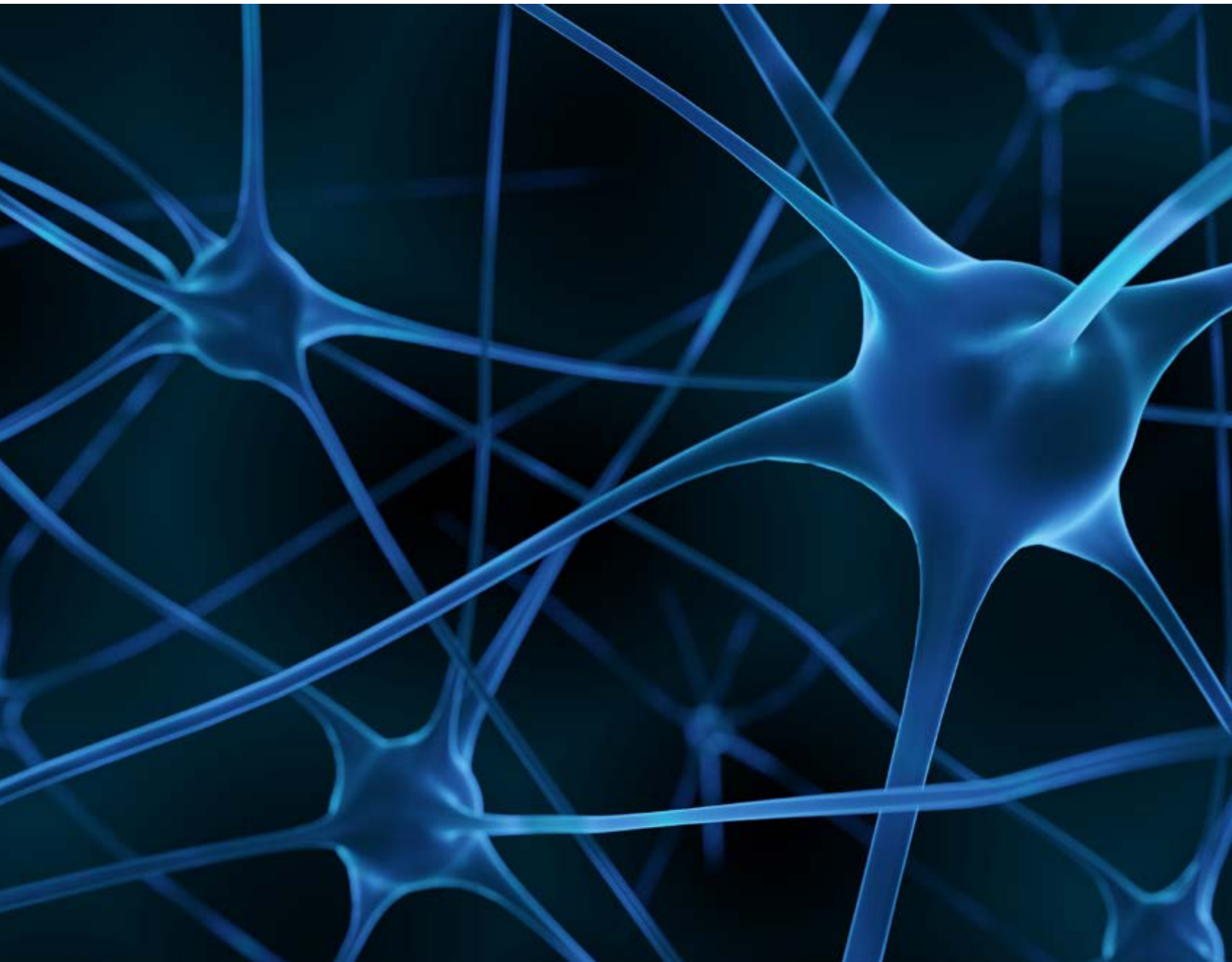
MAYO CLINIC
LABORATORIES

# Autoimmune Neurology Antibody Matrix

## A tool to guide test ordering



# The evolution of phenotype-specific antibody testing

Autoimmune neurology testing is rapidly evolving with increasing numbers of clinically relevant biomarkers discovered each year. Mayo Clinic's neuroimmunology laboratory has developed a unique approach to ease physician burden and improve patient care. The concept of phenotype-specific antibody evaluations was created to enable physicians to select a test based on clinical presentation. Our testing includes the most relevant antibodies associated with each disease-state and the results provide clinically actionable answers in the shortest amount of time. We continually evaluate these panels and add or remove antibodies when necessary.

### WHICH SPECIMEN SHOULD I TEST?

Certain neural antibodies are detected more readily in serum (e.g., LGI1, CASPR2), while others can be detected more readily in CSF (e.g., NMDA, GFAP). Testing both, simultaneously or sequentially, maximizes diagnostic yield.

**30**
classified antibodies reported in our panels.

**6–7**
unclassified antibodies called-out every day.

| | | PLASMA MEMBRANE SPECIFICITIES | | | | | | | | | | | | | | | | | NUCLEAR AND CYTOPLASMIC SPECIFICITIES | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NMDA-R | LGI1 | CASPR2 | AMPA-R | GABA-B-R | DPPX | mGluR1 | VGKC-Complex | P/Q Type VGCC | N-Type VGCC | AChR Binding | AChR Ganglionic | PCA-TR | AQP4 | MOG | IgLON5 | ANNA-1 (Hu) | ANNA-2 (Ri) | ANNA-3 | AGNA (SOX1) | PCA-1 (Yo) | PCA-2 | CRMP-5 (CV2) | Amphiphysin | Striational | GAD65 | GFAP | GRAF1 | ITPR1 | NIF | TAT |
| **CENTRAL NERVOUS SYSTEM EVALUATIONS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ENS2** | Encephalopathy, Serum | • | • | • | • | • | • | • | | • | • | | • | • | | | • | • | • | • | • | • | • | • | • | | • | • | | | • | 10 days |
| **ENC2** | Encephalopathy, CSF | • | • | • | • | • | • | • | | | | | | • | | | • | • | • | • | • | • | • | • | • | | • | • | | | • | 8 days |
