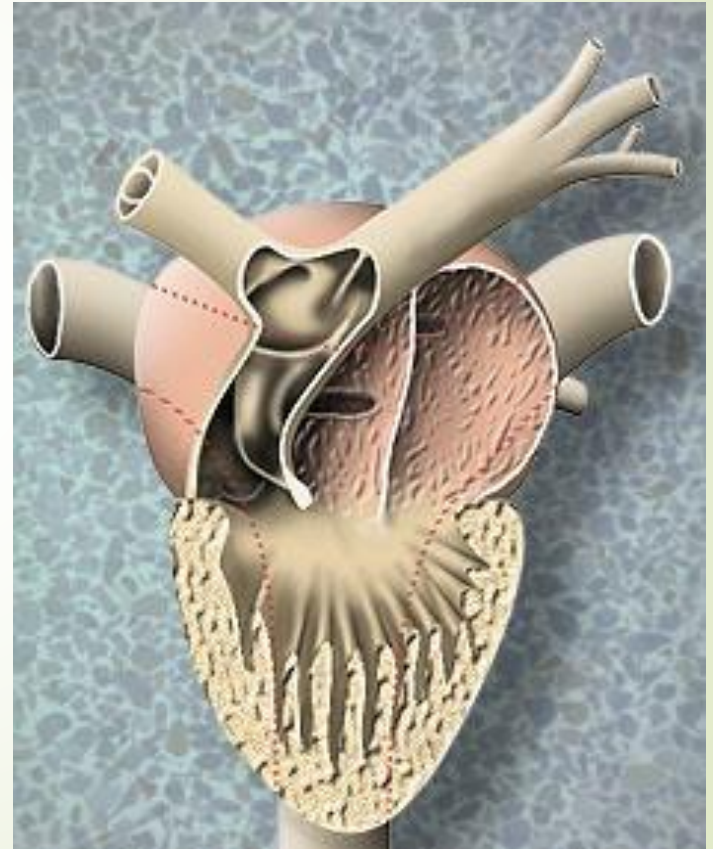


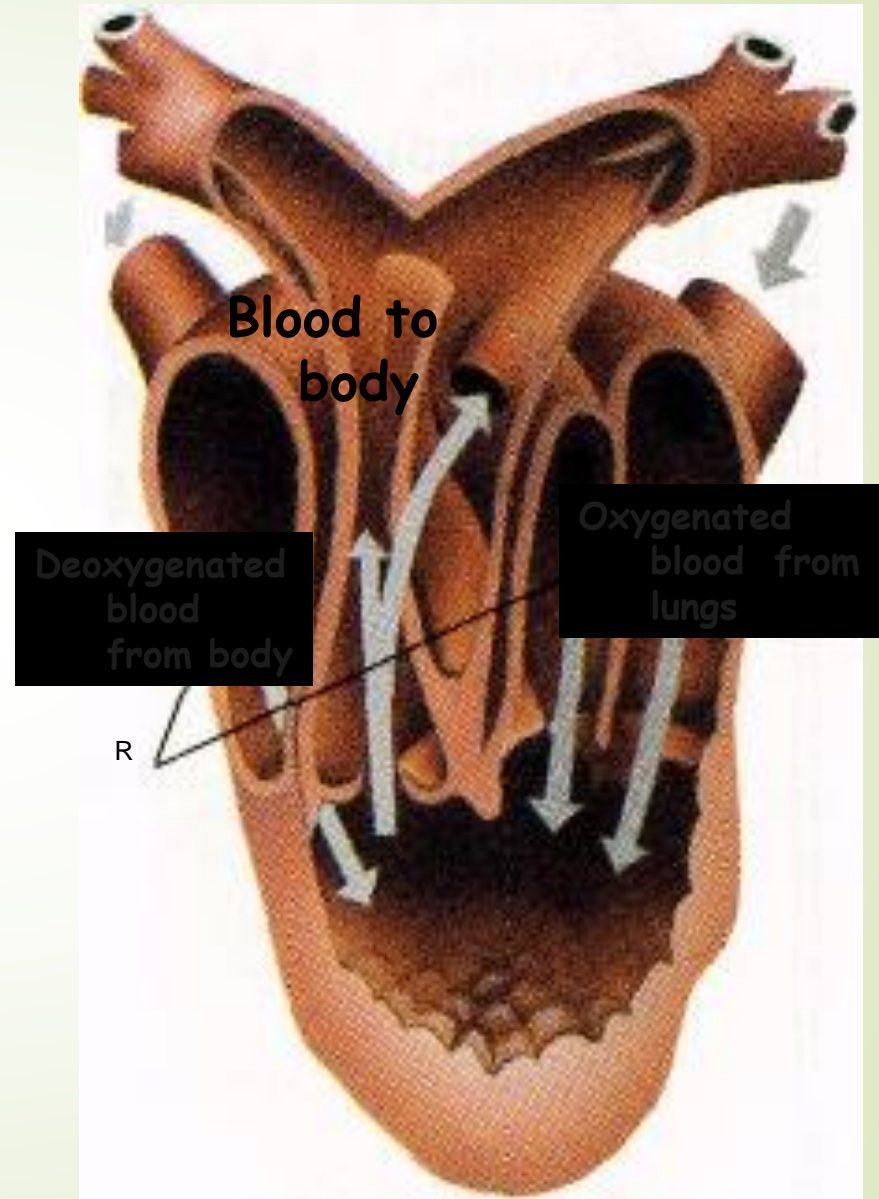
EVOLUTIONARY PRESSURES

Circulatory System

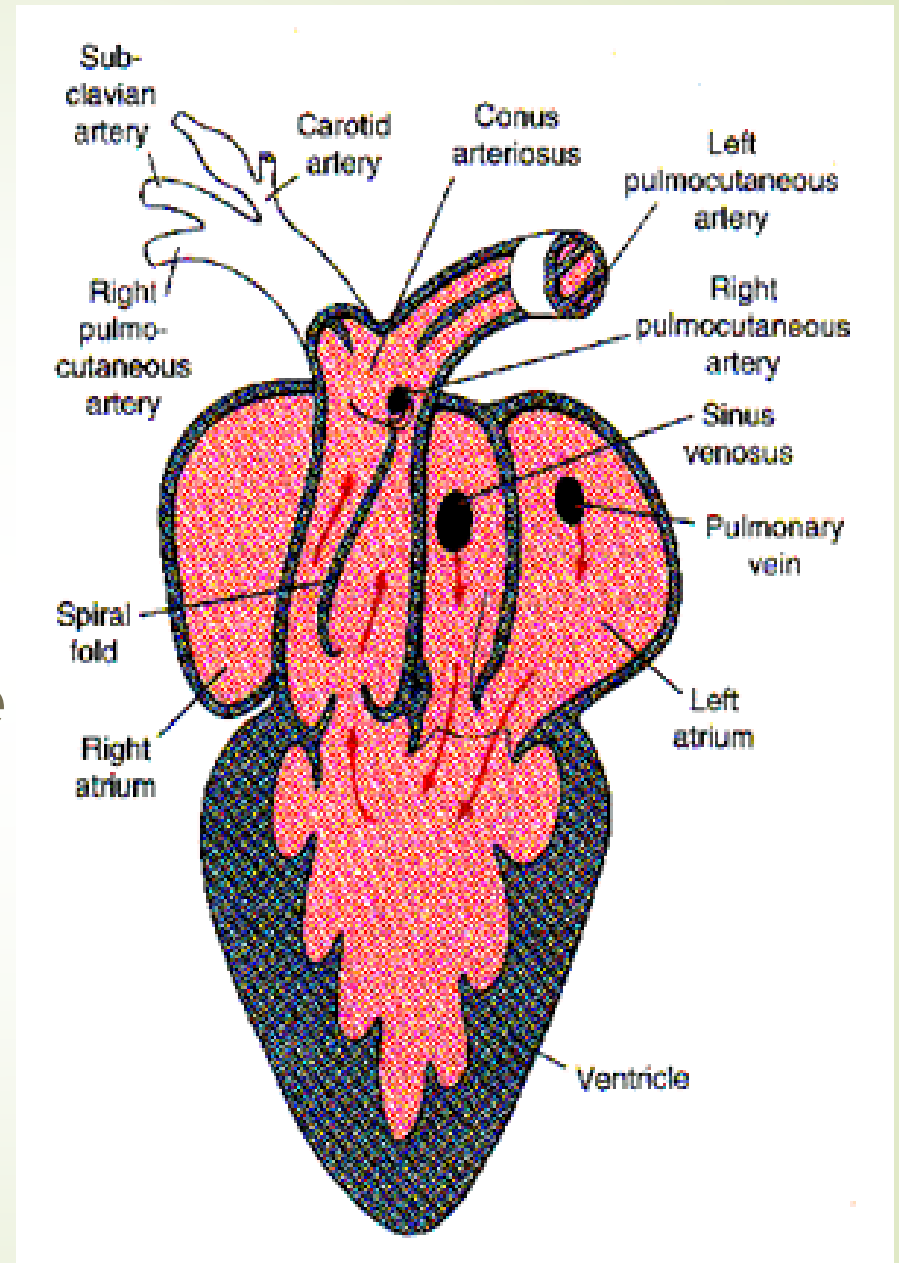
- ❑ An adaptation to the greater oxygen needs of land animals is a more efficient circulatory system than the fish's two-chambered heart.
- ❑ The amphibian's three-chambered heart partially mixes oxygenated with deoxygenated blood and pumps the blood throughout the body at higher pressure than does the fish's heart



- ❑ The left atrium receives oxygenated blood from the lungs, and the right atrium receives deoxygenated blood from the body.
- ❑ Both the atria empty into the ventricle, the main pumping chamber of the heart.
- ❑ In the ventricle oxygenated and deoxygenated blood mix partially and are pumped to the lungs and the rest of the body.

