

## 2015 Orthomolecular Medicine Hall of Fame



Inaugurated in 2004, the Orthomolecular Medicine Hall of Fame recognizes the achievements of pioneers and leaders in the advancement of Orthomolecular Medicine. On Saturday, April 25, during the Orthomolecular Medicine Today Conference, four new members were inducted, bringing the total number in the Hall of Fame to sixty-four. Pictured above from left to right: Aileen Burford-Mason, L. John Hoffer and Hyla Cass.

### Irwin Kahan 1919-2015

Irwin Kahan was born on a Saskatchewan farm in 1919. After serving with the Royal Canadian Air Force during World War II, he graduated from McGill University with a social work degree.

In the 1950s, Irwin was an integral member of the research team, headed by Dr. Abram Hoffer, that provided the foundation for the orthomolecular medicine approach. Later, as Executive Director of the Saskatchewan Division, Canadian Mental Health Association, for over a decade he advocated fiercely for the adoption of orthomolecular treatment.

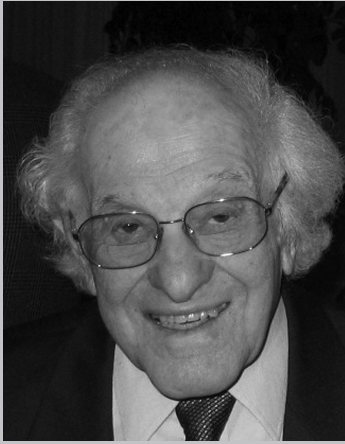
In 1968, Irwin became the founding director of the Schizophrenia Foundation of Saskatchewan, and shortly afterwards the founding executive director of the Canadian Schizophrenia Foundation (now the International Schizophrenia Foundation). With passion and dedication, Irwin worked hard to

create, with very few resources and in a hostile psychiatric community, a new organization dedicated to improving the lives of people with schizophrenia. In this endeavour, he worked closely with his wife Fannie Kahan, Abram Hoffer, other CSF board members, and a large crew of volunteers from branches which he had established across Canada. In 1975, the Academy of Orthomolecular Psychiatry elected Irwin as an honorary member "in recognition of meritorious contributions to Orthomolecular Psychiatry."

Irwin's approach was multi-pronged, focusing on: assisting people at the grassroots level; policy and advocacy at the government level; media communications to promote widespread public understanding of schizophrenia and the orthomolecular approach; and raising professionals' knowledge regarding orthomolecular practice.

Irwin is the author of the memoir *Tending the Tree of Life* (Wild Sage Press, 2015), which includes some of his orthomolecular

Irwin Kahan



Aileen Burford-Mason



medicine experiences. Irwin's three decades of putting his heart and soul into advocating for better treatment and conditions for schizophrenics resulted in many lives saved from years of suffering and an increase in the quality of those lives.

## Aileen Burford-Mason

Born Aileen Philomena Reilly in Birmingham England, Aileen returned with her parents to their native Ireland when she was three years old. Her earliest education was at the Dominican Convent, Santa Sabina, Dublin, where her favourite activities were writing, drawing and performing in school productions. From there she went to boarding school at Loreto Convent, County Meath, where she learned little science but developed a lasting love of music.

Aileen's scientific education began in earnest at University College Dublin where she obtained her Bachelor of Science degree. After graduation she moved to England to pursue a research career as a forensic biochemist in the horse-racing town of Newmarket, Suffolk. Her most enduring memory of that time was her futile attempts to appear calm and unruffled when collecting blood and urine samples from horses. (The horses were not fooled and to this day she is

afraid of horses.)

While living in Newmarket Aileen met and married the love of her life, Roger Burford-Mason (d. 1998). They moved to Hitchin, Hertfordshire, where their son Oliver was born. After some years in teaching, she returned to research, this time in immunology. In 1983 she completed her PhD in immunology and continued research in that field until 1988 when she emigrated with her family from the UK to Canada.

Once in Toronto she moved into cancer research, holding positions as Research Associate and later Assistant Professor in the University of Toronto's Department of Pathology. However, a nutritional thread had run through her research career, and she gradually became convinced that all disease had its roots in inadequate nutrition. So in 1996 she made the transition from conventional research to orthomolecular medicine.

