

# **The Cancer Information Database for Information About Integrative Cancer Treatments: A Special Interview With Dr. William LaValley**

By Dr. Joseph Mercola

**JM:** Dr. Joseph Mercola

**WL:** Dr. William LaValley

**JM:** Cancer will affect 1 in 2 men and 1 in 3 women before they die, and that's not including skin cancer. Obviously, we can burn fat for fuel, but what other approaches can you use if you come down with cancer? Hi, this is Dr. Mercola, helping you take control of your health. Today, we are joined by Dr. William LaValley, who is an expert in advanced nutritional customized modifications that can be integrated for a specific cancer. He's been doing this for a long time.

Really, like myself, [he's] a family physician but has specialized in researching the scientific literature and developing a comprehensive database to help physicians understand what they can do. He actually trains other physicians to treat patients with advanced cancers, and uses evidence-based molecularly targeted treatments to help these physicians help their patients. Welcome and thank you for joining us today.

**WL:** Thank you for having me.

**JM:** We have been beating the drum for a bit. I neglected to mention in your intro is that you're one of the clinicians who helped carefully proof my book, *Fat for Fuel*, which helps people understand how to burn fat as their primary fuel. I greatly extend my appreciation for that assistance, and also helped me really understand the way insulin truly works, because virtually no physician realize that it does not work by driving glucose into your cell.

You pulled up a paper, with your perpetually curious mind is, and you said, "How does this work?" You researched the literature. You pulled up this study that was done like 20 years ago. It just like opened our eyes that it doesn't work by driving glucose in the cell. It works by suppressing hepatic gluconeogenesis or your liver's ability to make glucose. Thank you so much for that too.

**WL:** Sure. Very interesting stuff.

**JM:** Yes, indeed. I believe, and I suspect it's true, that one of the most foundational approaches that you can do to prevent and treat cancer is to get your body to burn fat for its primary fuel to optimize mitochondrial function, but not the only thing you should do.

**WL:** Sure.

**JM:** I suspect you would agree with that also, right?

**WL:** Sure. I do. I think that the mitochondria are highly important and not well focused on otherwise.

**JM:** I want to give you the floor now. Why don't you describe what you've been doing for the last 10 or 15 years, your focus and your passion on this, what you've compiled and how that can help people understand what collaborative, adjunctive, natural interventions can also be used with the diet?

**WL:** Okay. Great. I think one of the most important things that people can understand is that there are large amounts of data – I call it mountains and oceans of data – that are showing that there are anticancer effects, scientifically targeted, molecularly targeted, anticancer effects from natural supplement products, so natural product supplements, as well as the repurposing of already available pharmaceuticals that can increase anticancer activity for people with cancer, in addition to their chemotherapy and radiation therapy and not instead of.

The challenge is that most doctors, because they are already overwhelmed with the information, don't have the time to dig into this information. They don't know about a great deal of it. [There] are two other important reasons that doctors aren't being taught about this. One is that pharmaceutical companies are restricted by law and regulation from educating about the use of their drugs except for how they're approved. Anywhere from 10 to 30 percent of chemotherapy, as well as conventional medicine, is used for other reasons than what they're approved for.

The concept is repurposing of drugs. Doctors do it all the time, except they don't learn about it except from other doctors. There are now doctors teaching about these commonly available drugs for anticancer activity. In addition to that, supplement companies are forbidden from educating and marketing about the use of their products for disease treatment, and specifically that includes cancer treatment.

Yet there are large amounts of data that showed the anticancer molecular action, scientifically proven anticancer molecular effect, from a whole range of specific natural supplements in a whole range of particular cancers. When you piece these things together with nutrition for cancer metabolism – which you, Dr. Mercola, are talking about very much with *Fat for Fuel* – as well as using scientifically-targeted, molecularly-targeted, anticancer supplements, as well as repurposing of these already available pharmaceuticals.

Usually, family doctors are prescribing these commonly. Not always, but commonly. That can bring an additional great anticancer impact to people who are being treated for cancer and that their oncologists are using appropriate conventional care, but they don't know about these other options.

**JM:** Thank you for that frame. I just want to comment on the pharmaceuticals, because probably some people's eyebrows are being raised and saying, "What is he talking about drugs for?"

**WL:** Of course.

**JM:** For the most part, drugs are not the answer to this. My guess is that when you're referring to drugs, it's pretty much older drugs and not the newer ones that cost frequently over six figures for a cancer treatment. These are generally the most expensive drugs in all of medicine. The other

factor that contributes to the impairment of the ability of physicians to integrate this into their practice is that oncologists are really taking control of the treatment of cancer.

Many people aren't aware that oncology's one of the few specialties in medicine where they are actually allowed and actually encouraged to sell these drugs. When your oncologist gives you a 100,000-dollar cancer drug, they may be getting half of that directly as a paycheck to them. There are clearly some ulterior motivations here that impair the ability to implement these really effective, far less dangerous, far less toxic, far less likely to kill you from the side effects of these medications.

