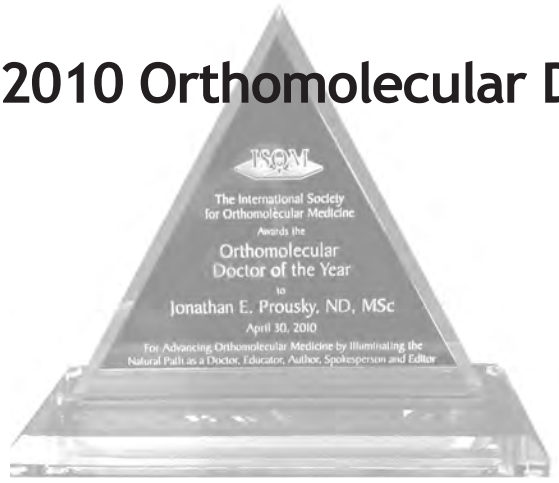
2010 Orthomolecular Doctor of the Year



Jonathan Prousky, ND, MSc, was presented with the 2010 Orthomolecular Doctor of the Year Award* at a special luncheon at the 39th Orthomolecular Medicine Today Conference in Vancouver on Friday, April 30. The triangle crystal award was presented to Dr Prousky by the 2009 recipient, Aileen Burford-Mason, PhD, and Steven Carter, Director of the International Society for Orthomolecular Medicine. The inscription reads "For Advancing Orthomolecular Medicine by Illuminating the Natural Path as a Doctor, Educator, Author, Spokesperson and Editor". Dr Prousky presented two papers at the Orthomolecular Medicine Today Conference, "Vitamin B12 and Psychiatry" and "Chronic Fatigue Syndrome: A Disorder of Microcirculation". Dr Prousky was also recently named as the new Editor of the Journal of Orthomolecular Medicine, which was headed by Abram Hoffer, MD, PhD, until his death in May, 2009.

*Inaugurated in 1998, the Orthomolecular Doctor of the Year is awarded to an outstanding contributor in the field of Orthomolecular Medicine; past recipients include Dr. Abram Hoffer, Dr. Hugh Riordan, Dr. Masatoshi Kaneko and Dr. Harold Foster. This is the first time the award has been given to a Naturopathic Doctor.

Dutch Snowboarder Wins Olympic Gold with Orthomolecular Support

Snowboarder Nicolien Sauerbreij won the Olympic Gold Medal in the parallel giant slalom at the Vancouver Olympics in February. Sauerbreij's achievement is doubly significant: for the first time in history, the Netherlands has won a medal in an alpine event during the Winter Olympics and Sauerbreij's victory marks the 100th gold medal won by the Netherlands in Olympic history. During the most important race of her life, in which she competed with the Russian Ekaterina Ilyukhina, Sauerbreij proved to have nerves of steel and tremendous powers of concentration, aided by top quality nutritional supplements from her sponsor, Platina.

At her third Winter Olympic Games, Nicolien Sauerbreij definitively settled the score for her earlier disappointing experiences. For years, she has been working intensively to crown her elite sport career. On a misty, rainy afternoon in Vancouver–typically Dutch weather conditions– Sauerbreij performed beyond her wildest expectations.

2010 Orthomolecular Medicine Hall of Fame

The 7th Annual Orthomolecular Medicine Hall of Fame Evenwas held at the Farimont Hotel Vancouver on Saturday, May 1, to honour the lives of three orthomolecular pioneers: Casimir Funk, Bruce Ames and Harold Foster. The inductions were co-hosted by Dag Poleszynski, Stephen Lawson and Steven Carter.

Casimir Funk, PhD 1884-1967

Casimir Funk is remembered as an outstanding biochemist and early explorer in the field of nutritional science, who is best known for the first formulation of the concept of vitamins in 1912. It was Funk who coined the term "vitamin," to describe compounds that were "vital" to health and were centred around an "amine" group. He also postulated the existence of vitamins B_1, B_2, C and D. In 1936, he determined the molecular structure of thiamin, and was the first to isolate niacin, vitamin B3. He discovered that many human diseases are caused by a lack of particular nutrients that are readily available in certain foods. He found cures for such devastating illnesses as beriberi, pellagra, ricketts, and scurvy. Funk later did extensive research on hormones.

