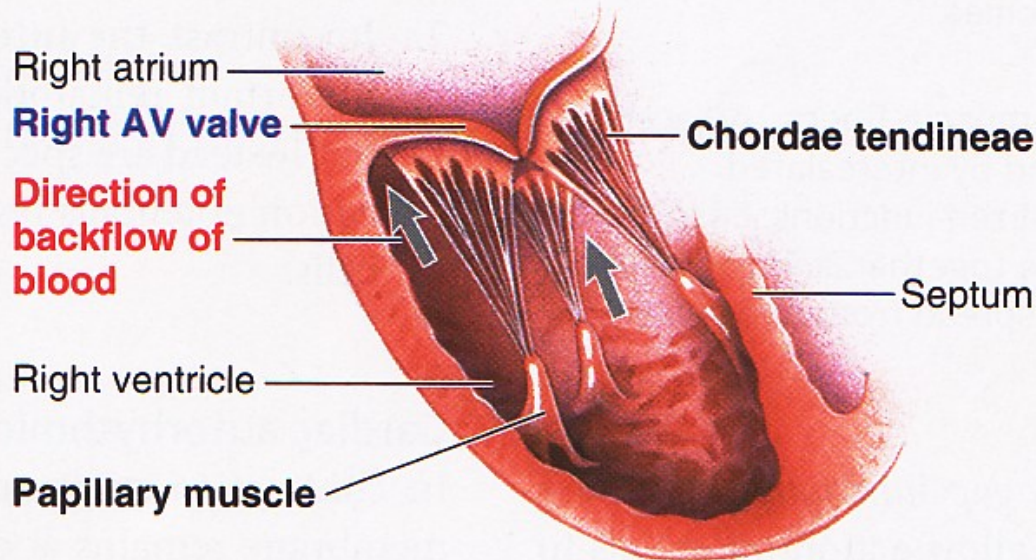
Left AV valve

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.

Human ♥ = 4 unique valves?
2 valve sets?

