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Dr. Peter Osborne: Hi, just Dr. Peter Osborne with the gluten-free society. Today we're presenting module 10 of the gluten allergy health matrix is probably one of my favorite modules of the whole series. We're going to take a deep dive into grain, not just gluten sensitivity, but actually how we came up with the true gluten-free diet. I think it's important that you understand a lot of the science behind this, because as you navigate the gluten-free diet, a lot of people have a tendency to go and gravitate back toward consuming corn and rice and sorghum and millet, and some of these in oats and some of these other grains that it really just wreak havoc. I want to walk you through why we develop this definition and the science behind that. In this, you're going to learn about the connection between not just gluten, but the connection between grains as a trigger of autoimmune and chronic degenerative disease.

You're going to learn the role that grain plays in the generation of chronic problems and autoimmune disease, not just gluten. We're also going to be talking about how the traditional medical approach to treating a lot of these problems is actually what keeps people sick. It contributes to further progression of their autoimmune condition. We're going to talk about the questions that you should ask your provider to have a meaningful, productive conversation. Like what are those questions? What are the things that you should go into that doctor's office so that you can make the most out of that visit? These actionable items that you can start on today to reduce your risks of maintaining that chronic illness that you're maybe struggling with right now, that auto immune disease that you might be struggling with because of gluten, but also because of grain. Let's dive in.

With autoimmune disease, you have to understand there's this pathway to development, and that pathway really is inflammation. Put up a diagram up for you on what we saw a number of years ago on the cover of Time Magazine, it was called The Secret Killer was the title of this. It said, “The surprising link between inflammation, heart attacks, cancer Alzheimer's and other diseases.” In essence, what this article was highlighting is that inflammation is the mother of chronic degenerative diseases. In essence, for these diseases to develop, you've got to have chronic levels of inflammation at high levels over time. This is why you don't wake up tomorrow with the disease. This is why diseases take years and years to manifest with enough bad symptoms that doctors can finally come around to saying, “Hey, you have this disease.”

Again, our medical model is not about prevention. It's about treating symptoms. Most doctors, “It's like go home. When your body is completely broken, then come back to me and we'll give you some drugs, but we're not going to do any prevention today.” That would be like taking your car in to the mechanic to get it tuned up. They say, “Oh, no, don't worry about tending it up. Just wait for your motor to blow up. Don't worry about changing your oil, but when it blows up, come back and I'll charge you a whole lot of money to rebuild your motor.” That's the healthcare model that we're in. We're going to talk a little bit more about that, but back to inflammation, what causes the inflammation? Because if we know that inflammation is the predominant trigger, then what is the trigger for the inflammation?

Because inflammation is a normal biological process and a lot of people criminalize inflammation as this evil thing, but remember, your body uses inflammation to break down old tissues so that you can repair it with new tissue. It's how our body basically recycles itself. It uses controlled fire to break down all the damaged tissue so that we can come in there with new materials and build new tissue so that our body continues to stay healthy as time goes on. If we can understand what creates the trigger for an overproduction chronically of inflammation, then we have a proverbial elixir, if you will. It's really not an elixir, but a proverbial set of choices that we can then begin to ponder and make differently in our lives so that we can reduce the risk of having hyper inflammation. Part of what happens is we get the inflammation and the inflammation is coming from environmental triggers.

Now, one of the biggest environmental triggers of inflammation is grain, which is why I'm putting this module on last for you, because I want you to understand that it goes beyond gluten. So many people that go gluten free, the reason they don't heal, number one is they're not following a true gluten-free diet. They're still getting other types of gluten. Number two is there's so many different elements to grain that it can actually generate inflammation. All these elements when combined over time leads to a hyper inflammation that can contribute to the development of these autoimmune conditions. Let's dive in and talk about it. About autoimmune disease, because most of you watching this either probably have some degree of degenerative disease, which is autoimmune. According to the American Autoimmune Related Disease and Disorders Association, 46 million people suffer with some form of painful autoimmune condition.

The National Institute of Health and Research Funding for Autoimmune disease in 2000, this is in 2003. These numbers are aren't up to speed, but they're not always updated. But the number came to out to be $591 million. The NIH funded $591 million to research Autoimmune disease. Now, in comparison with that, cancer funding was 6 billion and heart and stroke, heart disease and stroke funding was 2.4 billion. Autoimmune disease, even though it kills more people accumulatively than cancer and heart disease is funded far less. Yes, there's less funding. There's less research, there's less focus or attention that goes into it. That's the problem. Remember, most of this research that the NIH gives most of this research funding isn't developing like preventative elements about these diseases. The research is funded to develop new drugs. Basically, your taxpayer dollars are going to develop new drugs that then the drug companies turn around and sell to you.

