

Are You Critical of Genetically Engineered Foods? Watch Out

By Jeffrey M. Smith, author of *Seeds of Deception*

One day in April 1998, Professor Phillip James walked into the office of Arpad Pusztai and placed a large stack of documents on his desk¹. He called in Arpad's wife Susan from the adjoining office. James was the director of the Rowett Institute in Aberdeen Scotland, Europe's leading nutritional research facility. He told the Pusztai's, both senior scientists there, that the British agriculture minister was meeting with European ministers in Brussels to vote on genetically modified (GM) foods. The documents were submissions from biotech companies that had sought approval of their GM soy, corn, and tomatoes. The minister wanted a scientific opinion on them.

Arpad Pusztai looked at the stack—nearly 700 pages—then back at James. He was confident that his director and the other eleven scientists on the committee that approves GM foods for the UK were far too busy to actually read these studies. The Pusztai's, however, had been working for more than two years on a UK government grant, leading a 20-member research team to design the ideal testing protocol for evaluating GM foods. They were also conducting safety tests on a new variety of GM potatoes intended for commercialization. The Pusztai's were therefore among the most qualified scientists in the world to evaluate the papers James had just given them. Arpad asked how much time they had. "Two and a half hours," said James. They quickly got to work, focusing on the design and the data.

Arpad was shocked at what he discovered. The research was incredibly poor. He described it as superficial, flimsy, just plain bad science. Reading those studies was a turning point in the life of this very pro-biotech scientist. Arpad was the leading researcher in his field with more than 300 articles and 12 books to his credit. Based on his reputation and experience, the government had awarded him the GM research grant over 27 competing applicants. As a man of integrity, accustomed to thorough and rigorous science, Arpad expected the same from others. But he realized that the approach taken by biotech industry scientists was diametrically opposed to his own. "I was doing safety studies," he said. "They were doing as little as possible to get their products to market as quickly as possible."²

Pusztai called the minister and told him that although he wasn't expecting to have such a strong opinion after only two and a half hours, there was definitely not enough information to declare the foods safe for humans. But the

minister responded, "I don't know why you are telling me this, Professor James has already accepted it." It had already been on the market for two years.

Months later, Arpad had another shock. Young rats fed a genetically engineered potato developed extensive health problems. Some had smaller, less developed brains, livers, and testicles, as well as partial atrophy of the liver. Some suffered damaged immune systems and organ damage.³ And there was excessive cell growth in the stomach and intestines.⁴

The potato was engineered to produce its own insecticide, but the insecticide itself was not the cause of these problems. In fact, other rats that had eaten natural potatoes that were spiked with the insecticide fared much better. Thus, since the insecticide was not the cause of the poor health of the GM-fed rats, it was almost certainly the *process* of genetically modifying the potatoes that was the culprit.

Arpad realized that if his potatoes had been subjected to the same superficial industry studies he had reviewed, the potatoes would have been approved. The organ damage, cell growth, immune functions, etc., would have been undetected. More worrisome was the fact that the soy, corn, and tomatoes that *were* approved were not tested for these potential problems. And they were created with the same *process* that Arpad used to engineer his potatoes.

With permission from his director, Arpad accepted an invitation to be interviewed on television and express his concerns about GM food. For two days he was a hero at his institute. Then, on a Tuesday afternoon, two phone calls from the prime minister's office were allegedly forwarded through the institute's receptionist to the director. On Wednesday morning, Phillip James fired Arpad after 35 years and silenced him with threats of a lawsuit. The 20-member research team was dismantled and the UK government abandoned its plans for long-term safety study requirements for GM foods. The Rowett Institute then issued several statements trashing Arpad and his research in an apparent attempt to protect the biotech industry.

Eventually, Arpad was invited to speak before Parliament, his gag order lifted, and his research published in the prestigious *Lancet*. In spite of his work being cut off in the middle, his rat study remains the most in depth animal feeding safety study ever published on GM foods.

Tragically, no similar studies have yet been applied to the GM foods on the market and no one is monitoring to see if the organs, immune system, and cells of humans eating GM foods are being similarly influenced.

Arpad has since been commissioned to review all published animal feeding studies on GM foods. There are only about a dozen. In his paper, published as a chapter in the book *Food Safety*⁵ he reported consistent shortcomings in industry-sponsored research. Their poor designs would allow significant problems to go unnoticed. When problems were identified, they were not followed-up.

