Lab Dept: Serology
Test Name: EPILEPSY AUTOIMMUNE EVALUATION

General Information
Lab Order Codes: EPS1
Synonyms: N/A
CPT Codes:
83519-ACh receptor (muscle) binding antibody
83519-AChR ganglionic neuronal antibody
83519-P/Q-type calcium channel antibody
86255-AGNA-1
86255-Amphiphysin
86255-ANNA-1
86255-ANNA-2
86255-ANNA-3
86255-CRMP-5-IgG
86255-PCA-2
86255-PCA-Tr
86255-AMPAR-Ab
86255-GABAR-Ab
86255-NMDAR-Ab
86255-LG1CS
86255-CS2CS
86255-DPPX
86255-GL1IS
86255-GFAIS
86341-GAD65
The following reflex testing may be added on at an additional charge:
86255-PCA-1 (if appropriate)
84182-Amphiphysin Western blot (if appropriate)
84182-CRMP-5 Western blot confirmation (if appropriate)
84182-Paraneoplastic autoantibody Western blot confirmation (if appropriate)
86256-AMPAR-Ab titer (if appropriate)
86256-GABAR-Ab titer (if appropriate)
86255-DPPX Ab CBA (if appropriate)
86256-DPPX Ab IFA (if appropriate)
86256-GL1TS (if appropriate)
86255-GL1CS (if appropriate)
86256-GFATS (if appropriate)
83519-ARBI (if appropriate)
83519-ARMO (if appropriate)

Test Includes:
If indirect IFA suggests ANN1S, ANN2S, ANN3S, PCAB2, PCATR, AMPHS, CRMS, AGN1S, is indeterminate, then paraneoplastic autoantibody Western blot is performed at an additional charge.
If client requests, or if IFA patterns suggest CRMP-5-IgG, then CRMP-5-IgG Western blot, ACh Receptor muscle binding ab and aCH muscle modulating ab are performed at an additional charge.

If IFA patterns suggest amphiphysin antibody, then amphiphysin Western blot is performed at an additional charge.

If IFA pattern suggest NMO/AQP4-IgG, then NMO/AQP4-IgG FACS is performed at an additional charge.

If IFA pattern suggest AMPA-R antibody and AMPA-R antibody CBA is positive, then AMPA-R IF titer is performed at an additional charge.

If IFA pattern suggest GABA-B-R antibody and GABA-B-R antibody CBA is positive, then GABA-B-R IF titer is performed at an additional charge.

If IFA pattern suggests GFAP antibody, the GFAP IFA titer and GFAP CBA are performed at an additional charge.

If IFA patterns suggest NMDA-receptor ab, and NMDA-receptor ab CBA is positive, then NMDA-receptor ab IF titer assay is performed at an additional charge.

If IFA patterns suggest PCA-1, the Purkinje cell cytoplasmic antibody type 1 assay is performed at an additional charge.

**Logistics**

**Test Indications:**
This assay is useful for investigating new onset cryptogenic epilepsy with incomplete seizure control and duration less than 2 years in serum specimens plus one or more of the following:

- Psychiatric accompaniments (psychosis, hallucinations), Movement disorder (myclonus, tremor, dyskinesias), Headache, Cognitive impairment/encephalopathy, Autoimmune stigmata, Smoking History, History of Cancer, Investigating Seizures, a rising Autoantibody titer in a previously seropositive patient suggests cancer recurrence.

**Lab Testing Sections:**
Serology-Sendouts

**Referred to:**
Mayo Clinical Laboratory (MML Code: EPS2)

**Phone Numbers:**
MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:**
Daily, 24 hours

**Turnaround Time:**
4- 10 days (performed Monday- Thursday, 04:00p.m by Friday)

**Special Instructions:**
N/A
**Specimen**

**Specimen Type:** Blood

**Container:** SST (Marble, Gold or Red) tube

**Draw Volume:** 12 mL (Minimum: 6 mL) blood

**Processed Volume:** 4 mL (Minimum: 2 mL) blood

**Collection:** Routine blood collection

**Special Processing:** Lab Staff: Centrifuge specimen, remove serum from cells, aliquot into a screw-capped round bottom plastic vial. Store and ship at refrigerated temperatures. Forward promptly.

