American Academy of Environmental Medicine
6505 E. Central Avenue, #296
Wichita, KS 67206
316.684.5500

Genetically Modified Foods

According to the World Health Organization, Genetically Modified Organisms(GMOs) are "organisms in which the genetic material (DNA) has been altered in such a way that does not occur naturally."[1] This technology is also referred to as "genetic engineering", "biotechnology" or "recombinant DNA technology" and consists of randomly inserting genetic fragments of DNA from one organism to another, usually from a different species. For example, an artificial combination of genes that includes a gene to produce the pesticide Cry1Ab protein (commonly known as Bt toxin), originally found in Bacillus thuringiensis, is inserted in to the DNA of corn randomly. Both the location of the transferred gene sequence in the corn DNA and the consequences of the insertion differ with each insertion. The plant cells that have taken up the inserted gene are then grown in a lab using tissue culture and/or nutrient medium that allows them to develop into plants that are used to grow GM food crops.[2]

Natural breeding processes have been safely utilized for the past several thousand years. In contrast, "GE crop technology abrogates natural reproductive processes, selection occurs at the single cell level, the procedure is highly mutagenic and routinely breeches genera barriers, and the technique has only been used commercially for 10 years."[3]

Despite these differences, safety assessment of GM foods has been based on the idea of "substantial equivalence" such that "if a new food is found to be substantially equivalent in composition and nutritional characteristics to an existing food, it can be regarded as safe as the conventional food."[4] However, several animal studies indicate serious health risks associated with GM food consumption including infertility, immune dysregulation, accelerated aging, dysregulation of genes associated with cholesterol synthesis, insulin regulation, cell signaling, and protein formation, and changes in the liver, kidney, spleen and gastrointestinal system.

There is more than a casual association between GM foods and adverse health effects. There is causation as defined by Hill's Criteria in the areas of strength of association, consistency, specificity, biological gradient, and biological plausibility.[5] The strength of association and consistency between GM foods and disease is confirmed in several animal studies.[2,6,7,8,9,10,11]

Specificity of the association of GM foods and specific disease processes is also supported. Multiple animal studies show significant immune dysregulation, including upregulation of cytokines associated with asthma, allergy, and inflammation. [6,11] Animal studies also show altered structure and function of the liver, including altered lipid and carbohydrate metabolism as well as cellular changes that could lead to accelerated aging and possibly lead to the accumulation of reactive oxygen species (ROS). [7,8,10] Changes in the kidney, pancreas and spleen have also been documented. [6,8,10] A recent 2008 study links GM corn with infertility, showing a significant decrease in offspring over time and significantly lower litter weight in mice fed GM corn.[8] This study also found that over 400 genes were found to be expressed differently in the mice fed GM corn. These are genes known to control protein synthesis and modification, cell signaling, cholesterol synthesis, and insulin regulation. Studies also show intestinal damage in animals fed GM foods, including proliferative cell growth9 and disruption of the intestinal immune system.[6]

Regarding biological gradient, one study, done by Kroghsbo, et al., has shown that rats fed transgenic Bt rice trended to a dose related response for Bt specific IgA. [11]

Also, because of the mounting data, it is biologically plausible for Genetically Modified Foods to cause adverse health effects in humans.

In spite of this risk, the biotechnology industry claims that GM foods can feed the world through production of higher crop yields. However, a recent report by the Union of Concerned Scientists reviewed 12 academic studies and indicates otherwise: "The several thousand field trials over the last 20 years for genes aimed at increasing operational or intrinsic yield (of crops) indicate a significant undertaking. Yet none of these field trials have resulted in increased yield in commercialized major food/feed crops, with the exception of Bt corn."[12] However, it was further stated that this increase is largely due to traditional breeding improvements.

