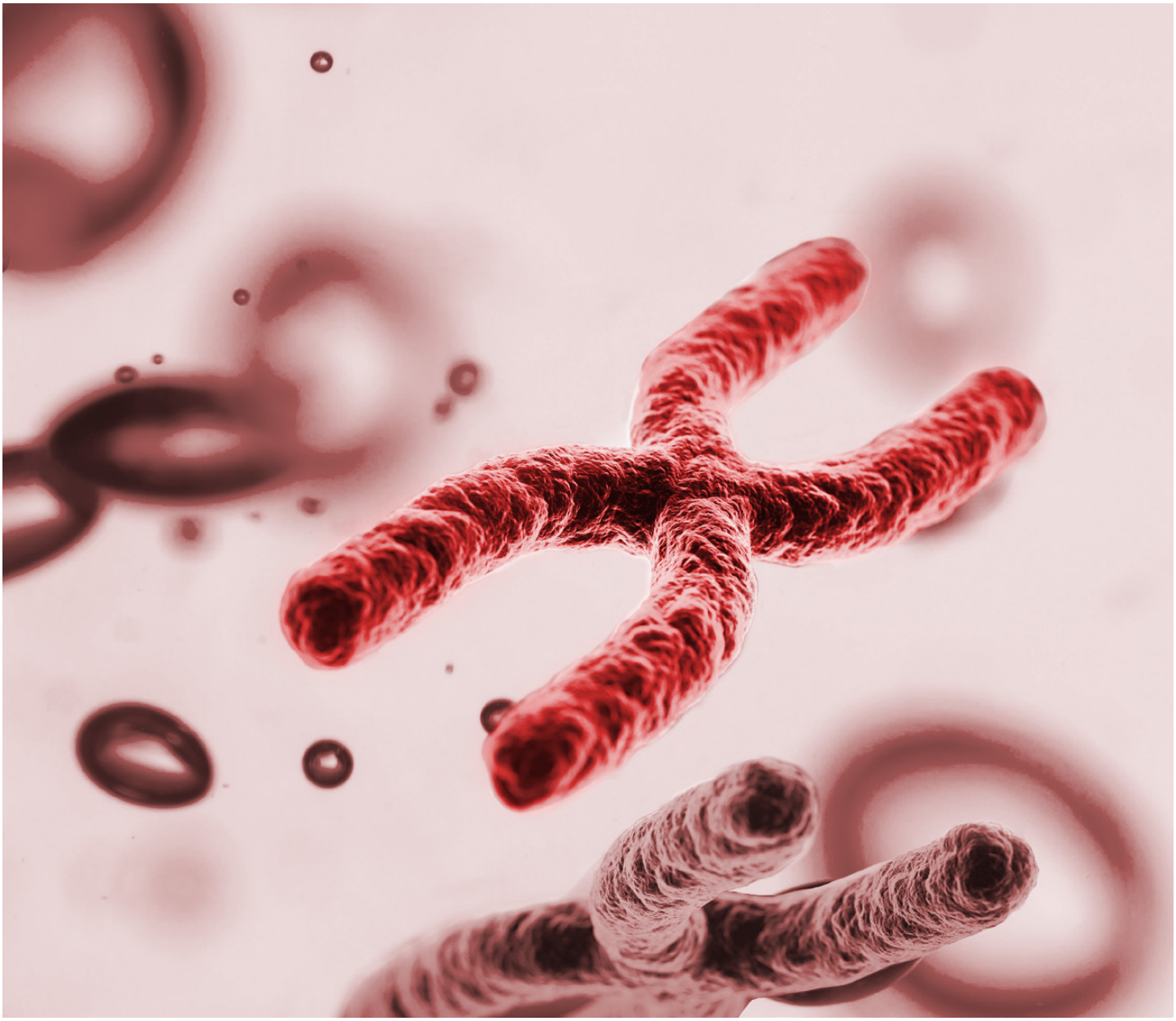
MAYO CLINIC
LABORATORIES

NEXT-GENERATION TESTING FOR HEMATOLOGIC NEOPLASMS

PROVIDING ACCURATE RESULTS AND INTERPRETATION FOR CLINICALLY-RELEVANT GENES



RESULTS WITH CLINICAL SIGNIFICANCE

The presence and pattern of gene mutations can provide critical diagnostic, prognostic, germline, and sometimes therapeutic information for physicians. While many hematologic neoplasms are characterized by morphologic or phenotypic similarities, a growing number of patients also have somatic gene mutations. In addition, many myeloid neoplasms lack a clonal cytogenetic finding at diagnosis (normal karyotype) but can be diagnosed and classified according to gene mutation profile.

