SYMPOSIUM

Career Choices in the Biosciences: What Companies are Looking for When They Are Filling a Position

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Holding a Ph.D. or other doctoral degree in the biological sciences used to allow for only one main career path. Faculty positions at either research-intensive universities or at predominantly teaching institutions defined the career path very well. The situation is considerably more complex now. Many individuals decide to pursue careers in for-profit organizations, either by personal preference, geographic needs, or simply as an expedient way to continue in biology in a meaningful way. This article arises from the need to define a better understanding of the nature of corporate job seeking for potential job applicants. The author draws upon his experience over a thirty-year scientific career in industry and academics. The distinctions he makes are helpful for job-seekers in this new environment. Exp Biol Med 228:1261–1265, 2003

Over half of all new jobs for persons holding doctoral degrees in the biological sciences come within the private sector. Those positions occur in fields as diverse as biotechnology and pharmaceuticals, forensic science, publishing, and intellectual property law. Few Ph.D. scientists have trained in companies, and fewer still of their faculty preceptors have industry experience upon which to draw to guide their students and fellows regarding career choices involving nonacademic fields. This presentation is designed to present key features regarding these less traditional jobs, including how the potential applicant should prepare for making the hard choices needed to take a path distinct from that of the professor.

To confine the scope of the discussion to the most prevalent case, the author's remarks have been limited to consider fields in which a person holds a Ph.D. or M.D. degree, and has research experience at the post-doctorate level as well.

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Types of Positions in the Private Sector

The broad range of job types open to today's biological science professional is depicted in Table I. Traditional careers (i.e., those job types that date from the launch of biotechnology—roughly co-appearing with the advent of molecular cloning technology) include academic and other research-intensive positions. The distinguishing feature between the positions on the list deals with requirements for teaching, characteristics of the reporting structure, and the level of independence afforded to the employee. These details will be discussed below.

A second category of job requires a distinct skill set. These positions involve knowledge of scientific research, but are more slanted toward language and organizational skills. These positions may or may not require additional professional training. Project management, for instance, is a type of private-sector job for which an MBA degree might be highly desirable but not necessarily required. Similarly, intellectual property law requires a legal degree for certain activities of the profession, but not all. Much of the writing and background research into intellectual property law is carried out by well-compensated bioscientists who do not hold law degrees.

The third category, forensic bioscience, is a field that has gained prominence due to recent world and national events. Homeland security, bioterrorism, and global pandemics are but three examples of areas in which skilled bioscience workers will be in high demand for the foreseeable future. This category of work is potentially very attractive to those scientists who possess unique language skills.

Table I. Biological Sciences Career Types

Traditional career paths
Academics: instructor/asst. professor
Federal Gov't. Lab
Biotech and big-business staff scientist
For-profit analytical laboratory: CRO, diagnostics
Bio suppliers: Sales, R&D
The road less-known to academics
Computing/data management
Project management/science administration
Intellectual property law
Scientific journalism
Forensics
Microbiology, Virology, GC/MS
Esp. with foreign language skills

Strategies for Choosing a Potential Position: Matching Your Skills to the Company

One of the most difficult tasks facing a potential job applicant is to decide how to limit the search to those types of job for which there is a good fit of interest and capabilities. Key decision factors should include the size of the company, how long it has been in business, and its financial stability.

Beginning companies may offer very attractive opportunities in terms of research, but there is an inherent risk associated with any such endeavor. The level of risk one is willing to assume should be a first-line decision in determining whether or not to consider a job with a particular company. Besides size and stability, the degree of success a company currently enjoys may tell a lot about the sort of work environment that will prevail. Small biotechnology companies, for example, are launched to capitalize upon some key technology usually licensed in from universities whose faculty members are associated with the new firm. There is only a limited amount of funding available, but the new company has only the smallest visibility and no products yet. So it will generally encourage its scientists to carry out research studies designed to jump-start the pipeline of capabilities, build the patent estate around the founding patents, and lend visibility to the company through publications and participation of the scientists in scholarly scientific meetings. As a company progresses and reaches a critical stage where profitability is near or an initial public offering is planned, there will be less opportunity for unfocused science and more need to do only those mission-critical activities needed to achieve the company's main goals. Finally, large corporations are a mix of these two concepts. Whereas they are extremely mission-oriented and focused on achieving certain goals, there generally is sufficient latitude in the work day to allow and encourage scientists to maintain off-line research related to the individual scientist's field of interest.

