

Overview

**Useful For**  
Aiding in the identification of hematolymphoid neoplasms and melanomas

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
IHTOI	IHC Initial, Tech Only	No	No
IHTOA	IHC Additional, Tech Only	No	No

**Testing Algorithm**  
[For the initial technical component only immunohistochemical \(IHC\) stain performed, the appropriate bill-only test ID will be reflexed and charged \(IHTOI\). For each additional technical component only IHC stain performed, an additional bill-only test ID will be reflexed and charged \(IHTOA\).](#)

**Method Name**  
Immunohistochemistry (IHC)

**NY State Available**  
Yes

Specimen

**Specimen Type**  
TECHONLY

**Ordering Guidance**  
This test includes only technical performance of the stain (no pathologist interpretation is performed). If diagnostic consultation by a pathologist is required order PATHC / Pathology Consultation.

**Shipping Instructions**  
Attach the green pathology address label and the pink Immunostain Technical Only label included in the kit to the outside of the transport container.

**Specimen Required**  
**Specimen Type:** Tissue  
**Supplies:** Immunostain Technical Only Envelope (T693)  
**Container/Tube:** Immunostain Technical Only Envelope  
**Preferred:**

-Formalin-fixed, paraffin-embedded tissue block  
OR  
-2 Unstained, positively charged glass slides (25- x 75- x 1-mm) per test ordered; sections 4-microns thick  
**Acceptable:** None

Digital Image Access

1. Information on accessing digital images of immunohistochemical (IHC) stains and the manual requisition form can be accessed through this website: <https://news.mayocliniclabs.com/ihc-stains/>
2. Clients ordering stains using a manual requisition form will not have access to digital images.
3. Clients wishing to access digital images must place the order for IHC stains electronically. Information regarding digital imaging can be accessed through this website: <https://news.mayocliniclabs.com/ihc-stains/#FAQ>

Forms

If not ordering electronically, complete, print, and send a [Immunohistochemical \(IHC\)/In Situ Hybridization \(ISH\) Stains Request](#) (T763) with the specimen.

Reject Due To

Wet/frozen tissue Cytology smears Nonformalin fixed tissue Nonparaffin embedded tissue Noncharged slides ProbeOn slides Snowcoat slides	Reject
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Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
TECHONLY	Ambient (preferred)		
	Refrigerated		

Clinical & Interpretive

Clinical Information

MUM-1 (multiple myeloma oncogene-1), expressed by the *IRF4* gene, is seen in a subset of B cells in the light zone of the

germinal center (representing late stages of B cell differentiation), plasma cells, activated T cells, and a variety of hematolymphoid neoplasms derived from these cells. Among non-hematolymphoid neoplasms, MUM-1 expression has been reported in melanomas. A separate protocol optimized for B5 fixed/decalcified bone marrow specimens has been validated.

### Interpretation

This test does not include pathologist interpretation, only technical performance of the stain. If interpretation is required, order PATHC / Pathology Consultation for a full diagnostic evaluation or second opinion of the case.

The positive and negative controls are verified as showing appropriate immunoreactivity and documentation is retained at Mayo Clinic Rochester. If a control tissue is not included on the slide, a scanned image of the relevant quality control tissue is available upon request, call 855-516-8404.

Interpretation of this test should be performed in the context of the patient's clinical history and other diagnostic tests by a qualified pathologist.

### Cautions

This test is optimized for use on B5-fixed, decalcified, paraffin-embedded bone marrow specimens.

Age of a cut paraffin section can affect immunoreactivity. Stability thresholds vary widely among published literature and are antigen dependent. Best practice is for paraffin sections to be cut within 6 weeks.

The charge of glass slides can be affected by environmental factors and subsequently may alter slide staining. Sending unsuitable glass slides can result in inconsistent staining due to poor slide surface chemistry.

Best practices for storage of positively charged slides:

- Minimize time slides are stored after being unpackaged
- Limit exposure to high humidity and heat
- Minimize exposure to plastics

### Clinical Reference

1. Rada G, Nagla S, Ali G: MUM1 and Ki67 Expression Best Predictors of Treatment Response in Diffuse Large B Cell Lymphoma Not Otherwise Specified. *Amer J Clin Pathol*. 2015 Oct;144(2,1):A147
2. Cozzolino I, Varone V, Picardi M, et al: CD10, BCL6, and MUM1 expression in diffuse large B-cell lymphoma on FNA samples. *Cancer Cytopathol*. 2016 Feb;124(2):135-143. doi:10.1002/cncy.21626
3. Heo MH, Park HY, Ko YH, Kim WS, Kim SJ: IRF4/MUM1 expression is associated with poor survival outcomes in patients with peripheral T-cell lymphoma. *J Cancer*. 2017 Mar;8(6):1018-1024. doi: 10.7150/jca.17358

### Performance

### Method Description

Immunohistochemistry on sections of paraffin-embedded tissue.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

1 to 3 days

Specimen Retention Time

Until staining is complete.

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 has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

88342-TC, primary  
88341-TC, if additional IHC

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MUM1B	Bone Marrow MUM-1/IRF4 IHC, T Only	Order only;no result

Result ID	Test Result Name	Result LOINC® Value
603218	Bone Marrow MUM-1/IRF4 IHC, T Only	Bill only; no result