



Transcript: #426 How The Brain is Affected Through Meditation and Spiritual Practice with Dr. Andrew Newberg

Wendy Myers:

Hello everyone. I'm Wendy Myers. Welcome to the *Myers Detox Podcast*. You can learn more about my work at Myersdetox.com. And today we have a really interesting show. We have Dr. Andrew Newberg on the show to talk about how spirituality affects the brain. Really, really interesting show. We talk about his research, his 25 years of research showing what neurotransmitters are released when you're in prayer or in a meditative state. He talks about addictions and how those can be parlayed into a spiritual practice or overcome with a spiritual practice. He talks about his new book, *Brain Weaver*. He talks about neurotheology, which is kind of the biological research of religion and what happens to the body during religious experiences or prayer or meditative experiences. He also talks about what happens to the brain in brain scans when people are meditating or praying. Just lots of really, really interesting topics.

Wendy Myers:

We also talk about how to keep a healthy brain as we age. So what to do, what nutrients you need to have a healthy brain. I know that these are some of my more popular topics. Everyone's really, really concerned about their brain and preserving it. So this is a really good podcast as well, really interesting in regards to how your spirituality affects the brain. So, Dr. Andrew Newberg, MD, is currently the research director at the Marcus Institute of Integrative Health at Thomas Jefferson University and hospital in Philadelphia. And he's a professor in the department of integrative medicine and nutritional sciences, and he is also board certified in internal medicine and nuclear medicine. And he's published over 250 peer reviewed articles in chapters on brain function, brain imaging, and the study of religious and mystical experiences. And he's published 12 books, which have been translated into 17 different languages.

Wendy Myers:

He's the co-author of the new book, entitled *Brain Weaver: Creating the Fabric for Healthy Mind Through Integrative Medicine*. We discuss that on the podcast. And he's also appeared on Dr. Oz, on Star Talk with Neil deGrasse Tyson. Good

Morning America, Nightline 2020, CNN, ABC World News Tonight. And now on the *Myers Detox Podcast*. You can learn more about Dr. Newberg and his work at andrewnewberg.com. Dr. Newberg, thank you so much for coming on the show.

Andrew Newberg: My pleasure. Thanks for having me on the program.

Wendy Myers: Yeah. So why don't you tell us a little bit about your research and how you got into studying the brain and spirituality?

Andrew Newberg: Well, I guess it goes way back to when I was in medical school and even really before that. I was always curious to know how we think about things and the nature of how we think about reality itself and why there are different religious traditions and so forth. And when I was in medical school, I had the good fortune of working with two wonderful mentors, one who introduced me to the whole world of brain imaging. And we were doing a lot of work looking at very traditional stuff, looking at things like Alzheimer's and Parkinson's and depression and so forth. And then I was also working with another mentor who was in the field of psychiatry and who was very interested in trying to understand religious and spiritual beliefs and how different practices like meditation and prayer affected people.

Andrew Newberg: And then finally, one day kind of the proverbial light bulb went off and I said, "Well, gee, if we're studying the brain with depression and Alzheimer's, why can't we study the brain with spirituality and religion?" And that was really what kind of launched a lot of the research that we've been doing over the last 25 years, studying a whole array of different practices and experiences that people have from almost every tradition. And also trying to understand how that ultimately ties back to what's going on in terms of our overall mental health and wellbeing, because there's been so much research that has been done that has shown that practices like meditation or prayer help to reduce anxiety or depression, that people who are religious tend to have lower rates of depression and anxiety and suicide and substance abuse and so forth. So part of what we ultimately want to look at too is what those mechanisms are, how does that actually translate into what's going on in the brain?

Wendy Myers: Yes. And let's talk a little bit about some of the research that you've done. So what have the brain scans shown for people that are meditating, or while they're praying?

Andrew Newberg: When we look at the brain while people are doing a practice like meditation or prayer, we actually see a lot of different changes, and in some sense that shouldn't come as a surprise to people. And when you think about a person's sense of spirituality or religiousness, there are a variety of different cognitive processes. We think about different things. We think about meaning and purpose in life. We think about the nature of the universe. We think about God, for example. There are different emotions that we all have. Some people feel a sense of bliss or calmness, some people feel a sense of energy or joy. And then

there are a whole variety of experiences that we have. They can be visual. They can be auditory, they can be different things that we may feel even with regard to our overall sense of self.