**Patient Preparation:** None

**Sample Rejection:** Mislabeled or unlabeled; Gross Hemolysis; Lipemic, grossly icteric

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**Interpretive**

<table>
<thead>
<tr>
<th>Antibody</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANNA-1</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>ANNA-2</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>ANNA-3</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>ANNA-1</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>AGNA-1</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>PCA-2</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>PCA-Tr</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>Amphiphysin Ab</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>CRMP-5-IgG</td>
<td>&lt;1:240</td>
</tr>
<tr>
<td>N-Type Calcium Channel Ab</td>
<td>&lt; or= 0.03 nmol/L</td>
</tr>
<tr>
<td>P/Q-Type Calcium Channel Ab</td>
<td>&lt; or= 0.02 nmol/L</td>
</tr>
<tr>
<td>ACh Receptor(Muscle) Binding Ab</td>
<td>&lt; or= 0.02 nmol/L</td>
</tr>
<tr>
<td>ACh Ganglionic Neuronal Ab</td>
<td>&lt; or= 0.02 nmol/L</td>
</tr>
<tr>
<td>Neuronal VGKC Autoantibody</td>
<td>&lt; or= 0.02 nmol/L</td>
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<tr>
<td>GAD65 Ab</td>
<td>&lt; or= 0.02 nmol/L</td>
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<tr>
<td>NMDA-R Ab CBA</td>
<td>Negative</td>
</tr>
<tr>
<td>GABA-B-R- Ab CBA</td>
<td>Negative</td>
</tr>
<tr>
<td>LGI1-IgG CBA</td>
<td>Negative</td>
</tr>
<tr>
<td>CASPR2-IgG CBA</td>
<td>Negative</td>
</tr>
<tr>
<td>AMPA-R Ab CBA</td>
<td>Negative</td>
</tr>
<tr>
<td>DPPX Ab IFA</td>
<td>Negative</td>
</tr>
<tr>
<td>GFAP IFA</td>
<td>Negative</td>
</tr>
<tr>
<td>mGluRq Ab IFA</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**Reflex Tests**

| PCA-1                        | <1:240          |
Paraneoplastic Western Blot | Negative
---|---
CRMP-5-IgG Western Blot | Negative
ACh Receptor (Muscle) Binding Ab | < or = 0.02 nmol/L
ACh Receptor (Muscle) Modulating Ab | 0-20%
DPPX Ab CBA | Negative
DPPX Ab IFA Titer | <1:240
GFAP CBA | Negative
GFAP IFA Titer | <1:240
Amphiphysin Western Blot | Negative
mGluR1 Ab CBA | Negative
mGluR1 Ab IFA Titer | <1:240
NMDA-R Ab IF Titer Assay | <1:120
AMPA-R-Ab IF Titer Assay | <1:120
GABA-B-R-Ab IF Titer Assay | <1:120

Neuron-restricted patterns of IgG staining that do not fulfill criterial for ANN1, ANNA-2, CRMP-5 IgG, PCA-1, PCA-2, or PCA-Tr may be reported as "unclassified anti-neuronal IgG." Complex patterns that include non-neuronal elements may be reported as "uninterpretable."

Note: CRMP-5 titers lower that 1:240 are detectable by recombinant CRMP-5 Western blot analysis. CRMP Western blot analysis will be done on request on stored serum (held 4 weeks). This supplemental testing is recommended in cases of chorea, vision loss, cranial neuropathy, and myelopathy.

Critical Values: N/A

Limitations: Negative results do not exclude autoimmune epilepsy or cancer.

This test does not detect Ma2 antibody (alias: MaTa). Ma2 antibody has been described in patients with brainstem and limbic encephalitis in the context of testicular germ cell neoplasms. Scrotal ultrasound is advisable in men who present with unexplained subacute encephalitis.

Methodology: Indirect Immunofluorescence Assay (IFA), Western Blot (WB), Cell Binding Assay (CBA), Live Cell Assay (LCA), and Immunoprecipitation Assay (IPA)

References: Mayo Clinical Laboratories June 2019

Updates: 6/21/2019: Panel updated per Mayo, change in base test and new reflexes added.