



**The Great Plains Laboratory, Inc.**

## Understanding Autism

### The Importance of Biomedical Testing and Treatment Options

#### GENERAL DESCRIPTION

Traditionally, the diagnosis of autism has been based on the observation of behavior, and treatment focused primarily on alleviating challenging behaviors. However, there is a very real biomedical component to the disorder in which underlying medical issues often cause or contribute to autistic behavior. Some of the most common problems include gastrointestinal (GI) overgrowth of *Candida* and *Clostridia*, inability to detoxify environmental toxins, and development of food intolerances and/ or allergies. These physical and environmental factors limit the nutrients available to the brain and body, resulting in damage to cellular, metabolic, and central nervous system functionality.

Genetic susceptibility to autism may determine who develops this complex disorder, but nutrient deficiencies and food allergies strongly influence the severity of symptoms. Exposure to toxins and imbalanced microbial growth in the GI tract contribute to pathological responses to food. Yeast (most commonly, *Candida*), parasites, viruses, and bacteria, particularly *Clostridia*, all have the potential to act as pathogens. Eradicating harmful and often recurrent intestinal microbes and restoring proper intestinal flora balance is the best place to start so the body can begin to heal and detoxify itself. Eliminating IgG-reactive foods which can contribute to inflammation is an important part of healing the GI tract.

#### Recommended Tests for Autism Spectrum Disorders

##### Organic Acids Test (OAT)

Microbial overgrowth (yeast and bacteria) can be measured with the Organic Acids Test (OAT). When *Candida* grows out of balance, it can disrupt areas of the intestinal wall, producing toxins and leading to leaky gut syndrome. An inflammatory immune response and multiple food sensitivities can result from the leaky gut. Many children with autism have an overgrowth of certain *Clostridia* species, which produces a compound called HPHPA, which may disrupt dopamine metabolism. HPHPA is a potent toxin with profound neurological effect, and can lead to moodiness, tantrums, extreme anxiety, aggression, and /or self-injurious behavior. The OAT quantifies other useful markers of energy cycle and neurological function, as well as nutritional adequacy. The test is also designed to identify some rare genetic diseases and indirect indicators of methylation problems.

#### PERIPHERAL ISSUES SEEN IN AUTISM THAT ARE EXACERBATED BY ABNORMAL INTESTINAL FLORA

- Impaired detox pathways
- Reduction in glutathione levels
- Poor sleep quality
- Speech and behavioral issues
- Oxidative stress
- Immune dysfunction
- Deficient essential fatty acids



## GPL-TOX Profile (Toxic Non-Metal Chemical Profile)

Because exposure to environmental pollutants has been linked to many chronic diseases, including autism, we have created GPL-TOX, a toxic non-metal chemical profile that screens for the presence of 173 different toxic chemicals including organophosphate pesticides, phthalates, benzene, xylene, vinyl chloride, pyrethroid insecticides, acrylamide, perchlorate, diphenyl phosphate, ethylene oxide, acrylonitrile, and more. This profile also includes Tiglylglycine (TG), a marker for mitochondrial disorders resulting from mutations of mitochondrial DNA.

## MycoTOX Profile

Mycotoxins released from mold fungi are some of the most prevalent toxins in the environment. A majority of mycotoxin exposures are through food ingestion or airborne exposure from water-damaged buildings and homes. Studies are now coming out correlating the severity of symptoms from mycotoxin exposure with autism, perhaps due to common decreased detoxification abilities for those with autism. With our GPL-MycoTOX Profile, we can identify exposures to eleven common mycotoxins and make recommendations for detoxification treatments that have been effective.

## Metals Hair Test

Symptoms of autism are consistent with those of a mercury toxicity. Metal toxicity impacts cognition, language, immunity, and behavior. Identifying and eliminating metals such as lead, arsenic, aluminum, and mercury is an important step toward recovery. Evidence shows that children with autism tend to have low levels of glutathione and cysteine, which are critical to the removal of toxic metals like mercury.

## IgG Food Allergy Test w/Candida

IgG-mediated food sensitivities create problems because they stress the child's immune system, compromising digestion and resulting in inflammation and increased behavioral issues. IgG food allergy testing can identify the specific antibody reactions not commonly tested by allergists. Eliminating offending foods strengthens the immune system and may help significantly reduce autistic symptoms and GI problems.

## Glyphosate Test

Glyphosate is the world's most widely produced herbicide. High correlations exist between glyphosate usage and numerous chronic illnesses, including autism. Ingestion of foods exposed to glyphosate can lead to an alteration of the intestinal microbial flora in which harmful species such as Clostridia replace beneficial microorganisms. The presence of increased Clostridia bacteria results in the increased production of Clostridia metabolites, such as HPPHA and 4-cresol. Those compounds inhibit the conversion of dopamine to norepinephrine in the brain and in the sympathetic nervous system. Metabolites of dopamine induce mitochondrial dysfunction, oxidative stress, the formation of neurotoxic  $\alpha$ -synuclein protofibrils, and impaired protein degradation. The Glyphosate Test is a urine test that can be easily added on to other urine tests like the Organic Acids Test or GPL-TOX.

## Phospholipase A<sub>2</sub> Activity Test (PLA<sub>2</sub>)

Phospholipase (PLA<sub>2</sub>) is one of the key biochemical factors produced in the inflammatory response. However, the same phospholipase that attacks infectious agents may also attack the cell membranes of the human host, damaging or killing those cells. Studies have linked an increase in PLA<sub>2</sub> activity with multiple sclerosis, rheumatoid arthritis, Crohn's disease, pancreatitis, ulcerative colitis, allergic disorders, atherosclerosis, cardiovascular disease, multiple cancers, and more.

### Other recommended tests for autism include:

- Advanced Cholesterol Profile
- Comprehensive Stool Analysis
- Copper + Zinc Profile
- Omega-3 Index Complete
- Streptococcus Antibodies Profile

For a list of references, go to [www.greatplainslaboratory.com](http://www.greatplainslaboratory.com) and view or download the full version of this brochure.

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