The following is an interview with Jeffrey Smith conducted by Dr. Jeffrey Bland, an internationally recognized leader in the nutritional medicine field for over 25 years.

Dr. Bland is a nutritional biochemist and registered clinical laboratory director, a former professor of biochemistry at the University of Puget Sound, and a previous Director of Nutritional Research at the Linus Pauling Institute of Science and Medicine. The interview was recorded as part of Dr. Bland's Functional Medicine Update (FMU), a well-respected audio journal now in its *26th year* of publication.

Jeffrey Smith, the executive director of the Institute for Responsible Technology, is a leading spokesperson on the health dangers of Genetically Modified Organisms (GMOs) and an international best-selling author of Seeds of Deception and *Genetic Roulette: The Documented Health Risks of Genetically Modified Foods*. Dr. Bland and Mr. Smith have a detailed discussion about current practices related to genetically engineered crops and worldwide instances of immune-system response and concern.

Clinician/Researcher of the Month

Jeffrey M. Smith
Author, *Genetic Roulette: The Documented Health Risks of Genetically|Engineered Foods* (Yes! Books, 2007)

www.seedsofdeception.com
www.responsibletechnology.org
www.geneticroulette.com

I'm very fortunate to have the opportunity to talk with you about a very uniquely different format than we've ever had in the 25 (going on 26) years of *Functional Medicine Update*. There is no better time, nor better person, to change our format slightly than Jeff Smith, who is going to be our discussant person on this edition of *Functional Medicine Update*.

Jeff Smith doesn't fulfill our normal kind of criteria for a clinician or a researcher, but yet he represents everything that we are about in *Functional Medicine Update* and have been about for 25 plus years. He is an advocate who is bringing to the world an understanding at a deeper level of the impact of genetically modified foods and genetically engineered foods. I think this is a very extraordinary topic that you might say (at some level, as a clinician), "How does it relate to the health of my patients?" I think after this discussion that we are going to have with Mr. Smith you'll much better understand this.

To really give Mr. Smith an introduction I want to just quickly quote from a forward by Frances Moore Lappé, who has been—for the better part of 3-plus decades—one of my heroes in the field of nutrition. This is a forward to Jeff Smith's first book *Seeds of Deception: Exposing Industry and Government Lies about the Safety of Genetically Engineered Foods*. Ms. Lappé says that Jeff Smith's book really talks about more than just nutrition. It talks about the whole nature of information, about the whole nature of truth and discovery and full disclosure. It talks about the freedom of information and access of citizens to enough information to make informed choices, which doesn't seem to have been the case as it relates to this extraordinary topic of genetically engineered foods.

Her comments really are voiced by so many others who have read this book and been deeply affected by it, including one of my good friends, Jim Turner, who is the author of *The Chemical Feast* and the Nader report on the Food and Drug Administration many years ago and is a well-respected lawyer in the area of food advocacy. Most recently, Jeff Smith has authored an updated and more definitive book that was just published and it is absolutely fantastic; it is called *Genetic Roulette: The Documented Health Risk of Genetically Engineered Foods*. It is that book that I would put on everyone's mandatory reading list. If you are not a person that has read this book then you are really not up to date with what has been going on in this extraordinarily important area of applying molecular biology and genetic engineering to the food supply.

So with that as an introduction, we are talking to Jeff in England, no less. He is on a tour and having the opportunity to speak to Parliament and at academic centers around Europe concerning this extraordinary topic. Yesterday he was discussing this with members of Parliament in Australia, and of course he has an extraordinary advocacy here in North America as well, through his advocacy expressed in *Seeds of Deception* and now with *Genetic Roulette*.

Jeff, it is really a treat and a pleasure to have you as part of our history in *Functional Medicine Update*. Let me, if I can, just start first by introducing you to our audience and secondly asking if we can start with a definition. Could you define for us what genetically engineered foods are as contrasted to our traditional foods?