Therefore, because GM foods pose a serious health risk in the areas of toxicology, allergy and immune function, reproductive health, and metabolic, physiologic and genetic health and are without benefit, the AAEM believes that it is imperative to adopt the precautionary principle, which is one of the main regulatory tools of the European Union environmental and health policy and serves as a foundation for several international agreements.[13] The most commonly used definition is from the 1992 Rio Declaration that states: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[13]

Another often used definition originated from an environmental meeting in the United States in 1998 stating: "When an activity raises threats to the environment or human health, precautionary measures should be taken, even if some cause and effect relationships are not fully established scientifically. In this context, the proponent of an activity, rather than the public, should bear the burden of proof (of the safety of the activity)."[13]

With the precautionary principle in mind, because GM foods have not been properly tested for human consumption, and because there is ample evidence of probable harm, the AAEM asks:

- Physicians to educate their patients, the medical community, and the public to avoid GM foods when possible and provide educational materials concerning GM foods and health risks.
- Physicians to consider the possible role of GM foods in the disease processes of the patients they treat and to document any changes in patient health when changing from GM food to non-GM food.
- Our members, the medical community, and the independent scientific community to gather case studies potentially related to GM food consumption and health effects, begin

epidemiological research to investigate the role of GM foods on human health, and conduct safe methods of determining the effect of GM foods on human health.

- For a moratorium on GM food, implementation of immediate long term independent safety testing, and labeling of GM foods, which is necessary for the health and safety of consumers.

(This statement was **reviewed and approved by the Executive Committee of the American Academy of Environmental Medicine on May 8, 2009**)

Submitted by Amy Dean, D.O. and Jennifer Armstrong, M.D.

Bibliography: Genetically Modified Foods Position Paper AAEM

1. World Health Organization. (Internet).(2002). Foods derived from modern technology: 20 questions on genetically modified foods. Available from: http://www.who.int/foodsafety/publications/biotech/20questions/en/index.html
2. Smith, JM. Genetic Roulette. Fairfield: Yes Books.2007. p.10
3. Freese W, Schubert D. Safety testing and regulation of genetically engineered foods. Biotechnology and Genetic Engineering Reviews. Nov 2004. 21.
4. Society of Toxicology. The safety of genetically modified foods produced through biotechnology. Toxicol. Sci. 2003; 71:2-8.
5. Hill, AB. The environment and disease: association or causation? Proceeding of the Royal Society of Medicine 1965; 58:295-300.
6. Finamore A, Roselli M, Britti S, et al. Intestinal and peripheral immune response to MON 810 maize ingestion in weaning and old mice. J Agric. Food Chem. 2008; 56(23):11533-11539.
7. Malatesta M, Boraldi F, Annovi G, et al. A long-term study on female mice fed on a genetically modified soybean:effects on liver ageing. Histochem Cell Biol. 2008; 130:967-977.
8. Velimirov A, Binter C, Zentek J. Biological effects of transgenic maize NK603xMON810 fed in long term reproduction studies in mice. Report-Federal Ministry of Health, Family and Youth. 2008.
9. Ewen S, Pustzai A. Effects of diets containing genetically modified potatoes expressing Galanthus nivalis lectin on rat small intestine.Lancet. 354:1353-1354.
10. Kilic A, Aday M. A three generational study with genetically modified Bt corn in rats: biochemical and histopathological investigation. Food Chem. Toxicol. 2008; 46(3):1164-1170.
11. Kroghsbo S, Madsen C, Poulsen M, et al. Immunotoxicological studies of genetically modified rice expression PHA-E lectin or Bt toxin in Wistar rats. Toxicology. 2008; 245:24-34.
12. Gurain-Sherman,D. 2009. Failure to yield: evaluating the performance of genetically engineered crops. Cambridge (MA): Union of Concerned Scientists.
13. Lofstedt R. The precautionary principle: risk, regulation and politics. Merton College, Oxford. 2002.

About Us

Board of Directors | CME Committee | Staff

Mailing Address:
AAEM
6505 E. Central Avenue, #296
Wichita, KS 67206

Phone: (316) 684-5500
Fax: (316) 684-5709
Email: administrator@aaemonline.org

Who We Are

The American Academy of Environmental Medicine was founded in 1965, and is an international association of physicians and other professionals interested in the clinical aspects of humans and their environment. The Academy is interested in expanding the knowledge of interactions between human individuals and their environment, as these may be demonstrated to be reflected in their total health. The AAEM provides research and education in the recognition, treatment and prevention of illnesses induced by exposures to biological and chemical agents encountered in air, food and water.

