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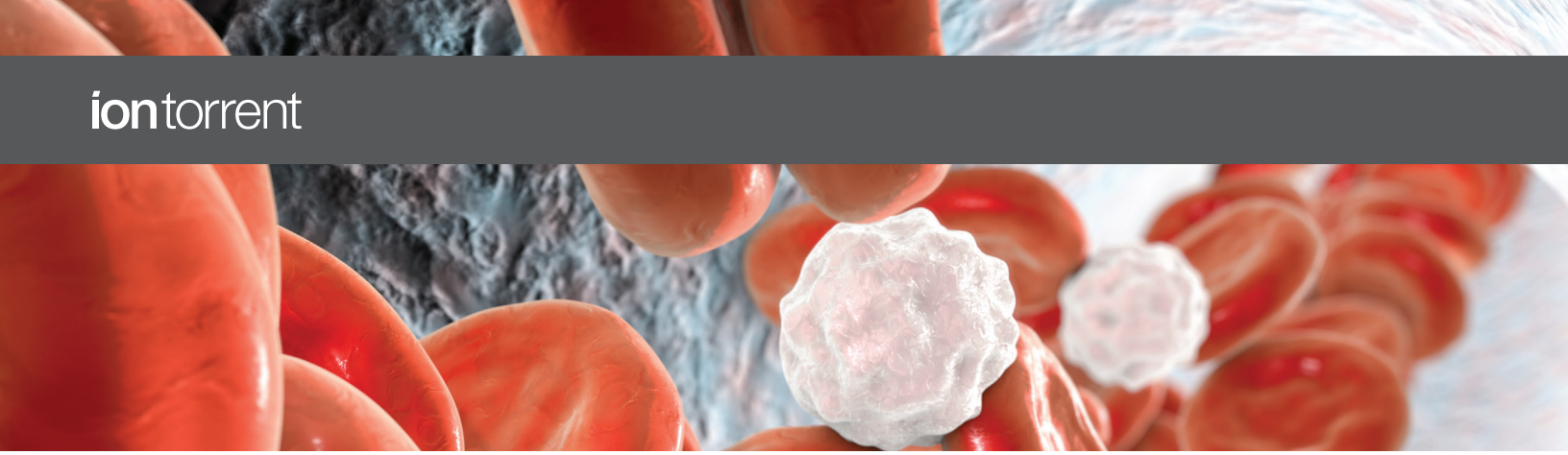

Oncomine Myeloid Research Assay

One single assay for comprehensive coverage of relevant myeloid mutations

Current analysis of hematological malignancies involves multiple sequential tests and laborious workflows. Adoption of next-generation sequencing (NGS) methods into clinical research laboratories has created an unprecedented opportunity to profile the multiple relevant driver genes in myeloid malignancies.

The Ion Torrent™ Oncomine™ Myeloid Research Assay is a comprehensive, targeted NGS assay designed to assist in the understanding of myeloid cancer. Specifically, it interrogates all relevant DNA mutations and fusion transcripts associated with myeloid disorders in a single NGS run. Our panel comprises 40 key DNA target genes, 29 driver genes, and a broad fusion panel (Table 1) to cover all the major myeloid disorders associated with acute myeloid leukemia (AML), myeloid dysplastic syndrome (MDS), myeloproliferative neoplasms (MPN), chronic myeloid leukemia (CML), chronic myelomonocytic leukemia (CMML), and juvenile myelomonocytic leukemia (JMML).

Table 1. Oncomine Myeloid Research Assay gene targets.

