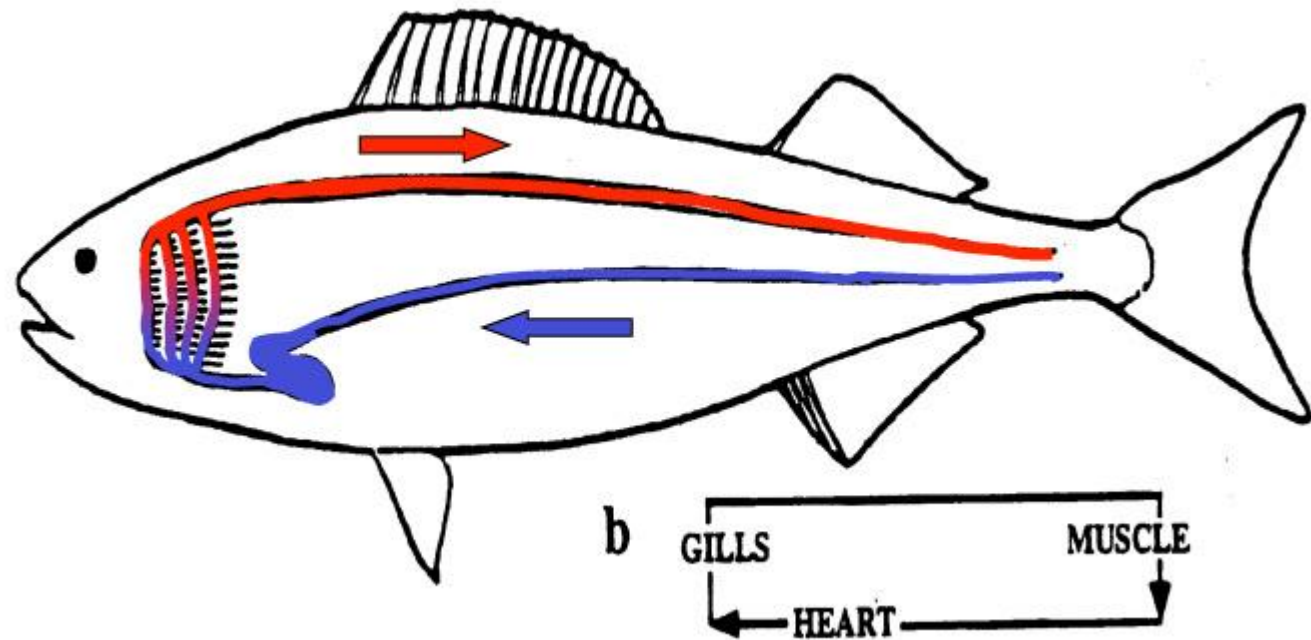


Scoliodon: Blood Vascular System



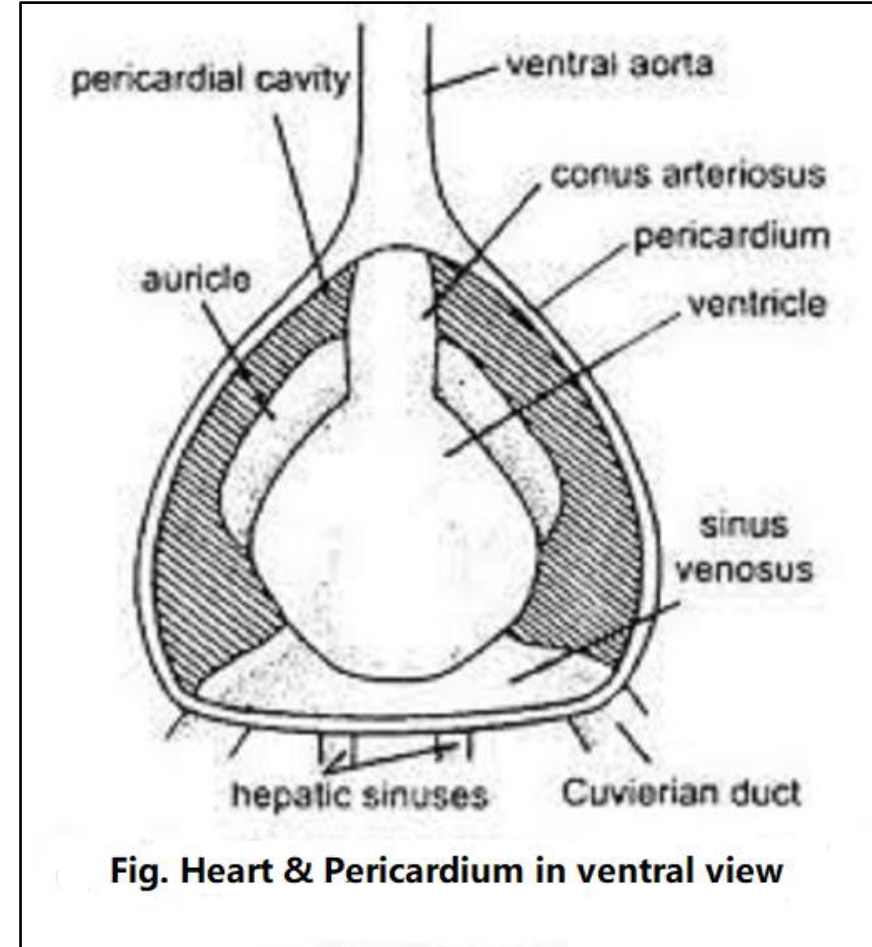
The blood vascular system consists:

