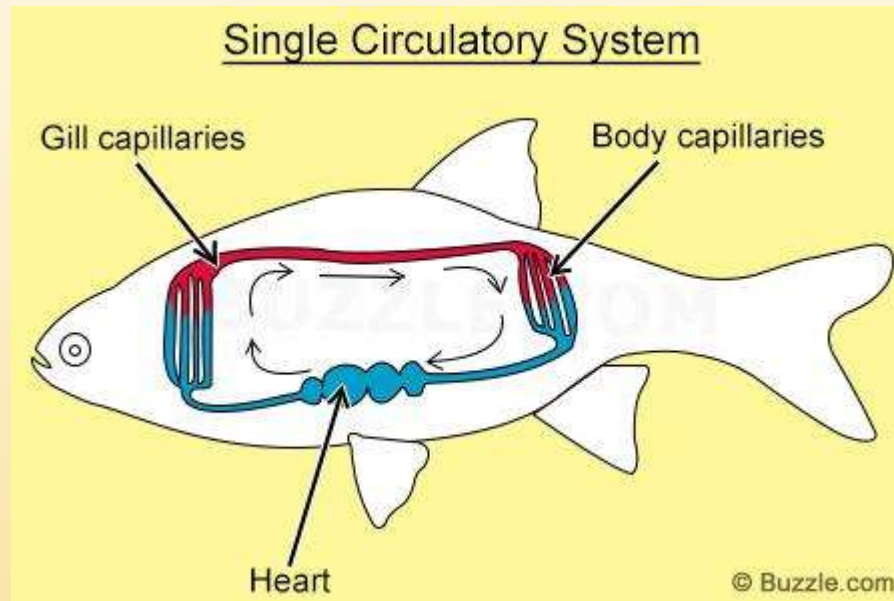


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Evoluce oběhových soustav



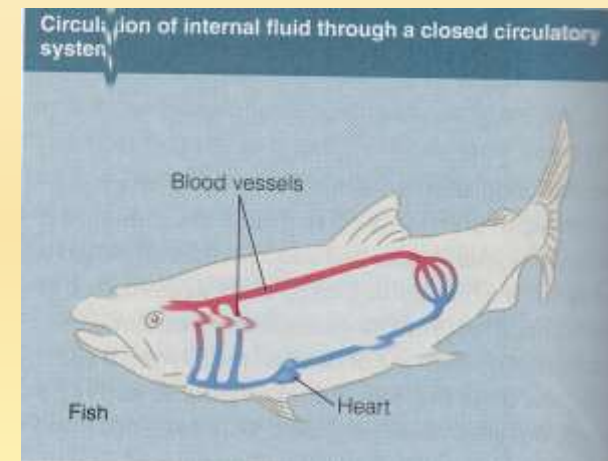
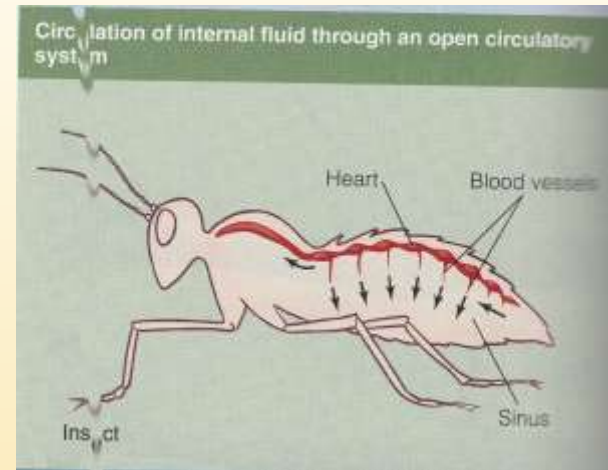
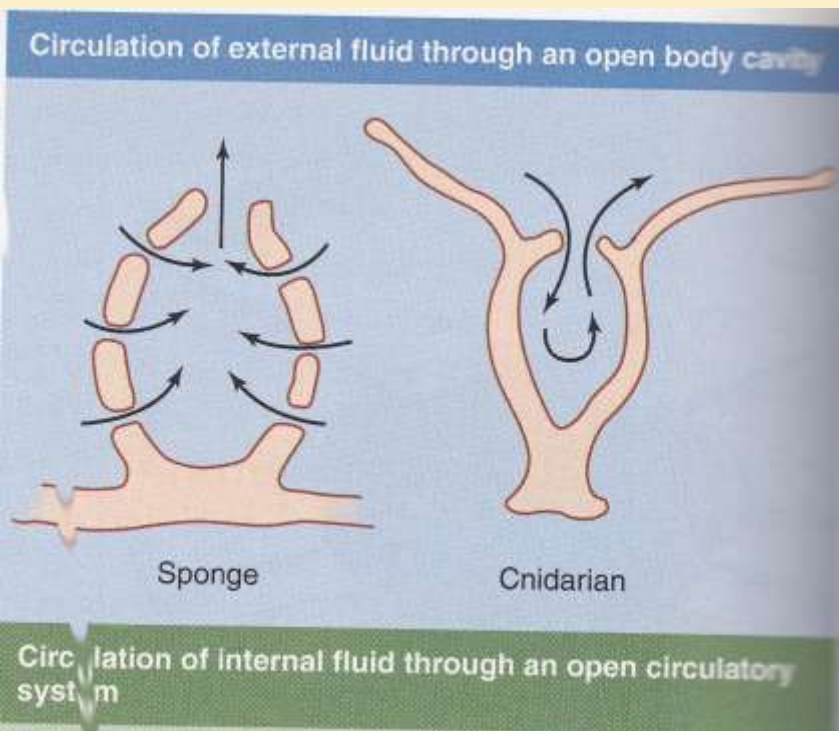
Oldřich Nedvěd

