MAYO CLINIC LABORATORIES

Test Definition: MDC2

Movement Disorder, Autoimmune/Paraneoplastic Evaluation, Spinal Fluid

Overview

Useful For

Evaluating patients with suspected paraneoplastic or other autoimmune movement disorders including patients with ataxia, brainstem encephalitis, chorea, dyskinesias, myoclonus, and parkinsonism using spinal fluid specimens

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
MDCI	Movement Disorder Interp, CSF	No	Yes
AMPCC	AMPA-R Ab CBA, CSF	No	Yes
AMPHC	Amphiphysin Ab, CSF	No	Yes
AGN1C	Anti-Glial Nuclear Ab, Type 1	No	Yes
ANN1C	Anti-Neuronal Nuclear Ab, Type 1	No	Yes
ANN2C	Anti-Neuronal Nuclear Ab, Type 2	No	Yes
ANN3C	Anti-Neuronal Nuclear Ab, Type 3	No	Yes
APBIC	AP3B2 IFA, CSF	No	Yes
CS2CC	CASPR2-IgG CBA, CSF	No	Yes
CRMWC	CRMP-5-IgG Western Blot, CSF	Yes	Yes
DPPCC	DPPX Ab CBA, CSF	No	Yes
GABCC	GABA-B-R Ab CBA, CSF	No	Yes
GD65C	GAD65 Ab Assay, CSF	Yes	Yes
GFAIC	GFAP IFA, CSF	No	Yes
GRFIC	GRAF1 IFA, CSF	No	Yes
IG5CC	IgLON5 CBA, CSF	No	Yes
ITPIC	ITPR1 IFA, CSF	No	Yes
K11CC	KLHL11 Ab CBA, CSF	Yes	Yes
LG1CC	LGI1-IgG CBA, CSF	No	Yes
GL1IC	mGluR1 Ab IFA, CSF	No	Yes
NCDIC	Neurochondrin IFA, CSF	No	Yes
NIFIC	NIF IFA, CSF	No	Yes
NMDCC	NMDA-R Ab CBA, CSF	No	Yes
PCTRC	Purkinje Cell Cytoplasmc Ab Type Tr	No	Yes

PCA1C	Purkinje Cell Cytoplasmic Ab Type 1	No	Yes
PCA2C	Purkinje Cell Cytoplasmic Ab Type 2	No	Yes
PDEIC	PDE10A Ab IFA, CSF	No	Yes
SP5IC	Septin-5 IFA, CSF	No	Yes
SP7IC	Septin-7 IFA, CSF	No	Yes
T46IC	TRIM46 Ab IFA, CSF	No	Yes

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
AGNBC	AGNA-1 Immunoblot, CSF	No	No
AINCC	Alpha Internexin CBA, CSF	No	No
AMPIC	AMPA-R Ab IF Titer Assay, CSF	No	No
AMIBC	Amphiphysin Immunoblot, CSF	No	No
AN1BC	ANNA-1 Immunoblot, CSF	No	No
AN2BC	ANNA-2 Immunoblot, CSF	No	No
DPPTC	DPPX Ab IFA Titer, CSF	No	No
GABIC	GABA-B-R Ab IF Titer Assay, CSF	No	No
GRFCC	GRAF1 CBA, CSF	No	No
GRFTC	GRAF1 IFA Titer, CSF	No	No
IG5TC	IgLON5 IFA Titer, CSF	No	No
ITPCC	ITPR1 CBA, CSF	No	No
ITPTC	ITPR1 IFA Titer, CSF	No	No
GL1TC	mGluR1 Ab IFA Titer, CSF	No	No
GL1CC	mGluR1 Ab CBA, CSF	No	No
NFHCC	NIF Heavy Chain CBA, CSF	No	No
NIFTC	NIF IFA Titer, CSF	No	No
NFLCC	NIF Light Chain CBA, CSF	No	No
NMDIC	NMDA-R Ab IF Titer Assay, CSF	No	No
PC1BC	PCA-1 Immunoblot, CSF	No	No
PCTBC	PCA-Tr Immunoblot, CSF	No	No
AN1TC	ANNA-1 Titer, CSF	No	No
AN2TC	ANNA-2 Titer, CSF	No	No
AN3TC	ANNA-3 Titer, CSF	No	No
APBCC	AP3B2 CBA, CSF	No	No

