May 2011 Issue | Mark Hyman, MD Chairman, Institute for Functional Medicine - Anniversary Issue

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Anniversaries: FMU Marks 30 Years While IFM Celebrates 20

Here we are at the May 2011 edition of *Functional Medicine Update*. This is the 30th anniversary of this audio/digital information product. Over 30 years I've interviewed luminaries and thought leaders that have created the context of change, the evolution of what I used to say was 21st century medicine. What an epic moment it is to have Dr. Mark Hyman as our guest for the 30th anniversary edition of *Functional Medicine Update*, which happens to be coincident with the 20th anniversary of the foundation of the Institute for Functional Medicine, for which Mark is now chairman. Synchronicity, how the world turns, the evolution of ideas, and people, and culture, and organizational structure—how does this all work itself out in magic ways?

Mark, what a pleasure and privilege to have you for the 30th anniversary of *Functional Medicine Update* as our clinician/opinion leader of the month, of the year, and of the decade. Thanks for being with us.

THE INTERVIEW

Clinician/Researcher of the Month

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MH: Thanks for having me, Jeff.

JB: I think your history within the movement of functional medicine really is a very great and significant. So many docs have made transitions in their professional lives over this last 20 or 30 years. Of course you've been extraordinarily successful as a clinician, as a thought leader, as a writer, as an author, and as a mover of change at so many levels. You've really become the paragon of what the movement is all about.

Give us a little history. Where did you start? You were a Chinese studies major at Cornell. Maybe you even want to go back before then to tell us how your lineage prepared you for this extraordinary transition.

The Path to Leadership

MH: I don't really think I was interested at all in medicine when I was a kid. I wanted to be a writer. I studied philosophy and religions. Actually, when I went to Cornell I studied Buddhism. I realized that it was a way of looking at the world in a systems model, and there was a way of understanding how the mind worked, and it was based on direct observation. It led me to sort of look at the process of the healing of the mind from a Buddhist perspective. That gave me really a sense of the possibility of a kind of medicine that I might want to practice someday. In the healing tradition in Buddhism, you have to be a monk before you can be a doctor. It was all intertwined. Spirituality, and religion, and discussion of the connections between things wer really integral to my thinking and my shaping as a young man. So I sort of naturally fell into looking at the healing systems of the world. In fact, I did a course in Cornell in healing systems of the world. I was able to study all of the planetary healing systems, and at the same time I was living with a PhD student in nutrition at Cornell who was studying the gut and bacteria and fiber. He introduced me to Roger Williams, and I actually read *Nutrition Against Disease* in college and began to study with Colin Campbell at Cornell.[1] These early influences had a huge impact on me.

I did end up studying Chinese and Chinese religions and Buddhism, but when I graduated I realized that I didn't really want to go to a fascist dictatorship and study Chinese medicine because I didn't want to spend my 20s in an environment of fascism, so I chickened out and went to medical school. I figured I would try it out and if I didn't like it I would do something else. And I liked it. I really sort of dove into it and got a sense of the mystery of biology and magic of it. But through the course of the training--I started out from an integrative and a nutrition perspective (I was a yoga teacher before I was a doctor--I sort of got brainwashed. I remember it almost like getting into a cult.

JB: Let's talk about that brainwashing because I think that's a seminal, interesting characteristic of people who ultimately decide to break from the norm and take the road less traveled in the

functional/integrative medical space versus those that feel comfortable just standing within the body politic of traditional medicine. I want to go back a step farther because I want to explore what it is that makes some people receptive to this transformation—I would say even courageous against forces of change.

What was the culture like in your home? I've met your sister; she's a very, very free-thinking, highly competent person. There must have been something in your home as you grew up that maybe sponsored or fostered thinking from the norm.

MH: My family was very unusual. My father quit high school when he was 13 and he lived on his own and then joined the Navy at 17. When he joined the Navy he lied about his age and went down to Antarctica with Admiral Byrd. He came back and put himself through high school, and then through NYU under the GI Bill, and Columbia School of Journalism. He studied Chinese and was about to go to China for the revolution there. Then the Bamboo Curtain came down and he couldn't go, but he and my mother went to Europe and lived in post-War Europe for 11 years, where I was born. So they had a very unusual life. He was traveling all over and my mother was a teacher (principal of the American School of Barcelona). I grew up in a very unusual family. We were focused on intellectual development, and reading, and the mind, and exploration, and even being an iconoclast (very disruptive and unusual). I think it was sort of bred into me to not be like everyone else and to think differently, and it was sort of just part of my culture growing up. I was encouraged to do anything, and to be anything, and to go everywhere. My mother really fostered that, and I think that was a huge factor in my development.

JB: So now we take that, which is really a very strong epigenetic imprinting on what was probably already genetic propensity, and now we go to medical school, which is very codified, very structured, and very linear. How did your nervous system respond to that kind of educational model?

MH: I loved it because I came from an analytic model where I was taught to think and question and inquire and analyze. Most of my colleagues in medical school were simply taught to memorize and were from science backgrounds, not from a liberal arts/philosophy background. When they were inundated with reams of information they couldn't discern what was important and what was not. They couldn't see the pattern that connected things. They couldn't see the story within the detail. And that was easy for me, so actually medical school was very easy for me. I graduated near the top of my class. I always had fun and enjoyed myself. I did yoga in the back of the classrooms. I was kind of a little bit of an outlier, but I had an extraordinary time in medical school and found it intellectually stimulating. I was always questioning why, why, why? And there was never an answer. I was perplexed at that, but I kind of went along with it. I said, "Look, I'm just going to try it on. I'm not going to fight it. I'm just going to swallow it and then I can reorganize it later." I had that instinct.

Then I went to a very unusual family practice residency in Santa Rosa, where I was the token white male; everybody was either gay, or had skin of a different color, or some other kind of unusual characteristic like they were the teamsters union bargaining guy or something. That was an interesting environment as well, but I really learned how to be a family doctor. In a sense, family doctors are route systems, and that was part of that training as well. So I learned to be a systems thinker in family medicine and went to Idaho and practiced in a small town there and worked with lumberjacks. I got a real second residency there.

Family Practice: The Magic is in the Bigger Picture

JB: Before we go there let me just stop you because I think you're again hitting on a very interesting part. What I'm trying to develop through your experiences is, is there a commonality that differentiates the psychographics of docs who decide to make this break from what has been the tradition of the guild into this new emergent 21st century functionally based medicine and who then are very successful at it versus those that just stay the course? I'm trying to explore the psychographic analysis. During your residency and this fellowship in Santa Rosa when you were starting to look at how this arrangement fit your own need and fully expressed your capabilities, was there ever a moment when you said "I think family practice is too general? I need to really focus. I need to become a specialist in a certain area." There is a motivation to really be the best of something in one discipline, or did you always have this sense of the magic is in the bigger picture?