These considerations lead to a set of criteria that potential job-seekers can use to assess the nature of the job and the fit between their skills and the company's expectations.

Table II. Key Decision Drivers for Choosing the Type of Company You Want

Level of scientific independence
Level of risk for continued employment
Level of profitability
Opportunity for advancement
Regional considerations
Corporate HQ or "outpost"

Table II shows a list of these considerations, listed in decreasing order of importance.

The maturation of the company and the impact of this evolution on employee activities are shown in Table III. Potential bioscientists should consider how their own professional needs and skills match up with the likely work environment. A good match between expectations and reality will be far more rewarding than one in which you quickly find yourself at odds with the way science is conducted in that particular environment.

The Nature of Corporate Bioscience Research: How Does it Differ from What You Experienced in Academics?

A new bioscience doctoral recipient who joins a company in any capacity will find that the expectations made upon time and activities are unique. What exactly are you expected to do when you join the organization? What are you NOT expected to do? The first answer to job-description expectations in the corporate world is very simple: teamwork. Graduate schools teach scientists to be individual thinkers, to be able to carry out a line of research from initial concept to completion. Only side issues are performed collaboratively, and such collaboration is not enforced but merely encouraged if it suits the individual's own interests. Corporate science, on the other hand is entirely team-oriented. There is a clear idea where the company wants to go, and in well-run companies a strategic plan exists that guides how it hopes to achieve those goals. As a beginning scientist you will be assigned resources (e.g., people, equipment, and supplies) to carry out your tasks. But with few exceptions you will not be allowed to work in

Table III. Research Distinctions Between Early-Stage and Late-Stage Companies

Early-stage (e.g., startup biotech)
Much can be published, presented at meetings
Latitude to pick the direction and approach
Work much like an academic lab
You will multi-task
Late-stage (e.g., big pharma, big biotech)
Key work is private, only off-hours science is cleared for public
Direction according to team needs and planning
Stratified levels of authority like Gov't.
Keep eye on the ball

Table IV. Scientific Research in a Company

Good news
Teamwork
Fewer pressures to publish
Planned approach
No budget problems
Access to new methodology
Stock options, salary
Bad news
Shared science
Can't publish the hot stuff
More paperwork
Deadlines
Ultimate control by non-scientists
No students, fellows

a vacuum. Your efforts will be carefully dovetailed with the work of many others. Hence your scientific work has both good and bad aspects to it as shown if Table IV.

What Are the Characteristics of a Company's Business Position that Can be Evaluated Before a Visit?

Companies are often rather new and untested. A typical biotechnology company has been in business for only 5 years, and the time to reach profitability can be 10 years or more. New companies are created daily, to commercialize ideas and patents. To determine whether or not such a company is suitable for your needs, you can evaluate some features of its status that will help you to understand how the company has progressed. You will also uncover information about the nature of the work environment as you gather answers to these questions. These matters are summarized in Table V.

The ways to obtain answers to these questions can largely be extracted from public documents. As shown in Table VI, the company's web site will give an understanding of who provided the scientific ideas that began the company, whether they are still involved, and whether there are patents that support the value of the company's science. One source of information that is frequently overlooked (or unknown) by potential employees is the financial disclosures

Table V. How Can You Evaluate a Bioscience Company?

Scientific foundation/goals
What exactly do they do that relates to your skills and future plans?
Funding
Living on borrowed time or profitable?
Management/organizational structure
Free-wheeling startup or lockstep control freaks?
Proprietary position
Do they have issued patents on the their technology platform?
Competition
How many other companies are out there doing exactly the same thing?

Table VI. Homework Before You Visit

Corporate website
Corporate mission: How do they plan to make money?
Scientific mission: What is their technology base?
Is it unique?
Is it proprietary?
Scientific founders
Scientific Advisory Board Membership
Corporate Board Membership
Patent Estate
S.E.C. 10K Form
Significant matters, compensation of senior management, investors, equity partners

of publicly traded companies required to be filed with the Securities and Exchange Commission. This document, called a "10-K," gives many details about the company's financial health, who its creditors are, and who has invested in the company. Unfortunately privately held companies do not need to disclose such information.