Today Aileen divides her time between her private practice, writing, and lecturing to medical and allied health professionals on the evidence based use of diet and supplements in health maintenance and disease prevention. Since 2008, Nutrition for Docs, the course on diet and supplements she designed and teaches has been presented across Canada to 1,700 doctors. *Eat Well, Age Better*, her best-selling book based on the course, has been enthusiastically received by doctors

Hyla Cass



Leonard John Hoffer



and the public. Aileen serves on the editorial board of the *Journal of Orthomolecular Medicine* and is a member of the core faculty of the Orthomolecular Medicine Today Conference. She is currently working on a new book to be published by Harper Collins in spring 2017.

## Hyla Cass

Hyla Cass MD is an internationally acclaimed psychiatrist and one of the our foremost experts and pioneers in integrative medicine. Combining the best of natural medicine with modern science in her clinical practice for over 30 years, and in writings, lectures, and media appearances, she's certified by the American Board of Psychiatry and Neurology (ABPN), as well the American Board of Holistic Integrative Medicine (ABIHM).

She is the author of a number of popular books including *St. John's Wort: Nature's Blues Buster*; *Kava: Nature's Answer to Stress, Anxiety and Insomnia*; *Natural Highs; Supplement Your Prescription*; *8 Weeks to Vibrant Health*; and *The Addicted Brain and How to Break Free*.

Dr. Cass also speaks to professional and lay audiences on topics ranging from complementary medicine and psychiatry, longevity enhancement, women's health

and hormones, weight management, and natural treatments for addiction, anxiety disorders, and depression. Audiences include the American College for Advancement in Medicine, the International Society for Orthomolecular Medicine, and The American Academy of Anti-Aging Medicine (A4M).

Born in Toronto, Canada, Hyla obtained her pre-medical and medical education from the University of Toronto School of Medicine, interned at LAC-USC Medical Center, then completed her residency training at Cedars-Sinai Medical Center, Los Angeles, where she then served as an attending staff physician for 10 years.

An Assistant Clinical Professor of Psychiatry at UCLA School of Medicine for 20 years, Board Member and Chair of Vitamin Relief USA, providing at-risk children, teens, seniors and adults with daily multiple vitamins across the U.S, she also is a Board Member of the American College for Advancement in Medicine (ACAM), Advisory Board member at Taste for Life Magazine and Medical Editor at Total Health Magazine.

Most recently she serves on the Board of Governors of the Placencia Health Group, which is creating a Medical Free Zone in Belize, while maintaining the highest scientific, professional and ethical standards, with an innovative World Center for Anti-Aging Medicine and Clinical Therapies.

## Leonard John Hoffer

Leonard John Hoffer is a Professor of Medicine at McGill University and Associate Professor in McGill's School of Dietetics and Human Nutrition. He is a full-time investigator in the Lady Davis Institute for Medical Research, Jewish General Hospital, Montreal, and a Senior Physician in the Divisions of General Internal Medicine and Endocrinology in the JGH, where he serves on the nutritional support team.

Dr. Hoffer obtained his medical and subspecialty training in internal medicine at McGill, then a PhD in Human Nutrition at the Massachusetts Institute of Technology, Cambridge MA, a clinical fellowship in nutritional support at Harvard Medical School, and a post-doctoral fellowship in biochemistry at Brandeis University, returning to McGill in 1984 as an assistant professor. Dr. Hoffer's research and clinical interests focus on the relationship between disease and malnutrition, the metabolic adaptation

to starvation, and micronutrient metabolism in disease. He authored the chapter on the metabolic features of human starvation in the last several editions of the clinical nutrition textbook, *Modern Nutrition in Health and Disease*, and co-authored the chapter entitled "Enteral and parenteral nutrition therapy" in the 2015 edition of *Harrison's Principles of Internal Medicine*, the world's most prestigious medical textbook. In 2012 he was recipient of the Kursheed Jeejeebhoy Award and Plenary Lecture, Canadian Nutrition Society.