MH: I never wanted to be a specialist. It just never crossed my mind because I couldn't understand how you could separate out everything. We are one organism, one body, one soul, one being. That was something I just knew intuitively, and I didn't understand how you could separate those things out. I knew there was a need for experts, but from my own personal sense of how I wanted to practice it was completely in synergy with who I was and what I felt and how I thought about the world.

JB: Let's take the next step. Moving into the reality of dealing with patient management in that kind of a family setting, and the diverse number of things that happen in the daily life of a family doc, did you find it was too prescriptive? Did you find that it wasn't exactly what you thought it was going to be (was the magic of dealing with the individual being stolen by the repetitive patterns of the system)? Or did you feel like, "This is the nurturing ground that I really have always thought it to be?"

MH: I loved it. I was actually talking about this the other day. When I was in medical school I was in Budapest at this meeting of International Physicians for the Prevention of Nuclear War. There was a woman standing next to me who was a pediatrician, and I said, "Don't you just get tired of seeing runny

noses and ear infections and sore throats?" She said, "The ear infection may be the same, but the person is different." And that's the magic. For me it was always about the relationship and never so much about the diagnosis. The tools that I got in conventional medicine were great tools. I was able to really do a lot of good as a family doctor in a small town dealing with acute issues, delivering babies, running the ER, dealing with trauma, doing small procedures, and just dealing with various problems. One guy had tendonitis of his elbow and was miserable and I gave him a little shot and he said, "I'm going to be dancing down the street praising your name." There was a lot of joy and connection in that, and I had no problem with it.

But I did realize that there was a sort of limit to the success of the interventions that I was doing. It particularly became evident to me once I started working more full time in the ER. I realized that everybody who came in usually got there because of something that happened in their life that could have been different. Other than it being a car accident or some trauma that they had no control over, there was something that lead them to that moment, whether it was an asthma attack, or a heart attack, or a stroke, or stomach pains. Whatever it was, if you looked back in the continuum of the illness there was some moment in time where they could have taken a different course. Not to blame them so much, but to just understand that these conditions didn't just show up just sort of static like this.

That led me to reawaken my desire to go back to my roots, which was to really go back into integrative medicine--I didn't know about functional medicine at the time—and to look at alternative approaches and mind-body approaches, so I began to sort of branch out. Once I made that decision, that's when I got the job offer at Canyon Ranch without any application. I just literally ran into someone in the store buying Andy Weil's book on spontaneous healing and they said, "Why don't you come over for a tour." I said, "Okay." And I talked to the director of health and healing as we were having the tour, and then a few days later she called me and said, "Hey, I want you to meet Mel and Jerry." And I thought, "Who are those guys? They sound like cartoon characters (Tom and Jerry)." They are the owners. I said, "Why do they want to talk to me?" She said, "Well, we're thinking of expanding our medical department." I met them, and it was going to be a ten minute meeting that was a two hour meeting and I got a job offer the next day. And that was sort of the beginning of a living laboratory for exploring functional medicine.

JB: That's great. I want to take a little sidebar with you. You mentioned this period in which you were in Budapest. The name Helen Caldicott comes up, who I think you probably knew very well. Now I am going forward to 2010. You and I were in a cab, and we were with a very fashionable, stylish, intelligent, forthright family doc (a woman) whose last name happens to be Caldicott. I'm slow on the uptake. I'm riding in the cab with the two of you, and I'm thinking to myself, "Wow, this woman reminds me a lot of the Helen Caldicott I knew 20 years (plus) ago." Tell us a little about that experience, because it's interesting how cycles work within cycles, wheels work within wheels. I think it's an experience that shows how we set ourselves down and things come back to revisit us.

MH: Yes, there is no—I think—coincidence. Someone said to me once, "Coincidence is God's way of staying anonymous." In college I was very much an advocate against nuclear war and nuclear power plants, and did a lot of activism around that. When I got to medical school I joined the Physicians for Social Responsibility and I heard Linus Pauling speak. It really moved me and I became much more active in that. I went to Budapest to this conference where we heard Helen Caldicott speak, and Bernard Lown, and Evgeny Chazoff, who was Breshnev's doctor. That was the year that organization won the Nobel Peace Prize.

Penny Caldicott is Helen's daughter and she joined a group of medical students who were from about 20 countries to go to the Soviet Union at the time to do a citizens' diplomacy mission to try to break down some of the barriers between the nations. We figured if we could just connect people to people that there would be a shift in the movement. We spent weeks traveling around the Soviet Union and bonded and got very close. I lost touch with Penny for many, many years, and she showed up at this conference in New York a few weeks ago and said, "Mark!" And I said, "Wow!" And it turns out she has been doing functional medicine in Australia for a long time and has a clinic of a dozen practitioners and is one of the pioneers of functional medicine in Australia, which was just such a funny sort of circle of history that tied us together that was really amazing.

JB: It really was. For me to have known her mother and not to have even known about Penny at all, and then to be sitting in the cab and looking at her and saying, "Boy, she reminds me of Helen Caldicott." It was just one of those really magic moments. We lay stuff down and then we come pick it up. Those things you lay down can either be very positive and reinforcing, or you can lay down stuff and come back later and you wish you wouldn't have re-picked it up, right? How do you set the tracks of continuity that lead you into joy, bliss, and fulfillment? That's kind of the path that we're all trying to be on. How do we make those choices along this road of life that has many off-ramps and on-ramps and try to keep some sense of principle around where we're heading? Your life has a very strong principle-centered component to it. You can see these divergent things clustering around a pattern, right? I think that's a characteristic that defines some of the unique aspects of the practitioners in functional medicine, because they've had to do something a little different probably to get there.

Now let's go back to Canyon Ranch and pick up the story. You passed the Mel Zuckerman test and you're now hired. Obviously they probably never had any idea who they really hired and who Mark Hyman really was. They probably knew he was a very bright, capable, affable medical doctor but they probably didn't understand the innovation that you might bring to the facility, so tell us what happened.

MH: Nor did I, really!

JB: Well, you met Kathie Swift, I would presume, and other people at Canyon Ranch. Tell us how it goes from there.

Amid Exciting Life Changes, A Sudden Illness Occurs

MH: What happened was an interesting collusion of events. I got the job in April, and in September I got really sick. I went from riding my bike 100 miles a day (you know, the Boston to New York AIDS ride), and from being extraordinarily fit and healthy to barely being able to function. Here I had this new job, I had just gone through a divorce, I had two little kids that I was taking care of, and all of a sudden I found my body breaking down. I knew I was under stress, but I knew there was something else going on. I went to doctor after doctor after doctor. I went to the neurologist in New York City, I went to the rheumatologist at Harvard, I went to a gastroenterologist for symptoms. I had autoimmunity bodies. I had low white count. I had elevated liver function. I had high CPK. I had digestive problems. I had diarrhea for years. I had severe muscle aches, brain fog, and insomnia. I really couldn't function. I literally would just survive each day, and it was a real struggle. I was trying to sort this out. I thought it would go away, but after a few months it didn't go away and it just got worse and worse and worse.

