

A Level Biology A
H420/01 Biological Processes

Question Set 18

18 (a)* Mammals and fish both need circulatory systems to transport oxygen to respiring tissues. They have different circulatory systems because they have different oxygen requirements.

Compare and contrast the circulatory systems of mammals and fish.

[6]

18 (b) Mammals and fish both need circulatory systems to transport oxygen to respiring tissues. They have different circulatory systems because they have different oxygen requirements.

Acetylcholine (ACh) is a neurotransmitter in mammals. Studies have suggested that it also functions as a hormone in some invertebrate species, such as squid.

When ACh comes into contact with specialised cells in squid skin, it causes them to change colour. These colour changes allow the squid to communicate and to camouflage itself.

ACh is made by cells in the centre of the squid's body.

Explain how it is possible for ACh to have an effect on cells in the skin of the squid.

[2]

18 (c) Mammals and fish both need circulatory systems to transport oxygen to respiring tissues. They have different circulatory systems because they have different oxygen requirements.

Squid blood contains a blue oxygen-carrying protein called haemocyanin.

High partial pressures of carbon dioxide reduce the affinity for oxygen of haemocyanin.

Suggest a mechanism by which carbon dioxide could reduce the affinity for oxygen of haemocyanin.

[2]

Total Marks for Question Set 18: 10

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