

**Lead-in Workshop: Metal Toxicity and the Impact on Human Health, Remedies and Rationale**  
**International College of Integrative Medicine**  
**Sheraton Station Square Hotel, Pittsburgh, Pennsylvania**

This workshop offers a comprehensive, advanced course for the study of metal toxicology for physicians who are experienced in the field.

**Wednesday, October 1, 2008**

**8:00am -10:00am David Quig, PhD**

Title: Chronic Metal Toxicity: Sources, Potential Consequences, and Assessment of Exposure vs. Net Retention

1. Identify primary environmental sources of the most commonly encountered toxic elements/metals.
2. Recognize predominant symptoms/diseases that have been associated with net retention of specific toxic elements.
3. Understand the primary mechanisms by which toxic elements adversely affect metabolic processes, organ function and health.
4. Understand and be able to apply the most appropriate laboratory tests for assessment of exposure to, and retention of toxic elements

**10:30am -11:30am Kim N. Dietrich, PhD**

Title: Lifelong Consequences of Early Low to Moderate Exposure to Lead: Neuroanatomical and Social Behavioral

Outcomes

1. To understand the biological bases of lead's neurodevelopmental toxicity
2. To understand the long term impact of prenatal and postnatal exposure to lead with respect to behavioral outcomes including juvenile delinquency, adult criminality, and adult ADHD
3. To understand the methods of functional and volumetric MRI, Diffusion Tensor Imaging and their applications in studies of lead's developmental neurotoxicity
4. To understand the impact of early exposure to lead on cortical development and function

Although deficits in cognition have been consistently associated with exposure to lead during early childhood, they may not be among the most important and persistent outcomes of early exposure. In a prospective birth cohort study initiated in 1979, we have demonstrated a robust association between elevated blood lead concentrations during the first seven years of life and adult criminality. Furthermore, using advanced neuroradiological methods, we have observed lead-associated loss of cortical gray matter in areas of the brain (prefrontal cortex) that are linked to executive functions and emotional regulation.

**11:30am-12:30pm Michael Aschner, PhD**

Title: Transport and Mechanisms of Toxicity of Manganese: From Worms to Humans

1. Identify essentiality and toxicity of Mn
2. Identify symptoms associated with Mn toxicity and similarities to Parkinson's disease
3. Discuss mechanisms of transport and neurotoxicity associated with Mn exposure
4. Identify mechanisms for detection of Mn in humans and potential consequences of exposure

I will discuss contemporary issues associated with Mn exposure ranging from what we can learn from worms and how to apply the findings to humans. Furthermore, I will discuss mechanisms of neurotoxicity and identify humans that may be at risk for exposure to this metal.

### **1:30pm-2:30pm John P. Trowbridge MD**

Title: History of Chelating Agents EDTA-DMPS-DMSA

1. Identify the key events in the development of complexation chemistry as a treatment modality
2. Explain the mechanism by which specific metals are incorporated into different heterocyclic rings, creating selective applications for different chelating compounds
3. Describe several political and economic forces that have limited the use of chelation as a treatment
4. Provide to non-medical public a rational explanation of how chelation has developed over time as a valuable treatment for degenerative disease

Complexion chemistry was discovered 120 years ago as a newly appreciated molecular binding, but 50 years elapsed before its application as a medical treatment was recognized. In the last 50 years, substantial progress has been made in learning how the removal of toxic metals can dramatically reverse deteriorating organ functions and degenerative diseases. Increasing awareness of how our polluted environment poses major health risks means that chelation has a bright future as a medical modality.

### **2:30pm-3:30pm Ted Rozema, MD**

Title: Introduction to Chelating Agents from a Chemistry Point of View: How and Why they Work

1. To delineate the process of chelation from the chemist's point of view.
2. The reasons why different chelating agents are necessary for different metals.
3. The importance of stability constants and how they explain why a specific chelating agent binds some but not other metals
4. Develop an understanding as to why the removal of toxic metals benefits the host organism

The student will have an understanding of the process of chelation and why it is so integrated into the life of all organisms. There will also be an appreciation of the toxicity of chelating agents and the ways to avoid them.