APBTC	AP3B2 IFA Titer, CSF	No	No
APHTC	Amphiphysin Ab Titer, CSF	No	No
CRMTC	CRMP-5-IgG Titer, CSF	No	No
GFACC	GFAP CBA, CSF	No	No
GFATC	GFAP IFA Titer, CSF	No	No
NCDCC	Neurochondrin CBA, CSF	No	No
NCDTC	Neurochondrin IFA Titer, CSF	No	No
PC1TC	PCA-1 Titer, CSF	No	No
PC2TC	PCA-2 Titer, CSF	No	No
PCTTC	PCA-Tr Titer, CSF	No	No
PDETC	PDE10A Ab IFA Titer, CSF	No	No
SP5CC	Septin-5 CBA, CSF	No	No
SP5TC	Septin-5 IFA Titer, CSF	No	No
SP7CC	Septin-7 CBA, CSF	No	No
SP7TC	Septin-7 IFA Titer, CSF	No	No
T46CC	TRIM46 Ab CBA, CSF	No	No
T46TC	TRIM46 Ab IFA Titer, CSF	No	No
AGNTC	AGNA-1 Titer, CSF	No	No
K11TC	KLHL11 Ab IFA Titer, CSF	No	No

Testing Algorithm

If the immunofluorescence assay (IFA) patterns suggest amphiphysin antibody, then the amphiphysin immunoblot and amphiphysin IFA titer will be performed at an additional charge.

If the IFA pattern suggests antiglial nuclear antibody (AGNA)-1, then AGNA-1 immunoblot and AGNA-1 IFA titer will be performed at an additional charge.

If the IFA pattern suggests antineuronal nuclear antibody type 1 (ANNA-1), then the ANNA-1 immunoblot, ANNA-1 IFA titer, and ANNA-2 immunoblot will be performed at an additional charge.

If the IFA pattern suggests ANNA-2, then the ANNA-2 immunoblot, ANNA-2 IFA titer, and ANNA-1 immunoblot will be performed at an additional charge.

If the client requests or the IFA pattern suggests ANNA-3 antibodies, then the ANNA-3 IFA titer will be performed at an additional charge.

If the IFA pattern suggests adaptor protein 3 beta 2 (AP3B2) antibodies, then the AP3B2 cell-binding assay (CBA) and AP3B2 IFA titer will be performed at an additional charge.

If the collapsin response-mediator protein-5 (CRMP-5)-IgG Western blot is positive, then the CRMP-5-IgG IFA titer will be performed at an additional charge.

If the IFA pattern suggests Purkinje cytoplasmic antibody type 1 (PCA-1), then the PCA-1 IB and PCA-1 IFA titer will be performed at an additional charge.

If the IFA pattern suggests PCA-Tr, then the PCA-Tr IB and PCA-Tr IFA titer will be performed at an additional charge.

If the IFA pattern suggests PCA-2 antibody, then the PCA-2 IFA titer will be performed at an additional charge.

If the alpha-amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA)-receptor CBA result is positive, then AMPA-receptor antibody IFA titer will be performed at an additional charge.

If the dipeptidyl-peptidase-like protein-6 (DPPX) antibody CBA is positive, then DPPX antibody IFA titer will be performed at an additional charge.

If the gamma-aminobutyric acid B (GABA-B)-receptor CBA result is positive, then the GABA-B-receptor antibody IFA titer will be performed at an additional charge.

If the IFA pattern suggests glial fibrillary acidic protein (GFAP) antibody, then the GFAP antibody CBA and GFAP antibody IFA titer will be performed at an additional charge.

If the IFA pattern suggests metabotropic glutamate receptor 1 (mGluR1) antibody, then the mGluR1 CBA and mGluR1 antibody IFA titer will be performed at an additional charge.

If the N-methyl-D-aspartate (NMDA)-receptor CBA result is positive, then the NMDA-receptor antibody IFA titer will be performed at an additional charge.

If the IFA pattern suggests GTPase regulator associated with focal adhesion kinase-1 (GRAF1) antibody, then the GRAF1 CBA and GRAF1 antibody IFA titer will be performed at an additional charge.

If the IgLON5 antibody CBA result is positive, then the IgLON5 antibody IFA titer will be performed at an additional charge.

If the IFA pattern suggests inositol 1,4,5-trisphosphate receptor (ITPR1) antibody, then the ITPR1 CBA and ITPR1 antibody IFA titer will be performed at an additional charge.

