Navigating technology transfer issues

You’ve got an idea and you think it has business teeth—now what? If you’re a postdoc aiming to focus your career on commercialization, your institution’s Technology Transfer Office is on the front line, providing a wealth of resources and advice to make sure your innovation’s market potential packs the biggest and most impactful punch. By Alaina G. Levine

David Giljohann began contemplating a career in entrepreneurship as he was finishing up his Ph.D. in 2009 at Northwestern University in Evanston, Illinois. Together with his principal investigator (PI), he had realized the commercial potential of modifying nanoparticles with nucleic acids to create targeted, personalized medicines for a myriad of diseases. He and his advisor approached the university’s Technology Transfer Office (TTO), which serves to help researchers in all aspects of commercialization.

Northwestern’s TTO team gave him advice, guidance, access to resources, and a sweetheart deal—they arranged for him to do a postdoc in which he would spend half his time in the lab to continue his research and half his time at the university’s incubator to bring his startup plans to fruition. When he finished his postdoc in 2011, his firm had reached a critical milestone and was able to move to permanent headquarters in nearby Skokie, Illinois.

Giljohann now serves as CEO of Exicure, and has a staff of 25 and more than 100 patents and applications to his name. The new enterprise has just completed its first clinical trials in Germany. He shares that his success could not have happened but for the dedicated professionals in the TTO. “A personalized relationship with the TTO allowed me to come up with a unique way to start the company,” he explains. “It took away some of that risk so I would not be left homeless on the street while I was growing the company.”

While Giljohann’s arrangement with Northwestern was somewhat unusual, it is still emblematic of the many resources afforded to postdocs who approach their TTO with their business ideas and seek to craft partnerships to achieve those goals. Indeed, “there is a greater emphasis on proactively approaching the graduate students and postdocs of an institution, as they are often the hands that develop those inventions in conjunction with their PIs,” says Stephen J. Susalka, executive director of the Association of University Technology Managers, the main membership organization for technology commercialization professionals.

Today’s TTOs provide a bevy of benefits for would-be entrepreneurs, including seminars, internships, access to capital, startup space, infrastructure, mentors, and established industry partners, as well as soup-to-nuts assistance with everything from invention disclosures, early-stage commercialization plans, marketing plans, and licensing deals. Since TTOs’ objectives are to spin out innovations developed by researchers, TTO leaders, who often have Ph.D.s in science and engineering, welcome opportunities to converse with postdocs to help them map out their potential startup options.

Postdocs: the MVPs of tech transfer

The postdoc appointment can be the sweet spot in one’s career track for pursuing tech transfer endeavors. First of all, at such an early stage in their research career, postdocs often don’t have preconceived notions of how the tech transfer cont.>
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– Alicia Löffler, associate provost for innovation and new ventures at Northwestern University

process works, or unrealistic expectations associated with forming licensing alliances, says Andrew Corris, a licensing associate at Nationwide Children’s Hospital in Columbus, Ohio.

One of the bad habits postdocs usually avoid is a problem that Corris and his colleagues sometimes see with veteran inventors—who are more likely to weigh in on terms during licensing than a postdoc who is new to the process. “Sometimes the experience can be a boon in negotiations, but other times those preconceptions can mean a threat to the agreement,” he adds. “Those new to licensing tend to be more willing to accept the validity of reputable third-party benchmarking, which tends to be the only available compromise point anyway.”

Another advantage for postdocs is that since they are just starting out, they risk less by choosing to realize their dreams. “They are at a point in their career where they can easily transition into the startup company to advance their technology,” says Kimberly A. Muller, managing director of innovations at the University of Colorado Anschutz Medical Campus in Denver.

Cutting a deal with your mentor

Being transparent with your research mentor is the first and most important step to navigating technology transfer waters. “Have an open dialogue with your PI about where you think the technology could go and where your interests may align in starting a company,” says Giljohann. “Not all PIs realize that their students or postdocs have these ideas or designs on commercialization.”

A mentor’s response can range from giving their blessing to the postdoc and letting them take full responsibility for their ideas, to wanting to structure a binding partnership so they do everything together. Serge van de Pavert, a group leader at the Centre d’Immunologie de Marseille-Luminy, in France, agrees that it’s important to be up front with your mentor: “You cannot go behind their back—it will lead to conflict in the end.”

As a postdoc, van de Pavert recognized that an idea he had nurtured in the lab could be developed into a product. “I came to understand that if you don’t patent your finding, there will never be any medical applications generated from it, and that really shocked me. If possible, I want something I put a lot of effort into to provide benefits to the world.” He broached this subject with his PI; she was not interested in entrepreneurship but was fine with him pursuing it, as long as he kept her in the loop and ensured that she was present during meetings with the TTO.