### **4:00-5:00pm Vasken Aposhian, PhD**

Title: Autism: Thimerosal, DMPS & DMSA

1. Update knowledge concerning mercury toxicology
2. Possible etiologies of autism
3. Thimerosal Pharmacology and toxicokinetics
4. DMPS and DMSA: pharmacology and toxicology

There is a growing belief that one of the causes of autism is the Thimerosal in childhood vaccines. Evidence for this and other etiological factors will be presented plus DMPS & DMSA use.

### **5:00pm-6:00pm Ted Rozema, MD**

Title: Specific Chelators- EDTA- Chemistry and Mechanism of Action- EDTA Toxicity-how to protect the patient

1. The student will understand the specific characteristics of EDTA and coordination numbers
2. The difference between ligand binding and true chemical chelation
3. Why we modify the EDTA molecule to achieve the goal of removing calcium from metastatic sources
4. How to be safe in the use of EDTA- understanding the importance of the Parathyroid hormone involvement in the action of EDTA

The student will understand the different types of EDTA molecules and how to use them safely and successfully, whether removing calcium from metastatic deposits or removing toxic metals that are amenable to the EDTA molecule.

Thursday, October 2, 2008

**8:00am-8:45am David Quig, PhD**

Title: Safe and Effective use of DMPS and DMSA: Protecting the Patient

1. Understand why it is imperative to assess glomerular filtration and liver enzymes prior to and intermittently during metal detoxification with DMPS and DMSA
2. Recite the reasons for assessing and optimizing gastrointestinal health and function during metal detoxification, especially when using oral thiol-containing agents
3. Obviate the rationale for inclusion of antioxidants to a)protect the body b)enhance metal excretion
4. Understand the importance of adequate protein and specific essential elements in metal detoxification

**8:45am -10:15am Jeff Bradstreet, MD**

Title: Rationale and Therapeutic Use of DMSA, DMPS, D-Penicillamine and CaNa<sub>2</sub>EDTA in Heavy Metal Intoxication and

Exposure: Implications for Children and Adults.

1. Define objective criteria for heavy metal exposure based on history and laboratory methods
2. Explain the shortcomings of various laboratory methods to detect past heavy metal exposure
3. Present the pathophysiology of metal intoxication as mediated through free radical formation, oxidative stress generation, glutathione depletion and glutamate excitotoxicity
4. Show mechanism by which various chelators can scavenge free radicals, reduce oxidative stress, contribute to the reduction of inflammation and improvement of mitochondrial dysfunction.

A common central pathway has emerged whereby oxidative stress and inflammation are linked to mitochondrial dysfunction and neurodevelopmental abnormalities. Heavy metals are a potential contributor to redox issues and mitochondrial dysfunction, but chelators may have applications beyond merely their intrinsic chemistry as heavy metal binding agents. Chelation appears to represent a viable means of detoxification of free radicals in children with autism spectrum disorders and this may have broad application to other neurodegenerative disorders.

**10:45am-11:45am Ted Rozema, MD**

Title: Protocol for Clinical Use of Both Mg<sub>2</sub>NaEDTA and CaNa<sub>2</sub>EDTA

1. The use of EDTA can be fraught with difficulty if the reason for the use of synergistic ingredients are not understood
2. Time of and rate of administration are discussed
3. Each ingredient is discussed and the rationale for each is presented
4. The great difference between Calcium and Magnesium EDTA is explained and the importance of using each one carefully

The student will be able to use EDTA successfully with the understanding of the cautions and importance to use each form as indicated and the reasons to not use them inappropriately.

**11:45am-12:30pm Terry Chappell, MD**

Title: Supporting Evidence of Na<sub>2</sub> Mg EDTA in clinical medicine

1. Learn the evidence that supports the mechanisms of actions of EDTA
2. Learn the clinical evidence in favor of the use of EDTA clinically
3. Learn the evidence with Negative Conclusions
4. Learn about the progress of the TACT trial to date

EDTA has multiple mechanisms of action and has been used for multiple indications. This talk will review the scientific evidence for its use.