If the IFA pattern suggests neuronal intermediate filament (NIF) antibody, then the alpha internexin CBA, NIF heavy chain CBA, NIF light chain CBA, and NIF antibody IFA titer will be performed at an additional charge.

If the Kelch-like protein 11 (KLHL11) CBA result is reactive, then the KLHL11 antibody IFA titer will be performed at an additional charge.

If the IFA pattern suggests neurochondrin antibody, then the neurochondrin antibody CBA and neurochondrin IFA titer will be performed at an additional charge.

If the IFA pattern suggests septin-5 antibody, then the septin-5 CBA and septin-5 IFA titer will be performed at an additional charge.

If the IFA pattern suggests septin-7 antibody, then the septin-7 CBA and septin-7 IFA titer will be performed at an additional charge.

If the IFA pattern suggests tripartite motif-containing protein 46 (TRIM46) antibody, then the TRIM46 antibody CBA and TRIM46 IFA titer will be performed at an additional charge.

If the IFA pattern suggests phosphodiesterase 10A (PDE10A) antibody, then the PDE10A antibody IFA titer will be performed at an additional charge.

For more information see:
Autoimmune/Paraneoplastic Movement Disorder Evaluation Algorithm-Spinal Fluid
Central Nervous System Demyelinating Disease Diagnostic Algorithm

Special Instructions

- Autoimmune/Paraneoplastic Movement Disorder Evaluation Algorithm-Spinal Fluid
- Central Nervous System Demyelinating Disease Diagnostic Algorithm

Method Name

GRFIC, GRFTC, K11TC, AGN1C, AGNTC, AMPIC, AMPHC, APHTC, ANN1C, AN1TC, ANN2C, AN2TC, ANN3C, AN3TC, APBIC, APBTC, CRMTC, DPPTC, GABIC, GFAIC, GFATC, IG5TC, ITPIC, ITPTC, GL1IC, GL1TC, NCDIC, NCDTC, NIFIC, NIFTC, NMDIC, PCA1C, PC1TC, PCA2C, PC2TC, PCTRC, PCTTC, PDEIC, PDETC, SP5IC, SP5TC, SP7IC, SP7TC, T46IC, T46TC: Indirect Immunofluorescence Assay (IFA)

GRFCC, K11CC, AMPCC, APBCC, CS2CC, DPPCC, GABCC, GFACC, IG5CC, ITPCC, LG1CC, GL1CC, NCDCC, AINCC, NFLCC, NFHCC, NMDCC, SP5CC, SP7CC, T46CC: Cell Binding Assay (CBA)

CRMWC: Western Blot (WB)

AGNBC, AMIBC, AN1BC, AN2BC, PC1BC, PCTBC: Immunoblot (IB)

GD65C: Radioimmunoassay (RIA)

MDCI: Medical Interpretation

NY State Available

Yes

Specimen

Specimen Type
CSF

Ordering Guidance
Multiple neurological phenotype-specific autoimmune/paraneoplastic evaluations are available. For more information as well as phenotype-specific testing options, refer to Autoimmune Neurology Test Ordering Guide.

When more than one evaluation is ordered on the same order number the duplicate will be canceled.

For a list of antibodies performed with each evaluation, see Autoimmune Neurology Antibody Matrix.

Necessary Information
Provide the following information:
-Relevant clinical information
-Ordering provider name, phone number, mailing address, and e-mail address

Specimen Required
Patient Preparation: For optimal antibody detection, specimen collection is recommended before initiation of immunosuppressant medication, or corticosteroid or intravenous immunoglobulin (IVIg) treatment.
Container/Tube: Sterile vial
Preferred: Collection vial number 1
Acceptable: Any collection vial
Specimen Volume: 4 mL

Forms
If not ordering electronically, complete, print, and send a Neurology Specialty Testing Client Test Request (T732) with the specimen.

Specimen Minimum Volume
2 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Refrigerated (preferred)	28 days	
	Frozen	28 days	
	Ambient	72 hours	

Clinical & Interpretive

Clinical Information

Autoimmune movement disorders encapsulate a large and diverse group of neurologic disorders occurring either in isolation or accompanying more diffuse autoimmune encephalitic illnesses.