Tech transfer professionals can aid postdocs in having such potentially delicate discussions with their advisors. Alicia Löffler, associate provost for innovation and new ventures at Northwestern University, recalls a case where a postdoc wanted to delve into commercialization, but the PI was not as “enthused.” She and her team were able to convince the PI it was a worthwhile endeavor, in part by highlighting how the venture in question would expand their influence in their disciplines. “Professors are, in general, committed to the mission of impacting society through their research,” she says. “Sometimes, this mission is best accomplished through commercialization.”

Minefields to mind

Once you have your PI informed and/or on board, “build a coalition of people who will help with the process,” says Giljohann. In fact, it is never too early to start conversing with your friendly neighborhood tech transfer professionals, who can help you traverse the critical hazards you are likely to meet while building your business.

The first such hazard relates to publishing. Muller strongly suggests that if you think your idea is patentable, speak with the TTO as soon as possible—especially before you publish or even think about publishing, which also includes giving oral and poster presentations at conferences. “Once things are published, it changes the landscape,” she says.

Susalka warns, “Intellectual property rights can be lost if you publish before an invention application is filed. You are always in a better place if you file a patent application before you publish the paper. I’ve said to people ‘send me a draft of your paper,’ and that way it can be reviewed with the tech transfer lens.”

However, if you’re concerned you won’t be able to publish at all, don’t worry, says Nisha Narayan, intellectual property and partnerships lead at the U.S. Food and Drug Administration’s Center for Biologics Evaluation and Research: “You may need to delay the publishing for a few months, but we ultimately want you to disseminate the knowledge and make it available to the public.”

When Mayuresh V. Kothare, chairman of the department of chemical and biomolecular engineering at Lehigh University, his collaborator, adjunct professor Shivaji Sircar, and their postdoc Vemula Rama Rao realized they had a patentable result based on their bench-scale experiments, they immediately filed an invention disclosure with Lehigh’s Office of Technology Transfer (OTT). “Our OTT immediately recommended that we file a provisional patent so as to lock a priority date on the invention,” says Kothare. From this point on, they remained constantly in touch with their OTT to update on their progress in developing the technology. They filed a second provisional patent application soon after, and a nonprovisional, Patent Cooperation Treaty (PCT) application was filed within a year, which provided intellectual property protection across multiple countries.

PHOTO: NORTHWESTERN UNIVERSITY
number of applicants) than typical federal research grants, says Alexandra Hall, intellectual property manager at the University of Denver in Colorado.

Additionally, more and more TTOs are offering postdocs and graduate students internship opportunities to learn the business from the inside out. This type of offering is a “win-win” for the postdoc, TTO, and university, says Susalka, because the intern/postdoc can then serve as an “ambassador” in his or her home department and share their experience to help peers in their own patenting and commercialization pursuits.

Your TTO might offer other unexpected opportunities. For example, CU Anschutz has a partnership with StartUp Health, a for-profit enterprise that offers global-level connections and advancement opportunities for innovators in the health care space. “It provides additional resources to catapult the work we are doing here onto the national scene,” says Muller. “It connects our researchers with venture capitalists and others to accelerate translation of the research from the lab to the public sector.” The university also has a clinical validation program with Children’s Hospital Colorado and the UCHealth system, in which inventors can test and fine-tune these innovations and “deploy them in the hospital in real time,” she says.

The TTO can lay out all of the different options available, from licensing to outright selling of an invention to launching your own enterprise, and it can facilitate your success in many ways, including teaching you marketing skills, pairing you with mentors and partners, and giving you access to funding. “There are a lot of mechanisms to engage a TTO,” says Narayan. “If a similar idea has already been patented, don’t not come to me because of that.”

It’s crucial to let your TTO get to know you and your needs and goals, and vice versa. “It’s going to be different everywhere, and you’ll see the flavors of technology commercialization differ widely depending on institution,” says Corris. So just because your Ph.D.-granting institution handled tech transfer one way does not mean that your current university will handle it in the same manner. And if your institution does not have its own TTO, Susalka suggests contacting your university’s Office of Sponsored Research.

But as a postdoc, no matter how you engage the realm of tech transfer, you should know that you will find more pluses than minuses there in terms of career opportunities, even if your plans don’t involve being a full-time CEO. “People used to think that if you were going to commercialize, you could not be a good academic,” says Löffler. “But now, most faculty know this is not true. If you look at most universities, the scientists who are the best academics are also the best entrepreneurs.”

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