

The Crest

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Chesapeake Bay
National Estuarine
Research Reserve
in Virginia

a fair Bay Summer 2000
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Scientists Discover New Species of *Perkinsus*

A description of a new species of a marine protozoan, named *Perkinsus chesapeaki*, recently published in the latest issue of the journal *Parasite* resulted from a research project conducted in the laboratory of Professor Mohamed Faisal, VIMS Department of Environmental Sciences in collaboration with Dr. Shawn M. McLaughlin, NOAA/MDDNR Cooperative Oxford Laboratory.

The cooperative research effort to characterize the new species of *Perkinsus* parasite began three years ago when Dr. McLaughlin sought the expertise in Dr. Faisal's laboratory to identify pathogens of the softshell clam. Two morphologically distinct *Perkinsus* species were isolated from the clams and successfully cloned in continuous culture. The investigators identified the first isolate as the oyster pathogen, *Perkinsus marinus*, and the

second isolate as a new species of *Perkinsus* based upon unique morphological and life cycle characteristics exhibited by the two isolates in culture. Dr. Ehab Elsayed, a visiting scientist at Dr. Faisal's lab, contributed to the efforts of adapting *Perkinsus* spp. to culture conditions.

The researchers then launched a series of investigations to further examine the biochemical, molecular, and ultrastructural characteristics of softshell clam *Perkinsus* species. Dr. Ben Tall, from the Food and Drug Administration, and Dr. Adel Shaheen, a visiting scientist at Dr. Faisal's lab conducted zoosporulation studies and described the ultrastructural details of zoospores.

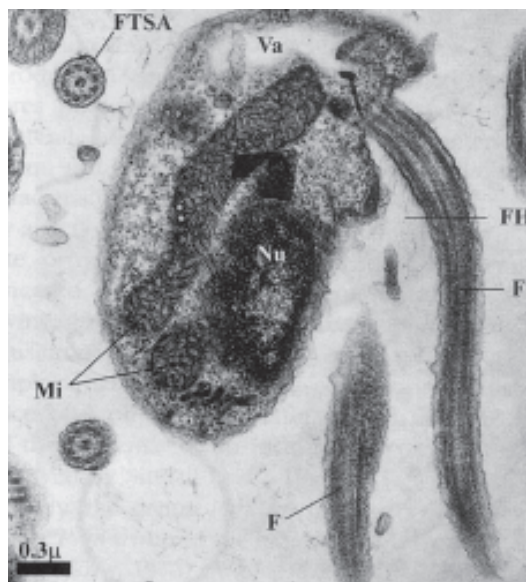
Dr. Shaban Kotob, a Research Assistant Professor at the Department of Environmental Sciences at VIMS and Dr. Peter Van Berkum, a senior scientist at the U.S. Department of Agriculture, joined forces to apply a molecular biology approach to the investigations using gene cloning and sequence analysis. "Molecular typing and phylogenetic analysis were required to provide the quantitative estimates of genetic relatedness of the two isolates to the genus *Perkinsus*," said Dr. Kotob.

Although researchers have found *Perkinsus marinus* (Dermo) in softshell clams, it is too early to say whether *Perkinsus chesapeaki* may be found in oysters. Dr. Mohamed Faisal emphasizes "These findings are

new and much more research must be done before we know the extent of the parasite's presence and whether the parasites are harmful to clams or other marine mollusks."

McLaughlin explains that in the early 1990s an increase in *Perkinsus* sp. infections was observed in softshell clams at some sites in the Chesapeake Bay following a series of extremely hot and dry summers. This paralleled increased infections in oysters during the same period. "The unique morphology of the parasites found in fixed tissues of some of the softshell clams led us to question whether clams were infected with the same parasite found in oysters or another unidentified species," said McLaughlin.

Perkinsus parasites may be found in bivalves worldwide in warmer coastal waters and are found in numerous bivalves without causing mortality. However, pathogenic species of *Perkinsus* have caused serious disease and mortality in other bivalves including the eastern oyster, blacklip abalone, Portuguese clams and cultured Japanese scallops. Dr. McLaughlin is currently investigating virulence factors of *Perkinsus* parasites and their potential role in pathogenicity. These investigations will be conducted in collaboration with Spanish researchers studying a similar parasite causing severe losses of commercial clams in Europe.



A zoospore of *Perkinsus chesapeaki*.

NMFS Faculty Position
Established at VIMS
continued from page 1

excellent opportunity for increased interaction in an area that is strategically located in the mid-Atlantic region. Additionally, NMFS scientists will be involved in the education of young scientists who need to be well prepared to deal with future problems and issues." Vecchione will continue his affiliation at VIMS and will teach a deep-sea biology class in the fall and invertebrate zoology in the spring. The deep-sea biology course will include a 2-week research cruise aboard a NOAA vessel.

According to Dr. John Graves, Chair, VIMS Dept. of Fisheries Science, "This appointment allows us to support additional students and offer

new classes to both graduate and undergraduate students. In addition, the CMER Program provides access to NOAA vessels for teaching and field work and increased opportunities for research funding." "The guidance and cooperation we receive from VIMS and NMFS will help our research program and student recruitment," said Dr. George Burbank, Head of Marine Science at Hampton University.

In addition to funding the faculty position, the program also provides annual funds for research in areas of specific interest to NMFS. These funds will support research for three to four students each year. Currently Bruce Collette and Tom Monroe and Mike Vecchione of the NMFS National Systematics Lab are adjunct faculty in VIMS' Department of Fisheries Science.

\$500,000 Challenge Grant

VIMS recently received a challenge grant of \$500,000 from the Massey Foundation to create an unrestricted endowment at VIMS. This challenge has been met by an anonymous donor with the expectation that we will raise an additional \$500,000 in the next five years for a total unrestricted endowment of \$1.5 million. A campaign to meet the endowment campaign match is underway. The income from this generous endowment will provide increased flexibility to fund cutting edge research and critical education needs and will benefit the entire VIMS community.