Neuberg DIAGNOSTICS

● India ● UAE ● South Africa ● USA

New INSIGHTS

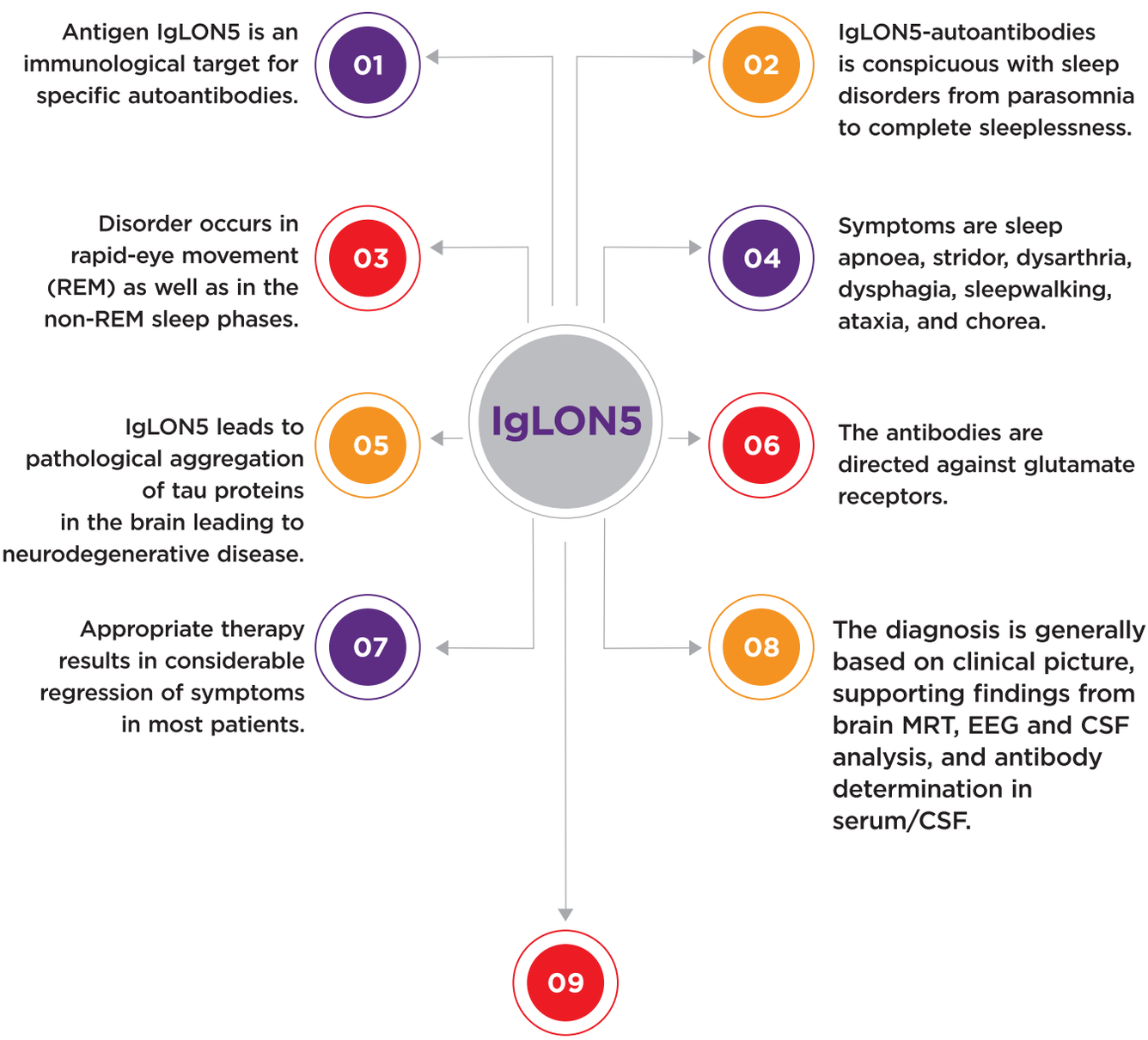
Autoimmune Encephalitis

Serial number : 010 Edition : 1. 2022

Antibody Associated CNS Diseases

The finding of neurologic specific auto-antibodies is a cornerstone in new classification of the disease. It also enables a more rational therapeutic strategy

- Intrathecal synthesis of specific auto-antibodies can be a feature of some autoimmune encephalitis
- These disorders may be with or without association to a neoplasm
- Paraneoplastic auto-antibodies are always markers of neoplasia under development, although not necessarily markers of a neurogical disorder
- Rapid diagnostic procedures and commencement of therapy can be of major significance



