HENRY FORD HEALTH
CENTER FOR PRECISION DIAGNOSTICS

# Rapid AML Sequencing Panel

Targeted next generation sequencing assay for detection of hot spot mutations and fusions in cancer-related genes. The Rapid AML Sequencing panel is to be used in newly diagnosed AML cases that been established by morphology or for follow-up as class defining or risk modifier according to current WHO guidelines.

## Testing Method and Background

This test utilizes hybrid capture method followed by **Next Generation Sequencing (NGS) technology** for detection of mutations in 26 genes associated with Hematologic malignancies (tumor suppressor genes and oncogenic hot spots) using extracted DNA and RNA from blood or bone marrow specimens. Additionally, 112 fusion targets are screened. Data analysis provides variant detection and annotation, interpretation of clinically significant genomic alterations and their association to approved or investigational therapies. This assay is designed to detect single nucleotide variants, insertions, deletions and copy number alterations within the defined target regions. Variants outside the define regions may not be detected.

## Highlights of Rapid AML Sequencing Panel

**Targeted Genes**

AKRD26, ASXL1, BCOR, CEBPA, DDX41, DNMT3A, ETV6, EZH2, FLT3, GATA2, HRAS, IDH1, IDH2, KIT, KRAS, NPM1, NRAS, RUNX1, SF3B1, SRSF2, STAG2, TET2, TP53, U2AF1, WT1, ZRSR2

**112 fusion targets and specific exon coverage listed on next page

- **Accurate Results from Low-Quality Samples**
  Workflow with low quantity of input DNA and accurate detection of variants down to 5% mutant allele frequency.
- **Wide-ranging Coverage of Variants**
  Assessment of single-nucleotide variants (SNVs) and small insertions/deletions within multiple target exons.

## Ordering Information

**Get started (non-HFHS):** Print a Molecular Hematologic Testing requisition form online at www.HenryFord.com/HFCPD

**Get started (HFHS):** Order through Epic using test "Rapid AML Sequencing" (MOL8032 Blood, MOL8036 Bone Marrow)

**Specimen requirements:**

- Peripheral Blood - 1-3ml in lavender top tube (EDTA) **Specimen stability: Ambient - 72 hours; Refrigerated - 1 week**
- Bone Marrow - 1-3ml, anticoagulated with either heparin or EDTA, **Specimen stability: Refrigerated - 1 week** (ship cold)
- Extracted DNA + RNA - from a CLIA-certified Laboratory

**Cause for Rejection:** Clotted, hemolyzed, or frozen specimens, improper anticoagulant, tubes not labeled with dual patient identification, non-dedicated tubes.

**TAT:** 5-10 business days (after Prior Authorization obtained)

**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 Codes:** 81455, G0452

**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, visit our website**
**www.HenryFord.com/HFCPD**

Revision: 1; 08-25-2022

# Rapid AML Sequencing Panel

**DNA Gene Target Regions**

| Gene | Target Regions | Gene | Target Regions |
|---|---|---|---|
| ANKRD26 | Exons 1-4 (including full 5'-UTR) | KIT | Exons 2, 8-11, 13, 17, 18 |
| ASXL1 | Exons 9, 11, 12 | KRAS | All coding exons |
| BCOR | All coding exons | NPM1 | Exons 10 and 11 |
| CEBPA | All coding exons | NRAS | Exons 2-5 |
| DDX41 | All coding exons | RUNX1 | All coding exons |
| DNMT3A | All coding exons | SF3B1 | Exons 10-16 |
| ETV6 | All coding exons | SRSF2 | Exon 1 |
| EZH2 | All coding exons | STAG2 | All coding exons |
| FLT3 | Exons 11, 13-17, 20 | TET2 | All coding exons |
| GATA2 | All coding exons | TP53 | All coding exons |
| HRAS | Exons 2 and 3 | WT1 | Exons 7, 9 |
| IDH1 | All coding exons | U2AF1 | Exons 2, 6 |
| IDH2 | All coding exons | ZRSR2 | All coding exons |

