THE FATIGUE SUPER CONFERENCE

Healing brain fatigue

Guest: Dr. Tom O'Bryan

Alex: Welcome to The Fatigue Super Conference, my guest for this interview is Dr Tom O'Bryan. Dr O'Bryan is considered a Sherlock Holmes for chronic disease and teaches that recognising and addressing the underlying mechanisms that activate an immune response is the map to the highway towards better health. He holds teaching faculty positions with the Institute for Functional Medicine and The National University of Health Sciences.

He has trained and certified tens of thousands of practitioners around the world in advanced understanding of the impact of wheat sensitivity and the development of individual autoimmune diseases.

Dr O'Bryan's most recent book 'You Can Fix Your Brain: Just one hour a week to the best Memory, Productivity and Sleep you've ever had' was published through Rodale Books in September 2018 to global accolades.

Dr O'Bryan thank you so much for making the time to talk to me today.

Dr O'Bryan: Oh thank you it's really a pleasure to be here with you guys and to support this summit, it's such an important topic so thank you.

Alex: Thank you. Before we get into brain fog, the role of diet, food and how that impacts on I think one of the most frustrating symptoms that people with fatigue can have. I'd like to just start a little bit with your personal story. I was reading in your latest book earlier, actually it was your Autoimmune Fix book, you were talking a bit about your story and it very much tickled me that you'd actually started off working as a baker and as someone who has probably played a bigger role than anyone else around raising awareness around gluten sensitivity I thought that was very funny.

So maybe just say a little bit about how you got into being into this field?

Dr O'Bryan: Oh sure, you bet. Yeah those days, you know I was 20/21, hair down to my waist, bear you know all of that, and it was a whole holistic organic restaurant and I'd make 48 loaves by hand and it was an un-yeasted bread that rose, it took 24 hours for it to rise, but it was a game changer. It was a destination bread, people would drive from many miles to come buy our bread and it would come out of the oven and I'd slice up an end cut and it was still hot and I'd put peanut butter on it and then pour honey on it and then slices of banana on top of it, thought I was being healthy, and it was a blood sugar time bomb! (laughs). It was the worst thing you could do, we now know one slice of whole wheat bread has more affect on your insulin levels than a snicker bar, not exaggerating. It's called the glycemic index and when you eat bread you throw your blood sugar way out of balance. So that's where I started anyway.

Alex: I know that you had various journeys in terms of your own health that my understanding had brought you close and closer to then discovering that functional medicine was really an enormous passion and has been for many decades since then.

Dr O'Bryan: Yes, yes. My ex and I could not get pregnant, 39 years ago, and I was an intern at the time and I called the seven most famous holistic doctors I had ever heard of and I was able to reach them on the phone and asked what they'd do for infertility. They'd say do you know what a category one is and I'd say no, learn, OK category one, and I would write down all of these things and I put a programme together and we were pregnant in six weeks.

Alex: Wow.

Dr O'Bryan: My neighbours in married housing heard about this and they had been through artificial insemination and nothing had worked and they asked if I would work with them and I said 'well I don't really know what I'm doing on this but I don't think it will heart you, sure'. She was pregnant in three months. So we were so excited and as the pregnancy was developing we were telling all our friends, our friends would call their sister in Wisconsin, we lived in Chicago at the time, and she would drive down to Wisconsin to see me, I was seeing patients out of my dorm room. Illegally (laughs) you're not suppose to do that, right, but people wanted to get well so when I opened my practice I wanted to help the whole world get pregnant if they wanted the help.

I'll give you an example of what functional medicine is in this context. It gives you a sense, it doesn't matter what your symptoms are, this is a way you have to think about it. When a man ejaculates and millions of sperm are swimming up the canal why is it that only one sperm, maybe two, get through and penetrate the egg? When that sperm hits the egg it secretes an enzyme, the

enzyme digests just a little bit of the mucous protecting the egg and the sperm swims right in, activating a gene that shuts down the mucous so no other sperm can get in, right. That enzyme in the head of the sperm is completely zinc dependent so when men have insufficiencies of zinc or have actual deficiencies of zinc they're firing duds. You know so for guys, the only tests that are done for couples with infertility, guys it's sperm count and sperm motility. You know they're always nervous, the tests come back and the sperm counts good and the motility is good, must be you honey. Then the woman gets all of these injections of hormones when she doesn't have hormone insufficiencies, but for some guys it's a zinc insufficiency, they're firing duds.

