

Personalized Nutrition for Children with Autism & ADHD

with Julie Matthews and Albert Mensah, MD



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Julie Matthews

- Certified Nutrition Consultant & Educator
- Author of "Nourishing Hope for Autism"
- 20 years' clinical experience
- Lectured in 60 cities / 3 continents
 - Clinicians and Parents/Individuals
- Founder, Nourishing Hope & BioIndividual Nutrition Institute
- Television, radio, newspaper, blogs/podcasts



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Albert Mensah, MD

- Co-founder of Mensah Medical
- Specializes in the treatment of biochemical imbalances, and the cognitive (and physical) disorders caused by those imbalances.
- Focus on autism spectrum disorder, behavior/learning disorders, eating disorders, bipolar disorder, anxiety syndromes, childhood and adult schizophrenia, Alzheimer's Disease and Parkinson's Disease,



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Today...

- Increase nutrition knowledge
- Expand resources...

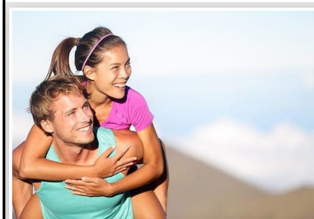
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PERSONALIZED BIOINDIVIDUAL NUTRITION

Unique Bodies

Unique Nutritional Needs



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Nutrients...

- 1) Are powerful
- 2) Need to be bioindividual
- 3) Imbalances cause ADHD and autism, as well as other mental health challenges including anxiety and depression

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Agenda

- Personalized Bioindividual Nutrition
- Brain Biochemistry and Distinctive Features of Autism
- Nutrient Deficiencies and Overloads that Impair Brain Function
- Nutrient Imbalances that Alter Neurotransmitters
- Environmental and Epigenetic Influences
- Therapeutic Diets for Mental Health
- Lab Testing
- Q&A

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"Personalized Nutrition Holds Tremendous Potential To Improve Human Health"

"Biochemistry, metabolism, genetics, and microbiota contribute to the dramatic interindividual differences observed in response to nutrition, nutrient status, dietary patterns, timing of eating, and environmental exposures."

Bush, C. L., Blumberg, J. B., El-Sohemy, A., Minich, D. M., Ordovas, J. M., Reed, D. G., & Behm, V. A. Y. (2019). Toward the Definition of Personalized Nutrition: A Proposal by The American Nutrition Association. *Journal of the American College of Nutrition*, 1-11.

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Personalized Nutrition Works

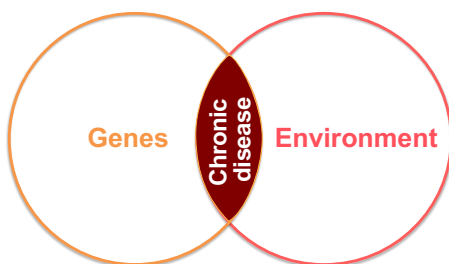
"Macronutrient, micronutrient, and non-nutrient recommendations can be optimized at the individual level, depending on a person's biological characteristics and specific goals."

van Ommen, B., van den Broek, T., de Hoogh, L., van Erk, M., van Someren, E., Rouhani-Rankouhi, T., ... & Wopereis, S. (2017). Systems biology of personalized nutrition. *Nutrition Reviews*, 75(8), 579-599.

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Chronic Disease



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Biochemical Individuality

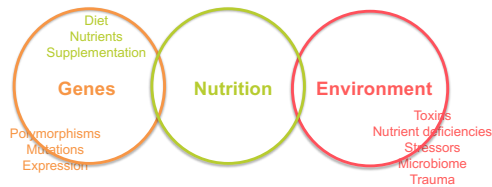
Nutrition - the link between genes & environment
Genes and Environment



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Biochemical + Individuality = Bioindividuality

