

Personalized Tumor Test Tells Whether More Cancer Treatment Is Needed

By [Daniel J. DeNoon](#)

WebMD Health News

Feb. 18, 2010 -- A new type of cancer test can tell whether -- and when -- a tumor is coming back after initial treatment.

The test uses a sample of the original tumor to identify unique cancer gene sequences. Later blood tests look for that genetic signature and tell whether surgeons removed the entire tumor, whether the cancer has spread to other parts of the body, or whether the cancer is coming back.

It's the brainchild of a team of Johns Hopkins researchers led by Victor E. Velculescu, MD, PhD. The team initially hoped to find markers that would identify cancers in any patient. Instead, they found that every patient's cancer is unique. But that uniqueness turned out to be the key to a new tool that may revolutionize cancer care. "A person's cancer is as individual as a fingerprint," study researcher Luis Diaz, MD, said at a news conference. "[The test] can clearly detect cancer in patients and monitor the burden of disease and response to treatment." Previous efforts to fingerprint tumors relied on sequencing each letter in the cancer's genetic code. Even with modern genetic tools, that's a formidable task. Velculescu's team had a better idea.

Realizing that cancer chromosomes become jumbled -- like out-of-sequence book chapters -- they looked for big pieces of rearranged DNA in the tumor. It turned out that each patient's tumor has about nine characteristic rearrangements at the ends of its chromosomes that together serve as that tumor's unique fingerprint. So Velculescu and colleagues called their new tool PARE -- personalized analysis of rearranged ends.

"The PARE approach could be used to develop biomarkers for virtually any cancer," Velculescu said at the news conference. "We are optimistic this will become available in the next few years to a broad number of patients. The question is the cost."

Right now, the cost is \$5,000 per patient -- much more than the less accurate scans now used to look for cancer spread. But Velculescu says the cost of the procedure is dropping rapidly because the instruments needed to perform the test are becoming less expensive, and because refinements of the technique are expected to cut the complexity of the PARE process.

Johns Hopkins University will hold the patent on any PARE products, and Velculescu and two colleagues will share in the royalties.

The researchers report their findings in the Feb. 24 issue of Science Translational Medicine.