It's really- for us to be frank, it's a jacked-up model where we'll take your tax dollars to develop drugs that don't actually cure diseases. Then we'll turn around after we've spent your tax dollars to develop these drugs, and we'll charge you a trillion dollars a year to receive these drugs, knowing very well that these drugs are not going to have an outcome that fixes your problem. It's only going to mask your symptoms. This is the realm of autoimmune disease, and you want to be aware of that. Again, it gets, it's under evaluated. It's under investigated. When we look at autoimmune disease, there are some things I'm going to put up another diagram. There are some things fundamentally that have to be investigated. I call this the autoimmune matrix.

Number one, you have to investigate vitamin deficiency and you have to investigate whether or not you have a microbial imbalance, so different kinds of bacterial viral, or other types of pathogens. You have to rule out gluten sensitivity, which is what we've spent most of this, most of this class talking about. You have to also look at other food triggers because gluten is just one element of food. Food and chemical triggers should also be being evaluated as triggers for chronic and hyper inflammation. Then we have toxic metals, which many people are exposed to through food and through the environment. If you recall Flint, Michigan, where they had that massive lead issue, that was leading to a number of people becoming very, very sick. We have things like gut integrity and dysbiosis, which can also be evaluated, physical issues.

We've talked about exercise in a number of our modules, and then emotional issues or psychological evaluation. These are all things that are comprehensively-- if you think of them as the milieu, you have factors that can contribute to chronic inflammation and autoimmune conditions. If a doctor doesn't start from that fundamental parameter of investigating those different things, or if you personally, don't start by asking those different questions about yourself, you're missing the boat. In all of that, why is removing grain the single most effective way to reduce your risk of developing chronic, degenerative autoimmune disease? I'm going to put up a diagram here, it's a funnel. You look at this diagram, you see, when you eat grain, it comes with all of these things in this funnel heavy metals, excessive Omega, six grain causes, leaky gut, a grain contains excessive carbohydrates.

Remember, I shared with you earlier that 50% of the caloric intake in this country is derived from wheat all by itself. We know that grain comes with mold contamination and mycotoxin contamination. We know that there's gluten in grain that can trigger autoimmune disease. We know that many of the grains are genetically modified or contain genetically modified pesticide residues. We know that many of the grains themselves contain what are called century proteins, plant century proteins, proteins that are designed to protect the plant from being eaten into extinction and that many of these proteins can hinder digestion and contribute to leaky gut.

One of those proteins is called an ATI. ATI stands for amylase trypsin inhibitor. When you eat great, it comes with all of these things. Now, aside from that there are other elements with ingrained. Certainly. We know, for example, the research on fortification of grain with synthetic folic acid has increased the risk of a number of different diseases. We know that many grains are produced where they add a chemical compound called bromine. It's a dough conditioning agent, and that also can contribute to thyroid dysfunction and iodine deficiency. What I'm trying to give you as an overall summary or synopsis of some of the problems associated with grain it as a general rule as a food. We're going to walk you through these things today. The fundamental piece here is isn't grain supposed to be healthy. We hear that on a pretty regular basis here's what you need to know about grain, though as it's farm today. The seeds are sprayed with fungicides and insecticides, these fungicides and insecticides act as what are called xenoestrogens or pseudo or false estrogens, chemical estrogens, they mimic estrogen in your body. Guys, if you're listening, excessive estrogen can cause problems like gynecomastia. It can de-masculinize you, it can make you more feminine. It's actually was a study done in

cats. There's a really good book written on it. If you want to read it, it's called Pottenger's Cats. Pottenger was a doctor a number of years ago in investigating processed foods in cats.

What he did is he did the only multi-generational study of processed food that's ever been done. Although it wasn't done on humans, it was done on cats. That's why the book is called Pottenger's Cats. What happened was he took three groups, primary groups, took a group of cats, and he fed them all raw carnivorous based foods, what cats are supposed to eat. He took another group and fed them all processed foods, and he took another group and he fed them a mixture of raw and processed. He followed these three groups of cats for multiple generations, for about three generations. What he found is in, they all processed group, the cats ended up with mange and autoimmune disease. They became infertile by the third generation. In other words, they were failing to be able to get pregnant. What he also found were changes in their bone structures.

The females started to look like males and the males started to look like females, and they also started to behave in such a manner. That's quite alarming. Now, again, you can't extrapolate a study from cats into humans directly, but we can learn from the lesson of that and we can start exploring those questions and asking some of those questions. Now, in the mixed food group, Pottenger found all the same problems only to a lesser degree, but in the all carnivore group, he didn't find the problems. Again, cats are carnivores for the most part. Their health was vibrant and their ability to reproduce was vibrant if they weren't introduced to processed foods. Coming back to what we're talking about here with these xenoestrogens, it's form of chemicals in processed food that changes the hormonal nature of people.

We know it happens in animals, but a number of studies that show that the same chemicals that are dumped into rivers after farmers clean their field cause basically chemical castration in male species, we know the salamanders and the frogs and the fishes that the males turn into females because they're being exposed to these xenoestrogen compounds in large quantities.

