

Alien STINGERS

exhibit exploration

Notes to teachers:

- Because the Aquarium houses a living collection, the species may change. The concepts, however, will remain the same.
- There are many exceptions in science. The answers here are based on the species in this exhibit; other species may vary.
- Many answers can be found in the graphics, but some are based just on observation and thought.

STING-O-METER

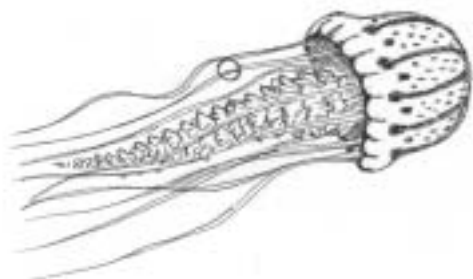
Cnidarians have special cells called cnidocytes, which contain harpoon-like stingers called nematocysts. There are three functional types of nematocysts: glutinant (sticky glue), volvent (tiny threads), penetrant (toxins). Check out the sting-o-meter and the graphics to answer the following questions.

1. Which species has the most deadly stinging cells? **box jelly**

2. What animal has the lowest sting intensity? (It feels something like your fingers after you've touched sticky candies.)

aggregating anemone

3. Ammunition has a high cost! Like an arrow, once a nematocyst is fired it's lost. It takes about 70% of the energy from a meal to replace the lost stingers with new ones. Try some math... If an anemone ate 200 calories of fish, how many calories would it use to make new nematocysts? **140** What if it consumed 1,345 calories? **941.5** (Answers are obtained by converting % into decimals and multiplying by the calories consumed. For example: 70% of 200 is $.7 \times 200$.)



**NEW YORK
AQUARIUM**



4. Stinging is an important adaptation for survival. Name two ways stinging cells help cnidarians:

feeding
and
protection

5. All cnidarians capture food by chance--they take prey that happens to brush against their tentacles. How might predation differ among species?

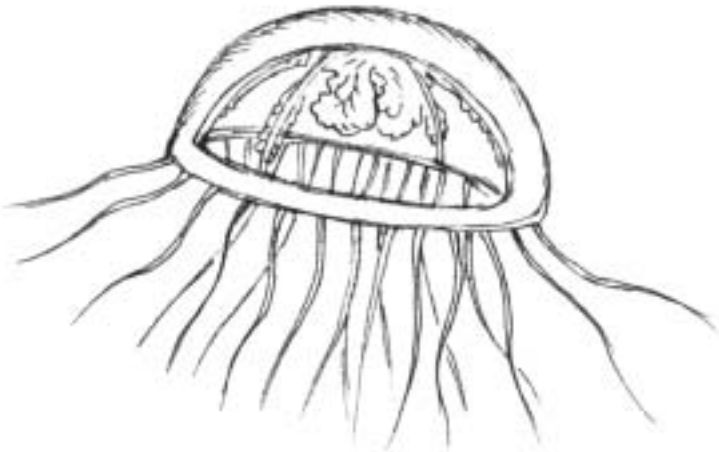
Possible answers include: movement (jellies are mobile, while corals and anemones are mostly sessile), tentacle size and general size, type of nematocyst.

6. Cnidarians have a sac-like body with a central mouth. Food is digested inside the digestive sac by enzymes in much the same way as occurs in your system. However, the mouth is the only opening in a cnidarian. Where do you think the solid waste is eliminated?

It is eliminated through the mouth. This two-way tubular gut is not only where digestion and elimination occur, but it is also the site for development and release of gametes and/or embryos depending on the species.

7. Look at the aggregating anemones. Why does one colony sting another?

To win space.



8. Many jellies are almost transparent. How could invisibility help an animal survive?

It could provide camouflage - a way for the animal to hide from its predators and prey.

