Clinicians Guide to: Genetic Testing for Hereditary Cancer

Fulgent offers both comprehensive and focused genetic testing for over 15 types of hereditary cancer. Results of this testing can help establish or confirm a diagnosis, guide personalized medical management, and identify risk for other cancers or conditions – while also informing close biological relatives of their own potential risk factors.

WHO IS THIS TEST FOR?

Patients with a personal or family history suggestive of a hereditary cancer syndrome. Red flags for hereditary cancers can include onset of cancer before age 50, more than one primary cancer in a single person, or multiple affected people within a family. This test is designed to detect germline pathogenic variants and is not validated to detect somatic mutations.

SHOULD I ORDER A FOCUSED PANEL OR A COMPREHENSIVE PANEL?

Fulgent Focus Cancer panels cover up to 50 genes associated with high/moderate risk for hereditary cancer syndromes and established clinical management guidelines for pathogenic variants. These tests maximize the chances of identifying a pathogenic cancer susceptibility variant, while minimizing the number of variants of uncertain clinical significance found.

Fulgent Comprehensive Cancer panels cover up to 154 genes associated with potential risk for hereditary cancer syndromes. These panels include well-established genes as well as candidate genes that may have been recently discovered or for which additional research is needed. These tests maximize the chances of identifying a pathogenic cancer susceptibility variant, while providing a comprehensive review of candidate genes to give you information you can use now and potentially in the future.

TEST SPECIFICATIONS

Sample Requirements (kits available upon request):

- Blood, two 4-mL EDTA tubes lavender top (preferred)
- Extracted DNA, 3 µg in TE buffer
- Buccal swab or saliva

Coverage* ~99% at 50x

Turnaround Time** 2-3 weeks

* Full gene sequencing and deletion/duplication, including detection of MSH2 inversion for select panels, BRCA2 Alu variant, and PMS2 (including exons 1-5 and 12-15), as well as sequencing of noncoding regions for selected genes. Please contact us for more details.

**Rush order available upon request

WHICH PANEL SHOULD I ORDER?

Hereditary cancer testing can establish or confirm a diagnosis, identify risks for other cancers and health conditions, help define the best management plan for patients with a positive test result (including increased surveillance, pharmacological treatments, and prophylactic surgeries), and determine whether close family members (children, siblings, and parents) may also be at risk. If a pathogenic variant is identified in your patient, their close relatives can have as high as a 50 percent risk of carrying the same variant and therefore also being at risk of developing cancer.

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AVAILABLE PANELS

Full Focus Cancer (50 Genes)

APC, ATM, AXIN2, BAP1, BARD1, BMPR1A, BRCA1, BRCA2, BRIP1, CDH1, CDKN1B, CDKN2A, CHEK2, EPCAM, FH, FLCN, GREM1, HOXB13, MAX, MBD4, MEN1, MET, MLH1, MLH3, MSH2, MSH3, MSH6, MUTYH, NF1, NTHL1, PALB2, PMS2, POLD1, POLE, PTEN, RAD51C, RAD51D, RET, RNF43, SDHA, SDHB, SDHC, SDHD, SMAD4, STK11, TMEM127, TP53, TSC1, TSC2, VHL

Custom Focus Cancer (Up to 50 Genes)

Choose any combination of genes from the Focus Cancer Panel Gene list.

Breast and Ovarian Cancer Focus (20 Genes) *ATM, BARD1, BRCA1, BRCA2, BRIP1, CDH1, CHEK2, EPCAM, MLH1, MSH2, MSH6, MUTYH, NF1, PALB2, PMS2, PTEN, RAD51C, RAD51D, STK11, TP53*	**Lynch Focus (5 Genes)** *EPCAM, MLH1, MSH2, MSH6, PMS2*
Breast Focus (13 Genes) *ATM, BARD1, BRCA1, BRCA2, CDH1, PTEN, STK11, TP53, CHEK2, PALB2, NF1, RAD51C, RAD51D*	**Ovarian Focus (14 Genes)** *BRCA1, BRCA2, BRIP1, EPCAM, MLH1, MSH2, MSH6, MUTYH, PALB2, PMS2, RAD51C, RAD51D, STK11, TP53*
Breast Cancer STAT Panel (9 Genes) The Breast Cancer STAT Panel examines 9 genes strongly associated with an increased risk for hereditary breast cancer and provides a more rapid turnaround time for surgical interventions. Genes: *ATM, BRCA1, BRCA2, CDH1, CHEK2, PALB2, PTEN, STK11, TP53* Turnaround Time: 10 days (additional confirmatory testing may affect turnaround time)	**Prostate Focus (13 Genes)** *ATM, BRCA1, BRCA2, CHEK2, EPCAM, HOXB13, MLH1, MSH2, MSH6, NBN, PALB2 PMS2, TP53*
Colorectal Focus (23 Genes) *APC, AXIN2, BMPR1A, CDH1, CHEK2, EPCAM, GREM1, MBD4, MLH1, MLH3, MSH2, MSH3, MSH6, MUTYH, NTHL1, PMS2, POLD1, POLE, PTEN, RNF43, SMAD4, STK11, TP53*	–