We know it can castrate in essence, it can change the sex of amphibious and fish animals. What is it doing to humans over years and years, or decades and decades? Nobody really can point the finger and say, “We can confirm that this happens, but we have to look to animal science and we have to do some extrapolation.” We have to ask these questions because if we don't, it's going to become too late. We're going to have poisoned our food to such a great degree that we've lost the ability to think clearly and intelligently when our minds have changed because they've been so chemically altered from the food.

Grains are sprayed, the seeds are sprayed with pesticides and fungicides. Once they're Dallas, with those things, they've been doused with hormones to aid in their growth. Then these grains, once they're harvested, they're stored in bins that where they spray additional pesticides on them to prevent things like mold and animals and other things from getting in there and eating it. Then these grains are dried out. That drying process it's called extrusion. That process damages the proteins in the grain, creating a substance known as acrylamides, which is a known carcinogen. Then

when we process the grain, we add dough conditioners like bromine. We add preservatives. Oftentimes we mix in genetically modified flowers, soy like soy flour, and then synthetic vitamins are added to the grains as well. A lot of people don't realize that our food fortification laws originally happened as a result of grains causing disease in humans.

We're going to talk about that too, but these synthetic vitamins like your vitamin B1 and your B3 and your folate added, actually not folate, but folic acid are added because it's illegal to sell these processed grains without fortifying them because we know they cause disease. Then, again, we have hydrogenated oils that are oftentimes added in the processing of these grains as well. By the time that grain gets to your table, it's far removed from what it may be once could have been looked at as a food source. Now, I want to take you down the roadmap of history of grains in the US diet. Let's just go back in time for a moment. I'll put these time buttons or links up on the screen for you as well. In 1850, processed flour became widely available prior 1850 processed flour was not really something that was commonly consumed.

Now I know that may seem shocking to many of you because you grew up in the world of processed grain. You grew up believing or watching cartoon characters like Tony the Tiger and the Count Chocula. Some of these, again, some of these caricatures, talking about how balanced and healthy grain was for the daily needs of the human diet. That's what we were indoctrinated with pseudo education through commercials. 1850 is when processed grain was really introduced. By 1855, the first description of gluten intolerance was delivered in the medical literature by Dr. Gull Guy. Then we get to 1892 and Henry Ford and Henry Drushel Perky. They invent a machine that shreds wholewheat, and they start producing a product called Shredded Wheat, which I'm sure you've heard of. It's the first packaged breakfast cereal.

The very first processed packaged breakfast cereal didn't occur until 1892, over a hundred years ago. In 1894, you may know the name Kellogg, Dr. John Kellogg, Dr. Kellogg. He was a doctor, and his brother, they invent cornflakes. Now they invented as a health food, but in reality, cornflakes were being used to irritate the bowel and people who were chronically constipated. During those years, the diet was pretty heavy in meat. Cornflakes meat can constipate too much of it specifically. The cornflakes were being used as a gut irritant to flush out and constipation.

Dr. John Kellogg actually ended up losing his cereal to his brother who was a brilliant marketer and took over the product and created one of the most powerful cereal companies in the world, one of the most wealthy, the Kellogg Cereal Company. That happened in 1894, in 1897, CW Post began the manufacturing of Grape-Nuts, Post Cereals. You've got Kelloggs, you've got Post, two of the major cereal company. Again, prior these years, cereal was not a thing, it didn't exist. Kids didn't grow up needing to have cereal for breakfast.

In 1922, we're now about two decades beyond the invention, if you will, of processed cereal, we've got Dr. Robert McCarrison who warns medical colleagues about the increase in intestinal disorders that are coming out. Then by 1932, a famous doctor

by the name of BB Crohn, if you've heard of Crohn's disease, it was named after this doctor. He identifies a new intestinal disorder. Prior to this, this disorder didn't exist and it was linked to grain consumption.

He called it regional elitists. It was later renamed Crohn's disease in his honor. Then in 1931, Dr. William Dickey, he was a Dutch pediatrician working during World War II with children, pediatric hospitals, what he found was the kids with celiac disease, and you have to understand in the 1930s, we knew that celiac disease existed, but we didn't know what caused it. It was Dr. William Dickey that actually started experimentations on wheat free diets for children with celiac disease. In the ‘40s, he recognized that during World War II, during grain rationing, the kids responded by getting better. He wrote one of the first published papers on the cause of celiac disease, which was grain. In 1940, farmers started to use chemical fertilizers to increase yield. Again, prior-- again, we talked about late 1800s up to 1930s, we've got an increase in intestinal disorders, we've got doctors starting to shout out, “Hey, we've got problems around this area arena.”

Then this is before chemical fertilizers, so we know there's something in the grain, even before the manipulation of the grain that was contributing to inflammatory intestinal disease. It wasn't until the ‘40s that farmers started to use these chemical fertilizers to increase there yields, reducing the nutrient quantity and content in grains and other crops. Meanwhile, government subsidies for growing corn and soy led to a processed food industry based on these ingredients, as well as high fructose corn syrup, hydrogenated oils, and corn starches.