Semilunar = Half-moon shaped

More rigid

1. Pulmonic/Pulmonary
2. Aortic



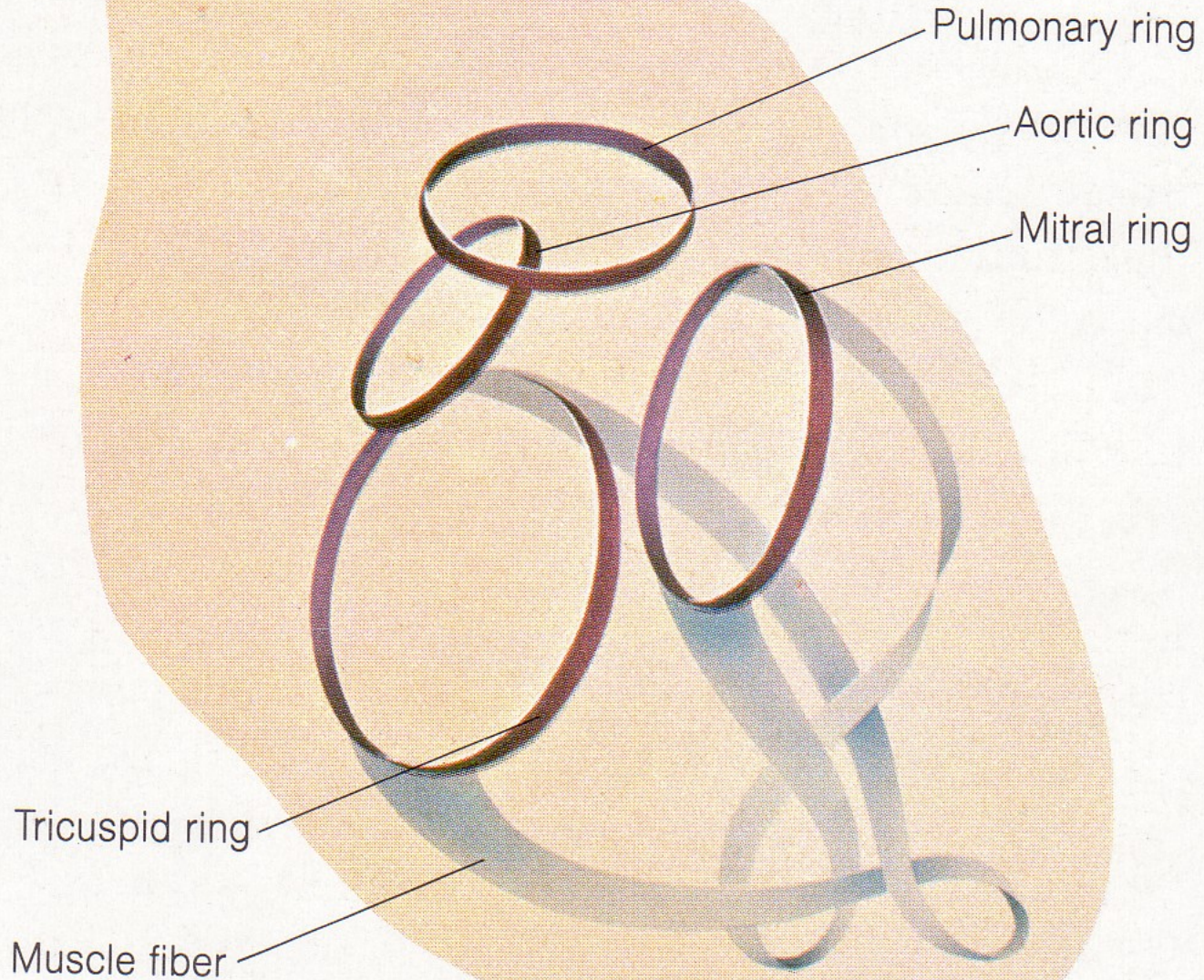
