Interview with Jeffrey Smith & Zach Bush (Audio + Transcript)

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Jeffrey Smith

Dr. Zach Bush

For those of you who missed the November 23 conference call with Jeffrey Smith interviewing Dr. Zach Bush, we have the link to the audio **as well as a transcript** here.

Jeffrey Smith: Hello every one, my name is Jeffrey Smith

This is our first webinar on healing from GMOs and RoundUp. I’ve been waiting for years to be able answer the second most popular question I hear over and over: “What can I do if I’ve been eating GMOs?” The first most popular question is “What are the GMOs,” but I’m not going to talk about that. Today is mostly about RoundUp which is sprayed on most GMOs but it’s also sprayed on wheat, barley, rye, rice and a whole bunch of other nonGMO products just before harvest as a ripening agent.

It is all around us: It is in the air samples, rain samples, it’s in the water supply and we need to be able to protect ourselves. Even those that are very vigilant at eating nonGMO and organic may still have exposure, so it is a very important question that we answer [How do I heal from GMO & glyphosate exposure]. Whenever anyone has asked me that question, for years I’ve answered that the answer is above my pay grade. And it still is. I don’t have a medical degree. I can’t say that I can look at something in detail and make a recommendation that this is the best product or protocol to deal with GMOs. But I deal with GMO health dangers and I have a lot more experience and confidence from interviewing lots of scientists. And often if there is discrepancy between what they say, I’ll hold conference calls and clear out what exactly what is the case and what I need to say because what I say about GMO dangers gets quoted around the world.

My criteria for the “Healing from GMO and RoundUp” webinar is a little different. In this case, I have some very very excellent physicians and doctors that recommend protocols and when I feel like there is enough scientific evidence and clinical experience from people that I really trust, then I feel like it’s time not to keep this information from people who want to know, but to create a platform so that you can hear what I’m hearing over and over again. So I’m not coming in saying: “I have studied all this and this product and this is the best.” But rather: “Six different practitioners have recommended that I talk to Dr. Zach Bush because he has something that is profound and I’m happy to interview him and hear his presentation with all of you.

Now, at the end of the webinar, if you are interested in purchasing the product, please the discount code “IRT”. Two things happen when you use this code. First, IRT gets a percentage of the purchase when you use this code. Second, you get 20% off your purchase through December 7th (11:59 PM PST) and 5% off after that.

I’m going to introduce Dr. Zach Bush, who is one of the few physicians in the nation who is triple board certified. He is certified in internal medicine, endocrinology and hospice care. He has published peer reviewed articles and book chapters in the areas of infectious disease, endocrinology and cancer. He uses this product RESTORE in his clinic – Revolution Health Center — and seen improvement in a variety of disorders. And he will talk to us now about RESTORE and I will be chiming in with questions and clarification and at the end I’ll start with questions and we’ll take yours.

Dr Zach Bush Thanks so much for the introduction Jeffrey. It is a pleasure to be on. Your work has been a tour de force for education to the population and this is such a critical topic that you bring forth. As you continue to set sail for bigger missions. Congratulations on your body of work and I’m excited to be partnered with your future success. The story for me – we can back up from GMOs – because I was a Western medicine trained physician which means I knew nothing about nutrition let alone how we grow it. It was so far off my radar screen to start with a GMO topic that it may be confusing how an MD would stumble upon a discovery to an antidote to one of our biggest problems.

So I’m going to back up in my career a bit and talk about where I was to set the stage to this accidental discovery. My background is in endocrinology and metabolism. I was at the faculty at the University of Virginia. I was doing cell research in tumor cell biology and I was working on a pathway called apoptosis – cell suicide in cancer cells. That research was being done under the microscope and then we went into the clinical realm with a novel chemotherapy, vitamin A compound.

That was going on, but on the other side of my life, I was also taking care of diabetic and autoimmune patients. There was a sudden merger that occurred in 2009 where I realized that what was happening under the microscope, and in my cancer patients in my clinical trials was really the same process that was happening in the diabetic patients and patients with autoimmune disease. It was all coming down to a state of chronic inflammation and dysregulation of the immune system. And that was a major “Ah Ha” moment that was both depressing and elating simultaneously, having spent 15 years in higher education and realizing I’ve been going down the wrong pathway of complexity and learning more and more minutia when in reality it was a really simple, single answer which was the inflammation story. It was a sobering and exciting moment that changed the course of my career.

