

SOUTHWESTERN NEWS

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UT SOUTHWESTERN RESEARCHERS DISCOVER PROTEIN THAT PROMOTES CELL DEATH

DALLAS – Sept. 11, 2000 – Researchers at UT Southwestern Medical Center at Dallas have discovered that the protein SMAC may lead to the development of drugs that eliminate cancerous cells. The protein, second mitochondria-derived activator of caspases, promotes apoptosis, or cell death.

The results of the study appeared in the Aug. 24 issue of *Nature*.

Dr. Chunying Du, Howard Hughes Medical Institute fellow, Dr. Xiaodong Wang, associate professor of biochemistry, and their colleagues previously identified the protein by purifying it from large cultures of human cells. The researchers noticed activity promoting the cell-death process and discovered the protein located in the mitochondria of the cell. The findings of this research appeared in the July 7 issue of *Cell*.

In their most recent study published in *Nature*, the researchers found that SMAC appears to be the “master regulator” of apoptosis in mammals and is ultimately responsible for cell death.

“It’s a new protein that has never been found before,” Wang said. “We know how it works, its structure, and we know what part of the protein is doing the job of apoptosis.

“The exciting part of this study is that out of the more than 200 amino acids found in the protein, only seven are necessary to induce cell death. It’s very unusual to have such a very small part of the protein that can carry out the function of apoptosis. This makes it possible for us to design drugs based on the seven amino acids that will promote cell death in cancerous cells.”

A large presence of inhibitors of apoptosis (IAPs), a class of proteins, may contribute to the resistance of cancer cells to chemotherapy, Du said. SMAC may weaken the cancerous cells to chemotherapy, she said.

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The long-term goal of the researchers is to replicate the protein and develop a drug that will kill cancerous cells.

Researchers at Princeton University assisted in identifying the actual structure of the protein.

The Howard Hughes Medical Institute, the National Institutes of Health and the Robert Welch Foundation funded the study.

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