1. Heart
2. Arterial system
3. Venous system.



Heart

- The heart is located below the pharynx.
- It is reddish brown, conical, muscular organ.
- It is enclosed in a double layered, transparent membrane called **pericardium**.
- There is a space between two layers of pericardium called **pericardial cavity**.
- The pericardial cavity is filled with **pericardial fluid**.
- The fluid serves as shock absorber and protects from mechanical injuries.
- It also provides free movements to the heart during contraction.



The heart is formed of two chambers-

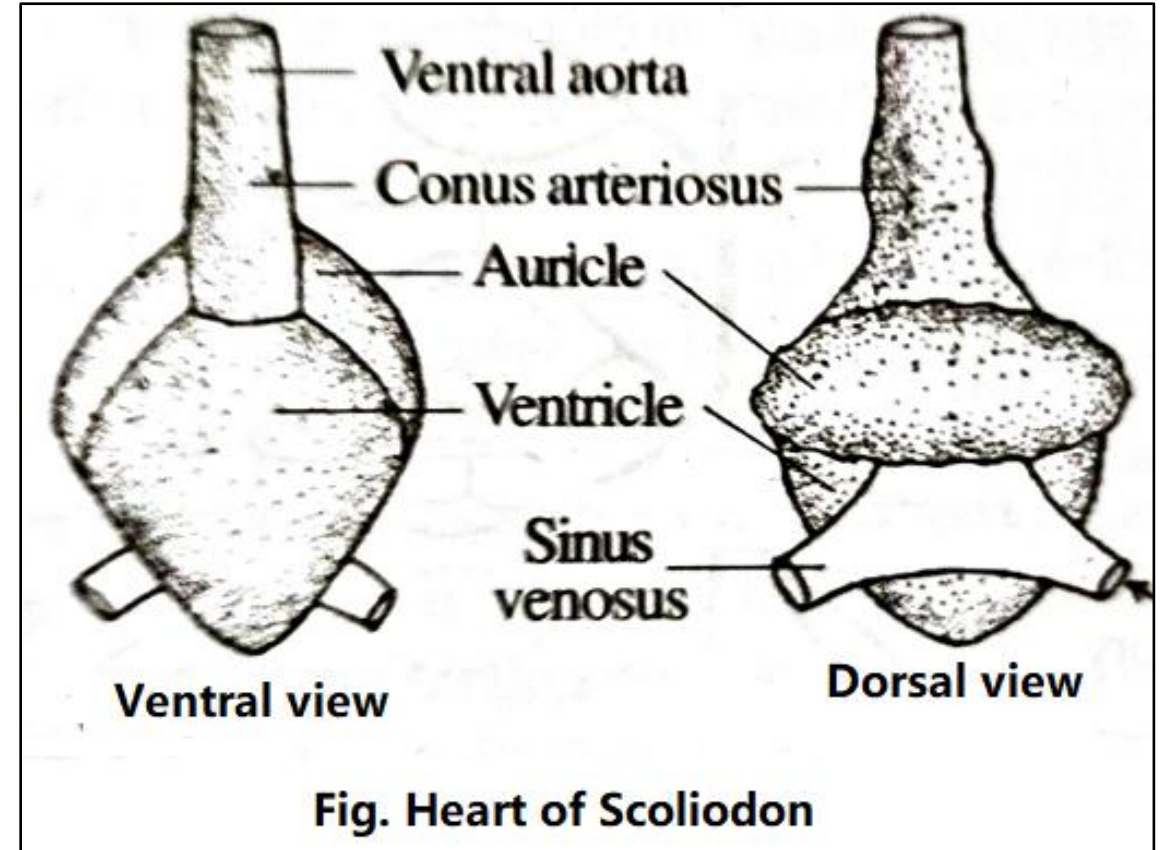
1. Auricle or Atrium

2. Ventricle

Along with these, two accessory chambers are also present-

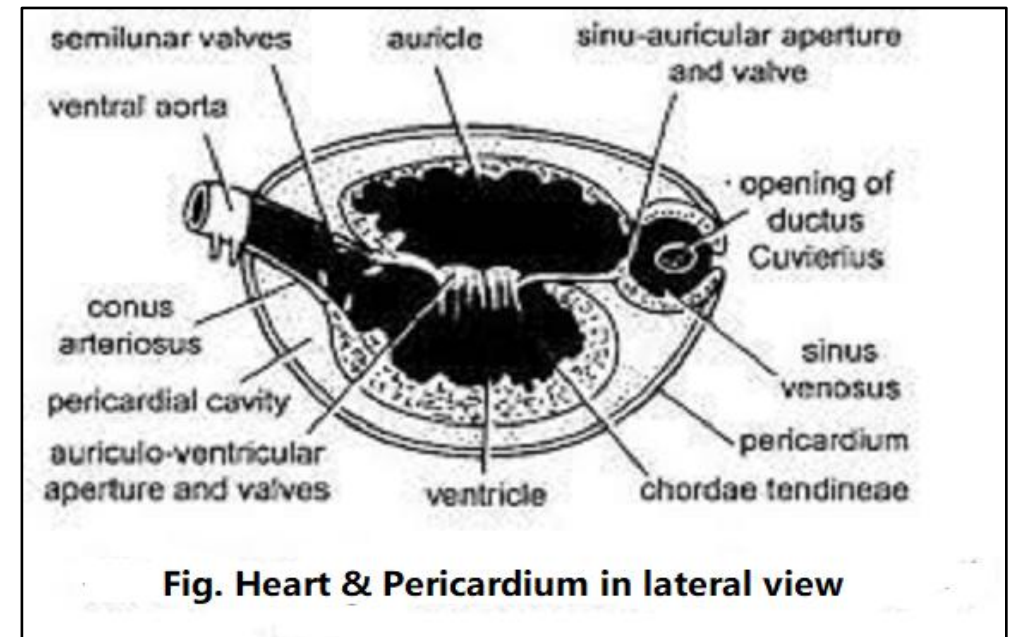
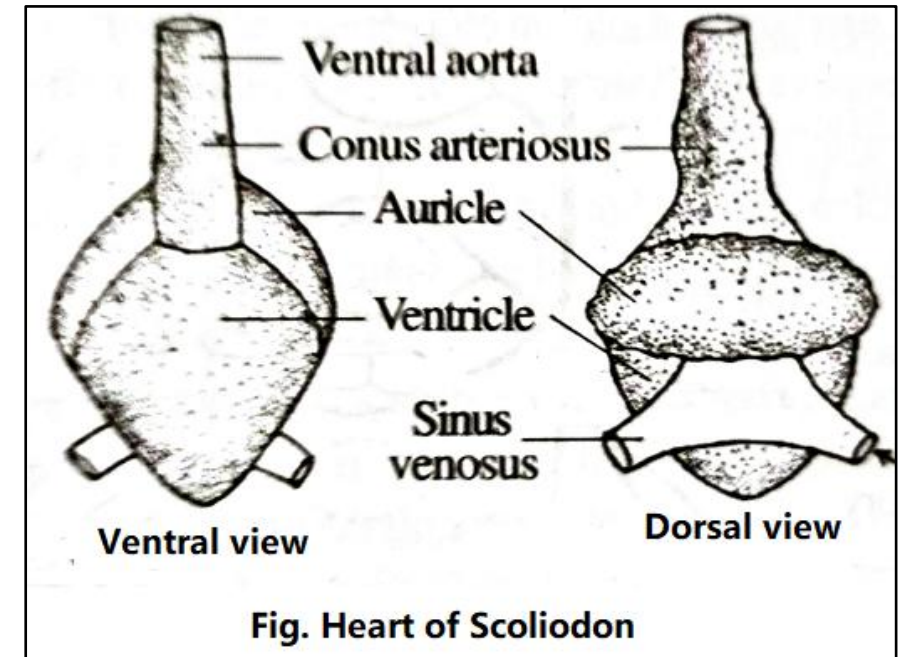
1. Sinus venosus &