Again, the government in its infinite wisdom decided to take your tax dollars and subsidize farmers to grow more of this junk food because it was cheap to grow. 1943, there was a couple of different diseases, beriberi, and pellagra now beriberi and pellagra are diseases of B vitamin deficiency, beriberi is a deficiency of vitamin B1. Pellagra is a deficiency of vitamin B3 and these diseases were rampant, killing thousands of people annually in the US. The United States government steps in, and they ban the sale of processed grain unless these grains are fortified with B vitamins and select minerals. This is the beginning, really in the US of our food fortification program. I'm going to put that research up there, so you can see that I'm not-- this is not just me saying that, this is actually part of our American history. Now, in 1953, Dr. Dickey, again, the pediatrician that was treating kids with celiac disease, he publishes his paper or an article, and this is part of his doctoral thesis, linking wheat protein to the damage of the intestinal lining, the mucosal lining of the intestine, AKA celiac disease. He publishes the first paper really on the cause of celiac disease.

It was around that same time that a group of researchers at the University of Birmingham and Alabama, isolated the protein alpha gliadin as a causative agent in celiac disease. Going back to, again, if you go back and watch Module One, you'll understand better now, the history, because it was alpha gliadin found in wheat, barley, and rye, that was isolated and blamed on causing celiac disease. You have to understand it's not just alpha-gliadin that triggers gastrointestinal inflammation. That was really, in my opinion, the attention was drawn and brought to alpha-gliadin and the attention on other grains was dismissed. Now, I want to show you another

diagram here called the grainflammation cycle, grainflammation, grain induced inflammation. Because again, this goes deeper than gluten. I want you to understand this is far deeper than gluten.

Grain consumption leads to inflammation. The inflammation causes changes in hormones. One of those changes is an increase in your cortisol production. Now, when you have increased cortisol, two things happen. Number one, your cortisol elevation tells your liver to dump more sugar into your bloodstream, so your blood sugar levels can go up and that can be a problem because chronic elevations in cortisol contribute to diabetes and water retention and weight gain. When cortisol is elevated, you also have to understand as a hormone, cortisol is a catabolic steroid. Cortisol causes muscle loss. What happens is you're inflamed and your muscles start to shrink and you're gaining weight. What happens in that combination of things? Generally speaking, is more joint pain, joint compression, joint pain. When people hurt all the time, predominantly what they do is they avoid any exercise.

When they're avoiding exercise, what happens, more weight gain, more muscle loss or joint pain, more joint compression. This is the grainflammation cycle and it's repetitive. It goes on and on and on. One of the reasons why I wrote the book No Grain, No Pain was to shed a light on this very cycle so that the chronic pain patients across the world, across the globe, would have an answer, a dietary answer to getting off of the drugs, the opiate medications, the pain medications, the steroids, the immune suppressing medications and autoimmune arthritis. All these things were designed to suppress your body's symptoms without actually ascertaining or addressing this grain induced inflammatory cycle.

It's important to understand gluten was the first medically proven cause of autoimmunity. Today we know gluten contributes to pretty much every major form of autoimmune disease there is. We know that all grains contain some form of gluten. Again, go back and review Module One, if you have not. Testing antibodies to gluten is misleading. We talked about that in Module Two and Three. We know that gluten sensitivity in and of itself is not a disease, it's a state of genetics and we went deep dive on that in the first few modules as well. We know it's a genetic predisposition, you either have the genes for gluten reactivity or you have genes that won't react to gluten.

We know that genetic piece is very, very important in this puzzle. We know that you can identify these genes very easy with genetic testing. We also know that all grains contain different forms of gluten. There are lots of different forms of gluten. You have to remember that alpha-gliadin is only the type of gluten that was discovered in the early 1950s as one of the reasons or one of the triggers for celiac disease, but not the only trigger as I've shown you the science throughout the gluten allergy health matrix masterclass.

Now, we know that all patients with autoimmune disease should be screened for gluten sensitivity, that should be a standard. If you've been diagnosed with gluten sensitivity, great. Now you have at least an answer, but if you've got an autoimmune disease and you've never actually had the ability to have a conversation with your doctor about gluten or be tested for a gluten issue, that's one of the first things that

you should walk away from this module and have done. Now, I don't think you'd be watching the Glutenology Health Matrix if you didn't suspect gluten to some degree anyway.

Remember that there are a number of different diseases caused by gluten. In this diagram up here, you can see that some of those diseases include the autoimmune family of disorders aside from, anemias and osteoporosis and nerve damage and nerve disease and infertility, we know the Autoimmune conditions are highly, highly linked to gluten. That's gluten. We've talked about that and we've really, really done a deep dive on gluten, but let's talk about some of the other elements of grain. That's what I promised to discuss with you in this module. One of the other elements that we know about grain are the heavy metals.