Influenced throughout his career by the ideas of his father, Abram, John Hoffer has spent much of his career thinking about and studying the therapeutic potential of nutrition in the treatment of important diseases, including cancer. He has served on the editorial board of the *Journal of Orthomolecular Medicine* for decades, and since 2009 as associate editor. With funding from the Hecht Foundation, he was able to contribute to interest in and study of the use of high-dose vitamin C in cancer therapy.

## Highlights from the 44th Orthomolecular Medicine Today Conference

by Paul Demeda, CNP

### Neil Riordan, PhD

*Secretions of Mesenchymal Stem Cells: The Next Generation in Orthomolecular Medicine*

Dr Riordan presented on the benefits and uses of Mesenchymal Stem Cells (MSCs) for addressing a variety of chronic and critical health issues. MSCs and their secretions are an important repair system in the body and control aspects of immunity, inflammation, and stimulate regeneration of cells and tissue. The number and function of MSCs dramatically decrease as people age.

#### Key points from the lecture:

- MSCs live on vascular beds throughout the body.
- Decreased capillary beds – due to decreased nutrients and other factors – house less MSCs.

-MSCs secrete compounds that stimulate resprouting of neural fibres and repair spinal cord.

-Bone marrow MSCs are a safe and feasible treatment for spinal cord injury.<sup>1</sup>

-The MSC-secreted protein IGFBP-4 consistently inhibits several cancer cells *in vivo* and *in vitro*.<sup>2</sup>

-Human MSC cells did not provoke an autoimmune response when injected into rats.

### Tom Levy, MD, JD

*Calcium: The Toxic Nutrient*

Dr Levy presented on the causes of, and negative effects of excess calcium in the body.

#### Key points from the lecture:

- The majority of people in the developed parts of the world experience body-wide ex-

cess of calcium, NOT deficiencies.

-Excess calcium is toxic to the body and a factor in ALL chronic diseases. Causes of calcium excess include intake from diet or supplements, and antioxidant deficiencies, especially vitamin C.

-Osteoporosis is focal scurvy of the bones. Vitamin C is required for the formation of collagen in the bones, stimulates bone-building cells and inhibits bone-destroying cells. Vitamin C is depleted by chronic inflammation and body infections. Low levels of antioxidants, especially vitamin C, favour bone destruction.

-Chronic calcium loss from bone feeds a corresponding excess of calcium elsewhere in the body.

-Excess calcium promotes arterial calcification. Calcifications are commonly seen in patients with cancer.

-Death from all causes is increased by elevated calcium intake from diet or supplements.

### **Atsuo Yanagisawa, MD**

*Orthomolecular Treatment for Girls with Adverse Effects of Human Papilloma Virus (HPV) Vaccine*

Dr Yanagisawa's presentation addressed the negative effects of HPV vaccine and orthomolecular steps to address them. The Japanese government suspended their recommendation for inclusion in the vaccination schedule after just two months due to the high amount of adverse events.

#### **Key points from the lecture**

-Delayed onset symptoms can appear many months after vaccination and may be due to movement of vaccine particles to different tissues over time. Symptoms include headache, muscle weakness and pain, dizziness, joint pain, hypersomnia, and memory loss.

-Lab findings show, normal blood chemistry, absence of inflammatory markers in blood, increased proinflammatory cytokines in spinal fluid, reduced brain blood flow, and high leukocyte sensitivity against aluminum.

-The HPV vaccine contains the adjuvant Amorphous Aluminum Hydroxyphosphate

Sulfate, which is implicated in various inflammatory neurological and autoimmune disorders.

-Treatment options that have proven effective at addressing adverse effects from the vaccine include IV vitamin C, glutathione, EDTA, and oral nutrients including EPA, DHA, GLA, turmeric, and lipoic acid.

### **Hyla Cass, MD**

*The Addicted Brain and How to Break Free*

Dr Cass discussed the imbalances and other factors that can lead to addictions, as well as natural approaches for addressing them. She also reported on appropriate supplements and nutrients and included dosing information.

#### **Key points from the lecture**

Steps for addressing mood and addiction issues:

-Rule out conditions that affect brain function, including: food allergies, blood sugar issues, adrenal and thyroid issues, sex hormone imbalances, and stress.

-Incorporate lifestyle changes, for example mind-body techniques, guided imagery and meditation.