Jihočeská univerzita v Českých Budějovicích



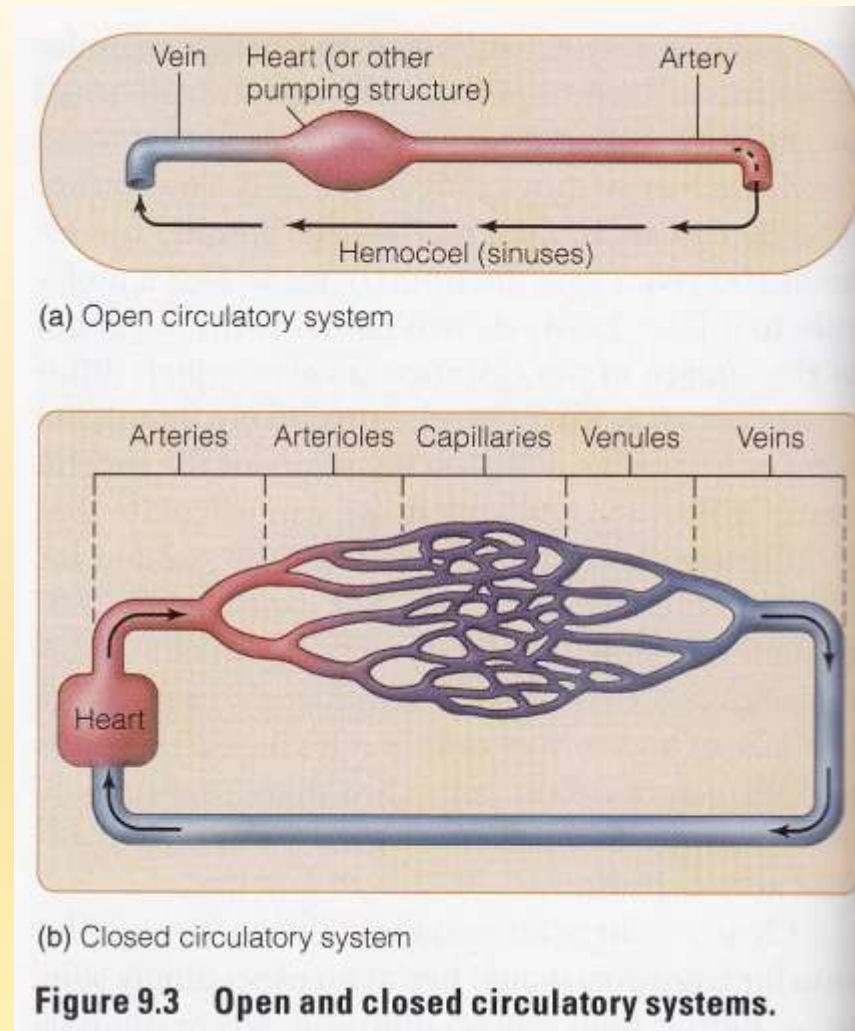
Evoluce oběhových soustav

- External fluid
- Open circulatory systém
- Closed circulatory system



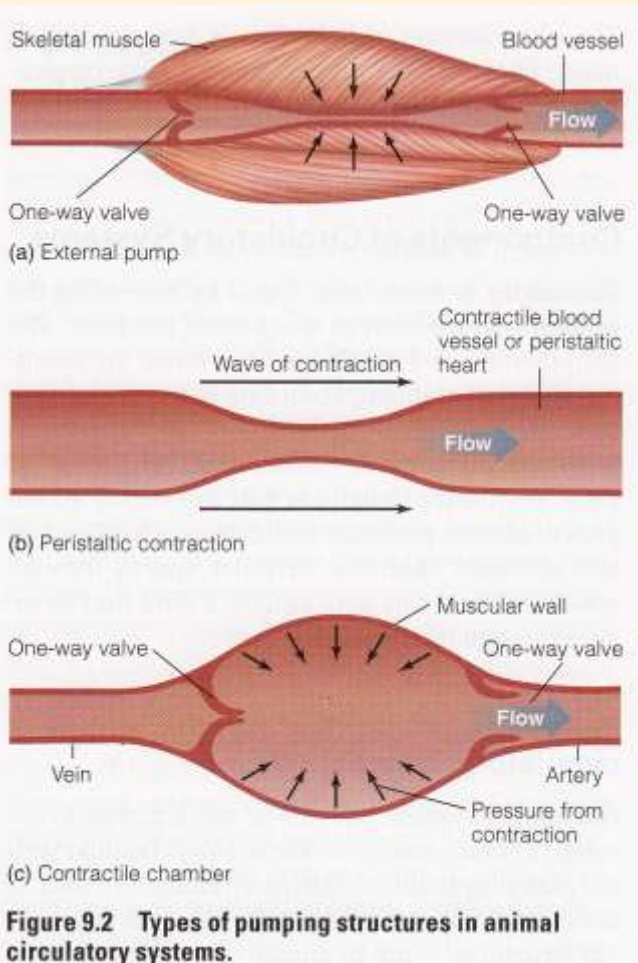
Evoluce oběhových soustav

- Open circulatory system
- Closed circulatory system



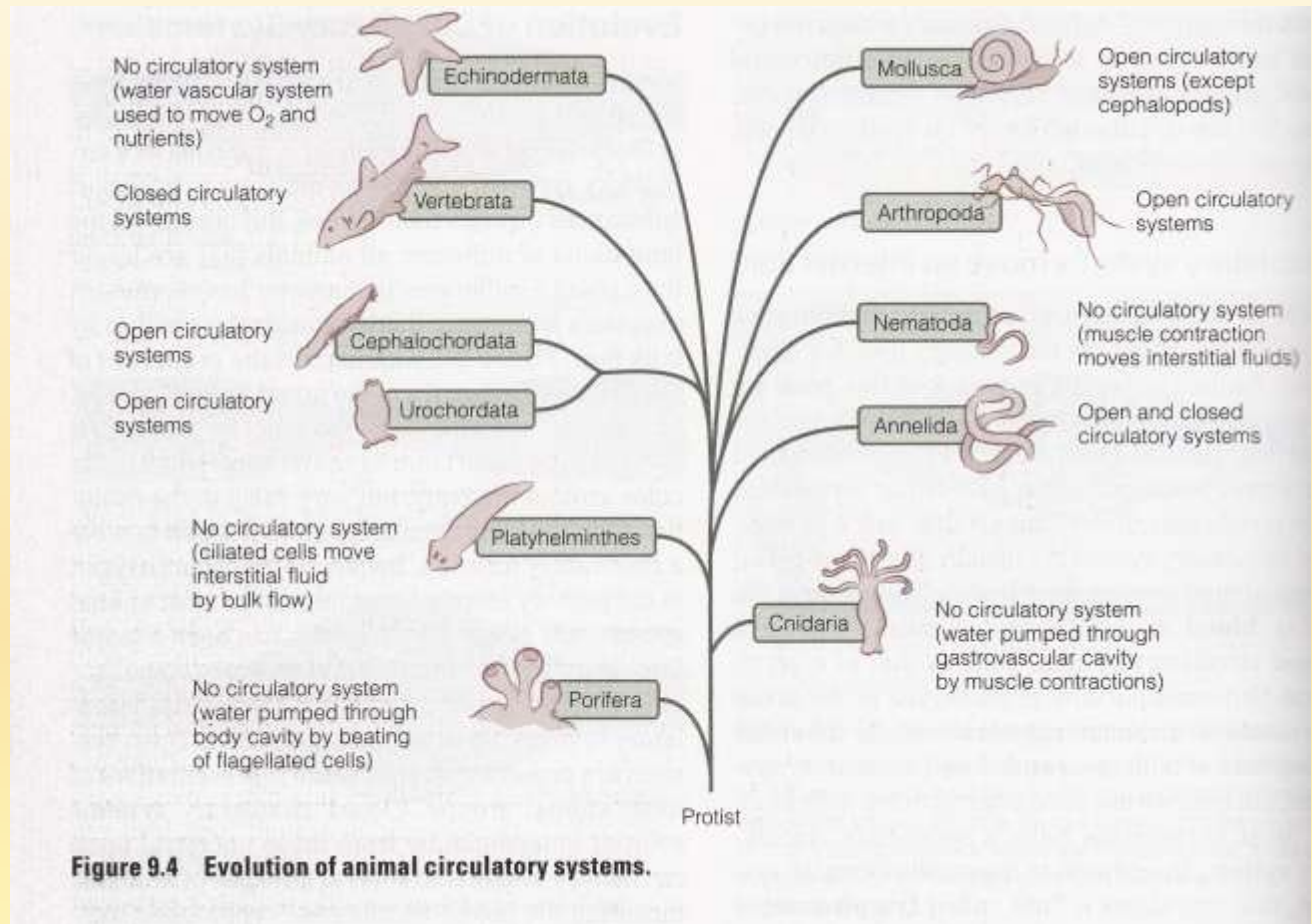
Evoluce oběhových soustav

- Pumping structures



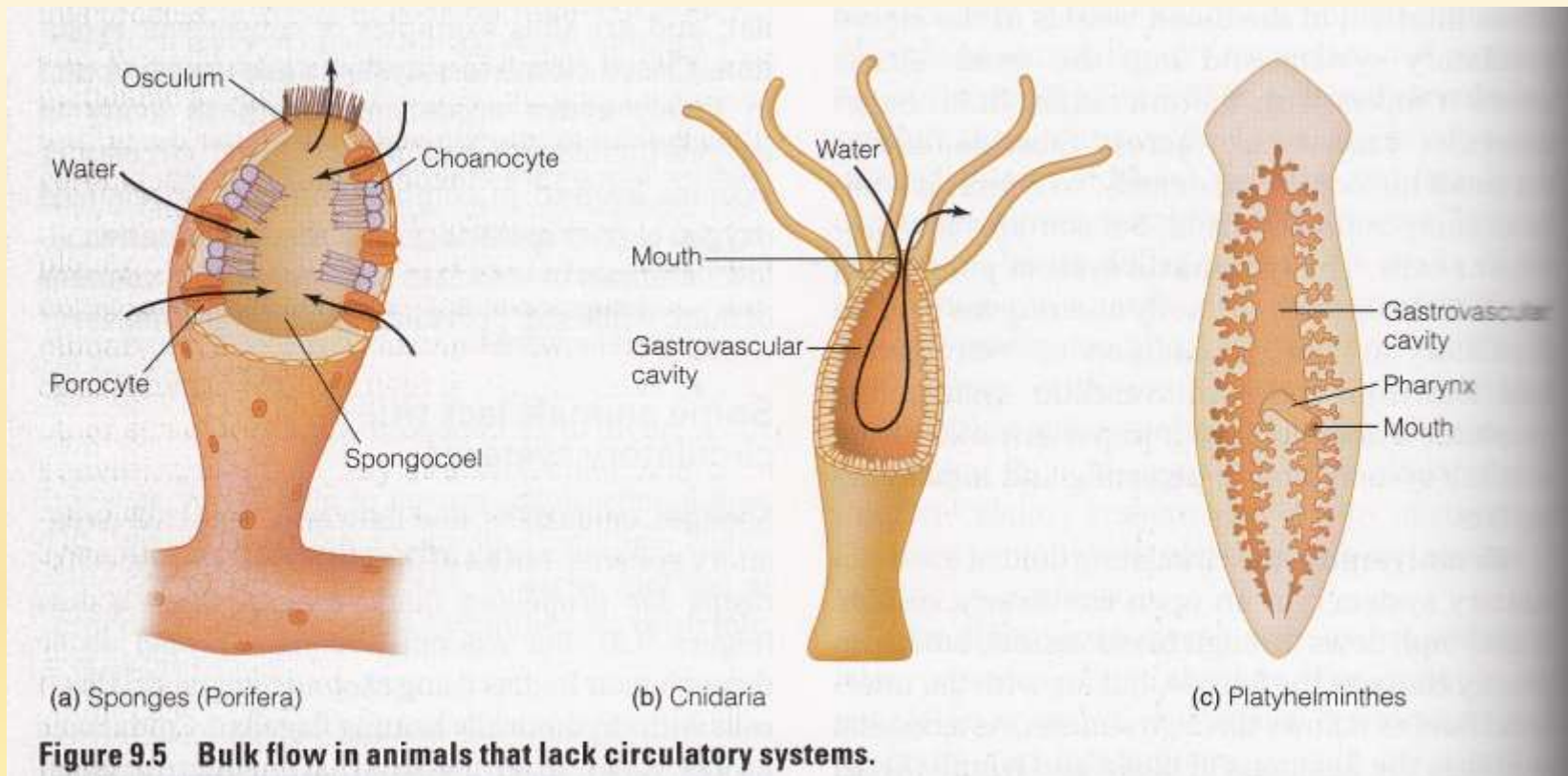
Evoluce oběhových soustav

- Animal phyla



Evoluce oběhových soustav

- Bulk flow



Evoluce oběhových soustav

- Annelida

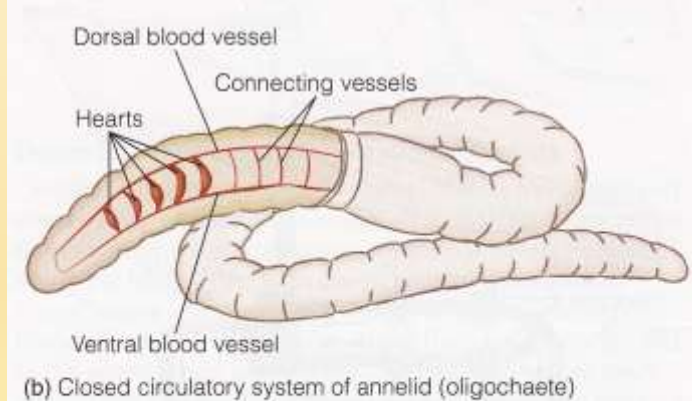
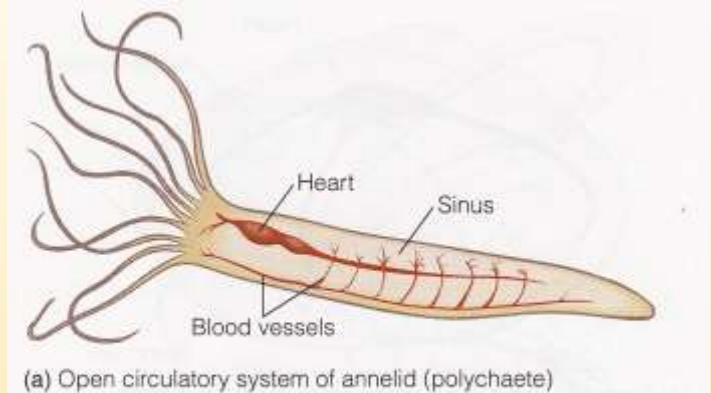


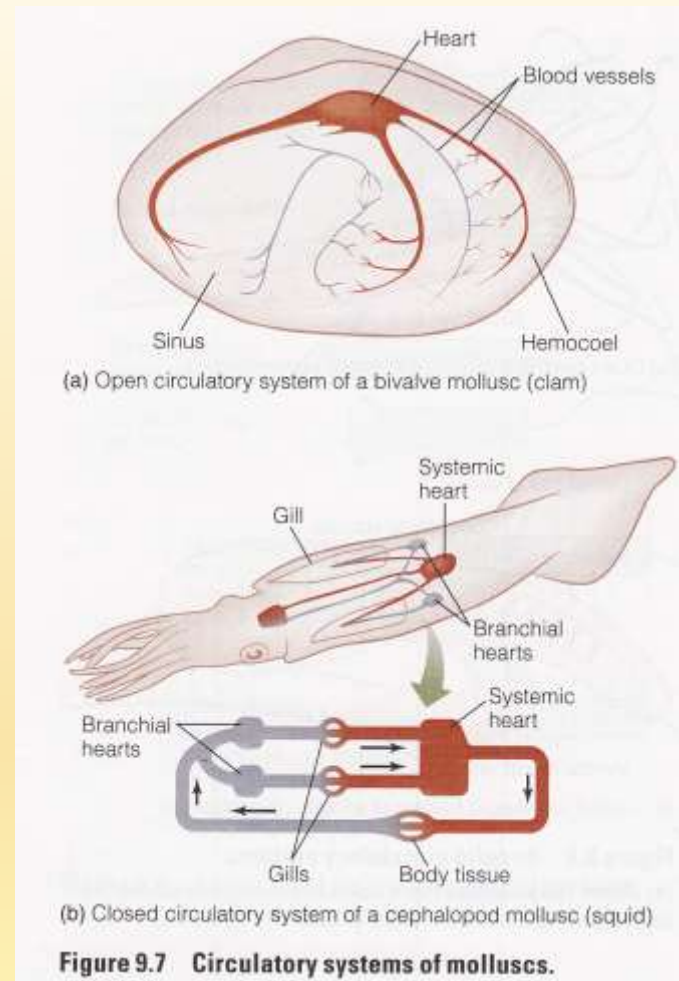
Figure 9.6 Annelid circulatory systems.