**1:30pm-2:30pm Stephen Olmstead, MD**

Title: The Pathogenesis of Atherosclerosis and Angiogenesis

1. Understand that atherosclerosis is a response to endothelial damage
2. Understand the role of systemic and localized inflammation in atherosclerosis
3. Understand the role of smooth muscle cell proliferation and dedifferentiation – atherogenesis
4. Understand nutritional interventions that may favorably modulate atherogenesis

The lecture will review the role of endothelial damage and the resultant smooth muscle cell proliferation response in the etiology of atherosclerosis with an emphasis of inflammation and ossification.

**2:30pm-3:30pm Efrain Olszewer, MD**

Title: Mitochondrial Pathophysiology; Implication of Toxic Metals; Restoration of Oxidative Function

1. Mitochondrial interference on heavy metals
2. Missing mineral catalysts of antioxidant enzymes
3. Chelation Therapy and ATP homeostasis
4. Energy production interference and chronic disease

We will discuss the relationship between mitochondrial activity and toxicity interference, and the importance of chelation therapy for homeostasis.

**4:00pm-5:00pm Swaran Flora, PhD**

Title: Chemistry and Creation of new Chelating Agents- From the Laboratory to the Human

1. Therapeutic efficacy of new DMSA analogues particularly monoisoamyl DMSA against chronic lead/arsenic exposure in animal models; to assess if they are better than DMSA in depleting lead/arsenic and provide better recovery in altered biochemical variables.
2. If chelation therapy in chronic lead-intoxicated rats could a) circumvent the altered Ca<sup>2+</sup> homeostasis and prevent neuronal death b) be useful in functional recovery in altered behavior, altered neurotransmitter, calcium homeostasis, and apoptotic molecules; c) the critical molecules that could prevent or revert early neuronal apoptosis; d) if combined administration of CaNa<sub>2</sub> EDTA and DMSA lead to no redistribution of lead and address some of the major drawbacks of treatment with CaNa<sub>2</sub>EDTA.
3. Discuss if combined chelation of succimer (DMSA) which is a hydrophilic chelator and its analogue, which are lipophilic in nature and presently have a minimal clinical role, could be a better option for treatment of chronic arsenic poisoning
4. Whether lead/arsenic induced oxidative stress is reversible following chelation therapy.

Combination therapy with Monoisoamyl DMSA and Calcium disodium EDTA might be a better treatment protocol than mono therapy with these chelators in lead-induced neurological disorders. I will report the role of Ca<sup>2+</sup> in regulating neurological dystrophy caused by chronic lead exposure in rats and its recovery with a two-course treatment regime of mono or combination therapy.

# **International College of Integrative Medicine**

## **Sheraton Station Square hotel, Pittsburgh, Pennsylvania**

The purpose of this meeting is to explore the important role of food in medicine. The proper intake of nutrients as food, their digestion and their absorption are crucial for the optimal function of the body. Deficiencies, interactions, and toxicities are significant aspects of food intake. This meeting will explore evidence-based concepts to utilize food and nutrition in treating and preventing diseases, correcting imbalances, and improving health performance.

**Friday, October 3, 2008**

### **8:00am-9:00am Paul Saunders, PhD, ND**

Title: Food and Nutrition: An Introduction

1. To understand the basic components of food
2. To learn how to approach and analyze a patient's diet
3. Sources of information about what is in food
4. To improve on reading labels
5. To identify the general beneficial foods for selected chronic diseases: treatment and prevention
6. To learn how to find references

### **9:00am -10:15am Mark Hyman, MD**

Title: Food as Healer, Food as Slayer: The Past, Present and Future of Food and Humans

1. Identify the major landmarks in the history of food and humans
2. Identify intellectual lineage of functional and nutritional medicine and systems biology and their key teachings/discoveries including Linus Pauling, Roger Williams, Bruce Ames, Gregory Bateson, Robert Heaney, and Jeffrey Bland
3. Understand the paradigm shift in medicine in the 21st century from reductionist diagnosis based medicine to the clinical application systems biology, genomics and functional based medicine
4. Understand the application of systems medicine through case studies
5. Learn 10 clinical pearls in nutritional medicine