-Supplement with vitamins, minerals, amino acids and herbs that help balance mood and stop cravings. Natural mood elevators and energizers include tyrosine and D,L-phenylalanine to support dopamine; and 5-HTP and L-tryptophan to support serotonin.

-N-acetylcysteine has shown benefit in the treatment of food, gambling, nicotine, cocaine and cannabis addiction at doses of 2,400 mg daily.<sup>3</sup>

### **Benjamin Brown, ND**

*Brain Mitochondrial Metabolism and Psychiatric Illness*

Dr Brown presented that brain mitochondria are crucial for important aspects of brain function and dysfunction of mitochondria can contribute to neurodegenerative and psychiatric disorders. He also discussed natural ways to support mitochondria health.

**Key points from the lecture.**

Key ways to support healthy brain mitochondria:  
 -Follow a natural-food-based diet high in phytonutrients. Phytonutrients support neuroprotection, neurogenesis, and are associated with optimism, cognitive resilience, and vigor.  
 -Challenge the brain with calorie restriction. Rodent models show restriction preserves mitochondrial energy production and neuronal activity<sup>4</sup>  
 The brain functions best when the individual is hungry and physically active.<sup>5</sup>  
 -Following a ketogenic diet improves mitochondrial function, decreases apoptosis and inflammation. Adding supplemental ketone bodies to a healthy diet may help achieve the same effects.<sup>6</sup>  
 -Include nutrients that support mitochondrial health, including acetyl-L-carnitine, creatine, CoQ10, and fish oils.

**Garry Vickar, MD**

*The Abram Hoffer I Knew*

Dr Vickar discussed his experiences growing up with, and the influences Dr Abram Hoffer had on his decision to enter the field of psychiatry, and also outlined Dr Hoffer's trials with the conventional psychiatry establishment.

**Key points from the lecture:**

-From early on in his career Dr Hoffer was scrupulously honest and ethical, never adding his name to a paper he had not materially contributed."  
 Dr Hoffer's thoughts on treating people:  
 -a diagnosis enables, not disables people, it allows them to move forward  
 -the first step is decency, be respectful, honest, courteous, and ethical  
 - be non-judgemental, empathetic, convey a feeling of safety  
 -do no harm  
 -no one can treat a patient if there's not a sense of hope, expectation and trust

**Ron Hunninghake, MD**

*Thyroid Dysregulation and the Metabolic Roots of Cancer*

Dr Hunninghake discussed the roles of oxidative factors and antioxidants in the outcomes of cancer patients, as well as the causes and effects of decreased oxygen utilization and thyroid hormone dysregulation.

**Key points from the lecture.**

The low oxygen cycle.  
 -Low cellular oxygen decreases ATP generated by the Krebs cycle. This results in decreased production of antioxidant enzymes – which leads to increased mitochondrial injury. Mitochondrial injury causes cells to shift from aerobic to anaerobic energy production and results in less CO<sub>2</sub> output by cells. Decreased CO<sub>2</sub> results in less displacing of oxygen off hemoglobin and therefore decreased oxygen transport to cells.  
 -Increasing oxygen in the body therapeutically helps reverse the cycle.  
 -Low oxygen is a factor in the development and function of cancer cells.  
 Free T3 to reverse T3 ratio.  
 -Free T3 (fT3) is a metabolic activator while reverse T3 (rT3) is a metabolic retardant. fT3 and rT3 are made from T4 by different deiodinase enzymes. 5' deiodinase makes fT3 but is inhibited by stress, infection, starvation, inflammation and toxins (especially mercury, plastics, pesticides). -As fT3 decreases, rT3 increases along with its retardant effects. The ideal target ratio of fT3:rT3 is 18–21/1 as calculated using the formula: fT3 x 100 / rT3. The quickest way to address a low ratio is to use small amounts of T3 along with nutrient support and detoxification.

**Burt Berkson, MD, PhD**

*Alpha-Lipoic Acid's Effects on the Mitochondrion and Human Disease Modification*

Dr Berkson presented on the many roles of alpha-lipoic acid (ALA) in the body and some of its clinical applications including liver disease and cancer. He also presented documentations of dramatic successes with cancer using non-standard cancer protocols.