Definition of Genetically Engineered Foods

JS: Well, thank you. With genetically engineered foods you take single genes or combinations of genes, typically you make changes in the structure of them, and then you artificially force them into the DNA (the genome) of other organisms. So it is not natural, but it is rather a method of selecting certain traits, pulling it out of context, and transferring it into species that would never naturally contain those genes. The process itself also causes massive collateral damage in the DNA, causing mutations and changed gene expressions, etc.

JB: When we look at genetically engineered foods, I think there has been a longstanding misunderstanding, even with those who are fairly well informed. I recall a conversation I had not too many years ago with a very esteemed vice president of a large food company, and his particular point of view was that we have been tampering with genes of plants in the formation of foods for centuries (or, actually, at least for decades) through selective breeding programs, so why is this any different than genetically modified foods? Maybe you could help differentiate for us what the difference is between the traditional methods of selective breeding and that of genetic engineering?

JS: Well, when you want to genetically engineer a crop, typically you take genes and you add an artificial "on" switch (a promoter). You add an antibiotic-resistant marker gene to verify that the transformation has occurred. You make millions of copies and put it into a gene gun and blast it into millions of cells in the hope that some of your genes make it into the DNA of some of those cells. Then you douse the remaining cells with antibiotics, killing almost all of them. Those that survive indicate that the antibiotic-resistant marker gene is inserted correctly into the DNA and is functioning. Then you clone the resulting cell (using tissue culture) into full plant, and this is a lot of things, but it is not sex. It is not natural selection. It is nothing that has ever been done before in history. Genes are not like Legos®; you can't just snap them into place and have them function independently, producing exactly what you want.

The process can cause hundreds or thousands of mutations and changes that can, in turn, change protein expression and the expression of the plant compounds, of which there may be thousands in a particular plant. They have measured changes. For example, in the DNA they found 2% to 4% difference (due to mutation) just from the results of cloning the cell into a full

plant. They also found massive changes in DNA in gene expression when a single gene was inserted into a human cell—up to 5% of the functioning genes changed their levels of expression when a single gene was input. So we are talking about global changes, and yet engineering was based on a reductionist model of individual genes functioning independently.

JB: That was a brilliant description and differentiation. You know, it is interesting, because when you talk to proponents or members within the genetic engineering community, they will tell you things like they have protected against some of these risks that Mr. Smith is talking about because we (they) have put (as you say) the kandamycin marker gene in there to tell us what is going on. And we (they) make sure that the plant can do its normal functions and it looks like the plant, tastes like it, and produces the same protein, carbohydrate, and fat, so a lot of this is theory of concern and in actual fact it doesn't happen. How do you respond to those kinds of debate questions?

Little Testing is Done Following Transgene Insertion

JS: I think your example is great. It looks like, it tastes like, and we have three or four data points, so it must be the same. You know, they don't even check to see if the transgene ends up the way they intended it to be. In fact, there were studies in Paris that found that they sequenced the transgene (the gene that was inserted into these crops) and in all five cases, what they found was different than what the company had registered. And so either it changed during insertion or was unstable and was changing over time. Likewise, the protein that is being produced from the transgene might be different, and they don't necessarily check that either. For example, they'll check five amino acid sequences and they will assume that the rest of the six hundred are the same. They will also assume that the transgene will produce the right protein even though the transgene can be interpreted differently.

In one transgene, 30% was lopped off altogether, and the resulting protein was a combination of the inserted gene and part DNA. And they don't actually test the food itself on animals, in many cases. What they do is they create a surrogate protein from bacteria and then test that with a single dose on a rodent to see if there has been any death occurring within 7 to 14 days and that is their animal-feeding study.

So they don't test in ways that would even evaluate these unpredicted changes in the crops themselves. They create artificial circumstances to force the conclusion that these foods are safe.

JB: Well I think you used in your book *Genetic Roulette*, and also in *Seeds of Deception*, a remarkably powerful example that illustrates what you are talking about and that is the amazing work of Dr. Pusztai that maybe you could tell us a little bit about? I think that really dramatically illustrates what you are describing.

