

## Overview

### Useful For

Identification of antigen in membranous nephropathy

### Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
MSMNT	Mass Spectrometry, MN TC	No, (Bill Only)	No
MNLCP	Microdissection, Laser Capture, MN	No, (Bill Only)	No

### Testing Algorithm

Requests for this test are reviewed by a Mayo Clinic renal pathologist prior to testing. After review of the submitted pathology report, electron microscopy images, phospholipase A2 receptor (PLA2R) staining results, and paraffin block, testing will proceed. If PLA2R results are not available, the pathologist may contact the ordering healthcare professional for the results or for additional specimen (frozen material/slides) to conduct the studies at Mayo Clinic Laboratories.

### Method Name

Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

### NY State Available

Yes

## Specimen

### Specimen Type

Special

### Ordering Guidance

This test should be performed on cases with a confirmed diagnosis of membranous nephropathy. Ideally, these cases should already be confirmed as phospholipase A2 receptor (PLA2R) negative, based on PLA2R immunohistochemistry (IHC) or immunofluorescence (IF) testing, not PLA2R serology testing.

If PLA2R IHC or IF testing has not been performed, order test PLAIF / Phospholipase A2 Receptor (PLA2R), Renal Biopsy and submit the additional required specimen.

### Additional Testing Requirements

**If phospholipase A2 receptor testing using immunohistochemistry or immunofluorescence (IF) has not previously been performed, PLAIF / Phospholipase A2 Receptor (PLA2R), Renal Biopsy must also be ordered and will be charged**

separately. An additional frozen IF block or frozen unstained slides will be required.

### Necessary Information

The following information is required. Testing will not proceed without this information.

**Note:** Images can be submitted for the request via [Mayo Clinic ImageShare](#) (preferred) or external storage device. Be aware that ImageShare **does not support** the upload of Pathology whole slide images.

1. Preliminary pathology report and clinical history
2. Electron microscopy (EM) images
3. Immunofluorescence (IF) slides/images if EM images are not available.

### Specimen Required

**Specimen Type:** Kidney tissue

**Supplies:** Pathology Packaging Kit (T554)

**Container/Tube:** Formalin-fixed, paraffin-embedded tissue block

**Additional Information:** Do not send fixed tissue slides. Testing can only be done on paraffin-embedded tissue blocks.

### Forms

If not ordering electronically, complete, print, and send a [Renal Diagnostics Test Request](#) (T830) with the specimen.

### Specimen Minimum Volume

See Specimen Required

### Reject Due To

Fixed tissue slides Wet/frozen tissue Cytological smears Non-formalin fixed tissue Nonparaffin embedded tissue	Reject
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### Specimen Stability Information

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

### Clinical & Interpretive

## Clinical Information

Membranous nephropathy (MN) is an autoimmune disease and a common cause of nephrotic syndrome in adults. MN results from glomerular accumulation of antigen-antibody complexes along the subepithelial region of the glomerular basement membranes. A series of novel antigens have recently been identified, and many of these antigen-associated MN have distinct clinical and pathologic findings as well as outcomes. This assay is intended to identify the antigens associated with MN using laser microdissection of MN glomeruli followed by mass spectrometry. The panel of MN antigens includes CNTN1, EXT1, EXT2, FAT1, HTRA1, NCAM1, NDNF, NELL1, PCDH7, PCSK6, PLA2R, SEMA3B, and THSD7A.

## Reference Values

An interpretive report will be provided.

## Interpretation

For results with a detected peptide profile, a description will be provided. The interpretation will include a diagnosis supported by the findings and a clinical reference. A simple description will be given for results that have no peptides detected or insufficient glomeruli.

## Cautions

No significant cautionary statements

## Clinical Reference

1. Sethi S, Madden B. Mapping antigens of membranous nephropathy: almost there. *Kidney Int.* 2023;103(3):469-472
2. Rovin BH, Adler SG, Barratt J, et al. Executive summary of the KDIGO 2021 Guideline for the Management of Glomerular Diseases. *Kidney Int.* 2021;100(4):753-779
3. Sethi S. Membranous nephropathy: a single disease or a pattern of injury resulting from different diseases. *Clin Kidney J.* 2021;14(10):2166-2169
4. Bobart SA, Tehranian S, Sethi S, et al. A target antigen-based approach to the classification of membranous nephropathy. *Mayo Clin Proc.* 2021;96(3):577-591
5. Ravindran A, Casal Moura M, Fervenza FC, et al. In patients with membranous lupus nephritis, exostosin-positivity and exostosin-negativity represent two different phenotypes. *J Am Soc Nephrol.* 2021;32(3):695-706

## Performance

## Method Description

Affected areas are removed from paraffin-embedded tissues by laser microdissection. Protein digestion is performed, followed by liquid chromatography tandem mass spectrometry. (Unpublished Mayo method)

## PDF Report

No

## Day(s) Performed

Monday through Friday

## Report Available

7 to 15 days

## Specimen Retention Time

Until reported

## Performing Laboratory Location

Rochester

## 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

82542

88380

### LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MSMN	MN Target Antigen ID, LC MS, Ts	106784-2

Result ID	Test Result Name	Result LOINC® Value
620789	Interpretation	59465-5
620790	Participated in the Interpretation	No LOINC Needed
620791	Report electronically signed by	19139-5
620792	Material Received	81178-6
620793	Disclaimer	62364-5
620794	Case Number	80398-1
620795	Gross Description	22634-0
620796	Addendum	35265-8