- (a) Some polychaetes have open circulatory systems.
(b) Oligochaetes have closed circulatory systems.



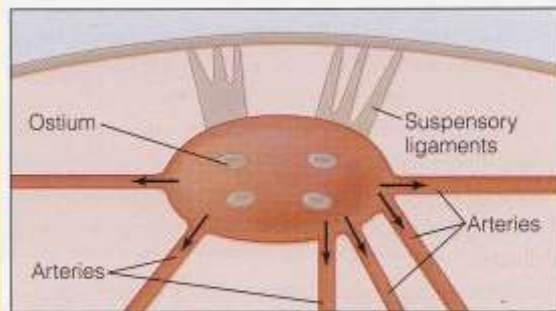
Evoluce oběhových soustav

- Mollusca

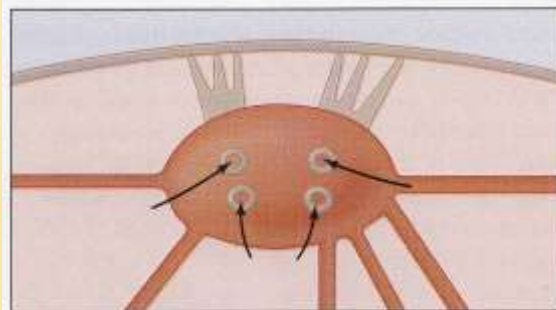


Evoluce oběhových soustav

- Crustacea

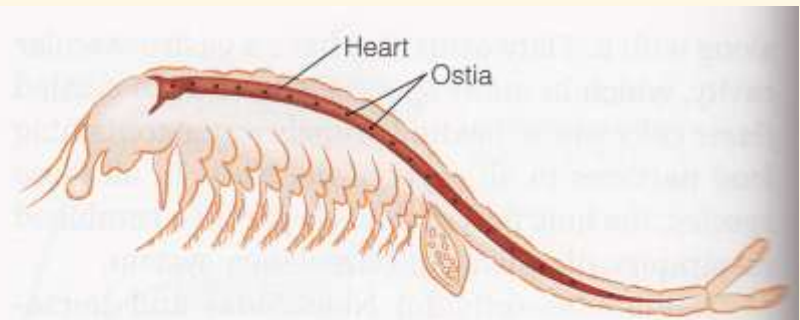


(a) Systole

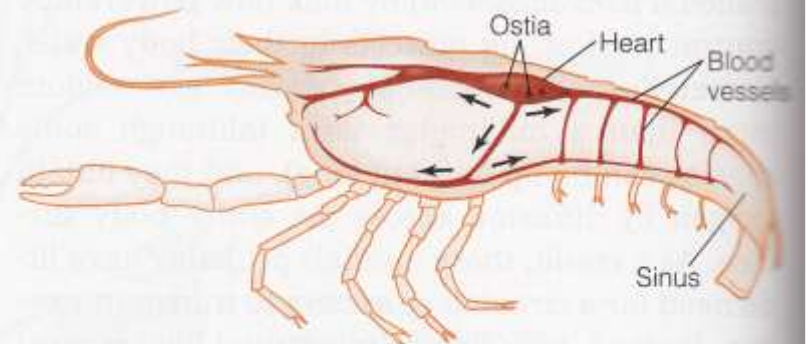


(b) Diastole

Figure 9.13 The cardiac cycle in decapod crustaceans.



(a) Brachiopod crustacean (fairy shrimp)



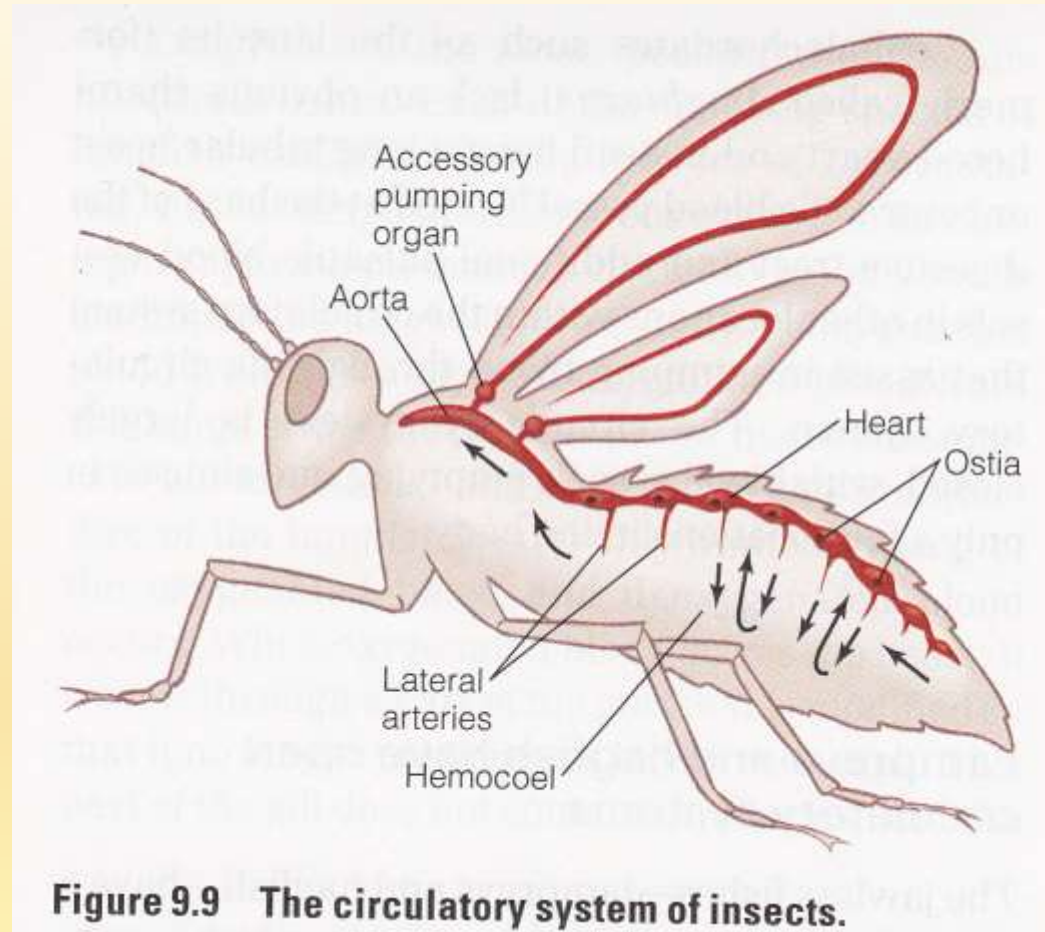
(b) Decapod crustacean (crayfish)

Figure 9.8 Circulatory systems in crustaceans.