Arpad and his wife have made presentations on GM foods around the world. In 2001, they appeared before New Zealand's Royal Commission of Inquiry on Genetic Modification, where the sentiments and experience of several other presenters echoed their own. Parliament member Sue Kedgley testified: "Personally I have been contacted by telephone and e-mail by a number of scientists who have serious concerns about aspects of the research that is taking place . . . and the increasingly close ties that are developing between science and commerce, but who are convinced that if they express these fears publicly, even at such a Commission. . . or even if they asked the awkward and difficult questions, they will be eased out of their institution."⁶

Mae-Wan Ho, a biophysicist and geneticist, told the Commission that the scientific evidence on GM foods "simply did not support the claims . . . that the technology is precise and safe." Ho has sustained numerous attacks for her opinions, including being hounded out of her position at the UK's Open University.

Epidemiologist Judy Carman testified that the few animal feeding studies on GM foods are too short to adequately test for cancer or for problems in the offspring, and are not evaluating "biochemistry, immunology, tissue pathology, gut function, liver function and kidney function." Carman, who has investigated outbreaks of disease, said that health problems associated with GM foods might be impossible to track in the human population or take decades to discover. Carman is repeatedly attacked for her critical stance. One pro-GM scientist threatened disciplinary action through her Vice-Chancellor. Another circulated a defamatory letter to government and university officials in October 2004, alleging that Carman was unethical and that her work was similar to "inaccurate

anti-vaccine scaremongering [that] kills people."

Geneticist Michael Antoniou, who works on human gene therapy, told the New Zealand Commission, "genetic engineering technology, as it's being applied in agriculture now, [is] based on the understanding of genetics we had 15 years ago, about genes being isolated little units that work independently of each other." He explained that genes actually "work as an integrated whole of families." In 2003, Antoniou represented non-governmental organizations on the UK's supposedly balanced GM Science Review Panel that was part of the nationwide "GM Nation?" public debate. He was shocked to find scientists there still supporting obsolete theories of gene independence, even claiming that the order of genes in the DNA was entirely irrelevant. But Antoniou was outnumbered by eleven scientists representing either the biotech industry or appointed by the pro-biotech UK government. His well-supported arguments fell on deaf ears. Since the debate, new studies have further verified Antoniou's position by showing that genes are not randomly located along the DNA, but clustered into groups with related functions.⁷

Virologist Terje Traavik testified that GM crops "might be the basis for real ecological and health catastrophes." Three years later, in a February 2004 meeting with delegates to the UN biosafety protocol conference, Traavik presented preliminary evidence from three studies which might fulfill his earlier prediction. 1. Philippines living next to a GM cornfield developed serious symptoms while the corn was pollinating;⁸ 2. Promoters—genetic material routinely inserted into GM crops—were found to transfer to rat organs after a single transgenic meal;⁹ and 3. Key safety assumptions about genetically engineered viruses were overturned, calling into question the safety of using these viruses as vaccines.¹⁰ Traavik, naturally, was attacked.¹¹

Biologist Phil Regal told the Commission, "I think the people who boost genetic engineering are going to have to do a mea culpa and ask for forgiveness, like the Pope did on the inquisition; you know, 'we made a mistake, let's start over.'" Sue Kedgley had a different idea. She said, "I would recommend that perhaps we could set up human clinical trials using volunteers of genetically engineered scientists and their families, because I think they are so convinced of the safety of the products that they are creating and I'm sure they would very readily volunteer to become part of a human clinical trial."

For references cited here, and for more information about Arpad Pusztai, see *Seeds of Deception*. Footage from the New Zealand Royal Commission is found on the forthcoming video, *Healthy Eating Means No Genetically Engineered Foods*, available at www.seedsofdeception.com.

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Note to subscribers: As of August, 2004, this publication no longer summarizes the news on genetically engineered foods and crops. This is because there are already other free electronic newsletters that do an excellent job of this. We recommend GM Watch, www.gmwatch.org, and The Campaign, www.thecampaign.org.

References

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6. Testimony presented here is found in the transcripts from the Royal Commission of Inquiry on Genetic Modification
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Abstract: In eukaryotes, unlike in bacteria, gene order has typically been assumed to be random. However, the first statistically rigorous analyses of complete genomes, together with the availability of abundant gene-expression data, have forced a paradigm shift: **in every complete eukaryotic genome that has been analysed so far, gene order is not random. It seems that genes that have similar and/or coordinated expression are often clustered.** Here, we review this evidence and ask how such clusters evolve and how this relates to mechanisms that control gene expression.
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