| **DMS2** | Dementia, Serum | • | • | • | • | • | • | • | | • | • | | • | • | | | • | • | • | • | • | | • | • | • | | • | • | | | • | 10 days |
| **DMC2** | Dementia, CSF | • | • | • | • | • | • | • | | | | | | • | | | • | • | • | • | • | | • | • | • | | • | • | | | • | 8 days |
| **EPS2** | Epilepsy, Serum | • | • | • | • | • | • | • | | • | • | | • | • | | | | • | • | • | • | | • | • | • | | • | • | | | | 10 days |
| **EPC2** | Epilepsy, CSF | • | • | • | • | • | • | • | | | | | | • | | | | • | • | • | • | | • | • | • | | • | • | | | | 8 days |
| **MDS2** | Movement Disorders, Serum | • | • | • | | | • | • | | • | • | | • | • | | | • | • | • | • | • | • | • | • | • | | • | | • | • | • | 10 days |
| **MDC2** | Movement Disorders, CSF | • | • | • | | | • | • | | | | | | • | | | • | • | • | • | • | • | • | • | • | | • | | • | • | • | 8 days |
| **PCDES** | Pediatric CNS Disorders, Serum | • | • | • | | • | • | • | | • | • | | • | • | • | • | | • | | | | | | | | | • | • | | | | 10 days |
| **PCDEC** | Pediatric CNS Disorders, CSF | • | • | • | | • | • | • | | | | | | • | • | | | • | | | | | | | | | • | • | | | | 8 days |
| **MAS1** | Myelopathy, Serum | | | | | | • | • | | • | • | | | • | • | • | | • | • | • | • | • | • | • | • | | • | • | | | • | 10 days |
| **MAC1** | Myelopathy, CSF | | | | | | • | • | | | | | | • | • | | | • | • | • | • | • | • | • | • | | • | • | | | • | 8 days |
| **CDS1** | CNS Demyelinating Disease, Serum | | | | | | | | | | | | | | • | • | | | | | | | | | | | | | | | | 7 days |
| **PARANEOPLASTIC EVALUATIONS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PAVAL** | Paraneoplastic, Serum | | | | | | | | • | • | • | | • | • | | | | • | • | • | • | • | • | • | • | • | | | | | | | 10 days |
| **PAC1** | Paraneoplastic, CSF | | | | | | | | | | | | | • | | | | • | • | • | • | • | • | • | • | • | | | | | | | 8 days |
| **PERIPHERAL NEUROPATHY EVALUATIONS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **AIAES** | Autoimmune Axonal, Serum | | • | • | | | | | | | | | • | | | | | • | | • | • | • | • | • | • | | | | | | | | 10 days |
| **DYS2** | Autoimmune Dysautonomia, Serum | | | | | | • | | • | • | • | • | • | | | | | • | | | | | | | | • | • | | | | | | 10 days |