Concerns in Europe about Genetically Modified Foods

JS: Well he is a very pro-GM scientist, the leading lectin scientist in the world, working at one of the top nutritional research laboratories in the world in the UK. He received a grant from the UK government to create the ideal testing protocol to evaluate the safety of genetically engineered crops that was to be used EU-wide. And he created a genetically modified potato engineered to produce an insecticide (a lectin), and the insecticide turned out to be harmless to animals (he had studied it for six and a half years and characterized it quite well). But the potato that was engineered to produce the insecticide caused damage to virtually every system in the rats that were fed the potato. They had potentially precancerous cell growth in the digestive tract; smaller brains, livers, and testicles; partial atrophy of the liver; and damaged immune systems, among other things.

He was alarmed because he realized it was the inherent process of creating the genetically engineered potato that was responsible for the damage. He went public with his concerns, was fired from his job after 35 years, and silenced with threats of a lawsuit. His 20-member research team was disbanded, and he was maligned by the institute he had worked for and by the established pro-GM UK scientists, among others. When he eventually was able to speak because of an act of Parliament, he got his data back and it is now published in *The Lancet* and it remains the most in-depth animal-feeding study yet produced on genetically engineered crops.[i,ii]

What it shows is that if that same potato which proved to be so damaging had been subjected to the same superficial studies that got the GM crops on the market (soy, corn, cotton, and canola, for example), those potatoes would have also gotten onto the market. In addition, the other products were made from the same process of genetic engineering that he used to create the potatoes, so they might be creating these types of damage in human beings over the long term, but we don't know since the studies have not been done.

JB: It is really very, very fascinating, isn't it, how things of this importance, which are discovered by very diligent people, can be held in check and the information not made available to the broader public. I guess we have to really commend what happened in Europe as a consequence of the fall out of this because it seems like it was the catalyst for putting in place regulations about genetically engineered foods that we don't see in the United States. Why didn't we see a translation of this from one continent to another?

Many Americans Unaware of Presence of Genetically Modified Foods

JS: Well, when Pusztai was able to speak on February 16, 1999, it touched off a major headline war about GMOs. One commentator said it divided the society into two warring blocks on the GM issue, and within six to eight weeks, Unilever, Britain's largest food manufacturer, publicly committed to remove GM ingredients from their European brands. Within a week, virtually every other major food manufacturer followed suit. However, in the United States, Project Censure describes that (our Pusztai issue) as one of the most underreported events of the year. And so we don't really have an open press right now reporting the risks, instead we have press that read like a biotech brochure. This has been the case for many years. If you ask the average American, "Have you ever eaten a GM food in your life?" Sixty percent say no, 15% say I don't know, and those that don't want to eat GM don't know how (they have labeling over here in Europe but not over there in the United States). And so the structure of the way that they have been improved and sort of slipped into our diet without notice has been responsible for the fact that Europe has rejected it and the unknowing US consumers have not.

JB: So now that leads us (obviously) to the inevitable discussion about the business opportunity and how that has been a motivation for kind of circumventing (maybe) the normal process of consumer education and discussion and kind of general political support for the concept. Tell us a little bit about the Roundup Ready seed movement because it seems like it plays a pretty interesting role in this whole discussion here in the states.

Roundup Ready Seed Movement

JS: About 80% of genetically engineered crops are designed to withstand death by a particular herbicide. So the company markets their (for example) Roundup Ready seeds or soy to withstand sprays of Roundup herbicide. And what it does over time is it increases the use of that herbicide in the city and in the fields. By 2004, for example, Round-up Ready soy fields received an estimated 86% more herbicide than the natural soy fields, and it allowed Monsanto to maintain a de facto domination of the glyphosate market (that's the active ingredient in their Roundup even though the patent was expired in 2000). Now if you look at the potential impacts of Roundup, because there have only been about two dozen peer-reviewed, published, animal-feeding studies

on the health aspects of GM, and only one published, peer reviewed, human-feeding study, we have to take our information from several sources to get a big picture.