The Academy of Firsts:

The founders and members of the American Academy of Environmental Medicine are recognized as the first to describe or the first organization to acknowledge ...

- Serial Dilution Endpoint Titration
- Sublingual Immunotherapy
- Optimal Dose Immunotherapy
- Food Allergy/Addiction
- Provocation/Neutralization
- Avoidance/Reintroduction Challenge Testing
- Rotary Diversified Diet
- Chemical Sensitivity (MCS)
- Total Load Phenomenon
- Environmental Control in the Home, Workplace, and Hospital
- Chemically Less-Contaminated Foods
- Sauna Depuration
- Hepatic Detoxication Enhancement
- Gulf War Syndrome
- Endocrine Mimicry Disorders
- The Role of Mold in the Development of Systemic Illness
- Yeast Syndrome
- CFID/FMS

Education

The American Academy of Environmental Medicine is committed to providing physicians with the tools to recognize, evaluate, treat and prevent those aspects of illness caused or contributed to by the role of the environment and diet. The AAEM's educational content span a broad spectrum of subjects encompassing the research, knowledge, skills, experience and expertise of the participants based on the assessment of identified educational needs. Although the primary focus of our educational activities is the practicing physician, we welcome medical students, residents, and other health care professionals interested in learning the insights and modalities derived from appreciating the role of the environment and diet in health and illness.

The American Academy of Environmental Medicine is accredited by the Accredition Council for Continuing Medical Education to provide continuing medical education for physicians.

Education Committee

2011 Instructional Courses
April 6 - 7, 2011
Minneapolis Convention Center
Minneapolis, Minnesota

Online Education - Media Products

The American Academy of Environmental Medicine provides basic instructional courses covering various topics in environmental medicine. They are designed to provide the knowledge and modalities needed by physicians and health care professionals to effectively incorporate Environmental Medicine into their practices (of any specialty). Each course includes the syllabus and Continuing Medical Education credit.

We offer our courses in ("DigiVision") format. Just click the Buy Now button for the item you wish to purchase. Click here for the bundle of all products at a savings of 35%.

Free Samples

The two links below are examples of the DigiVision technology used to present our online education products. These links require Windows Media Player. Click here for further information about DigiVision.

- The Common Sources of Toxic Chemicals That Can Cause Human Disease – William J. Rea, M.D., FAAEM
- Taking the History in the Food Sensitive Patient Richard G. Jaeckle, M.D., FAAEM, John H. Boyles, Jr., M.D., FAAEM

Part ONE: The Diagnosis and Treatment of Inhalant Allergies

$395 (in DigiVision? Format)

This course will provide the practitioner with a comprehensive and complete program with which to assess and treat complex inhalant allergies in the office setting. You will learn how to confirm clinical suspicions and determine the levels of sensitivity with quantitative intradermal and sublingual testing for specific allergens.

Educational Objectives:

- Discuss the model of environmental medicine and contrast it with the conventional model of medicine;
- Describe how antigens are manufactured, quality controlled, their terminology, and what standardization means;
- Articulate an understanding of the basic immunology involved in inhalant immunotherapy;
- Describe how to confirm clinical suspicions and determine the levels of sensitivity with quantitative intradermal or sublingual testing for specific allergens;
- Set up an allergy treatment plan;
- Prepare patient's antigen vial(s) for immunotherapy;
- Discuss how to manage common difficulties in the administration of immunotherapy;
- Describe the practical items to help in controlling environmental exposures;
- Articulate how to prevent, recognize and treat and adverse or anaphylactic reaction.

The American Academy of Environmental Medicine designates this educational activity for a maximum of 17.25 AMA PRA Category 1 Credits. Physicians should only clamin credit commensurate with the extent of their participation in the activity.

Part TWO: The Diagnosis and Treatment of Food Sensitivities

$395 (in DigiVision? Format)

This course will provide a complete, scientifically validated program on the effective diagnosis and treatment of food sensitivity, so that the participants can immediately use the provided insights and modalities to achieve effective long-term, cost-effective medical outcomes for their patients. You will benefit from a practicum and immediately begin to use quantitative skin and sublingual testing for foods, drugs and other substances/situations, like infections, that may effect testing.

