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## *Food-for-Health Strategies and Programs*

### *Q&A*

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*Kenneth Swartzel:* I'll follow Mark McLellan's lead with a question for all three of our panelists. I may receive three different answers since they come from different walks of life. What is the major barrier to commercialization in your world?

*Rickey Yada:* The challenge for us is defining the value proposition of wellness. We have a struggle convincing our governmental funding agencies to invest in food and health. We are lucky with our funding, but many of us realize that, on a political agenda, wellness is a long-term goal, whereas most politicians operate on a 2-, 3-, or 4-year cycle.

*Will Rozenzweig:* When we started our fund raising in 2007, we called our fund "Consumer Health Wellness and Sustainable Living" and when we went out to present that to institutional investors—the people who control very large sums of money—we got a lot of pushback on this term "wellness": What do you mean by that? Is it snake oil? Is it something that's sold on late-night TV commercials? We ended up taking that word out. Now, in the 3 or 4 years since, in the United States, our experience is that this word has been endorsed and is legitimate. So, there is hope. That Dean Ornish recently got Medicare to cover his cardiovascular program to prevent heart disease is interesting validation.

*Fergus Shanahan*<sup>1</sup>: My world is an academic world, and it's a small place. I would say that, in my world, the greatest barrier to commercialization is getting people to believe. My

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<sup>1</sup>Dr. Shanahan left the discussion early to be interviewed on the conference by the media.

favorite word is “passion” and my second-favorite word “believe.” It’s getting people who see their world as quite small—getting them to believe they can actually do it and getting them to meet people like you and listen to some of these stories. There’s such a buzz of achievement, fulfillment, accomplishment, and chutzpa when you pull off publishing a paper. But it’s so much better when you translate the paper and actually make a difference somewhere—even if it’s only to a small sector of the market—by getting something off the ground. So the greatest barrier is getting them to believe, even getting the people who run the universities to believe it can be done, and getting the people who coordinate the courses and educate our students to actually believe. That’s the biggest barrier.

*Rosenzweig:* I’d say two things, one is with respect to citizens. I’m going to start using the word “citizen” instead of “consumer,” because I think there is a problem with the word “consumer.” It’s antithetical to sustainability, so I’ll use “citizen” today. I’m talking about people who buy things and then eat them. One of the barriers is that people don’t really understand the true cost of producing what they buy and that many intangible externalities are part of those costs. We’ve been trained to think that food should be really cheap, which is a barrier to commercialization. We have to teach people to appreciate and reprioritize their spending to take care of the full system that is involved in producing healthy products. There was a debate this morning on the radio about methyl bromide vs. methyl iodide and neither one is very good for people or the planet. This relates to making big juicy strawberries. And somebody asked, “Why don’t we just charge more for strawberries?” That’s an interesting solution, and a barrier. The second barrier is the ambiguity in the regulatory environment. It’s hard to navigate. It’s hard to get people to invest significant sums of money when there’s no clear pathway to being successful and to having their investment be protected from competitors who might not take the integrity part of what you are doing as seriously.

*Robert Wager (Vancouver Island University):* Dr. Shanahan, my wife is a clinical pharmacist and on a daily basis there are *Clostridium difficile* issues in her hospital. My question is, when do you think Thuricin might be a commercial product to give her another option to treat patients?

*Shanahan:* Realistically, you are probably talking 10 years. But it is conceivable—there’s an outside chance—given that the organism that produces it is actually in the food chain, then that might be the most efficient way to deliver it. Beyond that, I can’t say. There are lots of hurdles of which the regulatory aspect is only a small one, actually. There’s the production side; will it be done by fermentation or will it be done by synthesis or isolation? Those are big hurdles. There’s an outside chance that it could end up as a food—which would speed it up—but I doubt it.

*James Seiber (University of California-Davis):* Rickey, you mentioned the George Brown Chef School in Toronto, and you are from a food science department at Guelph and doing very good outreach in bridging and networking. Here at Davis, the Culinary Institute of

America is not very far away and we are working and growing our relationship there. What has worked in that interface between food science and culinary arts and what suggestions do you have for making that seemingly natural alliance grow and prosper?

*Yada:* I'll go back to one of the words that Dr. Shanahan used: "belief." People at George Brown believe that their research chefs and the students they train need to be better educated in nutritional science. Having willing participants—believers—on both sides may be the biggest hurdle that you face.