Born in Warsaw, Poland, the son of a renowned dermatologist, Casimir Funk studied organic chemistry at Switzerland's University of Berne, from which he received his Ph.D. in 1904. Funk worked at the Pasteur Institute in Paris until 1906, and then at London's Lister Institute of Preventative Medicine. It was at the Lister institute that Funk's career as a scientist truly began. He was assigned to research beriberi, a common illness in the Far East that causes peripheral nerve damage and heart failure. Scientists had thought the disease was due to insufficient dietary protein, but Funk discovered that the typical Far Eastern diet of polished rice was deficient in thiamine. Adding this vitamin back into the diet cured beriberi. Later that year, he isolated a substance now known as niacin (vitamin B_3). When he published his findings in 1912 and his book The Vitamin, in 1913, Funk immediately became well known in the scientific world.

The publication of "The Vitamin" earned him public recognition and a Beit Fellowship

from the University of London. He become head of the Biochemistry Department at the Cancer Hospital Research Institute and later became head of research at H. A. Metz and Company, where he remained until 1921. While at Metz, Funk developed Oscodol (a vitamin A and D concentrate). He began a job in NewYork as a consulting scientist for the U.S. Vitamin Corporation, and in 1940 he became president of the Funk Foundation for Medical Research.

During his lifetime, Funk published more than 140 articles, advanced humankind's understanding of nutrition and revolutionized the way people looked at their health. His original insight that lack of vitamins in the diet was responsible for disease helped develop effective preventive and curative measures for anemia, beriberi, osteomalacia, pellagra, rickets, scurvy, and sprue. The Polish Institute of Arts and Sciences of America (PIASA) annually honors Polish-American scientists with the Casimir Funk Natural Sciences Award.

Bruce Ames, PhD
b. 1928

Bruce Ames is a professor of Biochemistry and Molecular Biology at the University of California, Berkeley, and a senior scientist at Children's Hospital Oakland Research Institute. In the 1950s, Ames began working at the National Institutes of Health, where he investigated ways of mutating the DNA of bacteria in order to learn more about gene regulation. This work led him to develop the "Ames Test," one of the key diagnostic tools for detecting cancer-causing substances that is still used worldwide. With that breakthrough test, Ames and other investigators were able to show that most cancer-causing chemicals act by damaging genes. The revolution in the Ames Test was its speed: it can be done in an afternoon, whereas previously animal cancer tests costed million of dollars and took years to complete.

Bruce Ames is a National Medal of Science winner, has published more than 450 scientific papers, and has become one of the most cited scientists alive. As Ames neared 65, his thoughts turned to the notion of aging and his studies of cancer-causing chemicals had led him to consider that aging was connected to free radicals, highly reactive molecules that ravage cell machinery, bond indiscriminately with other molecules, break chromosomes and cripple enzymes. In 1990, Ames published the first evidence that DNA oxidation actually does increase with age. This research on oxidation led him to look more closely at mitochondria because they produce the bulk of the body's free radicals. In order to burn fats and carbohydrates to make metabolic fuel, mitochondria take electrons from oxygen in a complex chain reaction which spils over to create free radicals. In the mid-1990s, he took a closer look at a dietary supplement called acetyl-L-carnitine. (Alcar) Ames reasoned that high levels of Alcar might combat the problems of aging membranes and decrepit enzymes. He began feeding Alcar to his old rats and within weeks, he noticed improvements in the animals' biochemistry and behaviour. Their mitochondria were going full bore again, and they had become far more active. But the old rats were still churning out oxidants at a very high rate. Ames decided to add an agent to the rats' diet to neutralize the oxidants. He tried lipoic acid, a mitochondrial antioxidant. The results were profound. Oxidative damage to mitochondrial components

dropped dramaticallyand mitochondrial structure and function improved. Three years ago, Ames set up a company called Juvenon to test the antiaging combination in humans. Both nutrients—Alcar and lipoic acid—duplicate the original animal research which used 200 mg alpha-lipoic acid and 500 mg acetyl-L-carnitine, twice a day. Ames is also convinced that simple B vitamin therapy could combat many diseases, and has published an exhaustive review, with more than 300 references, showing that no fewer than 50 genetic diseases might be remedied with high doses of vitamins, minerals, and amino acids.

