Elevated Profiling, Accelerated Results

Agilent SureSelect Cancer Pan Heme assay

Key advantages

Deploy a rapid, turnkey solution with ease.

- **Fully automated workflow** with just 10 minutes of setup time
- **Integrated reporting** powered by QIAGEN Clinical Insight

Gain valuable insights.

- **Trusted panel content** curated by leading experts at Roswell Park Comprehensive Cancer Center
- **Comprehensive profiling** of over 350 DNA and 120 RNA genes to detect key variants and biomarkers, including FLT3 internal tandem duplications (ITDs), *IGH* translocations, and chromosomal-, arm-, and gene-level CNVs

Introduction

The Agilent SureSelect Cancer Pan Heme assay delivers rapid, comprehensive genomic profiling (CGP) to support disease subtyping and uncover the molecular drivers of hematological malignancies. Arising from various stages of hematopoietic differentiation, these conditions, particularly in their acute forms, are highly aggressive and demand timely, accurate molecular insights.

Codeveloped in collaboration with leading hematology experts at Roswell Park Comprehensive Cancer Center, the SureSelect Cancer Pan Heme assay is a hybrid capture-based next-generation sequencing (NGS) assay that leverages deep expert insights for panel content curation and assay optimization. The assay interrogates 359 DNA genes and 124 RNA genes and detects all classes of genomic alterations, including single nucleotide variants (SNVs), insertions/deletions (indels), copy number variants (CNVs) of all sizes, *IGH* translocations, and gene fusions (Table 1). This assay provides comprehensive, integrated DNA and RNA analysis in a single workflow, effectively overcoming the limitations of conventional single-analyte methods such as karyotyping, FISH, and PCR.

When combined with automation on the Agilent Magnis NGS prep system and QIAGEN Clinical Insight (QCI) analysis, the SureSelect Cancer Pan Heme assay offers a cost-effective, easy-to-implement, and fast-turnaround solution for molecular labs.

Agilent

Trusted Answers

Fully automated, sample-to-report CGP solution for hematologic malignancies

The complete assay features the Agilent Magnis SureSelect Cancer Pan Heme kits, paired with QIAGEN Clinical Insight (QCI), a fully optimized software platform for accurate variant calling, annotation, and reporting (Figure 1). Designed for efficiency, the Magnis kits include all necessary consumables and pre-aliquoted reagents for rapid setup on the Magnis NGS prep system, enabling fully automated generation of target-enriched libraries in just 9 hours for DNA and 13 hours for RNA—with no human intervention. For labs using manual or semi-automated, high-throughput workflows, Agilent SureSelect Cancer Pan Heme panels, Agilent SureSelect library preparation reagents, and Agilent SureSelect target enrichment reagents are also available to support flexible deployment options (Figure 1).

