

August 25th, 2009

LIA Foundation



### **Position Paper Urging the Prescribing of Non-GMO Diets**

The LIA Foundation recognizes the unique health dangers posed by genetically modified organisms (GMOs) in food, especially for populations suffering from compromised immune and digestive systems and other chronic disorders. We therefore urge doctors to prescribe non-GMO diets and for patients to avoid GMO foods. We will circulate educational material to doctors and patients about the documented health risks of genetically modified (GM) foods, and we encourage other patient advocacy groups to do the same.

The World Health Organization (2009) defines GMOs as:

Organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally. The technology is often called “modern biotechnology” or “gene technology”, sometimes also “recombinant DNA technology” or “genetic engineering”. It allows selected individual genes to be transferred from one organism into another, also between non-related species. (see section “20 questions on genetically modified foods”, Q1)

Several organizations and countries have called for a moratorium on genetically modified foods due to their potential harm to human and animal health (American Academy of Environmental Medicine, 2009; Greenpeace, 2008; Institute of Science in Society, 2008; Third World Network, 2001; Voice of the Environment, 2009). Research has shown that GM diets can lead to adverse effects in mammals (Ewen & Pusztai, 1999; Finamore et al., 2008; Kilic & Akay, 2008; Magana-Gomez & de la Barca, 2009; Vecchio, Cisterna, Malatesta, Martin, & Biggiogera, 2004). Other supporting evidence is summarized in Jeffrey Smith’s (2007) book, *Genetic Roulette*, which describes animal illnesses, sterility, and fatalities, as well as allergic and toxic reactions in humans. Additionally, Smith (personal communication, August 17, 2009) proclaims that the *only* published human GMO feeding study (Netherwood et al., 2004), confirmed that genes from the genetically engineered foods transfer into intestinal bacteria of humans and that these genes continue to function.

Special Populations, such as those with autism and other individuals with chronic infections, appear to be at greatest risk. As described by reports (Adams, 2007) found on the Autism Research Institute’s website, children with autism are often found to have developed allergies to corn, soy, and dairy by the time they are tested and diagnosed. Coincidentally, soy and corn are commonly genetically modified, and dairy products often contain GMOs due to

cows being fed GMO foods and injected with a GM bovine growth-hormone (Smith, 2007). Children with autism often have compromised digestion, immunity, and toxin-clearing abilities (Binstock, 2001; Blaylock & Strunecka, 2009; Bransfield, Wulfman, Harvey, & Usman, 2008; Cohly & Panja, 2005; Horvath, Papadimitriou, Rabsztyn, Drachenberg, & Tildon, 1999; Horvath & Perman, 2002; Martirosian, 2004; Nicolson, Berns, Gan, & Haier, 2005; Song, Liu, & Finegold, 2004; Vojdani, Pangborn, Vojdani, & Cooper, 2003; White, 2003). These same impairments related to autism can be found in many with chronic infections (DaCang, FengPing, Yue, LianHua, & ChengXue, 2004; Kazakoff, Sinusas, & Macchia, 1993; Massei, Massimetti, Messina, Macchia, & Maggiore; 2000; Stricker, Burrascano, & Winger, 2002). Individuals with infections that compromise immunity, such as pleomorphic pathogens of Lyme, Bartonella and/or mycoplasma or other chronic infections and/or high toxin loads (Ayensu & Tchounwou, 2006; Chen, Li, Paulus, Wilson, & Chadwick, 2001; Das et al., 2008; Massei et al., 2000; Stricker & Winger, 2001) may also be especially susceptible to adverse effects from pesticides, such as seen in genetically engineered foods (Smith, 2007).

There has been a rapid increase in autism and chronic infections (Hertz-Picciotto & Delwiche, 2009; Minnesota Department of Health, 2007; Slavinski, 2009). It is well-known that multifaceted, chronic illnesses such as autism and Lyme disease are costly, both to the patients with the diagnoses and our society as a whole. There is an urgent need for non-affiliated research to evaluate the role that GM foods may play in contributing to the prevalence or severity of autism, Lyme disease, and related conditions.

Given the health concerns in relation to GMO foods, it is the position of the LIA Foundation that medical practitioners should prescribe non-GMO diets, and that individuals, especially those with autism, Lyme disease, and associated conditions, should conscientiously avoid GMOs. The “Non-GMO Shopping Guide”, co-published by the Institute for Responsible Technology and Center for Food Safety (found at [www.NonGMOGuide.com](http://www.NonGMOGuide.com)), makes it easier for people to make wise shopping choices to avoid GMOs, and is among our recommended educational materials. Finally, we request that other organizations, especially those involved in advocacy, treatment, or research for such individuals suffering with chronic diseases, also promote non-GMO diets as well as advocate for non-affiliated GMO safety studies.

