

From Bench to Business and Back Again

The current emphasis on translational research is starting to blur differences between research environments in academia and industry. This has opened up a two-way street for academic researchers to go to work in industry and, in some cases, to then return to academia.

Earlier this year, cell biologist Ira Mellman traded a house on five acres and a tenured position at Yale University for the ups-and-downs of city living in San Francisco and a job at Genentech. This might seem a surprising move for someone so entrenched in academia, but Mellman follows in the footsteps of other well-known scientists who have made the jump to industry, notably Philip Needleman, Marc Tessier-Lavigne, Roger Perlmutter, Dennis Choi, and Roy Vogel, among others.

Going from academia to industry (and less commonly, the other way) is nothing new, of course. But a squeeze in funding for academic laboratories, the creation of quasi-university-like research organizations by big pharma, and PhD and postdoctoral students educated in an environment where applied research is more common have contributed to lowering the barrier to making the switch. According to Charlene Ledbetter of LedbetterStevens, a life sciences executive search firm in New York, “10 to 30 percent more senior roles [in industry] are being filled by academics than 10 years ago.” These, says Ledbetter, are senior scientists with tenure moving into top positions at biopharma companies.

At the same time, research institutions funded by big pharma—such as Merck’s department of experimental medicine in Rahway, New Jersey and the Genomics Institute of the Novartis Research Foundation (GNF) in San Diego—are forming a bridge between research in academia and industry. GNF, for example, strives to combine for-profit resources with hiring from academia, a relatively flat personnel structure, and encouragement to publish, says Peter Schultz, GNF’s director and a faculty member at The Scripps Research Institute in La Jolla, California.

A Blurring of Differences

“The dividing lines between industry and academia have become progressively more porous,” says Dennis Choi, executive director of the Comprehensive Neuroscience Initiative at Emory University in Atlanta, Georgia. “There’s a blurring of those careers,” making it not only more accepted to go from academia to industry, but also back again, he says. Choi has already been down this two-way street. Before taking up his post at Emory two months ago and after a stint at Boston University as a professor of pharmacology and experimental therapeutics, Choi had been executive vice president for neuroscience at Merck Research Laboratories in West Point, Pennsylvania for five years. Prior to joining industry, he was head of the neurology department at Washington University Medical School in St. Louis and was director of the McDonnell Center for Cellular and Molecular Neurobiology. “My time in industry was regarded as an asset” by academic recruiters, says Choi. “My direct understanding and appreciation of what is required in development of drugs is viewed as helpful by my colleagues.”

“In the Bay Area, it is totally culturally acceptable to go from academia to biopharma and back. It’s quite normal, actually, lots of people do both,” says Frank McCormick, director of the University of California, San Francisco Comprehensive Cancer Center and Cancer Research Institute and a professor in the department of microbiology and immunology. McCormick himself embodies that path, having previously served as the chief scientific officer of Onyx Pharmaceuticals, which he founded, and as vice president for research at both Chiron Corporation and Cetus. “The quality of

science is so high [in both academia and industry] that one’s peers recognize it as perfectly acceptable to do,” says McCormick.

Patrick Griffin, chair of molecular therapeutics and director of translational research at Scripps Florida (a division of The Scripps Research Institute), agrees. “I think it’s not a clear distinction between academic and for-profit at Scripps,” he says. There is a “need for good communications skills and leadership, you have to be doing cutting edge science in all cases.” Originally, he made the decision to leave academia after getting his doctorate at the University of Virginia working in proteomics. I was “thinking I wasn’t cut out for academia. My impression was you spent a lot of time writing grants and papers, not enough time in the lab.” He first went to Genentech; “I was a scientist, a real live job, but the salary and cost of living in South San Francisco were not compatible.” He then switched to the California Institute of Technology to work on mass spectrometry systems biology with Lee Hood. That led to a collaboration and eventually a full-time job with Merck in their immunology division.