There have been a number of couples, I tested the men, and most guys have a zinc insufficiency, about 4 out of 5 is the numbers I see clinically, 1 our of 5 will not, and zinc insufficiency is so easy to test for. Then you identify it, you give them zinc and then there's over 35o different processes in the body that are zinc dependent. So that's an example of functional medicine, is give them zinc if they need the zinc.

Alex: Yes.

Dr O'Bryan: So that started me off on my entire career from even before we opened our practice and I was in Dr Jeffrey bland, the founder of functional medicine, I was in his first talk in Chicago in 1978 so I've been following Dr bland ever since then.

Alex: So the key piece we're going to explore in this conversation is brain fog and I think for people with fatigue it can be one of the most frustrating symptoms because feeling tired is obviously miserable but when your brain isn't functioning and somebody is trying to have a conversation and you can't remember the end of the sentence that you've started, I know that for patients that is incredibly challenging. Often people will think that the solution to that is in the brain, and it's not uncommon that people end up having brain scans and other investigations to understand it. You obviously played a huge and important role in raising awareness around why digestive is so important in this so maybe just open this up a little bit and say a bit around the blood brain barrier and the second brain that we really have in our digestive system.

Dr O'Bryan: Yeah you bet and I'll say that as you were speaking your question I realised I'm going to change my language, it's really not brain fog it's brain fatigue. We talk about chronic fatigue and your muscles get fatigued, it's hard to walk up the stairs, your brain gets fatigued and it's hard to walk up the stairs of your brain to access different levels of brain function.

So there are numerous mechanisms that will contribute to brain fatigue or brain fog, a very easy one to understand the picture of this, and this is a geek word, hypoperfusion. Really good scrabble word, hypoperfusion, and what it means is a lack of blood flow into your brain. So for people to get an appreciation of what that might be like in my talks I always ask the audience can everyone please cross your legs for a minute, come on come on cross your legs, and for people at home please just cross your legs for a moment. If you're driving don't do it of course. OK you cross your legs, leave them like that for three hours, stand up and run. You can't because there's not enough blood in your legs. Hypoperfusion is a lack of blood flow into the brain, when you don't have enough blood flow your brain is tired, it just can't work right. That's a very common contributor to brain fog, especially when you're feeling pretty good, your brain's doing good, then all of a sudden a couple of hours later you can't think straight, right. When that fog comes in, that's hypoperfusion. If there were a pathology in the brain itself you'd have brain fog all the time, but when it comes and goes that's really a sign that there's something in lifestyle that's triggering what very often, not every time, but very often is hypoperfusion, a lack of blood flow into the brain.

And here's a really common one. 73% of people with celiac disease have hypoperfusion so if you have sensitivity to wheat the way that it might manifest is a lack of blood flow into your brain. Now for every one celiac patient that has gut problems or wheat sensitive patients, not just celiac's but any wheat related disorder, for every one person with gut problems there are eight that don't have gut problems, they have brain or joints or kidneys or muscles or bones, they get osteoporosis. So the ration for gut symptoms when you eat something that's not good for you in terms of wheat is 8/1, eight times more other areas of the body so don't think that you feel fine when you eat wheat, as an example, so it's not a problem. I feel fine when I eat wheat it's not a problem, no, no, you may be one of the 7 out of 8 when you eat wheat it causes hypoperfusion, that's all you get is brain fog. That maybe the case for you so it really is about exploration and investigation to find out.