Harold D. Foster, PhD
1943 - 2009

Harold Foster was deeply invested in the resilience of life on the planet, and improving the quality of life for all living things. For more than 40 years, Harold worked as a geomorphologist, professor of medical geography, consultant to the United Nations and NATO in disaster planning, and avid researcher which culminated in the formation of the Harold Foster Foundation.

A Canadian by choice, he was born in Tunstall, Yorkshire, England, and educated at the Hull Grammar School and University College London. While at university, he specialized in Geology and Geography, earning a B.Sc. in 1964 and a Ph.D. in 1968. He was a faculty member in the Department of Geography, University of Victoria, from 1967 to 2008. As a tenured professor, he authored or edited over 300 publications, the majority of which focused on reducing disaster losses or identifying the causes of chronic degenerative and infectious diseases.

His numerous books include *Disaster Planning: The Preservation of Life* and *Property; Health, Disease and the Environment,* and *Reducing Cancer Mortality: A Geographical Perspective.* He also wrote six books in the What Really Causes series, including those on AIDS, Alzheimer's Disease, Multiple Sclerosis, Schizophrenia, SIDS, and Breast Cancer.

Harry became one of the giants in orthomolecular medicine, with boundless enthusiasm, a prolific gift of writing, and was a researcher who made unique contributions in our understanding of health and disease. Harry's soaring scientific mind combined his expertise in geography, epidemiology and orthomolecular medicine to create new insights into nutritional medicine. He had a gift for synthesizing diverse, seemingly unrelated phenomena and showing us the orthomolecular whole.

A fixture at many of the Orthomolecular Medicine Today Conferences, Harry's eagerly anticipated presentations were always fresh and original as he explored the complex relationships between genetic inheritance, health and the "nutritional geographies" of the world. He also conducted many groundbreaking studies of selenium in AIDS therapy in Africa- A low tech, but surprisingly effective approach which large pharmaceutical companies ignored in favour of expensive western therapies whcih, in the end, few Africans would be able to afford.

Harry's accomplishments as a writer, researcher and educator are many and cover a broad range, including serving on the Editorial Board of the *Journal of Orthomolecular Medicine* for fifteen years, and on the board of directors for the International Schizophrenia Foundation for thirteen years.

Speaker Highlights from the 2010 Orthomolecular Medicine Today Conference

Nigel Plummer, PhD

The Developmental Origins of Modern Disease – Are We Programmed to Develop Disease in the Womb?

Most authorities now agree that half the risk factors for chronic disease in adulthood are acquired during the perinatal period. Dr. Plummer presented the volume of evidence for low birth weight as a risk factor for cardiovascular disease, diabetes, depression, and schizophrenia much later on in life. For every one kilogram of lower birth weight there is a 20% higher risk of CVD later in life. An excessively high birth weight was linked to the appearance of some cancers such as breast and prostate.

The low birth weight is often an indicator of malnutrition or other insult at the perinatal period. Dr. Plummer explained that although foetal programming under these circumstances may increase the risk of chronic disease, changes in diet and lifestyle can be beneficial in balancing this risk.

Aileen Burford-Mason, PhD

Nutrition in Pregnancy: An Orthomolecular Approach

Dr. Burford-Mason's comprehensive presentation on the key nutritional considerations for a health pregnancy elucidated a critical window of opportunity for mother and child. The cornerstone is a diet low in glycemic load and high in fruits and vegetables, which decreases various risk factors such as upper respiratory tract infections and preeclampsia. Extra protein was also critical and insufficient protein intake could be a factor in morning sickness.