Many grains can be contaminated with heavy metals and these heavy metals can wreak havoc on your intestinal health and on your systemic health. Again, remember the name of the game is inflammation. What we're trying to do is understand all the different ways that grain can induce inflammation, so heavy metals is one of those. You can see here, I'm going to put a slide up on the screen for you, on corn. Processed corn products can contain mercury. There was a study that was published not very long ago.

They showed this to be the case. We know that mercury is a carcinogen, so it increases the risk for the development of cancer. We know it increases the risk of lung and kidney and central nervous system tumors among other things. We know that mercury can contribute to leaky brain and leaky gut, we know that mercury can cause systemic inflammation, it can displace calcium and magnesium and zinc and other minerals with a similar valence.

Mercury can really pose a threat to creating a chronic level of inflammation in the body. We also know that rice is a problem, as it relates to heavy metals. Rice was found to contain arsenic, cadmium and lead in high quantities. You'll see, I'm going to put on the board for you here. This study was published in 2017, showing high levels of arsenic, cadmium and lead in rice samples imported from India and Pakistan.

Again, why? It's one of the reasons why is rice is really good at detoxifying the metals out of the soil. Remember, a number of these different chemicals that are sprayed on the grains, have these heavy metals in them. We also know that-- I'm going to put another study up for you that, this one published in 2001, reports levels that are high of cadmium, lead and mercury in imported rice grain samples. Now we're adding mercury to that list of metals associated with rice. Then we have this one here, the concentration of some heavy metals and rice types.

Again, more confirmation of lead and cadmium in this case as well, nickel and cobalt, were also found in higher quantities in these samples of rice. We know that, low level toxic metal exposure in healthy weaning age infants are associated with growth and iron deficiency. What happens is a lot of these heavy metals interfere with how iron is supposed to work in your body, and that can create iron deficiency leading to failure, to thrive in poor growth rates in children. We see a lot of this, especially in the

celiac community where, maybe the mother has celiac disease and she doesn't want to introduce a new baby to gluten containing grains. Instead, she's navigating toward the rice formulas or the rice baby cereals.

Babies getting cadmium and lead and mercury and arsenic, and this is competing with the iron in their body. Now they're anemic and they're not growing and you remember iron deficiency can cause a retardation. There's just a lot of things that go along with those heavy metals aside from the fact that they can disrupt iron, that can create inflammation in so many different ways.

Question here, are you poisoning your baby? Think about that for a minute. Many of you maybe gravitate toward those rice cereals anyway aside from the fact, because you're-- one of the things in marketing and one of the things that marketers are always good at is trying to deter you away from things that you might think are unhealthy. The gluten-free food industry has, in my opinion, done a great job, but also deplorable job. They've turned people on to products that are loaded with corn and rice and genetically modified at that, but also full of sugars and hydrogenated oils and other garbage, heavy metals.

In what we're finding in these baby formulas and in these baby rice cereals, we're finding high, high levels of these toxic metal compounds that can influence the growth of babies and can influence them for health. You can see here in this study, demonstrated that products for celiac children had a high concentration of arsenic. Arsenic's a poison. Again, if you're trying to introduce your baby to these gluten-free products because you believe maybe even if your family is not celiac diagnosed but maybe you believe that gluten-free is healthier, understand that when we say gluten-free, we're talking about wheat, barley, and rye, at least on the grocery side of things. But when we really say gluten-free, we're talking about grain-free. Again, we're laying out the map for you to navigate your diet toward a grain-free toward a true gluten-free diet. One of the other problems with grain is a general rule of thumb is the excessive quantities of omega-6 fatty acids.

We know that high levels of omega-6 fatty acids promote inflammation. Again, when we start this conversation off talking about the inflammation that triggers the disease, the chronic inflammation over time triggers the disease? What's triggering the inflammation. One of the reasons is high omega-6. High omega-6 also increases the development of obesity. A number of research studies show that and grains are extremely high in omega-6. Have very, very poor profiles for eating omega-3 fats at all. The ratio in most humans should be a 2:1 ratio, meaning for every two ounces, for example, of omega-6 fat, you should get one ounce of omega-3 fat.

That's the ratio that's healthy for humans to get in their diet, but the ratio in most people today is 64:1 or higher. Meaning they're getting so much omega-6 from the heavy, heavy load of grain in the diet. Remember I said earlier, 50% of total calories in the United States comes from wheat alone as a grain. That's a major problem as it relates to omega-6. It's also a major problem as it relates to this next slide on excessive carbohydrates. We know that those high levels of carbohydrates found in grain, especially refined or processed grains contributes to metabolic syndrome, hypertriglycerides, meaning elevations of fat in your bloodstream.

We know that, again, it creates a metabolic syndrome issue which is weight gain, high blood pressure, central adiposity, all those things that come with it increases the risk for the development of diabetes. This is one of the reasons why the ketogenic diet has become so popular. What ketogenic diets are is they're an antidote, if you will, to the poison of carbohydrate toxicity. It's not that carbohydrates are bad or evil, they're not bad or evil at all, it's in excess. When your diet is so carbohydrate heavy, it can create a lot of problems with your metabolism and with your overall health.