**WL:** What I'm talking about are not the cancer drugs. That's done by the oncologists. Thirty percent of what they prescribe for chemotherapies is used in ways that are not Food and Drug Administration (FDA)-approved. They're repurposed. I'm talking about the other whole range of drugs that are available, or say, family doctors who are prescribing common drugs that are often generic, like, say, metformin.

Metformin is very low cost, has an extraordinary safety history, is widely available, and has significant evidence across a whole range of cancer cell types as having anticancer activity on multiple different molecular targets. It's available. Family doctors and others can prescribe it.

**JM:** Yeah. Personally, I have some problems with metformin, not that I take it or ever took it. But it is widely recommended. As you mentioned, there is a mountain of evidence that it's useful in this area. But it's also been shown to be mitochondrially toxic. It's a mitochondrial poison. Whereas the benefits it has, at least at a molecular level, are actually replicated almost precisely by a nutraceutical called berberine, which doesn't have the mitochondrial toxicity. It seems to be an artifact, a side effect, of almost every darn drug out there. It's that there's some long-term toxicity because it's not natural. It's a chemical synthetic.

Not that I'm against all drugs. Some of them, like nutrient analogs like glutamine inhibitors that may be similar to glutamine but just block its effect in an important metabolic pathway to feed cancer cells, and glycolytic inhibitors. But other than those, unless you're affecting a specific target, there are almost always some long-term downsides. Maybe you can address that. I'm not a drug fan in any way, shape or form.

**WL:** Sure. I understand. It's a big issue. What I'm looking at with the people who are already getting conventional chemotherapy, are already going to their conventional doctors, I'm looking at benefit-risk. Most of these people are already dealing with very advanced cancer or diagnosis that puts them in a very high risk category and high risk for progression. Without adding some additional options to their treatment plans, then they are less likely to get the kinds of benefits that the evidence supports.

[-----10:00-----]

I call myself a molecular agnostic. I'm interested in using the molecules that are available. When you talk about metformin, yes, it does have some toxicity to mitochondria at a particular target within the mitochondria. It also has many other anticancer targets within cancer cells and cancer stem cells. It's widely available. I weigh all of those and I make the recommendations to the

doctors. I show the doctors the references, the scientific citations, and give them the link so that they can go and look at them. And then they have that discussion with their family, with their integrative medicine doctor.

I strongly encourage people diagnosed with cancer to access this emerging specialty of integrative medicine and a particular subspecialty within it that I do, molecular integrative medicine, looking at the spectrum of molecules that can add anticancer effects.

You're absolutely spot-on about berberine having specific activity that's anticancer, like metformin specifically, in that adenosine monophosphate-activated protein kinase (AMPK) target. They're not the same. They're overlapping. None of these molecules have only a single target, these natural products or these generic pharmaceuticals. That's why I'm using it. Essentially, the goal is to use networks of therapeutic molecules to target networks of cancer molecular pathways.

**JM:** It seems that one of the most important pathways, and one that I think many people watching this may not fully appreciate, is that what kills almost all patients with cancer is not the cancer. Well it is the cancer, but the mechanism is the circulating cancer stem cells that are distributed throughout the body. If you can target that, eliminate, decimate that population, then it's relatively easy to control the process. I'm wondering if you target many of your approaches to the circulating cancer stem cells.

**WL:** Sure. I think people benefit from understanding a general overview of cancer. Stem cell is a really important component. When I describe cancer to patients or to their doctors, I'm looking at targeting cancer metabolism, which is what you spend a great deal of time and effort on. *Fat for Fuel* is a great idea to describe that, a great book and has great supporting materials.

In addition, molecular pathways within the cancer cells. There are our whole range of cancer supporting and protecting cells in the microscopic environment, immediately adjacent to the cancer cells. That microenvironment includes a population of stem cells that can replenish cancer cells even when those cancer cells are eliminated. Whether it's cancer cells or those stem cells or some of the immune microenvironment cells, they can distribute. They can leave the cancer tumor, the lump of cells, and circulate throughout the body to other positions, to other places, and start growing additional cancer tumors called metastatic cancer.

That's really important to cover the molecular pathways in the cancer cells, as well as to aim at those in the cancer stem cells in what I call the "bad guy pro-cancer immune cells" that protect and support the cancer cells in that microenvironment. Using natural products, we can target all of these – the metabolism, the molecular networks in the microenvironment.

**JM:** What are the most frequent questions that, in your experience, people have who are recently diagnosed with cancer? The ones that they have and then also the ones taking care of them, their loved ones?

**WL:** Sure. By far, the most common question is, "Are there other things that I can do? Are there other things that we can do that can increase anticancer activity for the person diagnosed with

cancer, for that patient? Is there scientific basis to it rather than modern day folklore? Do we have access to the evidence?" The answer is yes, yes, yes, we do. There are many options available.

Those options can be personalized depending on the molecular characteristics, the profiles of those patients' cancer cells. They can be evaluated using technology called genomics, DNA assessment, or look at RNA or even look at the proteins in the cancer cells, to give a much better idea of how to target, how to focus treatment on that particular person's cancer. That's personalized precision medicine, in addition to patient-centered medicine, which is where the integrative medicine doctors are giving people choices for natural medicine in addition to their conventional medicine.

