

SOUTHWESTERN NEWS

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EYE RESEARCHERS MAKE SERENDIPITOUS LAB DISCOVERY OF BLOOD-CLOT BUSTER THAT MAY HELP HEART ATTACK PATIENTS

DALLAS — March 5, 1996 — Ophthalmology researchers at UT Southwestern Medical Center at Dallas have discovered a parasite that causes blindness also produces an enzyme that can dissolve blood clots similar to those found in heart attack patients.

The discovery was made by a research team led by Dr. Jerry Niederkorn, professor of ophthalmology and microbiology.

The enzyme's ability to dissolve clots was discovered while the researchers were studying the pathogenic effects of *Acanthamoeba*, an amoebic parasite with virulent and nonvirulent strains. The pathogenic strain causes *Acanthamoeba* keratitis, a disease in which an enzyme produced by the parasite destroys the cornea. This rare condition occurs in some contact-lens wearers.

"While it is important to continue this research for ophthalmologic reasons, we realize that this amoeba-derived enzyme may have important implications in the areas of heart disease and possibly cancer," said Niederkorn, director of ophthalmic research and holder of the George A. and Nancy P. Shutt Professorship in Medical Science.

"The enzyme, we have discovered, dissolves fibrin clots like those in patients who have suffered heart attacks. It also is similar to enzymes that cancer cells produce and use to metastasize, or spread to other parts of the body, and this has to be looked into as well.

"In animal studies we have found that the amoeba-derived enzyme dissolves blood clots as effectively as tissue-type plasminogen activator, the enzyme commonly used to treat heart attack patients," he said. "We have spent the past several months purifying the enzyme and are well on our way to cloning the gene that produces it."

By cloning the gene, Niederkorn's team eventually will be able to produce large quantities of pure enzyme, allowing them to move from test tube to animal studies.

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Niederkorn's team includes Dr. Hassan Alizadeh, assistant professor of ophthalmology, and Dr. MonaLisa Mitra, an instructor of ophthalmology.

Mitra has received a Texas Affiliate Research Endowment Fund Grant from the American Heart Association to continue researching the clot-busting enzyme. She knows firsthand the importance her work has because her father is a heart attack survivor.

"I became interested in heart research because heart disease is a major cause of death, not only in this country but globally," she said.

The molecular biologist's research also has implications for cost containment.

"The current man-made clot busters used to dissolve blood clots in heart attack patients cost a great deal to produce and often cause internal bleeding. In addition, they are inactivated by an inhibitor that all humans produce," she said.

The clot buster discovered by Niederkorn, Alizadeh and Mitra should be easy to produce in the laboratory in large quantities, Niederkorn said. It also is resistant to the major inhibitor of clot busters that humans produce, Mitra said.

"The successful completion of this study hopefully will generate a novel clot-dissolving enzyme that might be relatively inexpensive to produce in comparison with the enzymes currently in use," Mitra said. "This will make the treatment of coronary artery disease more effective and accessible to persons affected by this ever-increasing and often fatal condition."

The findings were published in the July 1995 issue of the *Molecular and Biochemical Parasitology* journal.

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