Could this be the end of cancer?

By Sharon Begley, Newsweek

By all rights, Shari Baker should have said her final goodbyes years ago. In 2005, more than a year after three doctors dismissed a lump under her arm as a harmless cyst, she was diagnosed with stage IV (metastatic) breast cancer, which takes the lives of at least 80 percent of patients within five years; it killed Elizabeth Edwards in 2010. Half of those diagnosed with breast cancer that has spread—in Baker, it had reached her spine—die within 39 months. But the 53-year-old jewelry designer in Scottsdale, Ariz., wasn't ready to die. "I've been a competitive athlete and a body builder, I take care of myself and eat right," she says. "I was going to fight this."

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Baker began searching for a clinical trial, and through the International Cancer Advocacy Network (ICAN) found an intriguing possibility: a cancer vaccine. In May 2006, she traveled to the University of Washington. The vaccine was injected into her upper arm; she got five more shots over the next five months. Today, with scans detecting no cancer anywhere, Baker seems to have beaten some extremely stiff odds.

Short of a sci-fi nano-camera to capture what was going on at the cellular level, it's impossible to know exactly what the vaccine did. But based on studies of lab animals and cells in petri dishes, scientists have a pretty good idea. The vaccine contained fragments of a molecule called her2/neu, which, perched on the surface of tumor cells, fuels the growth and proliferation of some breast cancers. Baker's immune system

treated the flood of injected her2/neu like an invading army and mounted a counterattack. Cells called CD4, acting like biological Paul Reveres, sounded the alarm, rousing white blood cells called T cells. The body’s Minutemen, they invaded Baker’s tumor, summoning reinforcements called cytotoxic (“killer”) T cells, which destroyed the tumor cells in Baker’s breast as well as her spine. Enough of the other 21 women who received the experimental vaccine against metastatic breast cancer are doing so well that its inventor, immunologist Mary (“Nora”) Disis of UW, dares to envision a future in which vaccines “control or even eliminate cancer.”

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