

# REPTILIAN HEART

**Introduction:** Reptiles have entered more fully terrestrial environment and adopted more active lifestyles than the amphibians that preceded them. (Cardiovascular system of reptiles supports accompanying higher metabolic rates and elevated levels of  $O_2$  and  $CO_2$  transport.

It is clear no single reptile heart can represent all others. In general two basic reptilian heart patterns are recognized. One is found in chelonians and squamates and the other in Crocodilians.

## A) Chelonian/ Squamate Heart:

Structure- 1) Chambers- i) A sinus venosus, ii) conus arteriosus, iii) Atrium (right & left), iv) Ventricle (with 3 compartments).

2) Sinus venosus- i) Reduced in comparison to amphibians, but it retains the same functions.

ii) It is the first chamber to receive venous blood and contains the pacemaker.

3) Conus arteriosus (or bulbus cordis)- i) appears during early embryonic development.

ii) Division- it divides to form the bases (trunks) of 3 large arteries leaving the ventricle: the pulmonary trunk, the right aortic trunks & the left aortic trunks.

**Remark:** In snakes, a paired interaortic foramen connects the bases of adjacent aortas.

iii) The conus also gives rise to a band of contractile muscle tissue at the base of the pulmonary trunk to control the resistance blood meets, as it flows to the lungs.

4) Atrium: i) Division- complete; (right & left atria)

ii) Atrioventricular valve prevents Guard the entrance to the ventricles.

5) Ventricle: i) No of chamber- single

ii) Performs as a single fluid pump to drive blood into the major arteries leaving the heart.

iii) Compartments- it has 3 interconnected compartments- a) Cavum venosum- filled mostly by deoxygenated blood from the right atrium.

b) Cavum pulmonale- i) does not receive blood directly from the atria, ii) Blood from the cavum venosum moving across the muscular ridge to fill this compartment.

c) Cavum arteriosum- i) Connected to the cavum venosum via an interventricular canal. ii) It fills with blood from the left atrium but has no direct arterial output.

**Remark:** Thus, the heart has 5 chambers, composed of Two Atria

And Three compartments of the Ventricle or 6 chambers if one counts the sinus venosus.

d) Compartments of ventricle are not anatomically separate. Functional separation extends to the aortic trunks.

# Blood circulation & pattern of involvement in different cardiac parts:-

### A) In Terrestrial Environment

► General view → most deoxygenated blood returning from systematic tissue is directed to the lungs & most oxygenated blood from the lungs is directed to the systematic tissue via the aortic trunks.

\* Involvement of different cardiac parts presented in flow chart—

