

Breaking with academia a tough choice for scientists

BY KAREN BUCKELEW

Daily Record Business Writer

Dr. Bruce Weintraub knows the value of the theories of evolution. It was studying the evolution of certain hormones in various species that led Weintraub's business partner Dr. Mariusz W. Szkudlinski to discover the platform technology on which the two are building their new company, Trophogen Inc.

And, as Weintraub and Szkudlinski have learned, it is a taste for capitalism, rich with the flavor of Darwinism, that can keep a tiny startup alive in today's viciously competitive world of biotechnology.

"The sad facts are that most startups, after 10 years, aren't there," Weintraub said. "That's just the cold weeding-out, the survival of the fittest, in capitalist systems."

That stark truth comes as a bit of culture shock for two endocrinologists who spent decades as academics before striking out on their own to form Trophogen last July. They may seem unlikely entrepreneurs, but the pair represents a rapidly growing industry trend.

With achievements like the sequencing of the human and mouse genomes, and with the heightened threat of bioterrorism, life sciences have begun to claim their share of the corporate spotlight.

That means more and more professors are leaving the safety of the university for the Darwinian voracity of the corporate world, said Weintraub, now Trophogen's chief scientific officer.

"For traditional academicians, like me, it's the excitement of doing something new," he explained. "Wouldn't it be great to learn new things, to develop [your ideas] and, frankly, maybe to have the economic rewards that are hard to



MAXIMILIAN FRANZ

Dr. Mariusz W. Szkudlinski, vice president of research development, left, and Dr. Bruce D. Weintraub, chief scientific officer, made the break from academia to enter the entrepreneurial world of running a start-up business — Trophogen Inc. Here they display the Liquid Nitrogen Cryo-Preserving tank where they store cells engineered for production of superactive analogs of hormones and growth factor.

realize fully in academic life?

"In decades past, the best and the brightest people were at NIH, at Hopkins, at University of Maryland. But now, when I interact with the biotech companies around here, and I see other entrepreneurs like myself, I'm thinking many of the best and the brightest are in the private sector now. There has been a paradigm shift. Many years ago, it was pejorative for an academician to go into the private sector, like you were selling out. Now that is not true."

That's why last summer Weintraub and Szkudlinski left their joint appointments at the University of Maryland Baltimore and the University of Maryland Biotechnology Institute to take their

chances in a Rockville office park with their own labs and, now, eight employees.

And it all started with a chance meeting.

Chance meeting

Weintraub and Szkudlinski had been working for the University of Maryland and UMBI for four years when UMBI's new president, microbiologist Jennie Hunter-Cevera, was inaugurated in 2000.

It was when the two scientists attended her official inauguration ceremony that Nov. 10 that they met a woman who would change both their careers.

At the ceremony, Weintraub ended up sitting beside venture capitalist Linda

Powers, one of two managing directors for the local company Toucan Capital. They began to chat, sharing the details of their work.

At the reception after Hunter-Cevera's inauguration, Powers showed an interest in Weintraub and Szkudlinski's technology. As the old cliché goes, the rest was history.

"We just struck up a relationship in a very short period of time at the reception," Weintraub said. "I just knew by her vision and her creativity that she really wanted to advance life sciences, that this was the long-sought-after venture capitalist that could make it work."

Toucan's three-year, \$3.5 million investment in Trophogen allowed Weintraub and Szkudlinski to leave the university and start the company with the hope of changing the science of infertility.

Trophogen's platform technology is based on altering the amino acids in hormones and related growth factors, which stimulate cell growth and function. The goal is to produce more active hormones and growth factors by inserting the right combination of amino acids into specific areas, replacing neutral charges with positive charges in the electrostatic interactions.

"Although others have recognized the importance of electrostatic interactions, they weren't so recognized in the field of hormones and growth factors," Weintraub said. "No one has shown, as in the way we've done, that you could increase substantially the efficacy and the activity of things by making these."