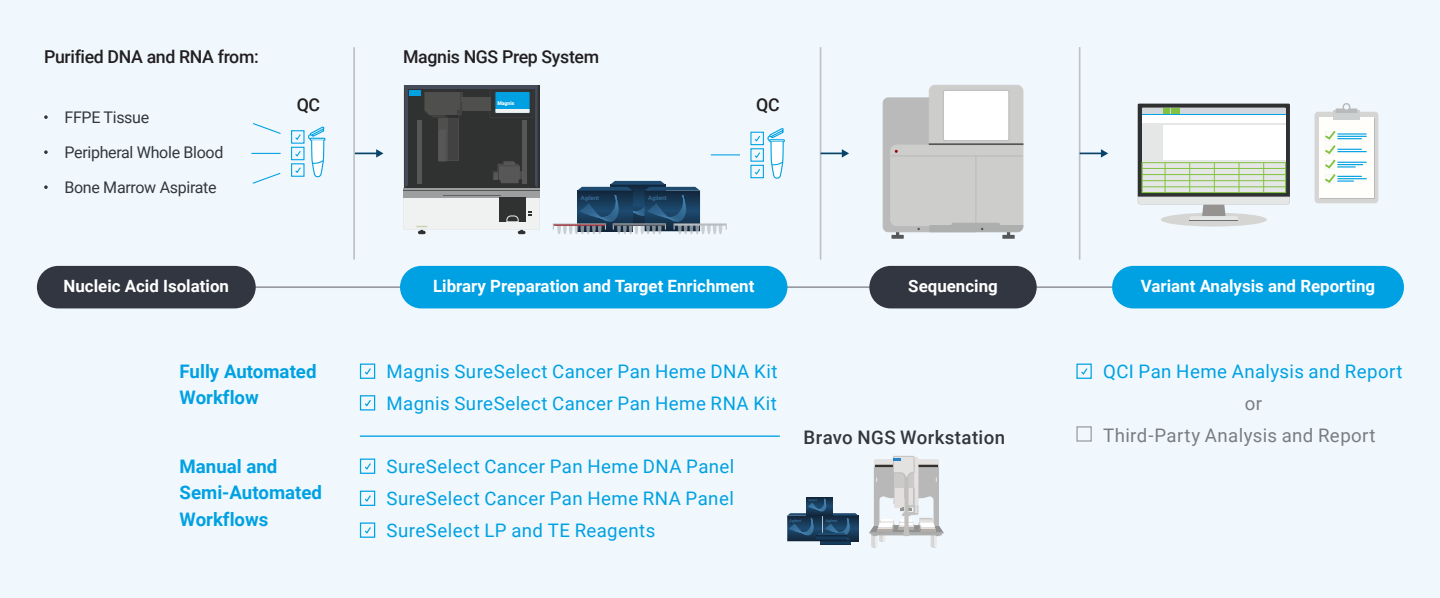

Figure 1. Streamlined solution designed for easy, scalable, and cost-effective implementation. The Agilent SureSelect Cancer Pan Heme assay delivers a sample-to-report comprehensive genomic profiling (CGP) solution for hematologic malignancies. Following nucleic acid extraction and purification, library preparation and target enrichment are fully automated on the Agilent Magnis NGS prep system, generating target-enriched libraries in just 9 hours (DNA) or 13 hours (RNA), with no hands-on time. This enables faster turnaround time for the assay and frees up valuable staff resources. For higher-throughput needs, operations can be scaled by automating on the Agilent Bravo NGS workstation or by placing additional units of the Magnis system. Variant analysis and reporting are powered by QIAGEN Clinical Insight (QCI), which combines an expert-curated knowledge-base with optimized analysis pipelines and automated informatics workflows to deliver rapid, reliable results for the SureSelect Cancer Pan Heme assay.

