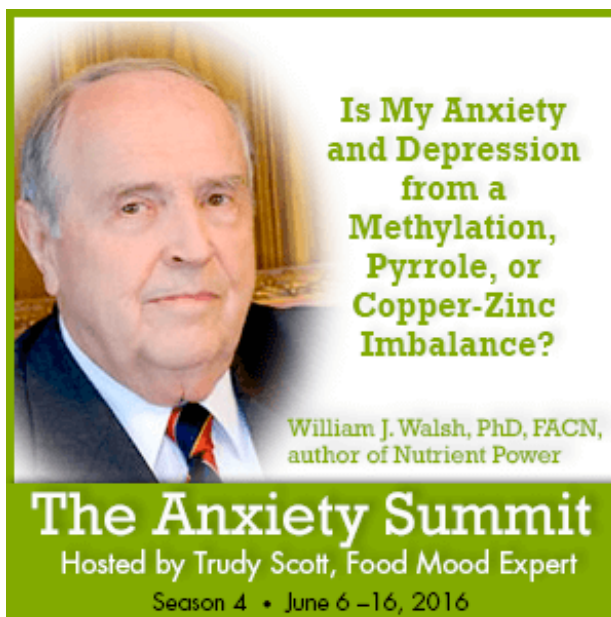


Is My Anxiety and Depression from a Methylation, Pyrrole, or Copper-Zinc Imbalance?

- Neurotransmitters: how they are synthesized, transported and broken down.
- Biochemical individuality and incidences of imbalances of copper, B6 and zinc.
- Biotypes of depression, methylation disorders and whole blood histamine, and pyrrole disorder (pyroluria)
- Copper-zinc imbalance and post-partum depression
- Testing in blood and urine



Trudy Scott: Welcome to season four of *The Anxiety Summit*. I am your host, Trudy Scott, food mood expert, certified nutritionist, and author of *The Antianxiety Food Solution*. Today our topic is “Is My Anxiety and Depression from a Methylation, Pyrrole or Copper Zinc Imbalance.” And today we have Dr. William Walsh who is president of the nonprofit Walsh Research Institute here to speak on this topic. Welcome Dr. Walsh.

William Walsh: Well thank you Trudy. Glad to be with you.

Trudy Scott: I’m really excited to talk about this topic. It’s an area of great interest and it’s an area of focus in my practice and I know that you are a pioneer in terms of teaching other practitioners in this area and have been working in this area for many, many years so I’m really excited to

have you here on the Summit. We've heard your name mentioned on prior summits and it's great to finally have you here to talk about your expertise. So thanks for being here.

William Walsh: Well you're certainly welcome.

Trudy Scott: Let me go ahead and read your bio and then we will get into the questions. As I said Dr. Walsh is president of the nonprofit Walsh Research Institute in Chicago. He's an internationally recognized expert in the field of nutritional medicine and a key scientist paving the way for nutrient based psychiatry and nutritional medicine - and I just love that – nutrient-based psychiatry. Dr. Walsh has researched biomedical details for individuals previously considered as untreatable or insufficiently treatable with modern psychopharmacology. This resulted in designing new therapies using natural substances like vitamins, minerals and amino acids, a healthy alternative to those who experience side effects whose brain chemistry has not been corrected by pharmaceuticals or who are seeking a non-drug healthy approach.

His advanced nutrient therapy protocols have helped thousands of individuals by supporting natural brain processes and healing brain imbalances. Dr. Walsh's approach recognizes that nutrient imbalances can alter brain levels of key neurotransmitters - and we're going to talk about that today - disrupt gene expression of proteins and enzyme and cripple the body's protection against environmental toxins. His book *Nutrient Power* which was published in 2012 describes his findings and the advanced nutrient therapies which correct biochemical and methylation imbalances that are causing learning, behavioral, developmental and mental health issues.

After earning degrees from Notre Dame and the University of Michigan Dr. Walsh received a Ph.D. in chemical engineering from Iowa State University. While working at Argon National Laboratory in the 1970s. Dr. Walsh organized a prison volunteer program that led to studies of prisoners and ex-offenders researching the causes of their violent behavior. A long collaboration with Dr. Carl Pfeiffer, M.D., Ph.D., a pioneer in the field of nutritional research therapy in the USA, Dr. Walsh was led to the development of individualized nutrient protocols to normalize body chemistry and brain chemistry.

And I must say Dr. Carl Pfeiffer is one of my heroes and it's just wonderful to hear that you actually worked with him so I'm going to ask you a few questions about that as well.

Over the next 30 years Dr. Walsh developed science-based biochemical treatments for patients with behavior and learning disorders, autism,

depression, anxiety, schizophrenia and Alzheimer's disease that are used by doctors throughout the world. Walsh Research Institute's current research includes studies in DNA methylation in individuals with schizophrenia, the role of epigenetics and mental health, oxidative stress and disease conditions and underlying causes of bipolar disorder. Dr. Walsh continues to direct his international physician training programs which have resulted in over 300 physicians from 14 countries educated in his non-drug advanced nutrient protocol therapies. And you can find out more information at WalshInstitute.org.

What a prolific background you have and I'm very interested to hear about your collaboration with Dr. Carl Pfeiffer. As I said he's a hero of mine. Tell us a little bit about how you worked with Dr. Pfeiffer?

William Walsh: Well I met Dr. Pfeiffer quite a while ago when he was giving a lecture at Argon National Laboratory. And it was in a large auditorium with about a thousand people and I had not known at that time who he was. And I found out there was a man who had spent 20 years of his life studying the biochemistry and the brain chemistry of schizophrenia. And really it was the same sort of thing I was just beginning to do with violent criminals and trying to understand their behavior. I got to meet him the next day and he got interested in my research and one thing led to another and then starting in the 80s we started a collaboration. Our collaboration actually lasted more than 12 years and I would do the chemical studies and do a medical history and then I would go to Princeton or to his winter home in Florida and we spent a lot of time together evaluating people with various kinds of biochemical disorders. And it was really a remarkable lucky thing for me to be able to sit at his side. Because when I would visit him at Princeton his patients would come in and he would introduce me as Dr. Walsh, an expert from Chicago.

I got to see his whole process of how he would do his medical intakes, how he would try to evaluate what neurotransmitters were misbehaving and then actually about 1988 I met him and he said, you know Bill, what's really needed is an outpatient clinic for behavior and for depression in the Midwest. And then I realized he meant me. And so I did establish a clinic we call The Pfeiffer Treatment Center named after the great man. He had volunteered to be our doctor evaluating the first six months of patients. But unfortunately he died just before our clinic opened. So he was a hero of mine. He was once nominated for a Nobel Prize. I think he absolutely deserved it, did not receive it. But that really got me started and it connected me with people like Abram Hoffer and Roger Williams and other heroes of the past. And that's how that all started.

