# Scientists seek genetic reasons for coral reef survival

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Coral reefs around the world are increasingly under threat from coral bleaching which destroys colonies and interrupts the food chain they support. Scientists at the University of Guam Marine Laboratory are using a new genetic sequencer to search for the biological mechanisms that allow some colonies to survive and thrive while others die. Credit: University of Guam

High-tech genome mapping of coral species from Guam's marine environment put scientists from the University of Guam's Marine

Laboratory at the forefront of coral reef research. Using the NextSeq 500, a newly installed genetic sequencer, UOG scientists are investigating how fragile coral reefs and marine ecosystems adapt to extreme environmental changes, including impacts associated with climate change such as warmer ocean waters, excessive sedimentation, and ocean acidification.??

By studying coral genomes, scientists can better understand why some coral reefs thrive and survive and others die. "Coral reef survival is linked to Guam's economic survival," said Dr. John Peterson, UOG Assistant Vice President. "Everything from recreational tourism to fishing is based on the health of our coral reefs. It is in our best interests to better understand the genetic factors that enable coral colonies to thrive.

"??The new genetic sequencer at the core of this research was made possible through the University of Guam's Experimental Program to Stimulate Competitive Research (EPSCoR) program, a $6 million grant award from the National Science Foundation (NSF). According to Dr. Jason Biggs, Associate Professor of Molecular Ecology and EPSCoR Co-Principal Investigator, the new instruments will allow UOG Marine Laboratory and EPSCoR researchers to sequence genetic information and systematically study Guam's coral colonies. Other scientists in Hawaii and Australia have already begun such research, but Guam, with its historically warmer climate, poses a new and exciting opportunity for local researchers.

??"Having this technology in such close proximity to Guam's coral reefs will enable our faculty to be at the forefront of molecular reef ecology, tackling questions we are just beginning to ask," said Dr. Biggs. "These new sequencers are at the core of this research and only a handful of them are stationed in places as unique as Guam and Micronesia. These instruments will allow us, the people of Guam, to study these things for

ourselves, and train our students as the next frontier scientists."

??That is part of the goal, explains Dr. Terry Donaldson, Marine Laboratory Director and EPSCoR Principal Investigator. The instruments underscore the University's increased research capacity and ability to provide scientific services within the region while attracting more researchers, students, and external funding opportunities in the future.??

"Through EPSCoR, the University of Guam has joined an elite group of institutions that are building research capacity, improving infrastructure and cyber-infrastructure, and providing greater educational opportunities for students while enhancing research opportunities for young scientists," said Dr. Donaldson.??

"We have reached a significant institutional and research milestone with the successful acquisition and installation of genetic sequencing instruments," said President Robert A. Underwood. "Our increased research capacity combined with record enrollment and conferral of a record number of degrees showcase the strides the University has undertaken in the last year; all of which have a major positive impact on our community."

Provided by University of Guam