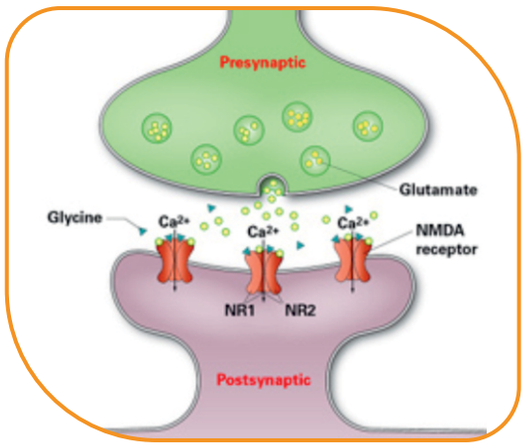
Monospecific recombinant assays are the method of choice for serological and CSF diagnostics and can be combined with conventional immunohistochemical detection procedures.

Name	Antigen (MW)	Function	The neurological syndrome & Frequently associated tumors
Anti-glutamate receptor (type NMDA)	Extracellular domains of NR1 subunit of receptor (approx. 105 kDa)	Cation channel, synaptic (glutamatergic) signal transmission, synaptic plasticity	Anti-glutamate receptor (type NMDA) encephalitis (approx. 60% as PNS), Ovarian teratoma, Testicular teratoma
Anti-glutamate receptor (type AMPA)	GluR1 and GluR2 subunits of receptor (each approx. 100 kDa)	Cation channel, synaptic (glutamatergic) signal transmission, synaptic plasticity	Limbic encephalitis (approx. 70% as PNS),Bronchial carcinoma, breast carcinoma, thymoma
Anti-GABAB receptor	Genuine GABAB1 and B2 subunits of human receptor (approx. 108 and 106 kDa)	Synaptic (GABAergic) signal transmission, synaptic plasticity	Limbic encephalitis (approx. 50% as PNS), SCLC
Anti-LGI1	LGI1 (approx. 60 kDa)	Component of transsynaptic complex involved in synaptic signal transmission	Limbic encephalitis (approx. 10% as PNS), Thyroid carcinoma, SCLC, kidney cell carcinoma, ovarian teratoma, thymoma
Anti-CASPR2	CASPR2 (approx. 180 kDa)	Component of adhesion complex for VGKC localisation in juxtaparanodes of myelinated axons	Neuromyotonia, Morvan's syndrome, limbic encephalitis (30% as PNS), Thymoma
Anti-DPPX	Dipeptidyl aminopep tidase-like protein 6	Regulator of membrane excitability in hippocampal Ca1 pyramid cells	AntiDPPX associated autoimmune encephalitis

Abbreviations:

AMPA α-amino-3-hydroxy-5-methyl-4-isoxazol-propionic acid
CASPR2 Contactin-associated protein 2
DPPX Dipeptidyl aminopeptidase-like protein 6
GABA γ-amino-butyric acid
LGI1 Leucine-rich glioma-inactivated protein 1
NMDA N-methyl-D-aspartate
PNS Paraneoplastic neurological syndrome
SCLC Small-cell lung cancer

