

[< Back](#) | [Home](#)

## Team seeks link between sea volcano, cancer cells

**Elyse Rosenberg**

**Posted: 11/20/06**

By Elyse Rosenberg  
Correspondent

University professors are looking at underwater volcano sites to see if life forms there could help cancer research.

The research is being conducted with scientists of the Center for Marine Biotechnology, which started a year ago, said Richard A. Lutz, the center's associate director. He and Paul Falkowski, co-director of the center, are part of the team currently writing up results of their most recent trip - a three-week expedition taking place about 500 miles south west of Acapulco, Mexico.

The deep-sea divers traveled 1.5 to two miles down in the Pacific Ocean to explore hydrothermal vents.

"It's a site known as 'Nine Degrees North,' because it's located at a latitude of nine degrees along the mid-ocean ridge system," Lutz said.

Lutz elaborated on how he and his team went about excavating the site.

"We not only look at the changes that have occurred and document them, we take those animals back and see what kind of compounds they might have within them, because they live in such strange environments," he said. "[We] see what kind of potential they may have for various medical applications."

Some of these organisms include clams, mussels, octopuses, fish, snails and "a very strange organism called a tube worm," Lutz said.

"You take those organisms, grind them up and get extracts," he said. "Then you inject those extracts into different strains of mice to assess how effective the extracts are in attacking various kinds of cancer cells."

If the whole extracts show effects, the scientists isolate the active compound, identify its structure and synthesize it. It can then be trial tested for its effectiveness in attacking certain cancerous tumors in humans, he said.

"We have isolated compounds from corals, and two of these appear to be extremely effective at killing cancer cells in a mouse-cell model that we used," Falkowski said. "We are very excited about this."

The mid-ocean ridge is a 40,000-mile long mountain chain that exists underwater - where Earth's plates separate and new material is formed, he said.

"We go down and study these ecosystems that are comprised of strange organisms and geological features," Lutz said.

The temperature where Lutz and his team study is more than 700 degrees Fahrenheit.

Lutz and Rutgers faculty and students have been visiting this system of hydrothermal vents for 15 years and documents its changes.

Lutz first visited after a volcanic eruption in 1991 wiped out all the communities of organisms and geological features down at the bottom of the ocean, he said.

"Miraculously, the things were essentially reborn," Lutz said. "And the community - in a couple of years - sprung back to life. It's a unique environment because very seldom do you encounter volcanic eruption."

Lutz described a recent eruption.

There was another at the site last January," he said. "And we went back this June and July to look at that. Everything got buried with lava, and new communities are starting to come back."

Lutz said there are hopes of "utilizing, isolating and identifying the structure of the compounds" to potentially be used as a pharmaceutical drug in cancer treatment.

"One of the most unique things is a lot of those organisms at the vents have bacteria living within their bodies and have a relationship we call symbiosis," Lutz said.

Symbiosis is when bacteria cannot live without the host organism, and the host organism cannot live without the bacteria.

"It's like having a garden of bacteria living in your body, and you get your nutrition from that little garden of bacteria that are ultimately living on the chemicals coming out of these vents," Lutz said.

Lutz explained how symbiosis operates in the vents.

"The key chemical that comes out of these vents is hydrogen sulfide," Lutz said. "It's the fuel for those bacteria, and that's how they get their own body masses increased. And they're essentially using that to make more bacteria inside the clam [for example], and the clam uses that bacteria as food."

In January, Lutz and his team plan to return to "Nine Degrees North" to conduct more research and will be taking students with them, Lutz said.

Falkowski said marine organisms have uses beyond those of which researchers currently know.

There's practical application of marine organisms in people's lives - many that we don't consider at the moment."

---

© Copyright 2006 The Daily Targum