Hotspot genes (23)		Full genes (17)		Fusion driver genes (29)			Expression genes (5)	Expression control genes (5)
ABL1	*KRAS*	*ASXL1*	*PRPF8*	*ABL1*	*HMGA2*	*NUP214*	*BAALC*	*EIF2B1*
BRAF	*MPL*	*BCOR*	*RB1*	*ALK*	*JAK2*	*PDGFRA*	*MECOM*	*FBXW2*
CBL	*MYD88*	*CALR*	*RUNX1*	*BCL2*	*KMT2A*	*PDGFRB*	*MYC*	*PSMB2*
CSF3R	*NPM1*	*CEBPA*	*SH2B3*	*BRAF*	*(MLL)*	*RARA*	*SMC1A*	*PUM1*
DNMT3A	*NRAS*	*ETV6*	*STAG2*	*CCND1*	*MECOM*	*RBM15*	*WT1*	*TRIM27*
FLT3	*PTPN11*	*EZH2*	*TET2*	*CREBBP*	*MET*	*RUNX1*		
GATA2	*SETBP1*	*IKZF1*	*TP53*	*EGFR*	*MLLT10*	*TCF3*		
HRAS	*SF3B1*	*NF1*	*ZRSR2*	*ETV6*	*MLLT3*	*TFE3*		
IDH1	*SRSF2*	*PHF6*		*FGFR1*	*MYBL1*			
IDH2	*U2AF1*			*FGFR2*	*MYH11*			
JAK2	*WT1*			*FUS*	*NTRK3*			
KIT								

Highlights

- From nucleic acid sample to report in <48 hr
- Total hands-on time is <0.5 hr
- Comprehensive coverage—40 key DNA genes and 29 RNA fusion transcript driver genes
- Fully annotated variants in Oncomine Knowledgebase Reporter, which links to relevant labels, guidelines, and global clinical trials

"With the Ion Torrent myeloid panel, we could move the testing of all myeloid malignancies to one assay and improve on turnaround time while keeping the cost down. In our assessment of previously characterized samples, we had excellent concordance for relevant variants, including fusions."

—Nancy Carson, PhD
Head, Division of Genetics, Department of Lab Medicine and Pathology
Saint John Regional Hospital, Canada

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Simple and integrated workflow

The assay is compatible with both the Ion PGM™ and Ion S5™ Systems, and comes with either manual or automated library preparation configurations for the Ion Chef™ system (Figure 1). Sample preparation to analysis can be achieved in 2–3 days, depending on the sample type, and is powered by our integrated Oncomine Knowledgebase reporting software (Figure 2), which links variants to relevant labels, guidelines, and global clinical trials.

Automated library and template preparation on Ion Chef Systems

Sequencing on Ion S5 Systems

End-to-end bioinformatics solution developed for particular assays and applications

Figure 1. A complete workflow—from sample preparation to report.

Manual or automated library preparation

Sample prep	Sequencing	Analytics
• Sample type—blood or bone marrow • Library preparation – 2 DNA pools—10 ng of gDNA for each pool – 1 RNA pool—10 ng of RNA for 1 RNA pool • Template preparation (Ion Chef System)	• High-throughput sequencing on Ion S5 Systems or Ion PGM System	• Automated reporting with Oncomine Knowledgebase Reporter

Figure 2. A comprehensive NGS workflow providing streamlined detection and analysis of all myeloid malignancies—go from sample to answer within 2 days, including hands-on time.

Features of the Oncomine Myeloid Research Assay include:

- **Ease of use**—one simple, robust workflow with all mutations encapsulated in 2 DNA and 1 RNA pools
- **Effective designs**—great coverage of challenging targets such as *CEBPA* and internal tandem duplications of *FLT3* (*FLT3*-ITDs)
- **Flexibility**—validated with blood and bone marrow samples on the Ion PGM and Ion S5 Systems, with manual and automated library preparation
- **Speed**—from samples to answers in <3 days, with up to 4 samples on an Ion 318™ Chip or 12 on an Ion 530™ Chip

Ordering information

Product	Cat. No.
Sample preparation	
Oncomine Myeloid Research Assay (Manual)	A36940
Oncomine Myeloid Research Assay–Chef Ready	A36941

To learn more about the Oncomine Myeloid Research Assay and our NGS technology, go to **thermofisher.com/myeloid**

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