Dr. Vincent Tuohy works to develop breast cancer vaccine

By KATHRYN RIDDLE

Dr. Vincent K. Tuohy, well known and highly regarded for his research on autoimmune diseases, specifically multiple sclerosis, is an immunologist at the Lerner Research Institute of the Cleveland Clinic. In 1989, he was recruited from Harvard to the Cleveland Clinic's Mellen Center for Multiple Sclerosis to continue and expand his research studying autoimmune mouse models.

In 2002, Dr. Tuohy began "to focus the immune response against self-proteins that are over-expressed in adult-onset tumors but are no longer expressed with age in normal tissues." Called "retired" tissue-specific proteins, he posited that they might be "useful vaccine targets for preventing diseases like breast cancer and ovarian cancer that typically occur in aging women." Using animal models for breast cancer and vaccinating "against breast-specific proteins no longer expressed in normal aging breast tissues but expressed in many breast tumors," Dr. Tuohy's research revealed that 100 percent of the vaccinated mice not only were protected from breast cancer but also showed inhibited growth of preexisting tumors. Following the publication of his conclusions in "Nature Medicine" in 2010, Dr. Tuohy sought funding for clinical trials in humans.

"Treatment is the paradigm ingrained in our culture for controlling cancer," said Dr. Tuohy. "I'm not an oncologist, not even in the cancer field; the only reason anyone was willing to listen to me initially was because of my MS research." A second dogma Dr.Tuohy faced is the belief that "you can't have a preventive vaccine unless you have a pathogen to target."

According to Dr. Tuohy, half of all women who are diagnosed with breast cancer are over 61 years of age. He believes that there must be "an option, a civilized option [in the form of a preventive vaccine] rather than the trauma women go through when having their breasts removed."

His lab, he said, "was saved — saved! — by funds raised by both local and national grassroots groups" such as Brakes for Breasts, a campaign by 67 independent auto repair shops across the country that last October offered free brake pads to customers who paid only for labor and other parts. Ten percent of the brake services were donated to the Cleveland Clinic Breast Cancer Vaccine. In three years, said Dr. Tuohy, "women's support groups gave my lab over $1 million" through community fundraisers such as bake and candy sales and 5k runs.

Last September the Cleveland Clinic announced that it has formed a new company called Shield Biotech, Inc. with Dr. Tuohy serving as the chief science officer. In order to develop the preventive breast cancer vaccine, Shield Biotech must seek permission from the FDA to test its vaccine "as an investigational new drug in proof-of-concept, first-in-human clinical trials." It will take at least two years to begin and three years to complete the early Phase I testing of the vaccine. FDA approval, said Dr. Tuohy, "could be at least 10 years away." For more information on the breast cancer vaccine go to www.clevelandclinic.org/pinkvaccine.

Dr. Vincent K. Tuohy of the Cleveland Clinic Lerner Research Institute (Photograph by Kathryn Riddle)