The full range of movement phenomena has been described, and, as they often occur in adults, many of the presentations can mimic neurodegenerative disorders, such as autoimmune chorea mimicking Huntington disease. Disorders may be ataxic, hypokinetic (parkinsonism), or hyperkinetic (myoclonus, chorea other dyskinetic disorders). Associated disorders may fall under the rubric of brainstem encephalitis.

The autoantibody targets are diverse and include neuronal surface proteins, such as leucine-rich, glioma-inactivated 1 (LGI1), as well as antibodies reactive with intracellular antigens (such as Purkinje cell cytoplasmic antibody-1 [PCA-1]) that are markers of a central nervous system process mediated by CD8+ cytotoxic T cells.

In some instances (such as PCA-1 autoimmunity), antibodies detected in serum and cerebrospinal fluid can be indicative of a paraneoplastic cause and may direct the cancer search. In other instances (such as 65-kDa isoform of glutamic acid decarboxylase [GAD65] autoimmunity), a paraneoplastic cause is very unlikely, and early treatment with immunotherapy may promote improvement or recovery.

Reference Values

Test ID	Reporting name	Methodology*	Reference value
MDCI	Movement Disorder Interp, CSF	Medical interpretation	Interpretive report
AMPCC	AMPA-R Ab CBA, CSF	CBA	Negative
AMPHC	Amphiphysin Ab, CSF	IFA	Negative
AGN1C	Anti-Glial Nuclear Ab, Type 1	IFA	Negative
ANN1C	Anti-Neuronal Nuclear Ab, Type 1	IFA	Negative
ANN2C	Anti-Neuronal Nuclear Ab, Type 2	IFA	Negative
ANN3C	Anti-Neuronal Nuclear Ab, Type 3	IFA	Negative
APBIC	AP3B2 IFA, CSF	IFA	Negative
CS2CC	CASPR2-IgG CBA, CSF	CBA	Negative
CRMWC	CRMP-5-IgG Western Blot, CSF	WB	Negative
DPPCC	DPPX Ab CBA, CSF	CBA	Negative
GABCC	GABA-B-R Ab CBA, CSF	CBA	Negative

GD65C	GAD65 Ab Assay, CSF	RIA	< or =0.02 nmol/L Reference values apply to all ages.
GRFIC	GRAF1 IFA, CSF	IFA	Negative
GFAIC	GFAP IFA, CSF	IFA	Negative
IG5CC	IgLON5 CBA, CSF	CBA	Negative
ITPIC	ITPR1 IFA, CSF	IFA	Negative
K11CC	KLHL11 Ab CBA, CSF	CBA	Negative
LG1CC	LGI1-IgG CBA, CSF	CBA	Negative
GL1IC	mGluR1 Ab IFA, CSF	IFA	Negative
NCDIC	Neurochondrin IFA, CSF	IFA	Negative
NIFIC	NIF IFA, CSF	IFA	Negative
NMDCC	NMDA-R Ab CBA, CSF	CBA	Negative
PCTRC	Purkinje Cell Cytoplasmic Ab Type Tr	IFA	Negative
PCA1C	Purkinje Cell Cytoplasmic Ab Type 1	IFA	Negative
PCA2C	Purkinje Cell Cytoplasmic Ab Type 2	IFA	Negative
PDEIC	PDE10A Ab IFA, CSF	IFA	Negative
SP5IC	Septin-5 IFA, CSF	IFA	Negative
SP7IC	Septin-7 IFA, CSF	IFA	Negative
T46IC	TRIM46 IFA, CSF	IFA	Negative

Reflex Information:

Test ID	Reporting name	Methodology*	Reference value
AGNBC	AGNA-1 Immunoblot, CSF	IB	Negative
AGNTC	AGNA-1 Titer, CSF	IFA	<1:2
AINCC	Alpha Internexin CBA, CSF	CBA	Negative
AMPIC	AMPA-R Ab IF Titer Assay, CSF	IFA	<1:2
AMIBC	Amphiphysin Immunoblot, CSF	IB	Negative
AN1BC	ANNA-1 Immunoblot, CSF	IB	Negative
AN1TC	ANNA-1 Titer, CSF	IFA	<1:2
AN2BC	ANNA-2 Immunoblot, CSF	IB	Negative
AN2TC	ANNA-2 Titer, CSF	IFA	<1:2
AN3TC	ANNA-3 Titer, CSF	IFA	<1:2
APBCC	AP3B2 CBA, CSF	CBA	Negative
APBTC	AP3B2 IFA Titer, CSF	IFA	<1:2
APHTC	Amphiphysin Ab Titer, CSF	IFA	<1:2
CRMTC	CRMP-5-IgG Titer, CSF	IFA	<1:2
DPPTC	DPPX Ab IFA Titer, CSF	IFA	<1:2
GABIC	GABA-B-R Ab IF Titer Assay, CSF	IFA	<1:2
GFACC	GFAP CBA, CSF	CBA	Negative
GFATC	GFAP IFA Titer, CSF	IFA	<1:2
GRFCC	GRAF1 CBA, CSF	CBA	Negative