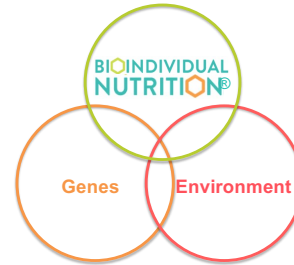


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BioIndividual Nutrition®

Personalized therapeutic diet and nutrition strategy based upon each person's biochemical Individuality



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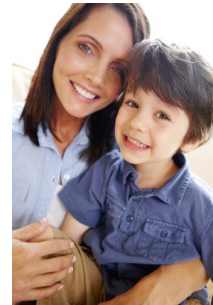
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Presented by Albert Mensah, MD, BCIP
Mensah Medical, LLC
Mensah Research Institute

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*Autism is treatable and
recovery is possible.*



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*“For every drug that benefits a
patient, there is a natural substance
that can produce the same effect.”*

- Carl C. Pfeiffer,

MD, PhD

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The Brain is a “Biochemical Factory”

- Given the proper supply of building blocks and co-factors, the brain creates biochemical processes essential for normal brain function.
- Serotonin, dopamine, norepinephrine and other neurotransmitters are synthesized in the brain.
- The raw materials for neurotransmitter synthesis are nutrients: vitamins, minerals, and amino acids.
- Based on genetics and epigenetics, individuals are **biochemically unique**.
- A genetic or epigenetic imbalance in a nutrient can alter brain levels of key neurotransmitters and result in abnormal brain chemistry.
- By understanding science-based biochemical “biotypes”, advanced nutrient therapy aims to heal the brain and correct biochemical imbalances.

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Distinctive Features of Autism

- Biochemical Imbalances
- Incomplete Brain Development
- Strong Genetic Predisposition
- Gut Micro-biome Dysregulation
- Onset after Environmental Insult
- High Oxidative Stress
- Gut-Brain Connection

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Gut Dysfunction

- Diet is Key!
- Not Just Casein/Gluten
- Carbs = Major Enemy
 - Inflammation
 - Hormone Elevation - Mood
 - Oxidative Stress
 - Glucosylation
 - Feeding Yeast
 - Microbiome Disruption

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Gut Dysfunction

- Carbs = Major Enemy (cont)
 - Fermentation/Alcohol Production
 - Acid/Base Irregularity
 - Poor Enzyme Function
- Recommend Keto/Paleo/Non-Carb Diet
 - May see results within first month
 - Strong Prep for Better Nutrient Response

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Gut Wall Dysfunction

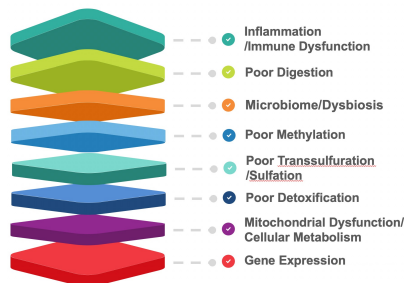
- Impaired Cell Wall (Gut/Blood Barrier)
- Leaky Gut
- Malabsorption
- Systemic Toxin Spread
- Cognitive Impairment – Poor Processing

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Underlying Factors of BioIndividual Nutrition

*from BioIndividual Nutrition program



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Natural Food Compounds

*from BioIndividual Nutrition program

- Salicylates & phenols
- Histamines & amines
- Glutamate
- Oxalates
- FODMAPS
- Food allergens/sensitivities
- Di- and polysaccharides
- Yeast containing foods
- Nightshades
- Sulfur/thiol foods
- Purines
- Lectins & phytates



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28 Diets

- GFCFSF
- SCD
- GAPS
- Paleo
- Autoimmune paleo
- Low salicylate
- Low amine
- Low histamine
- Low glutamate
- Low oxalate
- Low FODMAPs
- Body Ecology Diet
- Ketogenic diet
- MCT ketogenic
- Modified Atkins
- Raw food diet
- Vegetarian diet
- Vegan diet
- Low glycemic diet
- Sugar-free diet
- Low starch diet
- Nightshade free
- Low lectin
- Low sulfur
- Low purine
- Rotation diet
- Elimination diet
- Carnivore diet