Important nutritional supplements during pregnancy are a good multi-vitamin with iodine, fish oil, vitamin D, magnesium and vitamin C. Finally, the often forgotten fat, choline, should be added in the diet by eating 1-3 eggs per day or with supplementation to ensure optimal memory development far into adult life.

Bruce Ames, PhD

A Diet for Health and Longevity: How Do We Get There?

A key component of Dr. Ames presentation was his Triage Theory published in 2006 which explains that long-term low micronutrient intake may accelerate the degenerative diseases of aging through allocation of scarce micronutrients by triage. In response to nutrient shortages during evolution a metabolic rebalancing response evolved which favours micronutrient-dependent protein needed for survival while those needed for long-term health are neglected. This results in insidious damage that leads to acceleration of age-associated disease such as cancer.

Dr. Ames recommended that the RDAs and ERAs of micronutrients by re-examined on the basis of the triage theory. Furthermore, the optimum intake of micronutrients will vary among people due to polymorphisms. He also encouraged an inexpensive supplement be provided to the poor as the costs of fruits and vegetables are high for this group.

David Brownstein, MD

Iodine: The Synergistic Importance of an Underutilized Nutrient

Dr. Brownstein's presentation served as a strong reminder of the importance of Iodine

in disease prevention. This antibacterial, antifungal, antiviral mineral is important in the production of all hormones, T_4, T_3, T_2, T_1 and can prevent intellectual deficiency, thyroid disorders and other cancers. The widespread deficiency of iodine in North American may be a result of its scarcity in the soil, modern farming practices, pollution and the presence of competing compounds such as bromines and fluorines. In his patient protocols, Dr. Brownstein orders a 24 hour urine test to check iodine levels. To balance any deficiency he recommends supplementation with either dessicated thyroid, Lugol's Solution or Iodozyme. With 72% of the world population affected by iodine deficiency according to WHO, this may be the new nutrient deficiency epidemic.

Hal Gunn, MD

Integrative Cancer Care: The InspireHealth Experience and Site Specific Immunotherapy

As the Medical Director InspireHealth, an integrated cancer care centre, Dr. Gunn shared study results showing that patients from his centre had extended life spans versus the general BC population. He showed the often dramatic decrease in cancer recurrence with diet and lifestyle changes, such as exercise, a diet low in meat, fat, refined grains, sugar and supplementation with vitamin D. Dr. Gunn's then focused on a new area of cancer research and treatment called site specific immunotherapy. This is based on the idea that the tumour microenvironment may provide a better prognosis than the actual cancer or tumour cells. The macrophages in this environment can either support cancer growth or suppress it. One innovative way of stimulating the body's immune system to suppress cancer growth may be with the use of site-specific vaccines. The research to date for these cancer vaccines is very promising, although more clinical trials will need to be performed.

Brian Schaefer, PhD

Early Cancer Detection

After presenting the background on the discovery and development of salvesterols, a natural compound shown to cause apoptosis of cancer cells, Dr. Schaefer presented the next phase of research on early cancer detection. This work is founded on the fact that CYP1B1 is a universal marker for cancer. When a salvesterol enters the body it is metabolized by CYP1B1 and this metabolite causes apoptosis of the cancer cell. From this knowledge two types of blood and urine tests are in development that can lead to early detection of cancer: 1) proteomic approach; 2) metabolite approach. The proteomic approach is simple and convenient for patients and allows for direct detection and measurement of cancer. The metabolite approach measures the output of the cancer directly and indicates whether the enzyme is working or not. Both tests will be used together once all the validation and further work is complete. The goal of this work is to be able to detect cancer at the stage when diet and lifestyle can have the greatest impact on changing the course of the cancer development.

