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Profile

David Sidransky

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Cancer Spotter

In cancer, early detection is key. David Sidransky is giving doctors the tools to catch tumors long before symptoms appear

By Alice Park

(TIME) -- To most of us, blood, urine and saliva are just unsightly bodily fluids to be disposed of as quickly as possible. But to David Sidransky, they are valuable sources of biological information that can be mined for nuggets of potentially life-saving data.

David Sidransky Essentials

Born: June 21, 1960, El Paso, Texas

Mentor: Johns Hopkins geneticist Dr. Bert Vogelstein, who said, "Think about things that are not so obvious."

Career Highlight: 1992 paper describing the first genetic mutation for colon cancer picked up in stool

Research Philosophy: "Think about the way things should be, then work backward and figure out how to make it happen."

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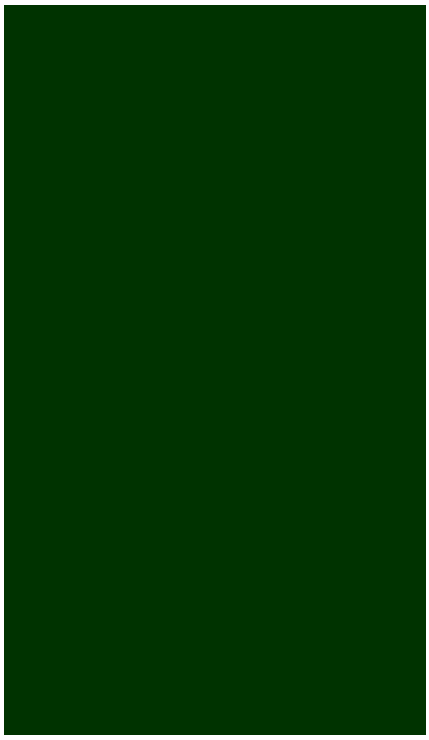
Sidransky, a cancer specialist at Johns Hopkins Hospital, is particularly interested in what these fluids reveal about a patient's risk of developing cancer. The best-known of today's cancer-screening tests, the PSA for prostate cancer, is at most 70 percent accurate in picking up tumors. Sidransky is pioneering a new generation of tests that can detect cancer more accurately and at a much earlier stage in the progress of the disease.

It's not an easy task, especially since doctors still don't fully understand how a normal cell becomes cancerous. But the challenge of stripping cancer down to its essential operations was what originally attracted Sidransky to the field when he was a medical resident at Baylor College of Medicine in Houston. "Of all the diseases confronting us in the early 1980s, cancer seemed the most interesting from an intellectual point of view," he says. "It seemed like something had to change."

What that "something" was became clear in the past decade as scientists began to see at the molecular level precisely what pushes a normal cell to become malignant. As more and more genetic mutations were linked to various types of cancers, researchers could see patterns of genetic changes that permit cells to grow into tumors. If doctors



could identify the steps that a cell has to go through to become cancerous, Sidransky reasoned, they might be able to pick up a budding tumor's malignant imprints along the way — tracking cancer as it develops, from start to finish.

Rather than rely on indirect cancer markers like PSA, which have an unacceptably high rate of false positives, Sidransky zeroed in on DNA shed directly from tumors. Many solid tumors, it turns out, result from mutations in stretches of DNA that are repeated several times. Finding these abnormal DNA snippets in urine or saliva could mean a cancer is just beginning to take root. In a small pilot study of bladder-cancer patients, one screen that Sidransky developed picked up more than 90 percent of tumors — a hit rate that could revolutionize the early detection and treatment of bladder cancer.

It won't always be so simple, however. For one thing, some cancers leave bigger footprints than others. In the urine of a patient with bladder cancer, for example, more than half the genetic material could derive from the tumor, making detection relatively straightforward. The sputum of a lung-cancer patient, on the other hand, is much more diverse; less than 1 percent of its DNA is traceable to cancer. Clearly, other genetic clues will have to be developed, and Sidransky is already tracking down several of them. The challenge, to his delight, never ends.

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