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## *Panel Discussion*

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*Columbus, OH*

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*University of Wisconsin*  
*Madison, WI*

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*East Lansing, MI*

MILTON ZAITLIN  
*Cornell University*  
*Ithaca, NY*

*Steve Slack:* The panel members will provide brief self-introductions to provide context in terms of their responsibilities in the system; each has or has had important roles in land-grant institutions. Then they will share some thoughts emerging from Rick Welsh's presentation in particular and the meeting in general, and I will then ask Rick to join the panel for questions from the audience.

*Steve Pueppke:* I'm a research administrator at Michigan State University as of a couple of months ago, having spent 8 years at the University of Illinois doing the same thing at the ag experiment station.

Part of my job has been in building research relationships with companies. In my experience, this generally plays out as somebody like me contacts somebody with a similar position in a company, saying, "Your people and our people ought to get together to discuss common interests." Behind this—if you are a university person—is the vision of obtaining funding, which is a powerful driver. At the university, we make a few phone calls and ask people to think about projects of possible interest to our industrial friends. We get on a bus or a plane and get together and have an interesting, thought-provoking half-day discussion—throwing out ideas that we think might interest our friends in industry—and return home. And we get busy. And at some point we realize, "Gee, haven't seen any checks." We call up the colleague who says, "They were really interesting ideas, but we are not really sure that we're ready to fund them. But we are genuinely interested in the interaction, so why don't we get together again?" With one company, we went through this cycle five times. Eventually, my industrial colleague obtained a new job and I had to make a new connection. Then I got a new job!

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*What is a nice standard for building relationships with companies that are not driven primarily on the notion of a money flow?*

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As an administrator, one does need to manage expectations in building relationships that go through administrative channels. It's different from building on scientists who have common interests. Sometimes I think that we administrators would serve ourselves well by listening more to the faculty and coming in behind them more.

At Michigan State, when I contacted my first company—actually they contacted me—to start this process, at the end of the conversation the gentleman asked, “Michigan State, what do you want out of this? How do you want to proceed?” I responded: “I don't want to talk about money, and we don't want any money from you. At least, not now.” And he said, “Thanks. Let's proceed and try to build a relationship.” I have thought a lot about what is a nice standard—at least for us administrators—for building relationships with companies that are not driven primarily on the notion of a money flow. There's a lot that we administrators don't know, a lot of commonality that can be found, things that can emerge from conversations. Sometimes such things emerge and are shared more readily when no money, project or proposal is on the table.

*Molly Jahn:* I've been a plant breeder at Cornell for 15 years and, as of August 1, 2006, I will move to the University of Wisconsin College of Agriculture as dean. I have participated in relationships with industry for a number of years. I have also been the object of study in this regard: social scientists—sociologists and economists—have evaluated the impact of our work.

University scientists have not lost any ambition to have impact. Idealism is alive and well. However, I agree with a point Paul Thompson made: many university scientists, including those with strong desire for relevance and impact, are woefully, even shockingly, ignorant of how that actually happens, despite the best efforts of administrators and technology-transfer offices and, sometimes, of our commercial partners. Something I have thought a lot about is the extent to which some of the traditional functional divisions—those legs on a stool—can actively obscure potentially beneficial connections. Some of the success that my program has had results from my not knowing about the legs of the stool, as someone who came to Cornell from outside the land-grant system. I did my own extension. Also, at Cornell we have the benefit of strong relationships with companies from the era when things were freely distributed, when packets of seeds went out the door without a backwards glance. My career spans the transition; now for everything that leaves—even in a project with organic farmers—material transfer agreements (MTAs) have to be signed.

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*Successful relationships that generate value for both sides generate money for the public sector.*

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Again, it's important to realize the degree to which desiring to have impact is different from knowing how to achieve it. Some do know how to achieve it and making connections with them is important. Also, as a university scientist I would argue that my ability to contribute to economic and workforce development—both of which are difficult to measure—is affected by our credibility as a public institution and the perception that we offer objectivity. One of the things that the institutions I work for think a lot about is not *avoiding* conflict of interest, but acknowledging that engagement generates conflict of interest and conflicts of commitment, and that, as institutions, our job is to manage them as opposed to avoiding them. There are many ways in which this is done, one important way in which we can contribute to this—and this is something we have experimented with in my research program for the past decade—is, as public-sector scientists engaged heavily with multiple facets of the private sector, we declare our principles ahead of time. And, as public-sector scientists—and this speaks to a point that Rick Welsh made about public-sector activity being, in some respects, fundamentally different from proprietary activity—our principles are different from those that guide proprietary activity. We are not fundamentally a profit-making enterprise, and I have never made decisions—either individually or on behalf of my institution—based on the financial aspect of a relationship. However, in my experience, successful relationships that generate value for both sides generate money for the public sector. We just passed the \$100,000 mark in gifts to a consortium I am part of; each year we are offered royalties—considered “research assessments,” resulting from less-formal relationships—of at least \$50,000, which is very helpful to a public-sector research program, although our fundamental motivation is impact and distribution of benefit as opposed to profit. As economic and workforce development are hard to measure, so are objectivity and credibility. Patents are a poor indicator of impact. Licences are better, but still present issues. Evidence of engagement is less difficult to at least describe.

