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Respiratory system of commercially important crustaceans and molluscs

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SHRIMPS

- ❖ In shrimps, as in all other decapod crustaceans, the gills lie within two branchial chambers, each of which results from a deep lateral fold of the carapace.
- ❖ The beating of a leaf-like flap, the gill bailer, or scaphognathite, causes water to enter the branchial chamber from below and behind that is, through opening between the thoracic legs and in front of the abdomen.



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- ❖ The water leaves the branchial chamber through a channel, directed toward the head, in which lies the beating gill bailer.
- ❖ As the water circulates through the branchial chamber, an exchange of gases takes place between the water and the blood in the gill filaments.
- ❖ At the same time there is a discharge of excess salts from the blood into the water and an uptake of needed salts from the water into the blood



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CRABS

- ❖ The gills of crabs differ from those of lobsters, where each gill consists of many filaments arranged, plume-like, around a central axis.
- ❖ In crabs two rows of closely set, leaf-like plates or lamella are attached to the central axis of all or, in some species such as the blue crab, all but one pair of gills.
- ❖ In the blue-crab one anterior pair of the gills has only one row of lamella.



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- ❖ Gill of crabs known as phyllobranchs, after the Greek words phylion, meaning leaf, and branch, meaning gill.
- ❖ There are eight gills on each side of a blue crab's body.



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LOLIGO

- ❖ There are two elongated gills in the mantle cavity, one on either lateral side of the visceral mass to which their proximal ends are attached.
- ❖ By alternate expansion and contraction of the mantle, the respiratory water passes into and out of the mantle cavity through the wide circular opening between the neck and collar.
- ❖ It flows over the gills, supplying oxygen to the blood and carrying away carbon dioxide



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SEPIA

Respiratory organs

- ❖ These include a pair of large, plume-shaped ctenidia, lying in the mantle cavity, one on either lateral side.
- ❖ Each ctenidium or gill is bipinnate, with numerous delicate lamellae on either side of a central axis.
- ❖ The surface of the lamellae is much folded to increase the respiratory surface.
- ❖ Cilia are absent as removal of sediment is not a problem in pelagic animals and water current is created by mantle contractions



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- ❖ Each gill receives venous blood through an afferent branchial vessel from the branchial heart of its side.
- ❖ Inside the gill it passes through a system of minute branches through the lamellae and is collected finally into an efferent branchial vessel leading to the auricle.