New peptide antibiotic - American Oyster Defensin (AOD)

North Carolina Sea Grant researchers have isolated a new peptide antibiotic from the American oyster that may have implications for managing many diseases in oysters.

The new antimicrobial peptide "American oyster defensin" (AOD) may protect against bacteria in Crassostrea virginica, a species that is native to North Carolina and important economically to Atlantic and Gulf Coast fisheries.

"This peptide may be helpful in selecting disease-resistant oysters for aquaculture and fisheries and may also allow for the development of a test to monitor oyster health," says Ed Noga, professor at the North Carolina State University College of Veterinary Medicine. "In recent years, a number of pathogens, especially bacteria and parasites, have devastated American oyster populations."

The research findings appear in the new (Dec. 30) issue of Biochemical and Biophysical Research Communications.

Pathogens such as dermo (Perkinsus marinus) have caused major decreases in oyster productivity -- bacterial pathogens -- such as Vibrio vulnificus that can cause a food-borne illness are a human health concern, according to Noga.

This is the first time that researchers have isolated an antimicrobial peptide from any oyster species, he says.

NC State veterinary medicine postdoctoral research associate Jung-Kil Seo, as well as scientists J. Myron Crawford and Kathryn L. Stone of

Yale University's Keck Biotechnology Resource Laboratory, collaborated with Noga on the study.

"The results may be used to better understand the innate immune system of American oysters and to enhance research to protect it from important microbial infections," according to Noga. "Further studies are needed to identify sites of synthesis and storage of AOD and determine mechanisms affecting its regulation."