What was going on under the microscope was a process of loss of communication which accounts for how cancer cells are created. And this was the same thing that was happening in my diabetic patients. They were losing communication on the macro level. Their immune system could no longer find the infection going on in their foot. They were losing limbs.

I'm going to try and speak more clearly here. My career was taking a significant change with the revelation that there was just one process going on with inflammation. And in that avenue, I started looking at nutrition. I left the university setting and entered the private community setting. We were seeing difficulty in setting nutrition programs in the setting of Western medical institutions. We were seeing a lot of data coming out that changes in the diet could have an effect on can cancer outcomes diabetes outcomes. UCLA and UCSD were publishing articles that was suggesting that were suggesting that some types of bacteria in the gut could predict the advent of cancer in the human. And we had no mechanism for how the two could be connected at the time. But it was compelling enough that we launched Revolution Health Center in Central Virginia which would become our training ground as doctors and scientist where we could start studying the science of health rather than the science of disease. So that is where we have been at since 2010 and we've been diving deeper and deeper into the mechanisms of healthy cells and immune systems.

We were putting our patients on a vast number of nutritional programs and intense regimens of super foods to reduce inflammation in the body. This had good outcomes in a significant portion of the population. But there were at least 50% there were getting more inflammation, not less, eating super foods. And this was not adding up with the biology that we had at our hands. So we started diving into asking "What is going on in our soil?" and "What is going on in our food" and "How can superfoods act as oxidants rather than antioxidants?"

It was around that time that a colleague brought in a paper on soil science and I was flipping through the pages and I stumbled upon a carbon molecule that looked a lot like the chemotherapy compounds that I had been working on at UVA. After coming upon that carbon molecule looking a lot like the chemotherapeutic compounds that I had been using at the University of Virginia, there was a moment of understanding of communication again and the same breakdown that we had that was leading to the cancer process was really reversing in the mind's eye looking at a molecule that was 15 times more complicated than the compounds we had been working with previously.

So we started working to understand where these molecules in soil were coming from and without too much effort it turned out that it was the bacteria in the soil that we creating these carbon based molecules that had this oxygen communicating system on the end of them. These are referred to as redox molecules in biochemistry. These redox molecules are unique in that do rapid cell-cell signaling and seem to be the backbone of how an immune system will respond to injury, and, perhaps more importantly, how the immune system will regulate its response to the said injury without mounting into a chronic inflammatory snowball.

So these redox molecules coming out of the soil were a new thought. It raised the theory of whether the bacteria were creating their own communication network between them. It was starting in our minds to tie together the possibility that maybe, in fact, the bacteria are producing different cancers in different people depending on how this communication network is functioning or not functioning in the human gut. So that is the convoluted background on how we stumbled upon these carbon molecules

by accident going through soil science. And it sets the tone over the next couple years as we teased out what we'd found with these bacterial produced metabolites that were producing the communication network in the gut. The advent of this was timely because of Jeffrey Smith and others raising the concerns over the GMO movement and understanding the dangers that had happened in our food chain. And so as we start putting things together that there was bacteria talking to the human gut and the immune system.

There were new ways that we were farming that was changing the way that the food was going to be presented to our gut created the perfect storm so that it did not take great intelligence to see that all of this is connected. So we went back in time to determine what the changes in our food industry had been. And one that predated the GMO movement was the green revolution post-World War II. At time we switch from thousands of years of farming practices of composting and crop rotation to keep healthy soils and we went into this nitrogen fertilizer process where we extracting nitrogen fertilizer from petroleum products and putting this into the soil and producing green plants with the hope that we could feed the world.

So we created the green revolution and started producing a vast amount of crop without the relation that the plants were lacking the nutrients we had had in those plants historically. So we had a nutrient deficiency starting in the 1950s and that progressed over the next few decades to the point where now you see a tomato on the market shelf and it resembles nothing of the nutrient panel you would have seen in a tomato in World War II. And we are lacking many of the anti-cancer effects like lycopene found in that tomato. So this nutrient deficiency that's developed had an interesting impact on the human gut in that of the 30,000 species we once had in the human gut was no longer necessary. The more we got towards the monocrop on our plates, the less pressure there was select for biodiversity in the human gut. And we started to get simpler and simpler microbiome in the gut environment.

This led to a vulnerability which previously had been unrecognized. And that vulnerability was right in the gut lining. IT turned out that the bacteria and the communication network they produced is the very thing that protects that gut lining from infiltration or penetration from unwanted material. That vulnerability from a lack of nutrition in plants and the subsequent loss of bacterial diversity was sped up by the advent of antibiotics. Antibiotics were put into play more post-World War II with penicillin and as everyone know there has been a huge acceleration of hundreds of different compounds put into the market place with the use and over use of those and frank abuse of those antibiotics over the many decades has been obvious.