Answering those questions gives people relief because then they have additional hope. That's really important when people are addressing these very serious questions. Another thing that often comes up is, "Can't I just do it myself? Can I just go down to the health food store or on the internet, order them?" I really want people to understand that cancer is a serious illness. It's not a do-it-yourself project. It's really important to have a team, a team that [has] licensed, and qualified physicians who know how to collaborate, know how to access the scientific literature and know how to personalize these protocols for your particular cancer.

The third thing that they usually ask is, "How can I 'boost' my immune system?" That's where I bring up the issue about the microenvironment cells. Because actually what we want to do is increase the strength and the capacity of what I call the "good guy anticancer immune cells" that can detect and eliminate cancer cells. We want to deplete, suppress and inhibit the bad guy pro-cancer immune cells, both of which are in the immune system.

Rather than boosting the immune system, I'd like to think of it as optimizing the immune system. There are natural supplements that are available that can increase the good guy anticancer immune cells and decrease the bad guy pro-cancer immune cells.

**JM:** Yes, indeed. I would suspect that most of the patients that you consult with are either directly or indirectly still using chemotherapy. When you're between a rock and a hard place, especially with many of your loved ones who don't understand or appreciate the healing potential of these natural approaches that may be the option. In fact, most oncologists, I suspect, would refuse to treat patients who didn't use that, depending on the tumor, of course. But there is a strategy that you can use. It seems to work really well. I'm wondering if you recommend this in your protocol.

For those who don't know, you don't receive chemotherapy continuously. It's in a pulse dose depending on the agent that determines the frequency. But it's not taken every day typically. The strategy that seems to work really well is the day that you're targeted for your chemotherapy – usually intravenous injection or administration – you don't eat for 24 hours before that day. You don't eat on the day of the administration, and then you can eat the following day. It's a 48-hour water fast for the most part. But that seems to have dramatically reduced the side effects, the toxicity, and also radically improved the effectiveness, so much so that they can probably radically lower the dose, again for the decrease of side effects. I'm wondering if that's a part of your protocol.

**WL:** Yes. The idea of calorie restriction during chemotherapy and radiation therapy is a really important consideration that people can ask their integrative medicine doctor about. I do recommend and support either calorie restriction or fasting. If somebody's willing to go all the way into fasting, great. I strongly support it.

**JM:** It's only two days. It's not like 40 days.

**WL:** Right. Not everybody is eager to do that.

**JM:** But what's the alternative? Death. It's a pretty powerful motivation.

**WL:** It is. It's a challenge. I have to meet people where they are, and meet their doctors where they are, and give them as best options as possible, and say that, "That's right. It would be better if you fasted for 48 hours. If you're not going to do that, it's better to have a calorie restriction, 500 or 600 calories."

In the old days, I suspect when you were in medical school, I know when I was, in the chemotherapy wards and the chemotherapy rooms, they had people coming in with donut carts and cookies.

**JM:** Great for business.

**WL:** Yeah. I think it's still around.

**JM:** Oh my gosh. That's the worst thing they could do. There's no worse food. That's No. 1.

[----20:00----]

**WL:** That idea that cancer cells are addicted or highly using sugar, glucose, fructose, in particular glucose, sugar-addicted, is called aerobic glycolysis. It's really, really well-researched. The science has been rigorously available for many, many decades. It's an area where we still run into a lot of resistance. People have to understand and make their own choices, which is why I spend the time educating them about cancer metabolism. *Fat for Fuel* is going to make it a lot easier.

**JM:** Yeah. It really focuses on limiting glucose as the primary fuel, and it does it really well, and also optimizing mitochondrial function, which is another major improvement because of your body's metabolic flexibilities. It's not the sugar that's intrinsically evil. You need sugar. You absolutely need it, glucose specifically, to run. Our program induces feast-famine cycling where you actually get these pulses.

Interestingly, I interviewed Dr. Abdul Kadir Slocum, who is a Turkish oncologist who integrated Dr. Thomas Seyfried's protocol, and was getting 50 percent improvements in stage 4 metastatic cancer patients. He was actually integrating feast-famine cycling where he would have them have large amounts of carbs, even though they had terminal cancer. He got incredible results.

What do you think the most important things are for people who are initially diagnosed with cancer that they should know and their family should be aware of, when they're considering all the treatment options?

**WL:** That's a great question. It happens often. One of the things is to know that diet matters. Food matters. What they eat and drink really matters. Because often, they're not getting that information directly. They can then go and evaluate whether or not the information is relevant.

**JM:** Let me just interject here because a frequent response from their conventional physicians will be, "Well, diet doesn't matter." What they can tell their physician is, "Great. Then it doesn't matter what I eat." Then you can go and figure out what you should eat.

**WL:** Right. I think it's really important. That's the foundation. If you understand that, you're going to increase the likelihood of getting better intake and getting a better result, a better outcome. That's fundamental.

The second thing is to understand that there are different specialties within medicine. Don't expect from any specialist what they don't have expertise in. When you're looking for additional expertise for scientifically targeted anticancer utilization of natural supplements, then it's probably best to go to an integrative medicine doctor, [or] at least a doctor that has expertise in integrative medicine. Because that's the specialty where there is a focus on using natural products scientifically, as well as integrating that within the conventional medicine.