In an era of declining public-sector support for all types of research, I concur with Rick Welsh that we are in a stronger position with respect to credibility and objectivity if we are working from diverse funding portfolios, which has been a feature of how we have done business, allowing us the independence to declare some of those principles as we intersect with sources of funds.

*Milt Zaitlin:* I am a professor emeritus of plant pathology at Cornell. I was once the director of Cornell's biotechnology program and I co-teach a class in plant biotechnology.

I want to deal with an aspect that has emerged from the meeting: I am concerned about the poor climate for the introduction of genetically engineered crops, particularly in the food arena, whether from the public or private sector.

I don't need to tell this audience that genetically engineered foods have been demonized by a number of interest groups, and the public remains sceptical, as shown by surveys. In particular in Europe, but also in this country, when asked, most people are opposed to it. They don't know a lot about it, but have been told that it's bad. I was struck by what Richard Broglie said about the new oils that DuPont has in the pipeline. What will the opponents do when these come onto the market? There have been objections to canola oil and cotton fibers from genetically engineered plants, even though they contain no genetically engineered component. They are said to contain an "essence" of genetically engineering, which is troublesome.

My area is plant virology, and towards the end of my career we developed a technology for making virus-resistant plants by transformation with the viral replicase gene. Cornell patented this technology and licensed it to Monsanto, which had established a potato company in Idaho, NatureMark, where they were bulking up to produce Russet Burbank potatoes resistant to the Colorado potato beetle (via *Bt*) and to the potato leaf roll virus (via the replicase gene). Lo and behold, the fast-food industry—the principal market for Russet Burbank—refused them because of fear of being picketed. The NatureMark operation closed down despite the fact that it was a good product that would have benefited the farmers who were embracing the technology.

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It's distressing that a number of excellent technologies in the pipeline may not see commercialization. My expertise relates to disease resistance and many virus resistances have great potential utility, yet companies, at least in this country, are unwilling to commit to this approach because of these objections and costs of the regulatory process. We can only hope that things will change in the near future. They cannot cry wolf forever. Warnings of how dangerous these products are will eventually be tempered by the fact that consumers are not getting sick.

*Slack:* The forum is open to general discussion.

*Audience member:* GM technology is not transparent enough. Some consumer concerns may be valid. Is there an institution where the pros and cons could be set out clearly, for particular use by policymakers?

*Rick Welsh (Clarkson University):* A large part of the public perspective on agbiotech has been driven by lack of comfort with certain agrichemical companies that have dominated the market. If a broader diversity of firms were involved, it would be harder to mount campaigns and they would be less successful. There is movement to provide greater transparency, which may have a profound effect.

*Jahn:* Many of us at universities have failed to understand the extent to which we think we are doing God's work, whereas the public sees us as corporate tools. We fail to recognize, often, the extent to which many issues—particularly the corporate control of food—are confounded. We want to have a conversation about safety, which is the essence of the discussion, but the picture is more complicated and we are unprepared to disentangle the issues, and neither is our counterpart. So, we have the same conversations year after year. I didn't understand the extent to which this college—Cornell—was perceived that way until I began working with the “organic” community. To balance that, we ended up with some products that that community wanted, so we developed dialogue and at one point the only thing I had to offer was a transgenic product. I asked them how they would feel about it—a silencing technology, not “frankenfood”—and they answered, “I don't know.” I considered this a significant victory, because it finally presented the opportunity to discuss the product rather than who is running the supermarket, *etc.*

*Slack:* Milt, you mentioned being in charge of the biotech program here at Cornell. When that was set up there was funding from the state, with certain expectations about economic development tied in. Largely it was operated as a grants program that, in part, matched up with industry. So, you had a mix of public and private funds. How did the blending of funding sources affect the nature of research that was done?

*Zaitlin:* We let the faculty decide what they want to do. We never told anyone, “Work on this project and you'll get money.” The program has changed. The money for economic development comes from New York State with the objective of fostering development of small businesses. So, the program has actually supported research faculty by giving them some of that money. The way it works now, matching funds are provided to faculty members who go out and get outside money.

*Slack:* Has that changed the dynamic of the kinds of research done?

*Zaitlin:* Oh, yes. When we started, we funded a lot of basic research, whereas now we fund essentially none. It's driven by the ability to attract matching industry funds.

*Tony Shelton (Cornell University):* Milt, when you were running the biotech program, how many businesses were spun off from those relationships, and how many continue?

*Zaitlin:* I haven't been associated with the program for a couple of years, but they claim that they have generated thirty spin-offs. And a few have done fairly well.

*Allan Eaglesham (National Agricultural Biotechnology Council):* Molly, although your progress with the people in the organic-farming community was modest, do you see opportunities for meaningful dialogue at some point in the future and what can we do on our side of the fence to foster that?