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Reactions to Gluten and Casein

- IgE mediated allergy
- IgG reactions
- Possible opiate response
- Zonulin – leaky gut
- Inflammatory response
- Autoimmune response
- Cerebral Folate Deficiency from Folate Receptor Antibody
- Other possible reactions

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SCD/GAPS Diet

How the Diets Work

- Removes disaccharides and polysaccharides that without the proper enzymes and absorption can become food for bacteria/dysbiosis, causing inflammation, pain, diarrhea, constipation, gas.
 - Which can affect the brain
- Breaks the cycle of feeding bacteria, helps with gut healing, relief of foods causing damaging, and encourages re-balancing of bacteria.

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Salicylates, Amines, Glutamates



- Artificial Phenols
 - Artificial colors, flavors, preservatives, propionic acid
- Salicylates
 - Phenols occurring in plant foods
 - Poor sulfation – depression and other mental health challenges
- Amines
 - Histamine, inflammatory
 - Tyramine - amine containing foods
- Glutamate - Excitatory

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Salicylate, Amine, and Glutamate Foods

Salicylates

- Berries
- Apples
- Grapes
- Tomato
- Almonds
- Honey
- Avocado
- Spinach
- Cantaloupe
- Watermelon
- Dates
- Herbs and spices

Amines

- Banana
- Cheese, yellow
- Aged or blue cheese
- Chocolate/cocoa
- Wine/beer
- Fermented foods: sauerkraut, yogurt, tempeh
- Soy sauce
- Bone broths
- Meat and aged meat

Glutamates

- MSG
- Autolyzed yeast
- Soy sauce
- Parmesan cheese
- Vegemite/Marmite
- Sauerkraut
- Bone broths
- Gelatin
- Peas
- Corn
- Tomatoes

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Reactions with Oxalate

- Oxalate can bind calcium forming crystals that may have sharp edges – causing pain and inflammation
- When not bound to calcium, oxalate impairs mitochondrial function, disrupts minerals, and creates oxidative stress
- 3-fold greater plasma oxalate in children with autism and 2.5 fold in urine. 1

1. Konstantynowicz, J., et al. (2012). A potential pathogenic role of oxalate in autism. European Journal of Paediatric Neurology, 16(5), 485-491.

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- Nuts
- Beans, most
- Beets
- Figs
- Rhubarb
- Swiss chard
- Field greens
- Spinach
- Amaranth and buckwheat
- Soy

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Day 0

Vitamin/Mineral supplementation

Day 30

Essential Fatty Acid supplementation

Day 60

Epsom Salt Baths

Day 90

Carnitine supplementation

Day 180

Digestive Enzyme supplementation

Day 210

Healthy, gluten-free, casein-free diet

Non-Verbal IQ/Memory
6.7 pt increase



18 months of development vs. 4 months in control group,
p<0.01 (over 12 month period)



- Mood/happiness
- Anxiety
- Sociability
- Expressive language
- Receptive language
- Play Skills
- Cognition Thinking
- Attention Focus
- Hyperactivity
- Tantruming
- Aggression
- Stools/GI Issues
- Sleep
- Sound Sensitivity
- Eye Contact
- Stimming



- Zinc
- Methionine
- Folic Acid
- Vitamins B-6 and B-12
- Niacin/Niacinamide
- DHA, EPA, AA (essential fatty acids)
- Antioxidants: Se, GSH, Vitamins C & E, etc.
- Chromium

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Nutrient Overloads that Impair Brain Function

- Copper
- Folic Acid
- Iron
- Methionine, SAMe
- Toxics: Lead, Mercury, Cadmium, etc.

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Nutrient Imbalances that Alter Neurotransmitter Activity

Distinctive biochemical imbalances are exhibited by most persons with ADHD, behavioral challenges, anxiety, depression, bipolar disorder, autism and schizophrenia.