Fast, reliable insights powered by automated chemistry and analysis

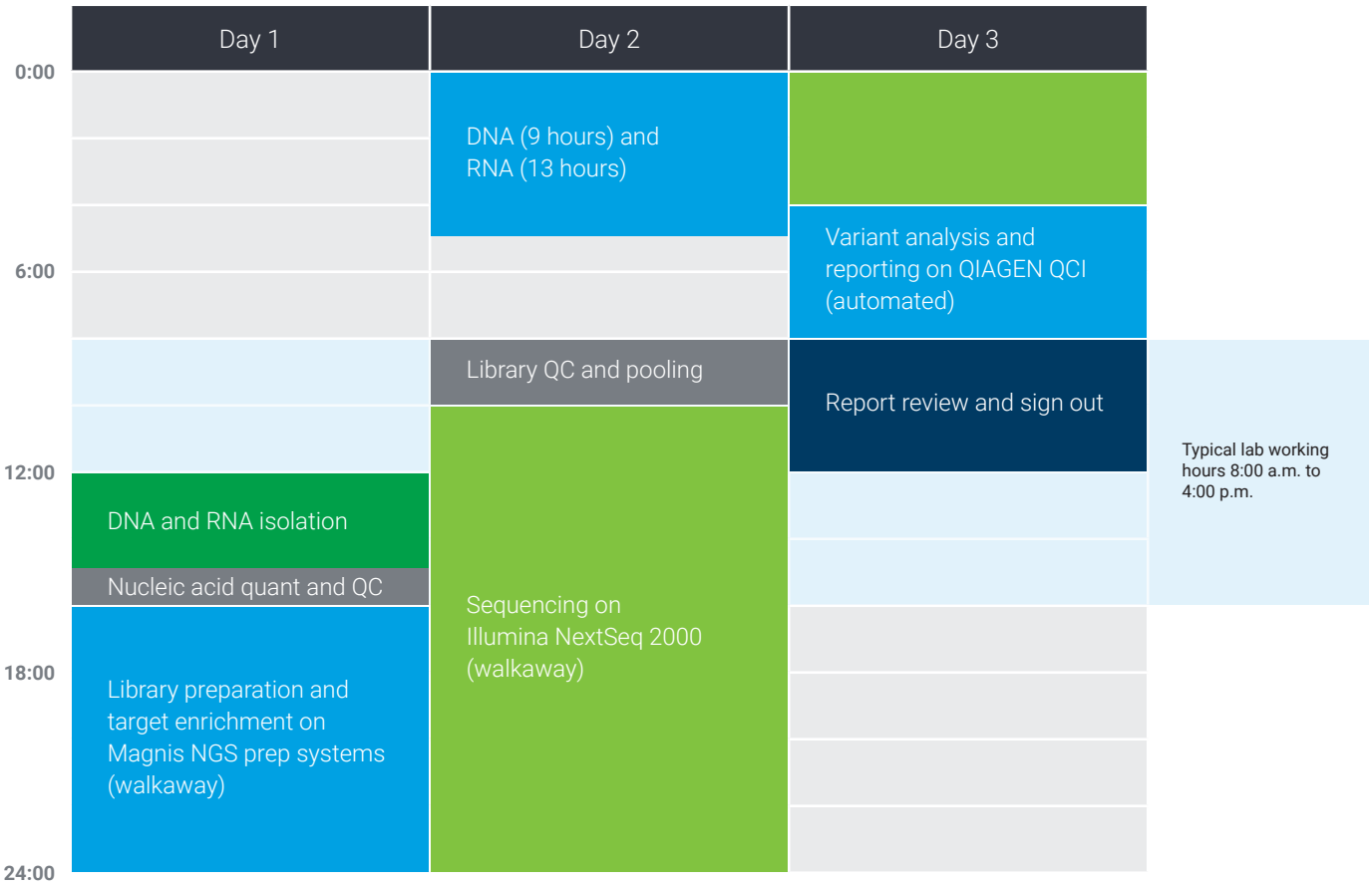

Figure 2. Accelerated turnaround time from sample to report. The Agilent SureSelect Cancer Pan Heme assay is powered by automated library preparation and target enrichment on the Agilent Magnis NGS prep system and by automated variant analysis, interpretation, and reporting through QIAGEN Clinical Insights. The automation empowers laboratories to easily bring the assay in-house, dramatically boost productivity, even during nonworking hours, and significantly reduce turnaround times. The timeline chart reflects the current assay implementation, from sample preparation to final report generation, at a CAP/CLIA-certified laboratory at Roswell Park Comprehensive Cancer Center. Here, results are delivered in just 48 hours—far faster than the typical 9- to 14-day turnaround of send-out services for pan-heme profiling. This rapid, automated workflow enables faster decision-making and delivers reliable insights with unmatched efficiency.

One assay for analyzing multiple variant types and biomarkers

Table 1. Comprehensive profiling enabled by the Agilent SureSelect Cancer Pan Heme assay. The assay interrogates both DNA and RNA to deliver a comprehensive analysis of multiple variant types and biomarkers associated with hematologic malignancies. The assay covers 359 genes in the DNA panel and 124 genes in the RNA panel, covering clinically relevant targets across key hematologic malignancies. This comprehensive approach eliminates the need for multiple or iterative testing, offering a future-proof solution for streamlined genomic profiling.

	DNA Panel	RNA Panel
Sample Type	Peripheral whole blood, bone marrow aspirate, FFPE tissue	Peripheral whole blood, bone marrow aspirate, FFPE tissue
Starting Input Amount	100 ng gDNA	100 ng total RNA
No. of Genes	359 genes	124 genes
Panel Size	4.16 Mb	2.62 Mb
Variants Detected*	- SNVs - Indels, including FLT3 ITDs up to 300 bp - CNVs, including gene-, cytoband-, arm-, and chromosomal-level changes - IGH translocations	- Gene fusions
Sequencing Read Length	2 × 150 bp	2 × 150 bp
Recommended Sequencing Reads per Sample	≥ 24M PE reads	≥ 4M PE reads
* Variant detection supported by QIAGEN Clinical Insights		

FFPE = formalin-fixed, paraffin-embedded; SNV = single nucleotide variant; PTD = partial tandem duplication; ITD = internal tandem duplication; CNV = copy number variant; PE = paired-end

