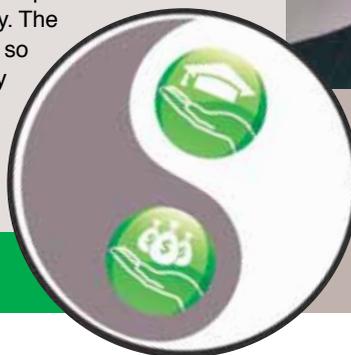


Faculty

Finding Balance: The Professor/Entrepreneur

The science of biology is one thing but the science of business is another animal all together. For academics who recognize that their discovery or innovation can be commercialized into a product or service for which people will actually pay, the promise of entrepreneurial endeavors can be exhilarating and confounding at the same time. Issues of intellectual property ownership, human resources protocols, and time management, as well as the challenge of keeping a delineated barrier between professorial and business activities can be difficult to manage, but these concerns shouldn't prevent academics from seeking to create a startup company. The key is to find avenues to balance the two worlds so that scientists can still continue to excel in what they do best and enjoy most—research and discovery.

By **Alaina G. Levine**



“Students see the passion we bring for science and entrepreneurship and it’s easier for them to see themselves doing it too.” —Gregory Phelan

KNOW YOUR PRIORITIES

Omid Farokhzad has been involved with three startups and holds 60 patents, and still manages a prolific laboratory of 25 people in nanomedicine and biomaterials at Brigham and Women’s Hospital in Boston. The Harvard Medical School associate professor of anesthesiology completed his postdoc in a group headed by MIT’s Robert Langer, where “the mindset of doing translational work was part of my training,” he says. So commercializing technology while contributing to the academic enterprise was a natural part of his genesis as a scientific leader.

But not every scientist has the luxury of learning about patents and products from their postdoc principal investigator. When **Dave Berque**, a professor of computer science at DePauw University, started as an entrepreneur, “I was uncomfortable at first. I wondered if it is appropriate for an academic to have products that spin off research,” he shares. But soon he found himself at ease with the process of becoming an entrepreneur, he says, because this is similar to the “textbook publication model that has been long-accepted in academia, as a way of blending scholarly and commercial activities.”

If you are a professor who ponders whether your research can be developed into a technology that can be commercialized, your initial step should be to ponder your priorities. Do you want to stay in academia? Do you desire a career in industry? Deciding these choices early on, even before the lawyers and university representatives get involved, is crucial to forging a balance and a satisfying career.

Farokhzad says part of the reason he has been successful is because he recognized that “my primary goal is to be an academic, and I don’t have any desire to run any of these companies.”

FIGURING OUT WHAT PATH TO TAKE

For every innovation that an academic thinks has market potential, there are seemingly endless ways of transferring that invention into a business. From weaving a multilayered licensing deal, to launching a company, to selling the technology outright, the dizzying array of entrepreneurial outlets can be unfamiliar territory for a professor whose training has been spent in the lab.

To wrangle the options and make it through the multiverse of marketing and manufacturing without sacrificing professorial duties, an academic’s initial stop should be their institution’s office of technology transfer (OTT).

The key is creating complete transparency from the start, suggests **Adam G. Marsh**, associate professor of marine biological science at the University of Delaware. Ensure the university knows what you are doing, and “make sure the university is happy with what you’re doing,” he advises. Get to know your institution’s human resources regulations and how they may impact your work in the private sector. For example, at Marsh’s institution, there are restrictions on how much time a professor can consult for an outside organization, he says. And there is also a rule that a faculty member can’t work for another company while employed at the university, a [continued](#)>

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“I utilize wide disclosure to audiences during speeches.”
—Phillip Sharp

stipulation that is common throughout academia.

The OTT can assist faculty with understanding how much time they can spend on outside endeavors and how it must be structured. Technology transfer professionals also provide insight into patent law and can help professors navigate intellectual property (IP) issues. But you need to be proactive, recommends Berque, and find out your school’s IP policies early on. “The worst time to ask,” he notes, “is after you launch, when the stakes are high and you have value.”