Nowhere more has that been true as in our animal population. In the production of meat, we are using about 85% of global antibiotics into those animals. That has immediate impact from the residue of those antibiotics ending up in the soil and the parts we consume on the plate. Between antibiotics in humans and animals as well as pesticides and herbicides use in crops, we have had an enormous annihilation of bacterial diversity. This has led to many problems clinically: c-diff, colitis, chronic diarrhea, MRSA and other antibiotic resistant strains of bacteria. And in communities, there is a resurfacing of multi drug resistant tuberculosis.

We have seen many detrimental effects of antibiotic use. **By the end of this call, I hope you realize that it is really the story of the gut lining and its loss of communication with the bacteria that**

is causing most global injury that we are suffering as a society now from the loss of bacterial diversity.

In a nut shell, I'm going to cover what the metabolism is in a bacteria. When bacteria eat, whether in the soil or in your gut, they are going to breakdown these larger macronutrients into little micronutrients that are bioavailable to humans. In the process of breaking down macronutrients into micronutrients, the bacteria are creating byproducts or metabolites to that effort. And the byproducts are these carbon-based molecules that are the communication network between the species.

The other correlate to this in biology is the mitochondria. The mitochondria look a lot like bacteria and they live inside the human cells. Inside the human cell and the same metabolism breakdown of sugar and fat, the mitochondria make redox molecules that are oxygen based vs. carbon. And those oxygen redox molecules were ones we were working on in the cancer world and which were creating the communication network of intracellular environment. In contrast, the large carbon molecules that are made by the bacteria are the communication network communication network of the extracellular environment between cells. In broad strokes, the bacteria seem to be creating the communication network of protection in the cell and the oxygen redox molecules in the mitochondria are creating the communication network of repair inside the cell.

The biochemistry and cell biology have been advancing quickly over the last years and we are starting to realize that at least 50% of the aging process is due to a loss of redox molecules and communication network. Where before, all of the focus has been on the mitochondria, and we believe that we are the first group to bring forward the science and communication network of bacteria. So we are going to share with you a screen shot of some of this communication network happening under the microscope. What we have found is that the tight junction, which is the firewall between the outside world and every cell in your body, is laced together with in the gut first, but also in every blood vessel, as well as the blood brain barrier and the kidney cells.

Each of these systems are tied together by these tight junction proteins. Tight Junctions, you can pictures as Velcro between cells. These are little cross linking proteins that hold together one cell to an adjacent cells. This creates a constituent membrane or firewall from one side of the cell system to the other. And perhaps nowhere more important than your gut lining. Your gut starts in your sinuses. So when you breathe, the mucosa of your nasal passages are tied together with the same tight junction network that you're going to find in the esophagus and the small and large intestines. So your entire GI system is lined with epithelium or mucosal layers that are going to be tied together with this network of firewall proteins.

When these tight junction proteins get damaged, we have an overwhelming effect on the immune system. A good 80% of the body's immune system lies behind the tight junctions. The Gastro Intestinal Associated Lymphatic Tissue (GALT) and is where you will produce 80% of the antibodies that will protect your system. As you start to picture the gut lining in constant communication with the bacteria, we can start to understand where immune function really begins. The vast majority of your protection is in relation to your diverse bacteria and them breaking down toxins, managing macro and micronutrients, and taking care of this tight junction membrane.

When you lose bacterial diversity (and you see this from generations where it is happening faster and faster) and have toxins present at your tight junctions, the earlier you will start manifesting the aging process and chronic disease manifestation.

Jeffrey Smith: I'm going to cut in. I've been attending many and speaking at many medical conferences, and as medical practitioners on the call know, what you are saying is really the cutting edge of a lot of medical research and experience. I was just at a microbiome conference chaired by Dr. David Perlmutter, and he was talking about this very same effect: the importance of a diversity of gut bacteria and its role in protecting the walls that protect our bodies from the outside.

There is one analogy I'd like to share about leaky gut. When you have an intact gut wall, then only small pieces of digested protein go into the bloodstream. But if you have these gaps as seen in these images, then undigested protein gets into the bloodstream. And they are attacked as if they are invaders. The immune system components take out their iPhone and take pictures of the invader, and post it on their Facebook page and say "Attack anything that looks like this". But they are using old iPhone with high pixilation, and so they are hard to see. So the immune system attacks anything that looks like that be it the thyroid or pancreas or microvilli. And this is the basis of autoimmune disease: holes in the walls and old iPhone.