With dairy it's a very similar thing, just go to Google and type in, there's a type of protein in dairy called casomorphines, or casein, so just type in casomorphines and sudden infant death syndrome and you go what? You want to know what brain fatigue is at it's worst, the worst brain fog, it's when the blood flow stops into your brain and just look at the studies about casomorphines or casein and sudden infant death syndrome. If you have a sensitivity to dairy the way it may manifest is affecting the respiratory centers of your brain that may be how it manifests, it may manifest as joint pain. I don't do too well with potato chips, I rarely, rarely eat them and so last night I had a nice meal but there were these homemade potato chips at the restaurant, this morning I woke up and I could barely move my elbow. I went

to work out, I mean I had a hard time putting a shirt on, I had to drive the car and my elbow was just 'my gosh what's wrong with my elbow I didn't hit it, oh, alright'. So my bodies reaction to bad fats is inflammation in the joints so it affected my elbow, right. Your body's reaction to a sensitivity to dairy or a sensitivity to wheat or a sensitivity to anything else may be hypoperfusion, it may be, you just have to check.

So you want to learn what are the things to check for, how do I do that, and that's why I wrote this book and it's number one in seven categories on Amazon and it's like 'oh thank you yes', right, because people are reading it and they're going 'oh my god I had no idea'. So hypoperfusion is a very common mechanism causing brain fog, you referenced another very important topic that doctors really haven't been taught this way and it's just so accurate though. And that is we have a barrier around the brain, when you eat food all the food you eat there's a protective mechanism in the gut so if there's some bacteria in the food bacteria can't get into the blood stream, right. There's a barrier between the food you eat and getting into your blood stream.

Mrs patient your digestive tract is a tube it starts at the mouth and goes towards the other end, it's about 20/25ft long and winds around in the center there. The inside of the tube is lined with cheese cloth now when you eat food those big molecules of food can't get through the cheese cloth to get into the blood stream, they've got to be broken down smaller and smaller and smaller until they're small enough to go right through the cheese cloth into the blood stream, right. That's why you're intestines are 20ft long, one reason is because it takes a whole lot longer to break down prime rib than it does a banana so you have to have accommodations for that and eventually the proteins in prime rib get broken down so small they go right through the cheese cloth.

Now when you get tears in the cheese cloth that's called leaky gut and now those bigger molecules get into the blood stream that shouldn't get into the blood stream and the result of that is your immune system trying to protect you says 'wow what's this in the blood stream I better fight this'. Now you make antibodies to beef or to tomato or to lettuce or to anything that you eat and it's your immune system trying to protect you. So these are the people that do a 90 food blood test to see what they might be sensitive to, it comes back and says they are sensitive to 25 or 30 different foods and they say 'oh my god that's everything I eat'. Well of course it is, your immune system's protecting you it's supposed to do that. When you heal the gut then go back in six months and test, now you're sensitive to two foods maybe three.

Alex: And that's one of the challenges that I think people often have when they do those tests it's that they're bemused by the fact that they thought they

were the safe foods, they were the foods they were eating without getting to many symptoms.

Dr O'Bryan: They're healthy foods right.

Alex: But they're the ones that actually come up that they have the problem to because whatever they eat, as you say, is going to be going through the lining.

Dr O'Bryan: Now there are three linings where there's lots of literature about that operate the exact same way. The lining of the gut, the lining of your lungs and the lining of your brain. So the lining of the brain is called the blood brain barrier and it's the tightest cheese cloth in the body so even though something may be in the blood stream, it's good in the blood stream, that doesn't mean it's OK for it to get into the brain. So the blood brain barrier is just a cheese cloth, it's just more tight so only smaller things can get through and scientists call it a breach of the blood brain barrier, I call it B4, breach blood brain barrier.

So do you have B4 because if you've got leaky brain, you've heard of leaky gut well people get leaky brain, if you get leaky brain these molecules get into the brain that shouldn't get in there and now your immune system in the brain, you know we have four immune systems in our body, different immune systems. One in the gut, that's the primary one, one in the liver, one in the blood stream and one in the brain. The one in the brains they are the big kahunas, those guys in the brain, they're called Glial cells, and the immune system in the gut has six hooters, like cowboy six shooters right. And they power those bullets that kill bacteria and all that. The one in the blood stream is special forces with high powered rifles specifically antibodies to go after specific things. But the one in the brain has bazookas, they do not mess around, if anything get through the blood brain barrier they fire their bazooka to destroy it right away, the glial cells are very, very active. Usually they're at rest, they're just standing guard inside the blood brain barrier but when they get activated they destroy whatever is trying to get in there, which is a good thing.