Immune-System Reactions to GM Soy Reported

Soon after GM soy was introduced to the UK, soy allergies skyrocketed by 50%. We know that in an analysis of the composition of GM soy by Monsanto (information that had been left out of their study and found later) that among cooked soy, the trypsin inhibitor (which is a know allergen) was seven times higher than compared to one variety of non-GM soy. We know that in another study, eight individuals showed a skin-prick reaction to GM soy, but only seven of them to non- GM soy, showing that one person had a unique allergic or immune-system reaction to the GM variety.

When they then did a profile of the proteins within the soy, they found a unique allergenic protein in the GM soy, one that was able to bind with IgE antibodies. We also know that the Roundup Ready protein that was intended to be created within the Roundup Ready soy has two sections of amino acid sequence that are identical to known allergens, which (according to the WHO) either should have stopped approval or forced further tests. And finally, we know that the high levels of Roundup residue might also be associated with food sensitivity or allergic-type reactions. In addition, there is a mouse study that showed the production in the pancreas of digestive enzymes was dramatically reduced in the mice that were fed the GM soy.[iii] Any reduction in (for example) protein enzymes could allow the protein to last longer in the system, causing it to be more likely to achieve an allergic reaction, so it potentially could increase allergic reactions not just to soy proteins, but to other proteins. When the GM soy was fed to mice and rabbits they showed changes in DNA expression and enzyme expression and metabolic activity in all the major organs that were tested.[iv] Also, mice that were fed GM soy had problems in the development of their young sperm cells and the embryos showed altered gene expression as well. And in the Russian National Academy of Sciences they fed rats genetically engineered soy and about over 50 percent of the offspring died within three weeks compared to about 10 percent of the offspring whose mothers were fed non-GM. The size of the offspring from the GM-fed mothers was also radically smaller, and they were not able to reproduce in subsequent studies. And they also fed soy to males and they found that the testicle structure was also considerably different among the GM-fed group. So we have a lot of information from the very few studies that have been done indicating that this thing is not just an accident waiting to happen, but might already be creating a health catastrophe in the United States if 89 percent of the soy acreage in the US is GM.[v,vi,vii]

JB: Well that was about as eloquent and complete an answer to that question as we could ever expect. Thank you very much. You know, for those who are going to read the book (*Genetic Roulette*—your book) which I think (as I mentioned) is mandatory reading, they might ask, "It seems so self-evident—the way that you describe it. Are your assertions documented and supported?" And if you look at the endnotes in your book (I haven't counted up specifically how many references you have cited to support your points), but certainly it is in the thousand range. I think anyone who would like to know if you are speaking from what has been published in the authentic literature the answer is a definitive yes.

JS: There are over a thousand endnotes and it is a combination of published literature and reports from the field. As I mention at the beginning of the book, if we had thousands of appropriately done studies, we wouldn't need to look at medical reports or correlational relationships.

Worldwide Consequences of *Bt*-Toxin Use Reported

For example, *Bt*-toxin. Here's an example where they took a toxin and they put it into food supply, so it was produced, for example, in every cell of corn (which means in every bite of corn) on the assumption that the toxin had a history of safe use because it is used in organic agriculture, that

the protein was truly destroyed during digestion, and that there were no receptor cells in humans or mammals so it would pass right through even if it weren't destroyed during digestion. So they didn't have a whole hoard of scientific studies and data points to say that this toxin in our food supply would be safe. It was based on assumptions as so much of the GM approvals are. However, even among the small number of data points that were there, they had overlooked the fact that about five hundred individuals complained of allergic-type reactions when they got sprayed with the natural version of this *Bt*-toxin that was used for Gypsy moth infestation in the Pacific northwest.[viii,ix]

Now, they take that gene and they make the *Bt*-toxin at three- to five thousand times more concentrated than the natural spray version, and farmers in India who are harvesting GM cotton (or loading it onto trucks, or working in ginning factories) are complaining of the same allergic-type reactions that the five hundred people complained about in the Pacific northwest. Then they let sheep graze in the *Bt* cotton plants after harvest, and within five to seven days twenty-five percent of the herds died (about 10,000 sheep in total). About two dozen farmers in the United States complained that certain *Bt*-toxin corn caused their pigs or cows to become sterile. There is a German farmer and others in the Philippines that claim that the *Bt* corn caused death among their animals (their livestock). And in the Philippines, also, people living next to the *Bt* corn field developed skin, respiratory, intestinal reactions, and fever during the time that the corn was pollinating.[x]