Educational Objectives:

- Discuss an overview of the model of environmental medicine and the dynamic nature of biological systems, interactions and dysfunctions that cause many common chronic diseases;
- Discuss the multiple mechanisms involved with foods contributing to illness;
- Review food patterns in illnesses, and the various mechanisms behind them;
- Appreciate the rationale of the Paleolithic Diet concepts;
- Discuss the different types of food elimination/challenge diets used for diagnosis of food sensitivity;
- Discuss the use of in vitro testing in the diagnosis of food-related problems;
- Discuss the rotary diversified diet, stressing its benefits for both diagnosis and treatment, with practical information on how to teach it to patients;
- Benefit from a practicum and immediately begin to use quantitative skin and sublingual testing for foods;

- Perform insurance coding for allergy and treatment vaccines;
- Benefit from illustrative case study examples for foods, with interactive discussion between faculty and attendees.

The American Academy of Environmental Medicine designates this educational activity for a maximum of 19.0 AMA PRA Category 1 Credits. Physicians should only clamin credit commensurate with the extent of their participation in the activity.

Part THREE: The Diagnosis and Treatment of Chemical Sensitivities

$395 (in DigiVision? Format)

This course will provide the practitioner with new diagnostic and treatment modalities to help improve treatment outcomes in a safe and cost-effective manner for many complex patients suffering from chemical sensitivities. You will learn to perform quantitative testing for chemicals, and how to test hymenoptera venoms, latex, and for antibiotic sensitivity. Also, how to utilize comprehensive treatments for chemical sensitivities: avoidance, nutritional, detoxification, sauna/heat, depuration, chelation of heavy metals, immunotherapy where applicable, etc.

Educational Objectives:

- Review the basic principles of toxicology, homeostasis and environmental medicine;
- Contrast the mechanisms behind chemical toxicity and chemical sensitivity;
- Discuss the mechanisms of detoxication and detoxification;
- Describe the manifestations of chemical toxicity and sensitivity from multiple chemicals such as pesticides, solvents, and heavy metals in major biological systems, including neurotoxicity and immunotoxicity;
- Take a home and work history and perform a physician examination to assess chemical injury and toxicity;
- Recognize the scope of indoor and outdoor air pollution, and food and water pollution;
- Discuss the available methods for detecting chemical contamination of the environment;
- Assess the patient for biomarkers of the effects of toxic exposures on various biological systems;
- Perform quantitative testing for chemicals, and how to treat hymenoptera venoms, latex, and for antibiotic sensitivity;
- Utilize comprehensive treatment for chemical sensitivities: avoidance, nutritional, detoxification, sauna/heat, depuration, chelation of heavy metals, immunotherapy where applicable, etc;
- Utilize psycho-neurological assessments and treatments for the effects of neurotoxicity;
- Benefit from illustrative case study examples for chemical sensitivities that stress interactive discussion between faculty and attendees.

The American Academy of Environmental Medicine designates this educational activity for a maximum of 18.5 AMA PRA Category 1 Credits. Physicians should only clamin credit commensurate with the extent of their participation in the activity.

Part FOUR … The Metabolism: Nutrition and the New Endocrinology

$395 (in DigiVision? Format)

This course will teach the practicing physician how to recognize, assess with practical and effective laboratory tests, and treat common but often misunderstood nutritional and endocrine disorders that contribute to complex cases.

You will learn how to use safe and effective oral and IV nutrient protocols in the office setting.

Educational Objectives:

- Assess patient's individual nutritional and endocrine status;
- Provide effective and efficient treatment for nutritional and endocrine disorders;
- Explain when and how to provide safe and effective oral and IV nutrient therapies in the office setting.

The American Academy of Environmental Medicine designates this educational activity for a maximum of 20.0 AMA PRA Category 1 Credits. Physicians should only clamin credit commensurate with the extent of their participation in the activity.

Package Deal … Parts 1, 2, 3, and 4

$1185 (in DigiVision? Format)

Save 25% off the regular price when you purchase all four courses at once.