Evoluce oběhových soustav

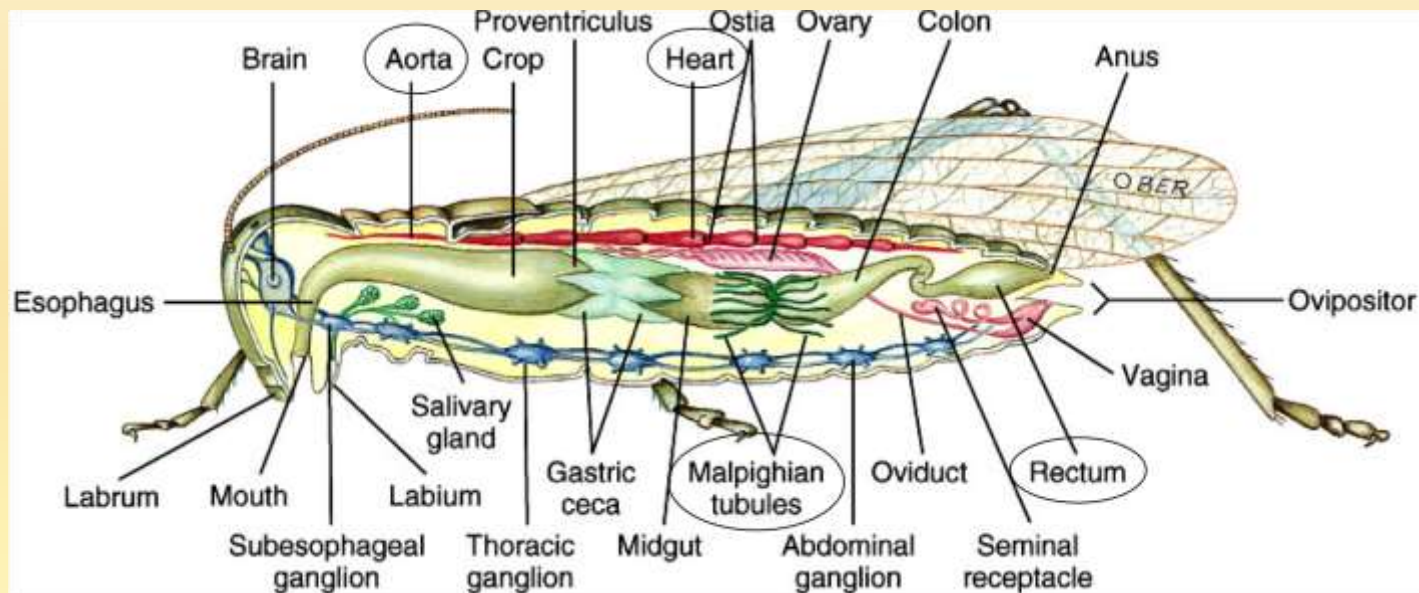
- Insecta



Evoluce oběhových soustav

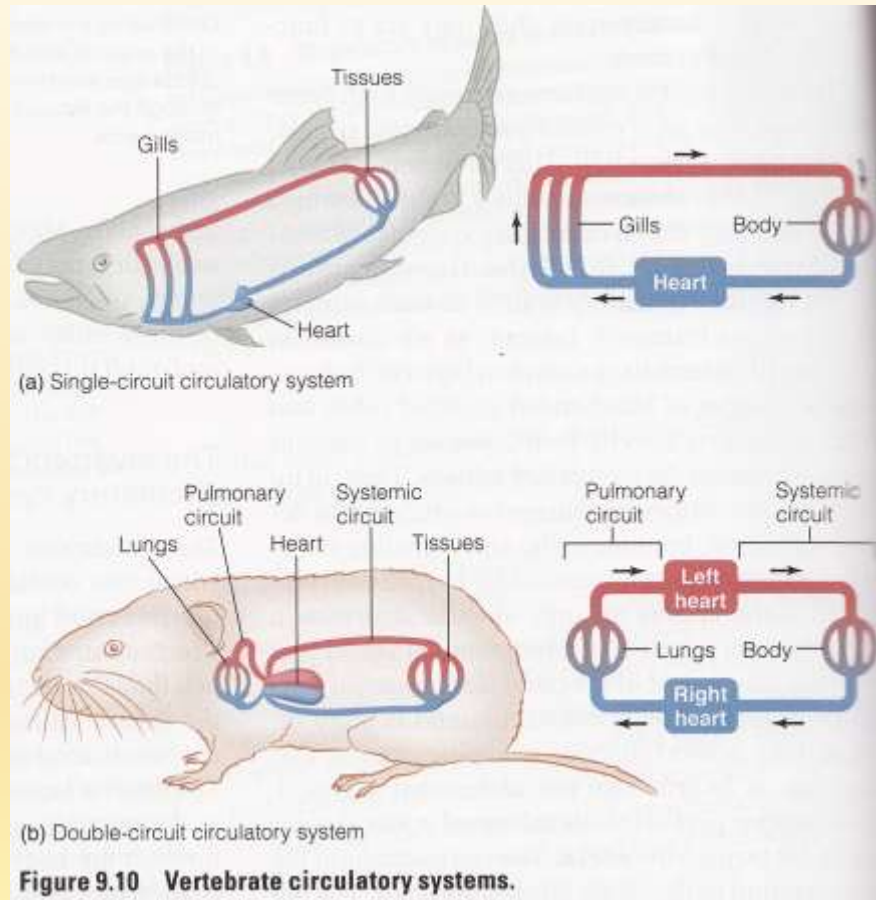
- Insecta

- Diaphragm ventral, dorsal
- Sinus pericardial, previsceral, perineural
- Septa (appendages)
- Alary muscles
- Accessory pulsatile organs