2. Conus arteriosus



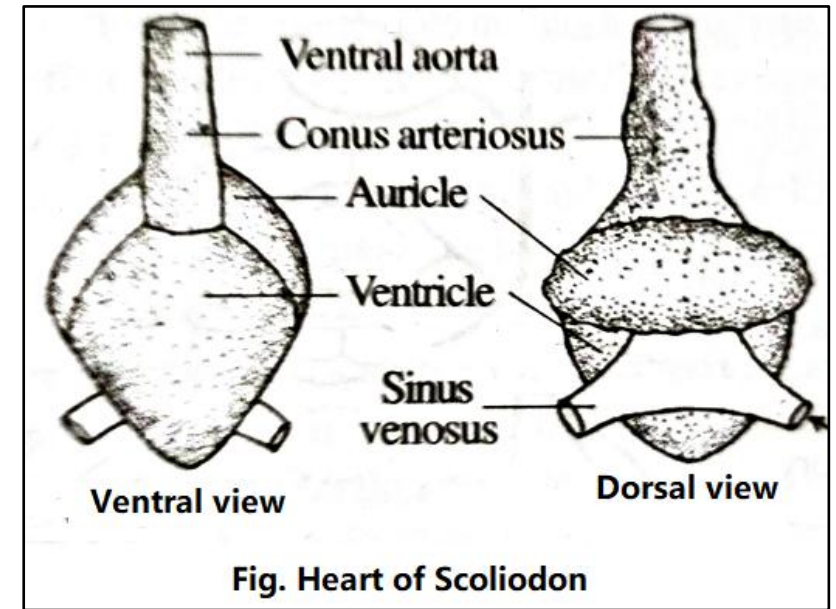
1. Sinus Venosus:

- It is somewhat triangular, elastic, thin-walled chamber.
- It is situated on the dorsal side of ventricle along the base of pericardial cavity.
- It receives venous blood from two large veins called Cuvierian ducts and two hepatic sinuses.
- The sinus venosus opens into auricle by **sinu-auricular aperture (Sinu-atricular aperture)**.
- It is guarded by a pair of **sinu-auricular valves (Sinu-atricular valves)**.
- These valves prevent the backflow of blood from auricle into sinus venosus.



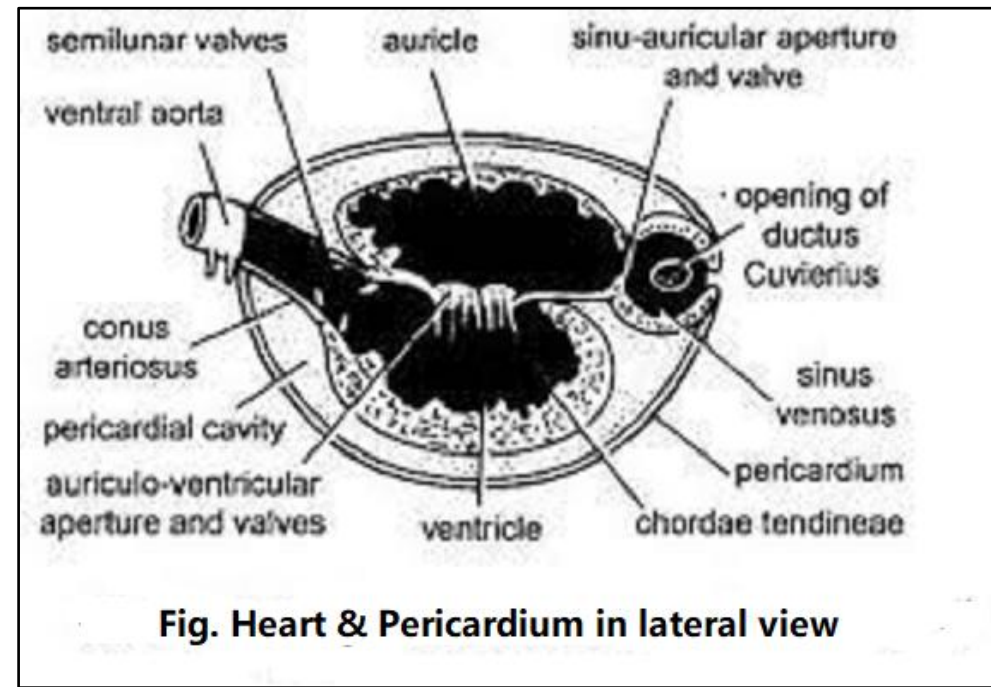
2. Auricle/Atrium:

- It is a large, triangular and thin-walled chamber situated in front of the sinus venosus.
- It opens into the ventricle by **auriculo-ventricular aperture**.
- This aperture is guarded by two lip like **auriculo-ventricular valves**.



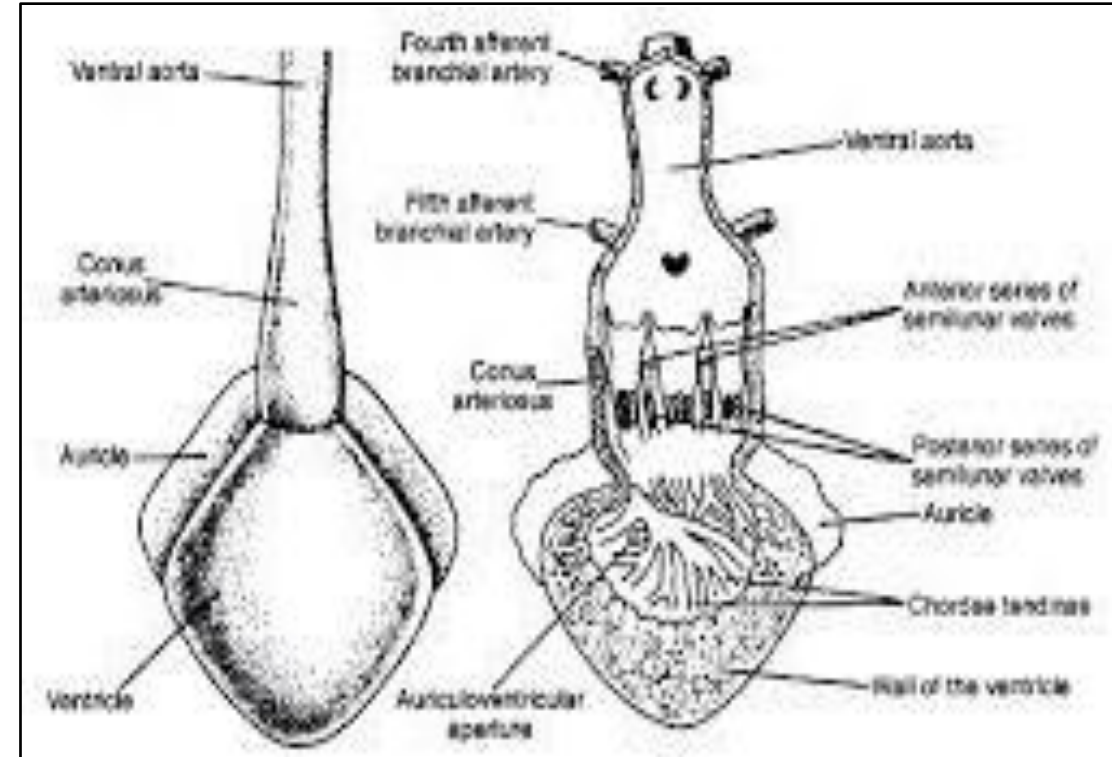
3. Ventricle:

- It is prominent and conical chamber with thick muscular walls.
- The muscular strands called **chordae tendinae** are present in its inner surface.
- Anteriorly, the ventricle leads into a tubular structure called conus arteriosus.