Trudy Scott: Wonderful. And he's amazing and I'm very jealous that you got to work with him. One of his books *Nutrition and Mental Illness: An Orthomolecular Approach to Balancing Body Chemistry* - which is a nice little succinct book - is just such a big favorite of mine. Of course he's authored many other books as well. And how wonderful for you to have worked with this great man and then taking this information forward. It's exciting to be talking to you having worked with him and being part of that because - of these people who have pioneered this work it's so important that we recognize them and remember them and take this forward. There's not enough people talking about this and we need more people to be aware of all the work that was done prior to today.

William Walsh: He was truly a dedicated man. I don't think I've ever met anybody who was happier. He didn't care about money and he would not take a penny more than other doctors working at his clinic. And he lived in a very simple house. His wife once made dinner for me and I got to see his very simple life. He could have been a multimillionaire and he didn't want that. He just enjoyed helping people and studying research and studying brain chemistry.

Trudy Scott: Wonderful. And before we go into the actual topic I'd like a little bit more background on this research that you did in prisons because I remember discussing this with you at an event. You were at the National Association of Nutrition Professionals and you taught me a little bit about this. Tell us a little bit more about the prison research that you did.

William Walsh: Well that's how this all started for me. I was working as a scientist at Argon National Laboratory at the time and I was involved in physics and chemistry and experimental work. And I became a prison volunteer back when a lot of people were volunteering and going to the Peace Corps - and it seemed like everybody I knew was volunteering for something. And I started visiting the Stateville Penitentiary which is supposedly one of the three toughest prisons in America -. And my real education began when I started an ex-offender program. I had started a program a few years earlier and we were doing the usual things that people do in prison and I had a group of about 125 volunteers visiting the prison and trying to do what we could to- enable them to succeed when they got out of prison.

Well when I started working with ex-offenders and with ex-convicts that's when I got to meet the families and got to meet mothers who had given birth to somebody who had done something horrible and I got to hear the story of their lives. I learned something very surprising. I learned that many criminals were born into really good families and

with parents who cared about them and had other brothers and sisters that were just fine and went on to be upstanding citizens. And yet this one child they said was different from the time they were maybe six months old. -They were oppositional. They were defiant. They would torture the family animals, and had an obsession with weapons. And I learned that there was something that seemed to be wrong with them from the time they were born.

And so I began to study their biochemistry trying to see if there was something intrinsically different in their body chemistry and brain chemistry. And after I had started doing that for a few years I ran into the great Carl Pfeiffer. He suggested that I start looking at metals because he said that's where he got his first really good data for schizophrenia. And I started looking at the levels of zinc and copper and manganese and lithium and so on and on. That was our first beginning. We found that people with behavior disorders almost all of them are born with serious metal metabolism disorders. And that's how we got started. And eventually with the doctors I worked with and the clinics that I founded in 1989 we eventually saw 10,000 people, adults and children, with really serious behavior disorders.

We learned that we never knew how to help adult criminals. And that's one of our failings. However we did find out that if we got to these people when they were young, when they were children before their lives were ruined by the time they were 14 years old we had really good outcome studies showing that we could turn them around. But we had to get them before they got into drugs, alcohol and maybe habitual crimes.

Trudy Scott: Very, very interesting. So you're saying that once they're older it's much more difficult to turn things around even with the biochemical approaches that you use?

William Walsh: Well especially the sociopaths. It's almost like an obsessive compulsive disorder. They're in the habit of doing terrible things and I think there are probably hundreds and hundreds of adult criminals that we may have helped. But the success rates were not good. Very often even if we balanced their chemistry we would get reports that things were going really beautifully for a couple of years but about five years later I would get a letter apologizing and saying they stopped our nutritional treatment and they were back in prison. However, we have great success with young, behavior disordered or physically violent people. And so that's been our focus really for the last 20 years- - working with violent youth. Now working with Carl Pfeiffer of course I also got to see him working with people with depression and bipolar

disorder and a lot of people with schizophrenia. And so we expanded into all of those areas.

Trudy Scott: Okay. And Dr. Carl Pfeiffer is known for the work that he did with schizophrenia so would you say that you can take the work that he's done with schizophrenia and then extrapolate it to the general population. It's like this continuum, there's some people that are serious enough that they would have a schizophrenia diagnosis and then other would have less severe symptoms but similar underlying biochemistry that might be causing anxiety or depression or OCD type behaviors.

William Walsh: Well the big question about schizophrenia is what could possibly cause a mental breakdown because the majority of the people I've met and I've now worked- with - more than 3,000 people diagnosed with schizophrenia - most of them were quite okay until they were about - 18 or 20 years old and then in many cases a very sudden mental breakdown and from that point on their lives were forever changed. It's now beginning to look like it may be an episodic event. In other words there's a good possibility that they had an inborn predisposition for schizophrenia and that environmental insults and - many other possibilities may have- triggered a remarkable global change in a lot of their DNA expression. And there's just not quite a spectrum, it's like an event that hits some people and not others and if you develop schizophrenia the very great odds are it'll be a challenge for the rest of your life.

Trudy Scott: Can you talk about some of these environment insults? I've seen some research on marijuana being a trigger in some instances. Have you seen that?

William Walsh: We're not sure about marijuana because if a person is developing a mental problem and has anxiety or depression or even beginnings of psychosis they're desperate to feel better and one way they can feel better is marijuana. And for others it's alcohol. We know that marijuana might be a gateway for other drugs. It's not clear whether the marijuana has actually caused a higher tendency for schizophrenia. It certainly does alter the brain. I've seen scientists who started doing too much marijuana and they weren't as smart afterwards. So I know that there's that. But I'm not sure about marijuana causing that. The number one thing I heard from doing medical histories and hearing their life history, is the sad story of these schizophrenics and I'd say about half the time it was a love interest that suddenly went wrong. When they got dumped by a girlfriend or a boyfriend or in one case- I had a female who was assaulted and the schizophrenia developed soon afterwards. I must have had a least 100 schizophrenic's who have had

a serious auto accident and head injury and developed psychosis right after that.

I had others who had an immune challenge. I mean something, a really serious disease and the psychosis came afterwards. So there's a variety of different environment insults. I had a few cases of toxic metals that seemed to be triggering it. So there's a lot of different insults that can trigger a schizophrenia and the real question is what on earth could really cause such a dramatic sudden change in a person's mental functioning. One thing about schizophrenia that - I learned from Pfeiffer when I started studying people with depression - and I think I eventually developed the world's biggest chemistry database for depression inspired by his classification of the different types of schizophrenia - we eventually discovered there were five different major types of depression.