Summary: How has something as simple as eating food become the most controversial and confusing subject of modern culture and science, spawning widely differing views on what to eat? The history of food and human culture provides insights into how and why we are in an epidemic of personal and economic suffering. However embedded and often hidden within the last 50 years of nutritional science is a new model of understanding the role of food in health, both as healer and slayer. Functional medicine and systems biology provides a simple organizing principle to orient us scientifically and clinically in an era of increasing information, but limited knowledge and wisdom. A new simple clinical model, and simple clinical tools for healing based on systems biology re-orient us in the face of the intentional complexity of "nutritionism", government policy and food industry practices. It allows us to use food to support, nourish, prevent, treat and even cure most of the chronic illnesses of the 21st century affecting 162 million Americans.

### **10:45am-11:30am Stephen Holt, MD**

Title: Natural Ways to Digestive Health

1. Evidenced-based approaches to GI health using nutritional and botanical agents presented
2. The concepts of the digesta, prebiosis, probiosis, and enzyme supplementation will be reviewed
3. The biopharmaceutical potential of several natural substances will be examined using peer review medical literature

**11:30am-12:30pm Wayne Fiester, DO**

Title: Traditional Diet: A Remedy for Disease

1. Examine Health of Primitive People
2. Characteristics of Traditional Diets
3. Using A Traditional Diet for Modern Health
4. Dietary Dangers

**Lunch Speaker: Sylvie Beljanski, President of Natural Source International, Ltd.**

Title: Nutritional Approach to counteract environmental toxins

1. The role of environmental toxins in DNA destabilization.
2. Developing a nutritional program specifically for teenagers--drawn from European experience and education—and designed to help prevent the early onset of DNA destabilization.
3. European detoxification strategies for preventing DNA destabilization.
4. Nutritional support for maintaining optimal health and counteracting the effects of DNA destabilization.

The presentation will review the discoveries of Mirko Beljanski PhD—a scientist who worked at the Pasteur Institute—and who demonstrated that the normal structure of our DNA is directly affected by toxins and carcinogens in our environment. Beljanski referred to the changes in the physical structure of the DNA double helix caused by environmental toxins as destabilization and provided evidence that DNA destabilization is a cause of cancer and other degenerative diseases.

DNA destabilization is a cumulative process that is influenced by the level and the frequency of our contact with molecules that damage DNA structure. We are exposed to these compounds in the air we breathe, in the water we drink, and in the food we consume. Indeed, many of these molecules are directly ingested as part of our diet: pesticides on fruits and vegetables, hormones in milk and meat, and heavy metals in fish.

**2:00pm-3:00pm Ellie Campbell, DO**

Title: Vitamin D: Not just for Osteoporosis any more

1. Understand the basics of Vitamin D synthesis
2. Identify the most useful lab tests for diagnosing Vitamin D deficiency
3. Name 8 disease states associated with Vitamin D deficiency besides osteoporosis
4. Recognize Vitamin D as a molecule with Bio-Identical Hormone functions
5. Describe 4 strategies for Vitamin D repletion
6. Define signs and symptoms of Vitamin D toxicity

**3:00pm-3:45pm Efrain Olszewer, MD**

Title: How to modulate neuropeptides and neurotransmitters with food and food supplements as a therapy for obesity

1. To understand how neuropeptides and neurotransmitters work for hunger and satiety
2. How to use food and food supplements in order to stimulate satiety neuropeptides and to increase neurotransmitters that control specific pathways of hunger
3. Relationship between obesity and the hypothalamic axis
4. Understand serotonin, GABA, catecholamines in hunger and satiety

5. Orthomolecular view of diet and exercise together with food supplements and protein –low glicemic index foods

**Saturday, October 4, 2008**

**8:00am -9:15am Tanya Edwards, MD**

Title:

**9:15am -10:30am Mark Houston, MD, MS**

Title: Mercury and Cardiovascular Disease

1. Review pathophysiology of mercury toxicity
2. Discuss types of mercury
3. Mercury role in hypertension
4. Mercury role in cardiovascular disease