The ketogenic diet is getting great popularity, because, again, it's the antidote to high carbohydrate. It's low-carbohydrate. The problem with ketogenic diet is when followed out for another 10 or 15 or 20 years, what we're going to see is that you can't trade one toxicity for another. Life is really truly about balance. Anytime we become imbalanced, we start to see problems creeping in. This is one of the reasons why I'm not a big fan of low carb diets. I'm also not a big fan of high carb diets. I'm a big fan of balanced diet. What does that look like? That looks like carbs, fats, and proteins being equally balanced as a general rule of thumb in the diet.

Again, a lot of these diets are not balanced at all. We also know that leaky gut is a pre-autoimmune state. A leaky gut, AKA intestinal hyper permeability. Now, a lot of people say that doesn't exist. A lot of doctors will claim that it doesn't exist. I would say if your doctor's saying that, run away. Find a different doctor because if your doctor's saying that, they've been living under a rock, because a leaky gut, there are thousands and thousands of research studies that validate the actual identification of leaky gut. Dr. Alessio Fasano was one of the first to do it as it relates to gluten.

He found that gluten was one of the triggers of leaky gut. Remember, 70% to 80% of the immune system is in your gut. When your gut is leaking, it puts your immune system under high alert. There are number of different things that we know can trigger leaky gut and many of those things are in grain. That's what's critical to understand, that some of these proteins that are found in grain are part of that leaky gut conundrum. Now, I'm going to put a slide up for you on the barriers of the GI tract, that I call the five primary barriers of the GI tract.

We've got what's called the GALT, the gastro-associated lymphoid tissue, we've got tight junctions, we've got mucosal immunoglobulin A or IgA, we've got the friendly flora bacteria, your microbiome, if you will, and then we have your stomach acid as a barrier. These are your five barriers. Here's what we know. We know that grains can disrupt all five of these barriers and not just gluten. Gluten can definitely cause a leaky gut, but there are other proteins and other components within grain, they can damage all of these barriers. That's what I want you know understand, it's not just gluten that's the pervasive issue creating health dysfunction.

As I've said earlier, the medical solution to all of this is part of the problem. Medicines, many of them can contribute to the autoimmune process. If you're going gluten-free and you're following a gluten-free diet in an effort and an attempt to alleviate or overcome an autoimmune disease and you're also taking medications for that same autoimmune disease, you should know that some medications actually contribute to autoimmune disease. I'm going to put a study up on the board here for

you because this is a pretty common drug that's taken in women who've had breast cancer.

Those of you who've had breast cancer, if you've ever taken a class of drugs called aromatase inhibitors, these drugs have actually been linked to the development of autoimmune disease. What happens for a lot of women once they have their breast cancer either removed surgically or treated chemotherapeutically, the next step doctors often always put women on aromatase inhibitors for five years as a preventative for the cancer to come back. In actuality, five years of use that medication is actually linked to the development of autoimmune disease. Trading prevention of one for the causation of another, that's not a winning battle.

It's not really even a battle that I would personally want to fight. We also know that medicines are the third-leading cause of death in the United States. I know I've mentioned that a number of times and I'll put slide up here on the board from that study, landmark study that was published. We also know that many medications cause vitamin and mineral deficiencies. As I've said before and talked about in an earlier module, vitamin and mineral deficiencies are one of the conundrums to why people don't get better even after going on a gluten-free diet. Remember, gluten damages the gut, creates an inflammatory digestion problem that leads to malnutrition.

That malnutrition makes it very difficult for the body to be able to heal and repair from years of previous damage. Many of your medications cause nutritional blockage, meaning they can either block the absorption of vitamins or minerals, they can inhibit the mechanics of how vitamins and minerals work inside your body. They can cause depletion of vitamins and minerals. One of the classics is diuretics given for people to lower their blood pressure. Many of these diuretics cause magnesium deficiency and calcium and zinc deficiency. Understanding that high blood pressure can be caused by calcium and magnesium and zinc deficiency.

Again, the diuretic treating the symptom but inducing a deficiency that actually causes the disease. This is one of the reasons why medicines can sometimes be counterproductive long-term. Again, don't take any of this as me telling you to get off of your medicine, but I think you should understand this information so that you can embark upon an intelligent, intuitive knowledge, to have a conversation with your doctor who's prescribing your medicine so that you can have a goal in mind to be able to work yourself to better health with these medicine not interfering.

We also know that many medications can interfere with the function in the gastrointestinal tract. Some medications can alter the way that you taste and smell thus altering your food choices. If you can't taste things, generally, people salt their food more. They'll add more sugar, more dressing, different things to their food to enhance the flavor because they've lost their ability to detect the taste or smell the food very effectively because some of the drugs have done that. Some of the drugs inhibit your ability to digest the food or to break the food down.