Now the psychiatric world has this misconception that depression is a single condition and basically if you have clinical depression it's believed throughout the world that the problem is low neurotransmission at serotonin receptors. And our database has shown that that's only true about half of the people with depression and there are four completely different other conditions. And that different neurotransmitters are involved and that each one of these different depression types needs an individualized different treatment approach. So that was really following in the footsteps of the great Pfeiffer and that was part of what we've learned. -We are still not clear on the causes or the underlying mechanisms of bipolar. That's something that we're working on and there's a lot of research going on. -

We've also seen more than 5,000 cases of ADHD. And those are also people that we are usually very able to help. And it's really a matter of biochemical individuality. We have to do a very careful medical history because symptoms and traits help us diagnose. I mean if a person is under methylated or over methylated or has a pyrrole disorder, there are just a classic set of symptoms and traits that go along with that. We have gotten - some experience with this. After talking to a patient for about an hour and doing a nice medical history and learning as much as we can about them we can quite accurately predict their blood and urine test results. And so we do a combination of the medical history and then we do a series of special blood and urine tests. And then usually we can then identify what neurotransmitter system has gone awry. And that can give us a roadmap to a nutritional therapy to treat them.

Trudy Scott: Great. So we're going to go into some of these because I'm sure everyone is thinking well where do we start. Well firstly I just want to

say I think it's great that you say within an hour you can figure out what's going on with someone and I love the fact that there are these specific symptoms for each of these different types. And it's certainly something that I use in my practice and I think it's so important that we realize that this biochemical individuality is such an important factor. So many people will say I've got anxiety or depression. Should I take so and so. Well maybe it's going to work for you but maybe it's not. Maybe it's something else that's causing your symptoms. So you mentioned the five types of depression and you mentioned low serotonin as being one of them. Can you talk about all of the five types?

William Walsh: I certainly can. Around this time in May two years ago I delivered a paper at the annual meeting of the American Psychiatric Association. There were 17,000 psychiatrists there from all around the world. I gave this talk in a big auditorium and basically I told them I thought that psychiatry was doing depression all wrong.

Trudy Scott: Good for you.

William Walsh: I showed them our chemical database and then I described one by one the different types of depression. Well the largest group are the people who are under methylated. About 40 percent of all people with clinical depression are under methylated. It's a condition they were born with and people who are under methylated have a classic set of symptoms but one of the problems that afflicts about 20 percent of under methylated people have a tendency for low serotonin depression, low serotonin activity. But then there are others for example 17 percent in our huge database – 17 percent of all people with depression basically have a metal metabolism disorder. And they don't have a serotonin issue at all. Their problem is that they have a copper overload and zinc deficiency. And what happens with copper, copper is a cofactor in the synthesis of norepinephrine and the norepinephrine is created, synthesized from dopamine. So if people have unregulated really high copper levels it means they have too much norepinephrine and too little dopamine and that's a really nasty combination. And these are our favorite patients - with depression because they're so easy to help. Almost all of them are females. Ninety-five percent of people with a metal metabolism problem are females.

Copper and estrogen are related and I've seen probably 400 cases of postpartum depression. Virtually all of them have a copper overload. These are people who might have been on SSRI antidepressants and with nothing really happening not making them better or worse. But if we are able to simply normalize their copper most of them become

completely okay and you can throw away their medications. They're the easiest people to help.

There's another 15 percent for whom the major problem is this thing called pyrrole disorder. Now pyrrole disorder in most cases is inherited, it runs in families. And it's a biochemical abnormality and it has to do with the biochemistry that goes on in your spleen and in your bone marrow. And these people tend to have too much of a byproduct of some of these biochemical reactions called pyrroles. Well pyrroles are chemicals we all have some of and they don't do anything good for us. They basically leave the body rather quickly. But they leave through the bloodstream and then out the kidneys and out through the urine.

The problem is that the pyrroles have an affinity for anything that's an aldehyde and the number one aldehyde in the body is vitamin B6. And so they strip B6 out of the body and people with pyrrole disorder have extraordinary deficiencies of B6 and it also tends to strip the zinc out of the body. Now this really affects your neurotransmitters. B6 is the major co-factor for synthesis of serotonin. It's the major co-factor for synthesis of GABA, and major co-factor for synthesis of dopamine. So you need an adequate amount of B6 just to make enough of these neurotransmitters. If zinc is deficient that tends to very greatly weaken GABA function and even more significantly the NMDA neurotransmitter.

So if we find a person with high copper that's one of the major causes of anxiety, especially in females. If you're high in copper you will have high norepinephrine and high adrenalin. And that's a recipe for extreme anxiety and usually a sleep issue.

But it has to be diagnosed and we have a therapy that can correct that at about six or eight weeks. It takes that long to normalize abnormal copper and zinc levels. Now that's three of the systems/depression types.

We also find the most interesting one of all of our biotypes of depression is what we call folate deficiency depression. One out of five of all people who have this - are people who have too much serotonin and dopamine activity already. And these are the people that- might have depression and- also anxiety. But if they take an SSRI antidepressant they will get worse. They will get worse. And it has to do with the epigenetics of neurotransmission. And it has everything to do with reuptake. We used to think that depression, that is low serotonin depression and the only - way to help these people was to do something to increase their serotonin concentration. And actually that's

not the case. We learned 20 years ago that what's really important is this thing called reuptake. Now the pharmaceutical people, the drug companies learned that in 1985 and that's why they stopped giving drugs to increase serotonin amounts and developed drugs that would inhibit reuptake. That's about 95 percent of the issue in low serotonin depression.

People who have this other version, this folate deficiency, the 20 percent I think that's what's mainly responsible for school shootings in America. Because - myself and others have studied the last 50 cases in school shootings in America and these kids are different from the violent people I've studied over the years. They're mostly okay until they're about 14 or 15. They develop anxiety and depression. Their family takes them to a psychiatrist. They start taking an SSRI and in some cases it can cause homicidal ideation and suicidal ideation. More than 40 out of the 50 cases of school shootings involved kids just like this who were taking an SSRI antidepressant. We have lab tests – what I told a psychiatrist at the APA was there are inexpensive lab blood tests they can do to identify people who might be ideal for an SSRI or those who absolutely need to avoid it. And then also these blood tests could also tell them how to identify the people with the copper zinc imbalance so they can help those people and not waste time trying to give them SSRIs.

The last group and the smallest group are those who are depressed only because of toxic exposures to things like mercury or lead. And it's a small number and it's actually shrinking now that we've taken lead out of gasolines in America. It's probably only about one out of every 30 or one out of every 25 depressed people. But for them it's everything. I've had people who simply were lead poisoned and that's why they had depression. So it's important to do a good medical history. It's important to learn everything you can about the patient and then to do a battery of lab tests. And about 95 percent of the time we could identify the reason for their depression and that gives us - a roadmap for nutrient therapy. And it's got to be individualized.

For example SAME which is a good methylator helps some people and would harm others. You have to make sure that you're only doing that for an undermethylated person. We know that folates have a tremendous effect on the epigenetics of neurotransmission. That's something that's really quite new but folates can for some depressed people - be the most important thing for them to take. And the very same folates would harm other depressives. So it's all individualized.

