Tricking Cancer Cells to Self-Destruct

November 19, 2010 10:45 AM Belinda Lacoste
newwave@tulane.edu

Tulane University researcher W T. Godbey has developed a treatment for cancer using a method that causes cancer cells to self-destruct while sparing surrounding healthy cells.

In the Laboratory for Gene Therapy and Cellular Engineering, W T. Godbey has developed a treatment that would cause cancer cells to kill themselves. (Photo by Guillermo Cabrera-Rojo)

While clinical trials with human patients are two to three years in the future, the treatment has been successful in animal models.

Tulane has received a patent for the treatment, whereby Godbey takes a gene from a cancer cell, extracts the current DNA message from the gene and replaces it with a code that instructs the cell to kill itself.

“We sort of trick the cancer cell,” says Godbey, an associate professor of chemical and biomolecular engineering. “When a cell expresses a gene it doesn't look at the message; if it recognizes the promoter it transcribes the message. Here the message is to express key proteins that cause self-destruction.”

Only cancer cells have the specific protein that will bind to this promoter; normal healthy cells do not, says Godbey. Other gene delivery methods have been tried before, but because his method targets only COX-2 expressing genes there are no bystander effects that would result in damage to healthy tissue.

The targeted treatment developed in Godbey's lab has been proven successful on several carcinomas. Most recently, the gene therapy treatment has been shown to have exceptional cancer-killing actions when tested on bladder cancer in mice. This is a cancer that is especially difficult to treat due to a protective layer around the bladder wall, Godbey says. The results are discussed in a recent article, “Preclinical Evaluation of a Gene Therapy Treatment for Transitional Cell Carcinoma,” published in the journal *Cancer Gene Therapy*.

Pre-clinical trials are currently in process in collaboration with researchers at the Tulane School of Medicine.

Belinda Lacoste is a student studying journalism in the School of Continuing Studies and a staff member who writes for the School of Science and Engineering.