So this is an analogy which may make it easier to under why the body attacks itself. Pieces of food get into the bloodstream and are profiled and then attacked in mass and we get it wrong and start attacking ourselves. So I just wanted to share what I'm hearing from you is what I'm hearing at top medical conferences elsewhere.

Dr. Zach Bush: That is a good analogy. And our team has come up with several hundred similar analogies to communicate what we are seeing as to the injury. Dr. Perlmutter's work has to do with the blood-brain barrier, and the tight junction injuries that you see with in the gut lining will nearly simultaneously happen in the blood-brain barrier. Dr. Perlmutter is working almost entirely with neurological disease in his clinic and seeing the consequences of that breakdown of the tight junctions in the blood-brain barrier.

The way in which that works is stunning. First you develop the vulnerability of the lack of microbiome and the carbon communication network. As you lose that and vulnerable, you become prone to injury to those tight junctions. And that injury happens to be through the toxin pathway that is exploited by the organism cholera. Cholera toxin is a pathway that produces Zonulin at the gut lining and Zonulin weakens the tight junctions which in turn leads to water in your body leaking into your colon and you die of dehydration.

So that was our introduction into how this injury occurs by studying the cholera organism. What Dr. Perlmutter and others see, is that once that Zonulin is produced it goes systemic. And so while it does damage in the gut wall tight junctions, you also get injury at the blood-brain barrier, in the kidney tubules and throughout the whole vascular system. And this systemic damage from Zonulin is where we see clinical conditions stemming from the "leak" phenomon. It turns out that the first manifestion of "leak" in the gut and the blood brain barrier is going to be colic in a new born infant. At 4-6 weeks, a baby who is born comfortable begins crying uncontrollably. This is the first sign of the breakdown in the gut. The leak continues through the life of the human to where you begin to see sensory

processing deficits, such as autism spectrum disorders that we see in our children, but also attention deficit and hyperactivity.

You also get sleep disorder, in your early teen's anxiety disorders develop. By your teens, you see irritable bowel syndrome which is now epidemic. In late teens, you see major depression where suicidal thoughts occur. By early 20's you see high rates of infertility. By early 30's, you see metabolic syndrome and diabetes. By 40's and 50's you see cardiovascular disease and renal disease. By 50's and 60's you see the advent to of cancer effecting one out of every two people. If you survive all this, you have a near 100% prevalence rate of dementia. Dr. Permutter ties a lot of this back to Celiac Disease but in the end, I don't just think that it is Celiac or gluten sensitivity but a much broader story of injury to tight junctions.

Jeffrey Smith: Is it possible to segue to the glyphosate research which we're looking at on the slide. When glyphosate is present, the gaps in the tight junctions are rather amazingly large and then the Restore plus the glyphosate closes the gaps.

Dr. Zach Bush: So the Celiac Disease and gluten sensitivity that Dr. Perlmutter and others have spoken about clinically we are starting to realize is not as much a cause as rather than a symptom of vulnerability and leak at these tight junctions. In front of you is some science that has made us realize that the inflammation you see from in Alzheimer's to Autism is really tying back to a change in our food industry predating the GMO and then accelerating with the introduction of GMO crops. And that compound is glyphosate, which was first patented and put on market as RoundUp, but as of 2007 is off patent and so the vast majority of glyphosate isn't from Monsanto, but from China who is the largest producer of generic glyphosate.

The glyphosate compound is 10 times more potent than gluten on the Zonulin toxin pathway to destroy the tight junction. And it is intriguing to realize this is timed right into the epidemic that we see. The epidemic started with inflammation in the really rapid growth of chronic disease in the US started with changes that happened in the food industry in the 1980s as we went to direct to consumer sales of glyphosate. Glyphosate was starting to be sprayed into driveways and in backyards and we were starting to see an accumulation of the compound in water systems. The EPA has steadily been raising the bar as to the allowable levels of glyphosate in our drinking water and on our foods. The largest single increase was in 2013. There was a 20 to 30 fold increase in allowables in things like broccoli and many other foods that we think of as health foods.

