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Circulatory system of commercially important crustaceans and molluscs

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SHRIMP

- The heart of the white shrimp has three pairs of small openings known as ostia.
- Through these ostia, the blood flows into the heart from the surrounding area, which is termed the pericardial sinus, or pericardium.
- Valves prevent the blood from leaking out through the ostia as the heart contracts.



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- Instead, the blood is driven into major arteries, most of which run forward to supply blood to the sense. organs and to vital organs within the cephalothorax.
- However, the sternal artery runs to war ventral region of the shrimp, where it gives rise to a ventral thoracic artery that supplies blood to the thoracic appendages and to the thoracic portion of the ventral nerve cord.
- The dorsal abdominal artery leaves the heart posteriorly and supplies blood to the gut, the abdominal muscles, and the abdominal portion of the ventral nerve cord.



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CRAB

- ❖ In a crab, circulation of blood takes place much as in a shrimp or lobster.
- ❖ Arteries carry blood dorsally from the heart forward into the head and viscera and backward into the abdomen.
- ❖ A sternal artery carries blood ventrally, where main branches direct it both forward and back.
- ❖ Further branching of main arterial vessels leads the blood into thin walled capillaries, where exchange of gases and foodstuffs between blood and tissues can occur.



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- ❖ The blood collects in venous sinuses, goes to the gills, and then enters the pericardial sinus surrounding the heart.
- ❖ Here, when the heart relaxes and its three pairs of ostia open, the blood enters the heart.
- ❖ In keeping with the breadth of a crab's body, the heart is broad, filling much of the pericardial sinus, or pericardium.
- ❖ In the small tail of a crab, the ventral abdominal artery is of relatively small size compared with the same artery in the muscular tail of a lobster.



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SEPIA

- ❖ The blood vascular system is well developed with a complete separation of venous and arterial blood.
- ❖ It consists of the heart, arteries, veins, and a system of capillaries.
- ❖ There are three hearts in Sepia, as in all the dibranchiate cephalopods.
- ❖ The systemic or arterial heart lies in the middle of the visceral mass enclosed in the pericardium.



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- ❖ It consists of a thick-walled median ventricle, and two thin walled lateral auricles, all spindle-shaped
- ❖ The ventricle is slightly constricted into two lobes;
- ❖ It supplies arterial blood through a large anterior or cephalic or oral aorta and a small posterior or aboral aorta, to the anterior and posterior regions of the body, respectively.
- ❖ The aortae branch into arteries which lead into a system of capillaries and then into veins.