- Copper Overload
- Undermethylation (methyl-deficiency)
- Overmethylation
- Pyrrole Disorder
- Toxic Metal Overload
- Severe Oxidative Stress

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Copper Overload

Elevated copper levels tends to lower dopamine levels and increase norepinephrine in the brain. Imbalances in these important neurotransmitters have been associated with paranoid schizophrenia, ADHD, bipolar disorder, postpartum depression and violent behavior.

Symptoms may include:

- Impulsivity
- Hyperactivity
- Poor academic performance
- Temper tantrums
- Low self-esteem
- High irritability
- Aggression or violence
- Sleep disorder
- Prior diagnosis of ADHD
- Short attention span
- Tend to be in constant motion
- Verbal outbursts
- Bad behavior in school
- High anxiety
- History of physical assaults
- White spots on fingernails

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The Critical Role of Methylation

- Excessive nutrient overloads and deficiencies disrupt methylation pathways in the brain.
- To explain: The body's methyl groups turn genes off or on by affecting interactions between DNA and the cell's protein-making machinery genes.
- Because the methylation cycle is essential for mental and physical health, basic nutrients necessary for normal function of this cycle are critical.
- Too much or too little of important methyl groups can cause a methylation imbalance.

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Ovmethylation

Patients who are **overmethyated** have a tendency for high anxiety, panic disorder, depression, including sensitivities to pesticides, toxic chemicals and foods.

Symptoms may include:

- High anxiety or panic tendency
- Nervous legs, pacing
- Food/chemical sensitivities
- Sleep disorder
- Depression
- Self mutilation
- Dry eyes and mouth
- Adverse reaction to SSRIs
- High pain threshold
- Low motivation in school
- Absence of seasonal allergies
- Artistic or musical ability
- Paranoia
- Belief that everyone thinks ill of them
- Obsessions without compulsions
- Low libido

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Undermethylation

Patients who are **undermethyated** have a tendency towards depression, eating disorders, OCD, perfectionism and schizoaffective disorder.

Symptoms may include:

- Obsessive/compulsive tendencies
- Seasonal inhalant allergies
- Low tolerance for pain
- Prior diagnosis of OCD or ODD
- Ritualistic behaviors
- Very strong willed
- Social isolation
- Poor concentration endurance
- History of competitiveness in sports
- Frequent headaches
- Family history of high accomplishment
- Calm demeanor, but high inner tension
- Delusions (thought disorder)
- Slenderness
- Phobias
- Addictiveness

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Pyrrole Disorder (Pyroluria)

About 10% of the population is unknowingly affected by this condition, and is commonly found in individuals with anxiety, depression, schizophrenia, bipolar disorder, substance abuse, alcoholism, ODD, and ADHD.

- Pyrrole Disorder (pyroluria) is an abnormality in biochemistry resulting in the overproduction of pyrrole molecules, normal by-products of hemoglobin synthesis and other processes in the body.
- Excess pyrroles have little or no function in the body and are effectively excreted in the urine; however, pyrroles have an affinity for zinc and may contribute to zinc deficiency by increasing its urinary loss.
- When elevated in the urine, they represent a marker for functional deficiencies in Vitamin B-6 and zinc.
- Common symptoms include poor stress control, high irritability or temper, extreme mood swings, severe inner tension, and sensitivity to bright lights and loud noises,

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Toxic Metal Overload

Patients with **heavy-metal overload** (lead, cadmium, mercury, etc.) or toxic levels of pesticides/organic chemicals exhibit a metallothionein (MT) disorder.

- These persons are especially sensitive to toxic metals and overmethylation is commonly associated with severe chemical sensitivities.
- MT proteins are directly involved in development of brain neurons, detoxification of heavy metals, and immune response.
- Effective treatment requires a three-part approach: (1) avoidance of additional exposures, (2) biochemical treatment to promote the exit of the toxin from the body, and (3) correction of underlying chemical imbalances to minimize future vulnerability to the toxin.