Andrew Newberg: So to me, one of the big things to be said from all of the research is that there isn't just one part of the brain that turns on or turns off when a person enters a spiritual state or does a spiritual practice, but it's many different parts of the brain. And we have used a variety of different imaging techniques, such as PET imaging, which stands for positron emission tomography, or functional magnetic resonance imaging, FMRI, to peer into the brain when people are doing these practices. But we can try to isolate certain things that happen in the brain that are related to certain elements of these experiences. For example, one of the areas we've been particularly interested in is the parietal lobe, which is located a little bit more towards the back of the brain, and this takes sensory information and helps us to create our sense of self, our spatial representation of ourselves.

Andrew Newberg: So when people are deeply engaged in a practice like meditation or prayer, where they lose that sense of self, and they feel that sense of oneness with the universe or oneness with God, what we find is that there's a decrease of activity in this area. And that kind of makes sense. It turns on to help us have our sense of self. So if it shuts down, we lose that sense of self. And as I mentioned a few moments ago, when we talk about different emotional responses, there's areas of our brain called the limbic system that are very involved with all of our emotions. People may have heard of some of these, like the amygdala or the hippocampus. And these are areas that turn on when people have these very intense feelings of euphoria, feelings of joy, awe and so forth. So again, a lot of what happens, it depends a lot on what the person is doing, how they're doing it, and what they experience, that we can then ultimately capture in terms of what's going on in their brain.

Wendy Myers: Yeah. I remember watching a 60 Minutes episode one time, and they were talking about some research about how when people are in a spiritual state or they're praying or they're in a religious state, for instance, that the part of their brain that lights up is the same part of brain that lights up when they're on drugs.

Andrew Newberg: Well, that's a great point, because there's a whole other side of this. So the studies that we were just talking about are basically looking at activity in the brain, and usually that is reflected in blood flow. So when we say that the parietal lobe turns on, when the parietal lobe shuts down or the limbic system turns on, we're talking about blood flow changes, because the brain is a lot like the engine in our car in the sense that if we want to go faster, we use more gasoline, and blood with oxygen and nutrients is the gasoline for the brain. So when we rev up a part of the brain, we get more blood flow and we can measure that with these brain scans. But there's a whole other part of how the brain works, which are the neurotransmitters, the different chemicals in the brain.

Andrew Newberg: And again, some of these are probably very familiar with people, things like dopamine, or serotonin, or the opiates that have an effect on the brain, and these areas of brain are particularly affected by different drugs, like psilocybin, for example, that affects the serotonin system, or LSD. And we have started to do some brain scan studies where we can actually look at those specific chemicals in the brain as well, using some of these same techniques. So things like PET imaging, and another related cousin to that called SPECT imaging, these involve injecting some kind of radioactive tracer. And if you inject a radioactive form of dopamine, you can see where dopamine goes in the brain. And we did a study of that, where we sent people through a spiritual retreat program, a very intense, immersive retreat that was based on the spiritual exercises of St. Ignatius, the founder of the Jesuit Christian tradition.

Andrew Newberg: And we found very dramatic differences in their dopamine areas of the brain that suggested that their brain is more, by doing these kinds of practices and going through a retreat, it sensitizes the brain to these neurotransmitters so that when you do have a release of dopamine, it becomes felt much more intensely. And we think that's in part what happens. And meditation by itself isn't a spiritual experience, but if you do enough meditation, if you do enough prayer, you can have these very profound spiritual states, maybe even mystical states that are probably related to the release of these kinds of chemicals. And that whole field of the study of psychedelics now has become much more active in the last 10, 15 years.

Andrew Newberg: And people are looking at this relationship between spirituality and the psychedelics, and not only in terms of understanding spiritual experiences, but then understanding that relationship between spirituality and health, because these psychedelics actually tend to have a very powerful positive effect on people's mental health. And they're exploring its use in people with depression or PTSD. And so there's a lot more to learn about this overall interrelationship between the psychedelics and the different parts of our brain that are involved in spiritual experiences.

Wendy Myers: It kind of reminds me of the statement that religion is the opiate of the masses, that maybe it relates to that. That people that are on drugs or use opiates, they can activate a similar part of the brain with religion or with their spiritual practice, perhaps.