Table 2. Sequencing throughput across platforms. The Agilent SureSelect Cancer Pan Heme assay supports 384 unique dual indexes, accommodating workflows of varying throughput levels. When automated on the Agilent Magnis NGS prep system, which processes up to 8 samples at a time, the assay aligns best with the Illumina NextSeq 550 Mid-Output and Illumina NextSeq 2000 P1 sequencing runs. This combination optimizes batching efficiency and minimizes turnaround time. The assay offers scalability for higher sample throughput by adding Magnis instruments or transitioning to automation on the Agilent Bravo NGS workstation. Further scalability can be achieved using higher-capacity sequencing systems and flow cells.

System and Flow Cell	DNA Only	RNA Only	DNA and RNA
Illumina NextSeq 550 Mid-Output (260M PE reads)	10 samples	65 samples	9 samples
Illumina NextSeq 550 High-Output (800M PE reads)	33 samples	200 samples	28 samples
Illumina NextSeq 2000 P1 (200M PE reads)	8 samples	50 samples	7 samples
Illumina NextSeq 2000 P2 (800M PE reads)	33 samples	200 samples	28 samples
Element AVITI Low Output (500M PE reads)	20 samples	125 samples	17 samples
Element AVITI Medium Output (1B PE reads)	41 samples	250 samples	35 samples
Note: Sequencing throughput is based on 24M paired-end (PE) reads per sample for the DNA only workflow, 4M PE reads per sample for the RNA only workflow, and 28M PE reads per sample for the DNA and RNA joint workflow. Care should be taken to account for variations in read distribution and nonusable reads.			

Comprehensive profiling backed by expertly curated panel content

Table 3. DNA content included in the Agilent SureSelect Cancer Pan Heme DNA panel. The panel provides full coding region coverage of 356 genes relevant to hematologic malignancies. For TERT (orange cell), both the full coding region and promoter region are covered. For IGH, IGK, and IGL (pink cells), specific regions are covered to enable detection of nonchimeric structural rearrangements. The panel also includes a genome-wide SNP backbone that enables the detection of CNVs at the gene, cytoband, arm, and chromosomal levels.