Applying for a Job in Industry: Nature of the Selection Process

Industrial job advertisements generally carry specific job descriptions, dealing with every aspect of the position, including reporting responsibilities, research area of specialization, technical needs, and position title. There is little to be gained by applying to companies that are not actively advertising. Virtually every unsolicited curriculum vitae that arrives in a company's Human Resources office ends up directly in the wastebasket. There is one possible way around this—if you have a personal contact within the company, no matter what their level, it never hurts to contact them and forward your CV.

Absent the direct personal linkage, you will be applying to an advertised position with knowledge of the job description. It is similarly a waste of time to apply for a job in which your credentials do not even remotely match the advertised needs. Even if you are really a star in one area, companies rarely hire except within a specific job need.

Table VII. The Search Committee Will be Asking Themselves "Can This person. . . ."

In Academics
Compete in science in your chosen field
Anchor a key technology and/or run a core facility
Teach a course, especially an entry-level requirement
Self-promote to attract attention, fellows, and grants
Publish often and well
Become fully funded and stay that way
In a Business
Know a competitive scientific field
Anchor a key technology and/or run a process
Communicate effectively by both oral and written means
Get along in a team environment
Plan and meet timelines
Do work that makes money for shareholders

Table VIII. What A Company Hopes to Find

A team player
Reliability
On-time performance
Good "people skills"
Smart, self-correcting
Able to accept criticism and make corrections
Future potential
Excellent scientific capabilities

Companies (like any other employer) expect to receive a CV and letters of reference that define your capabilities. You cannot create good letters of reference; you earn them over your years of contact with the persons who know you and can evaluate you. The best you can do is to be sure that your references really have sent the letters you have requested. Most companies will not proceed to interviews if letters are not in from all the people listed. Never list a reference who has not already agreed to be a reference—they might decide not to send a letter at all—the result is probably going to be that you do not get considered at all.

The Interview Process

Let's assume that you have made the cut and are invited to the interview. Unlike an academic interview, corporate interviews often are fairly formal events and may not even involve your giving a seminar. Especially if the job is not directly in lab research, you will be judged more by your interpersonal skills and references than by the hard science you have done. Corporate recruiting and hiring also usually involves specific itemized written interview forms to be filled out by the interviewers. The responses are considered in aggregate before you are ranked. It is rare to be hired on the spot. Generally, a letter outlining the job offer will come shortly afterwards by mail or by a personal phone call.

If you are interviewed, it is helpful to consider in advance what the search committee will be evaluating both from your CV and references and from their personal interactions with you. In academics, you are expected to carry out research, teach, and perform service to the school or department. Companies have somewhat different evaluations based upon their somewhat different needs. Table VII lists the questions that a typical selection committee will be asking about you.

It is important to realize that companies (as with all hirers) are attempting to do the best job they can. They do NOT want to be faced with the prospect of having you leave in the short run, thereby forcing the organization to go through the search process again. Rather, hirers try to be as careful as they can to pick the right person for the right position.

The characteristics they will seek to match include the obvious technical skill-set. That is, there are certain professional activities that they will be sure you can do. But just as important is the list of less tangible skills, of concern based upon their need to retain you and for you to be a "good fit" within their organization. A list of these characteristics is shown in Table VIII.

Signing on the Dotted Line: What an Offer Might Look Like

Job descriptions will be spelled out in detail during discussions about a position. Some details will only be mentioned once the company decides you are their prime candidate. Unlike academic positions where protracted deci-

