VibrantWellness

Neural Zoomer

Key Clinical Messages

What is the Neural Zoomer Test?

The Neural Zoomer test is a serological microarray test that offers very specific antibody-to-antigen recognition and the potential risk of developing neurological autoimmune disease. The test measures antibodies (IgG, IgA, and IgM) levels in the blood to 9 different neurological markers. The Neural Zoomer is a vital resource for early risk detection and enhanced personalized health interventions.

Neurological Antibodies

The Neural Zoomer reports antibodies to neurological antigens. The report measures IgG (subclasses 1,2,3,4), IgA (subclasses 1,2), and IgM antibodies. IgG and IgA antibodies are reported as pooled values, while IgM antibodies are reported independently. IgG is a systemic antibody with a long and variable half-life in the bloodstream. IgA is found in mucosal membranes (tears, saliva, and respiratory, gastrointestinal, and genitourinary tracts) and is used as an acute reaction indicator. IgM is the first immunoglobulin produced by the body with a ½ life of 5-8 days and has more clinical relevance when exploring the central nervous system. In broad summary, IgM and IgA would indicate more of an acute reaction vs. IgG, which is indicative of a chronic/persistent antibody reaction.

Which Patients Will Benefit from This Test?

Conditions and symptoms which may benefit from Neural Zoomer testing include:

- Ataxia/balance problems
- Sensory loss
- Neuropathic pain
- Optical decline
- Photosensitivity
- Muscle pain/spasms
- Muscle weakness/atrophy
- Orthostatic hypertension
- Chronic pain or fibromyalgia
- Memory loss or brain fog
- Autoimmune disease
- Attention deficit/ADHD
- Traumatic brain injury/history of concussion
- Cognitive decline
- Alzheimer’s disease
- Multiple sclerosis or demyelinating diseases
- Encephalitis
- Huntington’s disease
- Epilepsy
- Parkinson’s disease
- Dementia
- Myasthenia gravis
- Muscle stiffness/rigidity
- Neuromyelitis optica
- Autism

Why Order the Neural Zoomer Test?

The Neural Zoomer test provides insight into whether there is autoimmunity impacting the central or peripheral nervous systems. The markers included in the test can assess for demyelination antigens, which is important to understand if there's an immune attack against the structure and myelin of nerve cells. The Neural Zoomer assesses for blood–brain barrier dysfunction, which is associated with many different neurological conditions including multiple sclerosis, stroke, and epilepsy, and has also been implicated in neurodegenerative disorders such as Alzheimer's disease.[1]

The optical and autonomic panels can provide information about eye health, as many neurological conditions present with vision disturbances. The peripheral neuropathy panel examines antibodies related to autoimmune motor neuropathies, which can cause symptoms like muscle pain, weakness, atrophy, and loss of motor function, and can be associated with conditions like systemic lupus, erythematous, and rheumatoid arthritis. This test looks at markers associated with brain autoimmunity, including herpes viruses. The brain autoimmunity panel includes information on autoimmunity related to motor coordination, cerebellar ataxia, and gait abnormalities.

While the Neural Zoomer and the Neural Zoomer Plus have many overlapping markers, they're different tests. The Neural Zoomer focuses on specific markers in the categories of demyelination, blood brain barrier, optical and autonomic function, peripheral neuropathy, and brain autoimmunity. The Neural Zoomer Plus includes these same markers, but also includes additional panels for infections, brain inflammation, and neuromuscular disorders. The Neural Zoomer Plus also includes additional markers in the other panels, making them a little bit more comprehensive. It's helpful to be aware of the test differences before ordering.

What Tests Pair Well with The Neural Zoomer?

- **ApoE:** Genetic testing for apolipoprotein E can help provide information on the increased risk for dementia, Alzheimer's disease, or cognitive decline. ApoE can be added to the Neural Zoomer test at an additional charge.
- **Infections Panel:** To assess for infections that may be associated with autoimmunity in the nervous system. Adding this panel provides some of the additional information that's included in the Neural Zoomer Plus.
- **Gut Zoomer:** To assess for any gut dysfunction that may play a role in neurological function. This test can also help assess for intestinal permeability that may be associated with autoimmunity of the central nervous system.
- **Food Zoomers:** The Wheat Zoomer, Lectin Zoomer, and Dairy Zoomer may be particularly helpful in identifying food antibodies that can display cross-reactivity with neurological antigens. The Wheat Zoomer provides information about antibodies to gliadin and also provides additional information for intestinal permeability. The Lectin Zoomer assesses for antibodies to aquaporins that are associated with neurological autoimmunity, particularly aquaporin 4 (AQP-4). The Dairy Zoomer provides information on butyrophilin that can cross-react with antibodies in the brain.