The following year, the same seeds were planted in four other villages and during the time of pollination when they were breathing in the pollen, they had more reactions among people living nearby. Now these are all medical reports or farming reports that are documented, yes, but not necessarily in peer-reviewed journals. For the studies that got *Bt* crops approved, they are typically not peer reviewed by the companies; they are submitted only to the regulatory bodies and labeled "Confidential Business Information." However, a lawsuit forced Monsanto's *Bt* corn study for their Mon 863 into the public domain a couple of years ago. It turns out that they had an enormous amount of problems with the rats that were fed the GM corn, and some scientists recently re-evaluated the raw data based on the study and found clear signs of toxicity in the liver in kidneys that was not reported or acknowledged by Monsanto or the regulators that approved the product. So even among the company's own studies, which I describe in great detail in part three of *Genetic Roulette*—how they meticulously design their studies to avoid finding problems (using the wrong samples, the wrong control group, the wrong statistics, under-reporting the details)—even with all that, they found signs of toxicity.

JB: So that leads us into an interesting question. Michael Pollan, in his recent book *Omnivore's Dilemma*, talks about this concept that often when farmers are feeding corn to their animals that are genetically engineered and the animals have a choice of the genetically engineered corn versus the non-genetically engineered, they will preferentially choose the non-genetically engineered, suggesting (at least from anecdote) that animals know the difference. Is there any history of that that you have seen in the way that animals respond to these foods?

JS: Absolutely. There are reports from all over North America that show cows, pigs, geese, elk, deer, raccoons, mice, and rats all avoided GM feed when given a choice. In fact, the CEO of Calgene, that put out the first approved, genetically engineered food crop (the Flavr-Savr tomato) said that even if you were Chef Boyardee, these rats were not going to eat their GM tomatoes. They force fed the rats the tomatoes and several developed stomach lesions and seven of twenty died within two weeks. We know now from documents made public from a lawsuit that the FDA was willing to let that go on the market as is. Calgene voluntarily used a different line of their transformed tomato to introduce to the market.[xi]

But it shows you that the FDA was ready to turn a blind eye to some pretty serious results. Now the FDA has no required consultation (it is all voluntary), so that was the only study in which raw feeding-study data was ever submitted to the FDA (that was basically summary conclusions and

very, very superficial and flimsy reports that are voluntarily submitted). If the FDA asks for further studies and further questions, they are typically ignored.

This voluntary consultation process came about because the 1992 policy of the FDA claimed that the agency was not aware of any information showing that foods created from these new methods differed in any meaningful or uniform way. On the basis of that sentence, they said that if Monsanto wants to introduce a GM crop to the market, they can determine whether it is safe and don't even have to tell the FDA. That sentence turns out to be a deception. Documents made public from a lawsuit show that the overwhelming consensus among the FDA's own scientists was that GM crops were inherently unsafe and could create hard-to-detect, unpredicted toxins, allergens, new diseases, and nutritional problems and had, in fact, urged their superiors to require the long-term safety studies that they chose not to require.

JB: What do we do? That is the question. You have already told us that in terms of labeling there is no mandatory requirement in the United States for labeling foods that were produced by genetic engineering. In your extraordinary website and Institute (the Institute for Responsible Technology) you talk a little bit about what we should do and where we are going. Maybe you can help us to kind of define a strategy.

JS: Well, I think that among all the health and environmental problems in the world that we face, ending the current generation of GM crops is one of the easiest things we can do. I emphasize the words "current generation" because I'm not against the possibility that someday in the future we can safely and reliably and predictably manipulate the DNA for the benefit of human health and the environment, but the current generation is a primitive technology based on obsolete science and faulty assumptions. So how do we stop that?