The problem is when you've got B4, a breach of the blood brain barrier, that process is going on continually, bazooka fire, bazooka fire, bazooka fire non stop and when that happens you start to get collateral damage. Brain tissue gets damaged, not just the bacteria or the virus or whatever got in but now your brain tissue gets damaged and just as true in every part of your body, when you've got damaged tissue your immune system has to get rid of those damaged cells to make room for new cells to grow. That's why we exercise and we work out is that you're actually breaking down muscle fibers, you're damaging muscle fibers and the result is the immune system comes in to get

rid of the old muscle fibers then you start making new muscle fibers and you make more muscle.

Same is true in every cell of your body that's why it is normal to have a certain level of antibodies to your thyroid on a blood test, there's a normal reference range. When is it ever normal to have antibodies to your own tissue, well to get rid of the old and damaged tissue, that's normal. But when you have elevated antibodies to your thyroid for example, you're killing off more cells than you're making. Now you've got a problem and eventually if you keep doing that that thyroid won't be able to function very well anymore and eventually you start getting some symptoms and then eventually you get more symptoms, you go to the doctor and they can't figure it out, until eventually you get diagnosed with autoimmune thyroid disease. Or autoimmune myelin disease, that's MS, or autoimmune cerebella disease, meaning antibodies attacking your cerebellum, and that's agate ataxia when you can't walk very well as you get older, or Parkinson's or Alzheimer's. All of these mechanisms of the brain they begin with B4, they all do by definition every brain deterioration, including constant recurring brain fog, seizures, autism, attention deficit, Parkinson's, Alzheimer's by definition every single one of them is a disease of inflammation in the brain. Where's the inflammation coming from, that's the million dollar question and it's coming from B4 allowing some molecules to get in there, your immune system trying to protect you. I mean this is extremely sophisticated postdoctoral concepts that I'm giving you in everyday language but this is the mechanism, this is why we now have a chance of reversing Alzheimer's, just read Dr Dale Bredesen's book 'The End of Alzheimer's' and it becomes crystal clear, you just have to figure out where's the inflammation coming from and stop throwing the gasoline on the fire causing the inflammation.

Alex: And I think what is often staggering for people is that what they eat can have such an impact in terms of their brain and their symptoms and everything else and particularly you mentioned, what people often call the big three, of gluten, dairy and sugar, that three of the things which are most common in the modern diet in terms of what people are eating.

But maybe say a little bit about why those foods particularly can be problematic and then also it would be good to come to the actual digestive process and some of the ways that can be going wrong and result in an even worsening of these problems.

Dr O'Brady: Sure. There's absolutely no question, you read the literature you read the science, there is no question every human gets leaky gut every time they eat wheat. Within five minutes of the wheat getting through the stomach into the small intestine here comes the inflammation. Now Mrs patient you

have an entire new body every seven years, every cell in your body regenerates. Some cells are very quick, like the inside of your gut is every two to three days, some cells are very slow like bone cells and brain cells, but every cell regenerates so if you eat toast for breakfast you tear the cheese cloth, but it heals, you eat a sandwich for lunch you tear the cheese cloth but it heals, so you don't feel anything you feel fine. You eat pasta for dinner, croutons on your salad, a cookie, a piece of a pie, everyday, day after week, it's the most common food that people eat is wheat.

Just think about how often you eat something with flower and it's multiple times a day, everyday, tearing the gut but it heals, tearing the gut but it heals. Until one day you don't heal anymore and that's called 'loss or oral tolerance', oral meaning what we eat and you just can't tolerate it anymore and that's a very sophisticated concept that when our practitioners understand, really do a deep dive to understand mechanisms in loss of oral tolerance, and that's in the book 'The Autoimmune Fix', but when they understand they think oh this just makes perfect sense because now the tears of the cheese cloth don't heal, now you have what's called pathogenic intestinal permeability or the leaky gut, now these molecules get in, now your immune system in the blood stream makes antibodies to fight those molecules.

