From academic solos to industrial symphonies

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Academic researchers often need to stand out to advance, but the corporate world calls for team players. Moving from one world to the other can be a culture shock.

Leaping from academia to industry can be vexing, confusing and, to be frank, sometimes irritating. It is not easy to be trained all your life by trusted professors only to be told that some of this training needs to be unlearned to succeed in industry. Both explicit and implicit aspects of today's postdoctoral training can directly interfere with a seamless jump into industry. In academia, shared authorship is often negatively correlated with scientific kudos, Quixotism is venerated and singular thinking is encouraged. But in industry, these customs can limit both your success and enjoyment of your new role because of three fatal errors: individualism, science for science's sake and exceptionalism. As researchers who transitioned to industry, we share in the following article some lessons that helped to make the path a little less jarring for us. In the end, we would not trade the journey, as the teams and projects we have each had the opportunity to be part of make up for any temporary trauma encountered along the way.

Individualism

Individual project ownership is often encouraged and rewarded in academia, yet this approach in industry downplays the contributions of the team and inhibits key communication required for the success of highly multidisciplinary drug development projects. Those independent, single-contributor projects you enjoyed so much as a postdoc are simply not found in the biopharmaceutical industry. In fact, no less than hundreds of individuals with varied backgrounds will play crucial roles over decades to bring a therapy to patients.

Over the years, we have seen many scientists undermine their careers by trying to do too much on their own. One former academic we knew joined a biotech company fresh from a well-respected university with stellar publications and recommendations. In a new environment, he wanted to impress his boss during his first weeks in the company. It was evident that he was putting in long hours and working tirelessly. Even so, at the end of the first three months, he was shocked by the team's dismay when he disclosed his stealth project involving a new target. Certainly, his dedication was praiseworthy, and no one could dismiss his determination. But he had failed to get the team involved, so he learned far too late that the company had been down this road before and had no wish to pursue this target.

Conversely, one of our colleagues is an accomplished biotech executive who often tells a story about a seminal experience early in her career. Given a high-profile project at the edge of her core expertise, she had a problem: she did not know as much as the expert originally brought in to lead the project, who was far more scientifically qualified than her in that particular field but had quit the company, frustrated that he could not finish the project fast enough on his own. She overcame this challenge by rallying the team and engaging a network of scientists she had worked with in the past. She harnessed their joint intellectual ability to accomplish the project together, within the timeline needed by the startup company.

These stories illustrate that two mind-shifts can ease the transition from individual to team: adjusting your expectations regarding the meaning of your work and fine-tuning the role of competition.

Individual project ownership, and the recognition that follows, is the pillar on which careers are made or lost in the academic arena. This fact engenders competition and sometimes even a culture of 'information management' (read: secrecy) among peers. Such behavior is well rewarded, and publication in peer-reviewed journals opens many doors, including the academic grant and tenure system. Competition is indeed the name of the game in academia, and it is arguably not a bad thing. In industry, on the other hand, rapid, nonlinear career evolution is business as usual. Competition is reserved for external parties and has no place within your team. Development of the product, which will bring benefit to the patient, is central. Individual contributions routinely take a peripheral place, and any meritocracy is team based, because drug discovery projects are among the most multidisciplinary projects of all scientific endeavors.

Going solo in this atmosphere is at best a kamikaze approach and definitely career limiting, in our experience. A successful individual navigates this road by contributing as a member of a team whose composition and leadership will change depending on the project maturity and the developmental stage. Sometimes the so-called leader on these teams is simply the one who writes down the decisions made at meetings.

Scientists who are not team players are often passed over for roles in startup biopharmaceutical companies. This is because industrial R&D is as much a team- and people-oriented effort as one that relies on an individual with particular expertise. As one venture capitalist (VC) puts it, when selecting startup management, "choose attitude over aptitude" (http://www.bothsidesofthetable.com/2011/03/17/whom-should-you-hire-at-a-startup-attitude-over-aptitude/). These views are likely shocking for scientists in academia, but they are widely held in industry.

