MAYO CLINIC LABORATORIES

Test Definition: MYD88

MYD88 L265P Gene Mutation Analysis

Overview

Useful For

Establishing the diagnosis of lymphoplasmacytic lymphoma/Waldenstrom macroglobulinemia

Helping to distinguish lymphoplasmacytic lymphoma/Waldenstrom macroglobulinemia (low-grade B-cell lymphoma) from other subtypes

Special Instructions

- Hematopathology Patient Information

Method Name

Allele-Specific Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Varies

Shipping Instructions

Peripheral blood or bone marrow specimens must arrive within 10 days (240 hours) of collection.

Necessary Information

The following information is required:

1. Pertinent clinical history
2. Clinical or morphologic suspicion
3. Date of collection
4. Specimen source

Specimen Required

Submit only 1 of the following specimens:

Preferred:

Specimen Type: Bone marrow

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

Specimen Volume: 2 mL

Collection Instructions:

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

Specimen Stability: Ambient (preferred)/Refrigerated

Specimen Type: Paraffin-embedded tissue

Container/Tube: Paraffin block

Specimen Stability: Ambient

Specimen Type: Paraffin-embedded bone marrow aspirate clot
Container/Tube: Paraffin block
Specimen Stability: Ambient
Acceptable:
Specimen Type: Peripheral blood
Container/Tube: Lavender top (EDTA), yellow top (ACD solution B), or green top (heparin)
Specimen Volume: 3 mL
Collection Instructions:
1. Invert several times to mix blood.
2. Send specimen in original tube. **Do not aliquot.**
3. Label specimen as blood.
Specimen Stability: Ambient (preferred)/Refrigerated
Specimen Type: Frozen tissue
Container/Tube: Plastic container
Specimen Volume: 100 mg
Collection Instructions: Freeze tissue within 1 hour of collection.
Specimen Stability: Frozen
Specimen Type: Unstained slides
Container/Tube: Unstained tissue slides
Specimen Volume: 10 slides
Specimen Stability: Ambient
Specimen Type: Extracted DNA
Container/Tube: 1.5- to 2-mL tube
Specimen Volume: Entire specimen
Collection Instructions:
1. Label specimen as extracted DNA and source of specimen.
2. Indicate volume and concentration of the DNA on the label.
Specimen Stability: Frozen (preferred)/Refrigerated
Specimen Type: Methanol-acetic acid (MAA) fixed pellets
Container/Tube: Plastic container
Specimen Stability: Ambient (preferred)/Refrigerated

Forms

1. Hematopathology Patient Information (T676) in Special Instructions
2. If not ordering electronically, complete, print, and send a Hematopathology/Cytogenetics Test Request (T726) with the specimen.

Reject Due To

Gross hemolysis	Reject
Bone marrow core biopsies	Reject
Paraffin shavings	
Moderately to severely clotted	

Specimen Minimum Volume

Blood, Bone marrow: 1 mL
Extracted DNA: 50 mcL at 20 ng/mcL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Varies (preferred)	10 days	

Clinical & Interpretive

Clinical Information

The single point alteration in *MYD88,* L265P, is present in 67% to 100% of patients with lymphoplasmacytic lymphoma, and these patients typically have clinical manifestations of Waldenstrom macroglobulinemia (often designated LPL/WM).

Reference Values

Variant present or absent based on expected alteration polymerase chain reaction product size. Concurrent amplification of wild type *MYD88* fragment determined for sample amplification integrity. *MYD88* gene (NCBI accession NM_002468.4).

Interpretation

Variant present or not detected; an interpretive report will be issued.

Cautions

This test is a targeted assay and will not detect any alteration at the *MYD88* codon 265 that does not result in the L>P (leucine to proline) amino acid change. It will also not detect additional *MYD88* alterations, including insertion or deletion events. The analytical sensitivity of the assay (1% *MYD88* L265P in a wild-type background) can be affected by a variety of factors, including biologic availability (ie, tumor burden), fixation of paraffin-embedded specimens, or nonspecific polymerase chain reaction interferences. Rare cases of lymphoplasmacytic lymphoma/Waldenstrom macroglobulinemia (LPL/WM) have been reported lacking the *MYD88* L265P abnormality, so a negative result would not completely exclude this diagnosis but would make the possibility of LPL/WM more unlikely.

Clinical Reference

1. Treon SP, Xu L, Yang G, et al: MYD88 L265P somatic mutation in Waldenstrom's macroglobulinemia. N Engl J Med. 2012;367:826-833

2. Varettoni M, Arcaini L, Zibellini S, et al: Prevalence and clinical significance of the MYD88 (L265P) somatic mutation in Waldenstrom's macroglobulinemia and related lymphoid neoplasms. Blood. 2013;121:2522-2528

3. Xu L, Hunter ZR, Yang G, et al: MYD88 L265P in Waldenstrom macroglobulinemia, immunoglobulin M monoclonal gammopathy, and other B-cell lymphoproliferative disorders using conventional and quantitative allele-specific polymerase chain reaction. Blood. 2013:121;2051-2058

4. Poulain S, Roumier C, Decambron A, et al: MYD88 L265P mutation in Waldenstrom macroglobulinemia. Blood. 2013:121;4504-4511

5. Gachard N, Parrens M, Soubeyran I, et al: IGHV gene features and MYD88 L265P mutation separate the three marginal zone lymphoma entities and Waldenstrom macroglobulinemia/lymphoplasmacytic lymphomas. Leukemia. 2013;27:183-189

6. Ondrejka SL, Lin JJ, Warden DW, Durkin L, Cook JR, His ED: MYD88 L265P somatic mutation: its usefulness in the differential diagnosis of bone marrow involvement by B-cell lymphoproliferative disorders. Am J Clin Pathol. 2013;140:387-394

Performance

Method Description

Extracted DNA from the clinical specimen is subjected to a single-tube allele-specific polymerase chain reaction (PCR) using *MYD88* exon 5 primers that simultaneously amplify both a wild-type sequence fragment and a fragment containing the specific nucleotide change resulting in L265P, if present. PCR products are visualized by capillary electrophoresis and the presence of altered and wild-type amplicons is determined according to the expected specific PCR product sizes.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

DNA 3 months

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

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

CPT Code Information

81305