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Severe Oxidative Stress

Most mental disorders involve **oxidative stress**. Excessive release of free radicals can destroy cells or impair biochemical processes.

- Oxidative stress depletes levels of glutathione (GSH) needed for efficient NMDA receptor site function.
- Severe oxidative stress is evident throughout autism spectrum disorder.
- Oxidative stress can destroy digestive enzymes needed to break down casein and gluten, producing inflammation and often results in a "leaky gut" allowing toxics to enter the bloodstream.
- Additionally, severe oxidative stress can lead to poor immune function and disruption of the methylation cycle.

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Nutrient Imbalances in ADHD, Behavior Disorders and Learning Disabilities

Distinctive biochemical imbalances are exhibited by most ADHD and behavior-disordered children and adolescents.

- A high incidence of children and adolescents with oppositional defiant disorder or ADHD exhibit elevated copper levels and zinc deficiency.
- Undermethylation is commonly seen in children with obsessive-compulsive disorder, fears/phobias, and perfectionism.
- Children who are overmethylated are may seem unmotivated and tend to perform poorly in school but may score extremely well on standardized tests.
- Pyrrole Disorder as a distinctive biochemical imbalance is often exhibited in a variety of disorders including ADHD, anxiety, Tourette syndrome, behavioral disorders, sensory processing disorder, learning disorders, and with normal growth cycles (the "terrible twos" or adolescence).

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Biochemical Abnormalities in Autism

- Depressed Glutathione & Cysteine
- Elevated Toxic Metals
- Depressed SAME/SAH Ratio
- High Copper and Low Ceruloplasmin
- Depleted Zinc and Metallothionein
- Elevated Pyrroles (Pyrrole Disorder)
- Low B-6, C, and Selenium
- Elevated Urine Isoprostanes
- Note – All These Abnormalities Are Associated with Severe Oxidative Stress

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Zinc Deficiency

- Zinc (Zn) is needed for regulation of GABA in brain.
- GABA is a "calming" NT that combats overloads of norepinephrine.
- Zinc deficiency is characteristic of autism.
- Zinc deficiency is also associated with ADHD, irritability, anxiety, explosive temper, violent or aggressive behavior.

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Why is Metallothionein Important?

- Required for development of brain cells and synaptic connections.
- Prevents Hg and other metal toxics from passing intestinal and blood/brain barriers.
- Required for homeostasis of Cu and Zn.
- Supports immune function.

Note: MT functioning can be disabled by excessive oxidative stress.

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Oxidative Stress and Autism

- Excessive oxidative stress is evident throughout autism spectrum disorder.
- An oxidative stress model can explain most symptoms of autism.
- Most autism therapies have antioxidant properties.
- Oxidative stress has become a leading focus of autism research.

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Consequences of Oxidative Stress: Mirror Classic Symptoms of Autism

- Hypersensitivity to Hg and other toxic metals
- Hypersensitivity to certain proteins (i.e., casein, gluten)
- Poor immune function
- Disruption of the methylation cycle
- Inflammation of the brain and G.I. tract
- Depletion of glutathione and metallothionein
- Excessive amounts of “unbound” copper

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Oxidative Stress Can Impair Brain Development

- Excess oxidative stress can deplete GSH, impair the one-carbon cycle, and produce undermethylation.
- Undermethylation can reduce production of GSH, cysteine, and MT, and cause excess oxidative stress.
- Ample glutathione is required for proper functioning of metallothionein.
- Metallothionein (MT) is a key factor in early brain development.

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Consequences of Oxidative Stress Overload in the Gastrointestinal (GI) Tract

- Destroys digestive enzymes needed to break down casein and gluten.
- Increases candida/yeast levels.
- Diminishes Zn levels and production of stomach acid.
- Produces inflammation.
- Results in a “leaky” intestinal barrier allowing toxics to enter the bloodstream.