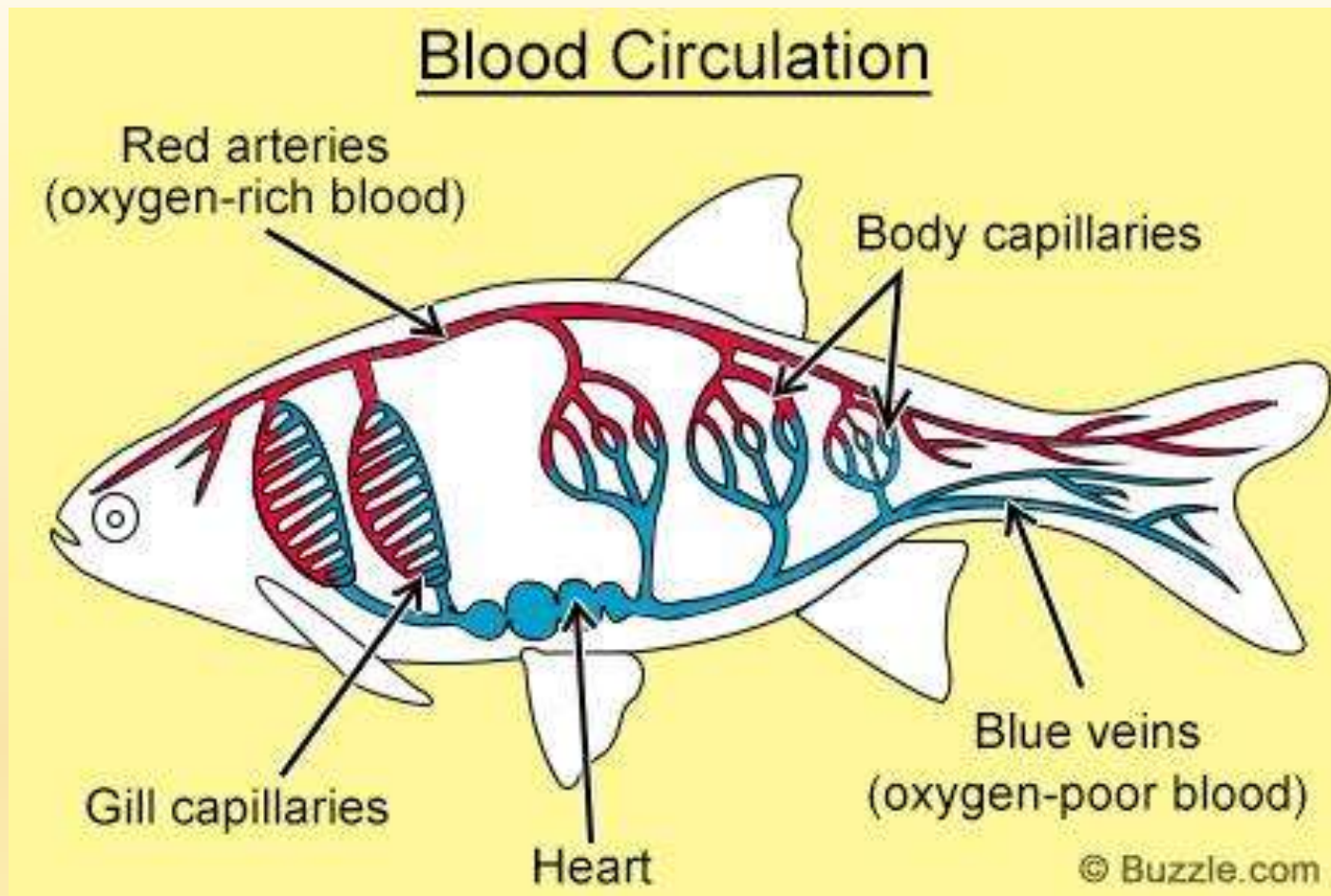
Evoluce oběhových soustav

- Vertebrata



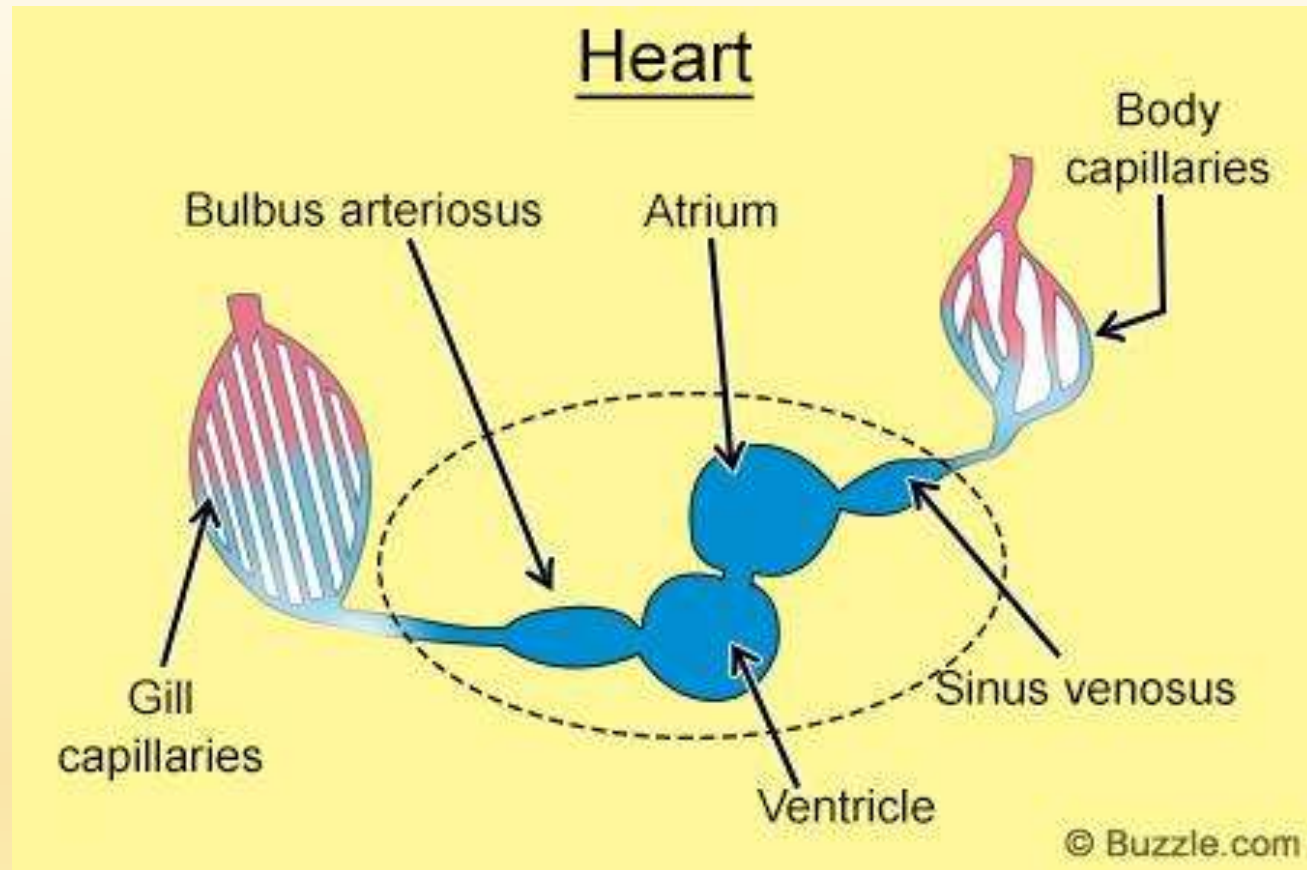
Evoluce oběhových soustav

- Osteichthyes



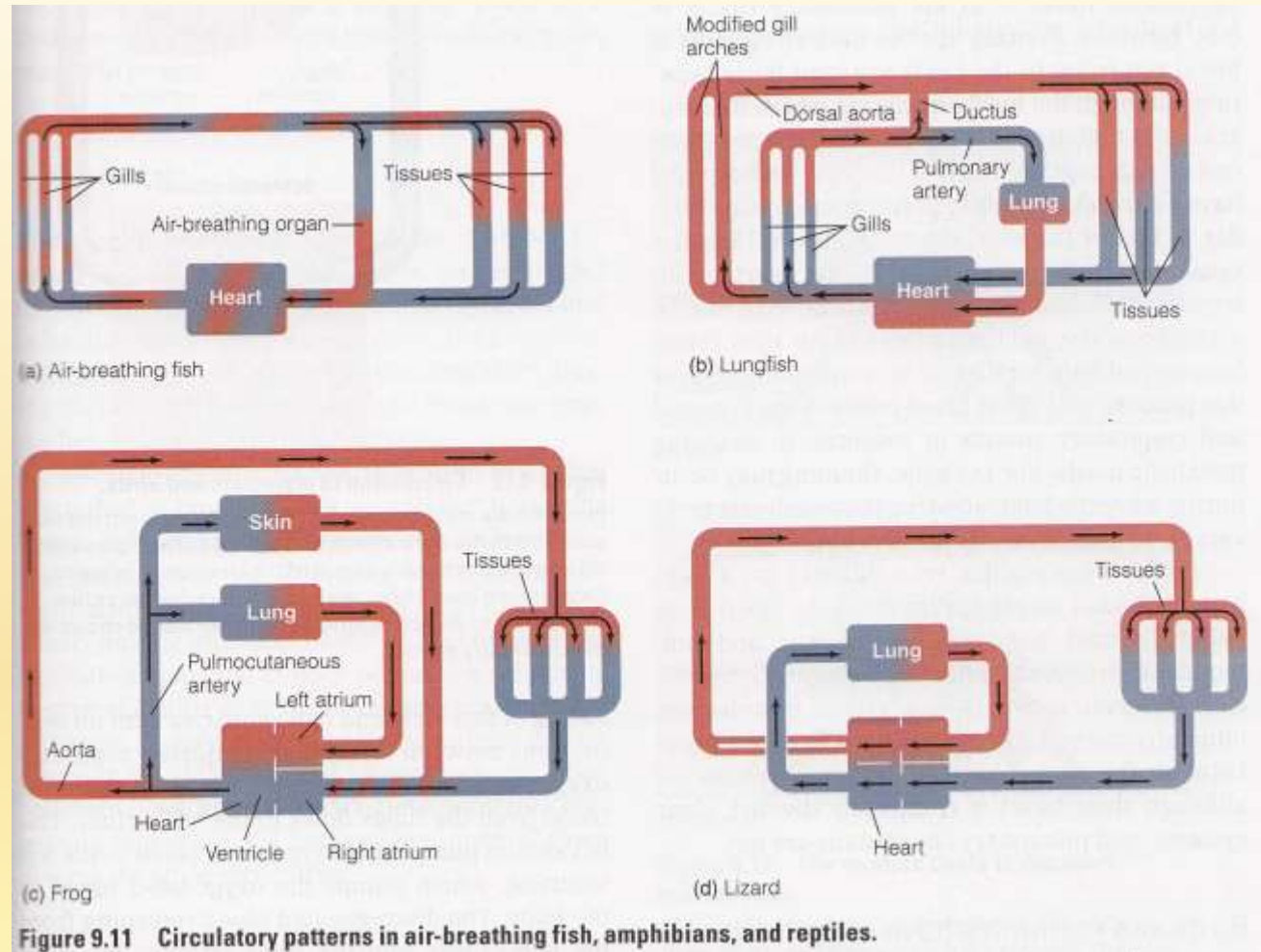
Evoluce oběhových soustav

- Osteichthyes
 - bulbus arteriosus
- Elasmobranchia
 - conus arteriosus



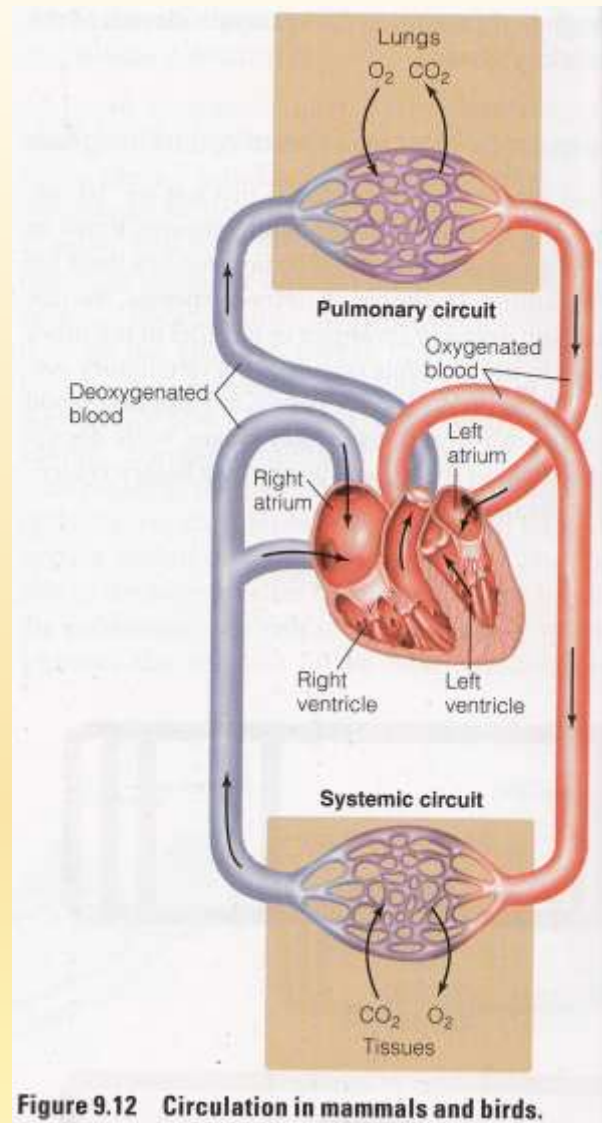
Evoluce oběhových soustav

- Vertebrata
- Aquatic
- Amphibian
- Terrestrial



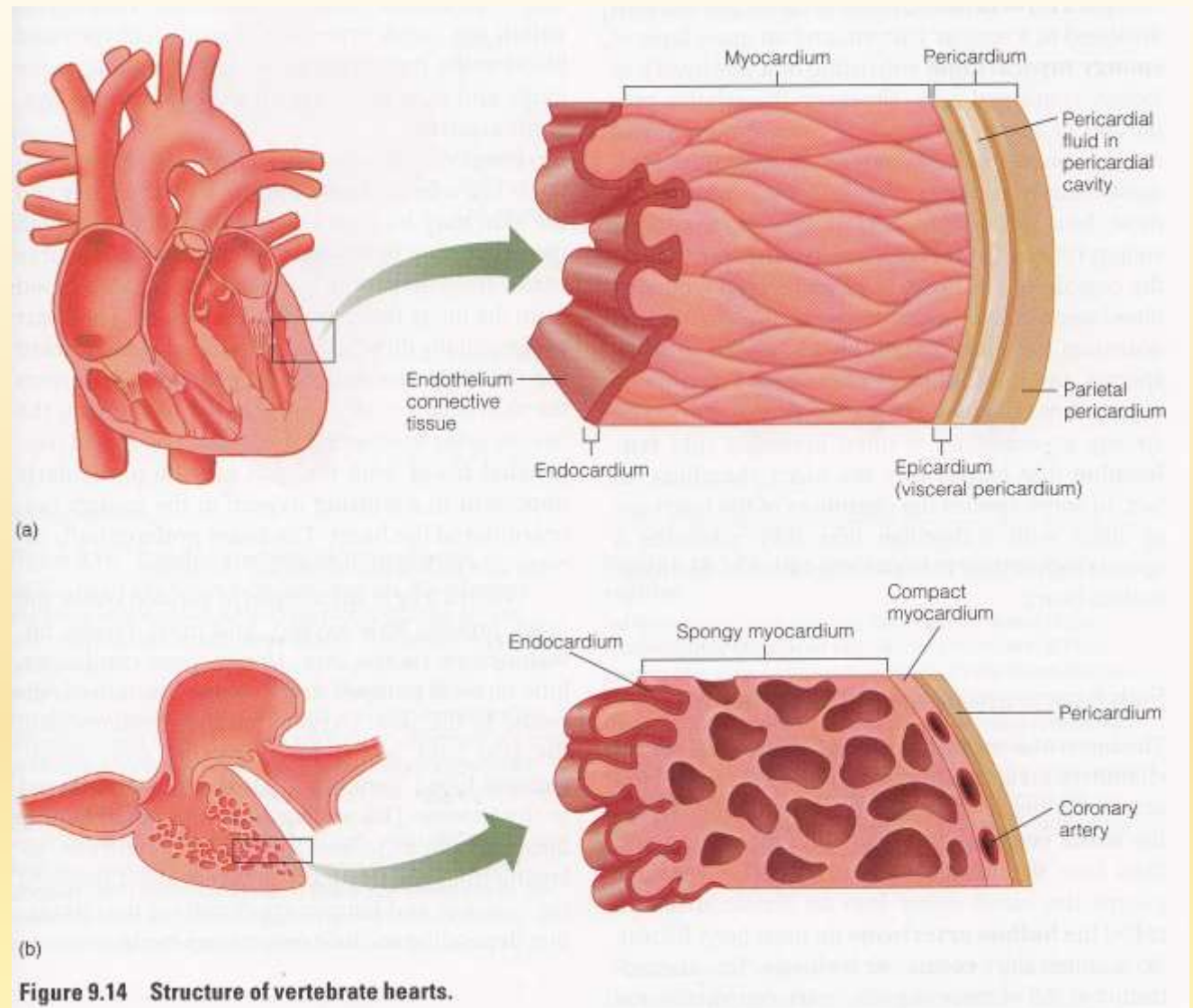
Evoluce oběhových soustav

- Vertebrata
- Warm blooded



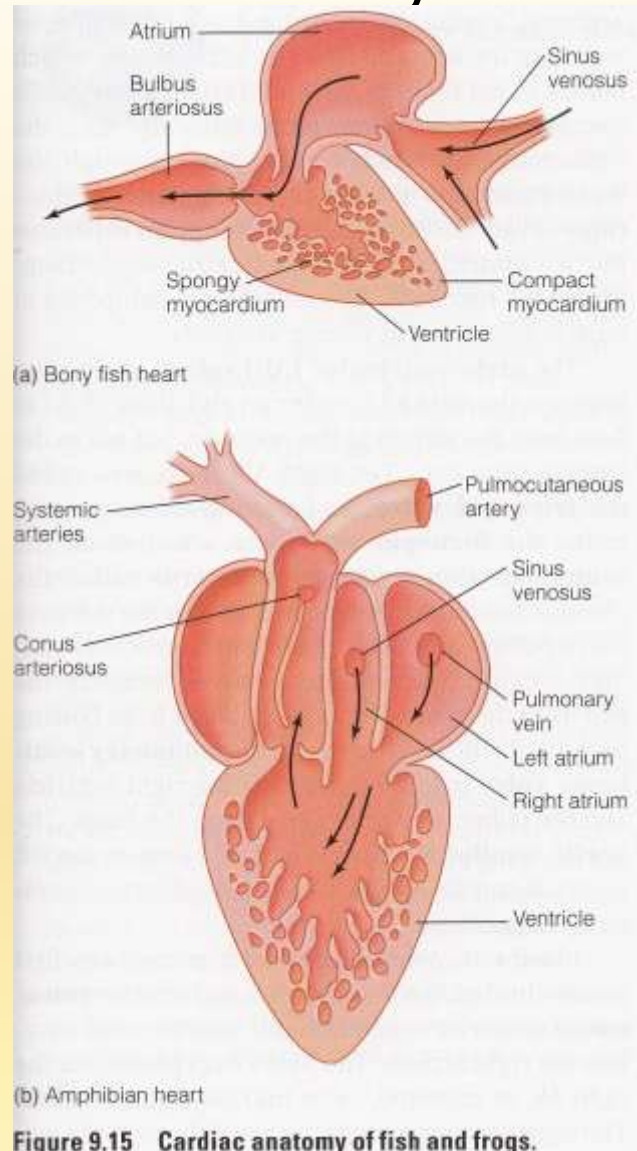
Evoluce oběhových soustav

- Vertebrata
- Cardiac tissue



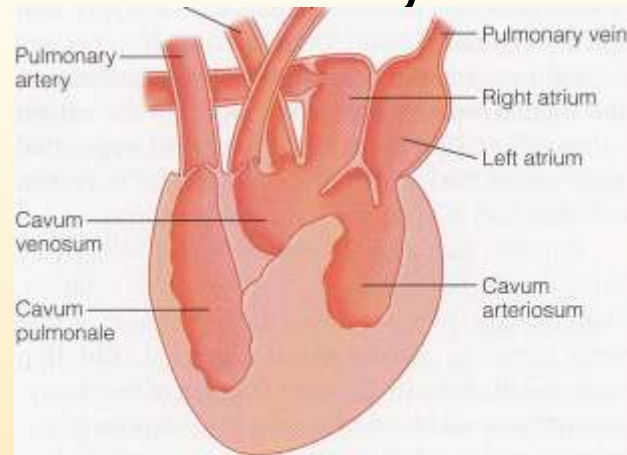
Evoluce oběhových soustav