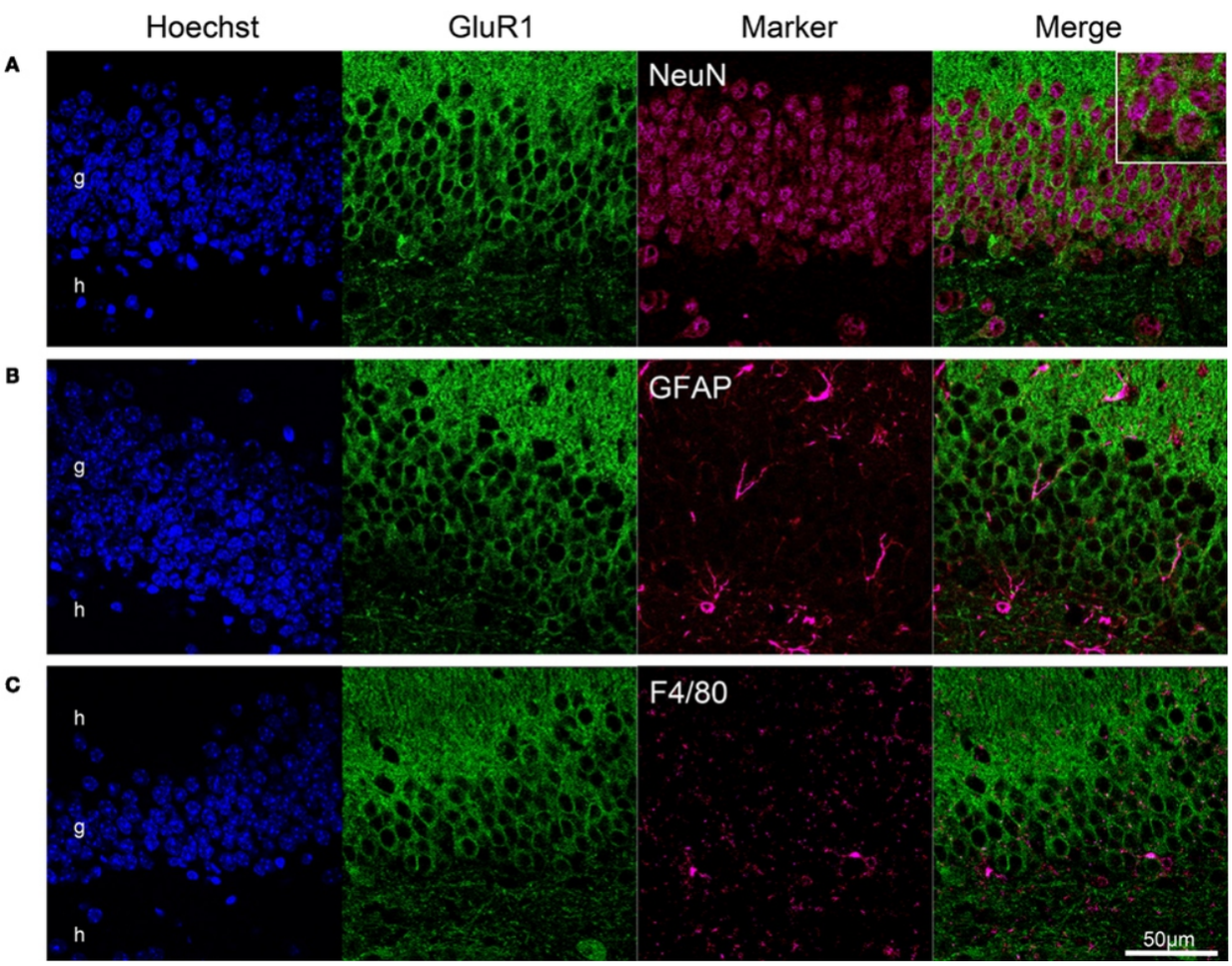
Autoantibodies against glutamate receptors (type NMDA)



- The antibodies are directed against an extracellular epitope of the receptor subunit NR1 and can be determined in patient serum or CSF by immunohistochemical detection methods or recombinant assays.
- The prognosis for patients is improved with appropriate immunomodulatory therapy in paraneoplastic syndrome, tumor detection, and resection as early as possible.

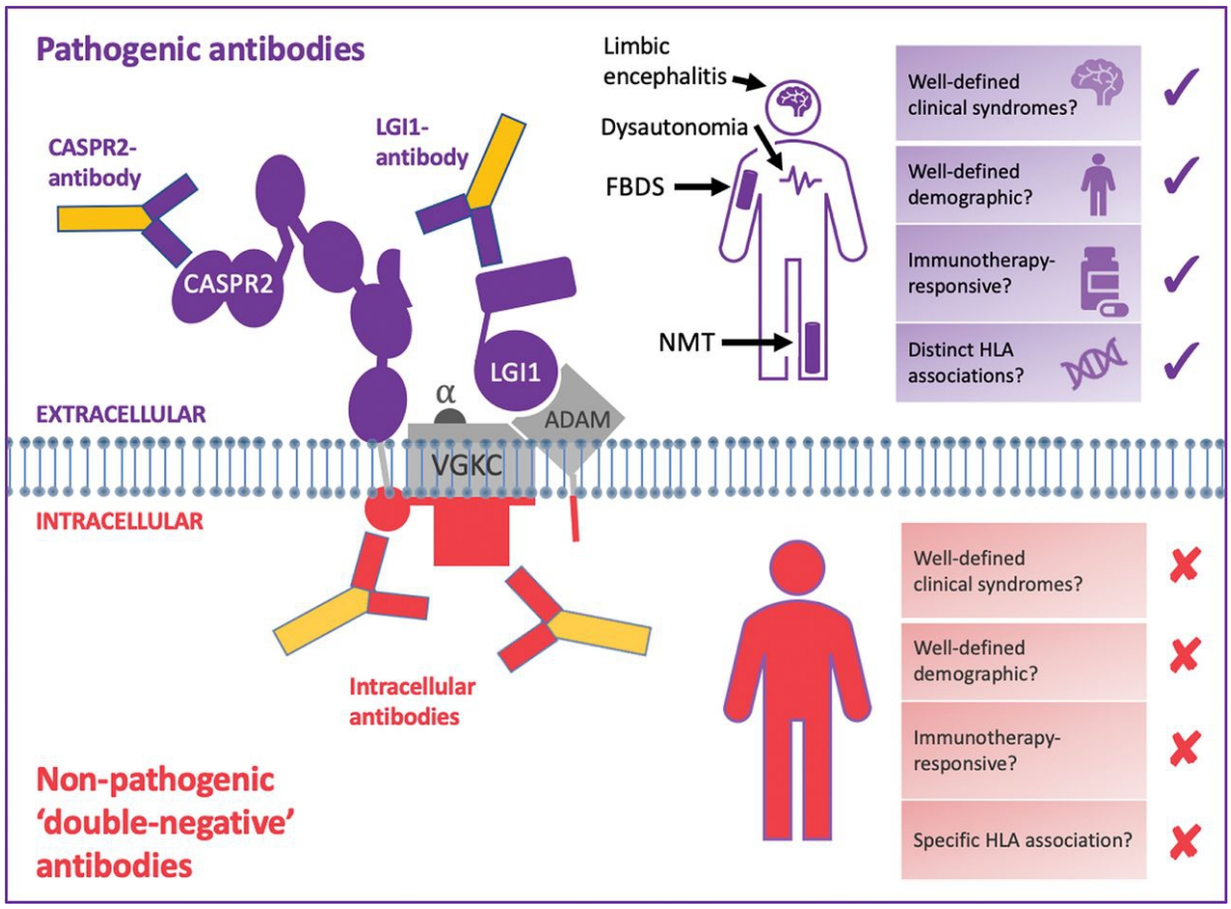
Antibodies against the GluR1/GluR2 subunits of glutamate receptors (type AMPA)