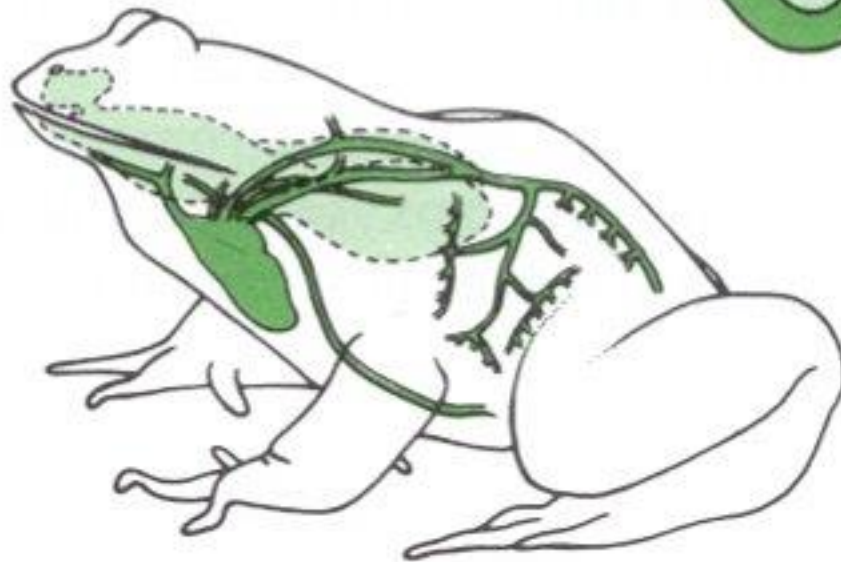
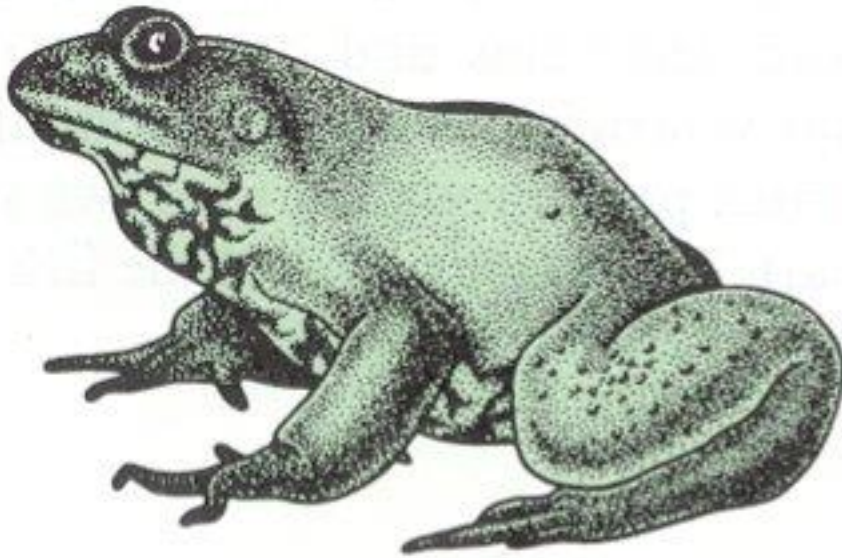


- ❑ From the right atrium the blood enters the single ventricle. The ventricle then contracts, pumping some blood to the lungs to receive oxygen and some to the rest of the body.
- ❑ The blood going to the body leaves the ventricle through the conus arteriosus, a large vessel that lies against the front side of the heart



- ❑ This vessel divides into a right and a left truncus arteriosus, which immediately branch again into three arches that carry blood to various parts of the body.
- ❑ Deoxygenated blood travels in veins back to the right atrium from the various regions of the body.
- ❑ Oxygenated blood returns from the lungs to the left atrium via the pulmonary veins

The frog — 3-chambered heart



- The amphibian circulatory system shows remarkable adaptations for a life divided between aquatic and terrestrial habitats.
- The pulmonary and systemic circuits are separated.
- The atrium is partially divided in urodeles and completely divided in anuras.
- There is no ventricle in the septum.
- A spiral valve in the conus arteriosus or ventral aorta helps direct blood flow into the pulmonary and systemic circuits.