Andrew Newberg: And sometimes people do talk about how people can become so religious that it becomes a kind of addictive type of process for people. And so is that good? Is that bad? It gets into a lot of very interesting questions, especially when we see a lot of, again, therapeutic approaches when it comes to trying to treat people with substance abuse, that oftentimes like Alcoholics Anonymous, they implicate a higher power as part of that process. And there's that sense that kind of turning towards something spiritual is a way of helping people to overcome that addiction.

Wendy Myers: Yes. Yes. And so what is your advice? So after researching this for 25 years, would you, based on the research, recommend that people have a spiritual meditative or religious practice?

Andrew Newberg: Well, certainly the research is very positive in terms of showing that people help to find a greater sense of meaning and purpose in life, practices like meditation and prayer tend to be very beneficial for people. So, absolutely. The spiritual side of ourselves is really fundamental, and we recently wrote a book called *Brain Weaver*, where we talk about not just the biological part of our health, which are the chemicals and all that going on in the brain and the physiology of our body, but the psychological, social and spiritual part of ourselves as well. And that spiritual part is very important. Now it can manifest in lots of different ways. And so in terms of advising people, part of what we need to know is, well, what is a person's sense of spirituality? Are they a particularly religious person to begin with or are they not?

Andrew Newberg: I would never tell somebody who is a very staunch atheist, "You should do the rosary because I have a research study that shows that the rosary helps to reduce anxiety." That isn't going to work on an atheist. And similarly, I wouldn't recommend a rosary to somebody who's Muslim or Jewish, because they just don't know that practice. But for somebody who does know a particular practice, or if somebody doesn't have a particular religious tradition but they want to do a practice like meditation to help them with stress or anxiety, there are a variety of secularized approaches, like mindfulness for example, where people can do these practices as a way of helping them to work with their own mental health, but also their spiritual health as well.

Andrew Newberg: And again, I always have to caution people that practices like prayer, these are not interventions, they're not medical interventions. One does these practices because they are relevant to your spiritual life. So it's important that whatever one does, whatever a person does, that they are consistent with the beliefs that they hold, that the goals of those practices are consistent with their goals. What are you striving for? Maybe you are just striving to reduce your anxiety a little bit, and so a practice like mindfulness might be perfect. But maybe you want to have a spiritual experience. Maybe you want to have some kind of mystical understanding of the universe. And so a very mild practice like mindfulness may not necessarily be the right thing for that person. So it's really important for people to kind of take stock in who they are as a person, what their beliefs are, what traditions they've come from, and think about what goals they have so that they can figure out what kind of practice, what kind of program is ultimately the best one for them to pursue.

Wendy Myers: Let's talk about the neurotransmitters. What neurotransmitters are involved with spiritual practices and experiences?

Andrew Newberg: Well, actually the research is quite interesting. Some of the models that we've developed actually suggest a very complex interplay of different neurotransmitters. So for example, I've mentioned dopamine. Dopamine is part of the reward system of the brain. It's part of what helps us to feel good. In fact, that's the neurotransmitter that is particularly prominent with the effects of cocaine, which gives you that euphoric high. In our brain scan study of the spiritual retreat program, it was the dopamine system in particular that was affected. So we think that probably turns on and helps us to feel that sense of positivity, that sense of wonder, that sense of joy, for example. And so dopamine probably is very important in terms of these experiences.

Andrew Newberg: Now, interestingly, I mentioned earlier that the parietal lobe in the back of our brain tends to quiet down when a person has a deep spiritual experience and that quieting down is associated with the loss of the sense of self. Well, there's a very important neurotransmitter called GABA, which stands for gamma aminobutyric acid, and that's one of the main inhibitory neurotransmitters in the brain that helps to quiet things down. And there's been evidence that that gets released during meditation practices, and that's probably what helps to settle the parietal lobe down so that you feel that sense of oneness, but it's also part of what helps to suppress anxiety and high emotions, so that may help to relax people and give people a sense of blissfulness, calmness and relaxation, which is important in relieving stress and anxiety.

Andrew Newberg: And in fact, actually the drugs that people use for anxiety, like the benzodiazepines, Valium and Xanax and so forth, they operate on the GABA system. So we can see this kind of overlap. But again, as I mentioned earlier, almost every neurotransmitter system and serotonin and dopamine, the opiates probably get involved and the endorphins as well, as well as several others are probably involved in these experiences. They are very complex and they activate the brain in lots of very interesting and complex ways.

