Name: Loz\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Squid Dissection**

**Getting to Know your Squid**

**Directions:**

1. Read the following paragraphs as well as the purpose of the lab
   1. While reading, highlight unique features of a squid (5 points)
   2. Underline features of other mollusks (5 points)
2. Complete the pre-lab questions in the space provided (note format is fine) (10 points)
3. Form a hypothesis based on the reading, purpose and class discussion (5 points)

**Introduction**

Squid have long been the subjects of folk tales which include descriptions of ferocious, long-armed giants that surface from their lairs in the depths of the sea to devour sailors. Many stories passed between sailors and boat crew about humongous monsters with ten arms attacking ships and gobbling up sailors. Science, however, provides evidence that these tales are myths.

In fact, squid are rather shy marine animals that are relatives of the snail; both belong to the phylum Mollusca. Squid are members of the class Cephalopod- meaning head-foot. Other cephalopods include the octopus, chambered nautilus and the cuttlefish. Squid are among the quickest members of this group and of all invertebrates, both mentally and physically. The squid’s brain is protected by a cartilage shield that sits between the two large eyes, evidence of excellent senses. In addition, squid have large nerve cells to coordinate their mantle and tentacles. These nerves are so large those scientists often use these to study nervous system reactions. Although there is a drawback to this large brain, the esophagus runs right through the brain, so the squid must swallow small pieces of food. To supply such a complex body with oxygen and nutrients, squid have three hearts as part of their closed circulatory system. One heart pumps blood throughout the body while the other two pump blood for the gills.

The sizes of different squid species vary from about 5 centimeters to six meters (18 feet). The giant squid, the largest of all invertebrates, with tentacles of nine to twelve meters (27-36 feet) is rarely seen because of its deep-water habitat. However, whalers and fishermen sometimes find the remains of these huge animals, digested and green, in the stomachs of dead whales or in their fishing nets.

Squid have cylinder-shaped bodies with a head that has ten tentacles. Below its head, a loose fitting cape (mantle) with two side fins covers the internal organs (visceral mass) of the squid. Squid do not have shells for protection and support like other mollusks. Instead, they have a tough, transparent structure called a pen (gladius) embedded in the mantle which provides support for this mobile animal.

Squid are powerful swimmers, easily capturing smaller marine animals or escaping the jaws of predators. Some can reach high speeds and leap as high as three meters (9 feet) from the water’s surface. The squid swims using a jet propulsion system. First, water enters the mantle cavity as the mantle relaxes. Then, the squid contracts the mantle, closing it off to the water column except for at the siphon. Due to hydrodynamics, the water is forced out of the small tubular opening of the siphon. Water shoots out of the siphon and propels the squid. Muscles control the position of the siphon allowing for the squid to control the direction of motion. In addition, the two side fins help balance the squid and allow it to maintain neutral buoyancy when not shooting through the water column.

Squid feed on small fish, shrimp and even smaller squids. The prey is captured with the long tentacles, grasping arms. Suction cups at the ends of the arms, on its clubs, grasp the prey and bring the item into the smaller tentacles. Each of the eight smaller tentacles have suction cups throughout which hold onto the prey as the sharp beak stabs and shreds it into smaller pieces. These pieces are then swallowed. While hunting for food, squid must avoid becoming dinner. Squid are counter shaded as are many marine swimmers, dark on the top and light on the bottom. The pigment cells (chromatophores) can also change color in order to improve camouflage in the changing light. In addition, squid can release ink through the siphon to confuse an attacker and escape through this “smoke screen”. Overall, squid are well adapted to life in the ocean and are certainly more advanced than their mollusk cousins, snails and clams.

**Purpose**

**The purpose of this lab is to observe the internal and external structures of a squid, a cephalopod mollusk.**

**Pre Lab Questions**

-compare and contrast a cephalopod with other mollusks

| **Cephalopods (squids)** | **All Mollusks** | **Other Mollusks: claims, snails** |
| --- | --- | --- |
| * Foot modified in to tentacles * Shred with radula * No shell, almost alls support inside (many) * Siphon helps movement recreation | * soft bodies * muscular foot for movement * siphons * gills * radula * mantle to cover guts and make shells * Body cavity has 3 areas: heart, reproductive organs, kidney * bilateral symmetry | * Crawl with foot * Scrape food or drill into shells with radula * One or none shells * Breathe in/out siphon * Clap, dig or stick with foot * Reduce radula, filter feed * 2 shells * Breath + bring water for filtering with siphon |

**Hypothesis**

What UNIQUE internal and external features will a squid have that allows it to survive so well in the ocean? (include at least 3 features you will see)

| The Unique and external features that a squid has that allows it to survive so well in the ocean are 3 things. First, jet propulsion gives it the extra speed to get away from predators or to go faster by sucking in water and then squirting the water out to give it a quick escape. The Second  ink Sac/smokescreen: which blinds the sea creature and creates a smokescreen to disappear from. Finally suction cups give the squid a grip on creatures allowing them to hold onto their prey to start the killing process. These features give the squid and an advantage and help them survive in the world. |
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