*Betty Burri (Western Human Nutrition Research Center):* We've heard a lot of good examples of how we're working with K through 12, but that's actually fairly late in life, nutritionally. Have you any comments on additional barriers or opportunities for the daycare-center age group or at the other extreme of life, in assisted-living homes?

*Yada:* One of the initiatives that we are helping to support is in the province of Quebec. They have undertaken a program to celebrate cultural diversity at a daycare center. It's very much the Jamie Oliver approach where they get young students to bring recipes from home and the class shares in the development of that food and at the end they celebrate by eating the foods from their classmates. When the reports come back from that group, the candidness of the students is surprising. They tell you exactly what they like and don't like at that level.

*Rosenzweig:* One of the opportunities that we are seeing results from increased willingness to form partnerships among collaborators. The women at Revolution Foods were successful at getting Whole Foods to work with them early as a supply-chain partner. To address your question, I think there are entrepreneurial opportunities for people with vision and belief to address those markets and I think the road forward is to knit together people who share that vision. We've looked a lot at the market that's being termed "aging in place" and certainly food is a big piece of it, but again it's moving toward an integrated systems dynamic. There's a lot of interesting technology with sensors to anticipate when people are going to fall and they are linking that back to, "If we can see when someone doesn't take their medication they are more likely to fall and if they are not taking their medication they may not be eating." My point is, there is a lot of monitoring and the sooner the food industry starts to think of itself as not a single point in a solution but as part of an overall lifestyle system, I think innovation will begin to accelerate.

*Shanahan:* If I might just put a plug in for the exploration of the microbiota at the extremes of life—I'd probably be shot by my colleagues if I didn't—but you are probably familiar with the Human Microbiome Project in the United States, which is essentially trying to define normal and the ranges of normal, and how diet and nutrition influence the composition of the microbes. If it's really going to make an impact, I actually think it would be at the extremes of life. At the very early stage in life at the time when we are colonizing our bodies and, therefore, influencing the "education" of the immune system

and probably risk factors for immuno-allergic diseases, the time to intervene is very early on—it's too late for us—and also at the other extreme of life, the elderly, when things start to break down. The Irish version of the Human Microbiome Project, called ELDERMET, is beginning to show that there is extreme diversity and instability in the microbiota of the elderly and what is particularly revealing is when the elderly go from living in the community to being institutionalized. You might think that's because of living in close contact with others, but I think it's almost certainly the influence of diet. Let's remember that food, nutrition, diet, is the single most important factor determining the microbiota. But, we have to understand “normal” first.

*Bonnie Dixon (University of California-Davis):* My question is for Will Rosenzweig. I was particularly interested in the part of your talk dealing with Internet and iPhone applications for wellness. You said that one of the things you are watching for is a platform that will integrate all of these. Friends who work in the area of internet applications and information technology say that that integration can be quite a challenge. When a lot of websites are competing with each other—providing similar services—it can take a long time for integration to occur even though that's problematic for users. How do you see this developing with wellness applications?

*Rosenzweig:* My answer to this question is informed by a trip that I took to India not long ago. There you see lots of people with cell phones who don't have computers. Their cell phones are computers, and it's a remarkable example of skipping over an incumbent technology. The mobile environment is going to become rich for this sort of dynamic. When you think about food and behavior change, you are thinking about capturing information. There will be different ways to do that. You also want to give rewards or incentives for feedback. You want to set goals. You want to have feedback. If you pick a few key rules and you embed that in the platform, you create a fairly cohesive opportunity, once you agree on a language and a boundary for what you want to work on. We actually see this food, wellness, nutrition area being quite within grasp, and so, hopefully, we are going to make an investment very shortly in a company that will provide that platform. But it will be a mobile platform. It will be on an Android-based phone, not on a laptop.

*Amanda Martin (University of Minnesota):* Dr. Yada, you mentioned that we should be aware of intellectual property issues. At what stage is it important to start looking at that, considering that one might not be aware that one's research is heading in a direction where IP would eventually be important.

*Yada:* Tom Dowler, who is at this conference, was hired as our business analyst and one of his charges is to educate our HQP<sup>2</sup> on IP right from the get-go. We introduce them as early as possible to disclosure issues.