Trudy Scott: This is great. I've got some follow on questions. First I'm just going to recap the five types just for folks who are getting all this information

and want to get a recap and just make sure that I've got it right. So the first one is undermethylated and 20 percent have a tendency for low serotonin. The second one is a metal metabolism issue. This is where you've got a copper overload and a zinc deficiency. The next one is the pyrrole disorders and again we've got the issue with zinc but here we are also stripping B6. And then we've got the folate deficiency and then we've got the depressed type. And this is with the mercury and the lead toxicity.

I've got a few follow on questions. Firstly I'm really excited that you were presenting to all the psychiatrists and I'm just curious if they were open to all of this?

William Walsh: I wondered about that because this is my fourth time presenting at APA at the big annual meeting where they come in from all over the world, the one big annual meeting. The first three times I spoke there I thought I gave some pretty important information. For example 21 years ago I gave a talk on undermethylation. I had the world's biggest database for undermethylated people and I was trying to point out to them how important that was in mental health. Nobody paid any attention to me. So my first three times there I think they thought I was out in left field. And this time people really paid attention. I could tell and I was on a big platform with three other speakers who I thought gave pretty good talks. And at the end of the session the moderator said that the four of us were going to stay up there in case anybody wanted any additional information. Well a large number of people just stormed up toward the front and they all wanted to talk to me. And the really nice thing is that a number of those people actually came to our physician training programs that we hold to show how nutrients therapy can help people with depression and other kinds of illnesses.

And ever since that presentation I've been getting more and more interest from psychiatry and from psychiatrists. We now have more than two dozen psychiatrists we train in these methods. They're actually the most enthusiastic of all the doctors that we've trained in the advanced nutrient therapy.

Trudy Scott: Wonderful. Wow, I love it. I think it's really great that you are getting in front of these psychiatrists and sharing this because it's so important. Now I do have some follow on questions on some of these types that you talked about. As far as- when you were talking about copper metabolism you said that you see this copper overload often in women as related to estrogen imbalance and you'll see it in postpartum depression. And you said it's really easy to normalize copper. Can you tell us how we would go about normalizing copper?

William Walsh: Well copper is supposed to be regulated – it's regulated very carefully by the body and normally kept within a very narrow range. And it's really done by the action of zinc, that the cause is expression, genetic expression of a protein called metallothionein. Metallothionein. And that has the responsibility for regulating and normalizing copper levels. Well if the person doesn't have that system working well then your copper levels can escalate. We know that 68 percent of all ADHD people have elevated copper as their major problem. And these are low dopamine people and high norepinephrine people and that's a recipe for ADHD.

Well with respect to the females if a person has an anxiety disorder or a depression disorder and we find out that the onset was at puberty we kind of expect that the lab results are going to show this is a copper problem because at hormonal events copper levels tend to go awry if you're not able to regulate your copper. So it can happen at puberty. It can happen at childbirth. And it can happen at menopause. During the nine months of a pregnancy a women's copper level more than doubles. And this is necessary for that growing fetus. It's necessary for something called angiogenesis to promote the rapid development of blood vessels that that little growing baby needs. And at the end of a pregnancy a woman's copper level is usually more than double what it normally is. A woman normally would be around 100 micrograms per deciliter in her blood. Maybe it would be 220 at the end of a pregnancy.

Well right after the baby's born that copper level is supposed to start heading right back down to normal. Well people with postpartum depression don't have that ability and this can completely disrupt two of the major neurotransmitters and misery sometimes for the rest of their lives. But the way we would bring it down, you have to do it carefully because they're already suffering from too much copper levels in their brain and in their bloodstream so we have to remove the copper gently and gradually. And one way to do that is to give them small doses of zinc initially and then just gradually build up the doses to the full dose it takes to normalize their zinc which will then automatically get the natural metallothionein system working. And it takes about six to eight weeks usually. But it can be done and it can be done without any discomfort for the patient if it's done slowly.

If you did it all at once, we've had some women who were really desperate to get better quickly and they took a huge dose of zinc immediately. Well that dumps so much copper into their bloodstream that they had maybe the worst day of their life. So this has to be done carefully. I think it should be done under the supervision of a physician

who knows what he or she is doing. But one of the easy disorders to correct is a metal metabolism disorder.

Trudy Scott: Okay. Now you said to do it under the supervision of a physician and many women are wanting to breastfeed. Would this be something that could be done with someone who has postpartum depression and is breastfeeding?

William Walsh: Yes I think so because it doesn't help the breast milk if a person has a metal metabolism disorder. I think the quality of the milk would be better. So from that point of view it would be good to start right away. That certainly would be great for the mother to not have to suffer. I've had more than 100 cases of postpartum psychosis where the postpartum situation was so awful that these people started hearing voices or developing delusions usually with extraordinary anxiety. And so it's really essential to get that corrected as quickly as possible.

Trudy Scott: And related to this would the baby be affected with the mom having such high copper and breastfeeding? I actually had a colleague working with a mom who had a very high copper and the baby was very, very restless. And once they started to help the mom, the baby calmed down because she was less affected. They actually tested the baby and found that the baby had pyroluria and the doctor got the baby on some very small amounts of zinc as well and that helped the baby. But if you didn't do anything for the baby adjusting the mom's levels would that affect her breastmilk as well?

William Walsh: Well our goal is to normalize the mother's body chemistry which would tend to normalize the breast milk. So that's exactly what we do. I don't think we can do any harm if we do this carefully and do it right.

Trudy Scott: Right. Okay. So a few more follow on questions from the earlier discussions. The comment about the pyrrole disorders. You said about 15 percent have this pyroluria condition or pyrrole disorder. And you said in most cases it's inherited. Can you just tell us a little bit more about that because I've heard a number of practitioners say that the pyroluria can be triggered by Lyme disease and other types of infections. And I always assumed that it was inherited.

William Walsh: Well actually these doctors are correct. And Carl Pfeiffer thought it was always inherited. But what we've learned since then – what I said originally is that pyrrole disorder is usually inherited. It's usually inborn. However we've learned that whenever anyone has severe oxidative stress from any cause like Lyme disease or anything that can cause oxidative stress to be excessive your pyrroles will increase. We learned that originally when a few people who did not have pyrrole

disorder developed cancer and that caused their pyrrole levels just to escalate. The oxidative insult from that. So yes, the Lyme disease and other conditions can absolutely cause a temporary pyrrole disorder. It's not the inborn persistent type but you will have elevated urine pyrroles and maybe diagnose a pyrrole disorder at least temporarily.

Trudy Scott: And you would use the same approach as you would for someone who had the inherited pyrrole disorder while you're addressing the underlying trigger which may be the Lyme disease.

William Walsh: Yes the pyrrole part of the treatment is the same. The only difference is that you don't have to continue it once the pyrrole issue is corrected.

Trudy Scott: Okay. And would this show up in the urine test? So let's talk about the urine test for pyrrole disorders because earlier on you mentioned the fact that each of these different categories have a specific set of symptoms. I'll have people do the pyroluria questionnaire that Carl Pfeiffer developed. I've modified it slightly based on feedback that I've had from my clients and I know that you have – do you have people do the questionnaire as well? A questionnaire and then you do the urine test?