And so this glyphosate compound has been accumulating at a startling rate over the last two decades and it started with a practice that Dr. Perlmutter made kind of famous in the lay public with the discussion of spraying glyphosate on wheat. They started this in 1992 where it was suddenly an exciting advent where we could spray wheat crops before their maturation and kill them. They would dry quickly and they could be harvested and then a second crop could be put in the ground. And so it gave farmers in northern climates the opportunity to grow two wheat crops instead of one per season. We started spraying more and more acres of wheat with glyphosate. Dr. Perlmutter has some nice graphs in his recent book *Brainmaker* that detail that out and overlay that with the rates of autoimmune disease, namely celiac disease. That started in 1992 with the spraying of wheat. We started consuming at that moment the combination of not just glyphosate but also its cousin which is the gluten breakdown product gliadin.

We were simultaneously eating glyphosate and gluten in the same products and this led to the catastrophic injury we believe at the tight junction system. In 1996, made famous by Jeffrey Smith and others discussing this at great length and accuracy, we invented the GMO crops to be Roundup ready so that we could spray all the corn and soybeans with glyphosate. Suddenly it was wheat, corn, and soybean all being sprayed and as you know a good 85-90 percent of the crops in the US are now genetically modified to handle Roundup. We are seeing an enormous amount of glyphosate from China being dumped on those crops.

With the slide that you all have in front of you we are going to show you how this looks under a microscope. In the top left hand corner you have a control membrane. The green is highlighting something called ZO1 which is a portion of the tight junction in the bowel wall. The ZO1 keeps all of the cells tightly laced together. If you put glyphosate on that membrane, you go straight down to the picture in the bottom left quadrant and you will see a breaking apart of the cells very rapidly.

This is a concentration of glyphosate used is one third of the concentration that you would typically see in a non-organic food line. So any food that you are getting non-organic is going to have glyphosate residues that are about three times what you are seeing here in this quadrant of the slide. Even at those low densities of glyphosate you are still seeing widespread damage to those cellular adhesion molecules and you are seeing these cells floating away from their partners. You are now looking through the small intestine membrane and sitting right behind that in the human organism is your immune system. This is really what leaky gut looks like in a profound fashion under the microscope.

The compelling thing is the picture up to the right. If you add glyphosate and get that injury and then add back the bacterial communication network that we are bringing to market in the product restore you see this very rapid restoration of the inherent capacity in this cell membrane to make these tight junctions. You may not be able to appreciate it at this magnification but the number of tight junctions from your controls to this post injury expression are actually much higher. So not only do you get back to adhesion cells and a cohesive membrane, but you actually have a higher expression of the tight junctions than when you started.

Jeffrey Smith In other words if you don't have glyphosate at all you have a certain level of tight junctions, and then you put the glyphosate on and they break down and then you put the Restore on and the tight junctions are actually more than when you started before you got the glyphosate, is that right?

Dr. Zach Bush: You got it. You can see that done as well at the top of the frame. To the left you can see the control membrane and to the right where you just add Restore again, with this magnification it is hard to appreciate, but you are getting a 30-50 percent increase in the expression of those tight junctions. And this is a 12-18 hour response rate to this. This is seen in doses of Restore that are all the way down to 0.1 percent concentration. Tenfold less than you would see with the common usage of Restore. Even at tenfold less you can still see that protective mechanism against glyphosate. It is a really unique and wonderful thing that nature seemed to have planned for one of our worst accidents in changing our food chain and gave us a very eloquent solution to that dilemma that is really helping us recreate that ironclad gut.

Jeffrey Smith: I have a couple of questions. First of all, where does Restore come from? You said that you found the molecule that looked like the chemotherapy agent in soil. So how does soil play into Restore?

Dr. Zach Bush: Yeah, that is exactly where we went back to. We were asking over and over again, 'What is the root cause of the problem?' and were getting deeper and deeper into the soil thinking we had found some solutions there. We felt like we really took apart the soil to find those answers once we found that carbon molecule so the next problem was finding clean soil that might have biodiversity. We have at best 12-18 inches of healthy topsoil on our planet right now. Finding soil much deeper than that is a rare thing. We started just turning back the clock, going back into the fossil soils. There have been a number of efforts over the years to find soil extracts that might have some medicinal properties or be able to deliver a mineral supplementation to our diet. Those started back in India with shilajit.

After shilajit came the advent of fulvic acid and humic acid and all these that are now on the US market. We were looking at fulvic acids and humic acids and trying to understand how those might provide an answer. As it turns out, the vast majority of the soil extracts whether they be humic, fulvic, or shilajit, you end up seeing a tremendous amount of oxidative capacity, meaning it actually induces an inflammatory injury and apoptosis especially in kidney tubule cells which are the canary in the coal mine for toxicity. Kidney tubule cells don't seem to tolerate any of the other soil extracts that are on the market, these fulvic acids and such due to their high oxidative component. Instead of going after the mineral content, of the fulvic acids and humic acids, we just needed this eloquent carbon molecule family to be brought forth with this oxygen-hydrogen communication network put into play. We started working with different extractions from a fossil soil. The ore called lignite. This is a fossil layer that is about 50 million years old. The layer that we are drawing from this lignite layer is about 8 feet deep.