Now to your question the antibodies, or special forces with high powered rifles, just going after whatever they have been trained to go after, so let's say it's wheat. So they're going after wheat in the blood stream and your blood stream is just a high way and there's lots of traffic on the highway and there's no lanes of traffic so everything's bouncing around into each other but they're all going the same way. It's like driving in New Dehli, you know, there's three lanes of traffic but there's five lanes of cars, I'm not exaggerating it's unbelievable how they drive there. But that's your blood stream so now you've got these special forces going after wheat where they can find it and when they're going after wheat they're looking for orange vests, like when guys go hunting and they wear the camouflage and the orange vests. They're looking for a particular vest, it's a protein signature I'm giving you a visual in your mind of a vest, so everywhere in the blood stream they're just looking for an orange vest. Boom they fire their chemical bullet, and boom they fire they're chemical bullet and the antibodies go everywhere in your body because the blood goes everywhere so they're just looking for wheat.

Here's the kicker, many different tissues in your body have exactly the same or very close to the same protein signature as the orange vest of wheat so if you're genetically vulnerable your soldiers are looking for wheat but if your genetics are this way they may attack the myelin in your brain and you get myelin antibodies elevated. Or they may attack your thyroid, it's called molecular mimicry and what it means is that one tissue mimics the molecular

signature of another tissue and the one that everybody knows about, they really didn't understand why, but this is the mechanism why do dentists give you antibiotics when you go to a dentist? There's only one reason, when they're working in your mouth and they squirt water in and you rinse your mouth out and spit it out in the porcelain tub and you've pink water or red water that's blood. They just gave you leaky gums and leaky gums take two to three days to heal, to seal again, the gums seal on the teeth.

The oral cavity, the microbiome of the oral cavity is loaded with bad bacteria, there's hundreds of different families of bacteria in your mouth. But now because you've got leaky gums, if streptococcus as an example gets through leaky gums into the blood stream and it sets up shop somewhere and it starts colonizing then you get a strep infection, now your immune system is making antibodies to fight strep to protect you. So now these strep antibodies are going through the blood stream and because of molecular mimicry the stress antibodies may attack the valves of your heart, that's rheumatic fever and people die from that. That is the only reason, that I know of, that dentists give you antibiotics is just in case some strep gets through your leaky gums, if the antibiotics are in your blood stream they'll kill the strep so that your immune system never gets activated to make the antibodies trying to protect you that may attack the valves of your heart.

That's the whole logic behind antibiotics from dentists, is to prevent rheumatic fever. That same mechanism occurs with wheat and with dairy and with tomatoes. It just depends on your genetic vulnerability attacking your brain or your thyroid or your liver or your kidneys or your eyes or your joints or your mouth or your bones. It just depends on your genetics where the molecular mimicry may originate. So when you read 'You Can Fix Your Brain', when you read this book it just all starts to make sense to you because this is a very sophisticated concept but when you understand the dynamics of how this thing works then you know how to explore in more detail where are my current symptoms coming from or what am I vulnerable to that I really want headed off at the pass before it kills off so much tissue I now have a disease.

Alex: Yes and obviously a starting point is getting gluten, dairy, sugar, those sort of things out of the diet but for many people, particularly those on the fatigue spectrum, that's often not enough to resolve either issues that have already developed or indeed as part of that there is now multiple food intolerances that have started to take hold.

So beyond just removing foods what are some of the ways to work to correct and heal this?

Dr O'Bryan: There is really no shotgun that is going to work for everybody. There are some things that can help in general, eat more berries is really a great idea, not strawberries so much but all the others organic. There's a lot of things you can do that can help but you really have to know where do I need to focus my attention, is it on foods, is there mold in the house and I'm breathing in mold spores that are causing inflammation in my brain. We now know that 60%-65% of all Alzheimer's patients clinically seen are inhalation Alzheimer's, it's what they're breathing that's causing the problem. It's the gasoline on the fire that's causing the inflammation on the brain is what they're breathing because what you breathe in will cause B4, a breach of the blood brain barrier.

So Mrs patient when you go on vacation for a week or two and you come home do you have to open the windows to air the house out 'oh yes, oh gosh yes' well you've got mold most likely, check your house for mold. Bring in a specialist to identify if you have mold or not and then they will, so that may be the trigger.

Alex: How about some of the other ways that one can reduce the toxic burden. So you mentioned mold and there's also lots of other places in day-to-day life that there could be toxins that could be feeding this problem.

