MAYO CLINIC LABORATORIES

Test Definition: RNP

RNP Antibodies, IgG, Serum

Overview

Useful For

Evaluating patients with signs and symptoms of a connective tissue disease in whom the test for antinuclear antibodies is positive

Testing for ribonucleoprotein particle antibodies is **not useful** in patients without demonstrable antinuclear antibodies.

Testing Algorithm

For more information see Connective Tissue Disease Cascade.

Special Instructions

- Connective Tissue Disease Cascade

Method Name

Multiplex Flow Immunoassay

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

0.35 mL

Reject Due To

Gross hemolysis	Reject

Gross lipemia	Reject
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	21 days	
	Frozen	21 days	

Clinical & Interpretive

Clinical Information

Antibodies to U1 ribonucleoprotein particle (U1-RNP) are central to the diagnosis of mixed connective tissue disease and are also associated with other antinuclear antibody (ANA)-associated connective tissue diseases (CTDs) such as systemic lupus erythematosus, systemic sclerosis, undifferentiated CTD, and CTD overlap syndromes.(1-5) Immunologic characterization studies suggest that anti-U1RNP antibodies are directed toward both discontinuous and linear epitopes that are either contained in the protein sequence or are post-translationally modified. These antibodies mainly target the RNP68 or RNP70, RNPA (33 kD), and occasionally RNPC (22 kD) proteins.(4-9)

Originally described by Mattioli et al (3) by immunodiffusion assay using calf thymus extract, current solid-phase immunoassays now use diverse analytes (purified or recombinant proteins, synthetic peptides of dominant epitopes) of the 3 main proteins (RNP68 or RNP70, RNPA, and RNPC) either singly or in any of the various combinations.(4-10) Because of the use of these different antigens and combinations thereof, the nomenclature, reporting, and interpretation of anti-U1RNP antibodies remain obscure.(10) In the absence of standardized nomenclature for anti-U1-RNP antibody assays, familiarity of the analytes in specific assays and use of Hep-2 substrate by indirect immunofluorescence assay for ANA are required for appropriate interpretation. In addition, low level anti-U1-RNP antibodies in the absence of ANA have a low predictive value for ANA-CTD. The U1-RNP antibody test offered by Mayo Clinic detects antibodies to both RNP68 and RNPA proteins. Combined response is more sensitive and less specific than assays to the Sm (Smith)/RNP.(10)

For more information see Connective Tissue Disease Cascade.

Reference Values

<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

Interpretation

A positive result for anti-ribonucleoprotein particle 68/A (RNP68/A) antibodies in association with positivity of antinuclear antibodies may be consistent with a diagnosis of connective tissue disease.

Cautions

The U1 ribonucleoprotein particle (RNP) 68/A antibody is more sensitive than the Sm (Smith)/RNP antibody test. Low positive results (< or =4.0 U) without an associated positive antinuclear antibodies by indirect immunofluorescence assay

should be interpreted with caution.

Clinical Reference

1. Tanaka Y, Kuwana M, Fujii T, et al. 2019 Diagnostic criteria for mixed connective tissue disease (MCTD): From the Japan research committee of the ministry of health, labor, and welfare for systemic autoimmune diseases. Mod Rheumatol. 2021;31(1):29-33
2. Hoffmann-Vold AM, Gunnarsson R, Garen T, Midtvedt O, Molberg O. Performance of the 2013 American College of Rheumatology/European League Against Rheumatism Classification Criteria for Systemic Sclerosis (SSc) in large, well-defined cohorts of SSc and mixed connective tissue disease. J Rheumatol. 2015;42(1):60-63
3. Mattioli M, Reichlin M. Characterization of a soluble nuclear ribonucleoprotein antigen reactive with SLE sera. J Immunol. 1971;107(5):1281-1290
4. Combe B, Rucheton M, Graafland H, Lussiez V, Brunel C, Sany J. Clinical significance of anti-RNP and anti-Sm autoantibodies as determined by immunoblotting and immunoprecipitation in sera from patients with connective tissue diseases. Clin Exp Immunol. 1989;75(1):18–24
5. Ihn H, Yamane K, Yazawa N, et al. Distribution and antigen specificity of anti-U1RNP antibodies in patients with systemic sclerosis. Clin Exp Immunol. 1999;117(2):383-387
6. Pattersson I, Wang G, Smith EI, et al. The use of immunoblotting and immunoprecipitation of (U) small nuclear ribonucleoproteins in the analysis of sera of patients with mixed connective tissue disease and systemic lupus erythematosus: across-sectional, longitudinal study. Arthritis Rheum. 1986;29(8): 986-996
7. Satoh M, Krzyszczak ME, Li Y, et al. Frequent coexistence of anti-topoisomerase I and anti-U1RNP autoantibodies in African American patients associated with mild skin involvement: a retrospective clinical study. Arthritis Res Ther. 2011;13(3):R73
8. Betteridge Z, Tansley S, Shaddick G, et al. Frequency, mutual exclusivity and clinical associations of myositis autoantibodies in a combined European cohort of idiopathic inflammatory myopathy patients. J Autoimmun. 2019;101:48-55
9. Tebo AE, Peterson LK, Snyder MR, Lebiedz-Odrobina D. Clinical Significance of Anti-U1 Ribonucleoprotein Antibody Is Analyte Dependent: Implications for Laboratory Reporting, Interpretation, and Interassay Correlations. Arch Pathol Lab Med. 2023;147(12):1461-1465

Performance

Method Description

Recombinant ribonucleoprotein particle (RNP)-68 and RNP-A antigens are bound to polystyrene microspheres, which are impregnated with fluorescent dyes to create a unique fluorescent signature. RNP antibodies, if present in diluted serum, bind to the RNP antigens on the microspheres. The microspheres are washed to remove extraneous serum proteins. Phycoerythrin (PE)-conjugated antihuman IgG antibody is then added to detect IgG anti-RNP bound to the microspheres. The microspheres are washed to remove unbound conjugate, and bound conjugate is detected by laser photometry. A primary laser reveals the fluorescent signature of each microsphere to distinguish it from microspheres that are labeled with other antigens, and a secondary laser reveals the level of PE fluorescence associated with each microsphere. Results are calculated by comparing the median fluorescence response for RNP microspheres to a 4-point calibration curve.(Package insert: Bioplex 2200 ANA Screen. Bio-Rad Laboratories; 02/2019)

PDF Report

No

Day(s) Performed
Monday through Saturday

Report Available
1 to 3 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

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
86235

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
RNP	RNP Ab, IgG, S	29958-6

Result ID	Test Result Name	Result LOINC® Value
RNP	RNP Ab, IgG, S	29958-6