**Prepared and approved by the following:**

Heidi Noyer, MS, LPC, LCDC, Research Coordinator, LIA Foundation

Tami Duncan, Co-founder, President, LIA Foundation

## **About LIA Foundation**

LIA Foundation (Lyme Induced Autism Foundation) is a non-profit organization dedicated to education and support for families who are affected by autism spectrum disorders, Lyme disease and associated disorders. [www.liafoundation.org](http://www.liafoundation.org)

## **References**

- Adams, J. B. (2007). Summary of biomedical treatments for autism. *Autism Research Institute Publication, 40*. Retrieved July 6, 2009, from [http://www.autism.com/treatable/adams\\_biomed\\_summary.pdf](http://www.autism.com/treatable/adams_biomed_summary.pdf)
- American Academy of Environmental Medicine. (2009). *Genetically modified foods*. Retrieved July 11, 2009, from <http://www.aaemonline.org/gmopost.html>
- Ayensu, W. K., & Tchounwou, P. B. (2006). Microarray analysis of mercury-induced changes in gene expression in human liver carcinoma (HepG2) cells: Importance in immune responses. *International Journal of Environmental Responsible Public Health, 3*(2), 141-173. doi:10.3390/ijerph2006030018
- Binstock, T. (2001). Intra-monocyte pathogens delineate autism subgroups. *Medical Hypotheses, 56*(4), 523-531. doi:10.1054/mehy.2000.1247
- Blaylock, R. L., & Strunecka, A. (2009). Immune-glutamatergic dysfunction as a central mechanism of the autism spectrum disorders. *Current Medical Chemistry, 16*(2), 157-170.
- Bransfield, R. C., Wulfman, J. S., Harvey, W. T., & Usman, A. I. (2008). The association between tick-borne infections, Lyme borreliosis and autism spectrum disorders. *Medical Hypotheses, 70* (5), 967-974. doi:10.1016/j.mehy.2007.09.006
- Center for Food Safety & Institute for Responsible Technology. (2008). *Non-GMO shopping guide*. Retrieved August 19<sup>th</sup>, 2009, from <http://www.responsibletechnology.org/GMFree/Non-GMOShopping/ShoppingGuide/index.cfm>

- Chen, W., Li, D., Paulus, B., Wilson, I., & Chadwick, V. S. (2001). High prevalence of *Mycoplasma pneumoniae* in intestinal mucosal biopsies from patients with inflammatory bowel disease and controls. *Digestive Diseases and Sciences*, 46(11), 2529-2535.
- Cohly, H.H., & Panja, A. (2005). Immunological findings in autism. *International Review of Neurobiology*, 71, 317-341.
- DaCang, C., FengPing, Y., Yue, X, LiangHua, L., & ChengXue, L. (2004). Pathologic features of mice infected by Lyme disease in Arlartai area of Xinjiang Province. *Chinese Journal of Zoonoses*. Abstract retrieved July 4, 2009, from CAB Abstracts database.
- Das, K., Siebert, U., Gillet, A., Dupont, A., Di-Poi, C., Fonfara, S., et al. (2008). Mercury immune toxicity in harbour seals: Links to in-vitro toxicity. *Environmental Health*, 7, 52. doi:10.1186/1476-069X-7-52
- Ewen, S. W. B., & Pusztai, A. (1999). Effect of diets containing genetically modified potatoes expressing *Galanthus nivalis* lectin on rat small intestine. *The Lancet*, 354(9187), 1353-1354. doi:10.1016/S0140-6736(98)05860-7
- Finamore, A., Roselli, M., Britti, S., Monastra, G., Ambra, R., Turrini, A., et al. (2008). Intestinal and peripheral immune response to MON810 maize ingestion in weaning and old mice. *Journal of Agricultural and Food Chemistry*, 56(23), 11533-11539. doi:10.1021/jf802059w
- Greenpeace. (2008). *GMO's in Europe – Greenpeace urges the EU to keep our food safe*. Retrieved July 11, 2009, from <http://www.greenpeace.org/international/news/EU-no-GE241108/gmo-q-and-a>
- Hertz-Picciotto, I., & Delwiche, L. (2009). The rise in autism and the role of age at diagnosis. *Epidemiology*, 20(1), 84-90. doi:10.1097/EDE.obo13e3181902d15
- Horvath, K., Papadimitriou, J. C., Rabszty, A., Drachenberg, C., & Tildon, J. T. (1999). Gastrointestinal abnormalities in children with autistic disorder. *Journal of Pediatrics*,

135(5), 559-563.