ABL1	*BRIP1*	*CDK6*	*DNMT3A*	*FBXO11*	*ID3*	*KMT2D*	*NFKB1*	*PIM2*	*RBM8A*	*SLAMF7*	*TINF2*
ACD	*BTG1*	*CDK7*	*DTX1*	*FBXW7*	*IDH1*	*KRAS*	*NFKB2*	*PIM3*	*RCOR1*	*SLC29A1*	*TLR2*
AKT1	*BTG2*	*CDKN1B*	*EBF1*	*FCRL5*	*IDH2*	*LCK*	*NFKBIA*	*PLCG1*	*REL*	*SLX4*	*TLR4*
AKT2	*BTK*	*CDKN2A*	*EFL1*	*FGFR1*	*IDH3A*	*LMO2*	*NFKBIE*	*PLCG2*	*RHOA*	*SMARCA4*	*TMEM30A*
AKT3	*CALR*	*CDKN2B*	*EGFR*	*FGFR2*	*IFNGR2*	*LTB*	*NFKBIZ*	*PMS2*	*RIT1*	*SMARCB1*	*TMSB4X*
ALK	*CARD11*	*CDKN2C*	*EGR1*	*FGFR3*	*IGF1R*	*LUC7L2*	*NHP2*	*POT1*	*ROCK1*	*SMC1A*	*TNF*
ANKRD26	*CASP8*	*CEBPA*	*EGR2*	*FLT3*	*IGH*	*MALT1*	*NOP10*	*POU2AF1*	*ROS1*	*SMC3*	*TNFAIP2*
APC	*CBFB*	*CHEK2*	*ELANE*	*FOXO1*	*IGK*	*MAP2K1*	*NOTCH1*	*POU2F2*	*RPL11*	*SOCS1*	*TNFAIP3*
ARAF	*CBL*	*CIITA*	*EP300*	*FYN*	*IGL*	*MAP2K4*	*NOTCH2*	*PPM1D*	*RPL35A*	*SOS1*	*TNFRSF14*
ARID1A	*CBLB*	*CKS1B*	*EPCAM*	*G6PC3*	*IKBKB*	*MAP3K1*	*NPM1*	*PRDM1*	*RPL5*	*SPARC*	*TNFRSF17*
ARID1B	*CBLC*	*CNOT3*	*EPHA7*	*GATA1*	*IKZF1*	*MAP3K14*	*NR3C1*	*PRKCB*	*RPS10*	*SPEN*	*TP53*
ARID2	*CCND1*	*CRBN*	*ERBB2*	*GATA2*	*IKZF3*	*MCL1*	*NRAS*	*PRPF8*	*RPS14*	*SPIB*	*TRAF2*
ASXL1	*CCND2*	*CREBBP*	*ERBB3*	*GATA3*	*IL2RG*	*MECOM*	*NSD2*	*PSMA1*	*RPS15*	*SRC*	*TRAF3*
ASXL2	*CCND3*	*CSF1R*	*ERCC4*	*GFI1*	*IL6*	*MED12*	*NTRK1*	*PSMB5*	*RPS19*	*SRP72*	*U2AF1*
ATM	*CCNE1*	*CSF3R*	*ETNK1*	*GNA13*	*IL6R*	*MEF2B*	*P2RY8*	*PSMD1*	*RPS24*	*SRSF2*	*U2AF2*
ATRX	*CCR4*	*CTC1*	*ETV6*	*GNAS*	*IL7R*	*MET*	*PALB2*	*PSMG2*	*RPS26*	*STAG2*	*UBA1*
B2M	*CCR6*	*CTCF*	*EZH2*	*GPR34*	*INO80*	*MGA*	*PAX5*	*PTCH1*	*RPS7*	*STAT3*	*UBE2A*
BCL10	*CCR7*	*CTNNB1*	*FANCA*	*GPRC5D*	*IRF1*	*MLH1*	*PDCD1LG2*	*PTEN*	*RTEL1*	*STAT5B*	*UBE2T*
BCL11A	*CD22*	*CUL4A*	*FANCB*	*GRB2*	*IRF4*	*MPEG1*	*PDGFRA*	*PTPN1*	*RUNX1*	*STAT6*	*UBR5*
BCL2	*CD274*	*CUL4B*	*FANCC*	*GTF2I*	*IRF8*	*MPL*	*PDGFRB*	*PTPN11*	*SAMD9*	*STK11*	*USB1*
BCL6	*CD28*	*CUX1*	*FANCD2*	*H1-2*	*ITPKB*	*MSH2*	*PDS5B*	*PTPN2*	*SAMD9L*	*SUZ12*	*VAV1*
BCL7A	*CD38*	*CXCR4*	*FANCE*	*H1-3*	*JAK1*	*MSH6*	*PHF6*	*PTPN6*	*SBDS*	*SYK*	*VPS45*
BCOR	*CD47*	*CYLD*	*FANCF*	*H1-4*	*JAK2*	*MTOR*	*PIGA*	*PTPRC*	*SBF2*	*TBL1XR1*	*WAS*
BCORL1	*CD58*	*DAPK1*	*FANCG*	*H1-5*	*JAK3*	*MYB*	*PIK3CA*	*PTPRD*	*SETBP1*	*TCF3*	*WRAP53*
BIRC2	*CD70*	*DCK*	*FANCI*	*H3C2*	*KDM6A*	*MYC*	*PIK3CB*	*RAD21*	*SETD2*	*TENT5C*	*WT1*
BIRC3	*CD79A*	*DDX3X*	*FANCL*	*HAX1*	*KIT*	*MYD88*	*PIK3CD*	*RAD51*	*SETDB1*	*TERC*	*XBP1*
BLM	*CD79B*	*DDX41*	*FAS*	*HLA-A*	*KLF2*	*NBN*	*PIK3CG*	*RAD51C*	*SF1*	*TERT*	*XPO1*
BRAF	*CD83*	*DHX15*	*FAT1*	*HLA-B*	*KLHL6*	*NF1*	*PIK3R1*	*RASA2*	*SF3B1*	*TET2*	*ZFP36L1*
BRCA1	*CDC25C*	*DIS3*	*FAT3*	*HLA-C*	*KMT2A*	*NF2*	*PIK3R2*	*RB1*	*SGK1*	*TGFBR2*	*ZRSR2*
BRCA2	*CDK4*	*DKC1*	*FAT4*	*HRAS*	*KMT2C*	*NFE2*	*PIM1*	*RBBP6*	*SH2B3*	*THRAP3*	

Table 4. RNA content included in the Agilent SureSelect Cancer Pan Heme RNA panel. The panel provides full coding region coverage of 124 genes relevant to hematologic malignancies for detection of gene fusions.