Follow-up testing is available for individual antibodies using Mayo Test ID: PNEFS and PNEFC

## PLASMA MEMBRANE SPECIFICITIES

| ANTIBODY | ONCOLOGICAL ASSOCIATION | APPROXIMATE FREQUENCY |
|---|---|---|
| NMDA-R | Teratoma (ovarian or extra-ovarian) | 50% |
| LGI1 | Thymoma | <5% |
| CASPR2 | Thymoma | <10% |
| AMPA-R | Thymoma, lung and breast carcinoma | 70% |
| GABA-B-R | Small-cell lung carcinoma, other neuroendocrine neoplasm | 70% |
| DPPX | B-cell neoplasia | <20% |
| mGluR1 | Hodgkin lymphoma | 50% |
| VGKC-Complex | No specific oncological association | <10% |
| P/Q and N-Type Calcium Channel | Lung, breast, or gynecologic carcinoma | 15% |
| AChR Binding | Thymoma, lung, breast, gynecologic, or prostate carcinoma | <15% |
| AChR Ganglionic | Miscellaneous carcinomas, thymoma | <15% |
| PCA-Tr | Hodgkin lymphoma | 70-80% |
| AQP4 | Rare, varied, more common in elderly patients | <20% |
| MOG | No specific oncological association | - |
| IgLON5 | No specific oncological association | - |

## NUCLEAR AND CYTOPLASMIC SPECIFICITIES

| ANTIBODY | ONCOLOGICAL ASSOCIATION | APPROXIMATE FREQUENCY |
|---|---|---|
| ANNA-1 (Hu) | Small-cell lung carcinoma, neuroblastoma, thymoma | 90% |
| ANNA-2 (Ri) | Small-cell lung carcinoma, breast adenocarcinoma | 90% |
| ANNA-3 | Aerodigestive carcinoma | 90% |
| AGNA-1 (SOX1) | Small-cell lung carcinoma | 90% |
| PCA-1 (Yo) | Ovary, other mullerian, or breast | 90% |
| PCA-2 | Small-cell lung carcinoma | 90% |
| CRMP-5 | Small-cell lung carcinoma, thymoma, thyroid, or renal carcinoma | 90% |
| Amphiphysin | Small-cell lung carcinoma, breast adenocarcinoma | 90% |
| GAD65 | Occasionally (e.g., thymoma) | <10% |
| GFAP | Ovarian teratoma, other | 25% |
| GRAF1 | Breast, small-cell lung carcinoma | 50% |
| ITPR1 | Breast, small-cell lung carcinoma | 30% |
| NIF | Neuroendocrine, small-cell carcinoma | 77% |



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