



Test Definition: MPLR

MPL Exon 10 Mutation Detection, Reflex,
Varies

Overview

Useful For

Aiding in the distinction between a reactive cytosis and a chronic myeloproliferative disorder

Evaluates for mutations in *MPL* in an algorithmic process for the MPNR / Myeloproliferative Neoplasm, *JAK2* V617F with Reflex to *CALR* and *MPL*, Varies

Method Name

Only orderable as a reflex. For more information see MPNR / Myeloproliferative Neoplasm, *JAK2* V617F with Reflex to *CALR* and *MPL*, Varies.

Sanger Sequencing

NY State Available

Yes

Specimen

Specimen Type

Varies

Specimen Required

Only orderable as a reflex. For more information see MPNR / Myeloproliferative Neoplasm, *JAK2* V617F with Reflex to *CALR* and *MPL*, Varies.

Submit only 1 of the following specimens:

Specimen Type: Whole Blood

Container/Tube: Lavender top (EDTA) or yellow top (ACD solution B)

Specimen Volume: 3 mL

Collection Instructions:

1. Invert several times to mix blood.
2. Send whole blood specimen in original tube. **Do not** aliquot.
3. Label specimen as whole blood.

Specimen Stability Information: Ambient (preferred)/Refrigerate

Specimen Type: Bone marrow

Container/Tube: Lavender top (EDTA) or yellow top (ACD solution B)

Specimen Volume: 2 mL

Collection Instructions:

1. Invert several times to mix bone marrow.
2. Send bone marrow specimen in original tube. **Do not** aliquot.
3. Label specimen as bone marrow.

Specimen Stability Information: Ambient (preferred)/Refrigerate

Specimen Type: Extracted DNA from whole blood or bone marrow

Container/Tube: 1.5- to 2-mL tube

Specimen Volume: Entire specimen

Collection Instructions:

1. DNA must be extracted from blood or bone marrow within 7 days of collection.
2. Label specimen as extracted DNA and source of specimen
3. Provide volume and concentration of the DNA.

Specimen Stability Information: Frozen (preferred) 1 year/Refrigerate/Ambient

Additional Information: DNA must be extracted in a CLIA-certified laboratory or equivalent and must be extracted from a specimen type listed as acceptable for this test (including applicable anticoagulants). We cannot guarantee that all extraction methods are compatible with this test. If testing fails, one repeat will be attempted, and if unsuccessful, the test will be reported as failed and a charge will be applied.

Reject Due To

Gross hemolysis	Reject
Paraffin embedded bone marrow aspirate clot or biopsy blocks	Reject
Slides	Reject
Paraffin shavings	Reject
Moderately to severely clotted	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Varies	7 days	

Clinical & Interpretive

Clinical Information

The Janus kinase 2 gene (*JAK2*) codes for a tyrosine kinase (*JAK2*) that is associated with the cytoplasmic portion of a variety of transmembrane cytokine and growth factor receptors important for signal transduction in hematopoietic cells. Signaling via *JAK2* activation causes phosphorylation of downstream signal transducers and activators of transcription (STAT) proteins (eg, STAT5) ultimately leading to cell growth and differentiation. *BCR::ABL1*-negative myeloproliferative neoplasms (MPN) frequently harbor an acquired single nucleotide mutation in *JAK2* characterized as c.G1849T; p.Val617Phe (V617F).

The *JAK2* V617F variant is present in 95% to 98% of patients with polycythemia vera, [50% to 60% of patients with](#) primary myelofibrosis (PMF), and 50% to 60% of patients with essential thrombocythemia (ET). It has also been described infrequently in other myeloid neoplasms, including chronic myelomonocytic leukemia and myelodysplastic syndrome. Detection of the *JAK2* V617F is useful to help establish the diagnosis of MPN. However, a negative *JAK2* V617F result does not indicate the absence of MPN. Other important molecular markers in *BCR::ABL1*-negative MPN include *CALR* exon 9 variant (20%-30% of PMF and ET) and *MPL* exon 10 variant (5%-10% of PMF and 3%-5% of ET). Variants in *JAK2*, *CALR*, and *MPL* are essentially mutually exclusive. A *CALR* variant is associated with decreased risk of thrombosis in both ET and PMF and confers a favorable clinical outcome in patients with PMF. A triple negative (*JAK2* V617F, *CALR*, and *MPL*-negative) genotype is considered a high-risk molecular signature in PMF.

Reference Values

Only orderable as a reflex. For more information see MPNR / Myeloproliferative Neoplasm, *JAK2* V617F with Reflex to *CALR* and *MPL*, Varies.

An interpretive report will be provided.

Interpretation

An interpretation will be provided under the MPNR / Myeloproliferative Neoplasm, *JAK2* V617F with Reflex to *CALR* and *MPL*, Varies

Cautions

A positive result is not specific for a particular subtype of myeloproliferative neoplasm and clinicopathologic correlation is necessary in all cases.

A negative result does not exclude the presence of a myeloproliferative neoplasm or other neoplastic process.

In rare cases, a variant other than the V617F may be present in an area that interferes with primer or probe binding and cause a false-negative result.

Performance

Method Description

Genomic DNA is extracted from bone marrow, and *MPL* exon 10 amplified using standard polymerase chain reaction. The entire exon 10 sequence is obtained using Sanger sequencing (BigDye terminator V1.1 cycle sequencing kit from Applied Bioscience) with analysis on an automated genetic analyzer.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

7 to 10 days

Specimen Retention Time

Whole blood, bone marrow: 2 weeks; Extracted DNA: 3 months

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes**Fees**

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact [Customer Service](#).

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

81339-MPL (myeloproliferative leukemia virus oncogene, thrombopoietin receptor, TPOR) (eg, myeloproliferative disorder), exon 10 sequence

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MPLR	MPL Exon 10 Mutation Detection, R	62948-5

Result ID	Test Result Name	Result LOINC® Value
36672	Final Diagnosis	22637-3