ABL1	*BIRC2*	*CIITA*	*DSCAM*	*FOXR1*	*KANSL1*	*MN1*	*NOTCH1*	*PML*	*SEPTIN9*	*TFG*	*ZFP36L2*
ABL2	*BIRC3*	*COMMD3*	*ELL*	*FUS*	*KAT6A*	*MPO*	*NPM1*	*PRDM16*	*SPI1*	*TP63*	*ZNF362*
ACTB	*BMI1*	*CREBBP*	*EP300*	*GATA2*	*KDM5A*	*MSI2*	*NSD1*	*PRRC2B*	*SSBP2*	*TP73*	*ZNF384*
AFF1	*CBFA2T3*	*CRLF2*	*ERG*	*GLIS2*	*KMT2A*	*MTCP1*	*NUP214*	*RARA*	*STAG2*	*TPM3*	
AHI1	*CCND1*	*CSF1R*	*ETS2*	*H2AX*	*LMO1*	*MYB*	*NUP98*	*RARG*	*STAT6*	*TPM4*	
ALK	*CCND3*	*CTCF*	*ETV6*	*HNRNPC*	*LMO2*	*MYC*	*NUTM1*	*RB1*	*STIL*	*TYK2*	
ATF7IP	*CCR6*	*CUX1*	*FGFR1*	*HOXA11*	*LYN*	*MYH11*	*P2RY8*	*RET*	*SYK*	*UBA2*	
BCL11B	*CD28*	*DAZAP1*	*FGFR3*	*HOXA9*	*MAL*	*MYH9*	*PAX5*	*RNF213*	*TAL1*	*VAV1*	
BCL2	*CDK6*	*DDX10*	*FLT3*	*IKZF1*	*MALT1*	*NFIA*	*PDGFRA*	*RUNX1*	*TBL1XR1*	*XPO1*	
BCL6	*CEP43*	*DDX3X*	*FNBP1*	*IRF4*	*MECOM*	*NFKB2*	*PDGFRB*	*RUNX1T1*	*TCF3*	*YPEL5*	
BCR	*CHD1*	*DDX6*	*FOXP1*	*JAK2*	*MLLT10*	*NIPBL*	*PICALM*	*SEC31A*	*TCL1A*	*ZCCHC7*	

Table 5. Clinically relevant DNA and RNA targets covered by the Agilent SureSelect Cancer Pan Heme assay. The comprehensive assay supports genomic characterization across hematologic malignancies, such as acute myeloid leukemia (AML), myeloproliferative neoplasms (MPN), myelodysplastic syndromes (MDS), acute lymphoblastic leukemia (ALL), chronic lymphocytic leukemia (CLL), multiple myeloma (MM), and non-Hodgkin lymphoma (NHL), enabling precision genomics insights. The assay provides full coding region coverage of target genes. For TERT (orange cell), both the full coding region and promoter region are covered. For IGH (pink cell), specific regions are covered to enable detection of nonchimeric structural rearrangements.