At Mayo Clinic Laboratories, we strive to provide the highest quality molecular services available to complement your clinical practice by offering three myeloid panels, including two focused panels and a comprehensive 42-gene OncoHeme panel.

ADVANTAGES OF OUR TESTING

- Our disease-specific panels offer high depth of coverage with relevant genetics targets for optimal tumor characterization.
- We offer panels of varying sizes to fit your patient needs including a 4-gene, 11-gene, and 42-gene OncoHeme panel. We also have the option to reflex to the OncoHeme panel upon request.
- Your results are reviewed by a board certified hematopathologist with clinical expertise in myeloid neoplasms. Patient history and other additional testing is also reviewed for a correlated result.

ACCESS TO MAYO CLINIC EXPERTISE

The Mayo Clinic Molecular Hematology Laboratory is led by expert hematopathologists who focus on molecular diagnostics and prognostics of hematologic disorders. Board-certified hematopathologists sign out cases in the context of comprehensive result interpretation of clinically relevant genes.

When you send your specimen to Mayo Clinic, you gain access to our physicians, laboratorians, and genetic counselors who are available to answer questions pertaining to testing options, result interpretation, or case review and coordination.

ANSWERS FOR YOU AND YOUR PATIENTS

A FOCUSED APPROACH

ACUTE MYELOID LEUKEMIA NGS THERAPEUTIC GENE PANEL (MAYO ID: NGAMT)

The acute myeloid leukemia (AML)-focused panel is useful for evaluating patients at the time of diagnosis, or possibly relapsed or refractory disease, to help determine optimal therapeutic approaches.

ACUTE MYELOID LEUKEMIA NGS PANEL (MAYO ID: NGAML)

This panel includes all of the World Health Organization (WHO) and National Comprehensive Cancer Network (NCCN) major genes of clinical significance for the prognosis, diagnosis, and potential therapeutic implications for patients with a new or presenting relapse of AML.

A COMPREHENSIVE APPROACH

ONCOHEME NEXT-GENERATION SEQUENCING FOR HEMATOLOGIC NEOPLASMS (MAYO ID: NGSHM)

This 42-gene panel allows for the evaluation of hematologic neoplasms, specifically of myeloid origin at the time of diagnosis or possibly disease relapse, to help determine diagnostic classification and provide prognostic or therapeutic information for clinical management. The included genes can also assist with identification of germline mutations for identification of patients with familial predisposition syndromes. This panel meets all NCCN and WHO guidelines.

GENE	*FLT3*	*IDH1*	*IDH2*	*TP53*	
EXONS	14-20	4	4	4-9	**NGAMT**

GENE	*CEBPA*	*DNMT3A*	*KIT*	*KRAS*	*NPM1*
EXONS	1	8-23	8-11, 17	2-3	9-11

GENE	*NRAS*	*RUNX1*			
EXONS	2-3	1-6			**NGAML**

GENE	*ANKRD26*	*ASXL1*	*BCOR*	*CALR*	*CBL*
EXONS	1-4	10-13	4-15	9	8-9

GENE	*CSF3R*	*DDX41*	*ELANE*	*ETNK1*	*ETV6*
EXONS	14, 17	1-17	1-5	2-5	3-8

GENE	*EZH2*	*GATA1*	*GATA2*	*JAK2*	*KDM6A*
EXONS	2-20	2, 4	3-7	12-16	1-29

GENE	*MPL*	*PHF6*	*PTPN11*	*RAD21*
EXONS	10-12	2-10	3-4, 12-13	1, 2, 4-7, 9-11, 13, 14

GENE	*SETBP1*	*SH2B3 (LNK)*	*SF3B1*	*SRP72*
EXONS	4 – partial	2-8	13-16	6, 10

GENE	*SMC3*	*SRSF2*	*STAG2*	*TERT*
EXONS	7, 8, 13, 17, 19, 21, 29	1-2	4-34	2-16

GENE	*TET2*	*U2AF1*	*WT1*	*ZRSR2*	
EXONS	3-11	2,6,8	1-10	1-11	**NGSHM**

Acceptable specimen types: bone marrow aspirate (preferred), peripheral blood, extracted DNA from blood or bone marrow

REFLEX TESTING FOR OPTIMAL PATIENT CARE

NEXT-GENERATION SEQUENCING, REFLEX FROM ACUTE MYELOID LEUKEMIA 4- OR 11-GENE PANELS (MAYO ID: NGSFX)

If a focused gene panel was performed, this test can be ordered within six months of the original order to provide a comprehensive reanalysis of a larger set of genes and gene regions. The bioinformatics and variant review is performed only for the added gene regions. This reflex testing allows for a greater understanding of the disease present without having to send an additional sample for testing.