William Walsh: We do both at the same time. And you're right. I do the same thing you've done. I've modified it a bit as time has gone on. You know Carl Pfeiffer did a beautiful job of finding most of these symptoms but we learned a few additional ones. I think pyroluria is probably the easiest thing to diagnose in a face to face encounter with someone. In fact after you see your first few hundred of them – I imagine you've already done this – you can actually identify people with pyrrole disorder walking down the street. I get the feeling I want to go up to them and say pardon me but your life would be better if you would correct this thing called pyrrole disorder. Of course I'd probably wind up in jail if I did that but yes, people with pyrrole disorder if they gain weight they tend to have an abnormal fat distribution. You've seen people with very thin necks and wrists and ankles who had a huge amount of weight around their upper thighs and abdominal area. They tend to wear sunglasses all the time. They're very sensitive to bright lights. I've seen people wearing sunglasses in movie theaters. They tend to have very dry skin. They usually are not hungry for breakfast and maybe skipping breakfast and maybe even lunch. They're night people. There's all these symptoms. I'm sure you already know what they are.

But we've learned a bit more about it as time has gone on. Again it's so easy to correct a pyrrole disorder. Pyrrole disorder occurs about 20 percent in depression. And I just gave a talk yesterday at Autism One

and it's found in about 38 to 40 percent in children diagnosed with autism, children and adults. For behavior disorders it depends on the type of a behavior disorder. But virtually all of the antisocial personality people have this – about 98 percent of them have pyrrole disorder. It's one of the higher ones for schizophrenia. There are probably 20 percent of all people with schizophrenia who have as their main problem a severe pyrrole disorder. If they only knew that life would be a lot better if they just simply corrected that imbalance.

Trudy Scott: Well I can relate. I have it and getting on the pyroluria protocol certainly turned my life around. And I see it with so many of my clients. I work primarily with women and I see it as such a common condition with the women that I work with. Obviously I'm working with people with anxiety so it's a large proportion of the population because they have anxiety already. But it's interesting how we see it prevalent in these other conditions. I know it's high in alcoholism as well. So it's much more prevalent than people realize.

And you mentioned some of the symptoms. And of course the other big one is the anxiety and you mentioned the antisocial personality. So we've got the social anxiety and this inner tension that I know personally myself. I've heard from a lot of my clients you sort of cover up and you push through and you deal with it. And life would be easier. I have so many people say they felt like this was just their personality. They didn't realize they could change it. And when they get on these nutrients things just turn around. So I'd mentioned the urine test. Let's just talk about that and then I'd like to talk a little bit about the protocol for pyroluria.

William Walsh: Okay. There are not too many labs that are good at testing for pyrrole disorder. There's a number of different kinds of pyrroles. I mean there's kryptopyrroles and hemopyrroles. There are six different kinds. The good news is that all sort of go up and down together. So if you're high in one you'll be high in another. So one lab for example might test hemopyrroles, the other might test kryptopyrroles. But you wind up with the same diagnosis. So they're sort of equally good. There's at least three labs in the United States that do a really good job of this. There are a few others around the world that can also do it. But it's a matter of taking a urine sample and I think it's important to get the specific gravity of the urine because you want to know the concentration of these pyrrole molecules in urine and if somebody is drinking three gallons of water a day you're going to get a lower number. So to compensate for that I've been talking to the labs and one by one I've been convincing them to do a simple specific gravity test so they can get a corrected value that will really give them a really accurate indication of whether they do or do not have this condition.

But you simply take a urine sample. Like with all urine samples you put some vitamin C into it to keep it from all kinds of overgrowth. And get it to the lab and it needs to be preserved from heat and light once you take the urine sample. Ideally it should be either kept on an ice pack or even better frozen and would arrive at the lab frozen. So that part of it's a little bit complicated. You probably can't get this done if you went to your local Lab Corp center and said you wanted to have a urine sample for pyrrole. They probably might not know how to do it. So the labs usually send you a kit so you can do this at home and then ship it back to the lab. As far as the analysis itself it's a fairly simple analysis although very few labs choose to do this test.

Trudy Scott: So tell us about the fact that we often see false negatives. This is something that I've been seeing. I used a lab a number of years ago when I worked in Julia Ross' clinic and the results correlated all the time with the questionnaire and the symptoms that people were exhibiting. And then that lab stopped doing it - they changed their testing and I started using other labs. And I found a lot of times the results were not coming back positive when you would expect it. As you said you can walk down the street almost and recognize someone as having pyroluria. And then I also had feedback and I still get feedback now where people say I did the test years ago and it came back negative so I didn't do anything about it and now say "I'm looking at things again and I think I may have it and I've got on the protocol and I'm doing better." So can you talk about that and how commonly do you see false negatives and why do we see them and is there anything we can do about it?

William Walsh: We see false negatives quite often and it's been a constant problem or at least an issue clinically for us forever. And there's a couple of reasons. One reason is that your pyrrole levels shoot up and down depending on how stressed you are. And when you take a sample you're getting a snapshot in time. And for example I did a study once of a famous serial killer in prison in New York. And working with a psychiatrist, we found that his pyrrole levels on a good day- would be around 32 which is quite high. But on a horrible day when he was really stressed and angry and upset it would be over 200.

So everybody's pyrrole level goes up and down with their stress level. I had a woman once who had pyrrole disorder and she knew she would be in trouble whenever her mother-in-law visited. So whenever her mother-in-law visited she would temporarily take a stress dose of more B6 and zinc. So that's one part.

The other problem is the pyrrole molecule tends to disassociate rapidly in heat or light. And I've done studies where we took samples and tested the rate at which the pyrrole disappeared. The challenge is to get the samples to the lab before the pyrroles have disappeared. And so that's one of the causes of a false negative. It could be a combination of everything being calm and their pyrrole level being relatively low or it could be a problem of getting the sample to the lab in time.

And then of course there are some labs that do everything wrong. There's a lab in England that does hundreds of pyrrole tests a day and they do them all wrong. They'll accept samples that are 30 days old and might have been warm. Of course they have false negatives. Those are the main issues involving it and I always like to do at least two tests. If you test a person twice and say once they test fairly normal and the next time they're high you can be sure they have pyrrole disorder. It's just that the first test was compromised for some reason.

Trudy Scott: Okay. And if someone – say they did two tests and both came back low but they scored really high on the questionnaire and they've got all the classic symptoms of pyroluria would you still have them do a trial of their pyroluria protocol maybe starting at a low dose to see if they're noticing any improvements?

William Walsh: Actually I would do a trial but I would do it at a high dose. And the reason the high dose is you can't hurt anybody with zinc and B6. Those are two very safe innocuous nutrients. I would do a fairly substantial dose so you could get your answer to your trial quickly. But yes I would do it. And probably half the time you'll find that you helped them.