Gregory Phelan, an associate professor and chair of the chemistry department at SUNY College at Cortland, jokes about intellectual property: “If you’re breathing university air, they have the right to it.” Professors need to have an IP plan from the start and should engage their university’s tech transfer office early on. The collaboration between the professor and their OTT will be a vital factor in ensuring that the proper balance and separation is maintained between their entrepreneurial and academic endeavors. But “do not labor under the misconception that your tech transfer office automatically knows what to do with your research, because they probably don’t,” cautions **Michael Zemel**, a professor of nutritional science and medicine at the University of Tennessee. “You’ll need to explain what the commercial value is, the utility of your work, and who would benefit. Insist on a conversation.”

Although there are multiple avenues to engage in entrepreneurship, many professors choose to license their technology to an existing firm or start their own company, and then back off. They might serve as a science advisor, but they prioritize their time so that they can maintain their teaching and research loads while offering outside counsel to industry. “My primary commitment is to MIT,” says Nobel Laureate **Phillip Sharp**, who cofounded Biogen in 1978 and served as chair of its science advisory board and then as a member of the board of directors for 20 years. “MIT and Biogen recognized that my interactions would be limited to one day a week.”

Joop Gäken, a senior lecturer in the School of Medicine at King’s College London, has three patents. When he licensed his microRNA target identification technology to a company, he did so in part to forge equilibrium between the two worlds he was straddling. “Because we

Featured Participants

Biogen Idec
www.biogenidec.com

MIT
www.mit.edu

Brigham and Women’s Hospital
www.brighamandwomens.org

Oklahoma University Health Science Center
ouhsc.edu

DePauw University
www.depauw.edu

SUNY College at Cortland
www2.cortland.edu/home

Harvard Medical School
hms.harvard.edu

The University of Tennessee
www.utk.edu

King’s College London
www.kcl.ac.uk/medicine/index.aspx

University of Delaware
www.udel.edu

Marquette University
www.marquette.edu

didn’t spin off our own company, it hasn’t been disruptive for me,” he explains. “Keeping the balance was not very difficult, and I still did most of the same work I was doing before.”

MANAGING POTENTIAL CONFLICTS OF INTEREST

Once you engage in entrepreneurship, you must create a distinct separation between your university lab and your company’s facilities. IP can’t flow freely between the two, and neither can labor—your grad students cannot work for you in your group and intern at your company at the same time. Safeguards that prevent mingling are necessary for legal purposes, say experts, as well as to synthesize a balance between being in academia and being in business.

David Baker, a professor of biomedical sciences in the College of Health Sciences at Marquette University, partnered with his institution to set up “firewalls” to manage any potential conflict of interest that could occur. The university enlisted the help of a third party contractor, he explains, who implemented certain checkpoints that would catch and resolve possible concerns.

“There is a demarcated line between my academic labs and the companies that got started in part through my inventions,” says Farokhzad. Anything that is or could appear to be a conflict of interest is immediately shuttered. He doesn’t accept sponsored research from companies, either his own or others, and any work that is “earmarked for the companies doesn’t connect with my academic lab.” And to ensure that his postdocs and staff don’t feel they are doing work in the lab that can be funneled into one of his ventures, he encourages open discussion about patents and he generally doesn’t transfer any IP discovered in his academic lab into an old company. Instead, “if the new IP is viewed as game-changing, then it may form the foundation for a new company.”

Sharp urges that an almost excessive amount of communication about your dual paths is warranted to prevent even **continued**>

CREDIT: PHOTO IS THE PROPERTY OF DR. SHARP’S OFFICE

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the perception of misconduct. “I utilize wide disclosure to audiences during speeches,” he says.

University of Delaware’s Marsh even keeps separate computer systems for his university and company research.