GRFTC	GRAF1 IFA Titer, CSF	IFA	<1:2
IG5TC	IgLON5 IFA Titer, CSF	IFA	<1:2
ITPCC	ITPR1 CBA, CSF	CBA	Negative
ITPTC	ITPR1 IFA Titer, CSF	IFA	<1:2
K11TC	KLHL11 Ab IFA Titer, CSF	IFA	<1:2
GL1TC	mGluR1 Ab IFA Titer, CSF	IFA	<1:2
GL1CC	mGluR1 Ab CBA, CSF	CBA	Negative
NCDCC	Neurochondrin CBA, CSF	CBA	Negative
NCDTC	Neurochondrin IFA Titer, CSF	IFA	<1:2
NFHCC	NIF Heavy Chain CBA, CSF	CBA	Negative
NIFTC	NIF IFA Titer, CSF	IFA	<1:2
NFLCC	NIF Light Chain CBA, CSF	CBA	Negative
NMDIC	NMDA-R Ab IF Titer Assay, CSF	IFA	<1:2
PC1BC	PCA-1 Immunoblot, CSF	IB	Negative
PC1TC	PCA-1 Titer, CSF	IFA	<1:2
PC2TC	PCA-2 Titer, CSF	IFA	<1:2
PCTTC	PCA-Tr Titer, CSF	IFA	<1:2
PCTBC	PCA-Tr Immunoblot, CSF	IB	Negative
PDETC	PDE10A Ab IFA Titer, CSF	IFA	<1:2
SP5CC	Septin-5 CBA, CSF	CBA	Negative
SP5TC	Septin-5 IFA Titer, CSF	IFA	<1:2
SP7CC	Septin-7 CBA, CSF	CBA	Negative
SP7TC	Septin-7 IFA Titer, CSF	IFA	<1:2
T46CC	TRIM46 CBA, CSF	CBA	Negative
T46TC	TRIM46 IFA Titer, CSF	IFA	<1:2

*Methodology abbreviations:
Immunofluorescence assay (IFA)
Cell-binding assay (CBA)
Western blot (WB)
Radioimmunoassay (RIA)
Immunoblot (IB)

Neuron-restricted patterns of IgG staining that do not fulfill criteria for ANNA-1, ANNA-2, ANNA-3, CRMP-5-IgG, PCA-1, PCA-2, or PCA-Tr may be reported as "unclassified anti-neuronal IgG." Complex patterns that include nonneuronal elements may be reported as "uninterpretable."

Interpretation

A positive antibody result is consistent with a diagnosis of an autoimmune movement disorder.

A search for cancer may be indicated, depending on the antibody profile.

A trial of immune therapy may bring about improvement in neurological symptoms.

Cautions

A negative antibody test result does not exclude an autoimmune movement disorder.

Corticosteroid treatment prior to the cerebrospinal fluid (CSF) collection may cause a false-negative result.

Intravenous immunoglobulin treatment prior to the CSF collection may cause a false-positive result.

Clinical Reference

1. Honorat JA, McKeon A. Autoimmune movement disorders: a clinical and laboratory approach. Curr Neurol Neurosci Rep. 2017;17(1):4 doi:10.1007/s11910-017-0709-2
2. Dubey D, Wilson MR, Clarkson B, et.al. Expanded clinical phenotype, oncological associations, and immunopathologic insights of paraneoplastic Kelch-like protein-11 encephalitis. JAMA Neurol. 2020;77(11):1420-1429. doi:10.1001/jamaneurol.2020.2231

Performance

Method Description

Cell-Binding Assay:
Patient specimen is applied to a composite slide containing transfected and nontransfected HEK-293 cells. After incubation and washing, fluorescein-conjugated goat-antihuman IgG is applied to detect the presence of patient IgG binding.(Package insert: IIFT: Neurology Mosaics, Instructions for the indirect immunofluorescence test. EUROIMMUN; FA_112d-1_A_UK_C13, 02/2019)