There are vast amounts of data that support the use of supplements for anticancer activity, molecularly targeted anticancer activity, as well as some of the already available, which not uncommonly that people are already having access to the drugs or they're taking the drugs that can have additional anticancer effect. Those two things are really important to empower people.

There is a large network of integrative medicine doctors in the U.S. and in Canada that are available for collaboration. That's what I do. I collaborate with these integrative medicine doctors to give to them these evidence-based, molecularly targeted, anticancer treatment recommendations for supplements, as well as off-label or repurposed pharmaceuticals, for them to consider in the treatment of their patients. So then, the doctors don't have to know all the details of the data that I know, and I can give them and point them to where that research is. They can then make decisions about those treatment options.

All of that is specifically designed to be integrated with whatever their chemotherapy and or radiation therapy is, and not expected, recommended or designed to be "instead of." Most people are getting chemo and radiation. That's where they are. They don't know that they can get this significantly greater increased benefit.

**JM:** Especially with lower doses.

**WL:** Yeah. Absolutely. The oncologists are not yet at a point where they're going to be modifying their protocols based on the molecular integrative oncology database. Yeah.

**JM:** Let's take a step back because I don't think I properly framed this with respect to where people are. If you're newly introduced to this field, say you're doing, trusted and really believed what your conventional medical physician has been telling you for your whole life, and then you got a diagnosis of cancer and all of a sudden you're scrambling.

We've said it a few times that *Fat for Fuel* is a great book, and it is, but you really need a more foundational primer, which is the book *Tripping Over the Truth: The Metabolic Theory of Cancer*, written by Travis Christofferson, so that you can understand the big picture. Once you understand the big picture, then you'll be better able to dialogue with your friends and family and clinicians about this, and then *Fat for Fuel*. There's a lot of reading. It's going to take you a while, certainly a number of hours to get through that material.

But once you've done that and started the program, it doesn't mean you can do these. Obviously, you have to read one book at a time, but it doesn't mean that you can't do something else. This something else is, I think, a really critical part of the equation. I want to get this out now because you used to see – maybe you still see, I don't know – but you used to see them as your primary treatment. You were a natural clinician with respect to integrating this molecular biological adjunctive therapy.

**WL:** Sure.

**JM:** But you were overwhelmed, as most people do as a single person, so you're training physicians. How does someone find a physician who's trained in these adjunctive molecular biological techniques and really understands this and can help guide them? Because they could listen to this interview 10 times but they're still not going to get all the details. You need someone who's going to answer your specific questions and customize the program for you. How do they find someone like that?

**WL:** What I've been doing for these last 10, 11 years is exactly that. It's using whatever their diagnosis, the criteria and the information of their diagnosis, to create personalized precision medicine protocols for them, for their doctor to then implement. That's a very direct way to get this information. The physicians are overwhelmed by and large.

The specialty of integrative medicine, even though it's relatively young and emerging, has still not had a lot of subspecialization. I'm subspecializing within that and [providing] those medical doctors, the integrative medicine doctors, who understand molecular biology and are willing to look at the evidence base, the ability to quickly get this information and apply it [to] their patients. That's the bridge that needs to occur.

Ultimately, I'm aiming to develop ways to teach physicians at scale, and to teach their patients who are interested. Because we see, as you do, lots of people who are not medical doctors who are very interested so that they can make better decisions about their own care. We're seeing more and more physicians interested because they know that this information's out there, but they're just too overwhelmed to be able to dig it out themselves.

**JM:** Yes. It is a team effort.



**WL:** Absolutely.

**JM:** Your team consists of yourself, obviously being the most important part of the equation and really the leader of the time because you are in control of your health. You make the decisions. You control the ship. But then you've got to have good people on your team. That would be an integrative medicine physician who's well trained. There are good strategies to find one if you hadn't already identified one.

I wouldn't necessarily restrict yourself to local if it's a terminal diagnosis. I mean many of these physicians do online consultations, or you can travel. There's a wide variety. But if it's a serious problem, you need to find the best.

**WL:** I do think it's a team effort. It requires people understanding that they're not going to get it all at one place. They're going to get a certain treatment from their conventional oncology team and their integrative medicine team. They may not get them in the same place. It's still early days as to how well those two teams now collaborate.

**JM:** There's another important member of the team. That's the nutritionist. We're in the process of certifying nutritionists – and could be physicians, but most of them are nutritionists – that can actually counsel and guide you through the most important foundational part of the program, which is the diet. You can read *Fat for Fuel* but you might struggle with it and might need some of that customized support. So that's another really valuable member of the team. We'll have that certification available later in 2017. Those links will be on our site. We get no referral fees or anything for that. It's just that we're seeking to provide resources for people in very desperate situations.

[-----30:00-----]

**WL:** Very important. There's such a range of information validity that's out there. There are some information that's, in my opinion, hogwash. It's dangerous. It can be harmful.

