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The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!

KESLER SCIENCE

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Name: _____

Date: _____

The Weird, Hidden Talents of Jellyfish

Photo of a box jellyfish

Ever seen those jellyfish tanks people keep at home? They're so calming—just watching those little blobs pulse around is kinda mesmerizing. At first glance, jellyfish seem super simple, but scientists are uncovering some of their secret, mind-blowing survival tricks.

Jellyfish belong to a larger group, a phylum called *Cnidaria*, which also includes sea anemones and corals. We may not see the similarities because when we think of jellyfish, we probably picture the large floating bell body and the dangling tentacles.

That's the adult stage, called the medusa. Jellyfish also spend a chunk of their lives attached to a rock or the ocean floor as polyps. Polyps use their tentacles to grab food that passes by, making it easy to see the family resemblance to sea anemones.

Now, while they *look* simple—they're 90% water, don't have a brain, and have one opening for food and waste—jellyfish are survival champs. Their tentacles are armed with stinging cells called nematocysts, which fire venom-filled barbs to zap predators and prey. It's an incredible defense mechanism—unless you're a sea turtle. Turtles have special raised skin in their mouths and stomachs, so they can chow down on jellyfish with zero issues.

Jellyfish have other adaptations that are not so obvious, but pretty mind-blowing anyway. Perhaps you've heard of the "immortal jellyfish"? Well, it's real. The *Turritopsis nutricula* has the ability to go from full-grown adult medusa stage back to its juvenile polyp stage, essentially restarting its life! Scientists think understanding this process could help us learn how to stop or reverse damage in human cells, including cancer cells.

Another strange jellyfish ability was just confirmed very recently. In response to injuries, two comb jellies in captivity fused their bodies. After a few hours, they had completely synchronized their nervous systems - making one organism!

This is a big deal, especially for doctors who work with organ transplants. If a patient receives a new organ from a donor, be it a heart, kidney, or liver, the biggest risk they face is rejection from the body. The body's natural immune system sees the new tissue as "foreign" and attacks it, even if that organ is keeping the person alive.

Obviously, this organ rejection is not happening when the two jellyfish fuse together. Scientists are working hard to figure out what makes jellyfish just so compatible. Cracking this code could literally save lives!

Scientists are also trying to understand more about the life cycles and population behaviors of different jellyfish species. For example, the box jelly is known for packing an extremely painful, and sometimes fatal, sting. Box jellies swarm the shores of Waikiki about eight to ten days after each full moon. Scientists in Hawaii have been counting the box jelly swarms for years and have noticed some patterns. Take a look at the graph on the next page that shows the annual average size of the swarms. The light gray line shows the population that was measured in the swarms for each year, while the other line shows the average swarm size across the years.

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The Weird, Hidden Talents of Jellyfish

1. When was the highest box jellyfish count (light gray line) according to this graph and how large was it?

_____

_____

_____

2. What is the distance (in time) between the two largest peaks in jellyfish swarm size?

_____

_____

_____

3. The dark gray line on the graph represents the average size of the swarms across several years. What patterns do you notice?

_____

_____

_____

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Blog Link: https://blog.keslerscience.com/phenomenon-and-graphing/the-weird-live-of-jellyfish

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1. When was the highest box jellyfish count (light gray line) according to this graph and how large was it?

   The largest population size occurred in January of 2009. The population size was about 1500 jellyfish.

2. What is the distance (in time) between the two largest peaks in jellyfish swarm size?

   The two high points in the graph occur in 2002 and 2009. This would be about a 7-year time period.

3. The dark gray line on the graph represents the average size of the swarms across several years. What patterns do you notice?

   The average appears consistent for about 4 years before it shifts.

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