

EXPLORER PASSENGERS INTRODUCED TO MICROBIOLOGY

By Gail Derr

While sailing aboard the Explorer of the Seas as a visiting scientist this past August, Kelly Goodwin, a microbiologist with AOML's Ocean Chemistry Division, carried out a simple experiment to introduce fellow passengers to the world of microbiology. The laboratory segment, entitled "Seawater: More than Meets the Eye," was designed solely for scientific outreach.

Passengers were invited to visit Goodwin in the Ocean Lab to learn more about "overlooked members of the sea." More than 100 passengers took up the offer. Goodwin and assistant Jordana Nance, a high-school student, grew bacteria from seawater samples to help convey the concept of hypothesis-based research. Common microbiology techniques such as serial dilution, spread plating, and the use of selective media were also demonstrated. "I wanted to give the passengers a hands-on experience in the Ocean Lab," said Goodwin.

As part of the experiment, Goodwin and Nance performed a series of dilutions on seawater to reduce the populations of microorganisms in their samples to manageable numbers. The serially diluted seawater was then spread across the surface of petri plates composed of either marine or nutrient agar. These are selective media, and marine bacteria preferentially grow on marine agar and land bacteria on the other medium. "The hypothesis was simple -- more bacteria would grow on the marine plates," said Goodwin. "The point was to have a simple, fun scenario that could be explained in less than 10 minutes but still convey basic scientific concepts," she added.

As bacterial colonies grew, Goodwin and Nance counted the number of colony-forming units. A large poster prominently displayed in the Ocean Lab outlined the experiment. During the tours, passengers had a chance to ask questions and observe the bacterial growth on the spread plates. Passengers could follow the progress of the experiment by checking the window of the Explorer's Atmospheric Lab for posted results.

This was the first time a visiting scientist brought a laboratory demonstration aboard for the purpose of scientific outreach. Goodwin hopes it will encourage others to design simple demonstrations. "With so many activities available aboard the ship, the passengers who visited the Ocean Lab came by choice," said Goodwin. "They were interested and curious. It was a great experience."

The Explorer of the Seas is one of the largest passenger ships in the Royal Caribbean Cruise Lines fleet. Its visiting scientist program, active for the past two years, is a collaborative effort between Royal Caribbean Cruise Lines, the University of Miami, NOAA, and the National Science Foundation.