Functional Medicine "Just Makes Sense"

Around that time, Kathie Swift, who was the nutrition director at Canyon Ranch at the time, dragged me to one of your lectures. I heard you speak (it was the improving gene expression and aging seminar you did). I listened to you sort of in rapture and realized that what you were saying just made sense. I asked a friend, "How do you think about functional medicine?" She said, "Well, it's just medicine that makes sense. Functional medicine is medicine that makes sense." And it's true. It's like what TH Huxley said when he heard the theory of evolution from Darwin. He said: "How stupid not to have thought of that." That's sort of the same epiphany I had: "This just makes sense." I said to myself: "Either this guy's crazy (meaning you), or you're a genius and this all is true. I owe it to myself and to my patients to figure this out and to ask the question."

I began to explore and experiment with it on myself and see changes, but it was a tough road because I didn't really have a map. Functional medicine—even in those days—was still in formulation. I thought it was an established field, but it was just really in formulation. This was just a few years after the establishment of the Institute for Functional Medicine. We hadn't even had the AFMCP course yet. It was really early on.

I had all of these patients who were extraordinarily wealthy. Doing $5000 worth of tests, for them, was like buying a Coke or a Starbucks for most of us. And they were interested in being explorers with me. I said, "Look, I don't really know what's going on here. I don't know this model very well. It seems like

it might have some merit, and certainly you're not getting better doing what you are doing with conventional care. Let's try it on together and see what happens." So I started to try it on them. I tried it on myself. I began this sort iterative process of experimenting with myself, experimenting with my patients, gathering data, and then people started getting better. I was like, "Oh. This works." I remember being surprised. I would actually be doing follow-ups with people and six weeks later they'd say, "I'm better. This is better." And I'm like, "What? You're better? You did that—you changed your diet—and you're better? You took these supplements and you're better?"

At first I didn't really believe it. It just was too extraordinary (the changes that happened). One woman who was sick since she was five years old with chronic sinus infections, she had inflammatory bowel disease, and IBS, and chronic fatigue. She was a banker, but had to go on disability. She was 36 years old and had endometriosis and infertility. She couldn't eat anything, and she had swollen fingers. She called me after a couple of months. I had put her on fish oil and an elimination diet—just basic stuff that I had learned. She said, "I'm feeling so great, but there is one thing with my fingers. There are all these bony things on my fingers." And I said, "Well maybe you have just had edema in your fingers your whole life and you haven't actually seen your fingers." All of her symptoms went away, and then six months later she got pregnant and had a baby. It just was extraordinary to see that. I realized, "Holy mackerel. There's something here."

I purchased every single CD—well they didn't have CDs back then, they were just tapes—every tape done by you. FMU wasn't called that at the time. By Sidney Baker, by Leo Galland, whoever. I would beg them to let me sit at their feet, and I would go down to Sid's office and I sit with him, and Leo's office and sit with him. I would find all the other experts and I would call them up and I would talk for hours on the phone with labs, and with different people who were experts in the field, and I was like a sponge. Thank God for rewind because I could rewind Jeff until I learned how to speak Bland-ish. I really had trouble, but finally understood what mitochondria were, and Th1 and Th2, and oxidative phosphorylation, and all these things I really had sort of forgotten about. It was like learning Chinese: you work hard, you work hard, you work hard, you study, and then all of a sudden it all connects up: "This is the story of how God made us. This is the story of the mystery of biology. This is the story of how everything connects."

Then I began to really apply this and became—over 10 years of doing this and having literally millions of data points from clinical history, from examination, and from laboratory data over time, prospectively, with my patients—I began to see this was real. And I began to see that it was like a prism. If you looked at a person's biology through this prism, you would see the same thing manifested all the way around. So I would do different labs from different companies, but they would be reflecting different aspects of what's going on. I would see patterns. For example, in heavy metal patients you would see oxidative stress, you would see mitochondrial dysfunction, you'd see depletion of glutathione, you'd see certain SNPs--clusters of phenomena that I knew nobody else was seeing and noticing.

I began to observe things in the clinic that were just bizarre. I treated someone for IBS with Flagyl because she had elevated clostridia overgrowth, and her depression went away. I was like, "What happened there?" I began to really see the matrix of human biology, and I realized that if my calling was to be a healer, that this is the future. This is the future, and it was incumbent upon me to learn as much as I could about it, and really to be an advocate and an activist for this new medicine. Once I realized this was true and real and it was reproducible over, and over, over again—and, yes, it wasn't done in large clinical trials, and yes it was just my practice—but it was also other doctors who trained at Canyon Ranch and it was also other people who were getting these results.

The patients were coming, and the practice grew, and we hired eight doctors. The financial people came and said, "We don't know what you're doing, but just keep doing it." People would get better. I realized that it was incumbent upon me to do something. And then I realized that if conventional medicine isn't providing these solutions, and there's a model of care that actually can relieve suffering and we're not doing it, it's criminal and it made me angry. It made me really angry. That's what has really been driving me. It sounds corny, but it is the passion for the relief of suffering of others. It's like if you see a solution here and a problem here and they don't connect, it makes me nuts, which is why I have a hard time saying no, because I feel so passionate that we just have to connect the dots and let people see how extraordinary this model is to provide a solution for chronic disease. It doesn't fix everybody all the time for everything. And, yes, there are complex patients that we're still trying to understand this model for and how it applies, but it's not because the model isn't right, it's because we haven't figured it out yet. I just feel every day I wake up so passionate and work so hard because I see what's going on out there and it just kills me, because I know how sick I was, and I know how good I feel now, and I know that I never would have gotten there, and I know this is true for many people in the field. It's a shame that most of the doctors who are in this either because they were sick or someone in their family was sick and that's what motivated them to look for something different.

JB: Yes, I think you hit upon very, very important point. By the way, thank you for sharing. That's an incredible rich and deep story. We all live by stories, really. We think we live by all these facts, but the facts are there to rationalize our feelings, right? What you gave us were some very powerful feelings about the reason for living—how we travel on this journey. For some of our listeners/viewers, let me go back and pick up where they are on their journey. People might come up to a point that would be comparable to where you were when you went to Canyon Ranch: they've had an experience, maybe they've seen what they were told was going to work in their training didn't, they're a little disillusioned but they are still in the flow. They're making a living out of what they are trained to do. They want to make a change but it's really an awkward kind of contemplation: "Well, I've got responsibilities, I've got a family, I've got a mortgage, I've got this, I've got staff, whatever it might be, and I also have medicolegal responsibilities and I also have a licensure." All these things weigh on the shoulders. And then they are confronted some night when it's quiet, when they are with themselves, with asking "What am I going to be? Where am I going?" I don't care if they're 25 or 65 or 75. They may have that moment where they say, "What am I going to be?"