Wendy Myers: Great. And so I found it interesting that you use the word neurotheology in relation to your work. Can you explain that a little bit and what that means?

Andrew Newberg: Sure. Well, so neurotheology, to me, the simplest definition of neurotheology is a field of scholarship, a field of research that helps us to find the link between our religious and spiritual selves and our biological selves, particularly the brain. For neurotheology to work as a term, I think you have to think of a couple of important things. First of all, I like to call it a two way street. What I mean by that is that it's not science just looking at spirituality, it's not religion or theology trying to understand science, but it's the two sides of ourselves as human beings looking at each other to help us understand who we are as human beings. So that to me is a very important part, that it's not just one way or the other, but it's kind of this dual approach that combines spirituality and science together to understand who we are and how we relate to the world.

Andrew Newberg: The other important point that I like to mention is that the neuro and the theology sides have to be defined very broadly. And what I mean by that is that the neuro side can be neuroimaging, but it can also be the study of neurology. It can be the study of different disorders like Parkinson's disease or Alzheimer's and how those disorders affect our sense of spirituality or religiousness. It can be medical and biological. Does it affect other parts of our body? Our stress hormones? Our immune system? Our other hormones in our body? So it's all the ways in which we kind of get at the biological part of who we are and particularly the brain.

Andrew Newberg: And then of course the theology side has to be defined very broadly as well. Theology is a specific discipline. It's a way of looking analytically at the basic doctrinal concepts of a religion. So, start with the Bible or start with the Quran, and how do we analyze that? How do we make sense of it? That's what theology actually is. And we can look at that. We can look at how our brain tries to address those kinds of questions, these fundamental theological, even philosophical questions about maybe the nature of free will, or what enlightenment is, for example.

Andrew Newberg: But it has to go beyond theology itself, because when we talk about prayer or meditation, that's not just theology. Those are the different practices that people do, the different experiences that people have. The beliefs that we hold are another target of our research to try to understand, why do we believe in God? Why do we believe what's right or wrong about the world? Why do we believe a sacred text? For example, why do we do certain practices, certain rituals? And how does all of that come together to make whatever our own personal spiritual view of the world is?

Andrew Newberg: So I think if we expand what the theology part of neurotheology and expand the neuro part of neurotheology, we get to a field which is extremely robust and really has a way of trying to help us understand this whole side of ourselves, the spiritual and the biological sides of ourselves together, to really try to figure out who we are as human beings.

Wendy Myers: Yeah. I love that. And let's talk about spirituality and religion and how it helps reduce stress and helps to regulate emotions and the benefits in that way.

Andrew Newberg: Yeah, again, the research generally has shown that there is a very positive effect of religions and religious or spiritual beliefs on our mental health. A lot of research has shown that being a spiritual person or doing spiritual practices reduce our stress, reduce our anxiety through a lot of the brain mechanisms that we were talking about. But actually, I like to sometimes divide this a little bit up into what I call direct and indirect mechanisms of action, because one of the indirect mechanisms of action has to do with the things that a person does as part of a religious or spiritual tradition that wind up having a health benefit, but

kind of incidentally. They're not doing it for the health benefit, they're doing it for the religious purpose, but it may be beneficial for our health.

Andrew Newberg: For example, if you are a Hindu, you might be a vegetarian. And all of the research now is pointing to the fact that if we have a more plant-based diet, rather than eating a lot of meat, especially some of the red meats that are popular in a lot of the American diets, the Western diet, then we have a healthier body, a healthier brain. So if you're vegetarian because of your religious tradition, you're doing that for the religion, but it turns out that it has a very beneficial effect in terms of biology and even your mental health. In fact, actually the Western diet contributes to depression and anxiety, whereas a vegetarian based kind of diet tends to be much healthier for people.

Andrew Newberg: Another really important indirect aspect of religion can be the social support that people derive. So going to a church, going to a monastery, going to a spiritual retreat, going to a meditation center, that also involves interacting with a lot of other people. And we know that when people have strong support networks, social support networks, they do better in life, and they do better with different issues and problems, dealing with health issues, dealing with the birth of a child, whatever issues that they're facing in life, they do better when they have a good social support network. So if you're a religious person and you have a good social support network, that's going to confer a benefit to you, but you're doing it because it's part of your religious vision, not specifically because you're trying to get a health benefit from it.

