Test Definition: LAGGN

Granulocyte Antibody Screen, Serum

Overview

Useful For

Work-up of individuals with autoimmune neutropenia

Work-up of individuals having febrile nonhemolytic transfusion reactions

Work-up for alloimmune neonatal neutropenia

This test is **not useful for** the diagnosis of neutropenia due to marrow suppression by drugs or tumors.

Method Name

Flow Cytometry/Agglutination

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Red top (serum gel/SST are **not acceptable**)
Submission Container/Tube: Plastic vial
Specimen Volume: 1.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.
Additional Information: Only a specimen collected before a transfusion reaction is acceptable.

Specimen Minimum Volume

0.3 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	30 days	
	Ambient	7 days	
	Frozen	365 days	

Clinical & Interpretive

Clinical Information

Granulocyte antibodies are induced by pregnancy, prior transfusion, or transplants. These antibodies can cause neutropenia in various autoimmune disorders. Febrile nonhemolytic transfusion reactions and alloimmune neonatal neutropenia may also be caused by granulocyte associated antibodies, including anti-human leukocyte antigen antibodies.

Reference Values

Not applicable

Interpretation

A positive result can be due to anti-granulocyte antibodies and anti-human leukocyte antigen antibodies.

This test cannot distinguish between allo- or autoantibodies, nor can it determine the specificity of the detected antibody. Results should be correlated to clinical history.

Cautions

Testing for patients who receive human monoclonal antibodies like daratumumab may cause false-positive results due to interfering substances. Hemolytic samples have the potential for causing false-positivity and will, therefore, be rejected.

Clinical Reference

1. Flesch BK, Reil A. Molecular genetics of the human neutrophil antigens. Transfus Med Hemother. 2018;45(5):300-309. doi:10.1159/000491031
2. Gottschall JL, Triulzi DJ, Curtis B, et al. The frequency and specificity of human neutrophil antigen antibodies in a blood donor population. Transfusion. 2011;51(4):820-827. doi:10.1111/j.1537-2995.2010.02913.x
3. Browne T, Dearman RJ, Poles A. Human neutrophil antigens: Nature, clinical significance and detection. Int J Immunogenet. 2021;48(2):145-156. doi:10.1111/iji.12514
4. Baig NA, Dukek BA, Falbo DK, et al. Daratumumab interference in flow cytometric anti-granulocyte antibody testing can be overcome using non-human blocking antibodies. Vox Sang. 2021;116(1):116-122. doi:10.1111/vox.12989

Performance

Method Description

The screening for granulocyte antibodies is conducted using two methods: the granulocyte immunofluorescence test (GIFT) and the granulocyte agglutination test (GAT). The combined interpretation of GIFT/GAT results is considered the

gold standard for granulocyte antibody screening. Both methods are performed in parallel by mixing the patient's serum with freshly collected granulocytes from healthy donors.

The GIFT method detects antibodies in the patient's serum that bind to donor granulocytes through indirect immunofluorescence staining using anti-human IgG-fluorescein isothiocyanate and anti-human IgM-AF647 and analyzed by flow cytometry. The results are calculated based on the median fluorescence intensity observed in the patient's serum compared to negative control serums.

The GAT method evaluates the functional ability of donor granulocytes to agglutinate in response to antibody binding from the patient's serum. The results are manually observed using bright-field microscopy and scored based on the percentage of cell aggregates present.(Chiaretti S, Burton M, Hassel P, et al. Human neutrophil antigen 3 genotype impacts neutrophil-mediated endothelial cell cytotoxicity in a two-event model of TRALI. Blood Transfus. 2022;20(6):465-474. doi:10.2450/2022.0013-22)

PDF Report
No

Day(s) Performed
Tuesday, Thursday

Report Available
7 to 15 days

Specimen Retention Time
7 days

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
86021 x2

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
LAGGN	Granulocyte Ab Screen, S	105285-1

Test Definition: LAGGN

Granulocyte Antibody Screen, Serum

Result ID	Test Result Name	Result LOINC® Value
LAGG2	GIFT/GAT Interpretation	105288-5
LAGG3	GIFT Result	105286-9
LAGG4	GAT Result	105287-7