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Nervous system of shellfish

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CRAB

- ❖ The nervous system of all crabs, except: the most primitive, has undergone a high degree of fusion.
- ❖ All ventral ganglia are fused into a single thoracic ganglionic mass, which lies near the floor of the cephalothorax and through which the sternal artery descends.
- ❖ From the periphery of the thoracic ganglionic mass, nerves radiate out to the appendages all the way from the mandibles to the last thoracic legs.
- ❖ An abdominal nerve emerges posteriorly at the midline and supplies the muscles and appendages of the tail.



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SEPIA

- ❖ The nervous system of Sepia, as of all the cephalopods, shows a high grade of organization, attained only by some insects and arachnids among the other invertebrates.
- ❖ The brain consists of four typical molluscan ganglionic masses, all concentrated in the head, round the oesophagus, behind the buccal mass, and protected by a cartilaginous "skull".
- ❖ A pair of cerebral or supra-oesophageal ganglia are fused together into a rounded mass, lying dorsal to the oesophagus



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- ❖ . Laterally, they give off a pair of extremely stout optic nerves which at once expand into large kidney shaped optic ganglia of the eyes.
- ❖ A small olfactory gang/ion lies on the dorsal side of each optic nerve.
- ❖ Anteriorly, a pair of slender cerebro-buccal connectives connects the cerebral ganglia to a pair of superior buccal ganglia, which are situated dorsal to the buccal mass,
- ❖ Connected by circumoesophageal connectives to a pair of inferior buccal ganglia lying below the buccal mass.



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LOLIGO

- ❖ The nervous system is very highly developed.
- ❖ Several pairs of ganglia are concentrated in the head, to form a large brain encircling the oesophagus, behind the buccie mass.
- ❖ The two cerebral ganglia, lying above the oesophagus, are fused together forming a single round mass.
- ❖ Below the oesophagus lie two ganglia, an anterior pedal and a posterior visceral.



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- ❖ The sides of the oesophageal ring are formed by the paired pleural ganglia, lying lateral to the oesophagus, and giving rise on each side to a large optic nerve, leading to the optic ganglion in the eye.
- ❖ Fibres from the pedal ganglia extend anteriorly a short distance to a pro pedal or brachial ganglion which gives rise to 4 pairs of brachial nerves to the 8 arms and a pair of tentacular nerves to the two tentacles.
- ❖ The cerebral ganglionic mass and the propedal ganglion are connected anteriorly with a small supra-buccal ganglion.



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FRESHWATER MUSSEL

- ❖ Has a muscular body, performing co-ordinated movements;
- ❖ The nervous system is greatly reduced due to sluggish and sedentary mode of life and there is little evidence of a brain.
- ❖ It consists of
 - (1) a central nervous system, including three pairs of ganglia for three main regions of body (head, foot and viscera) respectively
 - (2) their connectives
 - (3) small nerves