500 Chipeta Way – Salt Lake City, UT 84108 (800)522-2787 - www.aruplab.com Julio C. Delgado, M.D. M.S., Director of Laboratories Patient Age/Gender: Unknown Unknown Printed: 25-Jun-20 08:07:33

				Reported/
Procedure	Result	Units	Ref Interval	Accession Collected Received Verified
N-methyl-D-Aspartate Receptor Ab, CSF	1:40 *f		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20 11:51:00 11:51:00 12:12:33
Neuronal Nuclear Ab Titer, IgG CSF	1:20 *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
Neuronal Nuclear AD litel, 196 CSF	1.20		[ < 1.1]	11:51:00 11:51:00 12:12:33
Paraneoplastic Abs (PCCA/ANNA) IgG, CSF	ANNA Detected		[None	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
	*f		Detected]	11:51:00 11:51:00 12:12:33
AMPA Receptor Ab IgG Screen, CSF	Detected *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20 11:51:00 11:51:00 12:12:33
AMPA Receptor Ab IgG Titer, CSF	1:160 *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
AMPA Receptor AD 19G liter, CSF	1.100		[ < 1.1]	11:51:00 11:51:00 12:13:56
GABA-B Receptor Ab IgG Screen, CSF	Detected *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20 11:51:00 11:51:00 12:12:33
GABA-B Receptor Ab IgG Titer, CSF	1:10 *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
GABA B Receptor Ab 196 liter, CSF	1.10		[ < 1.1]	11:51:00 11:51:00 12:14:03
CASPR2 Ab IgG Screen by IFA, CSF	Detected *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
CASPR2 Ab IgG Titer by IFA, CSF	1:20 *		[< 1:1]	11:51:00 11:51:00 12:12:33 20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
CASPRZ AD 19G liter by 1FA, CSF	1.20		[ < 1.1]	11:51:00 11:51:00 12:14:00
LGI1 Ab IgG Screen by IFA, CSF	Detected *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
LGI1 Ab IgG Titer by IFA, CSF	1:40 *		[< 1:1]	11:51:00 11:51:00 12:12:33 20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
LGII AD 19G liter by 1FA, CSF	1:40 "		[< 1.1]	11:51:00 11:51:00 12:14:06
CV2.1 Ab IgG Screen, CSF	Detected *		[< 1:1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
GNO 1 Antibody Too Witon by TEA GOD	1:40 *		[< 1.1]	11:51:00 11:51:00 12:12:33 20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
CV2.1 Antibody IgG Titer by IFA, CSF	1:40 "		[< 1.1]	11:51:00 11:51:00 12:14:02
SOX1 Antibody, IgG by Immunoblot, CSF	High Positive		[Negative]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
	*		•	11:51:00 11:51:00 12:12:33
Neuronal Nuclear Ab (Hu) IgG, IB, CSF	High Positive		[Negative]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
, , , , , ,	*			11:51:00 11:51:00 12:12:33
Neuronal Nuclear Ab (Ri) IgG, IB, CSF	Low Positive *	ŧ	[Negative]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Low Positive *		Far	11:51:00 11:51:00 12:12:33 20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
Neuronal Nuclear Ab (Yo) IgG, IB, CSF	LOW POSITIVE *	•	[Negative]	11:51:00 11:51:00 12:12:33
Voltage-Gated Potassium Channel Ab, CSF	2.5 H	pmol/L	[0.0-1.1]	20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
	6 0 TT		[0 0 5 0]	11:51:00 11:51:00 12:12:33 20-169-900119 17-Jun-20 17-Jun-20 17-Jun-20
Glutamic Acid Decarboxylase Antibody CSF	6.0 н	IU/mL	[0.0-5.0]	11:51:00 11:51:00 12:12:33

- 17-Jun-20 11:51:00 AMPA Receptor Ab IgG Screen, CSF AMPAR Antibody, IgG is detected. Titer results to follow.
- 17-Jun-20 11:51:00 GABA-B Receptor Ab IgG Screen, CSF GABA-BR Antibody, IgG is detected. Titer results to follow.
- 17-Jun-20 11:51:00 CASPR2 Ab IgG Screen by IFA, CSF CASPR2 Antibody, IgG is detected. Titer results to follow.
- 17-Jun-20 11:51:00 LGI1 Ab IgG Screen by IFA, CSF LGI1 Antibody, IgG is detected. Titer results to follow.
- 17-Jun-20 11:51:00 CV2.1 Ab IgG Screen, CSF CV2.1 Antibody, IgG is detected. Titer results to follow. Additional charges apply.
- 17-Jun-20 11:51:00 N-methyl-D-Aspartate Receptor Ab, CSF:

Antibodies to NMDA were detected; titer was performed at an additional charge.

