

ALIEN DISSECTION

Environment & Outdoors



THE ADVENTURE:

Fast forward your life to the year 2034. You are a scientist with the Canadian Space Agency. You are working with a consortium of Space Agencies from around the world to search for life on other planets. After many years of hard work, your team has received a sample of suspected life forms from Europa, one of the moons of planet Jupiter. These samples are collected from the oceans underneath the icy surface of Europa and they come in several shapes and sizes.

One of them is large enough that you can examine and measure the external anatomy of the organism with naked eyes and propose the function of organs and features of the alien. You can dissect the alien to examine its organs and features to figure out how it functioned in its marine environment. For some parts, you will need a magnifying glass; for others, your only option is to use a microscope. Consider the features of these aliens to determine which are plants and which are animals.

In this activity, you are working with a large alien life form. You will dissect this alien to try to figure out how it lived.

PLAN:

- Discuss the below questions with your team:
 - What features would you expect to find in an alien from a water planet?
 - How would it eat? What would it eat?
 - How would it swim? How would it steer?
 - How could it protect itself?
 - How would you identify male from female?
- What issues should you consider when dissecting a once living creature?



DO:

- Everyone working with the alien must wear non-latex gloves. Provide an "alien" to each group of 2-3 youth.
- Observe and discuss the external features of the "alien." Use the "Alien: External Anatomy" diagram without labels as a guide.
- Measure the length of the alien, the number and length of the arms, and the number and length of the tentacles. Count the number of suction cups on one arm.
- Discuss the following questions with your team:
 - Look at the suction cups through a hand lens. What might be the functions of the different suction cups?
 - What might be the function of the arms and the tentacles?
 - What might be the function of the triangular objects at the opposite end of the alien?
 - What might be the function of the spots on the body of the alien?
 - What might be the function of the two round black objects on the alien?
 - What might be the function of the tube that comes out from under the mantle?
- Pull back the arms. Use a probe to explore this organ in the middle of the arms. What might be the function of this organ?
- Cut around this organ with scissors and remove it. What is the function of the long tube attached to this organ?
- Position the alien with the "tube" facing up. Insert scissors into the mantle above the tube and cut. Lift up on the scissors being careful not to cut the internal organs. Spread open the skin.
- Observe and discuss the internal features of the "alien." Use the "Alien: Internal Anatomy" diagram without labels as a guide.
- Discuss the below questions with your team:
 - What might be the function of the small dark sac near the "tube?" Remove this sac and break it with the probe. What is the function of the liquid in the sac?
 - What might be the function of the long feathery organs?
 - What might be the function of the organs at the base of the long feathery organs?



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DO (CONTINUED):

- What might be the function of the organ at the tip of the "alien?"
- What might be the functions of the organs near the arms?
- Remove the internal shell. Press your fingers along the length of the body. You may have to use scissors to cut the flesh. Use your fingers to pull it out. What might be the function of this organ?
- Wipe down work space with detergent spray and paper towels. Dispose of unwanted material in the plastic bucket.

REVIEW:

- What did you observe that was unexpected?
- Where do you think this alien fits into the food chain?
- How do the organ systems compare to humans?
- How might we communicate with similar live aliens?

After the Ventures have completed their analysis of the "aliens," they must be debriefed on squids so that they do not take away misconceptions. Use the "Squid: External Anatomy" and "Squid: Internal Anatomy" diagrams.

SAFETY TIP:

Make sure to get rid of the samples in a safe and responsible manner after you are done with your adventure.



MATERIALS:

- General
 - Paper towels
 - Detergent spray
 - Plastic garbage can lined with two garbage bags
- For each group of 2-3 youth
 - 1 whole squid
 - 1 ruler
 - 1 cutting board
 - 1 pair of scissors
 - 1 pair of forceps or tweezers
 - 1 probe
- For each youth
 - 1 pair of non-latex gloves

ONLINE RESOURCES:

- **Squid Dissection Video** [youtube.com/watch?v=OueQ9kU36i0](https://www.youtube.com/watch?v=OueQ9kU36i0)
- **Squid Dissection Photos** www.biologycorner.com/worksheets/squid_virtual.html#.U4u88FzaUk
- **Alien Anatomy Diagrams** www.usc.edu/org/cosee-west/Jun23-272008/Sperber_Squid%20Dissection.pdf