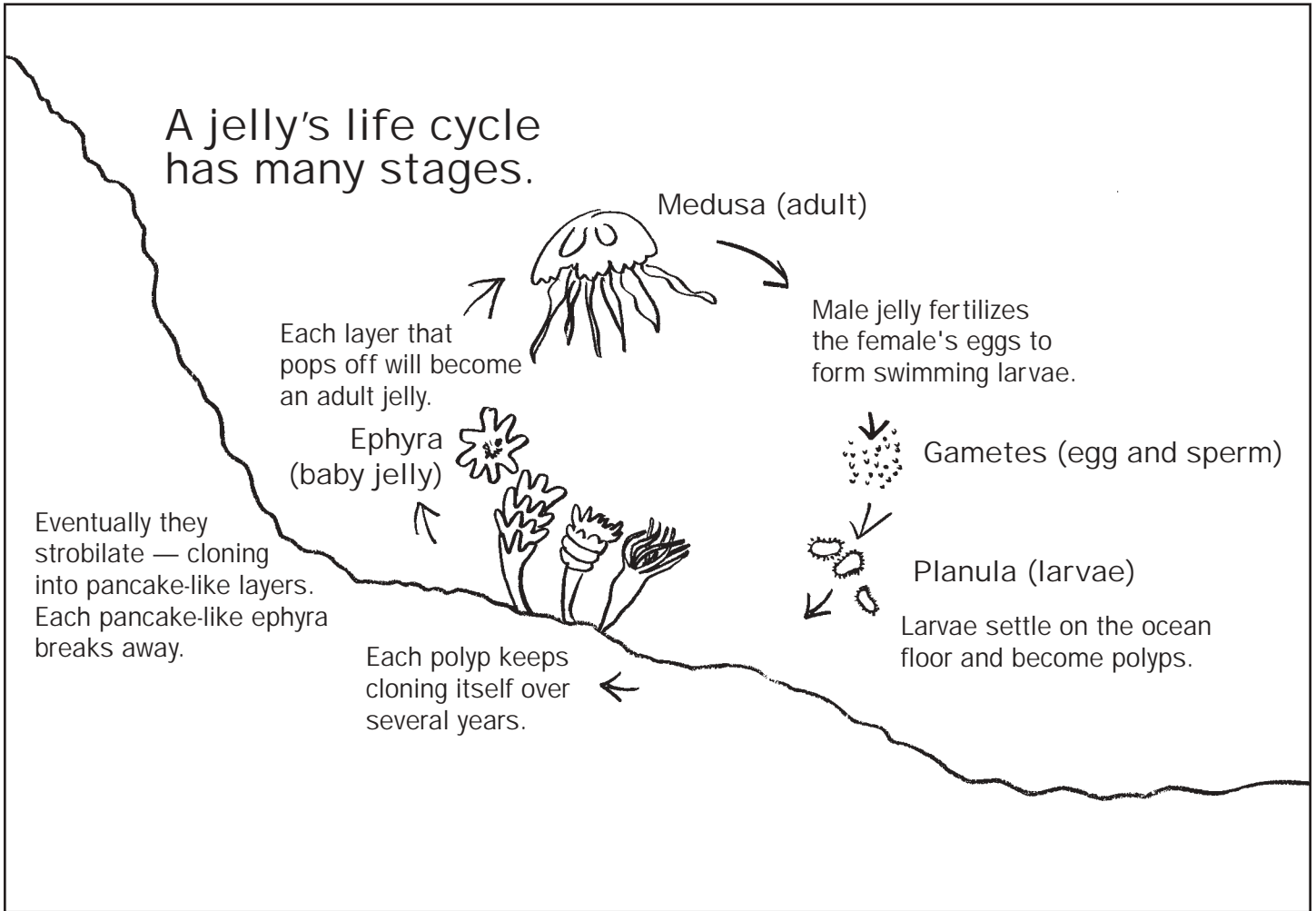
WHY STING?



WHERE ARE THEY?

MAKING MORE

9. Check out the moon jelly's life cycle. Most jellies have separate sexes, and their life cycle includes both sexual and asexual reproductive phases. In the sexual phase of the moon jelly, the male produces sperm, which swim out of the male's mouth and into the female's mouth and digestive sac. The sperm fertilize the eggs in the ovary. Draw and label the main stages of development .



10. In the North Atlantic and other temperate seas, why don't you usually see jellies in the winter? (Think about their life cycle.)

In temperate waters, many adult jellies die off in the winter. Most living jellies are in a non-moving or sessile stage, lying dormant on the bottom instead of floating at the top.

Look at the variety of shapes, colors, sizes, and body composition of cnidarians—from a single floating jelly blob to a stony underwater city with millions of coral polyps.

SAME GROUP!

11. Carefully look at an anemone, a sea jelly, and a coral. Why are they in the same group, or phylum? Read the graphics and list three common characteristics:

Cnidarians all have stinging cells, a ring of tentacles, and a mouth in the center of the body.



12. Do you notice any differences among the animals in this phylum? Fill in the chart.

ANIMAL	Shape	Orientation of Mouth	Mobility	Skeleton
Coral	Tube with tentacles on top, or flower-like	Facing up	Sessile, or immobile	Present
Jelly	Umbrella-like, or mushroom-like	Facing down	Mobile, floating, or swimming	Absent
Anemone	Tube with tentacles on top, or flower-like	Facing up	Sessile	Absent

13. On your way to the next room, stop at the predator/prey sculpture on the wall. Can you name two animals that eat jellies? Do you think humans are predators of jellies?

Fish and sea turtles prey on jellies.
Yes, humans also eat jellies.



Notes to teachers:

This completes the tour sheet, but there is much more to see in the exhibit. Some suggestions:

- Have students just pause and enjoy the large tanks. These are living works of art!
- Ask students to create a cinquain or haiku about these animals, or tell them to sketch their favorite.
- Have them find information about their favorite cnidarians on the interactive kiosks.
- The final part of the exhibit is about conservation. Have your students list some threats and some solutions.