- Fish
- Amphibians
- Heart structure

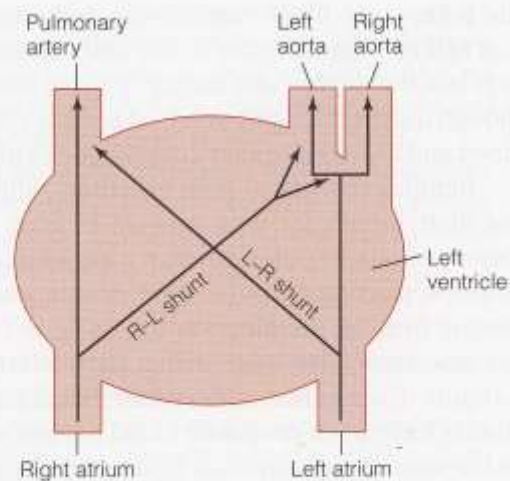


Evoluce oběhových soustav

- Lizards
- Heart structure



(a) Cardiac anatomy of non-crocodilian reptiles



(b) Blood flow through the heart of non-crocodilian reptiles

Figure 9.16 Cardiac anatomy of non-crocodilian reptiles.



Evoluce oběhových soustav

- Crocodiles
- Heart structure

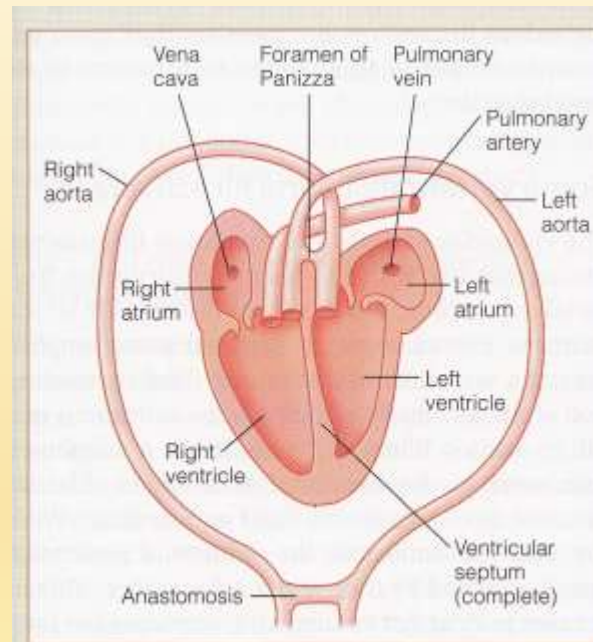


Figure A

• Syme, D. A., K. Gamperl, and D. H. Jones. 2002. Delayed depolarization of the cog-wheel valve and pulmonary-to-systemic shunting in alligators. *Journal of Experimental Biology* 205: 1843–1851.

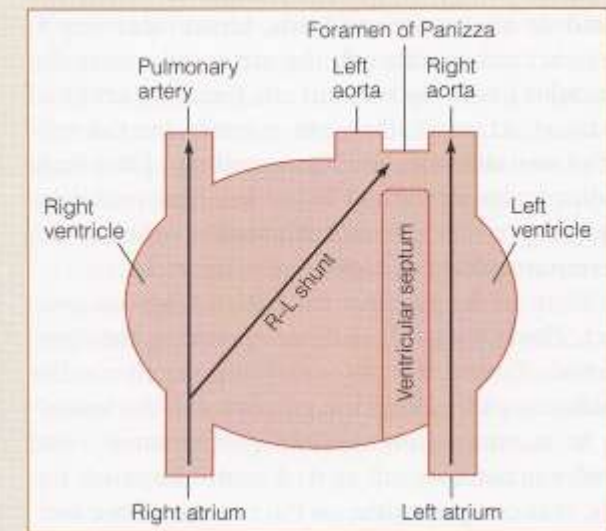
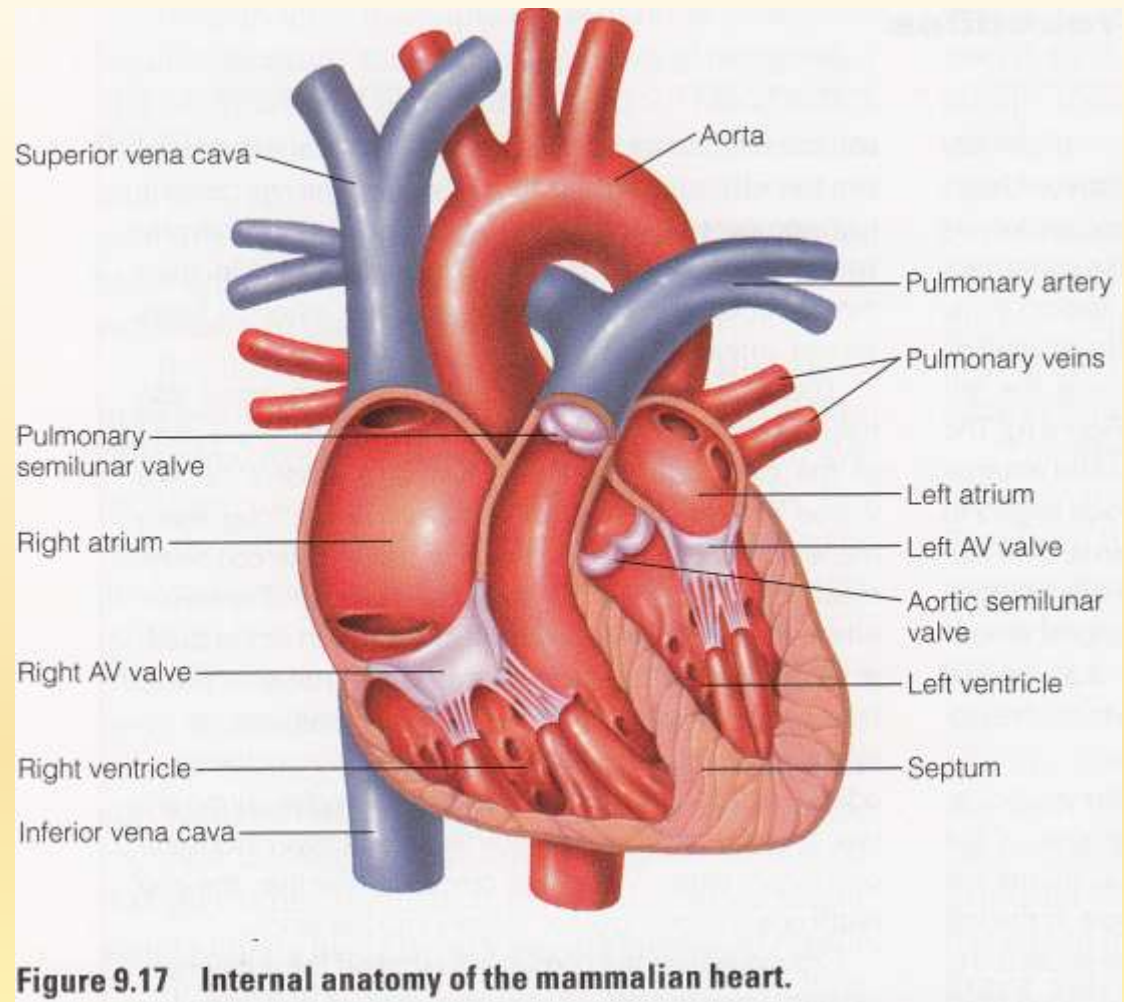