Methodology for detecting Kelch-like protein 11 (KLHL11)-IgG uses an in-house developed cell binding assay (CBA) with confirmation by a tissue indirect immunofluorescence assay (IFA). The CBA utilizes HEK293 cells that are stably transfected with DNA encoding the KLHL11 protein that has been tagged with green fluorescent protein (GFP). Since KLHL11 is localized to cytoplasmic vesicles when ectopically expressed, cells will be fixed and permeabilized prior to exposure to patient sample. Patients that are positive for KLHL11-IgG will have human IgG bound to the transfected cells. Binding will colocalize with the GFP-tagged KLHL11 protein in cytoplasmic vesicles. Patient IgG will be detected using a tetramethylrhodamine conjugated anti-human secondary antibody. The negative samples will not bind to KLHL11-GFP in transfected cells. Performed in a 96 well plate format, the plates are scanned, and images saved using the ImageXpress Micro Confocal High-Content Imaging System (Molecular Devices). Images will be scored positive or negative.(Unpublished Mayo method)

Indirect Immunofluorescence Assay:
The patient's sample is tested by a standardized IFA that uses a composite frozen section of mouse cerebellum, kidney, and gut tissues. After incubation with sample and washing, fluorescein-conjugated goat-antihuman IgG is applied. Neuron-specific autoantibodies are identified by their characteristic fluorescence staining patterns. Samples that are scored positive for any neuronal nuclear or cytoplasmic autoantibody are titrated to an endpoint. Interference by

coexisting non-neuron-specific autoantibodies can usually be eliminated by serologic absorption.(Honorat JA, Komorowski L, Josephs KA, et al. IgLON5 antibody: neurological accompaniments and outcomes in 20 patients. Neruol Neruoimmunol Neruoinflamm. 2017;4(5):e385. doi:10.1212/NXI.0000000000000385)

Radioimmunoassay:
(125)I-labeled recombinant human antigens or labeled receptors are incubated with patient specimen. After incubation, anti-human IgG is added to form an immunoprecipitate. The amount of (125)I-labeled antigen in the immunoprecipitate is measured using a gamma-counter. The amount of gamma emission in the precipitate is proportional to the amount of antigen-specific IgG in the specimen. Results are reported as units of precipitated antigen (nmol) per liter of patient sample.(Griesmann GE, Kryzer TJ, Lennon VA. Autoantibody profiles of myasthenia gravis and Lambert-Eaton myasthenic syndrome. In: Rose NR, Hamilton RG, et al. eds. Manual of Clinical and Laboratory Immunology. 6th ed. ASM Press: 2002:1005-1012; Jones AL, Flanagan EP, Pittock SJ, et al. Responses to and outcomes of treatment of autoimmune cerebellar ataxia in adults. JAMA Neurol. 2015;72[11]:1304-1312. doi:10.1001/jamaneurol.2015.2378)

Western Blot:
Neuronal antigens extracted aqueously from adult rat cerebellum, full-length recombinant human collapsin response-mediator protein-5 (CRMP-5), or full-length recombinant human amphiphysin protein is denatured, reduced, and separated by electrophoresis on 10% polyacrylamide gel. IgG is detected autoradiographically by enhanced chemiluminescence.(Yu Z, Kryzer TJ, Griesmann GE, et al. CRMP-5 neuronal autoantibody: marker of lung cancer and thymoma-related autoimmunity. Ann Neurol. 2001;49[2]:146-154; Dubey D, Jitprapaikulsan J, Bi H, et al. Amphiphysin-IgG autoimmune neuropathy: A recognizable clinicopathologic syndrome. Neurology. 2019;93(20):e1873-e1880. doi:10.1212/WNL.0000000000008472)