This is a highly compressed ore which suggests that the humus layer of soil that it is derived from was probably 25-30 feet thick to reveal this dense and this depth a fossil soil. So you can only imagine the biodiversity that existed 50 million years ago that would have supplied X an incredibly deep topsoil layer. We're extracting these carbon molecules from that fossil layer. We then bring that to Virginia and we go through a process of oxygen-hydrogen binding biochemistry to get that eloquence back into the cells. It's a unique situation where our raw materials are nontoxic but also nonbiologic, they don't have any effect on the tight junctions. They don't have any anti-inflammatory components. They don't have any anti-cancer effects. It is not until you get these oxygen-hydrogen sites back up and running until you start to see the biologic efficacy of the compound. That is basically the process in a nutshell.

Jeffrey Smith: You basically take ancient soil and somehow give it life again and somehow it has the components or the magic formula to reorganize the gut bacteria in the gut as well as the junctions along the gut lining. Now the other question I have is, we see in front of us slides from a test tube study I believe. This is not sending a microscope into the inside the gut of a human or an animal. These are taking the cells out of the animal or human and then putting them under the microscope.

How do we know that it works inside humans? Do we have clinical experience with this that shows that it is not just theoretical from a petri dish but it also happens inside of us?

Dr. Zach Bush: Fantastic question. We have about four years of data there. What we track in the human rather than sticking scopes and taking biopsies of their gut is their immune system. In the human we tend to track antibody levels as well as kappa and lamda proteins that are made by the immune system when it is activated. We track these in patients in our clinics. We have many physicians using the product worldwide now and they have done the same process. What you see is a really rapid reduction in some of the general inflammatory processes downstream of this tight junction injury. As the GALT (gut-associated lymphoid tissue) gets revved up you see a lot of production of these immune breakdown products.

For those inflammatory downstream products you can see changes even within hours of the first dose certainly within days and weeks, really dramatic changes. The actual antibody production in something like a thyroid condition or celiac disease, we've tracked those out four years now in some patients. The most impressive reduction happens between six months and eighteen months of use. What it's showing is that when you slam the gates shut at the gut lining, there is a slow reset that then happens in the GALT as there is less and less exposure of the immune system to whatever it is in your diet that triggered the autoimmune event. It takes time for those antibodies to die back.

Jeffrey Smith: "So that is interesting. Someone might take it and there might be changes that you can tell from laboratory studies that the gut walls are closing, but the actual clinical improvements, the bigger sense of what is going on, may take months because the body may not be sure that it is going to be dealing with a closed gut and maybe there is still some inflammation or preparation in case it happens."

Dr. Zach Bush: "The symptoms of the individual taking X will actually mirror those biologic findings in the lab where the individual can report changes of inflammation within minutes to hours of taking the first dose. Neurologic changes can be seen as early as two to three days of the use. And the reason for that is because of these tight junctions systems X shut when the electrical charge across those membranes increases. As that electrical charges increases the hydration of the cell becomes optimal again. Really in those first couple of days you can see a brain or a kidney that's dehydrated. Reversal occurs very very quickly with the hydration and nutrient delivery becoming possible even within hours to days of use. In contrast, if you have symptoms that are due to an autoimmune condition, there you are looking at months to years to see the effect."

Questions from the audience:
"How does Restore differ from probiotics and prebiotics?"

Dr. Zach Bush: "The probiotic industry was one to really start understanding that perhaps the bacteria are actually good for human health. It was an important step towards embracing bacteria rather than our constant effort to kill bacteria. However, the utility of the probiotics may stop about there. The reason is because what we have really demonstrated over and over again in our science and what is increasingly embraced throughout the industry is that the diversity not the heer number of

bacteria is the critical part of cellular health and immunity. If you take a probiotic, what you end up with is monoculture in the intestines. The typical probiotic will have between 3 and 24 strains of bacteria at copy numbers upwards of 35 billion even now a trillion of those same bacteria. If you imagine taking those same billions and billions of copies of the same bacteria day in and day out in your probiotic regimen you realize you are creating a monoculture very quickly. You are overwhelming the normal eco balance and really modifying the gut to one of monoculture.