Some drugs interfere with your pancreas and your liver and your gallbladders ability to be able to help you digest or break down the nutrients from the food that you’re

eating. We have to understand that many of these medications, and I said earlier, that the average person annually fills more than 16 prescription medications. That's a lot of drugs, that's a lot of drugs. It's almost six billion prescriptions that are written annually just in the United States alone. That's a lot of drugs that are being dispensed and given out. There's a lot of potential there for nutritionally-induced deficiencies. There's a lot of potential for gastrointestinal dysfunction.

There's a lot of potential for those drugs to contribute to or induce the autoimmune process. Remember that biochemistry is critical and an understanding a biochemistry. What bio chemistry is is nutrition. Biochemistry is how your nutrients work to basically maintain your health. It's important understand, I'm going to put a slide out for you to see the importance of biochemistry. This is coming from the-- this is the textbook that's used in most medical schools to teach the topic or the subject physiology. Here is what we know. "Each of the 100 trillion cells in the human being is a living structure that can survive indefinitely, and in most circumstances can even reproduce itself provided its surrounding fluids contain appropriate nutrients." What does that sound like to you? That sounds like nutrition is pretty important topic to just gloss over in medical school, which is what's done, but this is coming from the medical text on physiology. Even though that text highlights the importance of appropriate nutrition and appropriate nutrients for cellular growth and repair and turnover, the actual curriculum is largely ignored. If you go to your doctor and expect to get a really, really great conversation about nutrition out of them, you might be sorely disappointed.

Again, my advice to you would be look for a doctor who's an expert in nutrition to be able to have that conversation and then have your doctors work together toward the goal of helping you achieve your health, which is what you should be seeing a doctor for, not to be drugged, but for the goal of reestablishing your health. Next, let's dive into the topic of it's not just gluten. Remember I said earlier, there's certain plant-based proteins aside from gluten that can actually cause inflammation in the intestine as well. In this study, I'm going to put it up on the board you're going to see here it says, "Wheat amylase trypsin inhibitors drive intestinal inflammation via activation of toll like receptor four."

Let me explain what that means. There's a protein in grain, particularly and wheat called ATI, amylase trypsin inhibitor. This protein will dock to this little antenna in the surface of your gut, and it will trigger inflammation. That's what that means, meaning that this is a non-gluten protein. You could be eating, again, what you think is gluten-free, but you're eating a grain that contains this grouping of proteins, and it still perpetuates your triggers and intestinal inflammation. Now, I'm going to put another slide up for you because I think it's important to understand, as well, there's a whole family or whole class of proteins.

You see the study from the Journal of Proteome Research says here that specific non-gluten proteins are novel target antigens in celiac diseases humoral response, meaning there're different way that the immune system reacts to grain that doesn't have anything to do with gluten. You'll see on the left-hand side, this image here, these families of proteins the serpents, the puritans, the ATIs are amylase trypsin

inhibitors, the globulins and the ferrinins are different classes of what we call plant century proteins that create inflammation by a different mechanism. This is another reason why people go gluten-free and don't get better, because they're still getting exposure to these grain-based proteins found in, again, what most people consider to be gluten-free grains. We also know and I've mentioned this before, that grains contain molds and mycotoxins.

Molds and mycotoxins as contaminants can make people very, very sick. This is actually one of the drawbacks to many of the grain-based foods, is that they have high levels of mycotoxins in them. You can see here, I'm going to put a diagram up on the board for you. It's from the Food and Agricultural Organization of the United Nations. You can see here, this is a diagram on mycotoxins. You can see there are a number of different mycotoxins listed that are high in grains, you'll see the commodity, that center column there, the commodity wheat, maize, barley, you'll see the commodity and for many of these, again are predominantly wheat and corn, that these different types of mycotoxins are found at higher levels, and that there's a suspicion that they cause cancer.

What is cancer? Cancer is basically it's the bombardment of toxins on your immune system over time until your immune system can't continue to keep up and so that's how cancer is able to grow and develop. You can see many of these mold toxins are found in grain-based foods. Some of them are found in coffee, as I mentioned earlier when we were talking about gluten mimicking foods, but also found in grains, particularly the corn and the wheat and the barley, some of the biggest ones. You can also see on this diagram here, the regulation of mycotoxins and food is quite limited.

There's some regulation but what you won't see is a whole lot of regulation on the grain industry. You'll see some regulation in the dairy industry and you'll see some regulation in foods like peanuts and pistachios that also are considered high mycotoxin foods, but you don't see a whole lot of regulation of mycotoxins in the grain-based foods and that again can pose a problem because the higher level of mycotoxin exposure in the grains, the higher the level of potential inflammation that you can create. One of the mimickers of gluten sensitivity is mycotoxin exposure. It's a very, very common mimicker or the same types of symptoms that we'll see people with gluten sensitivity develop.