AV = Atrioventricular

More flimsy

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



Heart Valve Orientation & Scaffolding



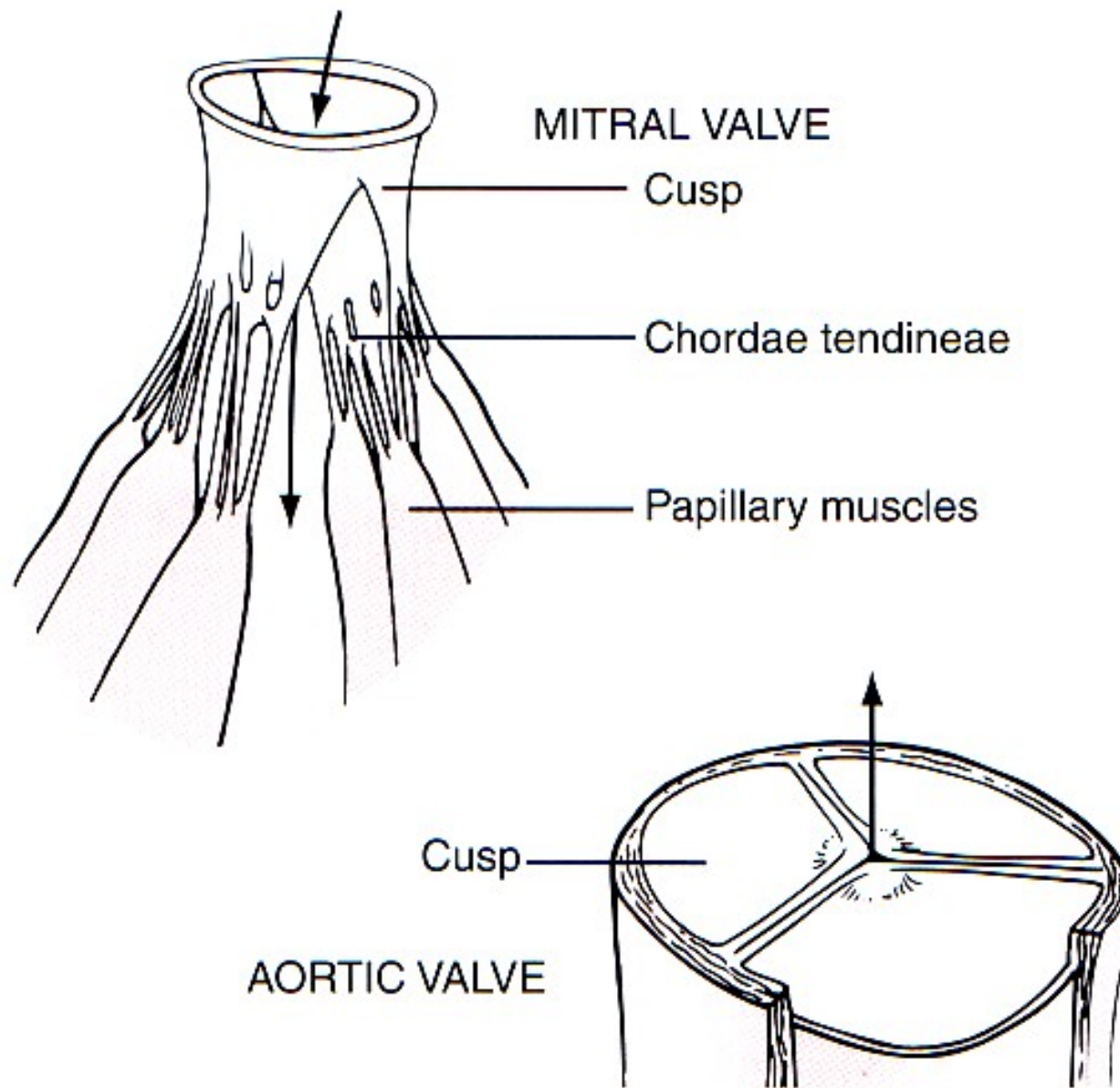
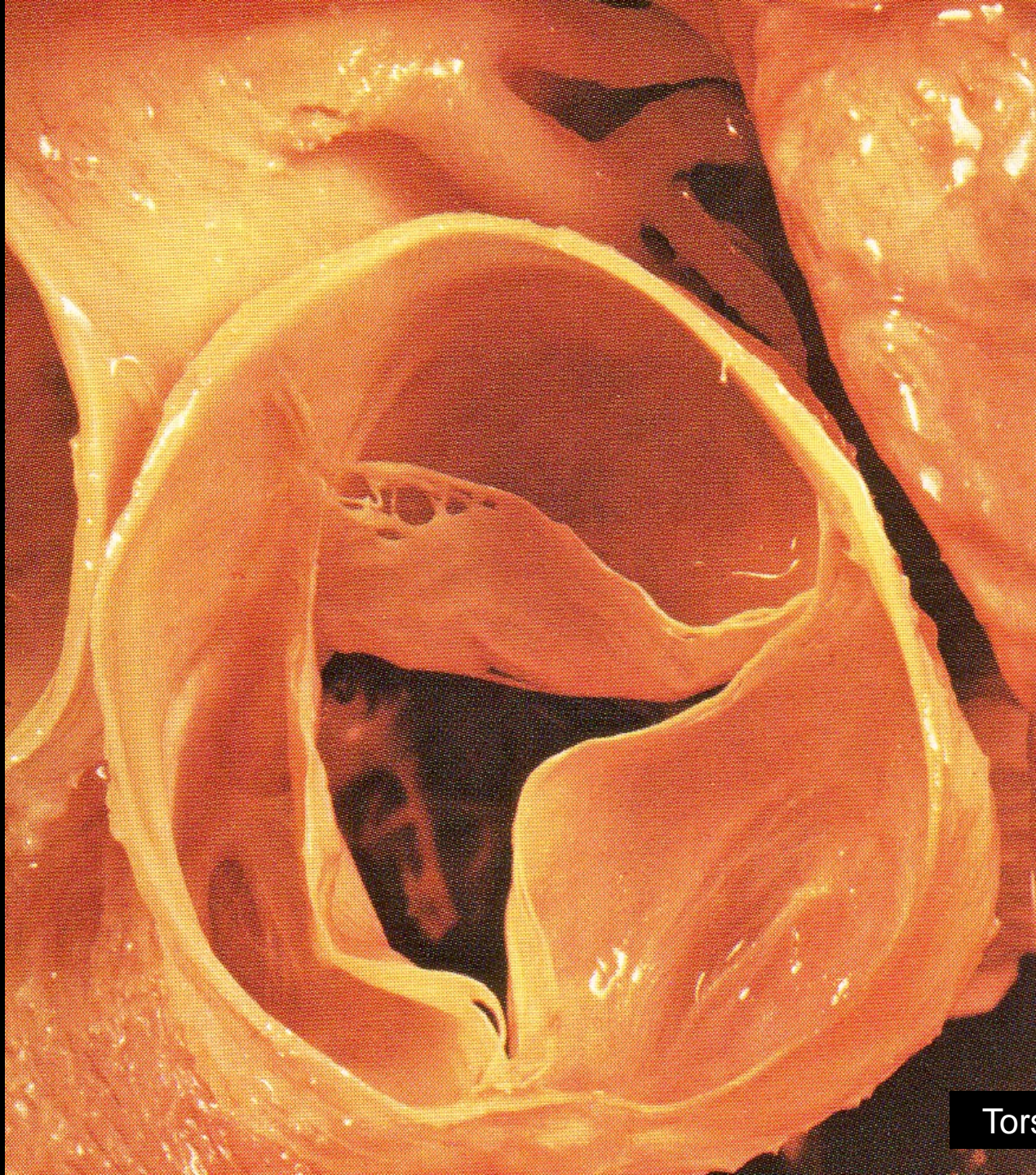