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The Epigenetic Theory of Autism (The Walsh Theory of Autism)

- The recipe for Autism:
 - Inborn Predisposition
 - Environmental Insult
- Environmental insults during the first month of gestation can produce abnormalities in gene expression that may persist throughout life.
- In some cases, these abnormalities can be transferred to future generations. This could result in a geometric increase in the number of autism-prone families.
- Epigenetic errors are enhanced by abnormal methylation and nearly all autism spectrum patients are undermethylated.

Walsh, William J. *Nutrient Power*. New York: Skyhorse Publishing, 2012.

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Environmental and Epigenetic Influences

- What is **epigenetics**? Epigenetics involves the alteration in gene expression due to chemical factors in the womb and the influence of environmental factors throughout life.
- Every cell in our bodies has the potential for expressing any of the 20,000+ genes in our DNA. The production of gene proteins or "gene expression" can be switched on or off (gene silencing or "bookmarking").
- These epigenetic processes are more vulnerable to environmental factors such as radiation, temperature, pesticide exposure, dietary choices, toxic metals, viruses, stressful life events, etc.
- EMF/sleep disturbances
- Attention has been focused on the direct insults to the child from conception to age 3

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A Strategy for Enhanced Cognition, Speech and Socialization

- Powerful antioxidant therapy,
- Methylation protocols,
- Biochemical therapies aimed at reversing epigenetic errors,
- Behavioral therapies (ABA) that enhance brain maturation.

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Metallothionein-Promotion Therapy and Biochemical Interventions

- Biochemical therapies and other interventions can either (a) adjust gene expression or (b) overcome the effect of altered gene expression.
- An epigenetic tendency for high oxidative stress can be effectively treated using Metallothionein-Promotion Therapy:
 - Directly aimed at development of brain cells
 - Potential for permanently correcting the intestinal and blood/brain barriers
 - Restores a key antioxidant system

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Mensah Medical
Healthcare Reinvented.

- Founded in 2008 by Drs. Albert Mensah & Judith Bowman
- Located in suburban Chicago (Lisle, IL)
- Outreach Clinics in Arizona, California, Florida, Maryland and Michigan
- Over 50,000 patients treated
- Treat Mental and Psychological Concerns that Result from Biochemical Imbalances
- Provide Training Worldwide on Targeted Nutrient Therapy Treatment Protocols
- Mensah Research Institute provides evidence of efficacy of natural healing techniques



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Comprehensive Evaluation

- What is out of balance?
 - Nutrient overloads and deficiencies
- Metal regulation and metal dysregulation
- Environmental and epigenetic Factors
- Gastrointestinal (GI) issues including food allergies/sensitivities and malabsorption
- Testing for methylation disorders
 - Histamine evaluation
- Pyrrole Disorder
 - Oxidative Stress/Inflammation

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Overview of Treatment

- Physical Examination
- Extensive Patient History
- Specialized Laboratory Testing (blood and urine)
- Diet and Gastrointestinal (GI) issues
- **Advanced Nutrient Therapy** protocols are prescribed at the appropriate therapeutic level to target the patient's specific needs in order to correct underlying biochemical imbalances.
- Nurse/Physician Follow-Up Care



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Healthcare Reinvented.

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or visit the Mensah Research Institute at
www.mensahresearch.org

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Conclusions...

- 1) Are powerful
 - 2) Need to be bioindividual
 - 3) Imbalances cause ADHD and autism, as well as other mental health challenges including anxiety and depression
- *Addressing specific, bioindividual needs can bring about profound improvement in our clients or patients.*

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Resources

- Advanced Training in BioIndividual Nutrition and Pediatrics/Autism with Julie Matthews
 - BioindividualNutrition.com (Practitioner trainings)
 - NourishingHope.com (For parents and individuals with autism)
- Clinical support and research with Dr. Mensah
 - MensahMedical.com
 - MensahResearch.org
- Advanced Lab Testing with DHA Lab
 - <https://www.dhalab.com>
- Customized Supplementation with Village Green
 - <https://myvillagegreen.com/>

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Contact us....

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