What went into that kind of process of thinking for you and what have you observed in your colleagues in which that kind of moment of truth comes up, saying "This is really a truth that I see, but to move that direction is so complicated that I really need to stay the course."?

MH: For me, I don't know if it's applicable to what I went through because my personality is extremely risk taking. I basically trust in the uncertainty of life to take me where I need to go, and have a really strong belief that if I show up, tell the truth and be straightforward, and then be welcome to whatever the outcomes are, things will work out. From my own sort of development, this is sort of what I carry through every day. I was willing to let go of things in order to try something different. And as soon as I did that—as soon as I released from the fear of: "Well, I'm a single parent. I have two kids. How am I going to make a living? What am I going to do? How am I going to be able to do the ER (it's a guaranteed source of income)? How am I going to do something different?" As soon as I set the intention for what I wanted to do, then the right solution showed up. That's when I got this job offer without applying at Canyon Ranch. I was like, "Oh wow, how did this happen?"

IFM and Other Leaders Must Come Up With Solutions For Practitioner Transitions

There's a bit of magic in that, but I think if we can engage a little bit with that magic in life, things happen. At the same time I also would say it's incumbent upon the Institute for Functional Medicine and other groups that are leaders in the field to really come up with solution sets for practitioners that help them transition. It's really a transitional system that allows them to find a way within their practices to create models that work that are insurance based, that are financially viable, that provide good care, but that—like I always say—change the way we do medicine and the medicine we do. So the delivery models and the content models have to change. And it's a process, and it can be done incrementally, and people can start very subtly. When I started, I just started with the gut. I just started with doing one thing: "I'm going to work on learning the gut and fixing peoples' digestive tracts, and doing elimination diets." And then I would add on later: "Oh look, now I understand hormones." You don't have to do everything at once; you can just take one step at a time. I think we do need—as a community—to come up with real solutions for our practitioners that allow them to do this in a way that isn't that disruptive, that they can scale, and that it's not everyone having to recreate the wheel every time and reinvent a model that is effective. I think we need to focus also—we've talked about this, Jeff—on policy and reimbursement, because doctors get paid to do things and they do those things, and if they get paid to do different things they'll do different things. We need to create changes in corporate health that are driving some of the decisions around health and insurance. We need to look at how we change our medical education, which we are working on at the Institute. So we need multiple platforms at the same time to be able to build the infrastructure that trains up a new generation of practitioners and provides them with real business and clinical models that work in real life and in real communities.

JB: That's a wonderful segue into institutionalizing and providing a support program for people who have elected, at that moment of truth, to make the decision of change. So you go to the Institute for Functional Medicine 20th anniversary—May 2011—a very big anniversary with its second decade. Tell us a little bit of your evolution with IFM. I remember the first lecture in which you gave some 10 or 12 cardinal rules for change (kind of transition rules like you would do with a twelve step program). Tell us how this evolution has occurred both for you within IFM and IFM as you have seen it over the 15 years that you've been affiliated.

IFM's Evolution

MH: Well, like I said, when I first joined I didn't realize IFM was in early development. I sort of realized that we had an extraordinary opportunity and have watched the organization grow from an idea to a leader in the field of education, in functional medicine but also in the integrative medicine field. I think what has happened is the Institute for Functional Medicine has really become sort of the graduate program for integrative medicine. Most people who go through the study of integrative medicine end up in functional medicine if they continue to explore and teach. I know many of the practitioners of integrative medicine are leaders in integrative medicine and actually go to functional medicine doctors themselves, which says something about what is missing from the integrative medicine piece. I think we, at the Institute, have created and worked very hard, with the leadership of David Jones and with Laurie Hofmann, to actually create a curriculum that is a solid foundation—a certification program—along with relationships with many, many institutions. We have almost one-quarter to one-third of all medical schools actually coming to training programs through the Institute and looking at bringing these concepts and programs back into their institutions. We're actually in over 40 countries in terms of education. I think that the Institute has really grown up and is ready to scale our educational model. With more resources and more funding, in our strategic plan (we're got a 5-year plan), we're going to—through education, through research and collaboration—build a foundation for a new educational infrastructure that is going to seep into conventional care and also post-graduate care.

JB: You've made a really interesting statement that for some people, if they are not familiar with this field, might be somewhat obscure as to how they interpret it. Let's go back and revisit. Integrative medicine, functional medicine. They are parts of a whole—we're all in this hologram of life—but they're slightly different components of the hologram. Could you differentiate, from your experience, how integrative vs. functional medicine are slightly different?

Integrative Medicine is about the Tools, Functional Medicine is about the Map

MH: Sure. I wrote an article a number of years ago, an editorial called "The Map: Integrating Integrative Medicine."[2] Because integrative medicine is about the tools. Functional medicine is about the map. It's about navigating. It's about thinking. So functional medicine isn't a specific tool, or a modality, or a treatment, or a test, or a supplement. It's a way of analyzing information: sorting it,

organizing it, processing it in a way that tells a story about how people got sick and how they can get better. It helps to choose which therapies to do, which may be alternative therapies or what we call integrative therapies such as acupuncture, or biofeedback, or herbs, or nutrients. It's a fundamentally different way of thinking. If someone comes to an integrative medicine case conference, take someone with depression—you'd have the homeopath recommending a certain remedy, you'd have the acupuncturist saying they had spleen qi deficiency and they need certain acupuncture points, the psychologist might say they had early-life trauma and this made them depressed, the nutritionist might say they have a folic acid deficiency, the internist might say they have a serotonin reuptake inhibitor deficiency, and so on. The question is, what do you choose? How do you figure out what's going on? The unfortunate part of integrative medicine is it is saying we're going to integrate alternative therapies with conventional medicine. That's what "integrative" means for most people. I think some people conceptualize it a little differently and understand it's about the whole person, and on the mind-body level, on the relationship level, I think they've got it nailed. But where it falls down is you have this smorgasbord of choices about modalities for diagnosis, the problem is the diagnosis is irrelevant. The question is, what's the cause? It's sort of the medicine of "why" (functional medicine) instead of the medicine of "what." It is not what the diagnosis is and what the treatment should be, it's what's the underlying cause, why is this person out of balance, how is this system dysregulated? zThe disease becomes increasingly irrelevant in terms of understanding what to do.