Dr O'Brady: Oh my goodness yes. It's a world out there, that's why you need a big picture and that's why the subtitle of the book 'Just one hour a week to the best Memory, Productivity and Sleep' you've ever had. It's not a cutesy title, it's the secret to success because this is so overwhelming, it's overwhelming for doctors to try to understand this and apply the principles because they're so busy with what they're doing so far. But it's overwhelming to the patients, so Mrs patient every week Tuesday night after dinner, or Sunday after services, whenever you want but every week you're going to allocate one hour to learn and apply one more new principle and in six months of doing this you've got it down.

For example, plastic storage containers in the kitchen leak phthalates into your food, you put left over chicken in a storage plastic container, put it in the refrigerator the next day the chickens got phthalates. It's not a toxic level of phthalates, there's not study that says it's toxic, but it's accumulative in the body and you lose oral tolerance to it after a while. So one week, and plastic wrap that we wrap around our food you can't use that stuff anymore because it's poisoning your family, minor amounts but accumulatively it builds up in your system until you cross the threshold.

So one hour a week. So one week OK Dr O'Bryan gave three URLs in the book, alright I'm going to go look at those, and you go to mileskimble.com, you go to

Amazon or you go to one of the others ones and you go 'oh those are the glass storage containers', OK well I really like what those look like, good OK I want three round ones and two rectangular ones, one square, one for the pie and you order them and you pay with your credit card. It took you an hour, you're done for the week but that means never again will you poison your family with these minute accumulative levels of phthalate from storing left over food in those containers.

Alex: Because really what you're saying is it isn't necessarily any one thing, it's like loads on a boat it's not the one load that causes the boat to sink, it's the too many loads together which then has that accumulative effect.

Dr O'Brady: Correct.

Alex: One of the other things that I liked about the book, I very much liked that principle of breaking down and making it simple but you also talk about a number of home tests that people can do. Just before we started recording you were telling me about a fascinating smell test that you've come across so maybe say a little bit about that because obviously there are many more of these in the book that people can come to as they do their hour a week but that was a really great example.

Dr O'Brady: Yeah thank you. I'm tickled by this because it changes people's lives when they know this so I'm going to share my screen with you so that you can see a couple of slides here and we're going to start with this slide here about the importance of the sense of smell.

We don't pay any attention today to smell, some of us notice that we're losing our sense of smell, but smell to our ancestors was critical for survival because the nerves of smell go right from the nose directly back to the memory centers of the brain uninhibited, unobstructed. It's the only nerves I know of that have no obstacles to getting into the brain, there's no screening, they go right back. The question is why do they do that? Well it's for memory recall because our ancestors needed to know about what they were smelling and this is a cute little quote about proust phenomenon that everyone can read here, that when you smell something it takes you immediately back to a memory. You know it might be a perfume and you remember an old girlfriend or an old boyfriend or it might be a smell in a house and you remember your grandmothers cooking but it takes you right back there.
So that is critically important when we're looking at memory. That smell is a marker of memory and safety, why because you're ancestors walking down the road or down a trail they smell lion, they better turn around gently, quickly and get out of there. So smell was our first and most prevalent alert system. Detecting threats and escaping before confrontations are important for

animals to avoid danger and death, well that's obvious. Because they're of the brain for smell, called the Rhine cephalic regions, are vulnerable to Alzheimer's pathology a candidate marker for this purpose may be odor identification. And I read these studies and thought wow this is really interesting, this is really interesting stuff. So measuring odor identification, University of Pennsylvania Smell Identification test, they are the go to people in the world on this, and I called them to talk to them about this and said this sounds really interesting. It really is, what they told me in 17 studies, longditudal means over time, they followed people over time, reduced over identification performance predicts faster cognitive decline in elderly controls and persons with mild impairment. This is pre-Alzheimer's identification that there's a problem there, called pre-clinical Alzheimer's.

Now this one really told the tale. When you have a problem with smell, they looked at 1,100 normal people, non-demented 65 or older, if they had a loss of the sense of smell there was a 45% mortality rate over four years. The other people in the study that did not have a loss of sense of smell was an 18% mortality rate. So it's a market that you're brains on fire and you've got a problem right now and if you put attention on it you wouldn't be one of the statistics. So we called the University of Pennsylvania and we came up with this smell identification test and that's what this is, it's the upset smell identification test.