**JM:** But the point I wanted to emphasize though is that when you've identified your integrative medical oncologist, if you're impressed with Dr. LaValley's work here, you can go online. He's got a lot more information. Then you have your physician connect with Dr. LaValley, who will specifically develop a program for you, customize it for you. That's the way to go.

**WL:** Right. Oftentimes, people come and they don't have an integrative medicine doctor. I can help them identify somebody in their region because the resources as to what kind of training I can make recommendations and then have a quick discussion with that doctor to give an overview. In that way, they now have an integrative team with a collaborative care that is covering the spectrum.

Very rarely do I encounter people who are saying they're not going to do any conventional treatment. There are some. We'd like to be able to give options to everybody. If someone's not going to be looking at any of the additional natural medicine options, they're not going to come to us in the first place.

**JM:** Yes, indeed. That's the key. This team allows you to rapidly accelerate your access to knowledge that if you were trying to do it yourself, it might take you 10, 15 or 20 years, if you could do it, if you have the requisite technical training to integrate this information and if you're doing it full time. But most people, they don't have that type of time. They'd be dead long before that time was finished.

**WL:** Sure. We need to accelerate that. That's actually one of the main functional components of what I'm doing. It's giving physicians a rigorously accurate overview of cancer, molecular biology of cancer, focused on the cancer metabolism, focused on these other molecular networks within the cancer cells, as well as in the microenvironment cells that protect and support the cancer cells, and then giving them direct, evidence-based, molecularly targeted options to specifically affect those sites and those pathways and those networks in an anticancer way, and do that in a way that the physician is able to administer and implement immediately, rather than that physician having to dig in for years to go find that information.

**JM:** Let me sort of take another sidestep to help people understand why you would have this expertise. Well, it's because you committed the more than last 10 years of your life to this project. You are searching PubMed every day to collaborate and design a very comprehensive database that interacts. It's almost a form of artificial intelligence.

In fact, maybe we can take a tangent there, too, because I think this is the next step for your work. Maybe I can help you catalyze a connection to these artificial intelligence teams like Watson. Watson, of course, was responsible for defeating the Jeopardy champions a number of years ago. More recently, we've got DeepMind out of Google, who bought them, that Go Champion. This technology exists. There's this massive amount of data. Watson is now being vectored over for cancer oncology drugs, but they're not doing anything with this natural approach. I think if they could connect to your database, I mean the world in cancer therapy would change. Why is this so important? Because it's going to be the No. 1 killer of U.S. citizens in the next five years.

**WL:** I think you're absolutely right with that technology is changing the rules for cancer treatment and the tools that we have. The evidence is overwhelming that there's benefit to be had from the appropriate administration of these molecularly targeted natural products and repurposing the drugs that are already available that doctors have access to, that are not otherwise given for cancer.

I'm talking about things like aspirin. I'm talking about things that are very common antihistamines that are over-the-counter have some maybe very specific and clear that each one requires a specific evaluation for that particular person's cancer. I'm not saying just go down to the pharmacy and over the counter start taking antihistamines because you have been diagnosed with cancer. That wouldn't be a good idea. That's not a good thing.

What I'm saying is for improving people's survival, these people, the patients that I've treated, as well as the other doctors are implementing these protocols, that these people live dramatically better quality of life and have substantially extended length of life compared to their similar group called their cohort. That's an important thing.

I'm not suggesting that we have cracked the code to cure cancer, and that if you implement one of these protocols, it's a guarantee for a cure for cancer, because no one has that yet. Anyone that's telling you that they can guarantee to cure your cancer is either lying or manipulating, or just doesn't understand the complexity of the cancer that we're dealing with.

These tools are available. You have to be selective. You have to do a gut check. Ask yourself whether it feels like this is someone who's being scientifically grounded or not. Your life depends on it. It's important that your physician feel comfortable that the treatment recommendations have an evidence base.

That's another thing I would ask the doctors to be able to say, that the patients can say, "Doctor, are you willing to be able to show me the references, the citations?" Every doctor that I collaborate with is happy to share the references with their patients. I'm happy for everybody to see all that information. I provide it in a document, 40, 50, 60 pages anywhere from several hundred. I've had 500, 600, 700, 800 citation references for these recommendations, so that the doctor doesn't have to believe me. The doctor can go look at it herself or himself and then decide.

The doctor receives the protocol recommendations and then decides and considers each one for administration with that patient. Then with our team, we can help those people implement the selections that that doctor has made so that we make it very efficient. It's a very organized systematic approach. People can implement very complex, very effective, broad-spectrum protocols and get robust anticancer results, basically really healthy, good, long lives. They can do it because this system is made efficient for implementation at home on a daily basis.

**JM:** Yes, indeed. Before I sort of tangent it out to the integration of artificial intelligence in your work, I wanted to emphasize the extent of the work that you've done. Maybe you can tell us how many articles or studies you've reviewed to establish this database of information to do it.

Because I'd say that the average person watching this video would likely not even be able to understand one of these studies because it's written in complex medical jargon, compounded with very sophisticated biochemical pathways. Many of which were never even recognized when we went to medical school.

