



INVITAE

Genetic testing
for hereditary cancer

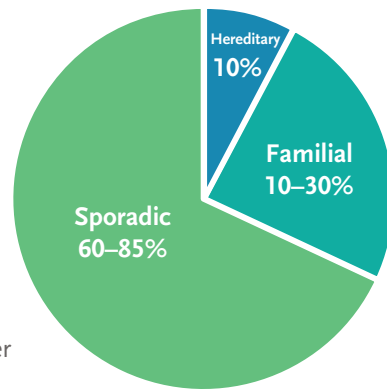
THE GENETICS OF HEREDITARY CANCER

About half of all men and one-third of all women in the US will develop cancer during their lifetimes.

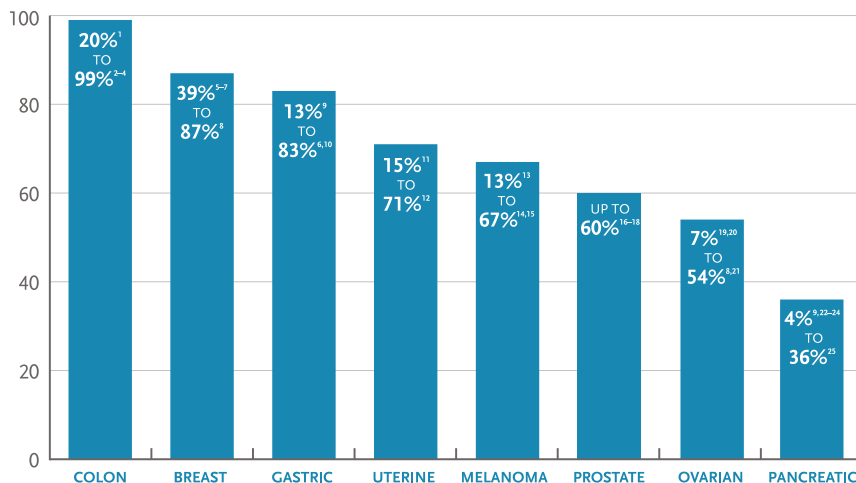
Approximately 5% to 10% of all cancers are hereditary. An additional 10% to 30% have a close family member who also had cancer, suggesting a familial link even though no specific hereditary link was found. And 60% to 85% of cancer patients have what's called sporadic cancer, meaning the cancer does not seem connected to inherited genetic traits, or is the result of many different factors.

In **hereditary cancer**, an increased risk of developing certain cancers is passed down through families via their genes.

The past few decades have seen incredible advances in genetic knowledge, and we have now identified many genes associated with cancer. If you have an alteration in one of these genes, your risk of developing certain types of cancer is significantly higher than that of the general population.



LIFETIME CANCER RISK FOR PEOPLE WITH A GENETIC ALTERATION



WHO SHOULD CONSIDER GENETIC TESTING?

Genetic testing may be appropriate if you or a close family member has:

- Breast, colorectal, or uterine cancer diagnosed **before age 50**
- More than one type** of cancer
- Cancer in both of a **set of paired organs** (for example, both kidneys or both breasts)
- Certain types of cancer** including ovarian, pancreatic, metastatic prostate, intraductal prostate, medullary thyroid, triple-negative breast or male breast cancer)
- 10+ gastrointestinal polyps
- Breast or high grade prostate cancer (Gleason score >7) and Ashkenazi Jewish ancestry

Recent research suggests genetic testing could also be appropriate for **anyone** diagnosed with breast or prostate cancer. Talk to your healthcare provider to determine whether testing is right for you.

WHAT ARE THE BENEFITS OF GENETIC TESTING?

Knowing if you have an inherited risk empowers you to be proactive about your health.



Increased surveillance can identify a cancer at its earliest, most treatable stage.



If desired, surgery can significantly reduce risk.



Certain medicines can prevent cancer from developing (“chemoprevention”).



Genetic information can qualify you for participation in clinical trials or research studies.

BASED ON YOUR SPECIFIC MEDICAL HISTORY AND INFORMATION ABOUT FAMILY MEMBERS DIAGNOSED WITH CANCER, YOU AND YOUR HEALTHCARE PROVIDER MIGHT CHOOSE ONE OF THESE GENETIC TESTS—OR PERSONALIZE ONE OF THESE TESTS FOR YOUR UNIQUE SITUATION.