Dag Viljen Poleszynski, PhD

Optimal Nutrition from an Evolutionary Perspective

Based on the Paleolithic diet, Dr. Poleszynski presented the case for a diet rich in animal fat and protein with no grains. He reminded us that the human species has been genetically stable for over 4 million years and may still require a primarily Paleolithic diet to avoid modern diseases. Dr. Poleszynski also refuted the notion that eating meat could impact cardiovascular disease. A more likely cause he stated was high insulin levels due to carbohydrate consumption. He highlighted the effects of chronically high insulin levels as insulin insensitivity, cardiovas-

cular disease, obesity, increased cancer risk, increased blood cortisol and loss of magnesium from the kidneys. Dr. Poleszynski recommended that blood sugar control be central in all clinical investigations to prevent cardiovascular disease.

William Grant, PhD

The Health Benefits of Vitamin D and Estimates of Reducions in Mortality Rates for Canada and the United States

Dr. Grant's presentation focused on the volume of evidence, including his own research, for optimizing the levels of vitamin D in the population. In fact, "increasing serum 25 (OH) D levels seems to be the single most efficient way to reduce disease incidence and mortality rates." The major diseases that vitamin D reduces risk include 18 types of cancer, cardiovascular disease, diabetes, bacterial and viral infection, autoimmune disease, falls and fractures and even periodontal disease. The risks of vitamin D supplementation are very low (for most people hypercalcemia will not occur at levels under 20,000 IU per day). Supplementation of 1,000 – 7,000 IU per day or more is deemed safe. Based on his own study, Dr. Grant concluded that if mean serum 25 (OH)D levels in Canada and the US were raised to 105 nmol/L there would be a mortality decrease by 17%, which translates into 2 years of extra life expectancy.

Adrian F. Gombart, PhD

Antimicrobial Effects of Vitamin D

Dr. Gombart's presentation on vitamin D further emphasized the importance of optimal vitamin D levels in the body. He presented studies showing the importance of vitamin D for innate immune function and T-Cell function, as well as disease risk reduction of colon, breast, prostate cancers, autoimmune disease and infectious disease. He clarified that D_2 is not recommended as a viable form of vitamin D supplementation and only D_3 should be used. Factors affecting synthesis by skin of serum 25(OH)D include climate, season, latitude, skin colour, clothing, sunscreen, age, diet, obesity and supplement usage. Although the best source of ditamin D is the sun in summer months, the most reliable source is supplementation with vitamin D_3.

John Hoffer, MD, PhD

Orthomolecular Psychiatry: Past, Present and Future

Dr. Hoffer clearly elucidated the key events and issues in orthomolecular psychiatry from the 1950s to the future. Highlighting strengths and weaknesses of both conventional and orthomolecular approaches to mental illness, Dr. Hoffer explained that there has been a paradigm shift caused by the vitamin D research. The volume of vitamin D studies pointing to a mass deficiency in North America has made it easier for mainstream medicine to consider "Are we deficient in any other nutrients?" Dr. Hoffer recommended the following 3 pillars for future actions in orthomolecular medicine: 1)Rational, innovative clinical practice; 2)Accurate, comprehensible, effective teaching; 3) First class, pragmatic clinical research.After citing key areas at the health professional level, he also reminded us that grassroots advocacy and education continues to play a very important role.

William Shaw, PhD

Toxic Chemicals, Mitochondria and Mental Health

After a brief overview on the function of mitochondria in the body, Dr. Shaw presented the signs of mitochondrial dysfunction in the muscles, brain, nerves and gastrointestinal system. These include muscle weakness/tone, developmental delay, autism, dementia, nerve pain and constipation.

Dr. Shaw presented studies indicating the link between toxic chemical exposure and Parkinson's and Alzheimer's. A key paper was also discussed which clarifies the pathway to quinolinic acid production which may play a role in neurodegenerative disorders via mitochondrial disturbances. Dr. Shaw recommended the following treatments to lower quinolinic acid: 1) Avoid tryptophan supplementation and use 5HTP instead; 2) Use niacin, which reduces tryptophan to quinolinic acid; 3) Avoid multiple vaccinations which produce cytokines that stimulate enzymes producing excess quinolinic acid; 4) Reduce stress in your life.