I was speaking with Joel Evans, who is faculty, the other day. He said, "I don't really care what people have. If they get their diet right, they exercise, they learn how to deal with stress, they sleep, and they drink enough water, most problems go away." I think that is sort of one of the premises of function medicine: it's about understanding the different elements that go into creating our system (our biological system), how to work with those, how to understand where they become out of bounds (how they get imbalanced), understanding those things that Sid Baker talks about (what do you need to get rid of to get healthy, and what do you need to get healthy, what are the things you're missing that your body needs to thrive, and what are those elements that are disrupting these basic systems in your body?). And then from there you can kind of say, "Okay, let's prioritize and figure out how to unwind this knot, or how to peel the onion of chronic disease." As opposed to saying, "we're going to try a bunch of these different modalities on a diagnosis that's a western diagnosis that is an ICD-9 code that is sort of irrelevant in terms of our understanding of systems biology. As we begin to understand, there is not "depression" there are "depressions"; there is no "diabetes" there is "diabetes'"; there is no "cancer" there are "cancers."

I remember being at an NIH think tank on systems thinking and biology. There were NIH researchers and National Cancer Institute staff looking at prostate cancer, and gene profiles and prostate cancer, and I said, "You know what? We look at these genetic profiles in prostate cancer samples and you get 10 guys with prostate cancer and they are all diagnosed with prostate cancer, but they aren't the same, they are all different. They may have different patterns, they may have different responses, different treatments, they have different etiologies. We call it prostate cancer but it is kind of meaningless as we begin to understand things." I think we're in an extraordinary period where with functional medicine we have an overarching architecture—a framework, a way of thinking, a navigational system, a GPS model for thinking through the problem of disease in chronic disease. Integrative medicine represents an incredible

wealth of tools and resources to use, but they are the tools, not the map. Functional medicine is the map.

JB: Mark, in this conversation, which has really been just fantastic, to look at the topography of change, of how people's lives weave themselves into these interesting moments of transformation and personal evolution. I think everybody that is listening or watching this probably has a moment where they can identify part of the story with their own lives, where there has been a watershed event, or there has been a branch in the road, or there has been an opportunity to do something dramatically different than that which they have done in the past, standing courageously on the edge saying, "Okay, am I ready to take that jump, that leap?"

With all of that in mind, and the way that you've described functional medicine, it seems—like you said earlier in this conversation—that it is self-evident that this is the right thing to do. But somehow, it must not be perceived by the body politic in general to be the right thing to do or there would be a groundswell/tsunami/cultural change overnight and we would see this kind of thing being incorporated as a way of thinking. There must be some barriers still, even though—as you've described it—it seems so self-evident. It's like gravitation; we do stick to the earth. What's retarding the acceptance of this model (whatever we want to call it—functional medicine or whatever)?

MH: Well, it's a lot of obvious things. We're talking about a major paradigm shift in our scientific conceptualization of disease, as big as what happened with Louis Pasteur, with the theory of evolution, or with Columbus and the earth being flat. These are huge scientific shifts that didn't catch on very quickly. When you say diseases don't exist, that challenges the entire infrastructure of a two-trillion dollar industry. That's not going to change overnight. The financial incentives around how doctors get paid and what gets paid for also are driving practice. There are a number of obstacles that have to do with the very fundamental scientific conceptualization of disease changing, which is, I think, one of the biggest obstacles. How do we reorganize medicine so that it's not structured by specialty and siloed? How do we reorganize it by systems and thinking? How do we do that? It's a daunting problem.

I think we are also dealing with "structural violence," as Paul Farmer calls it, where the very social, economic, and cultural conditions are actually depriving many of us of health as a human right. Those are things that are sort of embedded in our culture, where you can't drive down Main Street USA and find anything edible, or only food-like substances are available—things like what Michael Pollan says are "made in a plant, not grown in a plant." It's very difficult to overcome a lot of the inherent obstacles to getting healthy in America. Functional medicine is, I think, the standard bearer for a new way of thinking, but it's the best kept secret around." I think that's just by the natural process of this major paradigm shift. As Thomas Kuhn said, "It's not easy to shift normal science." We're at one of those moments (those transition moments). It will happen, but it's going to take a little while.

I think the second reason is just economic. That's really where I'm looking to find the leverage. Where are the economic levers where doing the right thing is also doing the most profitable thing? If we can pull those levers and get some key players to change in the healthcare industry, whether it's the insurers, whether it's some reimbursement policy based through things like the VA, which have align incentives, then we're going to see the self-evidence of this model being shown and then I think the changes will happen, but it's going to take a little bit more groundwork in establishing those demonstration projects showing the money. As they say in *Jerry Maquire*: "Show me the money!"

JB: I think that you have said something inherent in your very eloquent response to a complicated question, and that is you've illustrated that our present system is a procedures-focused system, in which the more interventional the procedure, the more social value has been perceived for its worth. So the more bizarre intervention, really (when we look at it in a purist state), the more you get into really doing something very heroically interventional, the more value you will get in terms of its perceived economic outcome versus those things that we're talking about that are not so procedures-focused as process-focused, in which the person in the life process is modulating their genes and response to the environment to produce a favorable outcome. That seems to have a low-value aspect associated with it in society. You're talking about a fairly profound transformation in how we establish value (principles of value). Do you have any thoughts on how the Institute for Functional Medicine and its doctors can help foster this?

Practicing Lifestyle Medicine Must Be Made Economically Viable

MH: Absolutely. I've thought a lot about this. One of the things that needs to change is reimbursement. If doctors get paid to do lifestyle medicine, then they will. If we all of a sudden made it as economically viable to do group programs of intensive lifestyle behavior change, which are the only things that have really been proven to work great (sustainable behavior change) and we actually reimburse that, then there would be Institutes of Lifestyle Medicine showing up in every major institute of health care in this country. Instead of cardiac institutes there would be lifestyle institutes and there would be these programs going on that would be paid for and reimbursed. You know, if you got paid as much to do that as you got paid to do an angioplasty, things would change. I think that kind of creative restructuring of reimbursement to deliver on outcomes is key.

When I was working in Washington with Dean Ornish and Michael Roizen, we created a bill introduced in the Senate called "Take Back Your Health." It had a double-payback provision and was still not passed. The double payback was that with intensive group lifestyle support of integrative teams of health professionals that were reimbursed at a reasonable rate of $100 an hour, that if patients actually didn't get better and ended up with an event, the doctor would have to pay back the amount they got. The second provision was they only got paid if there was a reduction in the biomarkers and an improvement in outcomes. So, (1) you only got paid if you succeeded, and (2) if you failed you had to give the money

back. Even with the double payback, which was a no-risk proposition, it still couldn't pass. And the reason we put those in there is we believe so strongly that this model works better. Imagine if I said to you, if you were a cardiologist, "Well, if your angioplasty fails, you have to give back the money you got paid doing that angioplasty." That's essentially what we did, and I think that's the power of lifestyle medicine.