Full Comprehensive Cancer (154 Genes)

ABRAXAS1, AIP, AKT1, ALK, ANKRD26, APC, ATM, ATR, AXIN2, BAP1, BARD1, BLM, BMPR1A, BRCA1, BRCA2, BRIP1, BUB1B, CASR, CDC73, CDH1, CDK4, CDKN1B, CDKN1C, CDKN2A, CEBPA, CEP57, CHEK2, CTC1, CTNNA1, CTRC, CYLD, DDB2, DDX41, DICER1, DIS3L2, DKC1, EGFR, EGLN1, ELANE, ENG, EPCAM, ERCC1, ERCC2, ERCC3, ERCC4, ERCC5, EXO1, EXT1, EXT2, EZH2, FAN1, FANCA, FANCB, FANCC, FANCD2, FANCE, FANCF, FANCG, FANCI, FANCL, FANCM, FH, FLCN, GALNT12, GATA2, GEN1, GPC3, GREM1, HOXB13, HRAS, IKZF1, KIF1B, KIT, LZTR1, MAX, MBD4, MEN1, MET, MITF, MLH1, MLH3, MRE11, MSH2, MSH3, MSH6, MUTYH, NBN, NF1, NF2, NHP2, NOP10, NTHL1, PALB2, PALLD, PAX5, PDGFRA, PHOX2B, PIK3CA, PMS2, POLD1, POLE, POLH, POT1, PRKAR1A, PRSS1, PTCH1, PTCH2, PTEN, RAD50, RAD51C, RAD51D, RB1, RECQL, RECQL4, REST, RET, RHBDF2, RNF43, RPS20, RUNX1, SAMD9L, SBDS, SDHA, SDHAF2, SDHB, SDHC, SDHD, SLC45A2, SLX4, SMAD4, SMARCA4, SMARCB1, SMARCE1, SPINK1, SRP72, STK11, SUFU, TERC, TERT, TGFBR1, TINF2, TMEM127, TP53, TRIP13, TSC1, TSC2, TYR, VHL, WRAP53, WRN, WT1, XPA, XPC, XRCC2

Custom Comprehensive Cancer (Up to 154 Genes)

Choose any combination of genes from the Comprehensive Cancer Panel Gene list.