Jonathan Prousky, ND, MSc

Vitamin B_{12} and Psychiatry

Dr. Prousky's presentation focused on the impact vitamin B_{12} deficiency can have on mental health. A prime point is the role of B_{12} in methylation, Kreb's cycle functioning and in the production of SAMe which stimulates the production of phospholipids for the myelin sheath, cell receptors and formation of monoamine neurotransmitters.

Dr. Prousky highlighted several studies in patients with mental disorders indicating that even though B_{12} levels were normal in the blood, the cerebrospinal fluid levels indicated a B_{12} deficiency. He recommended supplementation for sleep disorders, depression, and anemia. B_{12} has also been shown to have anti-inflammatory, analgesic properties and is a very safe and effective supplement.

Jonathan Prousky, ND, MSc

Chronic Fatigue Syndrome: A Disorder of Microcirculation

Dr. Prousky reminded us that currently there is no known single cause for Chronic Fatigue Syndrome. The evidence of red blood cell shape changes present in CFS may be linked to an underlying unifying cause. Dr. Prousky hypothesized that poor microcirculatory blood flow could account for the symptoms of CFS i.e. unrelenting tiredness, malaise after exertion and CNS dysfunction (memory, focus, mood). Suggested possible causes of the red blood cell shape changes are viral infections, bacterial infections, toxins and oxidative stress. A proposed pathology of CFS is: 1) Exposure (infection, toxic stimulus, other unknown factor); 2) Increased Oxidative Damage; 3) Altered RBC shape; 4) Development of CFS.

An orthomolecular treatment of CFS incorporates therapeutic doses of nutrients which reduce the oxidative damage and restore the normal red blood cell shape. Antioxidants to consider are vitamins C, E, alpha lipoic acid and reduced glutathione. Agents to consider for normalizing RBC shape are vitamin B_{12}, evening primrose oil for the GLA content and, if this is not effective, fish oil for the EPA content.

Elson Haas, MD

Orthomolecular Detoxification for Inflammatory Conditions

Dr. Haas began his presentation with a discussion of key factors in optimal health. He stated that the primary problem causing illness is cell malfunction caused by deficiency, toxicity, pH imbalance, oxidative stress and inflammation. Detoxification can play a role in addressing some of these issues, particularly inflammation. The goals of any detox program are to nourish with wholesome, vital foods, avoid toxins, support the body's elimination systems and ultimately to correct deficiency and toxicity. Special care must be taken to watch for deficiency signs and concerns during a detox program such as fatigue, coldness, hair loss, anemia, low blood pressure and other medical conditions. Dr. Haas shared his experience conducting group detox programs, which he found to be an effective way of motivating patients and achieving desired results.

Ron Hunninghake, MD
Orthomolecular Stress Management

Dr. Hunninghake's talk ended the three-day conference with an important, inspirational discussion on stress. The biological impact of stress is often ignored in the doctor's office and yet it has far reaching impact on the health of each patient. Dr. Hunninghake questioned whether some of our main chronic illnesses such as ALS, Crohn's Disease, and fibromyalgia are manifestations of chronic stress. Chronic stress, he stated, is like having your foot on the gas and on the brake at the same time; over the long term this will lead to imbalance and disease.

Dr. Hunninghake presented his model of health and disease with two categories– "Pathos" and "Orthos." Pathos is unmanaged stress, i.e. insufficient nutrients to manage redox, un-attended injuries, ignored stress signals, mistreated diseases and unprocessed toxins. Orthos is optimally managed stress and orthomolecular health i.e. well-chosen nutrients, well-attended nutrients, well heeded stress signals, well-treated diseases and well-processed toxins. In conclusion, Dr. Hunninghake shared the following quote by A.T. Still: "To find health should be the object of the doctor. Anyone can find disease."

The Orthomolecular Hall of Fame Award (See p. 92-94)