We're still working on it; it's still in process. I think those kinds of shifts are going to happen. And if we can provide economic models for primary care physicians within their practices to do a different delivery model that includes groups, which I think is a very sort of disruptive of delivery model, but can be reimbursed under current reimbursement rules, and is actually even something that groups like the American Academy of Family Practice are promoting—if we can provide models for that that are plug-ins for primary care doctors to deliver this content, and we package the content, and the Institute helps with other organizations to collaborate, to actually deliver these models and plug them into existing infrastructures, I think we can create change.

JB: I think what you are really describing very eloquently is a landscape, to go back to your Thomas Kuhn reference, that is a paradigm shift (Kuhn having coined that term, "paradigm shift"). And this transformational shift that is occurring is something that has many levels of synchronicity. It's not just like a doctor changing, it's an economic model changing, it's a social structure changing, it's a personal responsibility changing. It's going from a victim space to a participant space. There are all sorts of interesting contextual changes, to use the concept of self-efficacy. It's building the person back into their own model as being the central person in their life. I think all of these are really dramatic, dramatic changes, and I think it's very interesting that they seem to be converging and intersecting at a time and place in the 2011/12 year, that it becomes coincident with the 20th anniversary of the Institute for Functional Medicine, with the 30th anniversary of doing *Functional Medicine Update*, back through its *Preventive Medicine Update* and through its *Metabolic Update* years, starting with a small study group in the early 70s that was the kind of germ seed of some of these things that have emerged out of the last 30 years. It seems—without making up a story that doesn't exist—that there is a really dramatic moment in history to do something impactful, to change the course in a more positive way.

MH: Absolutely. I think things want to be changed, and I think it's an opportunity waiting for a leader to come through and deliver a model that actually makes sense, and a medicine that makes sense.

JB: When you look at this transition, how do you draw from some of the historical legacy? When you look back at the early days at the Linus Pauling and the Roger Williams era and the forefathers and mothers of this movement, what do you pull back to go forward?

MH: For me it is sort like the raw clay that can be used to shape the sculpture of what the future of medicine is going to be. Elements built over the last decades into an extraordinary picture of human physiology, biochemistry, genetics, and functioning that were sort of hinted at in the early days have coalesced into an extraordinarily robust clinical model that's an application of systems biology, which is functional medicine. And the Institute for Functional Medicine has really encapsulated that in its curriculum and training programs, and that's why everybody is seeking out the Institute to help build this into their medical schools and into their institutions (and corporations and insurers). I think that's really where this has got to go. We can take what we've done now and say this is the full expression of those early ideas into a model that's going to be a robust clinical model to change health care.

We Have to Not Only Change the Way We Do Medicine, But Also the Medicine We Do

Something we really haven't talked about that goes along with this is the idea we have to not only change the way we do medicine, we have to also have to change the medicine we do. We have to change both the delivery model of care and the content of care. These early ideas of functional medicine were really the refining, and the polishing, and the developing of the content model: What is the DNA of the future of medicine? What's that going to play into in the clinical practice setting in the healthcare industry? How does that actually intersect with that? I think that's where we are coming from. I think we've matured enough in terms of the content development, and out of the evolution of all these masters, and all these thinkers and leaders like you, we've been able to come up with a model that actually works clinically, but now we need the delivery system for that. We need to lay the railroad tracks so this model can be rolled out across the healthcare nation.

Deciphering the Human Genome Was Just the Start

JB: Let's take that as a very powerful little moment of getting oxygen in the brain and thinking about where the next neuronal firing is going to take us. When I've spoken over the years to practicing clinicians--often very skillful docs--often they would say there was very little translation of basic science into clinical practice. In everyday life, they are not really leveraging science; they are leveraging clinical acumen. This is probably where this interesting dynamic of you as an MD and me as a PhD meets in the middle to create an opportunity for synergism. I look back and I say, "And yet, what happened in 195 with the publication of one small paper in *Nature* magazine that had fewer than 700 words in it, I recall, which was written by two young heretics in Cambridge that didn't even have any scientific proof of principle, but had an idea that was cut out of the back cardboard from their starched shirts and the hangers upon which those shirts hung, in which they wove that pattern into the double-stranded helix to create a sense of what is encoded with what we called our genetic heritage going back to Gregor Mendel and even back to the Greeks, and then opening up the construct that there was something locked into that heritage in molecules—in molecular structure and function—that could, when uncoded, could create, then, the diversity of plants and animals that we see on this planet and help us to understand the origin of health and disease?"[3] That shifting paradigm, which seems so far away, probably, from medicine when it was first published, and even the scientists of its age didn't accept this because it wasn't that good of science. It was built more on a theoretic model, it was built more on conjecture, on kind of molecular modeling.

Yet it seems to follow some rule of reasonableness—in other words, a lot of work that had been done in electron microscopy with Rosalind Frankin and so forth that kind of seemed to kind of support it, but how it was going to translate didn't seem obvious. Then over the years we get to the human genome project. Basic science. The big huge science. It's like building the linear accelerators to look at particle physics. And big science produces big ideas. So here is President Clinton on the lawn of the Rose Garden with the two major competitors, both announcing simultaneously that they've deciphered the human genome, and that we're going to suddenly now understand everything that's going to be needed to be known about health and disease. So it's a basic science major discovery. It's going to be a frame shifter for health and disease. And yet now, some 11 or 12 years later we're finding that it was only the start—that discovery—of really how our genes are modulated in their expression by our environment, and that the action is not just the hard wiring of the genes, but it's what is going to be expressed out of that message in our book of life in ways that are going to be seen in our phenotype, our health and disease patterns. And now suddenly we learn that this renegade group of scientists that have been keeping alive a concept that goes way back to John Paul Baptiste called epigeneitics, that was the debate between Darwin and Baptiste as it related to adaptation versus mutation/natural selection, in which any student in an American university—actually in any reputable university anywhere in the world—that would have talked about that animals and plants adapt to their environment would have been excoriated because it was considered to absolutely be a ridiculous principle; we were all on board with natural selection, this slow moving process to weed out mutants that were selected from those that were not. And suddenly now we come back in the year 2011 to recognize, no, there is a fine tuning knob on how our genetic information is expressed by these tags, these marks, that are put on our genome called epigenetic marks that regulate what portion of our book of life can be read. And those epigenetic marks are put on there by life experience: life experience from what we eat, what we think, what we do, what we're exposed to. So that there is an adaptation, and it is transgenerationally transmitted; it can be sent on to the next generation. This construct, which comes from basic science, is morphing and changing all of the presumptions of medicine, and yet we're still practicing a medicine that was really the artifact of 1950s thinking.

MH: That's true.

JB: How does that get woven, do you think, into the functional medicine model—into its advocacy and ultimately into its teaching and training programs?

