

MEDIA ADVISORY
Thursday, July 1, 2004

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Saving our World's Coral Reefs through Cryopreservation

WHAT: **Coral in all our oceans are facing environmental challenges.** Because of this, scientists from around the world are convening on Moku O Lo'e ("Coconut Island") this week for an international workshop sponsored by the Smithsonian Institution and Hawaii Institute of Marine Biology to try to conserve coral species through cryopreservation. During cryopreservation, eggs, sperm, or embryos of a species can be kept frozen but alive for tens of years in liquid nitrogen, creating a "frozen zoo". If successful, the resulting frozen coral larva could then be reintroduced back into the wild, thus possibly preventing extinction of that species. This is the first attempt to try to freeze coral larva, and some of the world's experts are at HIMB to make this a success.

WHEN: **Tuesday July 6th, 2004**
Coral spawning generally starts at 5 pm and can last until 9 pm. Collection of the coral eggs and sperm will take place during this time.
During the day (10 am to 2 PM), researchers will be in the lab trying to freeze any resultant larva collected during the previous nights spawning.

WHERE: **The University of Hawaii's**, Hawaii Institute of Marine Biology, Coconut Island, Kaneohe

PROGRAM: Because Coconut Island is only accessible by boat, we would like to offer two options for media interested in covering this workshop. We ask that those media interested contact Tara Hicks at 956-3151 to arrange for boat transportation to and from the island.

First, the researchers will be collecting coral larvae from approximately 5 pm until approximately 9 pm from open water tanks at the Point Facility at HIMB. Researchers will be available to comment and answer questions throughout the entire process. If you have never seen coral spawning, it is an amazing event, and you don't even have to get wet.

Second, laboratory work will take place during the day from 10 AM to 2 PM in the NSF laboratory. Researchers will be trying to freeze larva collected from the previous day's spawning. This process involves examining the larva physiologically, creating new solutions for the freezing process, exposing the larva to ultra-rapid freezing techniques, and then thawing them to see if they have survived.

Researchers will also be available to comment and answer questions while in the laboratory.

Media coverage is invited and encouraged.

Workshop Information: Saving Our World's Coral Reefs

Investigators: Drs. Mary Hagedorn Smithsonian Institution; Jo-Ann Leong, HIMB; Peter Mazur Univ. Of Tenn; FW Kleinhans, Indianapolis Univ. Purdue University Indianapolis; William Rall, National Institutes of Health; and Greg Fahy, 21st Century Medicine; Douglas MacFarlane, Monash University, Australia.

Project Description: Coral reefs are at risk worldwide. Coral are well adapted to severe natural disturbances, such as hurricanes, earthquakes, and lava flows. They will recover quickly if they are sufficiently distant from human populations. However, they are not well adapted to human-related environmental stresses. Many of these stresses result in bleaching and destruction of large portions of reefs. Because of the pressing conservation needs of coral reefs, scientists at the Smithsonian and the University of Hawaii have begun studies to examine the physiology of coral larva and sperm with the future goal of conserving these organisms in a genome resource bank or “frozen zoo.” In this type of bank, the coral would remain frozen, but alive for many years in liquid nitrogen. It is feasible that these frozen populations could then be thawed and released back into the wild once the ecological conditions for their survival had improved. Thus, these genome resource banks may prevent the extinction of many coral species from the wild.

The major conservation goals for this project are to create a model that could be used to save coral species worldwide. The Smithsonian and HIMB are the only organizations in the world to be undertaking coral cryopreservation. Coral sperm, eggs, or larvae (the fertilized egg) have never been successfully cryopreserved, and little is known about their physiology. The leader of the project, Dr. Mary Hagedorn has been working on coral larva cryopreservation for the past two summers in collaboration with the Hawaii Institute of Marine Biology (HIMB). Fortunately, coral spawn reliably in the warm waters off Oahu in Kaneohe Bay where HIMB, one of the world's premier coral research institutes, is located.

This summer, some of the best cryobiologist in the world will convene on Coconut Island from July 1st to 10th to help move coral cryopreservation one step closer to reality. Cryobiology is the synthesis of many areas of science that must be combined in just the right ways to keep cells suspended in time without damage while they are frozen. As a result, the team is from all over the world made up of marine biologists, reproductive physiologists, membrane biochemists, and physical chemists. All are volunteering their time in this important conservation effort. Saving reef habitat is the best way to conserve coral species, however, in their rapidly changing environment, this type of ex situ preservation is an important and necessary tool for conservation.

Hawaii Institute of Marine Biology

HIMB is one of the premier coral research institutes in the world. Research and education projects at HIMB are supported primarily by state and federal funds, and private donations from sources, such as the Pauley Foundation, that generously sponsors annual summer research programs for students from all over the world.

Hawaii Institute of Marine Biology <http://www.hawaii.edu/HIMB/index.html> (Includes maps and history of the island)

School of Ocean and Earth Science and Technology <http://www.soest.hawaii.edu>