4. Conus Arteriosus:

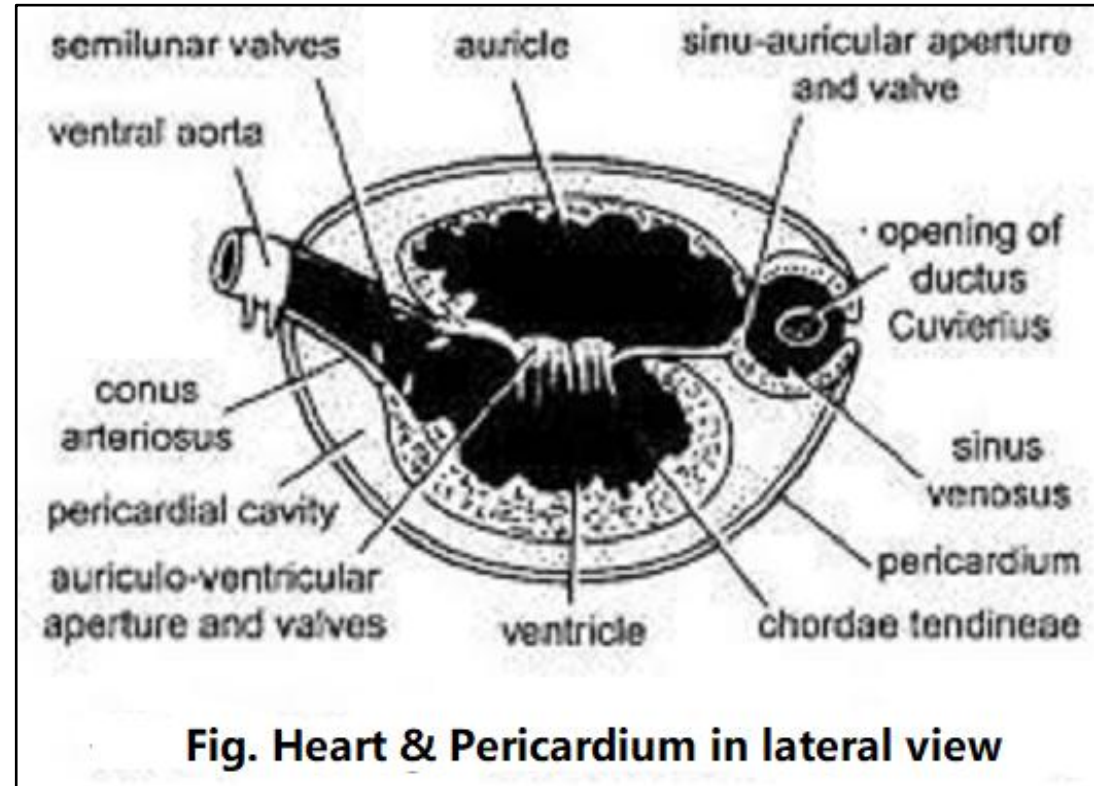
- It is a stout muscular tube arising from ventricle and extends upto the anterior end of pericardial cavity.
 - The inner wall is provided with two transverse rows of **semilunar valves**.
 - The conus arteriosus leads forward in the form of a tube called ventral aorta or cardiac aorta.
- ❖ The heart of Scoliodon contains only impure blood, hence called as **venous heart** or **branchial heart**.



Working of heart

The heart serves to pump the blood. For pumping the blood there should be sufficient pressure. This is brought about by rhythmic contraction called **systole** and relaxation called **diastole** of heart.

- The blood is received from various parts of the body in sinus venosus.
- Contraction (systole) starts from the sinus venosus forcing the blood into the atrium (auricle) through sinu-auricular aperture.
- By the contraction of auricle, the blood reaches the ventricle through auriculo-ventricular aperture.
- In the mean time the sinus venosus is relaxed (diastole).
- The ventricle contracts and forces the blood into conus arteriosus.
- Here backflow of blood is prevented by two rows of semilunar valves in conus arteriosus.
- From conus arteriosus, the blood enters the ventral aorta and then to gills for oxygenation.



- After oxygenation the blood is not sent back to the heart but forced to various parts of the body.
- The deoxygenated blood again returned to the heart from various parts of the body.

Thus, the heart is called **venous heart** or **branchial heart** and the circulation is called as **single type of circulation**.

