Function and Role of University-Based Parks In Economic Development

Q&A

Moderator: Steven Pueppke
Michigan State University
East Lansing, MI

Clifton Baile (University of Georgia): Dr. Chen—very interesting story. One thing I didn't understand was the equation that's used in distributing the profit to the university and to the founding professor.

Zhangliang Chen (China Agricultural University): This was a difficult decision because technology differs from department to department; for example, information technology and biotechnology are very different. Actually the policy came from the University of North Carolina and Duke. We decided that 5% goes to the inventing professor, 20% to the department or college and the rest to the university. Later, professors complained that they deserved more as did departments/colleges. So, we changed it, with 40% to the university and 60% shared by the research group and the department/college who decide how it should be distributed. Some departments decided that the money they take will be distributed equally among the professors who have no marketable technology, to provide balance. Different departments have different policies. Other universities may have different policies.

Cholani Weebadde (Michigan State University): When the departments decide to give the funds equally to the professors doesn't the inventor complain again because he gets an equal share?

Chen: No. The inventor gets more money, 5% or 10% for himself. The department chair distributes the rest to the people who have nothing to do with that technology otherwise it causes lots of problems.

Bob Seem (Cornell University): In support of the companies that are involved in your various institutions and organizations, do you treat the biotech companies any differently? Do you provide them any special services? What sort of services might those be, or kinds of advice and assistance that might be provided when the path to market is more difficult?

Allen Dines (University of Wisconsin): In Madison, the University Research Park is one of the few places that actually builds out wet-lab space ready to go for early-stage companies. In that sense, we do provide special assistance for biotech companies. Typically, the track to profitability, the track to products on the market, is a lot faster in IT for example, so we tend to see most of the biotech companies locating at places like the Research Park. At our campus, we have a strong life-science component so we mostly see biotech companies coming from the campus. In fact, some of the IT folks in town get frustrated because they think that there is more attention to, and favors for, the biotechs. However, my sense is that, other than the availability of that wet-lab space, no special programs favor the biotech world and our investors in the Madison area are more interested in the life-science and healthcare side than they are in IT.

Ashley O'Sullivan (Ag-West Bio, Inc.): In Canada, the companies that we deal with particularly through our investment fund—one of the big issues is money and lack of money. These companies live on a day-to-day basis. The CEO of the company usually spends a lot of time trying to figure out how they are going to survive past 3 months from now, because that's all the money they have in the bank. So money is a big issue and we help them through the early stage through the high-risk investment and that "valley of death" space and then we help them to source other capital to begin to move towards the marketplace. The other area in Canada that is a major issue in the life sciences is regulations. Our regulatory system simply does not work and most of our small companies look to the United States first as their market because your regulatory system is easier to get through and the market is larger. We are in the process of providing enhanced regulatory support, to the point of working with the Canadian regulators to try to introduce the new "smart" regulation concept that we have in Canada. And the third major issue for our small biotech or life-science companies is management. We find that a lot of the companies we invest in are technically sound, they are scientifically sound, but they don't understand the marketplace. They don't understand competition. And they don't really understand how to manage a company and work on the quickest path to revenue generation, targeting their most appropriate market opportunities. So, we help them to identify appropriate management to help them be successful.

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Wim Jongen (Wageningen Business Generator): We don't make any distinctions in terms of type of companies. It's noteworthy that a number of the companies that have human application come from veterinary science; it seems that veterinary biotech is a nice platform for human applications. We invest in pre-seed, we invest money, also on a case-by-case approach we might co-invest at an early stage to maintain a shareholder position because we want to be active shareholders. In addition we encourage the use the name of the organization, Wageningen-UR, as a way to facilitate things in the market. But, at the end of the day, the market should do its work.

Investment in plant biotechnology in China is very limited.

Chen: It seems to me there should no difference in terms of investment in biotechnology or IT or other areas; a capitalist will invest where money can be made. However there are difficulties with plant biotechnology. Investment in plant biotechnology in China is very limited. It is supported only by the government mainly because of regulatory aspects. As I mentioned before, the commercialization of GM rice remains pending, therefore it is hard for capitalists to justify investing in biotechnology and agriculture. In contrast, investment in pharmaceutical biotechnology is a hot area.

