Henry Ford Comprehensive Solid Tumor Cancer Panel (170 Genes)

Henry Ford Health System
CENTER FOR PRECISION DIAGNOSTICS

The Comprehensive Solid Tumor Cancer Panel (170 gene) provides integrated DNA and RNA analysis of a wide range of known oncogenes and tumor suppressor genes for navigating cancer care. The genes and types of variant analysis were carefully selected to include content cited by professional organizations such as the National Comprehensive Cancer Network (NCCN) and the European Society for Medical Oncology (ESMO). This panel provides **comprehensive coverage of >180,000 cancer-related variants** documented in COSMIC database for solid tumors. This test is used for diagnostic, prognostic, and predictive purposes.

Testing Method and Background

Comprehensive Solid Tumor Cancer Panel test utilizes **Next Generation Sequencing (NGS) technology** to **simultaneously** interrogate 170 genes associated with solid tumors. This assay utilizes tumor-only workflow with low quantity of input DNA and RNA (40 ng) and accurate detection of variants down to 4% mutant allele frequency from low-quality formalin fixed paraffin-embedded (FFPE) tissue blocks. Target capture probes enrich for full coding sequences of 170 genes to identify single nucleotide variants, small insertions, and deletions in 151 genes, amplifications in 59 genes, and fusions plus splice variants in 55 genes. The report includes information about clinically relevant biomarkers and genomic alterations to **help match patients to approved targeted therapies, immunotherapies, and consideration for enrollment in clinical trials.**

Highlights of the Henry Ford Comprehensive Solid Tumor Caner Panel (170 Genes)

- **Wide-ranging Coverage of Cancer-Related Variants**
  Assessment of fusions, splice variants, insertions/deletions and single-nucleotide variants (SNVs), and amplifications in one assay using DNA and RNA
- **Accurate Results from Low-Quality Samples**
  Variant detection with as little as 40 ng DNA and RNA input, and as low as 5% mutant allele frequency, maximizes the results from low input sample types such as formalin fixed, paraffin embedded (FFPE) sections
- **Integrated, Streamlined Workflow**
  DNA and RNA are prepared in parallel with an integrated workflow following DNA shearing/cDNA synthesis

Genes Targeted

Fusions ABL1, AKT3, ALK, AR, AXL, BCL2, BRAF, BRCA1, BRCA2, CDK4, CSF1R, EGFR, EML4, ERBB2, ERG, ESR1, ETS1, ETV1, ETV4, ETV5, EWSR1, FGFR1, FGFR2, FGFR3, FGFR4, FLI1, FLT1, FLT3, JAK2, KDR, KIF5B, KIT, KMT2A (MLL), MET, MLLT3, MSH2, MYC, NOTCH1, NOTCH2, NOTCH3, NRG1, NTRK1, NTRK2, NTRK3, PAX3, PAX7, PDGFRA, PDGFRB, PIK3CA, PPARG, RAF1, RET, ROS1, RPS6KB1, TMPRSS2

SNVs / Indels AKT1, AKT2, AKT3, ALK, APC, AR, ARID1A, ATM, ATR, BAP1, BARD1, BCL2, BCL6, BRAF, BRCA1, BRCA2, BRIP1, BTK, CARD11, CCND1, CCND2, CCNE1, CD79A, CD79B, CDH1, CDK12, CDK4, CDK6, CDKN2A, CEBPA, CHEK1, CHEK2, CREBBP, CSF1R, CTNNB1, DDR2, DNMT3A, EGFR, EP300, ERBB2, ERBB3, ERBB4, ERCC1, ERCC2, ERG, ESR1, EZH2, ABRAXAS1 (FAM175A), FANCI, FANCL, FBXW7, FGF1, FGF10, FGF14, FGF2, FGF23, FGF3, FGF4, FGF5, FGF6, FGF7, FGF8, FGF9, FGFR1, FGFR2, FGFR3, FGFR4, FLT1, FLT3, FOXL2, GEN1, GNA11, GNAQ, GNAS, HNF1A, HRAS, IDH1, IDH2, INPP4B, JAK2, JAK3, KDR, KIT, KMT2A (MLL), KRAS, MAP2K1, MAP2K2, MCL1, MDM2, MDM4, MET, MLH1, MLLT3, MPL, MRE11 (MRE11A), MSH2, MSH3, MSH6, MTOR, MUTYH, MYC, MYCL (MYCL1), MYCN, MYD88, NBN, NF1, NOTCH1, NOTCH2, NOTCH3, NPM1, NRAS, NRG1, PALB2, PDGFRA, PDGFRB, PIK3CA, PIK3CB, PIK3CD, PIK3CG, PIK3R1, PMS2, PPP2R2A, PTCH1, PTEN, PTPN11, RAD51, RAD51B, RAD51C, RAD51D, RAD54L, RB1, RET, RICTOR, ROS1, RPS6KB1, SLX4, SMAD4, SMARCB1, SMO, SRC, STK11, TERT, TET2, TP53, TSC1, TSC2, VHL, XRCC2

Amplifications / CNVs AKT2, ALK, AR, ATM, BRAF, BRCA1, BRCA2, CCND1, CCND3, CCNE1, CDK4, CDK6, CHEK1, CHEK2, EGFR, ERBB2, ERBB3, ERCC1, ERCC2, ESR1, FGF1, FGF10, FGF14, FGF19, FGF2, FGF23, FGF3, FGF4, FGF5, FGF6, FGF7, FGF8, FGF9, FGFR1, FGFR2, FGFR3, FGFR4, JAK2, KIT, KRAS, LAMP1, MDM2, MDM4, MET, MYC, MYCL1, MYCN, NRAS, NRG1, PDGFRA, PDGFRB, PIK3CA, PIK3CB, PTEN, RAF1, RET, RICTOR, RPS6KB1, TFRC

Ordering Information

Get started: Print a Solid Tumor test requisition form online at www.HenryFord.com/HFCPD

Acceptable Specimen Source Formalin Fix Paraffin Embedded (FFPE) Tissue blocks, 10-20 Unstained Slides, Nucleic Acid Extracted from a CLIA Certified Laboratory

Causes for Rejection Insufficient tumor cell content or quantity, and decalcified specimens

TAT: 10-20 business days

Mail test material to:
Henry Ford Center for Precision Diagnostics
Pathology and Laboratory Medicine
Clinic Building, K6, Core Lab, E-655
2799 W. Grand Blvd.
Detroit, MI 48202

CPT Code(s): 81455

Contact us: Client Services, Account and Billing Set-up, and connect with a Molecular Pathologist at (313) 916-4DNA (4362)

For more information on Comprehensive Molecular Services please visit our website www.HenryFord.com/HFCPD

Technical Note Target libraries are prepared using Illumina TruSight Tumor 170 kit. Sequencing is performed on a NextSeq Dx 550 instrument. SOPHiA DDM software (version 4) is utilized for sequence alignment against reference genome, detection of sequence variants, fusions and CNVs, variant annotation and diagnostic, prognostic and therapeutic interpretation of analysis results.