**WL:** That's right.

**JM:** How many studies have you put together and compiled in your resource?

**WL:** Many tens of thousands.

**JM:** Tens of thousands.

**WL:** Tens of thousands. When I was in medical school in the mid-1980s, we didn't learn molecular biology as part of the medical school curriculum. I always felt incomplete and inadequate because I didn't understand molecular biology.

In the beginning of 2006, I took a big decision. [I took] a self-imposed sabbatical for three quarter of time in order to learn the molecular biology of cancer. Since that time, I have developed evidence or databases, relational databases, that are connecting cancer cell types and molecular pathways and chemotherapy and pharmaceuticals, as well as natural products and how they interact and how they're cross-referenced with each other.

[I] have spent well over 13,000 hours in developing these databases that now can be used to greatly accelerate the selection of these options, because the data is organized. It's collated. I can then go in and select specific recommendations because I know where to go look. That information, I think, does have great value for the medical community because now doctors don't have to go and do all of that. This information is now encapsulated and in a way predigested. It has great value for the broad spectrum of cancer cell types because there's so much data out there.

[----40:00----]

When drugs get developed, before they're developed, there's a great deal of research that's done very frequently using supplements, natural molecules to prove the effects of these particular targets. The anticancer effect of a, let's say, green tea extract, for instance, in many different cancer cell types. Once those molecular targets are identified, then drugs are identified or are produced in order to do the same thing or at least affect the same targets. That data about the natural products and supplements doesn't normally get out to the clinics. Now, we can have access to it. Now, we can apply it.

That's the emphasis of this approach, molecular integrative oncology to use evidence-based, molecularly-targeted, anticancer supplements and repurposed pharmaceuticals, in addition to chemotherapy and radiation therapy, so that the patients get patient-centered, personalized, precision medicine. That is available now. I think that service is one that physicians are willing to administer if the information can be given to them. My job is to bridge that information gap.

**JM:** Yes. Very impressive statistics, tens of thousands of articles in 13,000 hours of your time, but you started in 2006. If you would have started when we were in medical school – and I took an additional year of training in my residency and took the whole year essentially just to really do library research.

For those of you who weren't doing library research in the 1980s or before, what you would do to do this type of investigation, you'd have to go to physically bound books, look it up, take that reference, copy it down, go walk back into the stacks, find the journal, walk back to the copy machine, photocopy it. It might take a half hour to an hour to find one reference, which would have made it physically impossible to compile the knowledge base that you did if you were to do that 20 years earlier. You couldn't have done it in a lifetime.

**WL:** It wasn't available. The reason I started in 2006 is because at the end of 2005, the National Institutes of Health put the PubMed database on the internet in a way that also organize it so you can access all the world's references. Everybody who's listening here can directly go to PubMed right now and see. Essentially, it's an electronic card catalog of the public medical literature in the world. It's got 27 million electronic cards.

The great value of that is that it gives you a brief overview. It's called the abstract. It also tells you what other articles it's related to. If you find an article that's relevant and it comes from 2012, it not only tells you what happened before that that it's related to, but it also tells you what's happened up until now that's related to it. That's a really valuable function.

It also shows you that there are 4 million, actually 4.2 million articles, that are free, that are immediately available. You can download them right now. That's a large amount of scientific value that wasn't available back before 2005. When you did get the articles, often you had to pay a large amount of money to get them. This is the prime example of how the technology has changed the tools and the rules for anticancer treatment. Integrating this information, making it more easily available so physicians and their patients can actually understand and implement it, that's where we can go now.

Dr. Mercola, you talked about using Watson with cancer treatment. The big cancer institution in Houston, MD Anderson, recently was using Watson for developing its treatment plans. It decided to no longer do it because it was giving the exact same plans that were being administered by the oncology teams. I think that's because the people who are programming Watson weren't aware how to efficiently access this information.

**JM:** They never accessed the materials that you are [accessing].

**WL:** Right.

**JM:** The question I had for you – I mean you're in this field, there are not many people like you – is there anyone else or any other organizations that's compiled this type of extensive database?

**WL:** Not that I know of. Otherwise I would have been using it.

**JM:** You're the top guy in the world on this.

**WL:** Well, I think that there are vast opportunities for integrating this information to make it immediately available to physicians when they're in their clinics making decisions for their patients. Right now, it's integrative medicine doctors. I think 10 years from now, we'll evolve to be the broad spectrum of doctors that are accessing molecules. Your body doesn't know where the molecule comes from. The evidence base is saying that there are a range of molecules. I look at all of the evidence base and evaluate benefit-risk.

There are large numbers of natural molecules, supplement molecules that I don't include in protocols because people can't get them. They're not available in the U.S. and Canada, or they're only available in places or for manufacturers that I don't think are appropriate or trustworthy. There are caveats to all of these, different bits and pieces of information that people need to understand.

In some regions in the U.S., as well as in Canada, naturopathic doctors are able to prescribe pharmaceuticals, in addition to the natural supplements. There are places where medical doctors

and naturopathic doctors collaborate closely and greatly. There are some integrative oncology teams of regular oncologists who also do integrative oncology. There's not many of them.