Ken Swertzel (North Carolina State University): A couple of things I'd like to comment on and then I'd like to ask the panel to comment on conflict of interest and conflict of commitment. I'm not so sure that the model in China is so different from the model we have here in the United States. I see us coming together. We certainly have faculty that start companies. We certainly have universities taking equity shares. So universities are owning pieces of companies. We see university faculty staying within the university while they run those companies, and I see those companies investing back into the university in a variety of ways. So, I'm not so sure we are so far apart. Its just more semantics. It seems to me like the bottom line is how you manage the conflict of interest, the conflict of commitment, how you manage dissemination of the information relative to the news media, your state supporters and, of course, the rest of the university community. I'll be interested in your comments.

Dines: We have a special relationship because WARF[1] is an independent entity. WARF is the entity that holds all of the equity in the start-up companies. The university has no equity, so that gives us a kind of a nice, clean starting point with respect to conflict of interest issues. For the most part, the conflict of interest we focus on is the individual conflict. The issue of institutional conflict is something that many universities have not yet waded into. There is a sense of recognition that there are potential pitfalls and problems in that area, but I think there is also the sense that they don't want to kick the sleeping

[1]Wisconsin Alumni Research Foundation.

dog. Because WARF is separate, they can make arm's-length decisions about whom they invest in and when they invest they really just simply take equity in *lieu* of cash for the license agreement. My sense is, there is a substantial difference in what Dr. Chen is talking about in China. As I mentioned, we do not actually form companies—not within the university, not even WARF. WARF takes an interest, but they always let the private sector, the founder, the inventor, pretty much take the lead. That's what I have come to characterize as a *laissez-faire* approach to start-up development. In our institution it seems to be working fairly well that way. Our sense is, we don't want our faculty to be too involved in the management of companies. We prefer to have them stay at the university and continue to do research. That's what they are good at. Typically, they are not all that good at building companies. So we would rather get the faculty person associated with a savvy investor and a savvy entrepreneur who knows how to put the company together.

O'Sullivan: From the Canadian perspective and from our own organizational perspective, we are arm's length from the University of Saskatchewan. When we invest in spin-off companies from the university we are normally dealing with the industry liaison office, which is the arm within the university that licenses all the technologies and establishes the spin-off companies. From our perspective, in terms of our due diligence, we really would like to see the university professor continue with the company. The professor is the key man in the development of the technology and we need that sort of expertise in the company—working with the company—to make sure that it's going to be successful. We may have to get the management expertise from somewhere else, but we really need the technical and scientific expertise. And then we expect that the university, through the industry-liaison office working with the individual professors, will manage any potential conflict of interest.

Jongen: In the Netherlands and in most European universities, we have a different approach, in part in that we are active in pre-seed activities working towards proof-of-concept and also early-stage investment. One of the reasons is that we don't use governmental money to do that; we do it from special funds. My boss is not necessarily happy that the Wageningen Business Generator is the 100% shareholder. I'll give you one example. Last year we had a vaccine-developing company in which there was disagreement between shareholders and I bought the shares from a shareholder so he could leave the company. Suddenly I had more than 50% of the shares so I had to consolidate, and this consolidation within the organization meant there was a multimillion-dollar loss. My boss didn't like that so we are discussing the positioning of my organization. One of the things is that if you are near the university, the balance between representing public good and making money is better guaranteed than when you are more at arm's length and making money is of higher priority. This is a discussion we are currently having in my organization. Professors can take equity in the company and it is their personal responsibility how they deal with that.

Chen: Conflict of interest is a public issue. It's a public university, so on one side you have government money and on the other side you run a company. I visited North

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Carolina State University because it was a pioneer in running enterprises. I also travelled quite often to Stanford and to the University of Maryland and to Japanese universities. In public universities, the possibilities of owning the shares or running a company are limited. But this is what we are doing in China. The people in society are unhappy that the university receives money from the government while faculty members take money from their companies. This creates some problem. There is also conflict of interest for the faculty because you are teaching graduate students while functioning as a CEO. It's a difficult question. It's an experiment, and we'll see what happens in due course.

Allan Eaglesham (National Agricultural Biotechnology Council): In the various entities represented by the speakers, to what extent is optimization of public perception of GM given emphasis?