It's so easy, you get a coin and you scratch that little area there and then it asks you is this tomato, menthol, strawberry or licorice and then you just circle the right one, turn the page and do the next one, scratch it and it asks if it's cherry, honey, lime or whiskey and then you put it where you think the answer is. If you don't know you guess, we've given you instructions, just guess if you're not sure, and you do all 12 of them. After the twelfth one, you score it then you turn the page there's the answers and so you see how good is your sense of smell. You score 10 or above you're in good shape, you score 9 or below you've got hyposmia, loss of the sense of smell which is a bio marker saying the memory center of your brain is on fire and those nerves are degenerating. It's a biomarker that says you've got a problem and you need to do a deep dive.

Now what's the deep dive? You have to figure out where's the inflammation coming from, do I have B4 do I have food sensitivities, is my environment toxic, do I have too much toxic metals in my body, there's many things it could be but no one knows to check to start that investigative check that you learn about when you read the book and stuff. No one will do it until they've got a real problem with their brain and they know they have to. But when you do the smell test, this simple smell test, the result is you know 'OK I got a problem here, I scored 8 that's not good', right, so I'm going to now learn

where is the inflammation coming from. Then you go back in six months, because every cell regenerates, and you test it again and if you scored 8 the first time now you're scoring 9, oh good it's not great yet but it's better, it's 50% better. In another few months you score 10 and now you're good. As far as you know the memory centers of your brain have calmed down and that inflammation that was killing off the nerves has stopped.

Alex: I think it's fascinating and one of the things I really like about the book there's some sophisticated functional tests that can be super helpful but what you're really focusing on is stuff that people can do at home and stuff that is relatively simple to do to gather information.

Dr O'Brady: Really trying to.

Alex: No it's a very helpful way of doing it and I guess my question then becomes that let's say someone does this and they score low, there's an issue about the amount of information and as you say there's many different facets and areas that one could go to but what would be some of the key pieces of that. Like in terms of reducing inflammation, yeah what would be some of the starting points that you'd recommend?

Dr O'Bryan: You bet. So the first thing that we recommend to our people when these tests come back low is do the neural zoomer. It's a blood test that looks for antibodies in your brain tissue and there are many. Many different antibodies that may be elevated and once again when they're elevated they're killing off tissue. So the neural zoomer looks at 18 different markers of brain tissue, the neural zoomer plus looks at 42 or 44. So you can identify which tissues are on fire right now, so that's just a biomarker like the smell test but it's much more accurate, much more sensitive. The smell test is a general indicator, these blood tests are right on the money every time, you can learn about them in the book or at my website we've got all kinds of information on it.

Once you have that then you do the functional medicine deep dive where's it coming from, is it food sensitivities, is it leaky gut allowing these larger molecules to get into the blood stream, your immune system trying to protect you is attacking those molecules but because of molecular mimicry it's also attacking the cerebellum in your brain. You know I did 316 consecutive patients, I met everyone that came in, had this one blood test done, very comprehensive blood test and it was $535 was my cost and $535 was the patients cost. If they didn't want to do the test I gave them a sheet of paper that had the names of three other doctors in the area who are really good. But every patient is doing this test, I'm in the midst of a study, but these docs can help you with your complaints.

So every patient between 2 and 90 years old came in, it didn't matter what they came in with, we checked them on this blood test. 68% of everyone had a problem with wheat where the immune system had lost oral tolerance so they had elevated antibodies to wheat, 69%. If they had elevated antibodies to wheat, 26% of them had elevated antibodies to their cerebellum, that's their brain attacking their brain, and 22% of those wheat sensitive people had elevated antibodies to myelin, that's the saran wrap around your nerves. That's a mess, that's a mechanism of MS.

So 1 out of 5 or 1 out of 4 people with a wheat sensitivity and 7 out of 10 had a wheat sensitivity, but if they had a wheat sensitivity they had elevated antibodies to their brain. That's how common it is and you just have to investigate where's it coming from. So certainly, and I never say everyone should stop eating wheat, never say that, I say everyone should be tested to see if they've lost oral tolerance. If you haven't lost oral tolerance and you do a comprehensive test, look at the wheat zoomer in the book or on my website that's the comprehensive test in the world, if you haven't lost oral tolerance confirmed by the wheat zoomer then eat wheat, you're fine. Just check it every year to two years to make sure you've not crossed that line. But for those people that have crossed the line you can't eat that, your immune system is trying to protect you and because of molecular mimicry it may be attacking your brain.

