Jellyfish 'fingerprints'

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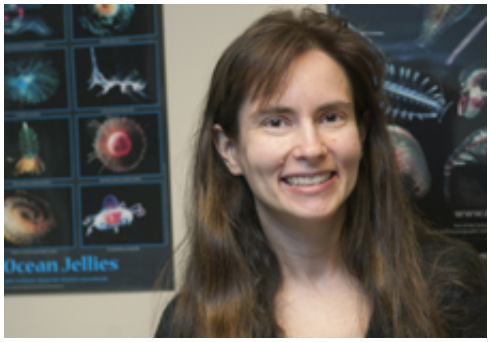

Annette Govindarajan's research involves studying the complex life cycles of jellyfish. Photo by Lauren McFalls.

Annette Govindarajan is fascinated with studying jellyfish, specifically their complex life cycles. That passion was forged years ago after working with hydrozoans, a jelly of the stinging variety.

"I was intrigued by how they could occupy different parts of the marine environment," said Govindarajan, a lecturer in Northeastern University's Department of Earth and Environmental Sciences, referring to their polyp, jelly and larval life cycle stages.

Govindarajan is primarily interested in researching the genetic and evolutionary differences between jellyfish as well as other gelatinous animals, and she recently coauthored a paper featured on the cover of the Journal of Plankton Research that explores these evolutionary relationships in thaliaceans -gelatinous, planktonic invertebrates that drift along in the ocean. She is also working on a project to barcode species of jellyfish with colleagues at the University of Connecticut and the Woods Hole Oceanographic Institution, where she is a research associate.

The first step in barcoding involves extracting a jellyfish's DNA, and using a technique to amplify copies of the target gene. Govindarajan said these copies make it possible to sequence the DNA and determine which are unique to a particular species.

These "genetic fingerprints" ultimately help to improve species identification, she said, and build upon existing DNA barcode databases that scientists can utilize in their research.

This work aligns with a larger push among researchers to increase efforts to barcode a wide spectrum of living beings, which can complement classification and advance other areas of science such as ecology. "In many groups of animals, there often aren't a lot of specialists capable of identifying them down to the species level. Having a genetic tool to do this fairly easily would really help," Govindarajan said.

However, she said researching gelatinous animals can be tricky given the challenges associated with collecting them since they are a delicate structure and can break apart at the softest touch. "They can be hard to work with," she said. "The samples we've used are collected by divers by hand."

Govindarajan is also interested in how large blooms of jellyfish form in the ocean. She said reports of these blooms are increasing in different parts of the world, and they often happen in polluted waters where algae have died and decomposed. While many animals can't survive in these low-oxygen zones, jellyfish are found to have a tolerance to those waters.

Provided by Northeastern University