Horvath, K., & Perman, J. A. (2002). Autistic disorder and gastrointestinal disease. *Current Opinion in Pediatrics*, 14(5), 583-587.

Institute of Science in Society. (2008). *Ban GMO's now*. Retrieved July 11, 2009, from <http://www.i-sis.org.uk/banGMOsNow.php>

Kazakoff, M. A., Sinusas, K., & Macchia, C. (1993). Liver function test abnormalities in early Lyme disease. *Archives of Family Medicine*, 2(4), 409-413.

Kilic, A., & Akay, M. T. (2008). A three generation study with genetically modified Bt corn in rats: Biochemical and histopathological investigation. *Food and Chemical Toxicology*, 46(3), 1164-1170.

Magana-Gomez, J. A., & de la Barca, A. M. (2009). Risk assessment of genetically modified crops for nutrition and health. *Nutrition Reviews*, 67(1), 1-16.

Martirosian, G. (2004). Anaerobic intestinal microflora in pathogenesis of autism. *Postepy higieny i medycyny doswiadczalnej*, 58, 349-351. Abstract retrieved July 3, 2009, from PubMed database.

Massei, F., Massimetti, M., Messina, F., Macchia, P., & Maggiore, G. (2000). Bartonella henselae and inflammatory bowel disease. *The Lancet*, 356(9237), 1245-1246.

Minnesota Department of Health. (2007). Annual summary of communicable diseases reported to the Minnesota Department of Health, 2007. *Disease Control Newsletter*, 36(1). Retrieved July 10<sup>th</sup>, 2009, from <http://156.98.150.11/divs/idepc/newsletters/dcn/2008/oct08.pdf>

Netherwood, T., Martin-Orue, S. M., O'Donnell, A. G., Gockling, S., Graham, J., Mathers, J. C., et al. (2004). Assessing the survival of transgenic plant DNA in the human gastrointestinal tract. *Nature Biotechnology*, 22, 204-209. doi:10.1038/nbt934

Nicolson, G. L., Berns, P., Gan, R., & Haier, J. (2005). Chronic Mycoplasmal infections in Gulf

- War Veterans' children and autism patients. *Medical Veritas*, 2, 383-387.
- Slavinski, S., & Fine, A. (2009). *2009 DOHMH Advisory #24: Tick-borne disease advisory*. Retrieved July 7, 2009, from City of New York, web site:  
<http://www.nyc.gov/html/doh/downloads/pdf/cd/2009/09md24.pdf>
- Smith, J. M. (2007). *Genetic Roulette*. White River Junction, Vermont: Chelsea Green.
- Song, Y., Liu, C., & Finegold, S. M. (2004). Real-time PCR quantitation of clostridia in feces of autistic children. *Applied and Environmental Microbiology*, 70(11), 6459-6465.
- Stricker, R. B., Burrascano, J., & Winger, E. (2002). Longterm decrease in the CD57 lymphocyte subset in a patient with chronic lyme disease. *Annals Agricultural & Environmental Medicine*, 9(1), 111-113.
- Stricker, R. B., & Winger, E. E. (2001). Decreased CD57 lymphocyte subset in patients with chronic Lyme disease. *Immunology Letters*, 76(1), 43-48.
- Third World Network. (2001). *Third World Network information service on biosafety*. Retrieved July 11, 2009, from <http://www.twinside.org.sg/title/service19.htm>
- Vecchio, L., Cisterna, B., Malatesta, M., Martin, T. E., & Biggiogera, M. (2004). Ultrastructural analysis of testes from mice fed on genetically modified soybean. *European Journal of Histochemistry*, 48(4), 449-454.
- Voice of the Environment. (2009, June 8). *Banning GMOs*. Retrieved July 11, 2009 from <http://www.voiceoftheenvironment.org/gmos>
- Vojdani, A., Pangborn, J. B., Vojdani, E., & Cooper, E. L. (2003). Infections, toxic chemical and dietary peptides binding to lymphocyte receptors and tissue enzymes are major instigators of autoimmunity in autism. *International Journal of Immunopathology and Pharmacology*, 16(3), 189-199.
- White, J. F. (2003). Intestinal pathophysiology in autism. *Experimental Biology and Medicine (Maywood)*, 228(6), 639-649.

World Health Organization. (n.d.). *20 Questions on genetically modified (GM) foods*.

Retrieved July 10, 2009, from

<http://www.who.int/foodsafety/publications/biotech/20questions/en/>