Next, let's talk about pesticides, another common ingredient found in today's grains. Atrazine, which is a weed and herbicide, atrazine is one of the really predominant estrogen-based chemicals. Earlier I was talking about estrogen as creating or potentiating disease. Remember, I said that, in men, estrogen can cause de-masculinization disruption of their testosterone, gynecomastia, fertility issues, and women too much estrogen, one of the predominant issues there is too much estrogen can actually contribute to cancer. We also know that these types of estrogens can potentiate leaky gut. I did a video on that earlier, how estrogens actually some of these false estrogens can contribute to leaky gut.

It's important to know that when you're taking in grain it's coming with that atrazine, it's coming also with that glyphosate. Glyphosate, it's recently been linked to

lymphoma, which is an intestinal cancer. Glyphosate also suspected to disrupt the microbiome and something in your body called the shikimate pathway, which is very important amino acid metabolism pathway that helps your body produce thyroid hormone and hormones like serotonin, which, again, regulate mood, regulate gastrointestinal motility, regulate a lot of important functional processes within your body. We know that this particular pesticide, glyphosate, can act as a chelating agent. What does that mean?

It actually its initial patent was on chelation meaning the binding or removal of metals. What are metals in your body? Calcium is a metal, magnesium, zinc, selenium, chromium, and copper are metals. We know that this glyphosate can act as a chelating agent for not just bad metals, but good metals. We know it can disrupt your microbiome. Again, you don't want to consume foods that have heavy pesticide glyphosate or atrazine residue because of the known health detriments.

We also know that many of your grains are genetically modified, GMOs, genetically modified organisms. We alter the seeds to survive better and that includes surviving you. When we manipulate the genes of the seeds of these grain seeds so that they can better survive pests and drought and other problems, then by default, that goes to say, we're playing with fire here. In some of these modifications, we know it makes these grains harder to digest. I showed you some research earlier on how some grains have been manipulated and that manipulation has led to new types of proteins being found in these grains that are more difficult to break down, that can lead to potentiation of inflammation.

We also know that manipulated genes have the potential, so in GMO foods, the genes of the food has been manipulated. Although those the genes from the plant can't cross over into your human DNA, we've actually found that they can cross over into your microbial bacterial DNA. Remember, you've got three sets of DNA, you've got your DNA from your parents, your mitochondrial DNA from mom, but you've got the microbiome DNA, and these GMO foods, those genetic manipulations, that gene crossover can come over to the bacteria.

Some research suggests, like some of these, particularly some of these GMO corns that produce their own toxin, here's a type of corn that produces its own botulism type toxin, that that gene can be transferred to the bacteria that live in your gut so that those bacteria then can start producing that same toxin. Basically, that transference of the gene can lead to your own microbiome starting to poison you. That's why you really want to look at avoiding GMO foods, not something that I would recommend that you consume at all. Remember, many grains are GMO organisms.

We've got time, plus exposure equals disease. I f we look at grain as a food in the human diet, we've got more than 50% of total calories coming from grain in most people's diets. Within that grain, we've got exposure to heavy metals, excessive omega-6, we've got excessive carbohydrate, we've got mold, and mycotoxins. We've got gluten, we've got genetically modified elements, we've got pesticides, and plant century proteins that are all known to contribute to inflammation. They're all known to contribute to leaky gut. If you're trying to restore your health by going gluten free and

restore your gut function because it's been leaking for years, if you're continuing on the path of the traditional gluten free diet where you're injecting the quinoa, the amaranth, the buckwheat, the corn, the rice, the sorghum, the millet, again, these grains that are considered classically gluten free, you might be going down the wrong road, you might be sabotaging your recovery. Very, very important that you understand that it's why we created the difference in the definitions between the traditional gluten free diet and the true gluten free diet. That's also why I wrote No Grain, No Pain, I wrote that to get this message out to you. Hopefully, that helps shed the light on why grain as a food in your diet, even what people consider to be the gluten free grains can still be problematic, can still contribute to the inflammation, the leaky gut, and the progression of autoimmune disease.

Because remember, why are you changing your diet? Why are you going gluten free, we're not doing this for the fun of going gluten free? We're doing this because the pain of our illness became greater than our fear of changing our diet. I want you to be successful. I don't want you to embark on a gluten free diet and be one of those people I showed you in research studies earlier, one of those 92% that don't respond, or in other studies, the 50% that don't respond. I want you to be one that responds and responds well and has success with it because your hard work should pay off for you.

That should pay off in dividends of great health and that's what we want for you. Thanks for tuning into Module 10. Make sure you check out our bonus modules as well. We've got a number of those for you. As always, make sure you share this if you know somebody who's going gluten free, who could benefit from a gluten free diet or is struggling with autoimmune disease and doesn't know why, share this series with them. Just like I help you, I'm asking you to help me.

We were trying to reach 100 million people and change 100 million lives with this message. Help me help others. This is Dr. Osborn with the gluten free society signing off of the Glutenology Health Matrix. Please leave your comments for us below. If there was something you felt like we could have added to this course that could have been beneficial for you, we certainly want to know about it so that we can enhance it in future updates. Have a great day.

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