Lab Methodology

- We use **Electrochemiluminescence immunoassay (ECLIA)** for peptide-level antibody detection, featuring a proprietary enhanced IgM binding assay methodology, which strips excess IgG antibodies from the sera to enhance the detection of IgM antibodies.
- Testing runs on a **3D-dense microarray platform** which offers highly sensitive, specific, and reproducible results with advantages that include:
  - Higher sensitivity than ELISA
  - Broad dynamic range
  - High sensitivity for detection of low analyte concentrations
- **Vibrant is a CLIA-certified and CAP-accredited lab.**

Test Prep for Blood Collection

Collection: Two (2) serum (tiger or red and yellow top SST tube)

Hydration Restrictions: None

Fasting: Not required.

Diet Restrictions: Not required.

Medication Restrictions: None.

Supplement Restrictions: Not required.

Reference Ranges

Reference ranges have been established using a reference population of 192 healthy controls. Determining the positive cutoff is by 97.5 percentile. If the antibody result is above 97.5 percent, it's considered positive/high risk. If the antibody result is 5% below the cutoff, it's considered borderline/moderate (92.5-97.5 percentile). If the antibody result is less than the 92.5 percentile, it's considered negative.

Which Markers Are Included in the Neural Zoomer Test?

Vibrant tests for three different (IgG, IgA, and IgM) antibodies to 9 different markers.

Demyelination Antigens

- Anti-Tubulin (IgG + IgA)
- Anti-Tubulin IgM
- Anti-Myelin basic protein (IgG + IgA)
- Anti-Myelin basic protein IgM

Peripheral Neuropathy

- Anti-GM1 (IgG + IgA)
- Anti-GM1 IgM
- Anti-GM2 (IgG + IgA)
- Anti-GM2 IgM

Blood Brain Barrier Disruption

- Anti-s100b (IgG + IgA)
- Anti-s100b IgM

Optical and Autonomic

- Anti-Neuron specific enolase (IgG + IgA)
- Anti-Neuron specific enolase IgM

Brain Autoimmunity

- Anti-HSV 1 (IgG + IgA)
- Anti-HSV 1 IgM
- Anti-Cerebellum (IgG + IgA)
- Anti-Cerebellum IgM
- Anti-Purkinje cell (IgG + IgA)
- Anti-Purkinje cell IgM

Report Integration

Antibody levels of individual proteins are calculated by comparing the average intensity of the individual protein antibody to that of a healthy reference population.

The results are displayed in three columns surrounded by **GREEN (In Control)**, **YELLOW (Moderate)**, or **RED (High Risk).**

- **GREEN (In Control): 0–10**
- **YELLOW (Moderate): 11–20**
- **RED (High Risk): 21–30**

Sample Report

	Test name	In Control	Moderate	High Risk	In Control Range	Moderate Range	High Risk Range	Previous
Demyelination antigens	Anti-Tubulin (IgG + IgA)	5			≤10	11–20	≥21	6 08/20/2015
	Anti-Tubulin IgM	5			≤10	11–20	≥21	6 08/20/2015
	Anti-Myelin basic protein (IgG + IgA)	2			≤10	11–20	≥21	29 08/20/2015
	Anti-Myelin basic protein IgM		19		≤10	11–20	≥21	23 08/20/2015

	Test name	In Control	Moderate	High Risk	In Control Range	Moderate Range	High Risk Range	Previous
Blood Brain barrier	Anti-s100b (IgG + IgA)	10			≤10	11–20	≥21	8 08/20/2015
	Anti-s100b IgM	3			≤10	11–20	≥21	5 08/20/2015

	Test name	In Control	Moderate	High Risk	In Control Range	Moderate Range	High Risk Range	Previous
Optical and Autonomic	Anti-Neuron specific enolase (IgG + IgA)	9			≤10	11–20	≥21	1 08/20/2015
	Anti-Neuron specific enolase IgM	3			≤10	11–20	≥21	2 08/20/2015

	Test name	In Control	Moderate	High Risk	In Control Range	Moderate Range	High Risk Range	Previous
Peripheral Neuropathy	Anti-GM1 (IgG + IgA)			21	≤10	11–20	≥21	29 08/20/2015
	Anti-GM1 IgM			26	≤10	11–20	≥21	29 08/20/2015
	Anti-GM2 (IgG + IgA)	3			≤10	11–20	≥21	8 08/20/2015
	Anti-GM2 IgM	8			≤10	11–20	≥21	26 08/20/2015

References

1. Caterina P. Profaci, Roeben N. Munji, Robert S. Pulido, Richard Daneman; The blood–brain barrier in health and disease: Important unanswered questions. J Exp Med 6 April 2020; 217 (4): e20190062. doi: https://doi.org/10.1084/jem.20190062

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