**11:15am-12:30pm Doug Graham, DC, D.N.H.**

Title: The Art, Science, and Philosophy of Sports Nutrition

1. Explain primary nutrient concerns for optimal recovery and how to monitor them
2. Explain primary blocks to optimal recovery
3. Discuss the role of hydration and to monitor it
4. Insuring optimum digestion, absorption, assimilation, and elimination of food
5. Learn the basic guidelines and rationale for optimal nutrition

Develop the expertise for building a consulting business. Access the support materials while gaining the knowledge to explain what to eat before, during, and after all physical activity.

**2:30pm-3:30pm Tom Malterre, MS**

Title: Gluten Sensitivity and Celiac Disease-Prevalence is Rising and Recommendations are Failing

1. Discuss Prevalence and Current Diagnostic Tools
2. Cover Diverse Symptoms and Diseases associated with these conditions
3. Review potential nutritional deficiencies and supplementation
4. Provide awareness to pitfalls of a Gluten-Free Diet and optimal solutions

100% of clients presenting to my nutrition practice claiming to be on a gluten-free diet are missing hidden sources of gluten. Would a small amount make a large difference in health outcomes? A review of the scientific literature surrounding this condition and its nuances will cover this question and many more like it.

**3:30pm-4:30pm William Shaw, PhD**

Title: Ceasefire needed in War Against Cholesterol?

1. Teach the importance of cholesterol for good health
2. To present evidence of diseases associated with low cholesterol
3. To indicate the benefits of cholesterol supplements
4. To indicate the widespread deficiency of cholesterol in autism

Although high cholesterol is associated with arthrosclerosis, cholesterol deficiency due to inadequate nutrition or overuse of statin drugs is associated with increase rates of neurologic, psychiatric, and infections diseases.

**4:30pm-5:30pm Ritchie Shoemaker, MD**

Title: When Panacea Faces off with Hygiea

1. The listener will be able to identify and distinguish innate and acquired immune responses
2. The listener will be able to incorporate the series of innate immune activation events into his or her clinical practice
3. The listener will be able to identify a patient who meets the peer-reviewed case definition of acute and chronic illnesses acquired following exposure to biologically produced neurotoxins
4. The listener will be able to initiate pharmacologic therapy to treat each of the identified series of abnormalities in innate immune responses in patients with illnesses identified in (3.) above.

Summary: Dr. Shoemaker will review the academic basis or diagnosis and treatment of patients made ill following exposure to toxigenic fungi, dinoflagellates, spirochetes and cyanobacteria. Diagnosis follows the parameters laid forth in a case definition of illness; monitoring progress of illness employs elements of innate immunity, particularly anaphylatoxins C3a and C4a, as well as VEGF and MMP9; providing prognosis involves unveiling of all elements of the illness persistent after all therapies are exhausted.

**Sunday, October 5, 2008**

**8:30-9:30am Mindful Eating Roundtable**

Discussion featuring Tom Malterre MS, CN, Paul Saunders ND, PhD, Steven Holt MD and Bessie Jo Tillman MD

**9:30-10:30am Rene Blaha MD**

Title: The Art of Medicine; Communicating with the Body

1. Testing the body with medicine and recognizing which medicine is right for the patient
2. Minimizing allergic reactions
3. Testing the body with food and recognizing which food is what the patient's body needs

**10:15am-12:00 Therapeutic Diet Protocol Roundtable Discussion**

**2:00pm Post Conference Workshop (included in registration cost)**

**Richard H. Rossiter, C.A.R.**

Title: Step Out of Pain the Rossiter Way

1. The role of connective tissue in creating structural pain in the body
2. How stretching connective tissue can relieve/prevent pain
3. Actively, consciously involving patients in pain relief and recovery
4. In-office stretching techniques for upper-body and lower-body

Simple, in-office, two-person stretching techniques can prevent and relieve many of the common structural aches and pains that patients present- low back pain, stress headaches, carpal tunnel syndrome, knee and hip pain, shoulder and neck pain, heel spurs, plantar fasciitis, etc.