Trudy Scott: Great. So give me an example of high doses. What do you start people on for example with zinc and vitamin B6?

William Walsh: It depends on height and weight and also the degree to which the severity that you think they have with the pyrroles. But let's say a full grown adult who might be 160 pounds and let's say they have moderate pyrrole disorder and it's affecting their life. They might be having a sharp temper, maybe some depression or some anxiety. And maybe even more importantly difficulty using their brain well because pyrrole disorder people usually have difficulty reading and it affects the cognitive abilities. I would typically start them with something like 200 milligrams of B6 and maybe another 50 milligrams of P5P. And in terms of zinc it depends on their zinc level. But if they're zinc deficient typically they might need between 50 and 100 milligrams of zinc depending on their zinc deficiency.

Now with zinc it is easy to determine the dose. In a person, an ideal zinc level is between 100 and 120 micrograms per deciliter. So let's say we test some poor person who might be down around 60. Well we would make our best guess or estimate on what the proper dose is and then after three months of taking maybe 60 milligrams of zinc or whatever you decided on, test for zinc again and then you can fine tune the dosage to find out how much they need to have their zinc level normalized.

Myself when I took my first group of ex-convicts to Carl Pfeiffer he made me go through the lab testing at the Princeton Center. And I discovered that I am very zinc deficient. It runs through my family. I didn't know that. I take 100 milligrams of zinc a day and it just barely keeps my zinc level normal. I think it's important for people to find out whether or not they have this problem. Zinc deficiency is pretty rampant in society. On the other hand there are people who get all the zinc they need from their food and they don't need any supplements. So it's all individual.

Trudy Scott: Very interesting. Tell us a little bit about testing zinc because there is a little bit of controversy about how accurate it is in plasma. I know Carl Pfeiffer and some of the early practitioners have used ratios of zinc to copper and I'm wondering if you use that as well or just your thoughts on that.

William Walsh: Zinc to copper ratio is really important and I do use it all the time. And it's especially important for children who might have a behavior issue or ADHD issues. So many of them have a copper-zinc imbalance. And the reason you like to look at the ratio is because the copper is regulated somewhat by zinc. So if you're zinc deficient you'll tend to be overloaded in copper. So you get a really clear pictures of it if you test both of them. With respect to the chemical analysis there are nine clinical ways to test for, you know, laboratory tests for zinc deficiency or zinc status. There are zinc experts that meet about every ten years and when they have these meetings every decade one of the questions is what is the most decisive way to identify what a person's zinc level is. And for the last 40 or 50 years it's been pretty much agreed that the number one most reliable and definitive test is plasma zinc. And next best is packed cell zinc where you look at the cells and not the plasma.

And both of those are very good zinc tests. They give somewhat different information and some doctors like to use both of them. Serum zinc is not good because there's a very high incidence of cross contamination and intending its spurious high levels that are not real.

At the bottom of the list is the taste test at the bottom of the nine. You do get some indication from a zinc taste test. There are just so many false positives and negatives - if you can't afford a lab test you can get some indication. But that's sort of the gradation. We always use plasma zinc because we know it's the best test if it's done correctly. But you have to use a special tube that has to be vacuum outgassed and it has to be acid etched to get all of the zinc impurities off the glass. So we have a solid way of doing zinc testing. But either we would do plasma or the packed cells.

Trudy Scott: That's good to know that it's specialty testing. So this would be done at a special lab as well.

William Walsh: Plasma zinc can be done at any lab in the United States. You go to Lab Corp or Quest or any hospital. You just have to make sure they use the right tubes. You have to make sure that they don't use the tube for serum because you're likely to get an incorrect answer if you use a serum tube.

Trudy Scott: So you would just ask for plasma zinc? Or would you have to specify that you want the special tube?

William Walsh: No, just plasma zinc. We've had so many cases where people went to someplace like a Quest or a Lab Corp draw center. Maybe they didn't have a plasma tube and they did it the wrong way. If it's somebody in my family doing it or if I was doing it I would always inquire and make sure they did it right. They're supposed to know exactly how to do it. It's a routine test but it's often done wrong.

Trudy Scott: Good to know. I know zinc is very controversial. I use the zinc challenge and I agree it's not perfect. It's one of the tools. The other thing that I use is alkaline phosphatase and if that's below 70 I've been taught that that could be an indication of low zinc status. Any thoughts on that?

William Walsh: I think if a person has alkaline phosphatase abnormality you're about 80 percent sure that there's a zinc problem.

Trudy Scott: Okay, great. Thank you. This is so interesting I've got so much more that I need to ask you. I wanted to ask about methylation disorders.

William Walsh: If you think about methylation over the years since working with Carl Pfeiffer and learning how important methylation was I have tested 30,000 people for their methylation status. This goes back many, many years. And it's really important to know what a person's methylation status is. Now I think I have the world's biggest database on

methylation. And first of all 70 percent of people in the United States based on my large database have normal methylation. They don't have a methylation disorder. Twenty-two percent are undermethylated and that's almost always inborn. And eight percent are overmethylated. And the symptoms and traits of overmethylation and undermethylation are very, very different. And the reason is that as a little tiny baby is developing in the womb methylation status is extremely important to gene regulation. It's the number one factor that determines what genes are functioning in which part of the body. And so if a person is born undermethylated the rest of their lives they will have symptoms and traits that are different than if it wasn't the case. And the same is true of overmethylation.

Now this has become a hot issue in nutrition especially starting around the year 2000. And in 1999 we discovered that nearly all autistics were undermethylated. And that actually came out of my database. And since then there's been a lot of research, especially in autism. Some of the world's best methylation experts have gotten involved like Dr. Jill James and Dr. Richard Deth and people like that. And they've verified that that's a classic symptom that's central to autism. Well undermethylation occurs in a lot of conditions including depression anxiety and schizophrenia. People that are undermethylated and have anxiety are different and the way they're different is they can have high internal anxiety behind a calm exterior. These are the people who are really anxious and it doesn't show. These are people who might commit suicide at the age of 60 or something and everybody wonders "I didn't even know the person even had a problem." Well some of these people can have extraordinary anxiety and that's one form of anxiety that's related to methylation.

Now there's a question of how can you determine somebody's methylation status. And that's something that I would say 80 percent of nutritionists today are doing wrong. But there's an attempt to use genetic testing alone to diagnose methylation and we know that that's not the right way to do it. I mean you can be probably 60 or 70 percent accurate if you try to look at SNPs in the methylation cycle. I'm sure you're very familiar with all of that. But there's just so many cases of false positives and negatives.

Fortunately there are lab tests that can do a very nice job of identifying a person's status with respect to methylation and of course there's also the symptoms and traits. For example 75 percent of undermethylated people have seasonal allergies, indolent allergies – grasses, pollens and that sort of thing. They have a history of perfectionism. These are generally people who are competitive, strong willed people. Most of them have a high libido. If they take antihistamines they have a good

response. If they develop depression most of them get better if they take an SSRI, et cetera, et cetera.

