

# Featured Research Studies

## A Comparison of the Effects of Three GM Corn Varieties on Mammalian Health

Joël Spiroux de Vendômois, François Roullier, Dominique Cellier, Gilles-Eric Séralini. *Int J Biol Sci* 2009; 5:706-726

### Abstract

We present for the first time a comparative analysis of blood and organ system data from trials with rats fed three main commercialized genetically modified (GM) maize (NK 603, MON 810, MON 863), which are present in food and feed in the world.

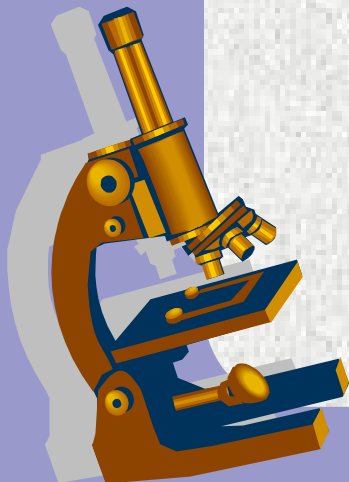
NK 603 has been modified to be tolerant to the broad spectrum herbicide Roundup and thus contains residues of this formulation. MON 810 and MON 863 are engineered to synthesize two different Bt toxins used as insecticides. Approximately 60 different biochemical parameters were classified per organ and measured in serum and urine after 5 and 14 weeks of feeding.

GM maize-fed rats were compared first to their respective isogenic or parental non-GM equivalent control groups. This was followed by comparison to six reference groups, which had consumed various other non-GM maize varieties. We applied nonparametric methods, including multiple pairwise comparisons with a False Discovery Rate approach. Principal Component Analysis allowed the investigation of scattering of different factors (sex, weeks of feeding, diet, dose and group).

Our analysis clearly reveals for the 3 GMOs new side effects linked with GM maize consumption, which were sex- and often dose-dependent. Effects were mostly associated with the kidney and liver, the dietary detoxifying organs, although different between the 3 GMOs.

Other effects were also noticed in the heart, adrenal glands, spleen and haematopoietic system. We conclude that these data highlight signs of hepatorenal toxicity, possibly due to the new pesticides specific to each GM corn.

In addition, unintended direct or indirect metabolic consequences of the genetic modification cannot be excluded.



## **Immunological Similarities between Cancer and Chronic Fatigue Syndrome: The Common Link to Fatigue?**

Meeus M, Mistiaen W, Lambrecht L, Nijs J.  
Anticancer Res. 2009 Nov;29(11):4717-26.

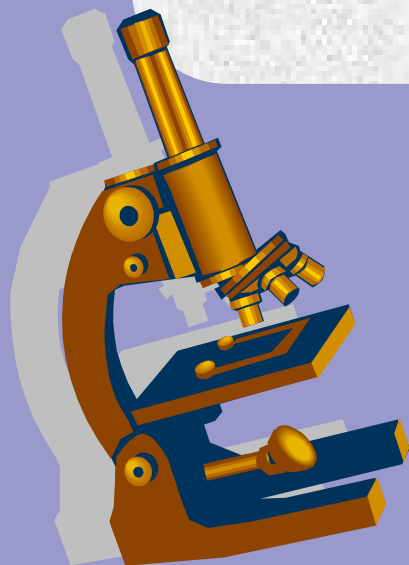
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Cancer and chronic fatigue syndrome (CFS) are both characterised by fatigue and severe disability.

Besides fatigue, certain aspects of immune dysfunctions appear to be present in both illnesses. In this regard, a literature review of overlapping immune dysfunctions in CFS and cancer is provided. Special emphasis is given to the relationship between immune dysfunctions and fatigue.

Abnormalities in ribonuclease (RNase) L and hyperactivation of nuclear factor kappa beta (NF-kappaB) are present in CFS and in prostate cancer. Malfunctioning of natural killer (NK) cells has long been recognised as an important factor in the development and reoccurrence of cancer, and has been documented repeatedly in CFS patients.

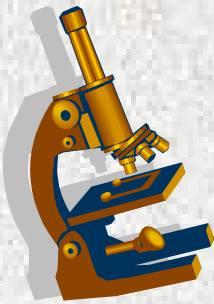
The dysregulation of the RNase L pathway, hyperactive NF-kappaB leading to disturbed apoptotic mechanisms and oxidative stress or excessive nitric oxide, and low NK activity may play a role in the two diseases and in the physiopathology of the common symptom fatigue. However, in cancer the relation between the immune dysfunctions and fatigue has been poorly studied.



## Integrated Review of the Association of Cytokines With Fibromyalgia and Fibromyalgia Core Symptoms.

Biol Res Nurs. 2009 Nov 22. [Epub ahead of print]

Menzies V, Lyon DE.



Fibromyalgia (FMS) is a chronic widespread pain (CWP) and fatigue syndrome that affects three to six million adults in the United States. Core symptoms of FMS include pain, fatigue, and mood and sleep disturbances. To date, consensus has not been reached among researchers regarding the pathogenesis of FMS nor the specific role of cytokine activation on the neuroendocrine-immune response patterns in persons with FMS.

The purpose of this article is to describe and synthesize the results of research studies focused on the relationship between cytokines and FMS and among cytokines and core symptoms of FMS. There is some support in the literature for relationships among FMS symptoms and cytokines; however, there are discrepant findings related to whether proinflammatory and anti-inflammatory cytokines are elevated or reduced in persons with FMS and whether their levels correlate with the core symptoms of this disorder.

Although the use of cytokine biomarkers must be considered exploratory at this time due to the lack of consistent empirical findings, biobehavioral research focused on understanding the relationship of FMS with cytokines may lead to a better understanding of this complex syndrome. This knowledge may ultimately contribute to the development of interventions for symptom management that address not only the symptom manifestation but also a biological mediator of symptoms.

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