are found in patients (>90% women, average age 60) with a special form of autoimmune-mediated limbic encephalitis. This is caused by an inflammatory brain disease which predominantly affects the mediotemporal structures (e.g. hippocampus) and the orbitofrontal cortex.



- Immunotherapy (e.g. plasmapheresis, intravenous immunoglobulin, corticosteroids) and, in the case of a paraneoplastic syndrome, tumour resection/chemotherapy generally result in an improvement in symptoms.
- Antibody-mediated inhibition or destruction of GABAB receptors is considered a likely cause of the associated form of limbic encephalitis. This assumption is backed up by the success of immunomodulatory intervention and also the observation that GABAB1 and GABAB2 null mutants (mouse model) show symptoms corresponding to limbic encephalitis (e.g. spontaneous epileptic seizures, memory deficits, anxiety, increased sensitivity to pain, excessive movement).

Antibodies against VGKC-associated proteins (LGI1, CASPR2)



Autoantibodies against LGI1

- Immunotherapy (e.g. intravenous immunoglobulin, plasmapharesis, glyco-corticoids) and tumour removal if applicable resulted in complete or substantial regression of symptoms in 80% of cases (relapses possible), while in individual cases neurological deficits remained. The lethality was 2 to 6%.

Autoantibodies against CASPR2

- With regard to the pathophysiology, it is assumed that CASPR2 autoantibodies cause a quantitative decrease in the CASPR2-VGKC complexes on the axons of the peripheral nerves, leading to neurological syndromes.
- The determination of antibodies against CASPR2 is advisable in patients with encephalitis but no evidence of a causative organism and in suspected cases of autoimmune acquired neuro-myopathy, Morvan's syndrome or limbic encephalitis. Anti-CASPR2-positive patients should be investigated for the presence of a neoplasia.

Autoimmune Encephalitis Panel & IgLON 5

Autoimmune Encephalitis Panel Includes the following:

- NMDA (anti-gluamate receptor against Nr1 subunit)
- AMPA (anti-glutamate receptor)- GluR1
- AMPA (anti- glutamate receptor) - GluR2
- GABA-B receptor antibody
- LGI -1 antibody (VGKC type)
- CASPRA2 antibody (VGKC type)

By Immunofluorescence (cell based assay)

Sample type: Serum | **TAT:** Wed & Sat 4pm.
Transportation Instructions: Refrigerated

PARTNERS IN HEALTH

DR. AAKASH SHAH

Consultant Pathologist
akash.shah@supratechlabs.com
+91-7046010135

DR. SANDIP SHAH

Consultant Pathologist
M.D. (Pathology & Bacteriology)
Laboratory Director
drsandip@neubergdiagnostics.com
079-40408181

FOR MORE DETAILS, CONTACT US AT

079 4040 8181

neubergdiagnostics.com

Neuberg DIAGNOSTICS

• India • UAE • South Africa • USA