Alex: In terms of people that have lost oral tolerance do you see them over time regain that?

Dr O'Brady: Oh absolutely, absolutely and every single patient that comes back on the follow up tests six months later a year later and they're clean on the wheat zoomer test, everyone of them says can I eat wheat now.

Alex: (laughs) First thing they ask can they go back.

Dr O'Brady: That's exactly right. You know humans are the only species on the planet, we find something that works and we stop doing it (laughs). So my answer's always the same, I say well we now know that your antibodies have calmed down and the brain antibodies or thyroid antibodies have calmed down, way to go, a lot of work we did great, you and I together we did great way to go. So you want to eat wheat I don't recommend it but if you are go ahead and eat wheat and in two months we'll do another blood test. If the antibodies come back elevated now you know, you can't eat it.

And technically, and medically I know, no one can eat wheat again once they've lost oral tolerance, even when they get tolerance back because we have

what's called a memory B cell now to wheat. It's why when you get a vaccination for measles the antibodies are there, they calm down but there's now a General, army, air force, marine core General, that's in your blood stream for the rest of your life to protect you from measles. So if measles every comes back into the blood stream General Measles just has to turn on the mechanism to make more antibodies. That's why if you go to Africa you need vaccinations for Yellow Fever, Dengue Fever, for all these weird diseases months and months in advance. But if you go back 15 years later you just need a booster shot two weeks before you go because General Yellow Fever just needs to wake up and make antibodies again.

When you cross the line of oral tolerance with wheat, you make memory B cells to wheat, they're there for the rest of your life so if you go back and eat wheat again you're going to activate General Wheat and here come the antibodies. But patients want to hope that they can do it, right, and I never recommend it because some people can get really sick when they get exposed to wheat again.

Alex: It seems to be the case that certain foods, particularly being wheat, the body just doesn't seem to do well. There seems to be other food intolerances where people have a reaction, they heal the gut, they calm the system, things start to settle and they seem to be OK on the other side.

Dr O'Brady: Yeah you're right. There's a whole approach called the elimination diet based on that. Now the problem with the elimination diet is that it's based on how you feel after you eat the food, wrong marker to use, because remember it's an 8/1 mechanism. For every one person that has gut symptoms and you feel bad when you eat it there are 8 people that don't and so it's the wrong mechanism.

You have to check the immune system, you have to check your armed forces, the army, navy, marines, air force, to see have they been called up again. So they were called up initially, you did the protocols it all calmed down the blood tests are normal now and does it get called up again. So you eat wheat, you eat tomato's whatever it should be, and you feel fine when you eat the tomato's but if you have the elevated antibodies again and your genetic vulnerability is to myelin you're going to kill off the nerves again just like you were before, which is the mechanism eventually leading to MS.

Alex: Dr O'Bryan I wish we had more time but I'm mindful we're pretty much out of time but for people that want to find out more you mentioned your latest book and also your previous book 'The Autoimmune Fix' are obviously great places. You also have I think the best url in the business, so maybe

mention your website and other places people can go to find out more about you and your work?

Dr O'Bryan: Oh thank you so much, it's the thedr.com and we've got lots of videos there, I actually have a brain master class that people register for and it's 37 videos where I talk to you like this on one topic in more detail. I'm so proud of it and people are blown away by it they just learn so much in the brain master class and you take it at your own pace, you know once we give you the password you get in there and you can do it all in a week or you can take two or three months, just watching one video and digesting it for a while, applying some of the principles, get the saran wrap out, you'll get the plastic containers out, whatever you like.

So thedr.com is where all that information is.

Alex: Fantastic. It's been super fascinating, you have a remarkable ability to take complex ideas and make them super simple. A lot of people claim to do that but you really do do that so thank you so much I really appreciate your time.

Dr O'Bryan: Thank you so much it was a real pleasure to be with you.