Dines: In the early 1980s, Madison was the home of the two biggest agricultural biotech company developments. Cetus Madison located there, and after a deal with WR Grace they became Agracetus and about the same time Agrigenetics got started there. You might have noticed in my talk I didn't say much about the agricultural biotech component in Madison. We do have a very strong agriculture school—agriculture and life science, animal science—but because of where the seed money has gone, it's hard to find a true agricultural start-up or early-stage company in Madison. That's changing a little bit. We've got an angel investment group now that's focused expressly on food and agriculture.

To answer your question we have people on the campus that certainly address the policy issues associated with GM-based products. That hasn't been much of an issue in Madison for the companies. I had an interesting conversation with Ralph Hardy last night at dinner. I was at Agracetus at the time they did the first field test of the genetically modified plant and I managed that test from the regulatory and business sides, Similarly, Biotechnica, did the first test of the genetically modified microbe, on the other side of Madison. Both of those field-test locations, for what it may be worth as a little factoid for cocktail party conversation, are now business parks. I'd like to say research parks, but I don't think it's quite true. But they are certainly business parks. A big UPS distribution facility has gone up on one of those sites. So, for what that may mean, I guess the whole idea of genetically modified field-testing going on in Madison, which actually has a tradition of being a very activist and liberal community, was managed very well. We dealt with the regulatory people. We dealt with the public-perception issues and basically it came out very positively. Now, pretty much everybody has forgotten about it, but the fact is there are two fairly historic sites right there, within a few miles of the UW-Madison campus.

We need a regulatory system to protect the public and the environment but also to be an enabler of innovation.

O'Sullivan: In Saskatchewan and in Canada I think we are over the worst in terms of public perception of GM. The rough period that we went through was the late '90s and early 2000. My sense is that the new technologies are fairly well accepted. We have a long track record. As you heard, 90% of our canola is GM. Nobody has grown a third hand or a second head. There is a strong belief that our regulatory system in Canada is protecting the public. It's probably leaning too far on the one side. We need a regulatory system to protect the public and the environment but also to be an enabler of innovation; that's a key piece. We are working with the regulators on that. So, we are really in a reactive mode now. If we see something that clearly is erroneous in the media or in the literature, we react to that as opposed to being proactive on it. Within Canada, there is a $1.2 billion initiative under the auspices of Genome Canada and a number of genome centers have been established—six of them now across the country—and within that is an initiative that deals with ethics, law and society. Those folks are looking at societal issues, legal issues and acceptance issues around GM technology. So, a fair bit of work is going on in the academic community at least, to understand the issue and to make sure we don't repeat some of the problems that we've had with biotech in Canada. The major thing for us at the moment is still the markets and the acceptance of our products in markets, and Europe is still the major issue in terms of GM canola. But I think the tide is turning, even in Europe.

I see a shift in the public perception also in the European context towards the good side.

Jongen: The European perspective on GM was discussed by Peter Welters. The situation in the Netherlands is not much different from the German perspective. When we act in these matters we try to be transparent. Just tell what you are doing. This is one thing. And secondly, as mentioned already, sometimes you rename things to prevent spoilage of discussions. You use different names to explain what you are doing. We follow a similar approach in large programs, as described for the genomics program in Canada. We have a separate program on societal impact discussions; at the initiation of large programs that start, we look the societal context and what problems can be envisioned. Lastly, I am less pessimistic for the mid/long term—I see a shift in the public perception also in the European context towards the good side.

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Chen: Public perception for GM in China, mentioned before, is quite confusing. After I returned from Roger Beechy's lab, when I finished my PhD, my own lab carried out the first field trial in China with transgenic tobacco and transgenic tomato, against cucumber mosaic virus and tobacco mosaic virus, both of which severely affect tobacco production. When the experimental area reached a couple thousand hectares, a problem arose. The Phillip Morris Company stated its refusal to import leaves from GM plants in China. Therefore, we stopped that work. And then for tomato, one difficulty is that farmers keep seeds. So, in 2000, we formed a company by ourselves in Beijing University using GM technology and invested a couple of million RMB. But we got nothing out of it because of lack of market demand. Today it is very difficult to invest in the GM area. Monsanto in China produces about 20% of transgenic cotton seeds. We don't have much money invested in GM—it's very confusing at the moment.