**Key points from the lecture.**

-Key actions of ALA include scavenging free

radicals, recycling antioxidants, enhancing insulin sensitivity, chelating heavy metals, stimulating organ regeneration and generating glutathione.

-ALA production by the body dramatically decreases as people age.

-ALA pushes anaerobic cell metabolism into aerobic cell metabolism by inhibiting the enzyme pyruvate dehydrogenase kinase (PDK). Inhibiting PDK results in pyruvate being directed into the Krebs Cycle over conversion to lactate.

-Therapeutic doses of IV ALA promote liver regeneration.<sup>7</sup>

-ALA disrupts tumour metabolism, which induces cell death by apoptosis and necrosis,<sup>8</sup> and stimulates apoptosis in human breast cancer cells,<sup>9</sup> and lung cancer cells,<sup>10</sup> and hepatocellular carcinoma cells.<sup>11</sup>

### **John Hoffer, MD, PhD**

*Principles and Practice of Evidence-based Orthomolecular Medicine*

Dr Hoffer discussed the the merits of Evidence Based Medicine (EBM) and steps for using it in practice. He also addressed the important limitation of EBM – bias.

#### **Key points from the lecture**

Some types of bias in clinical investigation include:

-Technically avoidable bias such as poor quality trial design, flawed execution, and biased reporting of results

-Cheating

-Reporting bias, for example only publishing positive trial results. An article in JAMA Psychiatry 2015 reported that the vast majority of positive trials were published while the majority of not-positive trials not published.<sup>12</sup>

-Fundamentalist/fanatical bias, for example stating “there’s no evidence” when evidence exists

-“Flight-of-fancy bias” – drawing conclusions based on relevant but insufficient evidence – “someone reported it in a test tube and 3 mice, so it’s got to work for all people”

-Thoughts on Media based medicine: Jour-

nalism is “a steady stream of irresponsible distortions that most people find refreshing”.

Three steps of EBM:

-obtain and analyze the most reliable, bias-free scientific evidence

-determine the relevance of the evidence to the situation of the patient

-coordinate treatment with regards to the patient’s preferences

### **Aileen Burford Mason, PhD**

*Orthomolecular Cardiology: Unmasking the Magnesium Link to Multiple Cardiovascular Risk Factors*

Dr Burford Mason discussed several important roles of magnesium in cardiovascular health and the dangers of magnesium deficiency.

#### **Key points from the lecture:**

-Cardiovascular symptoms of magnesium deficiency include arrhythmias and atrial fibrillation, palpitations, and increased blood pressure.

-As the ratio of calcium to magnesium increases the death rate from heart disease increases.<sup>13</sup>

-Calcium supplementation can be dangerous. A study on older women supplementing 1000 mg of calcium showed increased risk of myocardial infarction, stroke, and sudden death.<sup>14</sup>

-Magnesium intake decreases coronary artery calcification.<sup>15</sup>

-Magnesium helps regulate cholesterol. Magnesium deficiency results in insufficient Mg-ATP available to deactivate HMG-CoA reductase (the rate-limiting enzyme in cholesterol production), which results in sustained cholesterol production.<sup>16</sup>

-The daily adult requirement (DRI) for magnesium is 300-450 mg. The average intake in North America is around 200 mg.

-Magnesium deficiency is best detected by examining functional signs and symptoms.

### **Benjamin Brown, ND**

*Healing the Heart with Food and Food Bioactives*

Dr Brown presented key dietary measures that have been shown to reverse coronary heart disease.

### Key points from the lecture

Lifestyle changes for cardiovascular health:

- Follow a Mediterranean Diet. The benefit of the diet does not seem to come from the specific foods, but rather from the synergistic effect of the whole diet.<sup>17</sup> A Mediterranean diet supplemented with walnuts or olive oil decreased cardiovascular events by 30%.<sup>18</sup>
- Reduce Advanced Glycation Endproducts (AGEs). AGEs are formed by high-temperature cooking, especially frying, baking and roasting. AGEs in the blood after a meal can impair macro and microvascular function. A low-AGE diet decreases inflammation and oxidative stress.<sup>19</sup>

- Address Diet-Induced Acidosis. Diet-induced acidosis has clinical relevance.<sup>20</sup> A higher dietary acid load increases blood pressure and LDL-cholesterol.<sup>21</sup>