Grassroots Consumer Action Could Halt Use of GM Crops in US

I think what we talked about earlier—the result in the European situation— when a certain number of consumers reach the tipping point of pushback against GM, who are unwilling and very unhappy about the fact that the diet was being converted to GM, when that tipping point was reached, the food industry reacted for the sake of protecting market share. And that kept GM crops out of Europe in spite of a very pro-GM European commission and a pro-GM European food safety authority. So we need to create the tipping point of enough consumers in the United States to say no to GM.

Now remember, the food industry gains nothing from these GM crops, in about 80% are herbicide tolerant and about 20%produce their own pesticide. They do not have consumer benefits, so the food industry gains nothing from using GM, and if they saw a drop in market share of just a few percentage points and they perceived a trend that might grow over time, it is very easy to see how the stampede away from GM could be repeated in the United States as it was in Europe. I am predicting that with as little as 5% of the US consumers avoiding GM ingredients very consciously, that 15 million people could drive the decisions for the entire food industry. So where can we get 15 million people? Well, certainly health conscious shoppers are low-hanging fruit since there are already 28 million people who buy organic food on a regular basis, but they rarely avoid GM ingredients in their non-organic purchases. I'm working with some CEOs of major food companies in the natural food industry, and what we are doing is we are cleaning out any remaining GM ingredients from the entire natural food sector, setting up GMO information centers in all the health food stores, non-GMO shopping guides, and later on, in-store, on-shelf labeling of any products that have held out and not participated in the clean-up.

We are also working with communities around the country, showing a video that I created with others called *Hidden Dangers in Kids' Meals*, alerting parents and schools to the fact that children

are most at risk to the health dangers of GM foods and we are establishing GM-free campaigns around the country. Likewise, we hope to approach religious leaders to explain to them the dangers. They, themselves, may believe that "GMO" means "God Move Over" and are unwilling to participate in this experiment and might choose to distribute the non-GMO shopping guide. And the fourth demographic that are really important is the health practitioners—the doctors, the nurses, the dietitians, those who evaluate science and make recommendations to their patients and clients. If the word got out to the food industry that more and more doctors are now prescribing diets to be free of GMO, then GMO will be over in the United States very quickly. And I do know many doctors who tell their patients to avoid eating GMO foods. That is why this interview is so important. What we hope to do at ResponsibleTechnology.org is to post patient education materials that doctors can download. In the meantime, they can always use Genetic Roulette in their waiting rooms. It is designed for a quick, five-minute flip-through in the way that is has executive summaries on one side and detailed text on the other side of each two-page spread.

We have one doctor, an allergist, who said he used to do soy allergy tests all the time but now that soy is genetically engineered he tells his patients just don't eat it unless it says organic. He buys in bulk this audio CD we created called, *You're Eating What? Stop Eating Genetically Engineered Foods and Please Copy this for your Friends*. So he buys them for a dollar or so off our website and sells them to his patients for a dollar and has distributed over a thousand to his patients. So we have ways that we are working with the medical community so that we create this buzz that healthy eating means no GMOs, so then quickly we can reach the tipping point and the food companies will end this dangerous experiment, even if our government is unwilling to act.

JB: Well, Jeff, that is an incredible advocacy. I think it was very important for our listeners to hear that you are not a Luddite by nature. You are not a person who is just anti-technology, regardless. I think your point is that if we knew enough about what we were doing that would be a very different story than doing an experiment that is early on in our understanding of the gene and how it is translated into protein and function and that that uncertainty is really the cause for great concern. I share that concern. It seems like many of the dominant—what we consider "truths"—in molecular biology when I took my first course in 1962 in molecular biology, like the "one gene, one enzyme concept" and the fact that there was all this "junk DNA" that was present in the genome has now been pretty much refuted. It is not just "one gene, one enzyme." Genes can express themselves in different ways and this "junk" is really not junk at all; it is where a lot of the information molecules are for organizing the genetic expression patterns that ultimately control how genes are regulated. It seems like we jump prematurely with the kind of sophomoric view (the "wise fool" view) about what we knew about the gene and started inserting that knowledge prematurely into our food supply and I think that position that you have taken is a very, very scientifically supportable position. It is not a Luddite position or an anti-technology position; it is a rational thinking position.