Specifically, Trophogen is focusing on increasing activity in the hormones that stimulate development of the male and female gonads — the ovaries and the testes — in order to treat infertility.

The technique works on all of the growth factors in a specific scientific family called cystine knot growth factors.

Those include the factors that stimulate growth in blood vessels — for possible treatment of cardiovascular disease — and nerves, for the treatment of diseases like Alzheimer's.

"We would envision, once we work out the principles of doing this, we would have this platform technology that would have many, many markets," Weintraub said. "But we're starting with the infertility market."

Multibillion dollar market

So why infertility first? Because it's a

growing problem, he explained.

It's also a \$5 billion market.

"It's such a big growth industry," Weintraub said. "The market is growing at a very high rate as women [who are] more career-oriented defer having families to older ages where their fertility may decrease."

The appearance of genetic screening on the infertility scene also could add value to Trophogen's technology, he said.

If in vitro fertilization doctors begin to screen eggs to find the best one before fertilization, they'll be looking for the strongest, most promising egg, or follicle. Trophogen's hyperactive growth factors could stimulate the body to produce more — and better quality — follicles.

The technology still is in its early stages, undergoing pre-clinical testing in the company's laboratories. Szkudlinski said Trophogen expects to begin animal trials in about eight to 10 months. Since it doesn't have its own animal facilities, the company will supervise the testing at a contract research organization.

Pre-clinical testing, he said, should last about two to two-and-a-half years.

It seems like a long time to wait, but both scientists already have been working toward this their entire careers.

As endocrinologists, they have spent their lifetimes studying hormones. Weintraub has more of a clinical focus, while Szkudlinski is more of a researcher at heart. The two met first at the National Institutes of Health in 1994, when Weintraub recruited Szkudlinski to work in his lab at the federal institute for endocrinology.

Weintraub had been working on the idea for some time, but it was Szkudlinski who discovered the exact science of the technology, by studying the evolution of hormones using a method called rational drug design.

"Rational drug design has been very controversial in the pharmaceutical industry," Weintraub said. "There was a day a decade ago where people thought we could do a lot rationally by just looking at three-dimensional structures of hormones, growth factors and their receptors.

"But then in the pharmaceutical industry, it didn't live up to expectations. Big Pharma, as opposed to smaller biotech companies like us, are now relying on more high throughput screening of lots of different candidates," rather than pinpointing the magic answer using rational drug design.

But Szkudlinski studied the structure of fertility hormones throughout evolution, trying to find out what changes occurred to make higher forms of life, like humans, less fertile than lower forms, like fish.

He got his answer in 1994, and the two scientists began developing what became Trophogen's platform technology.

"It was Mariusz, my associate, who studied these hormones in a very scholarly way, looking at the changes in hormone structure, their evolution," Weintraub said. "To use evolution as a guide — that was the really revolutionary thing."

Difficult break

The pair began to amass intellectual property rights to their technology through NIH. Then, in 1996, they made the move to University of Maryland.

"NIH is great and it will be always great," Weintraub said. "But there are inherent limitations to developing technology in the cumbersome bureaucracy of the federal government."

Dr. Robert Gallo, known for his co-discovery of the virus that causes AIDS, was one of the reasons the two chose University of Maryland as their next step. Gallo — director of the university's Institute of Human Virology — was fascinated with their technology and its possible applications in AIDS and related diseases.

Weintraub and Szkudlinski further developed their technology at University of Maryland, filing for additional patents as they worked.

"UMB and UMBI were very savvy, and, like NIH, they were extremely generous about getting a wonderful intellectual property portfolio for us," Weintraub said. "They were scrupulous to make sure all our ideas were translated into patent applications before we had divulged them in any scientific meeting or publication."

But the men who would soon found Trophogen were beginning to realize the limitations of academic life. Their first attempt at forming a new company failed "for various complex reasons," among them the fact that the VC firm didn't offer enough funding, Weintraub said.

Then they met Powers and became involved with Toucan. On July 1 of last year, they left their jobs at the university and moved into their new Rockville offices.