“When I left to go from Harvard to Millennium, enough people questioned my sanity, I was a Howard Hughes investigator at Harvard, why would I leave that?” says Geoffrey Duyk, now a San Francisco-based healthcare investor and partner in the investment firm TPG (formerly the Texas Pacific Group). “Access to genomics tools was an uphill battle at Harvard at that moment in time” in the early ‘90s, he says. “The private sector was willing to invest, I went for the tools.” Duyk, an MD/PhD, in addition to being on the founding scientific staff of Millennium Pharma-

ceuticals in Cambridge, MA has since served as president of research and development at Exelixis in South San Francisco. "I've been able to move between these communities and act as a peer. I'm more of an entrepreneurial scientist than anything else," says Duyk.

Patrick Vallance, now head of drug discovery at GlaxoSmithKline (GSK) in London, UK, was formerly chief of the department of medicine at University College London and was tapped for an industry position after serving on GSK's research advisory board for two years. He acknowledges that some academics consider a move to industry as selling out, but he says that is changing. And he has been "incredibly invigorated, ideas I haven't thought about for a long time" are bubbling to the surface. It has taken "me right outside my comfort zone, gave me a buzz that once again I would be challenged."

But Still a Cultural Divide

For all the movement back and forth between academia and industry, there remain significant differences between the two environments and in the kind of people who thrive in one place or the other. "If we went back and looked at top people's CVs, people who lead R&D commercial organizations, what would be their biomarkers?" asks Charlene Ledbetter of LedbetterStevens. Her answer: "Howard Hughes investigators, a member of the National Academy of Sciences, other key scientific awards, a willingness to learn, and the ability to build teams rather than be a sole contributor." Choi echoes the importance of being a team player "You basically think more in terms of 'we,' you redefine ego to encompass team, you can only succeed in industry as a team," he says.

And, say people who have successfully made the transition, academics joining pharma need to tuck away their egos. "It's very easy to believe, if you're a success in anything, that you can develop a drug by the metric ton instead of micrograms at a lab bench," says Joseph Miletich, senior vice president of research

and development at Amgen in Thousand Oaks, California. "But unless you actually work at it for a while, you don't understand how complicated it is, no matter where you come from. If you can't sit in a room and admit to someone else that they know more than you, you aren't going to make it" in industry, says Miletich, who was also senior vice president for worldwide preclinical development at Merck as well as chief of the division of laboratory medicine at Washington University Medical School.

Whether you are a researcher in academia connected with translational research or "a doctor in a medical center and then go over to a Pfizer, you may be leading a medical team, but the business people have all the power. That is a huge adjustment, and for some, a narcissistic blow," explains Kerry J. Sulkowicz, a clinical professor of psychiatry at NYU Medical Center and founder of the Boswell Group, a consulting firm focusing on the psychology of business for CEOs and other business leaders. "The rewards of [industry] work are promotion and financial. Academia tends to be much more intellectual. For academics, whether scientists or clinicians, the more they can see themselves as business people, albeit with [a science] background, the more successful they will be. When they start to work for Pfizer, they will be, first and foremost, business people."

Collaborative processes as well as milestones, project plans, and go/no-go decisions are not typical in the academic setting, points out Giulio Superti-Furga, scientific director of the Research Center for Molecular Medicine of the Austrian Academy of Sciences in Vienna. Superti-Furga, who spent a year at Genentech as a PhD student before becoming a staff scientist and team leader at the European Molecular Biology Laboratory in Heidelberg, is cofounder of the biotech company Cellzome. "You need a higher degree of social competence in the industry setting," he says. Also, you are up against a bias from current employees. "There is a certain skepticism in the pharma setting for people

coming from academia," says Superti-Furga. "Industrial researchers need to give people who come from academics some time to learn."

Neuroscientist Marc Tessier-Lavigne, who became senior vice president of research drug discovery at Genentech in 2003, consulted for companies while a Howard Hughes investigator at Stanford University. But, he says, it's "not the same thing as doing it, as being inside. There was a learning curve on the research side, in translation," he recalls of first going to Genentech. "And learning about drug discovery and development, what makes a good drug... I was thrown in the deep end, sink or swim, but given a lot of help and mentoring."