| | | GENES | BREAST & GYN | ENDOCRINE | GASTROINTESTINAL | GENITOURINARY | HEMATOLOGIC | NERVOUS SYSTEM/BRAIN | PROSTATE | SARCOMA | SKIN | |
|---|---------------------------------------|-------|--------------|-----------|------------------|---------------|-------------|----------------------|----------|---------|------|---|
| INVITAE COMMON HEREDITARY CANCERS PANEL | INVITAE BREAST GUIDELINES-BASED PANEL | ATM | ■ | | ■ | | ■ | | ■ | | | |
| | | BRCA1 | ■ | | ■ | ■ | | | ■ | | | |
| | | BRCA2 | ■ | | ■ | ■ | | | ■ | | ■ | |
| | | CDH1 | ■ | | ■ | | | | | | | |
| | | CHEK2 | ■ | ■ | ■ | ■ | | | ■ | | | |
| | | PALB2 | ■ | | ■ | | | | ■ | | | |
| | | PTEN | ■ | ■ | ■ | ■ | | ■ | | | ■ | |
| | | STK11 | ■ | | ■ | | | | | | | |
| | | TP53 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | NBN | ■ | | | | ■ | ■ | | ■ | ■ | |
| | | NF1 | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | |
| | | APC | | | ■ | ■ | | | ■ | | ■ | |
| | | AXIN2 | | | | ■ | | | | | | |
| | | BARD1 | ■ | | | | | | | | | |
| | BMPR1A | | | | ■ | | | | | | | |
| | BRIP1 | ■ | | | | | | | | | | |
| | CDK4 | | | | | | | | | | ■ | |
| | CDKN2A | | | | ■ | | | | | | ■ | |
| | CTNNA1 | | | | ■ | | | | | | | |
| | DICER1 | ■ | ■ | | | ■ | | ■ | | ■ | | |
| | EPCAM | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | GREM1 | | | | ■ | | | | | | | |
| | HOXB13 | | | | | | | | ■ | | | |
| | KIT | | | | ■ | | | | | ■ | | |
| | MEN1 | | | ■ | ■ | | | ■ | | | | |
| | MLH1 | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | MSH2 | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | MSH3 | | | | ■ | | | | | | | |
| MSH6 | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| MUTYH | | | | ■ | | | | | | | | |
| NTHL1 | | | | ■ | | | | | | | | |
| PDGFRA | | | | ■ | | | | | ■ | | | |
| PMS2 | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| POLD1 | | | | ■ | | | | | | | | |
| POLE | | | | ■ | | | | | | | | |
| RAD50 | ■ | | | | | | | | | | | |
| RAD51C | ■ | | | | | | | | | | | |
| RAD51D | ■ | | | | | | | ■ | | | | |
| SDHA | | | ■ | ■ | | | | | ■ | | | |
| SDHB | | | ■ | ■ | ■ | | | | ■ | | | |
| SDHC | | | ■ | ■ | ■ | | | | ■ | | | |
| SDHD | | | ■ | ■ | | | | | ■ | | | |
| SMAD4 | | | | ■ | | | | | | | | |
| SMARCA4 | ■ | | | | | | ■ | | | | | |
| TSC1 | | | | ■ | ■ | | ■ | | | | | |
| TSC2 | | | | ■ | ■ | | ■ | | | | | |
| VHL | | | ■ | ■ | ■ | | ■ | | | | | |

INVITAE BREAST CANCER GUIDELINES-BASED PANEL

INVITAE BREAST CANCER STAT PANEL

INVITAE COMMON HEREDITARY CANCERS PANEL

WHAT CAN GENETIC TESTING TELL ME?



A POSITIVE TEST RESULT CAN:

- Pinpoint your risk of developing cancer, enabling you to make informed medical decisions to reduce risk
- Provide an explanation for your personal or family history of cancer
- Identify other at-risk relatives for whom genetic testing is recommended



A NEGATIVE TEST RESULT:

- Means that you do not have an alteration in the genes tested
- Your overall cancer risk depends on your medical history, family history, and environment



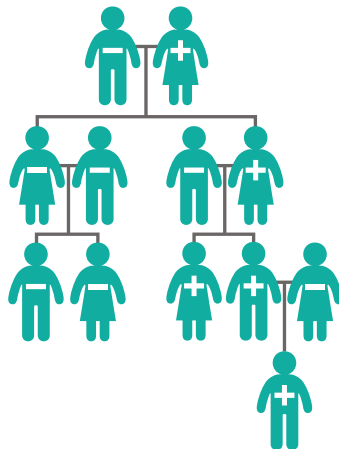
AN UNCERTAIN VARIANT TEST RESULT:

- Means that an alteration was identified, but it is not currently known if that alteration increases risk
- Should not be used to guide your medical care
- Invitae will update your doctor if new information becomes available

WHAT CAN GENETIC TESTING DO FOR MY FAMILY?

Identifying at-risk family members is one of the most important benefits of genetic testing. If you have a genetic alteration, your immediate family members could have a 50% chance of having the same alteration. Other relatives may also be at risk.

Invitae is dedicated to ensuring that both you and your family know your risk. **If you receive a positive test result from Invitae, we can test your blood relatives for that same alteration under our family variant testing program.** Learn more at www.invitae.com/patients/family-testing.



NEXT STEPS

- Submit a saliva or blood sample for testing.
 - Your sample was submitted on _____
- After receiving your sample, Invitae will send results to your doctor in 10–21 calendar days on average for standard orders and 5–12 calendar days for STAT panels.
- Learn more about genetic testing, including potential results and suggestions for how to talk with your family, at www.invitae.com/patients.

HAVE QUESTIONS? TALK WITH A GENETIC COUNSELOR

- If you're not working with one, Invitae can help you find a local genetic counselor. Our experienced, board-certified genetic counselors are also available by telephone to answer your questions. Simply call 800-436-3037 and ask to speak with a genetic counselor.
- Invitae also offers a comprehensive post-test genetic counseling session at no additional charge. During this session, our experienced genetic counselors will review your personal and family medical history, and discuss what your genetic test results mean for you and your family. To schedule a post-test genetic counseling session, please call 800-436-3037.

ABOUT INVITAE

Invitae is a different type of genetic testing lab. Our mission is to bring genetic information into doctors' offices to improve the quality of healthcare.

To do that, we're dedicated to making genetic testing affordable and accessible:

- Invitae bills insurance less than most other labs, which means a lower out-of-pocket cost for you.
- If your insurance company charges you more than \$100, Invitae offers payment options and a financial assistance program. Call us at 800-436-3037.
- Invitae works with all insurance companies, including Medicare and Medicaid.
- If you don't have insurance or prefer not to bill your insurance, you have the option to pay \$250 for your hereditary cancer genetic testing. Just tell your doctor that you would like to take advantage of Invitae's patient-pay option. Invitae will send you a link to pay online via credit card.



INVITAE

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