Figure B



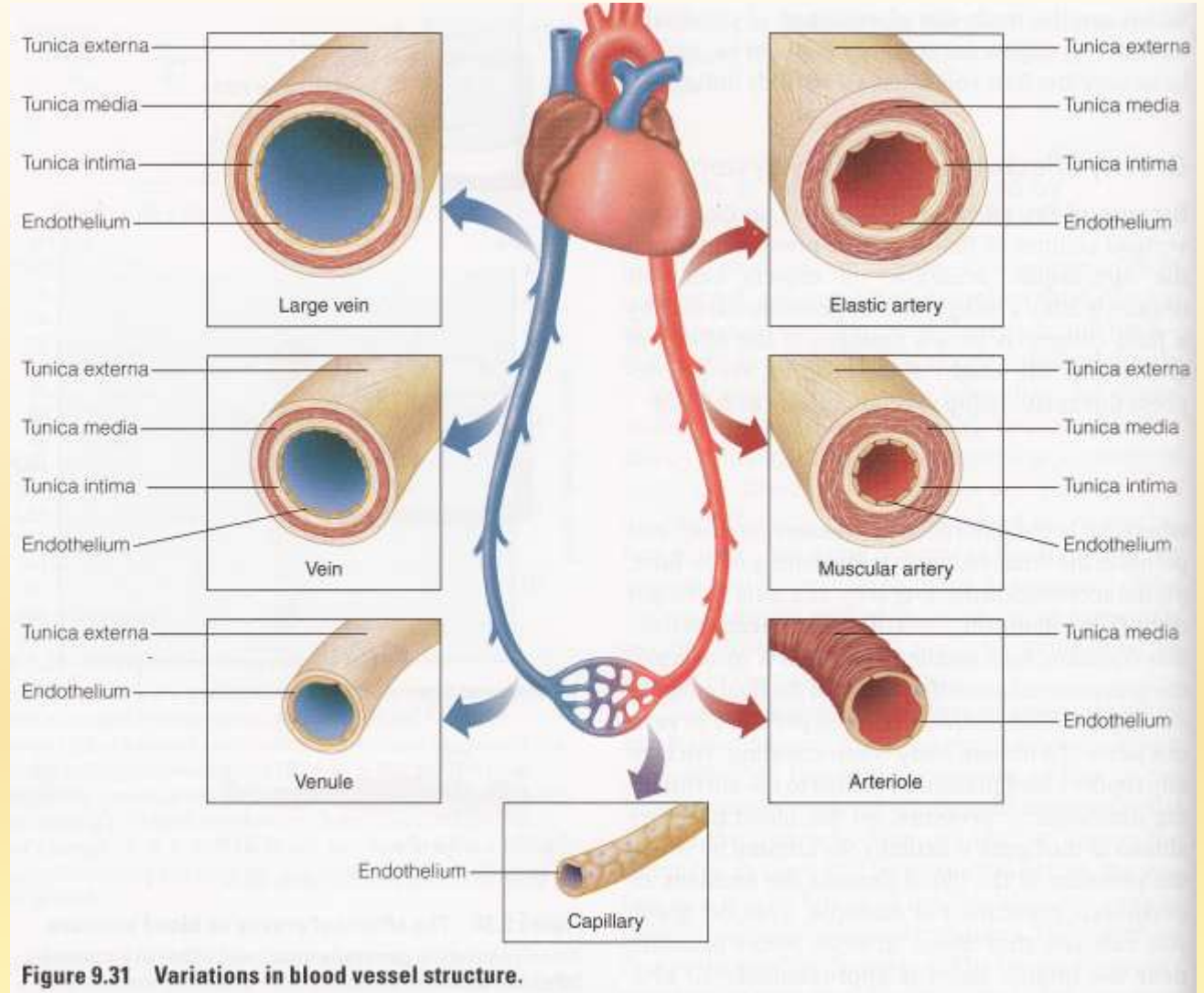
Evoluce oběhových soustav

- Mammals
- Heart structure



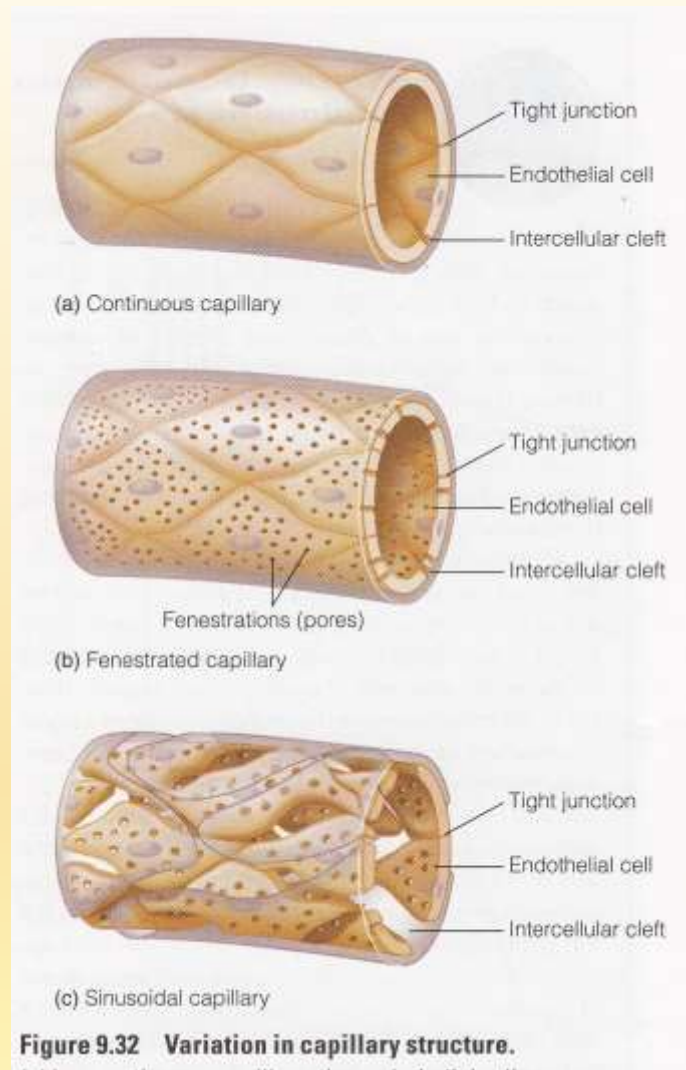
Evoluce oběhových soustav

- Mammals
- Veins
- Arteries



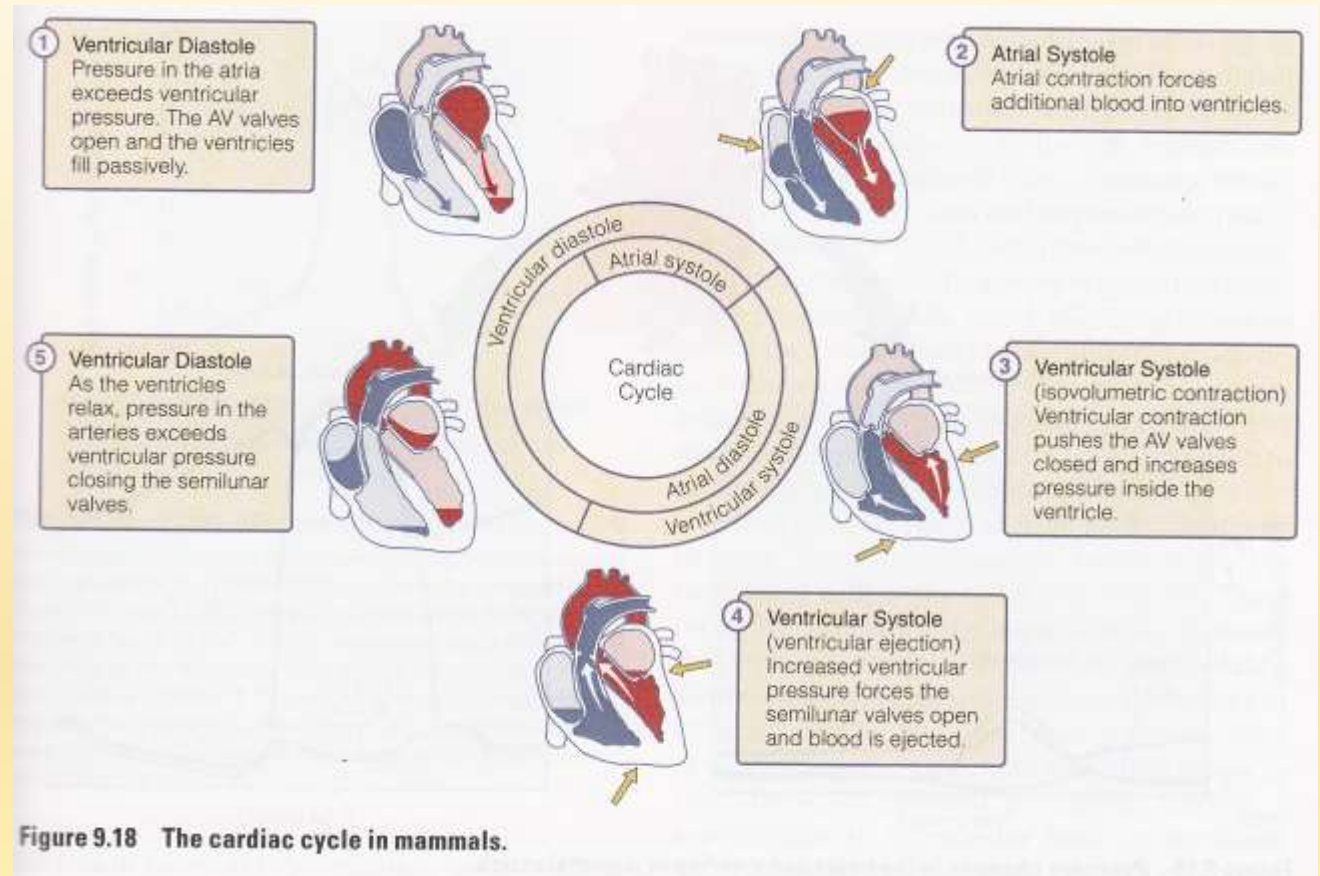
Evoluce oběhových soustav

- Mammals
- Capillaries



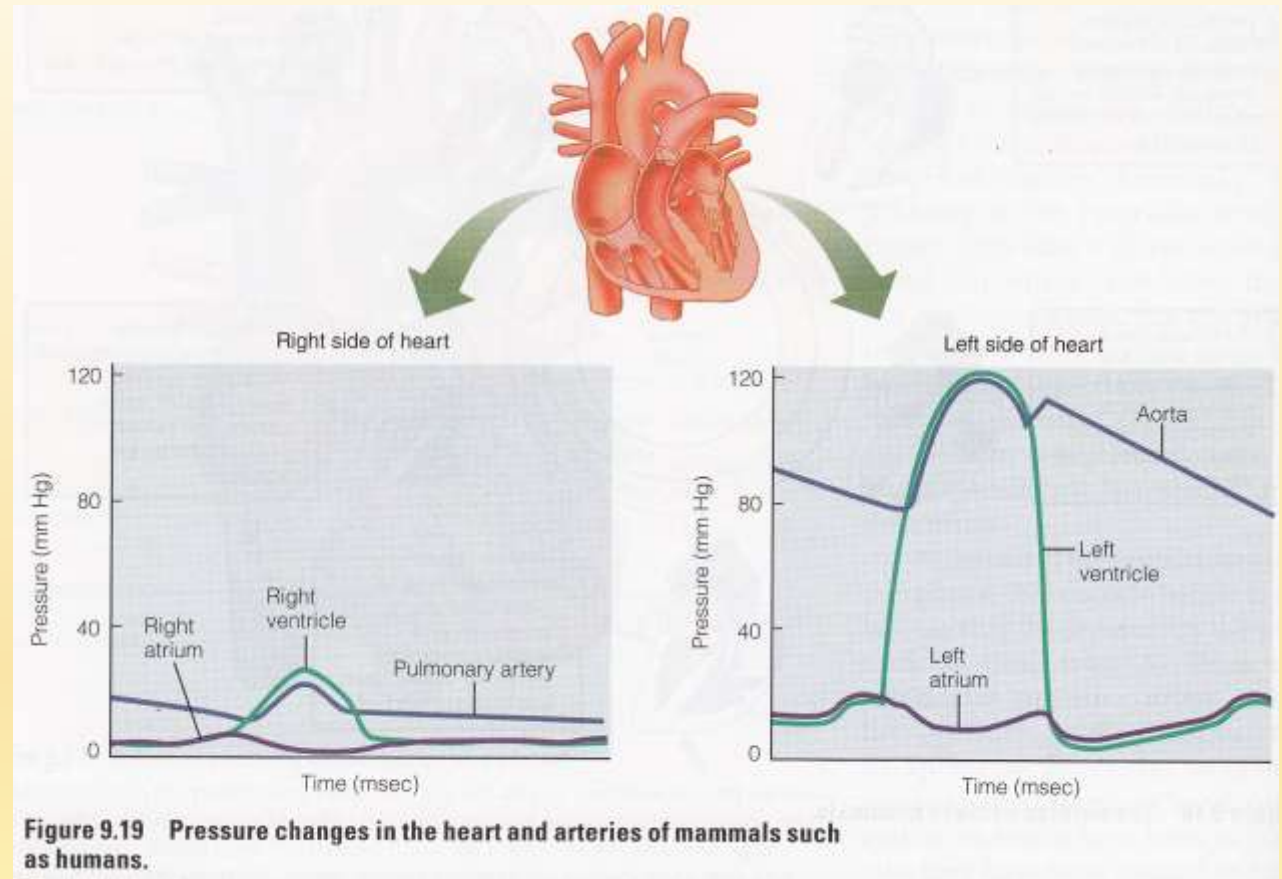
Evoluce oběhových soustav

- Mammals
- Heart function



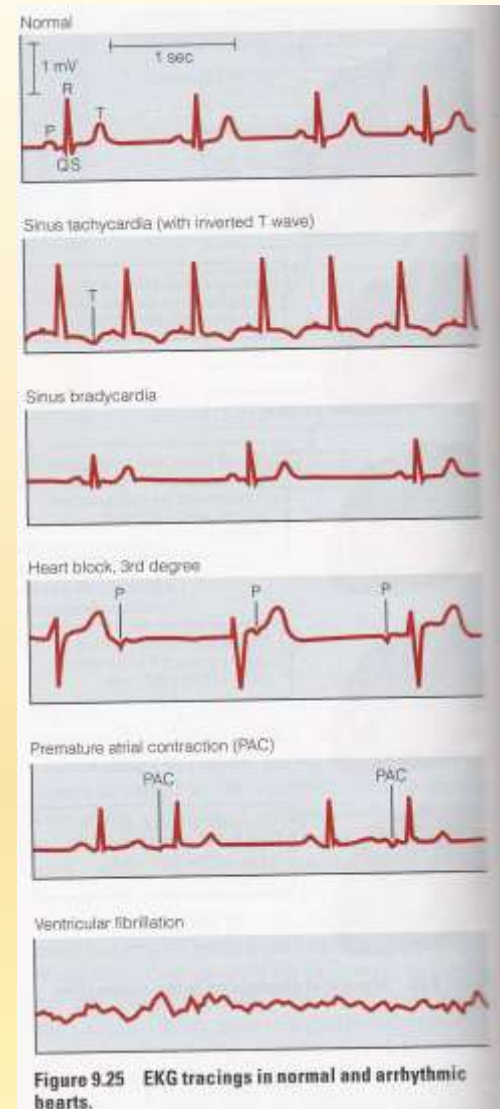
Evoluce oběhových soustav

- Mammals
- Heart function



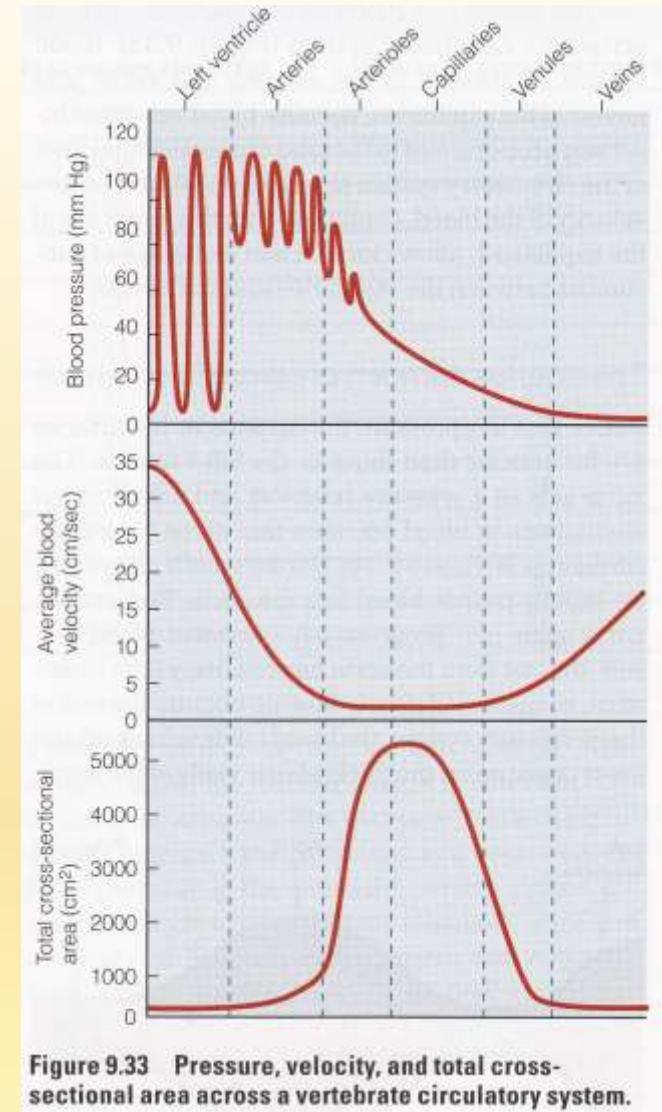
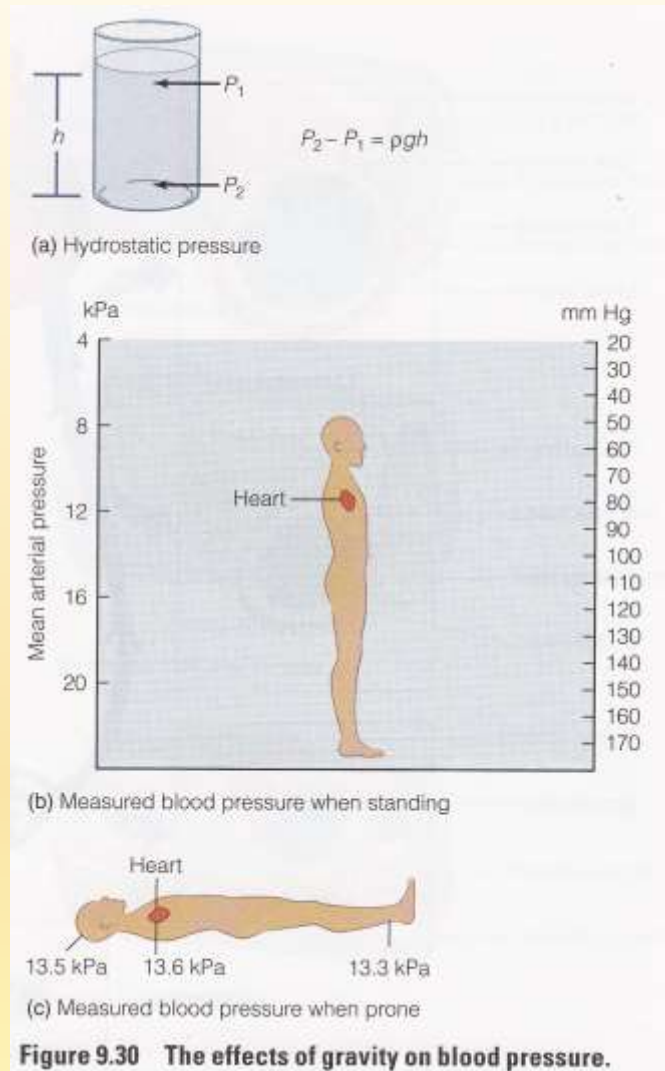
Evoluce oběhových soustav

- Mammals
- EKG



Evoluce oběhových soustav

- Mammals
- Blood pressure



Evoluce oběhových soustav

- Mammals
- Blood pressure

Table 9.1 Systolic and diastolic pressure in representative animals.