I think this emerging field is set to grow exponentially if this information can be put out appropriately in a way that it's useable. Right now, most doctors feel overwhelmed by molecular biology. They don't want to go and spend literally years or, let's say, even hundreds of hours in a year to get just a little bit of information. I'm looking at how can we encapsulate, how can we make this information more efficient. I think technology will do that, make it readily available.

**JM:** Yup. Probably an app on our phone in the not-too-distant future.

**WL:** Yeah.

**JM:** You've already discussed some of these, but there are some challenges to the practical implementation of molecular integrative oncology. There are three primary ones. I'm wondering if you could summarize those three primary challenges and how they reinforce each other and what's the solution to overcoming them.

**WL:** One of the main challenges is doctors don't have enough time and resources to learn the molecular biology of cancer, specifically the molecular biology of the anticancer effect of natural supplement molecules and already available molecules. Doctors don't know about that information and no one is teaching it to them and they don't have access to it. That other part of no one teaching it to them or very rarely are they being taught is because of two really important components within the regulatory system in the U.S. and in Canada and in other parts of the world.

Pharmaceutical companies are limited to educating physicians about the use of their drugs and how those drugs are approved. They can't educate about the repurposing of their drugs, even though repurposing of drugs for anticancer usage in conventional mainstream oncology with chemotherapy is done 30 percent of the time. That's not being educated by the pharmaceutical companies. It's the physicians educating themselves.

The other doctors, your family doctors, your other primary care physicians, are prescribing drugs as well, about 10 percent of the time, it seems sometimes even 20 percent or more, for other repurposed usage for reasons that are not approved by the FDA. There are lots of data that show that commonly available drugs, including generic drugs (these are really low-cost), including some over-the-counter drugs, have anticancer effects. The doctors can administer them. They can prescribe them or recommend them in addition to conventional chemotherapy and radiation.

Lastly and probably the most important, in my opinion, is that supplement companies are very appropriately restricted and prohibited from making advertisements or educating about the use of their molecules for disease treatment or disease symptom treatment. That's the way that natural product supplements are regulated in the U.S. They're called natural products in Canada. They're also regulated in that way.

[-----50:00-----]

Because of that, physicians don't know that there are large amounts of data that support the molecularly targeted anticancer effect of a broad range of natural supplement molecules in many different cancer cell types. Those supplement companies are forbidden from educating about that.

The fact that the doctors are overwhelmed about the molecular biology of cancer and aren't being taught the big picture about it, and they don't have access to the information about the repurposed pharmaceuticals and importantly the natural product anticancer effects, then that whole area is not available to them for implementing or for making treatment recommendations. That's the gap that I'm covering. That's the bridge that I'm extending from the range of the evidence base that's been done to make these available, so physicians can make specific recommendations to their patients by the way.

That's a big deal because people are getting much better outcomes and results. We need to apply this in clinical trials, looking at broad spectrum of natural products and some of these repurposed pharmaceuticals, in addition to conventional treatment. I'm very actively looking at how we can consider and actually implement this kind of clinical trial. It's not been done before. It's a different kind of method. It's a method looking at a broad spectrum of natural molecules rather than testing just a specific drug molecule or a specific natural product molecule, because it changes.

Different people have different molecular profiles. Everybody's cancer's a little bit different, so we have to personalize the treatment based on the evidence that we get about their molecular profile. We're going to see all of these explode in the next 10 years, the area of precision medicine, the area of genomics applied to medicine, not only cancer. I chose cancer because those are the patients I was seeing the most. That's where there was the most data. When you marry those two, we have rigorous approach now to evidence-based protocols. Physicians can access that to the degree that they're willing and able.

**JM:** Terrific. There is a wide range of patients with cancer from those who've just been recently diagnosed and have very localized stage 1. If you just basically apply the principles in *Fat for Fuel*, it will be gone almost virtually, with no other adjunctive therapies. To those who are in metastatic stage 4 and given a very poor prognosis, maybe even less than a week to live, I'm wondering at what point does this approach not work? Is it just wise to consider palliative care and go to a hospice? Or is it "never give up hoping"? What's your strategy as you get into this stage 4 cancers?

**WL:** I see a lot of people with stage 4. If they're able to implement at least either a minor protocol or a medium-sized protocol, it's very common for us to see that they're getting significant benefit. In other words, slowing down the progression, even getting the tumor amount, the tumor burden, the tumor load, to decrease.

There are ways to decrease the symptoms, decrease the suffering that people have as well. There are ways to increase the anticancer part of the immune system with people in stage 4 cancer, because stage 4 can be a very end-stage, very dramatic, very difficult part. Or it can be early aspect of stage 4 where they still have a really robust quality of life and they are able to manage and have a good full life doing what they want to do, whether that's working or not or whatever their choice is, and to have a full quality of life. I think it really matters to the degree that they're willing to decide to implement.

What I tell people is try it for three months. See how you're able to implement. Collaborate with your doctor, your conventional oncology team, as well as your integrative medicine doctors. Assess how you are at one, two and three months. These kinds of protocols, they take a while to get up and running. It may take a month or so just to get things up and running. Then over the next two months [of] very diligently implementing, reassess and determine whether there's value.

