

Doctors have new approach to fight tumor cells

May 18 2010, By Fred Tasker

University of Miami doctors have developed a new method of catching and killing tumor cells floating through the human bloodstream they say could be a potent new weapon against most kinds of cancer within a decade.

"This will be a big advance -- powerful, simpler to carry out, cheaper and broadly applicable to virtually any cancer," says Eli Gilboa, Ph.D., co-leader of the Tumor Immunology Program at Sylvester Comprehensive Cancer Center.

After a [cancerous tumor](#) is excised from a patient's breast, lung, prostate or other organ by surgery or radiation, there starts an agonizing wait to see if it has metastasized, or spread, to other parts of the body.

The UM medical team's new approach is to get the body's [immune system](#) to catch and kill the roaming [cancer cells](#) before they can affect other organs. The study appears in the May issue of the peer-reviewed journal *Nature*.

The doctors acknowledge the concept has been limited to laboratory test tubes and animals, and faces up to 10 years of human testing before general use.

In healthy people, the immune system is a powerful defense against disease, identifying tumor cells by spotting [antigens](#), which are foreign chemical substances attached to the tumors.

The problem: Many tumors don't have enough antigens to trigger the immune system. When tumors are small, the immune system is not properly activated, Gilboa says.

"Oncology knows how to get rid of big tumors you can see and surgically remove or radiate," Gilboa said. "Most patients die when the disease spreads to areas we don't know about or can't access. This is where the immune system has the advantage."

Gilboa and his team manipulated the body's DNA and RNA to induce the cancer cells scattered through the body to "express," or produce, more antigens. It makes them easier to spot by the immune system.

In the lab, the process eliminated tumors in rats.

Dr. Richard Jove, deputy director of the Comprehensive Cancer Center at the City of Hope Medical Center in Los Angeles, called the work a "fundamental breakthrough that could be applied to any cancer."

"The challenge for decades has been that the immune system has been tolerant to the antigens on [tumor cells](#). It's why tumor immunotherapy has not been particularly successful to date," said Jove, who was not involved in the UM study.

Gilboa's UM team includes Fernando Pastor, post-doctoral associate at Sylvester; Despina Kolonias, senior research associate at Sylvester; and Paloma Giagrande, assistant professor of internal medicine at the University of Iowa.

Cancer killed 562,000 Americans in 2009, making it the second biggest disease killer after heart disease, according to the American [Cancer Society](#).

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