The overmethylated people is a smaller group but they're a large population of the anxiety population because these are people who have excessive levels of serotonin, dopamine and norepinephrine, excessive levels of the neurotransmission not necessarily the neurotransmitter itself. But they're different. These are people who tend to be hyperactive. The number one symptom of the overmethylated people is anxiety. Probably three-fourths of people with anxiety or panic disorders have overmethylation. They tend to have a sleep disorder so they have high norepinephrine and that is associated with that.

So anyway the problem is that a person who is undermethylated - the number one cause are these mutations. The SNP - a single nucleotide mutation that affects this methylation cycle, especially MTHFR which is the rate limiting step in the cycle. And there's about seven or eight important enzymes that might be genetically weakened and that's the number one cause of undermethylation.

Well what's the number one cause of overmethylation? This is now eight percent of people of the population. The number one cause of overmethylation is inefficient utilization of your methyl, of your SAME. In other words these are people for whom the methylation cycle is working okay and you've got a nice stream of available supply of SAME for all these 80 important methylation reactions but it turns out that most of our SAME goes for one single reaction and that's the synthesis of creatinine. And as much as 70 percent of all the SAME that's produced in your methylation cycle goes into that one reaction. Well that synthesis of creatinine also involves enzymes with SNPs. So that reaction can be really weakened and so you can have a glut of SAME. And these are people who are overmethylated. And if that happens in the womb these people are born with different gene expression and different symptoms and traits and different tendencies for diseases.

So it's like a tug-o-war. I've got a slide I showed yesterday at the autism conference and in terms of the SNPs you've got MTHFR and methionine synthase and these other enzymes SNPs that are tending toward undermethylation. And then you've got on the other end of the rope you've got these enzymes that are tending toward overmethylation. And the question is who wins the war?

And you can't tell from a genetics test because genetics tests really only look at the undermethylation side of it. They don't really try to balance it and look at the tendency for overmethylation. Fortunately there are

lab tests that can do this. And one of the good tests is the SAM SAH ratio test that's offered by Doctor's Data. That's a very nice test that can really guide you to a person's actual status. In other words it just directly tests the blood for methylation and not try to do your guesswork with the genetics test. The other test that's been used by Carl Pfeiffer for 40 years is whole blood histamine which also is a very valuable test but has the disadvantage of being affected by anybody who's taking a medication that is an antihistamine. - Right now I use either the whole blood histamine test or the SAM SAH test. And that together with doing a nice questionnaire and learning all about the symptoms and traits we can very accurately determine undermethylation, overmethylation or normal methylation. Most people are normal.

Trudy Scott: Okay, great. Thanks for that quick summary. So I just wanted to clarify for people – a lot of people will get a histamine test and it's not the same as a whole blood histamine test. So I just want to make that clear. I'm not familiar with the SAM SAH test so that's good to know about that.

And I just had a comment to make just to clarify because when I interviewed Dr. Ben Lynch on some prior summits - he obviously talks a lot about the MTHFR defect and how this effects methylation status. When I got ready to interview him I had some people asking questions and there's some confusion about terminology. When you talk about undermethylation based on the work of Carl Pfeiffer that is considered high histamine or histadelia and overmethylation is low histamine or histapenia.

[Editor: Undermethylators/high histamine/histadelia = folate not good
Overmethylators or low folate/low histamine/histapenia = folate helps symptoms]

William Walsh: That's what he called it. He first thought that the problem related to methylation and histamine. He thought it was the histamine that was the problem. And he thought that histamine is a neurotransmitter. And he felt that that was a neurotransmitter that was messing up his schizophrenia patients. But actually we eventually learned that it's really methylation. Histamine is a marker for methylation. It's not the histamine that matters. It's a convenient marker that can tell you what a person's methylation is. Because one of those 80 methylation reactions is metabolizing histamine. That's how histamine is regulated. And so if a person has really high histamine levels that means that in general they are undermethylated. And so that's why it's a convenient test.

Now I've had a lot of questions. I'll bet I've had a thousand people ask me about some of the work of Dr. Ben Lynch and he came out of the autism community. I think he may have a child that's affected. And it turns out that about 98 to 100 percent of all autistics are undermethylated. And so undermethylation has become a main topic for many, many, many people. Everything that he has on his website related to improving methylation is absolutely correct. In other words it's yes the primary cause is MTHFR or maybe it's a 1298. There are two different major SNPs in the MTHFR. But there are other enzymes and he does a beautiful job of outlining them all. His biochemistry is absolutely correct.

The only way in which we deviate at all is that he sometimes recommends it for people with a mental problem, a person maybe with a serotonin or dopamine abnormality, maybe depression or anxiety. If a person had undermethylated depression it has low serotonin activity. If you gave these people methylfolate their methylation would improve and the patient would get worse. And that's the one thing that people who follow his methods may not understand. And it's all new information. What we know is that folates, all kinds of folates whether its folic acid, folonic acid or methylfolate because this has a powerful epigenetic effect on gene expression it lowers serotonin activity. So if you've got a depressed person with low serotonin activity you give them methylfolate again, their methylation will improve. You'll actually create a little bit more serotonin. But you will affect their reuptake in a very negative fashion. You will promote reuptake which is just the opposite of what these people need.

So basically I agree completely with Dr. Lynch on the best way to improve methylation and all I'm saying is that for some people, people who have problems of neurotransmission of serotonin you can't give them folates because they'll get worse. So that's an exception to the general rule. The general rule is everything that he proposes and there's just this one exception.

Trudy Scott: Excellent. And that goes back to biochemical individuality. We're all so different. And interestingly enough the last time I interviewed him the topic was how too much folate can actually make your anxiety worse. So he's recognizing that there are some cases where you may have the MTHFR defect and you cannot take a folate. We talked about you and he said he would love to have a conversation with you because there's confusion in people who are following both your work and his work with the terminology and the under- and overmethylation. And I mentioned histadelia and histapenia because people who are familiar with Carl Pfeiffer's work may be familiar with those terms. So going

back to that terminology are you saying we shouldn't be using that terminology any more because it doesn't really apply?

William Walsh: You know we need better terminology and I'm not completely happy with under- and overmethylation because it's confusing. It's not only confusing the public, it's confusing the experts. It's confusing the doctors and researchers.

Trudy Scott: Exactly because undermethylation means you've got high histamine and overmethylation means you've got low histamine. So even that gets confusing. I had to write this down before the interview just so I could remember the terminology. And we don't want people to be confused so it's great that we've had this discussion and I think it's good that we're all working in the same direction for finding solutions and helping people and getting answers and getting on the same page.

And we all have something to bring and he's very interested in learning about this – he didn't even know much about Carl Pfeiffer and he's interested in learning about that. So I think if we can bring it all together it'll be truly wonderful.