Andrew Newberg: And then there are the direct effects, which really we've been talking about, practices like meditation and prayer that have a direct effect on our brain, on our body, that actually change the way we think and feel, and in many ways that's part and parcel of how these different beliefs and the practices that are part of those beliefs have a beneficial effect on who we are. Now, the one caveat to all of that at which people frequently bring up, and I think is a very important part of neurotheology going forward, are the times when things don't go so well in the context of religion and spirituality, and certainly people end up falling into following of a cult, for example, and maybe even engaging in mass suicide, as some of these cults have done, or people who join terrorist organizations and kill people in the name of God, for example.

Andrew Newberg: So there are a lot of negative sides of religion and spirituality, even people who may develop cancer. And then they wonder, is God punishing me? And then they develop this very negative belief about religion or God. So there are a lot of different times where religion and spiritual pursuits can become negative for people, and again, I think this is where neurotheology has a real opportunity to come in and say, well, what's going on in the brain? What's different in the brain of someone who can follow a cult versus someone who doesn't? What is the difference in the brain of somebody who's willing to kill other individuals because of their beliefs or the differences in their beliefs? Whereas other people, I work in a hospital and so the pastoral care team, which are deeply

religious individuals, but they're open and they love people of all different traditions and they're willing to support people. So what takes people in one direction versus another?

Andrew Newberg: And hopefully this kind of research will help us to understand that and help to direct people in a way that is more beneficial and more positive for them. So these are some of the important things that we have to look at, both the good and the bad, when it comes to religious and spiritual beliefs.

Wendy Myers: I love that you're doing this research, because there's some people that have a hard time having faith or a belief in God, or even trouble with the meditation or following a meditation practice or taking the time to do that. They feel like they don't have time in our fast paced modern lives, but I think it's great you're doing this research where people are very much in their intellectual space to help them realize there are benefits to having a spiritual practice. I personally believe that it's an incredibly important part of your health and in many, many different ways, physical and emotional health, to have a spiritual practice. But in all of your research and researching the brain, what do you feel is really important in keeping your brain as healthy as possible as we age?

Andrew Newberg: Well, I think that, you know, again, we talk a lot about the four facets of who we are as human beings. We have the biological part, the social part, the psychological part and the spiritual part. And so the biological part, there are lots of important ways of keeping our brain healthy, and it starts with our diet and nutrition and whether we have certainly a more plant based diet, even if you're not necessarily willing to go all the way to being vegetarian, but a more plant based diet has been shown to be very beneficial. Watching your weight, having more good proteins and trying to avoid all those bad saturated fats and processed foods. We are what we eat, basically, to use the trite saying. And so that's very important in and of itself.

Andrew Newberg: Working on making sure that we have a good social support network, very, very important as well. And how do we develop relationships? Whether it's our family, our friends, our colleagues, and so forth, the more good interaction that we can have with people, the more we can be open to other people and to communicate and talk with other people. We wrote a book called *Words Can Change Your Brain*, that talks about compassionate communication and learning how to communicate effectively with people and how to listen to people effectively. So all of that is really essential for keeping our brain and our body healthy.

Andrew Newberg: And then there's the psychological side of ourselves, which is how do we try to be careful about feeling overly anxious about things, overly stressed, depressed about the world? And now again, some people have a biology that kind of leads us down those paths. And of course there are ways of trying to combat that, both in terms of doing practices like meditation and prayer, and sometimes people do need medications to try to help rebalance the brain in certain ways.

But there's a lot of ways to try to do that naturally. Again, starting with things like diet and nutrition, trying to work on reducing inflammation in the body, and then ultimately trying to think about the spiritual practices that we may do, and whether that's prayer meditation.

Andrew Newberg: And I think you even brought up a good point as you were taking that question, which is that even for people who are atheists or who don't believe in religion, well, that's fine too. We all have a spiritual part of ourself. That's that part of ourself that helps us to feel connected to something greater than ourself. Maybe it's connected to the rest of humanity and we want to go out and be charitable and help people and try to do humanistic kinds of practices to help other people around us, whether that's connecting with nature and taking hikes or going to the ocean and trying to feel connected to nature, whether it's something creative, like art or music that helps us to feel that we kind of connect to ourselves or connect to something beyond ourself or whether it is something that's truly religious and spiritual.