FINDING THE RIGHT PEOPLE

“I’m very comfortable working with the investors that I trust and leave it to their judgment to bring in the best business and scientific team to advance our technologies,” says Farokhzad, pointing to a lesson that many faculty learn early on even in academia—surround yourself with talented people and you will shine.

“Your company will be more successful if you personally don’t do stuff that you are not good at,” says Marsh. “One has to recognize the difference between what you ‘can do’ because of related prior experience and what you ‘should not be doing’ because of overconfident ignorance.” For example, he adds, negotiating a license agreement with your institute’s OTT should be handled by a lawyer familiar with the commercial value of similar IP.

Marsh launched his company in 2009 and serves as its chief scientific officer. On paper he is not employed by the firm, but rather serves as a consultant. His advice is echoed by other successful professor-entrepreneurs: “Find the best business partners you can,” especially people with experience managing startups.

A synergistic team will help you productively manage your time. “Get ready for a busy life: one that is three times as busy,” jests Phelan. “I was surprised how busy I was. I couldn’t believe it took this much time to get a company started, funded, and a product made.”

GETTING ROI ON THE FACULTY SIDE

“As daunting as it seems, entrepreneurship is very worthwhile,” says Baker. “It has energized me and even though I have fewer publications than I would otherwise have, I’m so much more enthused about my research.” Moreover, his interaction with patients who have benefited from his technology “gives us a real sense that what we’re doing may have a profound impact in addressing unmet medical needs. We wouldn’t have this without the entrepreneurship.”

Even with a targeted separation of academic and business endeavors, pursuing commercialization can actually enhance your skills in education. “My computer science classes are better because I can bring in my own experiences from my work,” says Berque. “This influences students to think about innovation and entrepreneurship as career paths.” He draws on examples from his software company, and ultimately, he says, “I serve as a more informed career counselor.” His professional advice is augmented with contacts in the business world who can arrange for pupils to



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—Dave Berque

acquire internships and jobs, or to pursue other kinds of research collaborations.

“Students see the passion we bring for science and entrepreneurship and it’s easier for them to see themselves doing it too,” echoes Phelan.

The connections that faculty make not only help the students but benefit the department and university as a whole as well. Phelan describes how after speaking with local businesses about his technology, he invited an industry representative to serve on a department board, which helped bolster the department’s profile for fundraising and public relations purposes, and generally paved the way for more interactions between university and industrial scientists.

Paul DeAngelis, a professor of biochemistry and molecular biology at Oklahoma University Health Science Center, notes that being an entrepreneur opens up the academic to novel potential revenue streams, even with a hard separation between the activities. “NIH isn’t the golden ticket that is going to be feeding you forever,” he cautions. “My advice is to not rely solely on NIH resources if you have the ability to create a company and a drug or device that can help people.”

Entrepreneurship activity invariably also helps scientists improve their ability to articulate concepts to numerous publics. “As you explain complicated scientific processes to different audiences,” says Phelan, “it makes you a better teacher and helps improve your critical thinking and communications skills.” In addition, as you gain more knowledge about the commercialization process, and have a better understanding of the business world, you can improve your grant proposals. “Your work is directly benefiting society and humankind,” he continues. “Entrepreneurship helps make grant applications stronger, because it stimulates new ideas and demonstrates potential commercial partners,” giving you more return on your investment. If you can establish in your proposal that your innovation has commercial appeal, adds DeAngelis, it further increases your chances of landing the grant.

An entrepreneurial undertaking has myriad benefits on the academic side, and in the long run can help you reset your priorities as a scientist. Farokhzad emphasizes that entrepreneurship has helped him be a better professor because it has sharpened his ability in identifying significant research problems. “It takes just as much time and capital to work on really important problems as it does on the less important ones,” he says. “As an academic entrepreneur, you’re required to have that litmus test—is this impactful research? If not you let it go.”

Alaina G. Levine is a science writer based in Tucson, AZ.

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