AML	DNA	*ABL1*	*APC*	*ASXL1*	*ASXL2*	*BCOR*	*CEBPA*	*CREBBP*	*DNMT3A*
		EZH2	*FLT3*	*IDH1*	*IDH2*	*JAK2*	*KIT*	*KMT2A*	*MECOM*
		NPM1	*PHF6*	*RUNX1*	*SF3B1*	*SRSF2*	*STAG2*	*TERT*	*TP53*
		U2AF1	*WT1*	*ZRSR2*					
	RNA	*ABL1*	*BCR*	*CBFB*	*CREBBP*	*DEK*	*FGFR1*	*KMT2A*	*MECOM*
		MKL1	*MLF1*	*MYH11*	*NUP214*	*PDGFRA*	*PDGFRB*	*PML*	*RARA*
		RBM15	*RUNX1*	*RUNX1T1*					
MPN	DNA	*APC*	*ASXL1*	*CALR*	*CBL*	*EZH2*	*IDH1*	*IDH2*	*IKZF1*
		JAK2	*KIT*	*KMT2C*	*MPL*	*NFE2*	*PPM1D*	*SF3B1*	*SH2B3*
		SRSF2	*TERT*	*TET2*	*TP53*	*U2AF1*			
	RNA	*ABL1*	*BCR*	*FGFR1*	*PDGFRA*	*PDGFRB*			
MDS	DNA	*ABL1*	*APC*	*ASXL1*	*BCOR*	*CALR*	*CBL*	*DDX41*	*DNMT3A*
		ETV6	*EZH2*	*FLT3*	*GATA2*	*IDH1*	*IDH2*	*JAK2*	*MPL*
		NPM1	*NRAS*	*PHF6*	*PPM1D*	*RUNX1*	*SETBP1*	*SF3B1*	*SRSF2*
		STAG2	*STAT3*	*TERT*	*TET2*	*TP53*	*U2AF1*	*UBA1*	*WT1*
		ZRSR2							
	RNA	*CBFB*	*CREBBP*	*DEK*	*KMT2A*	*MECOM*	*MYH11*	*NUP214*	*PML*
		PRDM16	*RARA*	*RUNX1*	*RUNX1T1*				
ALL	DNA	*ABL1*	*CDKN1B*	*CDKN2A*	*CDKN2B*	*CDKN2C*	*IGH*	*IKZF1*	*JAK2*
		MYC	*NOTCH1*	*RB1*	*TERT*	*TP53*			
	RNA	*ABL1*	*ABL2*	*BCR*	*CRLF2*	*CSF1R*	*EPOR*	*ETV6*	*FGFR1*
		JAK2	*KMT2A*	*MYC*	*NOTCH1*	*NUP98*	*PBX1*	*PDGFRB*	*RUNX1*
		TAL-1	*TCF3*						
CLL	DNA	*ATM*	*BCL2*	*BIRC3*	*BTK*	*CKDN2A*	*CKDN2B*	*NOTCH1*	*PLCG2*
		SF3B1	*TERT*	*TP53*					
MM	DNA	*ATM*	*BRAF*	*CD47*	*CDKN2C*	*CHEK2*	*DIS3*	*EGR1*	*EPOR*
		FCRL5	*GPRC5D*	*IRF4*	*KRAS*	*NRAS*	*RB1*	*SLAMF7*	*STAT3*
		TERT	*TNFRSF17*	*TP53*					
NHL	DNA	*BIRC3*	*BRAF*	*BTK*	*CREBBP*	*CXCR4*	*DNMT3A*	*EPHA7*	*EZH2*
		IDH2	*IGH*	*KMT2D*	*MAP2K1*	*MEK*	*MYD88*	*PLCG2*	*TERT*
		TET2	*TNFAIP3*	*TP53*	*TRAF2*				

Relevant publication

Galbo, P. M., Jr.; Klees, R. F.; Burgher, B.; Miles, K. M.; Morrison, C. M.; Glenn, S. T. A Comprehensive Guide to Achieving New York State Clinical Laboratory Evaluation Program Approval for Next-Generation Sequencing Assays. J. Mol. Diagn. 2025, 27 (6), 485–501. DOI: 10.1016/j.jmoldx.2025.02.009.

Ordering information

Product Description	16 Rxns	96 Rxns	96 Rxns Auto
SureSelect Cancer Pan Heme DNA Panel	5280-0071	5280-0072	5280-0094
SureSelect Cancer Pan Heme RNA Panel	5280-0073	5280-0074	5280-0153
SureSelect Cancer Pan Heme Assay with QIAGEN QCI Report	G9516	G9617	
Product Description	**32 Rxns**	**96 Rxns**	
Magnis SureSelect Cancer Pan Heme DNA Kit	G9780A	G9780B	
Magnis SureSelect Cancer Pan Heme RNA Kit	G9780C	G9780D	
Magnis SureSelect Cancer Pan Heme Assay with QIAGEN QCI Report	G9518	G9619	

Note: Agilent SureSelect Cancer Pan Heme DNA and RNA panels are compatible with Agilent SureSelect XT HS2 and Agilent SureSelect Max reagents. Panel optimization and analysis pipeline development on the QIAGEN QCI platform were conducted using the SureSelect XT HS2 reagents.

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