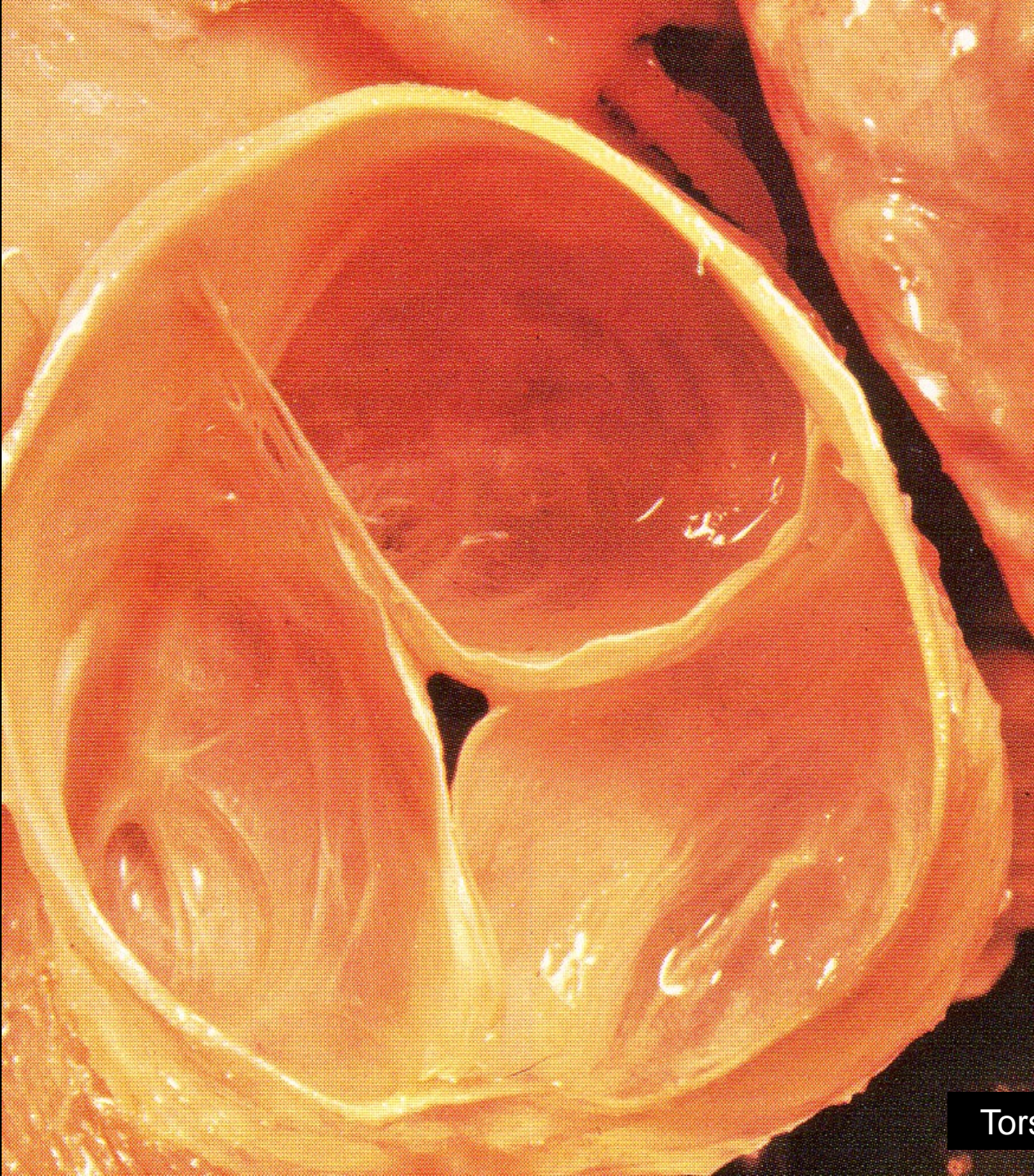
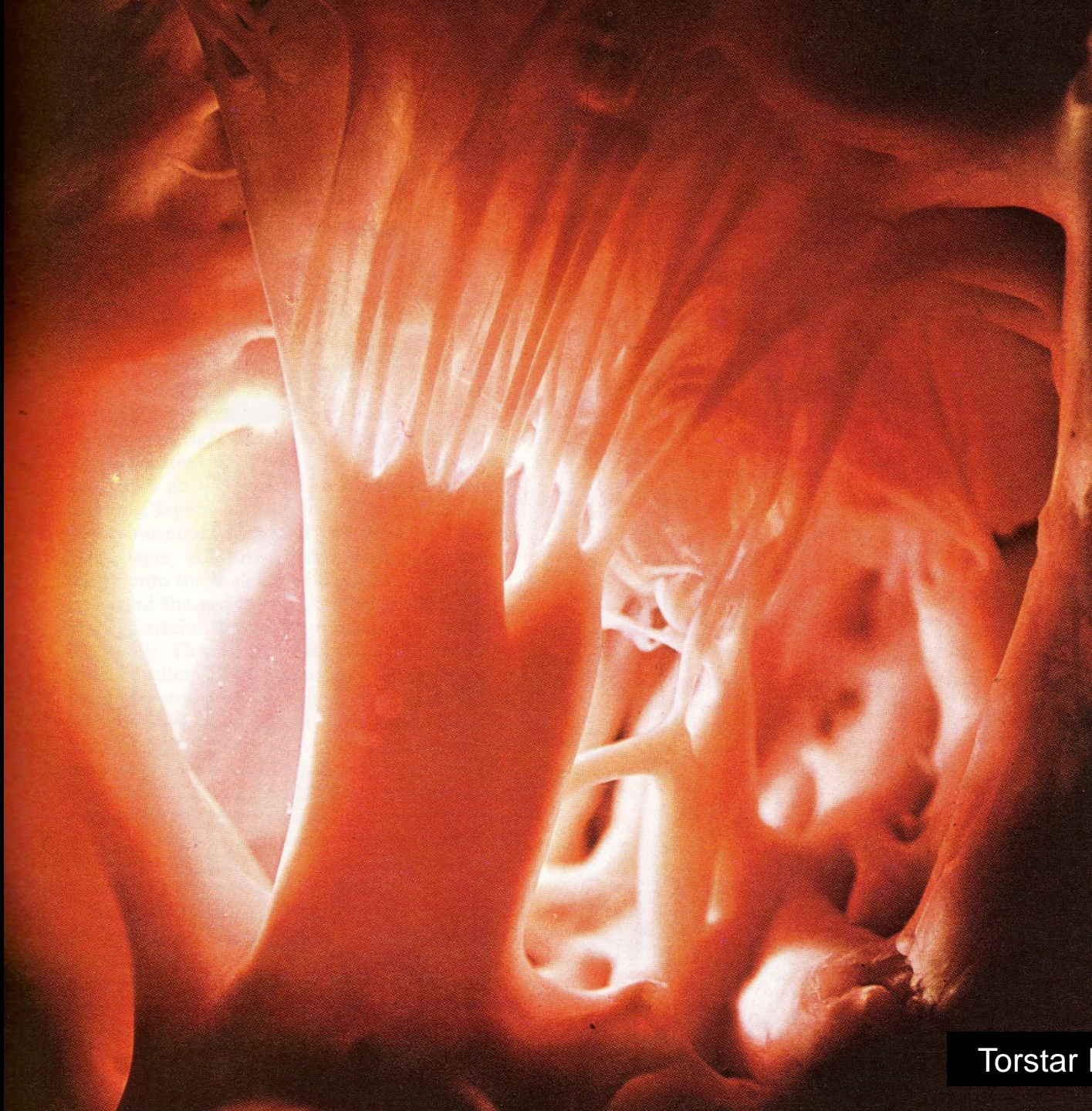