About DiGiVision

DigiVision is a DVD-rom video with

- Full word search,
- Easy scroll & skip buttons,
- Save items to your hard drive,
- And many more easy to use features.

DiGiVision requires a computer with window media player, and it's available right now. Four instructional courses for environmental medicine now available.

All Items are shipped via UPS within days of placing your order.

DigiVision Satisfaction Guarantee: YOU MUST BE SATISFIED with your purchase, or return it within 14 days for a full refund, less $50 processing fee.

Community Resource Center

Welcome to the Community Resource Center. Whether you are a health professional, a person with environmental illness, or a caregiver to someone with environmental illness, AAEM's Community Rescource Center has something for you. By following the links below, you will find clear information about environmental medicine and up-to-the-minute news of developments in environmental illness management and treatment, written by the World's leading environmental medicine experts.

The patient-oriented information on this website is not intended to replace a consultation with a physician. The content provided here is for informational purposes only, and was not designed to diagnose or treat a health problem or disease. This page contains links to other websites with information about environmental medicine. We hope you find these sites helpful, but please remember we do not control or endorse the information presented on these websites, nor do these sites endorse the information contained here.

We wish you all the best in your quest for optimal health.

What is Environmental Medicine?

AAEM Position Papers

Resource Books

Visit the websites of other organizations focused on Complementary, Alternative, Integrative, Holistic & Funcational Medicine.

Additional resources focused on Complementary, Alternative, Integrative, Holistic & Functional Medicine.

AAEM Corporate Members

Allergy Research Group®,established in 1979 is an innovative leader in research and the formulation of nutritional supplements, the Company is recognized worldwide for the quality, purity and efficacy of its targeted nutritional supplement line consisting of more than 200 products. Over 4,000 physicians and health care practitioners worldwide currently purchase Allergy Research Group's products and recommend these supplements to their patients.

Antigen Laboratories, Inc. manufactures a full line of stock extracts, prepares custom prescription treatment sets (either in-vitro or skin test based) and carries a full line of ancillary supplies (i.e. sterile empty vials, diluents, allergist trays, syringes, diagnostic controls and vial labels) needed for the practice of allergy. Antigen Laboratories is now offering Lincoln Diagnostic Products and Morrow Brown Needles for prick puncture testing.

College Pharmacy is one of the most experienced and comprehensive compounding center in the United States. Our pharmacists have been recognized for over 30 years for their expertise in providing uncommon solutions to common problems. We work collectively with medical and health organizations, prescribers and their patients to provide the best possible therapy options available. Our mission is the development and delivery of the finest compounded formulations to enrich the quality of life of our customers. Since 1974, we have been dedicated to making this mission a reality.

Doctor's Data, Inc. (DDI) a premier clinical laboratory with over 30 years experience, provides specialty testing to healthcare practitioners around the world. A specialist and pioneer in essential and toxic elemental testing of multiple human tissues, the laboratory offers a wide array of functional testing. DDI's tests are utilized in the assessment, detection, prevention, and treatment of heavy metal burden, nutritional deficiencies, gastrointestinal function, hepatic detoxification, metabolic abnormalities, and diseases of environmental origin. DDI is a licensed CLIA laboratory with appropriate state certifications and participates in numerous quality assurance/proficiency testing programs including the College of American Pathology, New York State DOH and Le Centre de Toxicologie du Quebec.

The Environmental Health Center-Dallas, Texas medically tests and treats human health problems including sensitivities to pollens, molds, dust, foods, chemicals, air (indoor/outdoor), water, electrical (electromagnetic- EMF) sensitivity and many more health problems as they relate to our environment.

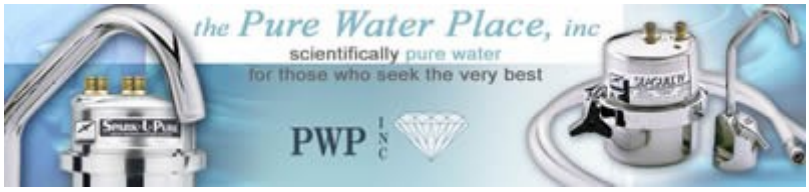
Insta-Tapes is the World Premier Archive of major medical conferences, lectures, courses, work-shops, seminars and trainings.