Letting go of the academic life, however, was not easy. It took some convincing from Toucan to lure the scientists away from the university.

Powers “told me early on, ‘If you really want to do this, you’re going to have to make the commitment,’” Weintraub said. “She made the offer attractive and generous and ... our feelings just evolved.”

One of the company’s first challenges was to license the scientists’ intellectual property from NIH.

That almost didn’t happen. Last year, NIH almost licensed the technology to Organon, a Netherlands company, until Trophogen gained wind of the deal.

Now, the licensing agreement with NIH “is almost certain,” Szkudlinski said. But then there is the challenge of licensing their patent portfolio from University of Maryland, a task that is proving just as difficult.

“I feel that, in general, there is so much bureaucracy and very little hope that everything will move quickly,” said Szkudlinski. “It’s kind of frustrating.”

With the UMB and UMBI intellectual property, “we can move much faster and more efficiently,” he said. But the company can work around the problem.

“Only specific mutations are covered by the Maryland patents. If there would be no other option, certainly we can live without” the intellectual property, Szkudlinski added.

“The hurdles to achieve the intellectual property were there, but we achieved [the NIH license],” Weintraub said. “And Jennie Hunter-Cevera and her advisors have continued to be supportive and are trying to help us as sort of a partnership.”

Hunter-Cevera said she was impressed with Trophogen’s co-founders from the start.

“When I first came to UMBI and I saw this, I was ecstatic,” she said. “I just thought, ‘Whoa — [Weintraub] is right on target.’ I was real excited when he wanted to form a company. He has an outgoing personality ... that can take very complicated scientific principles and package it so that people can understand it.”

And, she added, the two scientists make a perfect pair.

“Bruce is outgoing and Mariusz is quieter,” Hunter-Cevera explained. “They balance each other.”

Phillip A. Singerman, president and executive director of the Maryland Technology Development Corp., said Trophogen’s story is one he would like to hear more often.

“That’s what we’re about,” he said. “One of TEDCO’s major goals is to leverage extraordinary research assets in our universities and federal labs and connect them with management and facilities and new capital.”

TEDCO helped to facilitate the relationship between Trophogen and Toucan, though “the real heavy lifting was done by Toucan,” he said.

Singerman added he hopes Trophogen’s story will inspire others in the state.

“I hope it will give a signal to other researchers that there are strong partners with resources on both the public side — TEDCO — and on the private side — Toucan,” he said. “If they’re interested in having a company and seeing their technology commercialized and put to good use through business development, that’s possible.”

For now, Trophogen’s co-founders are enjoying their freedom from academic life and savoring the twist their careers have taken.

“In the private sector, you can move so much more quickly than you can in the cumbersome bureaucracies in universities and the federal government,” Weintraub said. “You are limited only by your creativity and your dedication. You have this feeling of propriety — it’s your baby. This is something Mariusz and I have created. It gives you a very special feeling.”

“I feel more things are in our own hands,” said Szkudlinski. “We are less dependent on some bureaucratic mechanism — on outside forces. We are more dependent on what we will do with our own hands and talents and so on.”

That’s not to say all that freedom isn’t somewhat intimidating.

“The hard part is, there’s a certain accountability to venture capital,” Weintraub said. “For venture capital backing, you must meet these milestones” in order to receive the gradual VC funding.

The biotech community in Rockville makes the insecurities of entrepreneurship more exciting than frightening, he added.

“It’s exciting to be in one of fastest growing [biotech] communities, what I feel will one day be the Silicon Valley of life sciences,” he said. “It’s exciting to be part of that — in the beginning of it.”

The scientists now are just hoping their company can evolve in the dog-eat-dog world of capitalism, Weintraub said.

“There is a risk, but that’s just the nature of risk/reward,” he explained. “That’s an accommodation — to learn to live with that risk — and we’ve done that.”

*Reprinted with permission of
The Daily Record Co. ©2002*