Immunoblot:
All steps are performed at room temperature (18-28 degrees C) utilizing the EUROBlot One instrument. Diluted patient specimen (1:12.5) is added to test strips (strips containing recombinant antigen manufactured and purified using biochemical methods) in individual channels and incubated for 30 minutes. Positive specimens will bind to the purified recombinant antigen and negative specimens will not bind. Strips are washed to remove unbound antibodies and then incubated with anti-human IgG antibodies (alkaline phosphatase-labelled) for 30 minutes. The strips are again washed to remove unbound anti-human IgG antibodies and nitroblue tetrazolium chloride/5-bromo-4-chloro-3-indolylphosphate substrate is added. Alkaline phosphatase enzyme converts the soluble substrate into a colored insoluble product on the membrane to produces a black band. Strips are digitized via picture capture on the EUROBlot One instrument and evaluated with the EUROLineScan software.(O'Connor K, Waters P, Komorowski L, et al. GABAA receptor autoimmunity: A multicenter experience. Neurol Neuroimmunol Neuroinflamm. 2019;6[3]:e552 doi:10.1212/NXI.0000000000000552)

PDF Report
No

Day(s) Performed
Profile tests: Monday through Sunday; Reflex tests: Varies

Report Available
8 to 12 days

Specimen Retention Time
28 days

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
86255 x26
84182
86341
0432U
84182-AGNBC (if appropriate)
86256-GNTC (if appropriate)
86255-AINCC (if appropriate)
84182-AMIBC (if appropriate)
86256-AMPIC (if appropriate)
84182-AN1BC (if appropriate)
86256-AN1TC (if appropriate)
84182-AN2BC (if appropriate)
86256-AN2TC (if appropriate)
86256-AN3TC (if appropriate)
86255-APBCC (if appropriate)
86256-APBTC (if appropriate)
86256-APHTC (if appropriate)
86256-CRMTC (if appropriate)
86256-DPPTC (if appropriate)
86256-GABIC (if appropriate)
86255-GFACC (if appropriate)
86256-GFATC (if appropriate)
86255-GL1CC (if appropriate)

86256-GL1TC (if appropriate)
86255-GRFCC (if appropriate)
86256-GRFTC (if appropriate)
86256-IG5TC (if appropriate)
86255-ITPCC (if appropriate)
86256-ITPTC (if appropriate)
86256-K11TC (if appropriate)
86255-NCDCC (if appropriate)
86256-NCDTC (if appropriate)
86255-NFHCC (if appropriate)
86255-NFLCC (if appropriate)
86256-NIFTC (if appropriate)
86256-NMDIC (if appropriate)
84182-PC1BC (if appropriate)
86256-PC1TC (if appropriate)
86256-PC2TC (if appropriate)
84182-PCTBC (if appropriate)
86256-PCTTC (if appropriate)
86256-PDETC (if appropriate)
86255-SP5CC (if appropriate)
86256-SP5TC (if appropriate)
86255-SP7CC (if appropriate)
86256-SP7TC (if appropriate)
86255-T46CC (if appropriate)
86256-T46TC (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MDC2	Movement, Autoimm/Paraneo, CSF	94712-7

Result ID	Test Result Name	Result LOINC® Value
89079	AGNA-1, CSF	90827-7
5906	Amphiphysin Ab, CSF	90815-2
3852	ANNA-1, CSF	44768-0
7472	ANNA-2, CSF	56959-0
21633	ANNA-3, CSF	90836-8
3988	PCA-1, CSF	90841-8
21632	PCA-2, CSF	90843-4
21631	PCA-Tr, CSF	90845-9
21747	CRMP-5-IgG Western Blot, CSF	53707-6
21702	GAD65 Ab Assay, CSF	94359-7
61513	NMDA-R Ab CBA, CSF	93502-3

61514	AMPA-R Ab CBA, CSF	93491-9
61515	GABA-B-R Ab CBA, CSF	93426-5
64280	LGI1-IgG CBA, CSF	94288-8
64282	CASPR2-IgG CBA, CSF	94286-2
64927	mGluR1 Ab IFA, CSF	94361-3
64934	DPPX Ab CBA, CSF	94283-9
601997	Movement Disorder Interp, CSF	69048-7
618902	IFA Notes	48767-8
605156	GFAP IFA, CSF	94360-5
606953	ITPR1 IFA, CSF	96467-6
606959	GRAF1 IFA, CSF	96473-4
606965	NIF IFA, CSF	96490-8
606951	IgLON5 CBA, CSF	96481-7
610580	KLHL11 Ab CBA, CSF	99073-9
615862	AP3B2 IFA, CSF	101907-4
615866	Neurochondrin IFA, CSF	101451-3
615874	Septin-7 IFA, CSF	101464-6
615870	Septin-5 IFA, CSF	101461-2
620067	PDE10A Ab IFA, CSF	103842-1
616446	TRIM46 Ab IFA, CSF	103843-9