MH: That's actually a perfect question because I recently wrote an article called "The Failure of the Promise of the Human Genome Project."[4] In it I said that really the future is not in the genomics, but it's in the exposome, which is the sum total of the environmental influences affecting gene expression, which accounts for 90% of all disease. It's in the epigenome, as you just said, which is how genes are tagged and modulated by environmental experiences and then control gene expression. It's in the nutrigenome, which is the way in which food regulates our gene expression. As you have said so often, food is information, and it's how that information translates into molecules that affect health and disease. And it's the microbiome, as we are learning in the 20th anniversary Symposium. It has enormous effect on

our health. We have ten times more bacteria in our gut than our human cells. We have 100 times more DNA from microbes than we have from our own DNA. How does that influence our health? These are the concepts that are really embedded in functional medicine that have been talked about in functional medicine by you for almost decades now that are beginning to see sort of the light of understanding. To me, that's the intersection where we need to be shifting from focusing on sort of gene-based therapies or pharmacogenomics, which is a very narrow view of the human genome project and personalized medicine to really thinking about how personalized medicine incorporates this whole notion of nutrigenomics, and microbiomics, and epigenetics, and the exposome, and even something that I call sociomics, which is the power of social networks to influence our gene expression patterns, to influence our health and disease patterns. We're understanding that social networks are important as molecular networks in determining health and disease. So, as we begin to piece all these parts of the puzzle together, we're creating an extraordinary story that has direct clinical application, and the functional medicine matrix is the lens through which we can actually interpret all this data and come up with real solutions for real patients in the clinic every day, which is what I do every day. I'm a practicing doctor. I go back on Monday from the Symposium and I've four days straight of patients every day. I do this as really my life source of energy. It's what gets me excited every day because I see that there is a way to take all this esoteric information and turn it into, at the end of the day (which is what got me started) the path of relieving suffering of others.

JB: We're really talking here about translational research (translational information). It only is good when it does something good, right? It only has value when it enriches to produce benefit. When I think of the 30 years, now, of *Functional Medicine Update*, going back through *Preventive Medicine Update* and *Metabolic Update*, I'm reminded that for 30 years every month I've had the privilege of interviewing someone who is a luminary, has a certain view in this lens that you're talking about—the multiple facets of knowledge—that is creating a change (a cultural change, a belief change, an attitudinal change, and a procedural change in the way we think about health and disease. I think of people like Moshe Szyf that we recently interviewed from McGill University, who is in the laboratories of Hans Selye. It actually brought Jay Johnson, who has shared the audio studio with me for all 30 years (been the audio tech all these years), it brought us both to tears, literally, this interview, in which Szyf was showing from his animal studies that by putting animals in a socially distressful situation they could induce epigenetic marks going on their genes that lock those genes in the expression of alarm and of fear, so the molecules that were produced in their bodies on a perpetual basis were fear-based molecules, meaning behaviorally these animals started to be aggressive, and they became fearful, and that was transmissible to the next generation. He asked us, in this interview, "What do you think the implications are of a world at unrest, in which you have poverty as such a major dominant theme, that you have war, that you have violence against children, that you have violence against women and people of different races?" What's the implication of that as it pertains to the lineage of the human species, which doesn't have a large litter size, it's not that strong for body weight, it can't run that fast, it only has its view of the universe as its protection to all the other elements of environmental change? And if you start modulating that by setting marks of fear, alarm, and hostility, what are the implications for the survival of the species? Those are profound questions that come out of basic science but have huge social implications, because we don't have enough docs at hospitals and rescue places to handle all those problems. Just Gulf War veterans—and he brought up the coming back from Iraq and from Afghanistan and the number of people that will be injured that are going to require care. And not just physically injured but

emotionally—epigenetically—injured, by situations that the human being should never be in. What do we do to manage those huge cultural gaps between the sense that we've got the answer somewhere in the emergency room and the hospital centers of America and the real origins of these problems, which are these functionally based frame-shifters that are creating the origins of these disturbances?

MH: Powerful question. I've thought a lot about it and I wonder if we can create epigenetic marks that can be passed on, can we undo them? Can we retag those epigenetic sites that allow us to undo the stress that has been placed on them by our toxic environment and our stressful world? I don't know the answer to that, but it seems to me there may be some "undoing" possibly in there. I know we can create more tolerance in the immune system. We can shift things that are seemingly intractable in human biology; I've seen it happen. I've seen kids with autism wake up. I've seen things that shouldn't happen happen. I ask myself, "How resilient are we as a species? How resilient are we as individuals? And what can we learn from understanding biology at the level that we do to actually change the inputs to change the outputs? I think we can.

Where the PhD Meets the MD

JB: Yes, I really share your optimism. One of the things that I've learned, and again this is where the PhD meets the MD, is that the way we often learn metabolism in school are these wall charts, right? The metabolic pathways that we had to commit to memory and recite on exams to move ahead. It gave us a sense that it was this linear relationship, like glucose got converted on into energy through the Krebs cycle ultimately and down into ATP, and so we got the sense of A goes to B goes to C to D in kind of a linear system. As we have emerged an understanding of animal biology (and actually plant biology as well), we recognize that those linear systems don't actually exist. We're not linear biology. We're not linear systems at all. We're very complex networks. It's like trying to examine a spider's web one tendril at a time. You might say, "Oh I understand a spider's web. It's this line that connects one part of the web to another." That's one web (part of the web); that's a pathway. But that is really embedded within the structure of the web—of the network—that creates the strength and integrity of that spider's web. A similar thing holds true for human physiology. We have this redundancy, so that the resiliency is built into what I call degrees of freedom. We have built all these physiological degrees of freedom through these redundant pathways. It's like the rainforest versus the cornfields in Iowa. If you have monoculture, if you have one blight or one insect or one problem with a nutrient it can wipe out the whole state's corn population. How do you stabilize that? You put a lot of external energy in the way of fertilizer, in the way of pesticides and herbicides and biocides, to keep that unstable system—that very linear pathway system—stable. If you go to the Brazilian rainforest, however, it's very complex; it's a network system. If one specie of plant or animal is jeopardized it's not good, but you've got so much other redundancy built into the system that it stabilizes itself. So the question is, what is human physiology? In the natural state it is the rainforest; it's not the cornfield in Iowa. But as we move our physiology more to a compromised state it becomes more cornfield-like. How do we maintain these metabolic degrees of freedom, which is resiliency, which is organ reserve, which is decreased biological aging. All of those things that then track and map against chronic disease?

MH: Are you asking me that question?

JB: Yes.