If somebody has a rapidly progressive cancer and then it doesn't rapidly progress, that's progress. That's benefit. That's value. They're able to extend their length of life. It's very situational. I just say that these protocols are based on the circumstances that the person is in at the moment. Sometimes we have people who already had surgery and chemotherapy and radiation therapy and there's no detectable cancer and they want to know what they can take at that point to maintain that status, that's different –

**JM:** Yeah. That brings up another point too, as to successful cancer treatments, at least in the conventional paradigm and how they're categorized, because they are considered essentially a cure if the patient lives for five years. When, in fact, if they're dead in five years and two months from the primary disease, they're still considered a cure.

**WL:** Because of this new technology that we're seeing now with being able to look at the molecular characteristics of cancer, either in the cancer cells or in the blood, we're now able to have a much more fine-tuned assessment of whether someone really does have remaining cancer.

Now, today, many places when cancer is too small to be seen by a computed tomography (CT) scan, positron emission tomography (PET) scan, magnetic resonance imaging (MRI) or other kind of scanning tools, people can receive the information that they are now "cancer-free." That just means, for that person, well that's a great thing and we want to have it, we really want to have as much information about the lack of cancer, [but] it doesn't mean that the patient is actually free of cancer, because it could be microscopic or too small to be detected.

There are some tools that are available now, as well as others that are coming into the diagnosis pipeline, that can find and identify particular cancer types at extremely small amounts and can continue to direct therapy. People say, "Well, if they don't see it by CT or MRI," I say, "We're still seeing these tumor markers," or "We're still seeing this particular protein in the blood." That would verify the likelihood of benefit from continuing the protocol. In other words, being cancer-free doesn't necessarily mean that you're free of cancer. It's a fine distinction but it means that we want to implement treatment as long as treatment is necessary.

If someone then does get a diagnosis that they have no discernable cancer – we've had this with our patients with serious illness, brain cancer. Glioblastoma is an example that I'm thinking of now, as well as some melanoma patients. I think that there are two areas that are really important, pancreatic cancer and ovarian cancer, because there are so many molecular targets that are relevant for which there is substantial amount of data in natural products, as well as the repurposed pharmaceuticals, and otherwise, the conventional outcomes, the prognosis is pretty dim. It's difficult because a duration of life is otherwise considered so short that even with these new tools



that are coming – the new immune treatments, the new other targeted treatments – that there are still additional targeted natural product options that are beneficial and valuable for these patients.

**JM:** Well, this is great. I'm sure anyone watching this realizes that we could literally talk for the next 10 hours and not bore you at all because there are so many things that we didn't cover. Dr. LaValley studied this for 13,000 hours and he's got a lot of information to share.

If you have cancer or if you're interested, I would suggest that you discuss this with your integrative physician and have them contact Dr. LaValley for a customized approach to your specific scenario. It's not something that you have to see Dr. LaValley for. You can easily consult with your physician.

[-----1:00:00-----]

**WL:** It works the other way around. Oftentimes, the doctors are busy and so if the patients contact us, that doctor's patients contact us, then we can make contact to the doctor. Or sometimes people come to us who don't have a doctor and we'll help them find that doctor and establish that collaboration.

**JM:** Great. It's a phenomenal resource. If anyone I know or loved, or myself certainly, had that encounter or that challenge, and most of us will - maybe not most, but close to half of the people watching this will. We're not talking about skin cancer. We're talking about serious cancers. Nearly 50 percent of the population will come down with it. It certainly is true for men. This is something to consider.

Too many people die needlessly and have to suffer from these cancers. I mean this was an unknown, essentially rare disease prior to the industrialization and the benefits that we got, but this is the artifact of living in a chemicalized society and having access to lots of great things but veering away from natural lifestyles, which expose us to these risks that cause our cancer cells to develop and kill us prematurely. Great resource. How does a physician find you or the patient find you?

**WL:** Our website, [LaValleyMDProtocols.com](http://LaValleyMDProtocols.com).

**JM:** L-A-V-L-E-Y. Like "valley." Go ahead.

**WL:** LaValley. L-A-V, like victory, A-L-L-E-Y. LaValley, M-D, protocols, dot com. You can search me or you can go and look at the LinkedIn profile. It gives a little bit of a better overview. We're developing resources for patients and for their doctors to make it easier for them to understand and to have a discussion, as well as this database access easier.

Essentially, the next 10 to 20 years, medicine is undergoing such a great evolution that it's going to come across the full spectrum. That's what we're aiming to do. It's to make people have access to these from whatever practice or whatever licensed physician they're going to.

**JM:** Okay. Great. Thanks. I appreciate all your hard work. I'm looking forward to the day when some enlightened company is able to have the tools to integrate pretty sophisticated AI to your

database and really make this technology easily available. There is no doubt in my mind, not unless you die prematurely, and I hope that never happens.

**WL:** Amen.

**JM:** But if you're around for the next 10 years, that technology will exist and be easily able to allow the maximum use of the knowledge that you put together and make it readily available to many people.

**WL:** I hope for that too. I look forward to that. Thank you for having me.

*[END]*