Of course, this leads us directly to the second stumbling block for transitioning scientists. If

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the scientific product is only 30% of the equation, how does that change the way you do science in industry?

Science for science's sake

In industry, focusing on science for its own sake is a recipe for disaster. Without question, the startup you joined is driving toward some sort of product. So those fun excursions to satisfy curiosity that were once encouraged during your postdoc training would hasten the death of a cash-strapped enterprise counting every penny.

For example, we knew a talented scientist who went to work in R&D for a biotech startup after finishing a postdoc in academia. She was very enthusiastic about the research and started working on a biology question she found intriguing, but the CSO told her that she first needed to develop some assays required by the US Food and Drug Administration (FDA) for approval of the drug. However, our acquaintance thought that management was being shortsighted. She reasoned that assay development was not innovative, whereas the scientific project she was working on had much greater value in the long run. She continued working on the scientific project despite being asked repeatedly by her CSO to work on the assays. Understandably, she was soon let go and branded hard to work with.

Or, consider the story of another PhD scientist we encountered working at a pharmaceutical company who had a tendency to extend timelines in hopes of turning a "very good assay" into the "ultimate assay." He imagined that if he were successful, it might even get published as an article. However, because the project he was working on at his company was critical to meeting business goals, he was advised to take quite reasonable shortcuts in the name of promptly validating a project that was eating up a large slice of company funding. He never understood the concept and complained loudly about it until he left the company.

Certainly the discovery phase of a project requires rock-solid science and the ability to make decisions based on reliable assays that must reflect as accurately as possible the potential of a candidate to effect significant therapeutic improvement. In business, however, rapid assessments are key to ascertaining the fate of a project quickly at the start. These experiments can rapidly become an albatross if unforeseen or unwarranted delays occur.

Why should this be the case? At the core of every biotech startup is a tension between burn rate and innovation. On average, a startup that has raised VC funding will have between $5 million and $20 million in the bank, with monthly operational costs (including your paycheck) of $300,000 to $1 million, depending on the technology and the size of the company. That means that at best the company is always 18 months from running out of money. Unless you have discovered a new technology for bank account filling, you will not personally be able to change this fact.

So if you have just been hired as the new *in vivo* biologist for a small-molecule company, it will take you perhaps one of those 18 months to come up to speed on the old data and label your pipettemen. The *in vitro* data on the latest small-molecule compounds will take another month to create. Then it will take two months to do a proper pharmacokinetic study (allowing chemistry scale-up and dose-level selection). In another six to eight weeks, you will have an efficacy study completed, though it could take longer depending on your animal model. That means you are conservatively six months from initial analog synthesis to actionable data. At this point, the company may have one year of funding remaining, and the CEO is likely sweating bullets and worried that she or he will have to lay off everyone in nine months to ensure a proper severance. So, regardless of what the data may show, the CEO is not likely to be enthusiastic if you have been working on a long-shot experiment with about 20% of the team's time for the past six months.

How can you ensure you do not make this mistake? Ask questions of your manager and others. Find out what the near-term goals are and what the likely long-term stumbling blocks will be. Spend a few months succeeding at your assigned projects, even if they seem mundane. Use this time to get the lay of the land before you stick your scientific neck out. Then dip your foot in the water rather than diving in headfirst. To quote Greg Martin, a successful medical device executive and entrepreneur, "Reasonable people with the same information often come to similar conclusions." So, lay the groundwork and basis for your cool ideas, and then leverage the unique perspective of your new colleagues to figure out what is missing from your hypothesis. Perhaps it will be the best idea they've ever heard, but don't be

Box 1 Top five signs that you are on the right track

1. Rather than follow your gut regarding a cool, new experiment, you chat with a couple of folks in your team and a couple of folks outside your group (project management, toxicology, pharmacokinetics and so on) in the company, to seek more information about how the experiment aligns with company goals.