FIGURE 9-6

Mitral and aortic valves.







♥ **Blood Flow**

To systemic circulation
(upper body)

To systemic circulation
(lower body)

Superior vena cava
(returns blood from
head, upper limbs)

Right pulmonary
veins (return blood
from right lung)

Pulmonary semilunar
valve (shown open)

Right atrium

Right atrioventricular
valve (shown open)

Right ventricle

Inferior vena cava
(returns blood
from trunk, legs)

Aorta

Right and left
pulmonary arteries
(to lungs)

Left pulmonary
veins (return blood
from left lung)

Left atrium

Aortic semilunar
valve (shown open)

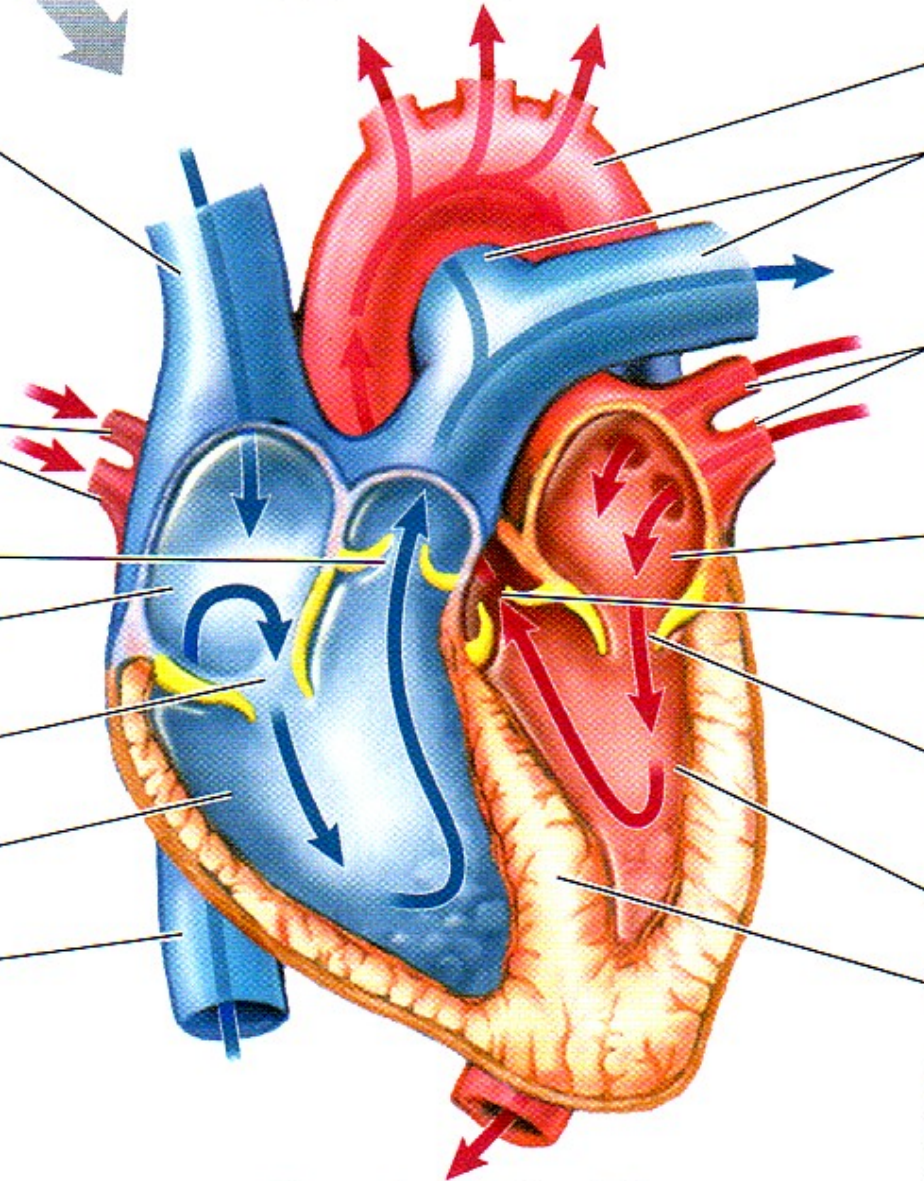
Left atrioventricular
valve (shown open)