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<sup>2</sup>Highly qualified personnel, see page 187.

*Rosenzweig:* From a commercial perspective, if you are going to head in that direction, you want to get engaged in it as soon as possible. An excellent program here at UC-Davis is a graduate course for scientists in the business school. They do it over a semester and also have a “boot camp” where scientists receive training from venture investors and commercialization experts. IP is critical to ensure freedom to operate and exclude other people from doing what you want to do.

*Martina Newell-McGloughlin (University of California-Davis):* Will, I was pleasantly surprised to see that you are investing in Chromatin. I was shocked to see that you think there is hope for a recombinant DNA technology in agribusiness given so much push back from Europe. Clearly, you are, at least to some degree, hopeful and positive about this, and I’m wondering what convinced you that this was a worthwhile venture and if there is actually hope in Europe?

*Rosenzweig:* I think it’s promising. Obviously it’s a controversial area. A lot of our rationale for investing came from the thoughtfulness and the mindset of the scientists and the management team and where they were leading the company. Chromatin has been making good progress lately and is a great example for those thinking about being an entrepreneur. This company has already died five deaths and come back. There have been people who have abandoned it, people who have tried to take it over, investors who have left, and investors who have come in. But now it’s starting to thrive, so patience and persistence are key.

*Newell-McGloughlin:* Well done to you for seeing that.

*Rosalee Hellberg (Oregon State University):* Dr. Yada, I am especially interested in your outreach program to physicians, educating them in food science. I’m working on a program in which we are educating healthcare providers on the benefits and risks of sea food. What kinds of communication strategies and materials have you found most useful for communicating with physicians?

*Yada:* As I said, the big challenge was getting some of the hierarchy at the Canadian Medical Association and our provincial medical association to appreciate the connection between food and health. We spent a number of hours talking to them, which resulted in that insert in the magazine to their members. Initially, we paid for a two-page insert and now we are on a gratis basis, so, I think they now appreciate the concept of food and health. As I said, the other thing that we are working on is the educational program for family physicians with research chefs and again, we’re not sure what the upshot will be because there are believers and nonbelievers within the medical and chef communities. We are hoping that, initially, we will get the believers involved and they will act as messengers to others.

*Rosenzweig:* James Gordon, the director of the Center for Mind-Body Medicine in Washington, DC, offers a course to physicians on food. Their materials may be a good resource for you.

*Swartzel:* I would like to end this session by having our panelists comment on a topic that has come up in this conference: personal choice versus regulatory intervention. Would you care to make any comments relative to what you see as emerging, developing aspects? I know that's a tough question.

*Yada:* Ken, that's a real tough one but, as I often say to groups that I talk to, we need to empower our citizens with information so that they themselves can make healthy choices. There was a movement in the school-board system of Toronto to remove soda machines, which I spoke against because it would likely drive that market underground and students by other means would obtain "contraband" soda. At that time, I had a chat with John Krebs, who headed up the Food Standards Agency about the Jamie Oliver program, and he said, "Wonderful goals, but not very successful. When Jamie went into those schools to work with the kitchen ladies he didn't empower those kitchen ladies with knowledge. They were basically told what to cook and students refused to eat the meals. Money was passed through the fence for their buddies to supply them with 'contraband' food." So, again, it's all about empowering our citizens with good educational programs.

*Rosenzweig:* The hard part is that entrenched interests want to perpetuate themselves. These are large companies that have been selling products and doing very well over periods of time and their shareholders, their investors, expect them to keep growing. So, they end up in a dilemma; they are selling food products from which they make large profits but which are now known to be bad for people if used excessively. I'm all for empowerment. I also feel that money, energy and resources kept in the system to sustain incumbent activities slow down innovation. One of the reasons for the interesting innovation in this food-equity area is because there isn't a lot of money to be made there. Entrenched interests are not maintaining the *status quo*, and, as such, entrepreneurs have reprioritized their own values. A lot of people going to business school today aren't saying that the most important thing in life is to get rich. They are saying that the most important thing in life is to make the world a better place. That reprioritization of values has a very powerful impact on the innovation system. So, regulation can be helpful when shifting the interests of incumbents and also in leveling the playing field, but I don't think it's helpful in constraining people in terms of what's best for them.