GENES BY DIAGNOSTIC VALUE*

MYELODYSPLASTIC SYNDROMES

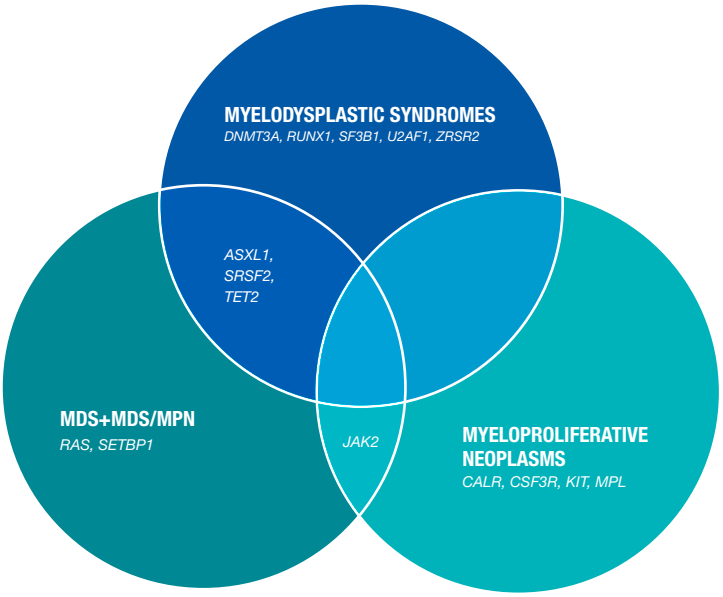
RARS, RCMD, RCUD: *TET2, ASXL1, DNMT3A, RUNX1, SF3B1, SRSF2, U2AF1, ZRSR2*

MYELOPROLIFERATIVE NEOPLASMS

PV, ET, PMF: *JAK2, CALR, MPL*
CNL: *CSF3R*
SM: *KIT*

MDS+MDS/MPN

CMML: *ASXL1, TET2, SRSF2, JAK2, RAS*
aCML: *SETBP1, JAK2, RAS*



GENES BY PROGNOSTIC VALUE*

ACUTE MYELOID LEUKEMIA

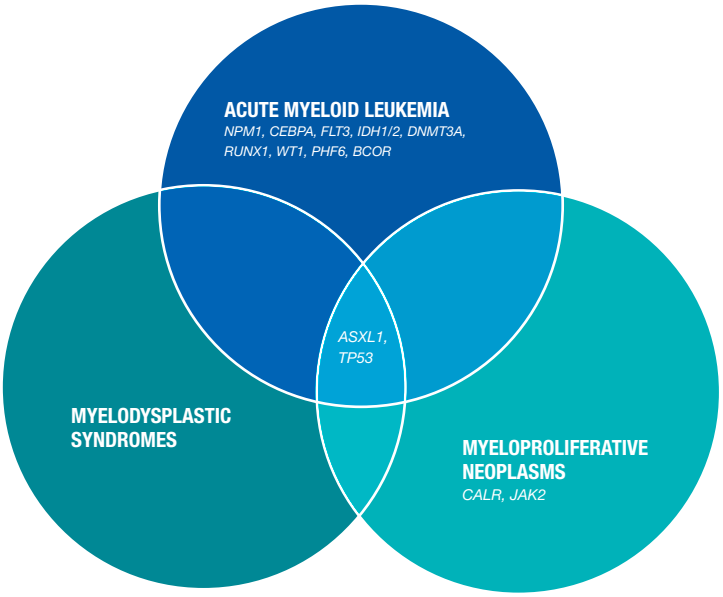
Normal Karyotype AML: *NPM1, CEBPA, FLT3, IDH1/2, DNMT3A, RUNX1, WT1, ASXL1, TP53, PHF6, BCOR*
CBF-AML {inv16 and t(8;21)}: *KIT*

MYELODYSPLASTIC SYNDROMES

5q: *TP53*
Any: *ASXL1, TP53*

MYELOPROLIFERATIVE NEOPLASMS

PMF, ET: *CALR, JAK2, ASXL1, TP53*



*These associations indicate common (> 5% mutation frequency) abnormalities. However, other genes in the panel may also be clinically relevant if detected in specific diagnostic or prognostic contexts.

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