Species	Systolic pressure (mm Hg)	Diastolic pressure (mm Hg)
<i>Homo sapiens</i> (human)	120	80
<i>Equus caballus</i> (horse)	100	60
<i>Rattus norvegicus</i> (rat)	130	90
<i>Canis familiaris</i> (dog)	140	80
<i>Loxodonta africana</i> (African elephant)	120	70
<i>Columba livia</i> (pigeon)	135	100
<i>Turdus migratorius</i> (robin)	118	80
<i>Pseudemys scripta</i> (turtle—red-eared slider)	31	25
<i>Bana catesbeiana</i> (bullfrog)	32	21
<i>Oncorhynchus mykiss</i> (rainbow trout)	45	33
<i>Ictalurus punctatus</i> (channel catfish)	40	30
<i>Octopus vulgaris</i> (octopus)	27	15



Evoluce oběhových soustav

- Mammals
- Blood pressure

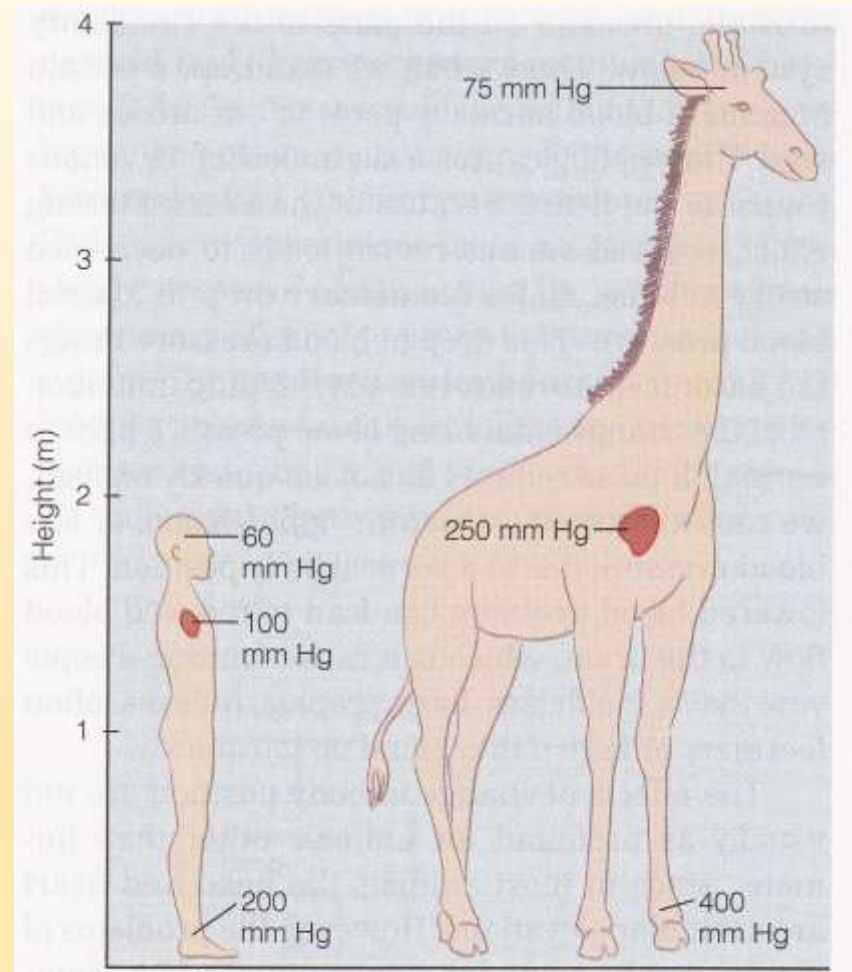


Figure 9.43 The effects of gravity on the circulatory system of a giraffe.



Evoluce oběhových soustav

- Mammals
- Lymphatic system