Breast Comprehensive (37 Genes) *ABRAXAS1, AKT1, ATM, BARD1, BLM, BRCA1, BRCA2, BRIP1, CDH1, CHEK2, CTNNA1, DICER1, EPCAM, FANCC, FANCM, MLH1, MRE11, MSH2, MSH6, MUTYH, NBN, NF1, NTHL1, PALB2, PIK3CA, PMS2, PTEN, RAD50, RAD51C, RAD51D, RECQL, SDHB, SDHD, SMARCA4, STK11, TP53, XRCC2*	**Ovarian Comprehensive (20 Genes)** *ATM, BARD1, BRCA1, BRCA2, BRIP1, CDH1, EPCAM, MLH1, MRE11, MSH2, MSH6, MUTYH, NBN, PALB2, PMS2, RAD51C, RAD51D, SMARCA4, STK11, TP53*
Breast and Ovarian Comprehensive (37 Genes) *ABRAXAS1, AKT1, ATM, BARD1, BLM, BRCA1, BRCA2, BRIP1, CDH1, CHEK2, CTNNA1, DICER1, EPCAM, FANCC, FANCM, MLH1, MRE11, MSH2, MSH6, MUTYH, NBN, NF1, NTHL1, PALB2, PIK3CA, PMS2, PTEN, RAD50, RAD51C, RAD51D, RECQL, SDHB, SDHD, SMARCA4, STK11, TP53, XRCC2*	**Pancreatic Comprehensive (24 Genes)** *APC, ATM, BMPR1A, BRCA1, BRCA2, BUB1B, CDK4, CDKN2A, EPCAM, FANCA, FANCC, MEN1, MLH1, MSH2, MSH6, NF1, PALB2, PMS2, SMAD4, STK11, TP53, TSC1, TSC2, VHL*
Colorectal Comprehensive (29 Genes) *APC, ATM, AXIN2, BLM, BMPR1A, CDH1, CHEK2, CTNNA1, EPCAM, FAN1, GALNT12, GREM1, MBD4, MLH1, MLH3, MSH2, MSH3, MSH6, MUTYH, NTHL1, PMS2, POLD1, POLE, PTEN, RNF43, RPS20, SMAD4, STK11, TP53*	**Paraganglioma-Pheochromocytoma Comprehensive (14 Genes)** *EGLN1, FH, KIF1B, MAX, MEN1, NF1, RET, SDHA, SDHAF2, SDHB, SDHC, SDHD, TMEM127, VHL*
Endometrial Comprehensive (15 Genes) *BRCA1, BRCA2, CHEK2, EPCAM, MLH1, MSH2, MSH6, MUTYH, PMS2, POLD1, POLE, PTEN, SMARCA4, STK11, TP53*	**Prostate Comprehensive (20 Genes)** *ABRAXAS1 ATM, ATR, BRCA1, BRCA2, BRIP1, CHEK2, EPCAM, GEN1, HOXB13, MLH1, MRE11, MSH2, MSH6, NBN, PALB2, PMS2, RAD51C, RAD51D, TP53*
Gastric Comprehensive (22 Genes) *APC, BMPR1A, BRCA1, BRCA2, CDH1, CTNNA1, EPCAM, KIT, MLH1, MSH2, MSH6, NF1, PDGFRA, PMS2, PTEN, SDHA, SDHB, SDHC, SDHD, SMAD4, STK11, TP53*	**Renal/Urinary Comprehensive (30 Genes)** *BAP1, CDC73, CDKN1C, CHEK2, DICER1, DIS3L2, EPCAM, FH, FLCN GPC3, MET, MITF, MLH1, MSH2, MSH6, MUTYH, PMS2, PTEN, REST, SDHA, SDHB, SDHC, SDHD, SMARCA4, SMARCB1, TP53, TSC1, TSC2, VHL, WT1*
Hematologic Malignancy Comprehensive (22 Genes) *ATM, BLM, CEBPA, DDX41, EPCAM, GATA2, HRAS, IKZF1, MLH1, MSH2, MSH6, NBN, NF1, PAX5, PMS2, RUNX1, SAMD9L, SRP72, TERC, TERT, TP53*	**Sarcoma Comprehensive (30 Genes)** *APC, BLM, CDKN1C, DICER1, EPCAM, EXT1, EXT2, FH, HRAS, KIT, MLH1, MSH2, MSH6, NBN, NF1, PDGFRA, PMS2, POT1, PRKAR1A, PTCH1, PTEN, RB1, RECQL4, SDHA, SDHB, SDHC, SDHD, SUFU, TP53, WRN*
Melanoma Comprehensive (14 Genes) *BAP1, BRCA2, CDK4, CDKN2A, CHEK2, MITF, MUTYH, POT1, PTEN, RB1, SLC45A2 TERT, TP53, TYR*	**Thyroid Comprehensive (10 Genes)** *AKT1, APC, CHEK2, DICER1, MEN1, PIK3CA, PTEN, PRKAR1A, RET, TP53*
Nervous System/Brain Comprehensive (32 Genes) *AIP, ALK, APC, ATM, CDKN1B, CDKN2A, DICER1, EPCAM, HRAS, KIF1B, LZTR1, MEN1, MLH1, MSH2, MSH6, NBN, NF1, NF2, PHOX2B, PMS2, POT1, PRKAR1A, PTCH1, PTEN, SMARCA4, SMARCB1, SMARCE1, SUFU, TP53, TSC1, TSC2, VHL*	–