We see the long-term use of probiotics is actually problematic and recommend strongly to our patients that they discontinue probiotics as a chronic maintenance and only reserve their use for recovery from antibiotic exposure or a chemotherapy regimen. And we usually limit their use to 2-4 weeks in recovery and then turn the engineering of the intestinal microbiome back over to its inherent communication network which is these carbon molecules. Much different than the probiotic, when you add Restore, you have the opportunity to create biodiversity where you had almost none before. And we have seen very dramatic recoveries, the most dramatic being in our pancreatic cancer patients who have sterile stools, we call them white chalk stools, they look like sticks of chalk because there is no organic material left in the gut to produce a brown stool.

Four days on Restore and you see large bulky brown bowel movements and reduction in inflammation in the patient. That is a demonstration of how fast the eco-balance can return to even sterile guts and it's a much different result than you would see with a monoculture of probiotics."

Q: "Restore has glutamic acid and heavy metals, aren't those bad?"

Dr. Zach Bush: "There are trace minerals and amino acids in Restore and those are from the source. The soil from which we pull these is going to have a constitution much like your very best biodynamic or organic soils that you see now on earth. They have biodiversity that probably way outperformed what we see today but nonetheless the micronutrients and minerals and amino acids is going to be relatively similar. The glutamic acid and the other minerals and metals that you see on the Restore label, those are trace quantities that you would see on an organically sweet potato. None of those, glutamic acid or otherwise are anything that you aren't getting already in your organic foods.

Q: What medical conditions does Restore help?

Dr. Zach Bush: "Restore is an interesting compound to work with. It seems like magic when you get it in the hands of a clinicians. For all of us use to the Pharmaceutical world we are used to making a diagnosis and pairing the diagnosis with a narrowly targeted therapy in contrast to that we no longer treating disease we're trying to manifest optimal health.

Restore's got this global result of reconstituting or re –establishing the communication network and firewall protection of the gut, vascular and blood brain barrier system. You can speak to your physician if you're under the care of a doctor for a chronic condition or if you're a physician on the line treating a myriad of conditions simply ask yourself so does this condition involve chronic inflammation, does this involve a dis-regulation of the immune system and I think you're going to be hard pressed to find a condition that doesn't point back to that same process.

John Hopkins put out a really nice review article for the lay public showing that asthma it is not a disease of the lung it's actually a disorder of the small intestine it is in fact pointing back to this tight junction injury and the chronic inflammation in the gut. A really good example is children's asthma eczema and allergies it's not a problem with their end organ it's really a problem with the general state of inflammation due to this wide spread injury from glyphosate in our foods and our refined gluten products and other toxins.

Question: How long does it take to heal leaky gut and if my gut is damaged do I have to stay on Restore forever?

Dr. Zach Bush: The clinical results are pretty stunning. We have patients with long term gluten sensitivity anywhere from five years to thirty years and have been on the product and they can often record tolerating healthy sources of gluten within days to weeks with consistent usage of Restore. Consistent usage seems to be important for the compound to work. It seems to have a half- life of about four to six hours so that biologic half- life diminishes pretty quickly. If you are looking for optimal usage, you're going to use it three times a day.

Twice a day definitely has a coverage for the day once a day you certainly have a lag time there. For optimal usage you will spread your usage thru out the day. We usually like to target usage before meals. Usually within two to four weeks we will challenge a patient with something like spelt which a small amount of gluten in it. If they tolerate that well, without any signs of bloating or gas, inflammation or fatigue, they can go to other sprouted grains or sources of gluten. Maybe even tolerating pizza again.

It's a really fun thing to see the gut go to gluten tolerant. Again, if there is an auto immune condition, I would not re-challenge that gut for eighteen months to two years. If you have an auto-immune condition, I recommended you work with your physician to tracking your body levels and wait for those to return to normal before challenging the gut with known allergies that actually have an anti-body tracking. You can look for a reversal of irritable bowel and symptoms of bloating within days to weeks for the immune system finding normalcy again. So very fast repairing in many conditions, for the auto-immune, it's going to be longer. The question on how long do I need to be on the compound, that is going to rely on how successful Jeffrey Smith is. I hope he is able to put us out of business by eliminating the need for this compound.

If we immediately reverse our usage of glyphosate and GMO crops across the globe, it would only take us thirty or forty years to get glyphosate levels out of the food chain. We would be able to be less reliant on a supplement like we have with Restore. But in the next thirty to forty years even with complete cessation there is going to be a need defending our weaken defenses with something like Restore.

