

Oil in the Ocean: Biological Response to Oil and Dispersant

Deepwater Horizon, 2010

Principle Investigator: [Ann Tarrant](#)

Spurred by a long history studying the starlet anemone, WHOI biologist Ann Tarrant and her colleagues have begun modeling the animal's genetic and physiological responses to the oil and the dispersants used to fight the spill. The anemone is one of the few organisms to have had its entire genome sequenced, which allows scientists to more easily study how it responds at a molecular level to environmental contaminants.

Before the spill occurred, Tarrant and her colleagues had developed a tool to probe the response of starlet anemones to chemical stresses, a tool they are now applying to test the effects of some of the chemicals released into the Gulf environment. Although the anemone is considered "primitive," many of the genes and biochemical pathways it uses to metabolize contaminants are also found in other animals, including humans.

By looking for specific gene expression patterns in the presence of oil and dispersants, the researchers have begun studying the importance that different types of exposure—in food or absorbed directly from the water—play, as well as the influence dispersants might have in determining the level and nature of damage to an organism. Because the anemones are an indicator of invisible damage or growing threats to the coastal ecosystem in which they live, their response to environmental stresses may also establish early warnings of changes yet to be discovered.



[Enlarge Image](#)

This half-inch starlet anemone, *Nematostella*, lives in salt marshes, adapts to a wide range of environmental conditions, is easy to culture, and scientists have decoded all its genes. This makes it a perfect model animal for WHOI biologist Ann Tarrant, who studies animals' responses to pollutants. She is investigating what genes *Nematostella* activates to detoxify contaminants, including oil and dispersant from the 2010 BP oil spill in the Gulf of Mexico. (Photo by Ann Tarrant, Woods Hole Oceanographic Institution)

From *Oceanus* Magazine



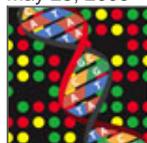
April 8, 2011

[Does Oil Affect Animals' Cellular Machinery?](#)

Meet *Nematostella vectensis*. The tiny orange sea anemone could be the ideal 'lab rat' to examine how oil and other impacts from the Gulf of Mexico oil spill affect the genetic and molecular machinery of animals.

Source: *Oceanus* Magazine

May 25, 2005



[Down to the Sea on \(Gene\) Chips](#)

The genomics revolution has reached the oceans. New genomic techniques are being used to find previously unknown life forms in the oceans; to learn how species, and genes themselves, evolved over Earth's long history; to understand the genetic tools that allow species to adapt to diverse and often harsh environments; and to investigate species' responses to pollutants.

Source: *Oceanus* Magazine

Related Multimedia

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WHOI's Response to the Deepwater Horizon Oil Spill

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