*Jahn:* I see many opportunities. I agree with Milt that the argument that you will grow a second head can last only for so long, especially given the predominance of foods that contain the “essence” of genetic engineering. One of the issues has been the nature of the first, perhaps also the second, generation of genetically engineered traits being offered, which continue to confound in terms of corporate control of food versus safety of the technology. I have tried to listen carefully for that mixture and to take it apart, not to disregard the emotion over the structure of our food supply, but to separate that from the conversation that we are, in theory, really having. As we worked with that community, we established credibility, and we are now a resource that that community looks to. We were not similarly viewed even 5 years ago—and I believe we are rare among public-sector scientists. That is the basis for the conversation. If there were more engagement of the public sector with that community there would be commensurately more opportunity for meaningful exchanges, which do not develop from adversarial stances. Modest, yes, but a significant victory for me in that it was a genuine interaction focussed on communication over a real question—not us peddling a product that they didn’t want—a real question that the community had and potential technical solutions. And that is really what the public sector was introduced to do about 150 years ago.

*Welsh:* Molly, you worked with them over time and they trusted you. They trusted your perspective on an issue they knew that you know more about than they did. That’s the way it works. They will listen to that from you but not from someone else. You had proven yourself, in a way. Can that be extrapolated, somehow?—that is the question.

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*Jahn:* Let me emphasize that that relationship started out with us listening and asking, as opposed to showing up and telling and selling.

*Bruce McPheron (Pennsylvania State University):* I have a question for Rick, but first I’ll follow up on that last exchange. I talk to many extension audiences and stakeholder audiences, and I try to tell them that the thing that differentiates the land-grant system from a Google search is that we have done the filtering of the results. When we give advice, it’s science-based and we hold our credibility very dear. Molly, that may be one of the values that you would put at the forefront.

Rick, do I recall correctly that one of your outcome slides from discussions with the industry people in the survey was a perception that we are doing less basic research?

*Welsh:* Yes, essentially echoing what Milt just said, that industry funding tends to be linked to the availability of public funds. We found that industry funding tended to draw research programs toward more-applied outcomes, and even though industry was

part of that dynamic, they felt it had either gone too far or wasn't a positive outcome because basicness was what they thought universities should be focussing on. They argued that there was a comparative advantage there because of the public-sector nature of the university. Also it's not the university's role to compete with industry, and they felt that they were in competition, which is not what they wanted.

*McPheron:* That's an interesting perspective. I would say that the flip-side is that the ag-production stakeholders with whom we interact—and, in fact many of the more vocal members of our college—would argue just the opposite, that all we do is basic research. So, there's an interesting perception that's based upon your starting point, that I think we need to be aware of, at least, as we plan our research agendas.

*Ralph Hardy (National Agricultural Biotechnology Council):* In the twentieth century, agricultural research was marvellously successful in terms of food productivity and associated aspects. In the twenty-first century, agriculture—probably better than any other single entity out there—has the potential to address an array of societal problems. How do you see we are going to communicate that potential, and structure and fund it to make it a reality?

*Slack:* That sounds like a “dean” question. Molly?

*Jahn:* I would argue that we will communicate more effectively if we have the qualities that I highlighted: maintenance of credibility and objectivity as already perceived by many in the public. On the other hand, many in the public don't perceive that, and to the extent that those dynamics are in play, we don't communicate effectively. GMOs provide the classic illustration: we've been out there answering questions for decades and are still unable to deliver the technology. On my mind is the extent to which public institutions are becoming an extension of capitalism, then there is nothing to distinguish us from the private sector. Also, as administrators, we need to watch out for the perception that our scientists are engaged in conflicts of interest, with resultant loss of credibility.

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With regard to big-picture issues—energy, global warming, economic viability of rural communities—I would argue that the capacities of the land-grant colleges are perfectly crafted to address them, albeit possibly with new approaches. Frequently we perceive competition when, in fact—particularly with declining resources—we should be thinking

about partnerships, university-industry being an important one. We've had great success partnering with non-profit organizations, which was an important vehicle into the "organic" community in the absence of an extension apparatus. But we had a message and we knew that we needed to learn. Our ability to react to current and future problems will depend on the extent to which we can craft common-sense, comprehensive approaches as opposed to, "Here is research, here's teaching and here's extension."

*Pueppke:* We've made progress already. In my academic career I've seen movement away from heavy emphasis on production agriculture. We haven't turned our back on any of that, but we've moved on and expanded our view and captured the food system in our thoughts, and we've become good at obtaining funding and building relationships with a variety of funding agencies. I see it as a logical extension of this. We have to keep on that pathway.

*Jahn:* I didn't touch on funding. The federal agencies are important. Madison and Cornell rely heavily on NIH and USAID through USDA. State money is also important as are industry relationships of many sorts. Other avenues of public support exist; our non-profit relationship has been a phenomenal advantage for us in terms of connecting with a community with whom we could not otherwise have communicated.

*Slack:* Rick, it's clear that your research touches on a very important dialogue and that there are strong feelings on it in our leadership. We look forward to your information as you release it, and further interesting discussions in due course.