William Walsh: I've looked at his website lately and he's getting it all. I think he's picking up on it all. He's a very bright young man and I'm convinced that he'll get there. We're all seekers of truth. We're all looking for ways to help our patients better and I'm glad he's out there. He's one of the good ones.

Trudy Scott: Great. Well thanks so much Dr. Walsh. This has been fantastic. We've got so much more that we can cover and we'll definitely have you back on a future summit.

I wanted to just highlight that you do have this physician education training that you do and I know you've got something coming up in October so we'll make sure to share a link to that. I have a lot of practitioners listening in and if you're a practitioner and this is intriguing and new to you this is a great opportunity to learn from Dr. Walsh. Anything you want to add about the practitioner training?

William Walsh: No except that I just found out yesterday that we're already without even hardly doing any marketing we're already 50 percent full. We expect to have about 75 doctors and it'll be in the Chicago area. It's going to be at a resort hotel in Oak Park, Illinois, a very nice location. It's only 25 minutes from either airport in Chicago. It'll be a four day session. We offer CME credits. Last time we had 30 class A CME credits for people that sign up. So I guess that's the summary of it. I will have one of the world's leading autism experts who will be training

in autism, the great Dr. Mary Megson who I believe has the most documented recoveries for autism of anybody in the world. And she'll be training in autism and I'll be doing the mental health part of it. And we have Dr. Sickels who is becoming a real expert in this who will be assisting as part of the faculty.

Trudy Scott: Wonderful. Well I will make sure to share a link to that. There's going to be a speaker blog and I'll share some of the questionnaires that we've talked about. I'll share this information. I'll share a link to your book *Nutrient Power: Heal Your Biochemistry, Heal Your Brain*. And I have heard from your team that we have a discount for folks to buy the book so I'll make sure to go ahead and share that as well in case people want to buy your book which is wonderful by the way. And any final words of wisdom for us?

William Walsh: No except that I think that people need to find out what their individual biochemistry is and I just want to quickly say that if every human being did a complete metabolic test you would probably find that because of genetics you're probably quite low in a few very important nutrients. But you'd also find out you're probably overloaded in some nutrients and I learned that excess of high levels can cause more mischief than deficiencies. And a person really should find out what their biochemistry is and there's an increasing number of doctors who are really good at doing this.

Trudy Scott: Wonderful. Well thank you for the work that you do bringing this information forward, helping people, teaching doctors and spreading the word. It's wonderful. It's been an honor to interview you and I look forward to learning more from you and sharing more of the information that you have Dr. Walsh. Thanks very much for joining us.

William Walsh: Well thank you Trudy and thanks for all you do.

Trudy Scott: You're welcome. Thank you. Thank you everyone for joining us.

Speaker Blog: <http://www.everywomanover29.com/blog/anxiety-depression-methylation-pyrrole-copper-zinc-imbalance>

William J. Walsh, PhD, FACN, author of *Nutrient Power*



William J. Walsh, PhD, FACN, president of the non-profit Walsh Research Institute near Chicago (USA), is an internationally recognized expert in the field of nutritional medicine and a key scientist paving the way for nutrient-based psychiatry and nutritional medicine.

Dr. Walsh has researched biomedical details for individuals previously considered as untreatable or insufficiently treatable with modern psychopharmacology. This resulted in designing new therapies using natural substances (vitamins, minerals, and amino acids) – a healthier alternative to those who experience side effects, whose brain chemistry has not been corrected by pharmaceuticals, or who are seeking a “non-drug”, healthier approach. His advanced nutrient therapy protocols have helped thousands of individuals by supporting natural brain processes and healing brain imbalances. Dr. Walsh’s approach recognizes that nutrient imbalances can alter brain levels of key neurotransmitters, disrupt gene expression of proteins and enzymes, and cripple the body’s protection against environmental toxins. His book, *Nutrient Power* (Skyhorse Publishing, 2012), describes his findings and the advanced nutrient therapies which correct biochemical and methylation imbalances that are causing learning, behavioral, developmental and mental health issues.

After earning degrees from Notre Dame and the University of Michigan, Dr. Walsh received a PhD in chemical engineering from Iowa State University. While working at Argonne National Laboratory (USA) in the 1970s, Dr. Walsh organized a prison volunteer program that led to studies of prisoners and ex-offenders researching the causes of their violent behavior. A long collaboration with Carl C. Pfeiffer, MD, PhD, a pioneer in the field of nutritional research therapy in the USA, led Dr. Walsh to the development of individualized nutrient protocols to normalize body chemistry and brain chemistry. Over the next 30 years, Dr. Walsh developed science-based biochemical treatments for patients with behavioral and learning disorders, autism, depression, anxiety, schizophrenia, and Alzheimer’s disease that are used by doctors throughout the world.

Walsh Research Institute’s current research includes studies in DNA methylation in individuals with schizophrenia, the role of epigenetics in mental health, oxidative stress in disease conditions, and underlying causes of bipolar disorder. Dr. Walsh continues to direct his international physician training programs which have resulted in over 300

physicians from 14 countries educated in his non-drug, advanced nutrient therapy protocols. www.walshinstitute.org

Trudy Scott, CN, host of The Anxiety Summit, Food Mood expert and author of *The Antianxiety Food Solution*



Food Mood Expert Trudy Scott is a certified nutritionist on a mission to educate and empower anxious individuals worldwide about natural solutions for anxiety, stress and emotional eating. Trudy serves as a catalyst in bringing about life enhancing transformations that start with the healing powers of eating real whole food, using individually targeted supplementation and making simple lifestyle changes. She works primarily with women but the information she offers works equally well for men and children.

Trudy also presents nationally to nutrition and mental health professionals on food and mood, sharing all the recent research and how-to steps so they too can educate and empower their clients and patients.

Trudy is past president of the National Association of Nutrition Professionals. She was recipient of the 2012 Impact Award and currently serves as a Special Advisor to the Board of Directors. Trudy is a member of Alliance for Addiction Solutions and Anxiety and Depression Association of America. She was a nominee for the 2015 Scattergood Innovation Award and is a faculty advisor at Hawthorn University.

Trudy is the author of *The Antianxiety Food Solution: How the Foods You Eat Can Help You Calm Your Anxious Mind, Improve Your Mood and End Cravings* (New Harbinger 2011). She is also the host of the wildly popular *Anxiety Summit*, a virtual event where she interviews experts on nutritional solutions for anxiety.

Trudy is passionate about sharing the powerful food mood connection because she experienced the results first-hand, finding complete resolution of her anxiety and panic attacks.

The information provided in The Anxiety Summit via the interviews, the blog posts, the website, the audio files and transcripts, the comments and all other means is for informational and educational purposes only and is not intended as a substitute for advice from your physician or other health care professional. You should consult with a healthcare professional before starting any diet, exercise, or supplementation

program, before taking or stopping any medication, or if you have or suspect you may have a health problem.