External features of the squid

Mantle

Fins

Squid can use their fins to steer and stabilise themselves when they swim at high speed, but they can also use the fins to propel themselves when swimming at slow speed. During jet propulsion, squid can also fold their fins around the mantle for streamlining.

Head

Chromatophores

Squid can change colour by expanding/contracting the muscles around these small pigment sacks. Chromatophores contain a limited number of pigments (red, orange, yellow, brown), but squid can also show colours like blue and green thanks to layers of cells called iridophores, which reflect light to produce iridescent colours.

Eyes

Unlike humans, which have three types of cone cells to distinguish red, green, and blue light, squid have just one type of cone and use a different mechanism, called 'chromatic aberration', to discriminate colours. This is possible thanks to their unique W-shaped, Ushaped, or dumbbell shaped pupils!

Suction cups

Most squid have a ring of very sharp teeth lining the inside of their suckers to latch firmly onto their prey.

Arms /

Like octopus, squid have eight arms, but they additionally have two longer tentacles.

Tentacles

Beak

Its main function is to slice prey into bite-sized pieces. The top of the beak is hooked and the bottom part is broader, much like the beak of an eagle. This makes the squid's beak very strong and perfect for crushing the external skeletons of crustaceans. Squid also eat fish and even other squid, and their main predators are birds, large fish, and toothed whales. The deep-sea battles between colossal squid (which can weight half a tonne!) and sperm whales are well known, and undigested squid beaks contribute to the production of whale ambergris.

Internal features of the squid

Gonad

Nidamental gland

In some squid species, females have an accessory nidamental gland filled with symbiotic bacteria with which she inoculates her eggs. It is thought that these bacteria protect the eggs from microbial predation and fouling during incubation.

Gills -

Siphon .

The siphon of the squid is very mobile: it can flex by up to 180°. By changing the direction of the siphon, the squid can suddenly veer off in a different direction to confuse predators!

Brain -

The nervous system of the squid has been extensively studied because of its giant axons, which have served as models to study electrical conduction in nerve cells. The giant axons can be removed from the squid and studied individually, and their massive size (up to 1.5 mm in diameter) is due to the fact that they control the explosive jet-propulsion system.

Gladius pen

The extremely flexible pen supports all the muscles of the mantle, siphon, and head associated with jet propulsion.

Hearts

Squids have three! Squid blood is blue because the oxygen is carried by the metalloprotein hemocyanin. This is similar to the haemoglobin that makes our blood red, but it contains copper instead of iron. Did you know that blood can be also green and purple?

Ink sac

In addition to melanin, squid ink is made of many other compounds, but is mainly water and mucus. By changing the proportion of the last two components, the squid can vary the density of their ink. Particularly thick ink produces so-called pseudomorphs, i.e. masses of ink that are used as decoys. Fun fact: cuttlefish ink is considered a delicacy in Japan and the Mediterranean countries!