MH: I think it's actually quite a simple answer. How do you create a thriving ecosystem? Sid has taught us simply to think about it as, how do we remove those things that impair thriving? How do we provide those things that are necessary for thriving—everything from food and nutrients, light/air/water, to love, meaning, purpose, connection, community? All those are necessary for necessary ingredients. I think the human organism is resilient and can reset and we've seen this happen, even at advanced ages in people with extraordinary inputs that change physiology in a dramatic way to reverse aging. I think it's possible. The epigenetic marks are an interesting piece for me. As you were talking I was recalling a group of my patients that are children of holocaust survivors. And there is a hypervigilance that exists in all these patients. It's almost imprinted in them. I don't know if it's an epigenetic imprinting, or an emotional imprinting, or what exactly happened, but it's a phenomena and I don't know if anybody else has observed this. Is it possible to undo that level of stress that happened as an early influence in an epigenetic way? I don't know. It seems to me that the only thing we can do is apply the model of functional medicine. To me, what's so extraordinary about this model of functional medicine is that it doesn't matter what the condition is. If you simply create healthy ecosystems as best you can and try to understand what that ecosystem is, and remove the impediments for thriving, and provide the ingredients for thriving, that most of the time there will be a resetting. Sometimes there won't and there are other factors that we haven't thought of, but for most of the time and most of the patients I see this happen.

JB: I think there is good—again the PhD interfacing with the MD—support for what you are saying in science. Years ago, and you're familiar with this, Pottenger (this is back during World War II and shortly thereafter, and Weston Price even before him, observed some very interesting changes in actually people and then later Pottenger did studies in his cats (the so-called Pottenger cat studies) and even in plants, showing that if you fed cats a suboptimal diet (in fact, he produced—as far as I know—the first hyper-allergic cat by putting them on a cooked meat and a cooked milk diet for generations, and by the third generation of cats he had these cats whose eyes were watering constantly, they were allergic, their fur was all mottled), and they couldn't reproduce. He was unable to produce a fourth generation. Then he took those cats and renourished them, and it took four generations to bring them back to the F0 generation.[5]

Now, let me follow that up with a more controlled study (that was more an observational study). A very highly acclaimed nutrition researcher now deceased, Lucille Hurley, had done some similar studies but under controlled conditions in primates.[6] She retarded one nutrient in the diet of the mother (the pregnant mother) in primates, and that was zinc. It was not to the level that the mother, during pregnancy,

was mortally ill; just a marginal deprivation of zinc so that she went through her pregnancy with zinc deficiency. Those offspring that were born had immunological deficiencies. They became immune incompetent, so to speak. And it took—again—three generations of zinc repletion of those animals to inbreed them back to the F0 generation of immune competence. So that means you can both see degeneration, but the other side of the story—the one that you're talking about—is you can see regeneration. But it requires hard work. It requires change. And that's the functional medicine model, right? It is designing the program for the person to deliver what they need to reset some of these pathways.

MH: That's right. Amazing.

JB: So, we're kind of at the end of our extraordinary time together. This is epic. I use the term "epic" because I think it really is deserved to be used on the 30th anniversary for Functional Medicine Update, the 20th anniversary for IFM. Anything at this period that really stands tall for you that you would want to acknowledge at this major landmark transition?

Looking Ahead to the Next 20 Years of Functional Medicine

MH: Yes, I think when I started in this field there was a sense of sort of being a lone island in the field of health care. Now what is see is happening is that the influence of functional medicine is embedding itself throughout our healthcare system and throughout our culture in ways that are actually not even sort of recognized as from the functional medicine lineage, but it is just kind of embedding itself within our understanding. From Dr. Oz, who has got his show, who actually calls upon functional medicine as one of his major influences, to large insurance companies that are looking at this model, to people in Washington beginning to look at how we can do this, to even major hospitals and institutions trying to figure out how to bring this in. I think it speaks to an extraordinarily big shift in thinking that has happened. It's happened sort of subtly, but it's actually fairly quickly—over the last couple there has been a shift. I think we all feel it, and now we have to show up and help create that transition for the next 10 to 20 years of functional medicine.

JB: That's how I feel. I think, having 20 years ahead of you in timeline, I'm feeling that very same thing here at this moment. What I've recognized that this thing we call life, no matter what the procedures, the policies, the standards of practice, the guidelines, what we've learned, how we've been licensed, what we've codified, it's still a people-related function. It's a social function. Everything we do is interconnected to exchanges of people, no matter if it is social networking on Twitter or Facebook, or if it's a face-to-face meeting like we're having here, there is an exchange of human energy. There is something uniquely intangible, off balance sheet, which really drives—on balance sheet—everything. All the measurable come out of the interactions of human in a social discourse, and we're in a great period of

extraordinary exploration for what the human spirit will be like as a group consciousness over the decades and the centuries to come. My feeling is of extraordinary privilege. I watch the dedication, and I watch the people like yourself that are coming up to take the standards, and hold the banner, and keep the flame lit, and to move it to the next level. It's beyond anything I would have imagined when I was 25 years of age and just starting as an assistant professor and hoping I could make a living for my family and my kids could go to college eventually and so forth. To watch this whole field emerge to really be a collaborative group of courageous spirit that can overcome the expected and do the unexpected—do the magic—to transform society, and fight back against the covenants of "We can't do that"; and "That will never change"; and "Institutions are too big"; and "That's beyond our abilities." I think we're really seeing—and I believe (hopefully) I'll be around here long enough to actually witness this shift—the wall coming down, the thing that happens in the mid of night and we wake in the morning and see the news and everybody says, "Oh yeah, I understood that all along. It was just the standard of care. There's nothing new about that." I don't care who invents it. I don't care who takes ownership of it. I don't care what you call it. But I think we are close to whatever that vibratory frequency is that leads to that change. And this experience I'm having at the 20th anniversary of the Institute for Functional Medicine and the 30th of *Functional Medicine Update* reminds me that it is a life worth doing, it's a road worth traveling. You're hanging out with the right people; the people that are asking the right questions.

Thank you for being a major part of this change.

MH: Thank you. It's extraordinary. Just as we have seen this last year, social networks can topple despots in the most crazy places like Egypt and Libya. I think, as a community, we can together change health care.

Bibiolograpy

[1] Williams, Roger J. Nutrition Against Disease. Pitman: New York, 1970.

[2] Hyman MA. The map: integrating integrative medicine. Altern Ther Health Med. 2009;15(1):20-21.

[3] Watson JD, Crick FH. Molecular structure of nucleic acids: a structure for deoxyribose nucleic acid. J.D. Watson and F.H.C. Crick. Published in Nature, number 4356 April 25, 1953. Nature. 1974;248(5451):765.

[4] http://drhyman.com/the-failure-of-decoding-the-human-genome-and-the-future-of-medicine-3361/

[5] Pottenger, Francis Marion, Jr., MD. Pottenger's Cats: A Study in Nutrition. Price Pottenger Nutrition: Lemon Grove, CA, 1995.

[6] Keen CL, Hurley LS. Effects of zinc deficiency on prenatal and postnatal development. Neurotoxicology. 1987;8(3):379-387.p>