

Chemotherapy-free 'cancer vaccine' moves from mice to human trials at Stanford

A recent Stanford cancer study that cured 97 percent of mice from tumors has now moved on to soliciting human volunteers for a new cutting-edge medical trial.

The trial is part of a gathering wave of research into immunotherapy, a type of treatment that fights cancer by using the body's immune system to attack tumors.

"Getting the immune system to fight cancer is one of the most recent developments in cancer," Dr. Ronald Levy, a professor of oncology at

Stanford who is leading the study, told SFGATE. "People need to know that this is in its early days and we are still looking for safety and looking to make this as good as it can be."

The treatment is not a true vaccine that creates lasting immunity, but it does feature a vaccine-like injection carrying two immune-stimulators that activate the immune system's T cells to eliminate tumors throughout the body.

Each test subject receives a low-dose of radiation plus two

rounds of the injected agents, Levy said. No chemotherapy is involved.

The treatment does not work on all types of cancer, Levy said, because each type of cancer has a different set of rules regarding how it can be affected by the immune system.

For the current trials, he is only looking for people with low-grade lymphoma regardless if they have been previously treated. He said Stanford is planning on running two trials by the end of the year with a total of about

35 test subjects.

"The two drugs we are injecting are made by two different companies and have already been proven safe for people," Levy said. "It's the combination we are testing."

Side effects at this point include fever and soreness at the injection site but no vomiting, Levy said.

He said if the FDA does end up granting final approval, he wouldn't expect it any sooner than a year or two from now.

While the vaccine approach to cancer is unique, Levy noted that one approved cancer drug for injection already exists for melanoma skin cancer.

Other limited approaches also currently exist in the expanding landscape for cancer immunotherapy. In 2017, the FDA approved a type of cell therapy for some types of leukemia and lymphoma known as CAR-T where a patient's immune cells are removed from the body, genetically engineered and reintroduced to attack the tumor cells.

Dr. Michelle Hermiston directs the pediatric immunotherapy program at UCSF, the first hospital in California to implement the treatment. She told SFGATE that CAR-T is cur-

rently being used as a third option for lymphoma and leukemia patients who have failed standard treatments like chemotherapy.

She said CAR-T is both labor intensive and very expensive — drugs alone cost half a million dollars — but that the new immunotherapy treatment has raised survival rates from about 10-15 percent to more than 60 percent.

"The thing to understand is how much of a game changer this is," she said. "If it's your kid, it makes a huge difference."

But CAR-T comes with its fair share of side effects: fever, confusion, organ failure and the chance of permanent loss of one's B cells — responsible for producing antibodies. "It's not a trivial therapy," Hermiston said.

Hermiston said she is very interested in Levy's injection trials as well as other future advances in immunotherapy. One biological area of importance that demands further study, she said, was the difference between "hot" and "cold" tumors with respect to the body's immune system.


She said research has shown that unlike hot tumors, the immune system does not

detect cold tumors — often associated with colon cancer. However, sometimes a combination of hot and cold may be at play. One main question, Hermiston said, is whether cold tumors can be transformed into hot tumors so that the immune system can first recognize and then destroy them.

"Can we make the tumor more visible to the immune system?" Hermiston said. "We are at the tip of the iceberg right now."

Levy, along with Stanford instructor of medicine Idit Sagiv-Barfi, published their study on the cancer-curing effect of immunotherapy on January 31 in Science Translational Medicine. Levy is a pioneer in the field of cancer immunotherapy having contributed to the development of rituximab, one of the first monoclonal antibodies approved for use as an anti-cancer treatment in humans. In 2009 he received the King Faisal International Prize — often known as the "Arab Nobel Prize" — for this achievement.

"We have a huge problem in cancer and we will never be satisfied until we find solutions for everyone," Levy said.



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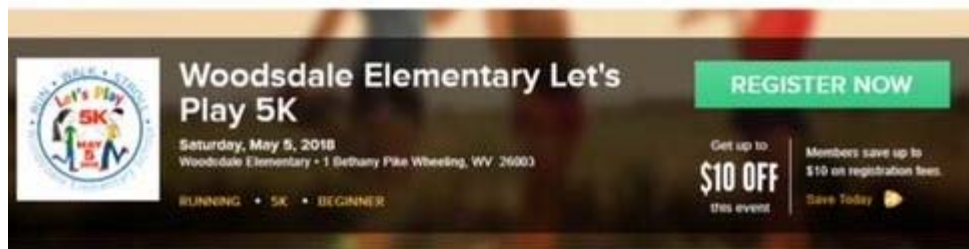


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