JS: You know, it is interesting. I agree with you completely, and yet the public relations spin by the biotech industry, which has been so successful around the world, wants people to believe that those of us who are demanding more science are anti-science. But there is also another very dangerous aspect. You mentioned this with respect to Arpad Pusztai, but I've interviewed scientists all over the world who have incredible pressure silencing them, taking away their funding from doing research, denying them access to genetically engineered seeds to do their research.

Doctors have had information stolen. Even scientists in government have had documents stolen from their locked file cabinets as is the case with the scientists in Health Canada who were evaluating Monsanto's genetically engineered bovine growth hormone. They also said, for example, that Monsanto had offered them a bribe of one- to two-million dollars to approve their drug and that also Monsanto go fined 1.5 million dollars by the US Justice Department for bribing up to 140 Indonesian government officials to try and get their patent approved there.[xii] It is not just

an avoidance of science, it is actually a rather sophisticated manipulation with very big goals in mind.

Arthur Anderson Consulting admitted at a 1999 biotech conference that they had consulted with the executives at Monsanto by asking them to describe their ideal future in 15 to 20 years. And the executives described a world in which 100 percent of all commercial feeds were genetically engineered and patented.[xiii] And they went backwards from that goal to create a strategy and tactics to achieve it. Imagine if they had been successful. Imagine if there hadn't been push-back from Europe. We would be replacing the genomes—the DNA—with self-propagating genetic pollution and reducing the number of seeds around the world, because they obviously would have taken over a larger percentage of the seed supply and reduced the amount of natural seeds made available, causing a much higher level of food insecurity. If they had gone forth with their plans they would be gambling with our entire food supply on this untested, primitive technology. They are not above really risking as much as you can possibly risk.

Self-propagating genetic pollution will outlast, theoretically, the effects of global warming and nuclear waste. We have never had an experience like this before in our history. Going slow, going cautious, going with plenty of consensus and thinking is the only way to proceed with such a technology, and yet we are seeing just the opposite. So I want to applaud you for taking this up as well as all of your incredible work in all the areas that you are working on, Jeff.

JB: Well, thank you so much, and I think (again) the listeners can see the urgency to read *Genetic Roulette* and really become more knowledgeable and informed and assist their patients in making informed decisions in this area. Once again I want to cite your website because I think it is a very valuable and dense source of information; it is www.responsibletechnology.org.

Jeff, I just want to thank you. I know you have taken time out of your busy schedule there in Europe to share this information with us but be assured it is being listened to by people who are very advocacy-minded and it will have a significant impact in how they counsel and discuss this with their patients.

JS: Thank you and I want to add one thing. We have a geneticroulette.com site. We have 65 health risks of genetically engineered foods documented in *Genetic Roulette*, so we posted a page for each one of those 65 health risks and then asked the biotech industry and others to give updates, challenges, corrections, etc. in the hope that it can become the world's forum on discussing the health risks. Not only that, but it is actually a gauntlet. We are throwing down a gauntlet to the industry, saying "You must respond to these 65 risks with rigorous scientific data showing that they are not concerns, otherwise there is no justification for allowing these foods to be on the market."

I'm traveling and speaking to parliamentarians and others, and I testified before the EPA and met with senators and congressmen, saying "We want to reframe the issue now. There is overwhelming scientific evidence that these foods are unsafe. We have parsed it out into 65 main risks. Let's give them the checklist. If they can respond to the 65 risks, we have no further questions. If they respond with more assumptions and no data points and sweeping dismissals, then they have no justification to allow the food to be fed to humans or to animals."

JB: Very, very convincing. Once again, thank you and thanks for your tireless efforts and we will keep the fire burning here from the practitioner side.

JS: Great. Thank you, Jeff.

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