



SALK INSTITUTE
FOR BIOLOGICAL STUDIES

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To Whom it May Concern:

I am a professor at the Salk Institute for Biological Studies, considered one of the premier medical research institutes in the world. I earned a PhD in immunology as a student of Dr. Melvin Cohn, a former science advisor for the government of India. My laboratory works on the development of drugs for neurological diseases, and we have one drug headed toward clinical trials for Alzheimer's disease. I am therefore familiar with molecular genetics and all aspects of toxicology and safety testing for potential hazards of GM crops to human health.

For the last decade I have been very concerned about the lack of any reasonable safety testing of GM food products, and have published many articles and reviews in scientific journals expressing these concerns. I contributed to the scientific review process initiated by Minister Jairam Ramesh (MoEF) in 2009-2010, which included a letter to the government of India that clearly defines the health hazards of Bt brinjal to the people of India if it were allowed into the food supply.

Contrary to industry claims, there are serious concerns about the direct human toxicity of Bt toxins within the scientific community. Bt toxins function by binding to the surface of cells in the guts of insects and killing them. There is increasing evidence that Bt toxins can also bind to mammalian cells in the stomach and intestine and cause inflammation that will certainly lead to cancer in people.

I am gravely concerned about the introduction of Bt brinjal and corn, because large amounts of the toxin will be directly eaten for the first time anywhere. Bt maize is grown in the US and it is claimed that because there has been no documented Bt maize-associated human disease, Bt Brinjal is therefore, safe to eat. This conclusion is invalid for several reasons, and if GMOs cause an illness, it could not be detected because of the lack of epidemiological studies and the technical limitations for detecting such an illness. Clearly, once Bt Brinjal is commercially released, there will be no way to monitor adverse health effects caused by the product.

The next generation of GM crops is being engineered to produce compounds that have known biological effects in people. These include nutritionally enhanced plants, such as rice that synthesizes beta-carotene, a precursor to vitamin A. While it is laudable to attempt to alleviate these health problems by incorporating beta-carotene into a major food source, the GM enthusiasts have overlooked the fact that simple derivatives of beta-carotene, such as retinoic acid, cause birth

defects. The rice making beta-carotene could easily make these derivatives, and to my knowledge there has been no safety testing of golden rice to determine if they are indeed being made. Minuscule amounts of a contaminant caused by GM can be lethal, as documented by the dozens of deaths from a GM food supplement in the late 1980s.

More recently, I have been greatly disheartened by the lack of honesty in the debate surrounding GM technology, primarily from plant scientists both from academic science and from industry. As a result of new revelations about the hazards GM technology to human health, the industry is making a major effort to promote itself, sponsoring numerous articles in the popular press, often falsely claiming that there is a "consensus" among scientists that the technology is safe. In reality, there is no evidence that GM food is safe for human consumption, nor is there any consensus on this topic within the scientific community. An examination of the literature on animal testing GM products for safety shows that 100% of the industry sponsored studies claim safety, while most studies published by independent academic scientists clearly demonstrate potential hazards. A recent incident clearly shows how the GMO industry is manipulating science to eliminate all negative information, this time jeopardizing our ability to assess the safety of our global food supply.

The major vehicle through which scientific information is disseminated is the scientific journal. Submitted manuscripts undergo a peer review process by three or more scientists. If the experimental data appear valid and the significance meets the criteria of the journal, publication goes forward.

About 60% of the corn and 90% of the soy grown in the US are genetically modified (GM) to be resistant to the herbicide Roundup, developed by Monsanto. The herbicide cannot be washed off crops as is commonly assumed. The use of herbicides have increased enormously since the appearance of GM plants. At the same time, the Environmental Protection Agency has increased the allowance of Roundup in the food supply, and it is now found in human blood and urine.

Last year, Gilles-Eric Seralini at the University of Caen in France published a study in the Journal of Food and Chemical Toxicology showing that Monsanto's Roundup Ready corn as well as the herbicide itself increases cancer in rats. As with all publications that demonstrate the potential health risk of GM plants, this one drew immediate, venomous criticism from plant biotechnology scientists. The result was the recent retraction of the paper by the journal, thereby erasing an important study from the scientific literature. Most importantly, the retraction is now being used to promote GM foods worldwide by throwing into doubt a major study that supports concerns about GM food safety. Was there any justification for retraction and how does this action reflect upon the safety of our food?

The major criticisms of the Seralini manuscript were that the proper strain of rats was not used and their numbers were too small. Neither criticism is valid. The strain of rat was identical to that required by the FDA for toxicology studies, and the toxic effects of the GM products in the Seralini study were statistically significant. In fact, Monsanto published a similar study in the same journal eight years earlier using the same number and strain of rats. Their study was for 90 days and they claimed to see no harm. In contrast, the Seralini study was for two years and they

did not see any tumor formation appear until after 9 months. Therefore, it is clear that the short 90 day feeding paradigm is not sufficiently long to detect the carcinogenic effects of GM products. This is not surprising because it can take a long time before low-level exposure to environmental toxins impact health. For example, a recent Associated Press report documented the dramatic increase in cancer in areas of Argentina that have grown Roundup-resistant GM soy for a decade. Given these facts, what was the justification for the editorial decision to retract the Seralini manuscript?

The journal editors claim the reason for the retraction was that “no definitive conclusions can be reached”. I can assure you that if this were a valid reason for retracting a publication, a large fraction of the scientific literature would not exist! A committee on publication ethics, of which the journal is a member, states that the only reason for retraction is misconduct (data fabrication or honest error), plagiarism, or redundant publication. The editors stated that none of these occurred with Seralini. However, before the retraction, a former Monsanto scientist, Dr. Richard Goodman, was brought into the journal as biotechnology editor. The likely conclusion is that a combination of intense pressure from industry scientists and a new editor led to the elimination of an exceptionally important study.

As a medical research scientist, I am convinced that there is significant evidence, like that presented by Seralini, that some GM foods may be hazardous to human health. In order for data supporting this possibility to enter public discourse, scientists must place their ethical responsibilities above corporate profits and cease their continual assault on the science relating to GM safety. The protection of scientists’ right to publish their findings without censorship or retribution must be preserved.

Respectfully,

A handwritten signature in black ink, reading "David Schubert". The signature is fluid and cursive, with the first letter of each word being capitalized and prominent.

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