

Prostate Cancer Gene Panel: What You Need to Know

Are most cases of prostate cancer hereditary?

About 5-10% of prostate cancer cases are partly due to an inherited risk. There are certain genes that are known to increase the risk for prostate cancer. Some of these genes are linked to well-known hereditary cancer syndromes that increase the risk for other cancers as well. People with metastatic prostate cancer (cancer that has spread to other areas of the body) may have a higher likelihood of having an inherited cancer risk.

What genes are linked to hereditary prostate cancer?

Cancer genetics is an active area of research. The genes below are currently known to be linked to an increased risk for prostate cancer.

BRCA1 and BRCA2: Those who inherit pathogenic variants (or mutations) in the *BRCA1* or *BRCA2* genes have an increased risk to develop prostate cancer. Pathogenic variants in these genes are also linked to an increased risk for breast cancer, pancreatic cancer, and ovarian cancer.

HOXB13: A pathogenic variant in the *HOXB13* gene has been linked to a significantly increased risk for prostate cancer and has been found in families with multiple cases of prostate cancer.

Other genes: Other genes have been linked to an increased risk for prostate cancer, including *ATM*, *CHEK2*, *EPCAM*, *MLH1*, *MSH2*, *MSH6*, *PALB2*, *PMS2* and *RAD51D*. Currently, there are limited data available to guide estimates of the specific lifetime risk of prostate cancer associated with these genes. As research continues, we expect to learn more about the genetic factors that contribute to hereditary prostate cancer risk.

What does it mean to have a pathogenic variant in a gene linked to hereditary prostate cancer?

- Having a pathogenic variant, also known as a mutation, in a gene linked to hereditary prostate cancer results in an increased risk for prostate cancer compared to the general population. The lifetime risk for prostate cancer in the general population is estimated to be 11.2%.
- If the test shows that you have a pathogenic variant in one of these genes, your doctors may recommend a specialized medical plan to manage the increased cancer risks. In some cases, your results may also help to guide treatment options.
- There is a 50% chance that a person with a pathogenic variant will pass it on to each of their children. In most cases, siblings also have a 50% chance to have the pathogenic variant. Other family members may also be at risk to have the pathogenic variant.

What should I consider before choosing a hereditary prostate cancer panel?

- Testing may not include all the genes linked to an increased risk of prostate cancer.
- Your test may identify variants of uncertain significance (VUS). VUS are genetic changes which may or may not cause an increased risk for cancer. Most VUS turn out not to increase cancer risk.
- The test may reveal a pathogenic variant in a gene with features that do not match with your family history.
- The clinical use and understanding of some of these genes is limited.