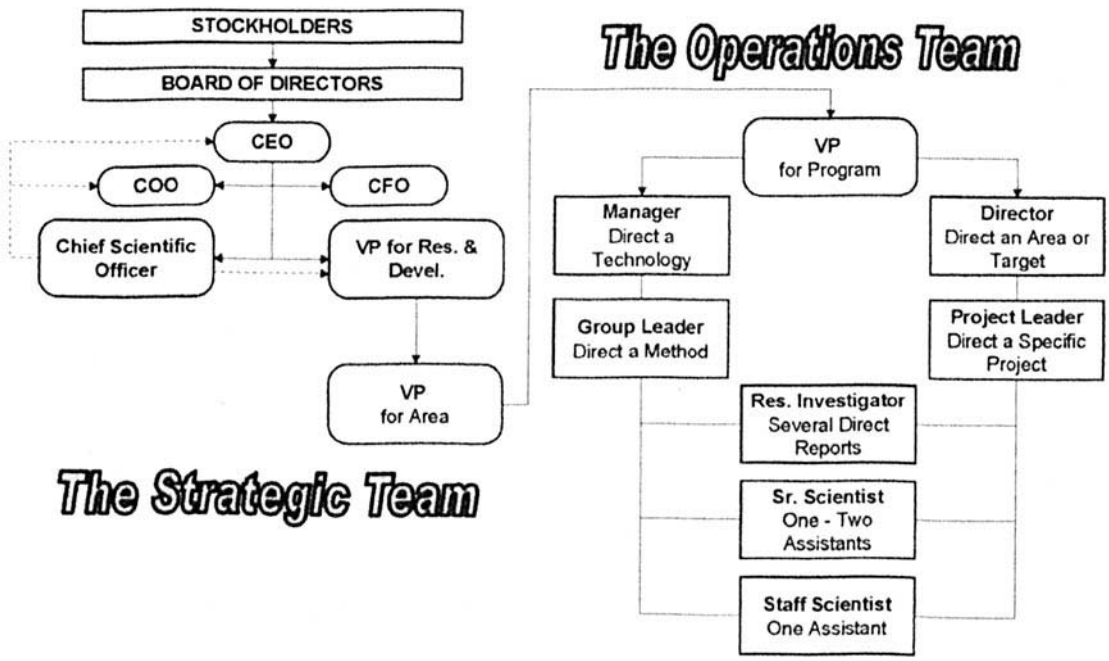

Figure 1. A typical corporate organizational chart.

sion-making time is often the rule, companies operate on much stricter timelines. Often a job opening is available to be filled only within certain specified times; once past, that job opening may be lost to another part of the company. In view of this factor, companies are much more streamlined than academics in making a job offer. The formal offer will define the job, benefits, salary, reporting authority, and duties in detail.

Most important, there will rarely be more than one opportunity for you to make a return visit, such as to bring a partner to see the area. Once that second visit is done, you will be confronted with a job offer that might give you only a couple of weeks or a month to respond. Such offers cannot be delayed until you finish up a research project at your current academic setting, since the job they wish to fill is presumably needed to be filled at once. You will need to consider carefully any clarifying issues and discuss them before signing a job acceptance. Less tangible issues such as relocation expenses may be unclear in the job offer letter. It is appropriate to discuss them up front. It is less easy to negotiate for higher starting salary or more stock options unless you have a competing offer from another company. If you do have a second offer, so much the better.

Do not try to price yourself out of a nice job by being too naïve or too greedy. Companies set pay and benefits ranges within a certain geographical area and within their own business sector. If you attempt to negotiate an unrealistic package, you may find that they will bypass you in favor of their second-choice candidate.

Where You Will Fit into an Organization

Once you agree to a package and report for work, you will find that you have become a part of a well-defined organization rather than a loose affiliation of researchers typical of most university departments. You will be hired as a "Staff Scientist" or a similar term, and will have both a supervisor and peer workers. Generally, one of the toughest things for a new scientist to understand is where you fit into the overall picture. To help you see how a company is organized, Figure 1 shows a typical organizational chart for a hypothetical biotech pharmaceutical company. You will be starting very close to the bottom rung of the research tree of professionals. You will find it helpful to retain this chart and to begin filling in names of colleagues on it so you can see who reports to whom. As you do so, note that the doctoral degree is not necessarily a determinant of where people stand on the chart. Most companies are meritocracies. Whenever someone moves up or out, there is an opportunity for the rest of the team to realign. People with good organizational skills or other characteristics beyond having a specific degree can frequently hold sway. In fact, most of the people in senior management (shown on this chart as the "strategic team") are not necessarily doctoral recipients at all. To the contrary, senior business persons are often not scientists, but are hired specifically because their management skills exceed those of any scientists in the company. In this sense, I will close with one word to the wise: remember that in any company, the corporate direction is almost always set by non-scientists. Science is a very valuable part of a company's structure, but is by no means the only part. A prudent scientist interested in a career in companies would do well to realize that one's capabilities at the bench must be complemented by capabilities in dealing with people, with teams, and with business decisions that often place pure scientific research objectives in the background.