   Evidence you are already an expert: You position those discussions in a third-party neutral way: "I wonder if anyone has ever tried X; would that help us to do Y, and is that a priority?"

2. Instead of spending all your time laboring in the laboratory, you are actively seeking out ways to strengthen relationships with colleagues inside and outside the organization.

   Evidence you are already an expert: You are scheduling lunches with key contacts three weeks ahead.

3. In addition to building your scientific expertise, you also invest in learning soft skills, such as communication, conflict management and leadership, that will help you be more effective in working with teams.

   Evidence you are already an expert: Colleagues come to you to ask how you might approach a difficult situation they are facing.

4. When you hear of the reputations of organizations, individuals or projects, you treat the information very seriously and take it into consideration before going to work with them.

   Evidence you are already an expert: You actively seek two or three recommendations from others inside and outside your company prior to signing any contract.

5. You take any and all opportunities to learn from everyone about the entire R&D process, not just your focus area.

   Evidence you are already an expert: Your point of view on key experiments to address the main issue(s) at hand is not only welcome but also actively pursued.

surprised if they respect you more for the way you communicated and sought input than for the idea itself.

Exceptionalism

Being unique and superior is often encouraged by principal investigators in academia. The result is that fearless trainees take on daunting tasks where others have failed. We have all kidded ourselves that "it will be different for me." Some are lucky and greatness follows. For most of us, though, this approach results in a longer-than-average tenure in a postdoc. The stakes are different in a startup. An exceptionalist attitude either in terms of your personal fit in a company or your project's likelihood of success can blind you to warning signs. This exceptionalism often encourages dismissal of risk at the expense of prudent risk mitigation.

A postdoc we know was offered a job at a startup that had technology she was both an expert in and passionate about. She had heard from several others who worked at the company that it was a high-stress environment, including public criticism of those who made mistakes and pressure from management to achieve aggressive milestones with limited resources. She listened to the stories but reasoned that because of her passion and skills, she would not be affected by the pressure. She considered her exceptionalism to be a buffer and did not see the risk in working in such an environment. She also did not take steps to prepare for managing the stress and pressure. However, six months later she was not sleeping well and was exploring options to leave the company. She had discovered that the toxic atmosphere in the group was impossible for her to avoid and was negatively impacting her ability to get work accomplished.

Without a doubt, your project is incredibly special to your company. What makes it unique, however, is not your personal contribution but rather the cluster of regulatory, competitive, scientific, clinical, team, cultural and financial factors surrounding it and influencing its success. Proper management of these factors could serve to lift your project toward its goal of developing a drug to impact human health or bring it to idle entirely.

Only a minority of those factors are in your direct control. A few more are under the control of your extended team. Some you will not be able to influence at all. Therefore, by shifting your view of your project (and yourself) as exceptional, you may increase the project's overall likelihood of success by taking a more risk-mitigated route.

Succeeding

The good news is that as a scientist, if you understand and appreciate these issues, you can be very successful in your transition to the startup world. That said, we do not expect you to take our word for it. Although we have certainly been through many of these challenges ourselves and have seen friends and co-workers go through them as well, sometimes these are experiments that one just has to do for oneself.

In your first weeks in industry, approach your new career as you would a set of scientific hypotheses. Observe first. Then plan a few thoughtful, controlled experiments where a negative result will not tank your career. Find colleagues who you trust and ask for their observations, and know that it is very difficult to measure the system you are perturbing while inside that system. Then spend some time analyzing the data you get back for any bias. It is even all right to repeat the same thing a couple of times to be certain of your conclusions. But remember that old adage that insanity is repeating the same thing over and over and expecting a different result (**Box 1**).

When the data from your own experiments are in, we think you will find that many of these stories will resonate with your own observations and experiences. By alerting yourself to business expectations, you should avert large career missteps and the associated heartache.

COMPETING FINANCIAL INTERESTS
The authors declare no competing financial interests.