Question : If the gut lining replaces itself seven to ten days , why doesn't the gut just heal it's self when one stops eating glyphosate ? And, if my gut is healthy, will taking Restore hurt?

The tight junctions and their expression is independent of the life span of the cells themselves. While you are having re-generation of the intestinal lining cells right at the surface, if it has seven days there, tight junction injury can happen at any point. Any exposure to gluten, glyphosate or anti-inflammatory like ibuprofen and diabetic medicines like tech 3000 which is an over the counter that's

used for constipation in children and adults will weaken the tight junctions regardless of the turnover of the bowel. Many toxins out there weaken that gut wall so any situation is going to present a potential problem regardless of fast your bowel wall turn over. The second question is can't we just eat organic foods and stop eating gluten? Gluten of course and gluten sensitivity is not so much a disease process but actually a symptom of tight junction injury itself. So eliminating gluten is able to reduce the symptoms of leaky gut and irritable bowel in many individuals. But studies have shown that even after on year of strict gluten free living, 85% of celiac patients and other gluten sensitive patients will continue to have symptom of irritable bowel. This is suggesting that it is not really from just gluten, gluten just makes it worse. Really we think it is from glyphosate and other pharmaceuticals in the industry that are damaging those tight junctions at a much higher degree than gluten itself. And so staying away from gluten is perhaps systemically beneficial but not getting to the root cause of the problem. Even though eating organic would be a nice solution, in fact there was such a thing as eating zero glyphosate , EPA limits of less than 10 parts per million are considered undetectable and would make into organic kind of labeling process. Unfortunately, in our studies even ten parts per million of glyphosate is adequate to do damage to the tight junctions therefore eating organic is an inadequate response because the water system and almost every other mechanism is going to touch that farm is going to have residues

Jeffery Smith: It is the best dietary regime for reducing glyphosate exposure unless you are eating from your own garden. We have seen enormous improvements in people's health demonstrating this recovery from switching to organic. Try and eliminate as much glyphosate exposure as possible and organic is one of the best ways to do that.

Dr Zach Bush: I would completely agree with that and we really encourage our patients to do the later which is grow your own food. I think that starting to control your own food is one of the most powerful ways to not only take control of your health but to really change the industry. It's an exciting statistic that 45% of our food production in America is done in back yard gardens at the end of WWII. WE definitely have the capacity as consumers to completely change the industry by taking responsibility for our food chain again to our back yard. A very exciting proposition.

Question: Dosage before meals can you explain this?

Dr Zach Bush: The slide in front of you captures the rationale behind recommending it before meals. Many of the foods we eat are either very high or have residual rates of glyphosate in them so by taking the Restore previous to this food related injury we can prevent the damage in the first place. And that is the goal is to let your tight junctions do the prevention mechanism rather than do damage control after the fact. If you forget to take it right before the meal it certainly does support normal repair mechanisms as well. So you can take it with or after the meal, with benefit as well. WE like to promote its use before the meal to provide the optimal more bang for the buck appeal

Jeffrey Smith: I would like to thank you Dr. Bush for your work in this area. I love the story about how you discovered it. I find that when I talk to scientists, and physicians that have a wide footprint of what they're looking at it's not just one area but several areas that overlap. They often are the ones that make the discovery that cross the paths that other are missing. I love the fact that in this case it appears the earth itself gave us the solution to a problem we're creating around the world that in the soil and ancient soil there is ways to stimulate diversity of the gut bacteria. The gut bacteria is the

new tofu. The cutting edge of medical science now and the most exciting with many people I speak with and everything that Zach said is echoed all over the country in terms of the importance of gut bacteria. Glyphosate is a registered antibiotic. It is a patented antibiotic and it targets the beneficial bacteria in the gut, not the nasty stuff like E.coli and salmonella which overgrow and create the gaps in the wall and in this case might not even need the Zonulin as it might just create the damage itself.

I want to remind everyone that it is a supplement and not meant to cure a particular disorder and Dr. Bush made that point clear and did not indicate that it is a cure. He talked about the holes in the gut and certain disorders and between holes in the gut and Restore. I want to share a couple things. First we are going to have a private Facebook page for those that are taking it to hear their stories. I am very interested in hearing the crowd source kind of report to see what people are experiencing and we can all benefit from this. Secondly, if you make a purchase, use the code IRT which supports the Institute for Responsible Technology. WE can try to race for our cure which to get rid of glyphosates and GMO as soon as possible. WE have plans for that. And if you purchase by December 7th using that code you receive 20% off and after that it is 5%