There are also other aspects of the transition to industry that take some getting used to for senior researchers immersed in the academic environment. "When you go into industry, your public record is diminished," points out Philip Needleman, who spent 25 years at Washington University School of Medicine as a professor and chairman of the department of pharmacology before becoming senior vice president of Monsanto and president of Searle Research and Development. "You are no longer on study sections. In industry, you have meetings for decisions, not discussion. I forgot how academia is so Talmudic."

But industry is not for everyone. Nathanael S. Gray was at GNF in San Diego for more than seven years before moving to the Dana Farber Cancer Institute in Boston as an assistant professor. He says he was getting too removed from the bench. "Most pharmas have two tracks: management and a scientific ladder track. If you want to grow, you pretty much need to take the management track, and pushed away from science, it becomes personnel management. I wanted to stay closer to the science," he says. Gray, who works on kinase inhibitors relevant to oncology at Dana Farber, says he has brought his experiences and contacts from industry to his new position. "For me, it was a very valuable experience, it was a start-up environment which had the resources of Novartis. There are a

large number of people you meet and rub shoulders with. In academia, it is more cloistered.”

Roy Vagelos, former CEO of Merck, tells the story of two top researchers at the company who eventually returned to academia. It hadn't been their scientific acumen or, necessarily, their rate of making significant discoveries. “The difference with those folks,” says Vagelos, was that “they never got the bug that I went to Merck with, that drug discovery is the most important thing you can do in your life.”

Making the Leap

Genentech has been particularly successful in recruiting top academic researchers, including most recently Ira Mellman, to work at its headquarters in South San Francisco. This is partly because Genentech has created an environment where academics feel at home. “I was intrigued enough to take the position realizing I could have my cake and eat it too,” says Vishva Dixit, a vice president and staff scientist at Genentech. (Dixit was lured to the company 10 years ago from his tenured position at the University of Michigan Medical School.) “I could continue to run my own research program while contributing to” translational research at the company, says Dixit.

The ability of academic researchers to move to Genentech with their labs is a major asset. Points out Mell-

man, “I took my lab..., one part of my existence is still defined by that, being a basic scientist, addressing fundamental questions in the laboratory.” “If you give up a lab, participation changes with the international community of scientists, you don't control your own research position,” he says. But having a lab means that you need to publish your research. Mellman says that at Genentech while research is vetted for proprietary or possible trade secrets prior to submission to a journal, publication is encouraged.

Another example of the academic aspect to Genentech is their postdoctoral fellows program run by Dixit, which currently has about 100 postdocs. In this program “the funding is guaranteed for four years, they are free to work on anything they want with their mentors, as long as it is cutting edge research and they publish, ...[and they are] not allowed to work on a product-related project,” says Dixit. After four years in the program, on average about 10 percent of postdocs get hired by Genentech, 10 percent go back to academia, and 80 percent go to other jobs or law school, etc., he says. But aside from being a potential employee pool, the postdoctoral program also helps to lure leading academics to the campus. “I was invited to Genentech by postdocs to do a seminar,” says Ira Mellman. “I ran into an old friend, Richard Sheller.” (Sheller, executive

vice president of research at Genentech, used to be an HHMI investigator at Stanford.) “We talked, he started a process of trying to convince me to come here.”

For Mellman, who was scientific director of the Yale Comprehensive Cancer Center, the offer struck a nerve. His mother had died of ovarian cancer, and recently his lab manager from Yale also died of the disease. When she was diagnosed, Mellman recalls his wife saying to him, “if you guys are so smart, why can't you do something to help her?” “Why indeed?” says Mellman. “It almost becomes a moral obligation to do it.”

And, by this time, he had shed any illusions about academic research. “Once you become a PI you say you have great academic freedom, on paper it's true, but in reality you don't,” says Mellman. “You're not free, you're a slave to your own success... You need to keep building on your base to keep grant renewals. It's an illusion to think you are completely unfettered. You can't wake up and decide to work on worms, in two years when grants are due you would be laughed out of study sections.”

A major difference for him between life in academia and in industry at Genentech, he says, is that “in academia you can be a success by being interesting. Here, it is assured that you are interesting, but you have to be useful. It's a different kind of intellectual challenge.”

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DOI 10.1016/j.cell.2007.10.010