Andrew Newberg: Those are all ways of trying to enhance that spiritual side of ourself. And if we can engage our health and wellbeing along those four different dimensions of who we are, the biological, social, psychological, and spiritual, that's where the evidence shows that will do the best to keep our brain functioning as good as possible for as long as possible, and keep us as young and healthy as possible, something one of my colleagues and I refer to as spiritual fitness. And so that spiritual fitness is a part of our brain's fitness as well.

Wendy Myers: I love that. Hashtag spiritual fitness. Yeah. I have a t-shirt that says hashtag spiritual gangster. It's so funny. And so you've co-authored a new book, it's called *Brain Weaver: Creating the Fabric for a Healthy Mind Through Integrative Medicine*. Can you tell us a little bit about what we could learn in your book?

Andrew Newberg: Sure. Well, it's based on a lot of the things that we've been talking about, and this has, I think, been a great introduction to a lot of the topics. We talk about the four dimensions of who we are. We also talk to people about trying to recognize and take stock in who they are as individuals. What are their strengths and weaknesses? Are you somebody who handles stress well? Are you somebody who doesn't handle stress well? Because obviously what you try to do in your life and how you engage different aspects of your being is very dependent on who you are as a person. You need to really think about how you can optimize your strengths and try to reduce the effects of your weaknesses.

Andrew Newberg: So for example, if you tend to not react well to stress, can you find practices like meditation and prayer that help you to reduce the way you respond to stress? Can you make sure that you modify your diet in ways that reduce inflammation in your body? Help feed your brain the right nutrients that it needs so that at least your brain doesn't feel the stress as much as it could. Do you have certain genetics that might predispose you to depression or Alzheimer's disease? And if so, how do you try to work through that or work around that by taking as good

care of yourself biologically, eating as best as possible, maybe taking certain supplements, maybe if you find that your immune system doesn't work as well as it should, are there certain vitamins and nutrients and antioxidants that might be beneficial for you to help keep your immune system as robust as possible? So that, again, you don't have problems with inflammation that ultimately lead to a detriment in terms of how your brain is working.

Andrew Newberg: So in the book, we talk a lot about how people can recognize where their individual strengths and weaknesses are. We talk about the different ways of creating the right kind of diet and individualized kind of care diet for each person. And then find the practices like the various spiritual practices, meditation, that would be the right kind of practice for each person. There's thousands of different kinds of meditation practices. And we take people through different steps to think about, Hmm. Am I somebody, for example, who likes to move? Or am I somebody who likes to sit still? Well, if you like to sit still, then a practice where you're sitting still might work really well for you. But if you really can't sit still for that long, then maybe doing a practice like Tai Chi or walking meditation or yoga, for example, might be a much better kind of practice, because it gets your body moving and then you use that movement as part of the meditative experience.

Andrew Newberg: So again, we sort of take people through all these very specific details about how they optimize their brain function through Brain Weaver and try to help them weave the best brain possible.

Wendy Myers: Fantastic. And so where can we learn more about your work? Do you have a website or anywhere where you publish your work?

Andrew Newberg: So the best place is my website, which is AndrewNewberg, N-E-W-B-E-R-G.com. And there, it has information about some of the research studies that we've been talking about, looking at the brain during spiritual practices, looking at how nutrition affects the brain and so forth. It also has information about various research articles and certainly the books that we have been publishing over the years, exploring that entire relationship between our mind, our brain, our spirit, and how people can find the best ways of optimizing that overall intersection between all of them to make them the best people they can be.

Wendy Myers: Well, fantastic. Well, Dr. Newberg, thanks so much for coming on the *Myers Detox Podcast*. Is there anything else that maybe you've left out, or that you wanted to leave the audience with?

Andrew Newberg: Well, I think each person really, it's an active process and I always encourage people to think about who they are, think about what their goals are, think about the best ways of trying to optimize who they are. And to be optimistic about the changes that people can try to make in their lives in their world so that they can really pursue their goals and try to achieve the enlightenments that they are looking for. And hopefully through Brain Weaver and some of the

other work that we've done, we can help people to find the path towards that enlightenment for each one.

Wendy Myers:

Okay. Fantastic. Well, Dr. Newberg, thanks for coming on the show. And everyone, thank you so much for tuning in every week to the *Myers Detox Podcast*. It's such a pleasure to be able to bring you all these world leading experts to help you meet your health goals and get you to where you want to go in your life. So thanks for tuning in, and I'm Wendy Myers and I'll talk to you guys next week.