Key Pharmacy Compounding Center is a full service compounding pharmacy that has been providing excellent service to healthcare providers and patients for over forty years. Our compounding pharmacists and technicians have received comprehensive training in compounding techniques.

We specialize in: bio-identical hormone replacement, multiple chemical sensitivity, heavy metal detoxification, vitamin/mineral blending, amino acid blending, office use injections, and pain management.

Key Pharmacy is proud to be Washington State's first and only PCAB accredited compounding pharmacy.

Metametrix Clinical Laboratory has been a pioneer and leader in the development of nutritional, metabolic, and toxicant analysis since 1984. Metametrix is committed to helping health care professionals identify nutritional influences on health and disease, and is recognized internationally for its laboratory procedures in nutritional and biochemical testing. Metametrix applies this knowledge to the clinical setting by providing quantitative analyses of the critical components of cellular metabolism.



The Pure Water Place: Vendors of scientifically proven water purification equipment Consultants to those who have special water needs (Multiple Chemical Sensitivities, Environmental Illness, or even an acute awareness of the contaminants in our water supplies). We concentrate on treatment units which remove chemicals and micro organisms from water while leaving the naturally occurring minerals and salts. And we believe the "Structured Matrix"™ has capabilities unequaled in the industry. The water produced by these units has successfully met the needs of many highly sensitive individuals for twenty-five years, ensuring that our customers receive the many benefits of refreshingly pure, great tasting, and safe water. The Pure Water Place, recognizes that there are some people who may have needs for mineral or salt free water. Our knowledgeable experts are prepared to help you find the treatment units you need.

THORNE RESEARCH

Pure Ingredients, Trusted Results

Thorne Research manufactures a comprehensive line of nutritional supplements in our own state-of-the-art production facilities. As the original specialists in pure encapsulations, Thorne is committed to providing innovative products in two-piece vegetarian capsules: truly hypo-allergenic supplements designed to meet the nutritional needs of the most sensitive patient. Our complete line of over 250 products is available through licensed health care practitioners and at select pharmacies.

VITAL NUTRIENTS is the first of two companies in the world to achieve independent audit and certification by the NSF and NNFA for GMP (Good Manufacturing Practices) compliance. All VITAL NUTRIENTS raw materials are independently laboratory assayed for content, purity, as well as microbiological contamination. All lipid products are independently tested for dual rancidity and botanical products are independently tested for heavy metal to part per billion, PCBs as well as dioxin and furan compounds to parts per trillion. Additionally, all products are finished product and stability tested by independent laboratories. All of this at a very reasonable price, which makes VITAL NUTRIENTS your best value in the professional supplement industry.

Wellness Health and Pharmacy has been noted in several medical references for experience and compounding expertise, BrainRecovery.com, and The Better Brain Book, David Perlmutter, MD; The Detoxx Book, John Foster, MD, Patricia Kane, PhD, and Neal Speight, MD. Representative samples of our compounds are analyzed in independent labs for sterility and quantity of active ingredient. Our state-of-the-art, USP 797 compliant, IV laboratory contains Class 100 laminar hoods in certified clean rooms. Some of our specialties include patented reduced L-Glutathione, formulations for autistic patients, Antifungals, Pain Gels, Bio-Identical Hormones, HGH, Mesotherapy, Proletherapy, and various Injectables.

Women's International Pharmacy

Custom Compounded Prescriptions for Men and Women

At **Women's International Pharmacy, Inc.,** we are dedicated to providing custom compounded bioidentical hormone prescriptions to men and women with the purpose of focusing on patient's individual needs, which would include the ability to provide alternate strengths or dosages that are often not available with manufactured drug items. Founded in 1985 by Wallace L. Simons, R.Ph., we have helped hundreds of thousands of people with their hormone balance. We compound the prescriptions as directed by the licensed healthcare practitioner to meet the patient's needs. We deliver high quality, individually, compounded prescriptions in the shortest amount of time and with the latest technology.