# Biomarkers are how cancers give up their secrets

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Animated by Hannah Folz. Click here for transcript.
We're kicking off a new video series focusing on science, and we're starting with the science of cancer treatment. There are a lot more options for cancer treatment than there used to be, but new treatments are often more effective *because* they only work in specific situations. Matching up patients with the treatments that fit them best is one of the things being unlocked by advances in biomarker testing.

Biomarkers are genetic variations, proteins, or chemicals produced by cells that can tell you about the internal workings of a cancer or how the body is responding to it. By measuring these things in cancer tissue samples or even in blood or urine, it's possible to detect or identify cancers, generate a prognosis, and determine which treatment has the highest chance of success.

It's a rapidly advancing field. The list of recommended biomarkers to test for has grown, and many more candidate biomarkers have been flagged by studies than are currently approved for use. Next-generation sequencing technologies, which can detect many genetic mutations at once, are enabling common testing for a longer list of genetic biomarkers. Those can highlight so-called "targeted therapy" drugs that work on

cells with specific mutations. Other biomarkers are being used to find cancers that will respond to new immunotherapy approaches that leverage the body’s own immune system.

Cancers are complex and varied, which makes treatment even more challenging. The more researchers learn about cancer in general, the more tools can be brought to bear on a particular patient’s cancer. But that requires a more detailed picture of each patient’s cancer, and biomarkers have opened new windows into the cancer cell.

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