Left ventricle

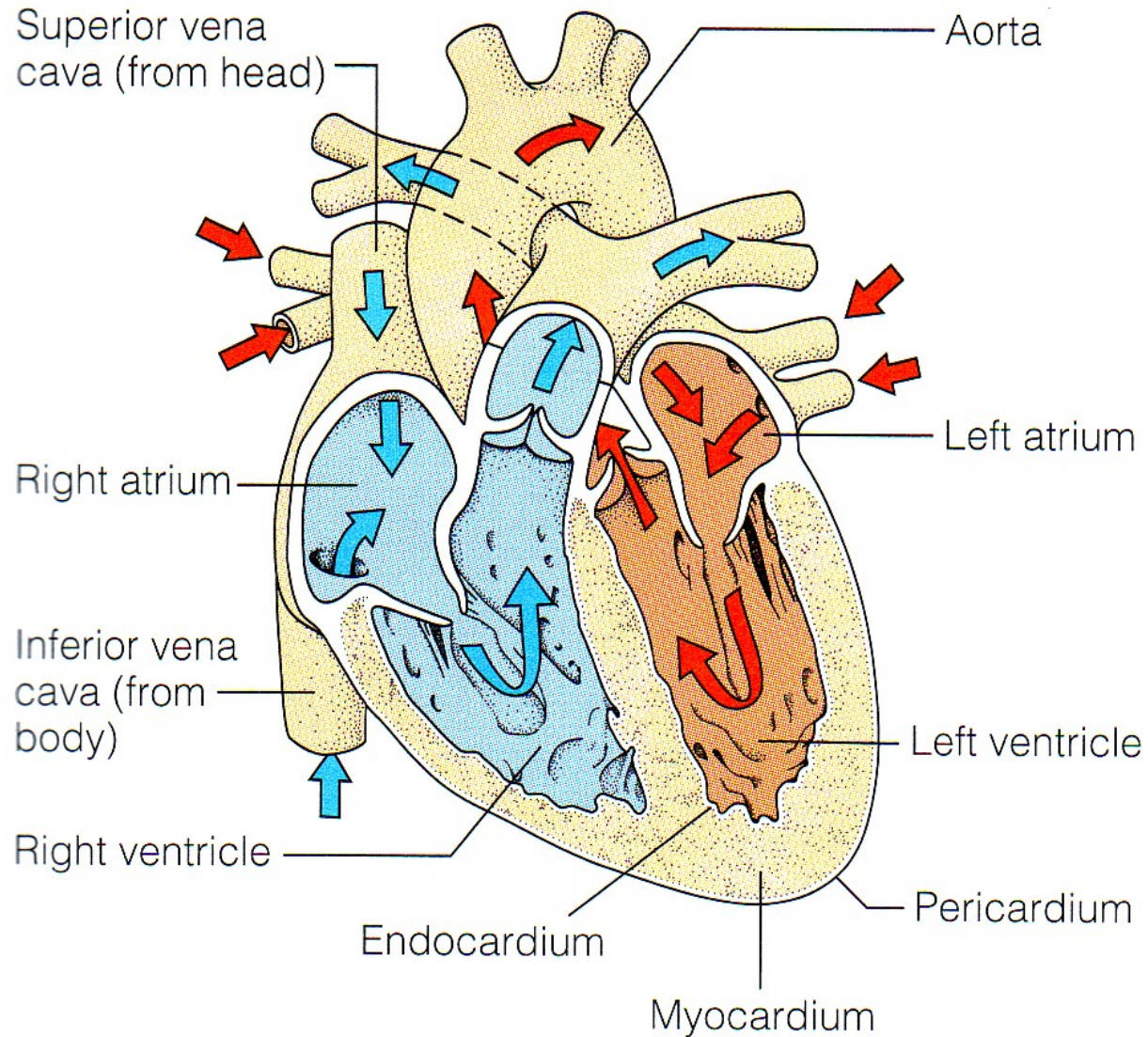
Septum

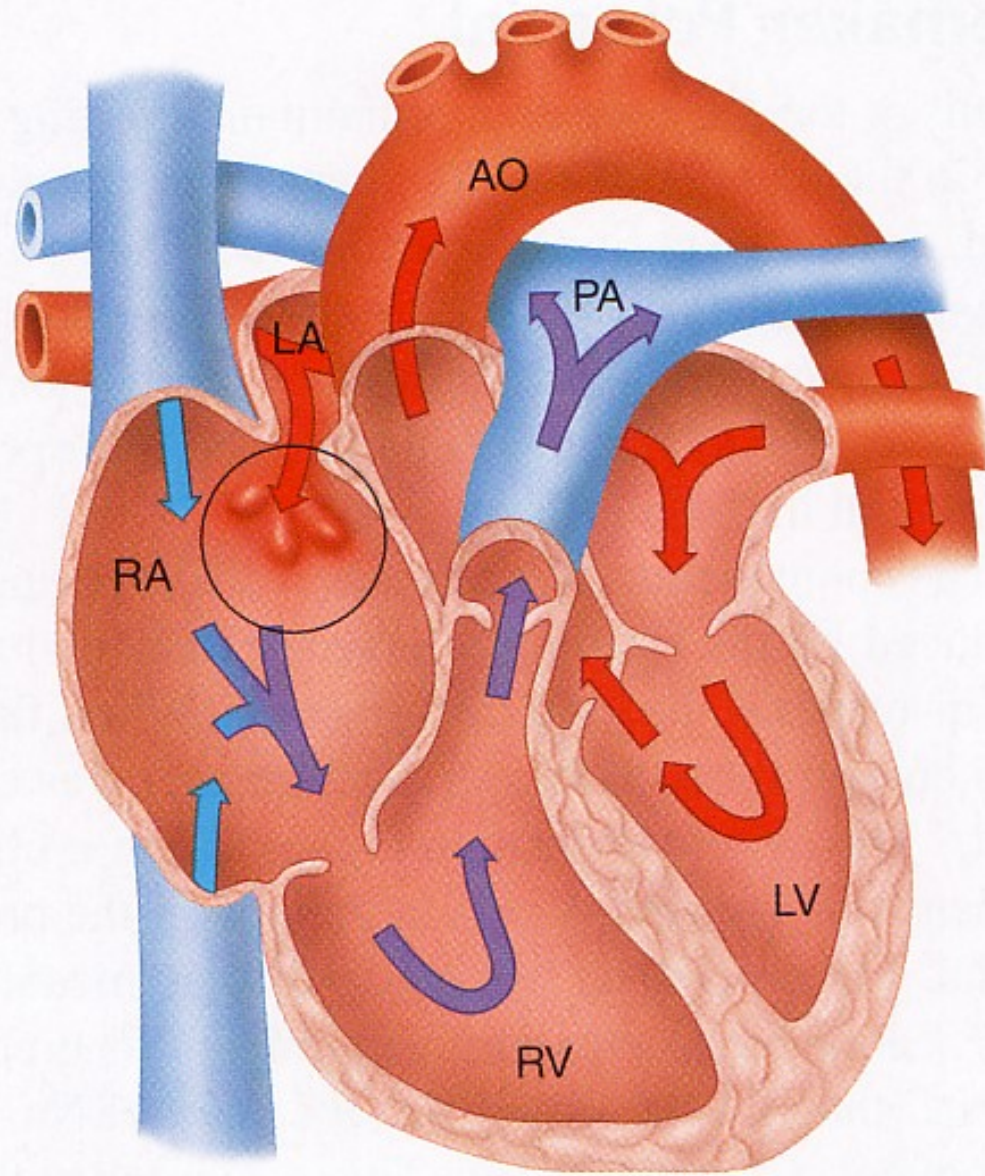
KEY

- O₂-rich blood
- O₂-poor blood



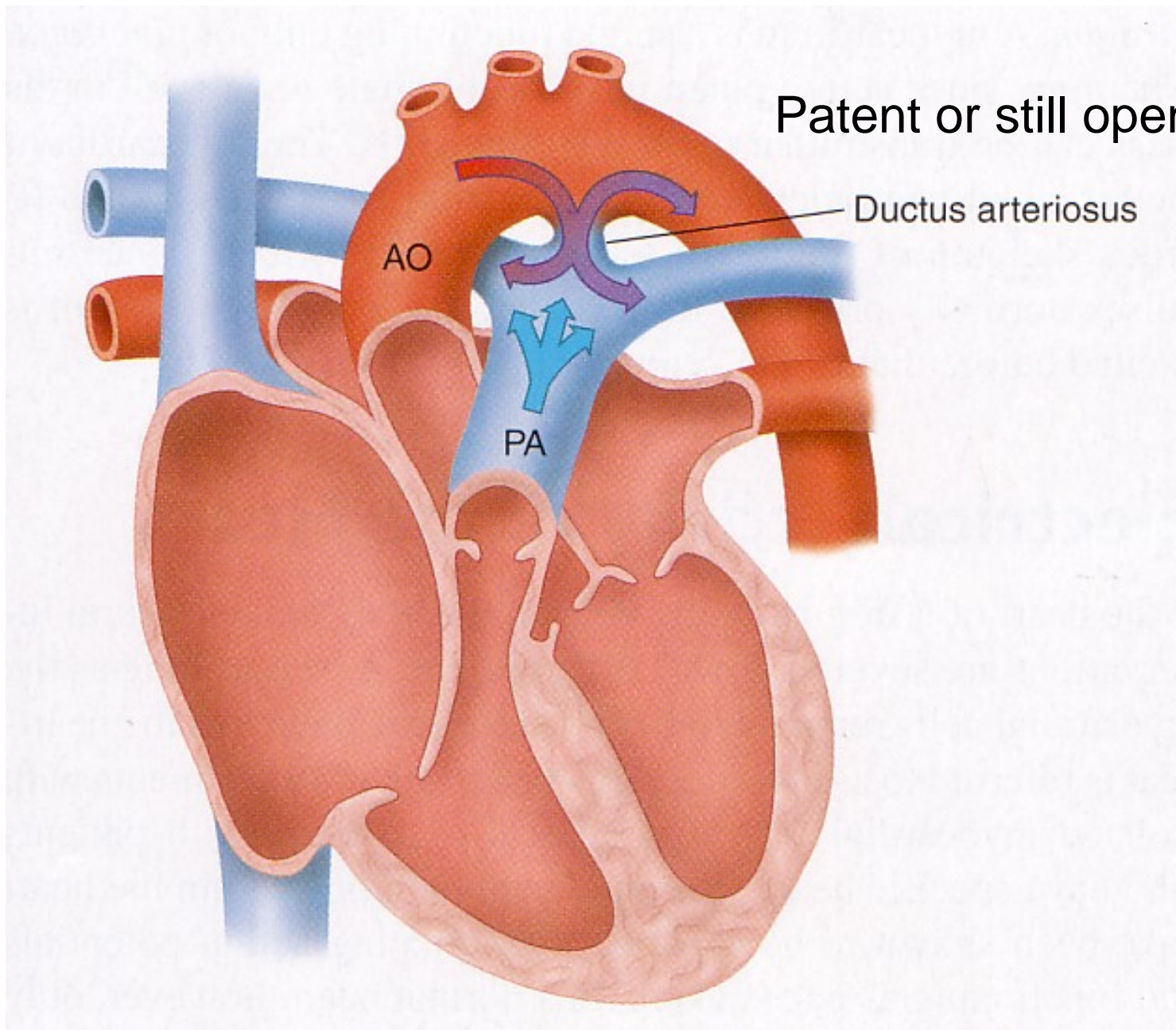
Veins → Atria → Ventricles → Arteries





SI Fox 2009 fig 13.16 p 419

Septal defect
in atria



Patent or still open!

Ductus arteriosus

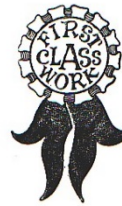
AO

PA

WOW!



SUPER



~ TOP 5-10!

EXCELLENT!!



~ TOP 15!

GREAT EFFORT



~ TOP 20-25!

Class Frequency Distribution Report

BI 121 MT U15, Part II, Multiple Choice

Overall

Mean Score: 77.81%

Grade	Percent Score	Raw Score	Frequency	Percent
A	90.00 - 100.00	36.00 - 40.00	9	22.50
B	80.00 - 89.99	32.00 - 35.99	9	22.50
C	70.00 - 79.99	28.00 - 31.99	12	30.00
D	60.00 - 69.99	24.00 - 27.99	8	20.00
F	0.00 - 59.99	0.00 - 23.99	2	5.00