**RNA Target Fusions (5'-3' gene partners)**

| | | | |
|---|---|---|---|
| ATF7IP-JAK2 | KAT6A-CREBBP | KMT2A-SEPT6 | RBM15-MKL1 |
| BCR-ABL1 | KMT2A-AFDN | KMT2A-SEPT9 | RCSD1-ABL1 |
| BCR-FGFR1 | KMT2A-AFF1 | KMT2A-TET1 | RUNX1-RUNX1T1 |
| BCR-JAK2 | KMT2A-AFF3 | MEF2D-CSF1R | SET-NUP214 |
| BCR-PDGFRA | KMT2A-AFF4 | MN1-ETV6 | SFPQ-ABL1 |
| BMP2K-ZNF384 | KMT2A-ARHGAP26 | MNX1-ETV6 | SNX2-ABL1 |
| CBFA2T3-GLIS2 | KMT2A-ARHGEF12 | MYB-GATA1 | SPAG9-JAK2 |
| CBFB-MYH11 | KMT2A-ARHGEF17 | NCOR1-LYN | SPTBN1-FLT3 |
| CCDC6-PDGFRB | KMT2A-C2CD3 | NDE1-PDGFRB | SPTBN1-PDGFRB |
| CHIC2-ETV6 | KMT2A-CBL | NPM1-MLF1 | SSBP2-CSF1R |
| CNTRL-FGFR1 | KMT2A-CIP2A | NPM1-RARA | SSBP2-JAK2 |
| CREBBP-ZNF384 | KMT2A-CREBBP | NUP214-ABL1 | STAT5B-RARA |
| CUX1-FGFR1 | KMT2A-DCPS | NUP98-NSD1 | STIL-TAL1 |
| DEK-NUP214 | KMT2A-ELL | NUP98-DDX10 | STRN-PDGFRA |
| EBF1-JAK2 | KMT2A-EPS15 | NUP98-HOXA9 | STRN3-JAK2 |
| EBF1-PDGFRB | KMT2A-FOXO3 | NUP98-KDM5A | TAF15-ZNF384 |
| EML1-ABL1 | KMT2A-KNL1 | NUP98-RAPIGDS1 | TCF3-HLF |
| EP300-ZNF384 | KMT2A-MAML2 | NUP98-TOP1 | TCF3-PBX1 |
| ETV6-ABL1 | KMT2A-MAPRE1 | OFD1-JAK2 | TERF2-JAK2 |
| ETV6-ARNT | KMT2A-MLLT1 | P2RY8-CRLF2 | TPM3-PDGFRB |
| ETV6-JAK2 | KMT2A-MLLT10 | PAG1-ABL2 | TPR-FGFR1 |
| ETV6-NTRK3 | KMT2A-MLLT11 | PAX5-ETV6 | TRIM24-FGFR1 |
| ETV6-PDGFRB | KMT2A-MLLT3 | PAX5-JAK2 | ZBTB16-ABL1 |
| ETV6-RUNX1 | KMT2A-MLLT6 | PCM1-JAK2 | ZBTB16-RARA |
| FGFR1OP-FGFR1 | KMT2A-NRIP3 | PDE4DIP-PDGFRB | ZC3HAV1-ABL2 |
| FIP1L1-PDGFRA | KMT2A-PTD | PICALM-MLLT10 | ZEB2-PDGFRB |
| FOXP1-ABL1 | KMT2A-RARA | PML-RARA | ZMIZ1-ABL1 |
| INPP5D-ABL1 | KMT2A-SEPT5 | RANBP2-ABL1 | ZMYM2-FGFR1 |

**Genes (target exons) for 5' Fusion Partners:**
ATF7IP (13); BCR (1, 4, 6, 7, 12-14, 19); BMP2K (14, 15); CBFA2T3 (10, 11); CBFB (4, 5); CCDC6 (1, 7); CHIC2 (3); CNTRL (38); CREBBP (4-7); CUX1 (11); DEK (9); EBF1 (10, 13-15); EML1 (18); EP300 (6); ETV6 (4-7); FGFR1OP (5-7); FIP1L1 (12); FOXP1 (19); INPP5D (8); KAT6A (16); KMT2A (8-11); MEF2D (7); MN1 (1); MNX1 (1); MYB (8); NCOR1 (35); NDE1 (6); NPM1 (4, 6); NUP214 (23, 26, 28-32, 34); NUP98 (10-14); OFD1 (21); P2RY8 (1); PAG1 (8); PAX5 (4,5); PCM1 (26, 36); PDE4DIP (16); PICALM (17-19); PML (3, 6); RANBP2 (18); RBM15 (1); RCSD1 (2, 3); RUNX1 (3); SET (7); SFPQ (9); SNX2 (3); SPAG9 (26); SPTBN1 (4); SSBP2 (5, 6, 8, 10, 16); STAT5B (15, 16); STIL (1); STRN (6); STRN3 (8, 9); TAF15 (6, 9); TCF3 (11, 13, 15-17); TERF2 (8); TPM3 (8); TPR (22, 39); TRIM24 (9-11); ZBTB16 (3, 4); ZC3HAV1 (12); ZEB2 (9); ZMIZ1 (18); ZMYM2 (17)

**Genes (target exons) for 3' Fusion Partners:**
ABL1 (2-4); ABL2 (3, 5); AFDN (2); AFF1 (4-6, 11); AFF3 (7, 8, 12); AFF4 (4-6); ARHGAP26 (19); ARHGEF12 (11-13); ARHGEF17 (2-5); ARNT (3); C2CD3 (13-15, 17); CBL (10); CIP2A (17); CREBBP (2, 3); CRLF2 (1); CSF1R (12); DCPS (2); DDX10 (6, 7); ELL (2, 3, 6); EPS15 (2, 6); ETV6 (2, 3); FGFR1 (11); FLT3 (14); FOXO3 (2); GLIS2 (4, 5); GATA1 (5); HLF (4); HOXA9 (1, 2); JAK2 (9, 11, 13, 15, 17-19); KDM5A (27); KMT2A (2); KNL1 (12); LYN (8); MAML2 (2, 3); MAPRE1 (2, 4, 6); MKL1 (4, 5); MLF1 (3); MLLT1 (2, 4-7); MLLT3 (4-6, 9, 10); MLLT6 (8, 9, 12); MLLT10 (5, 7, 10, 12, 17); MLLT11 (2); MYH11 (29-35); NRIP3 (2); NSD1 (6); NTRK3 (14, 15); NUP214 (17, 18); PBX1 (3); PDGFRA (12); PDGFRB (9, 11); RAP1GDS1 (2, 3); RARA (2); RUNX1 (1, 3); RUNX1T1 (6)
SEP5 (2); SEPT6 (2); SEPT9 (2); TAL1 (3, 4, 6); TET1 (9); TOP1 (8); ZNF384 (2-4, 7)