Other beneficial actions:

- Decrease calorie intake enough to decrease weight without causing malnutrition. Calorie restriction protects against endothelial dysfunction and stiffness.<sup>22</sup>
- Increase dietary polyphenols. Polyphenols protect against arterial inflammation.<sup>23</sup>
- Consume nitrate from plant-based foods. Dietary nitrate lowers diastolic blood pressure.<sup>24</sup>

### David Brownstein, MD

*A Holistic Approach to Iodine Deficiency*

Dr Brownstein discussed the key functions and therapeutic actions of iodine, along with reasons for deficiencies and the impact deficiencies have on health.

### Key points from the lecture:

- Defects with the sodium/iodide symporter decrease iodine uptake by the thyroid.
- The main causes of the defects include oxidative damage from fluoride and perchlorate, and inhibition of iodide by competition with bromine.
- Defective function of the symporters can

be deduced when patients don't respond to iodine supplementation, have adverse effects from supplementation, or have very high iodide excretion on iodine loading test.

- Defects can be addressed by countering oxidative damage with antioxidants, detoxification, and the inclusion of iodine and salt to competitively inhibit goitrogen uptake.

- Delta-Iodolactone is created from iodine and arachidonic acid and is a key regulator of apoptosis and cellular proliferation in the thyroid. It is only present with iodine administration at 100 times the RDA (RDA is 150 micrograms for adults).<sup>25</sup>

### James Greenblatt, MD

*Lithium in the Treatment of Mood and Memory Disorders*

Dr Greenblatt discussed the use of pharmaceutical lithium and its health risks, the roles of lithium in the brain, and benefits of nutritional lithium.

### Key points from the lecture:

- Examination of tap water lithium content shows suicide rate and mortality are inversely associated with lithium levels.

- Lithium reduces brain inflammation, possibly by increasing formation of the anti-inflammatory resolvin 17-hydroxy-DHA.<sup>26</sup>

- Lithium decreases dopamine synthesis, release, and effects at the postsynaptic receptor.

- Lithium decreases the activity of glutamate, which is excitatory in the brain.

- Lithium stimulates GABA production and release and upregulates GABA receptors

- Lithium may reduce risk and progression of Alzheimer's Disease. Tau and beta amyloid production is a factor in neurotoxicity and cell damage. The enzyme glycogen synthase kinase-3 (GSK-3) stimulates tau and beta amyloid production. Lithium inhibits the action of GSK-3.

- Lithium may help restore neurogenesis in cancer patients with neurocognitive impairment due to chemotherapy.<sup>27</sup>

- A common form of nutritional lithium is lithium orotate.



## Jonathan Prousky, ND, MSc

*Helping Patients to Overcome Psychosis and Schizophrenia: A Clinician's Experience with the Orthomolecular Approach*

Dr Prousky discussed issues with standard schizophrenia treatment and showed that people did better over time the less they were on antipsychotic medications. He also discussed the need to promote resilience as part of a therapeutic strategy. Dr Prousky discussed specific nutrients for addressing schizophrenia including roles and benefits, dosing, and integrating with conventional therapy.

### Key points from the lecture

Nutrients for addressing schizophrenia:

- Glycine. Mitigates glutamatergic NMDA dysfunction
- N-acetylcysteine. Increases glutathione levels, which helps address positive and negative schizophrenia symptoms
- Theanine. Increases alpha brain-wave activity, which promotes relaxation without sedation and may also increase dopamine and serotonin levels.
- Fish oils. Have been shown to help with the schizophrenic symptoms of hallucinations and delusions as well as depression and isolation.
- Niacin. Hypothetically reduces production of adrenochrome, a hallucinogenic metabolite of adrenaline .
- Vitamin C. Provides protection from glutamate toxicity in the brain, prevents the oxidation of dopamine, and maintains intracellular glutathione.

Key steps for promoting psychological resilience:

- Assess the patient's lucidity
- Assess the patient's readiness for change
- Be hopeful, increase expectations, and use encouragement
- Educate on risks and resources related to the patient's issues
- Promote activity scheduling by the patient
- Encourage daily relaxation or mindfulness training

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