17-Jun-20 11:51:00 Paraneoplastic Abs (PCCA/ANNA) IgG, CSF:

Antibodies detected, therefore IFA titer and Immunoblot testing to be performed.

17-Jun-20 11:51:00 N-methyl-D-Aspartate Receptor Ab, CSF: INTERPRETIVE INFORMATION: N-methyl-D-Aspartate Receptor Ab, CSF

Anti-NMDA receptor IgG antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response; therefore, clinical correlation must be

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strongly considered. A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement B: aruplab.com/CS

17-Jun-20 11:51:00 Neuronal Nuclear Ab Titer, IgG CSF: INTERPRETIVE INFORMATION: Neuronal Nuclear Ab Titer, IgG CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 Paraneoplastic Abs (PCCA/ANNA) IgG, CSF: INTERPRETIVE INFORMATION: Paraneoplastic Abs (PCCA/ANNA) IgG, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 AMPA Receptor Ab IgG Screen, CSF: INTERPRETIVE INFORMATION: AMPA Receptor Ab IgG Screen, CSF

Alpha-amino-3-hydroxy-5-methyl-4-isoxazoleproprionic acid receptor (AMPAR) antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response; therefore, clinical correlation must be strongly considered. A negative test result does not rule out a diagnosis of autoimmune encephalitis.

This indirect fluorescent antibody assay utilizes AMPAR transfected cell lines for the detection and semi-quantification of AMPAR IgG antibody.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 AMPA Receptor Ab IgG Titer, CSF: INTERPRETIVE INFORMATION: AMPA Receptor Ab IgG Titer, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 GABA-B Receptor Ab IgG Screen, CSF: INTERPRETIVE INFORMATION: GABA Receptor Ab IgG Screen, CSF

Gamma-amino butyric acid receptor, type B (GABA-BR) antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response; therefore, clinical correlation must be strongly considered. A negative test result does not rule out a diagnosis of autoimmune encephalitis.

This indirect fluorescent antibody assay utilizes GABA-BR transfected cell lines for the detection and semi-quantification of GABA-BR IgG antibody.

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Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 GABA-B Receptor Ab IgG Titer, CSF: INTERPRETIVE INFORMATION: GABA-B Receptor Ab IgG Titer, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 CASPR2 Ab IgG Screen by IFA, CSF: INTERPRETIVE INFORMATION: CASPR2 Ab IgG w/Reflex to Titer, CSF

Contactin-associated protein-2 (CASPR2) IgG antibody may occur as part of the voltage-gated potassium channel (VGKC) complex antibodies.

The presence of CASPR2 IgG antibody is associated with a wide spectrum of clinical manifestations, including acquired neuromyotonia, limbic encephalitis, painful neuropathy, and Morvan syndrome. Tumors such as thymoma, small cell lung cancer, and other rarer tumors may occur. The full-spectrum of clinical disorders and tumors associated with the CASPR2 IgG antibody continues to be defined. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes contactin-associated protein-2 (CASPR2) transfected cell lines for the detection and semi-quantification of the CASPR2 IgG antibody.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 CASPR2 Ab IgG Titer by IFA, CSF: INTERPRETIVE INFORMATION: CASPR2 Ab Titer IgG by IFA, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 LGI1 Ab IgG Screen by IFA, CSF: INTERPRETIVE INFORMATION: LGI1 Ab IgG w/Reflex to Titer, CSF

Leucine-rich, glioma-inactivated 1 protein (LGI1) IgG antibody may occur as part of the voltage-gated potassium channel (VGKC) complex antibodies.

The presence of LGI1 IgG antibody is mainly associated with limbic encephalitis, hyponatremia, and myoclonic movements. LGI1 IgG antibody is rarely associated with tumors but may occur infrequently in Morvan syndrome, neuromyotonia, and idiopathic epilepsy. The full-spectrum of clinical disorders associated with the LGI1 IgG antibody continues to be defined. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes leucine-rich, glioma-inactivated 1 protein (LGI1) transfected cell lines for the detection and semi-quantification of the LGI1 IgG antibody.

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Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 LGI1 Ab IgG Titer by IFA, CSF: INTERPRETIVE INFORMATION: LGI1 Ab Titer IgG by IFA, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 CV2.1 Ab IgG Screen, CSF: INTERPRETIVE INFORMATION: CV2.1 IgG Ab with Reflex to Titer, CSF

CV2.1 antibodies aid in discriminating between chronic paraneoplastic neurological disorder (PND) and other inflammatory disorders of the nervous system. Anti-CV2.1 is associated with small-cell lung cancer and thymoma.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS.

17-Jun-20 11:51:00 CV2.1 Antibody IgG Titer by IFA, CSF: INTERPRETIVE INFORMATION: CV2.1 Antibody IgG Titer by IFA, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS.

17-Jun-20 11:51:00 SOX1 Antibody, IgG by Immunoblot, CSF: INTERPRETIVE INFORMATION: SOX1 Antibody, IgG by Immunoblot, CSF

SOX1 antibody is detected in patients with Lambert-Eaton myasthenic syndrome (LEMS) and in patients with paraneoplastic cerebellar degeneration (PCD), paraneoplastic and nonparaneoplastic neuropathy. SOX1 antibody is associated with small cell lung cancer. A negative test result does not rule out a diagnosis of LEMS or other causes of paraneoplastic neurological syndrome.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 Neuronal Nuclear Ab (Hu) IgG, IB, CSF: INTERPRETIVE INFORMATION: Neuronal Nuclear Abs IgG Immunoblot, CSF

This test detects IgG antineuronal antibodies to Hu, Ri, and Yo antigens.

Antineuronal antibodies serve as markers that aid in discriminating between a true paraneoplastic neurological disorder (PND) and other inflammatory disorders of the nervous system. Anti-Hu (antineuronal nuclear antibody, type I) is associated with small-cell lung cancer. Anti-Ri (antineuronal nuclear antibody, type II) is associated with neuroblastoma in children and with fallopian tube and breast cancer in adults. Anti-Yo (anti-Purkinje cell cytoplasmic antibody) is associated with ovarian and breast cancer.

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The presence of one or more of these antineuronal antibodies supports a clinical diagnosis of PND and should lead to a focused search for the underlying neoplasm.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 Neuronal Nuclear Ab (Ri) IgG, IB, CSF: INTERPRETIVE INFORMATION: Neuronal Nuclear Ab (Ri) IgG, IB,

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 Neuronal Nuclear Ab (Yo) IgG, IB, CSF: INTERPRETIVE INFORMATION: Neuronal Nuclear Ab (Yo) IgG, IB, CSF

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 Voltage-Gated Potassium Channel Ab, CSF: INTERPRETIVE INFORMATION: Voltage-Gated Potassium Channel (VGKC) Antibody, CSF

Voltage-Gated Potassium Channel (VGKC) antibodies are associated with neuromuscular weakness as found in neuromyotonia (also known as Issacs syndrome) and Morvan syndrome. VGKC antibodies are also associated with paraneoplastic neurological syndromes and limbic encephalitis; however, VGKC antibody-associated limbic encephalitis may be associated with antibodies to leucine-rich, glioma-inactivated 1 protein (LGI1) or contactinassociated protein-2 (CASPR2) instead of potassium channel antigens. A substantial number of VGKC-antibody positive cases are negative for LGI1 and CASPR2 IgG autoantibodies, not all VGKC complex antigens are known. The clinical significance of this test can only be determined in conjunction with the patient's clinical history and related laboratory testing.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement D: aruplab.com/CS

17-Jun-20 11:51:00 Glutamic Acid Decarboxylase Antibody CSF: INTERPRETIVE INFORMATION: Glutamic Acid Decarboxylase Antibody, CSF

A value greater than  $5.0~{\rm IU/mL}$  is considered positive for glutamic acid decarboxylase antibody (GAD AB CSF).

This assay is intended for the semi-quantitative determination of the GAD Ab in human CSF. Results should be interpreted within the context of clinical symptoms.

See Compliance Statement B: www.aruplab.com/CS

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