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Making the Leap: When, How, and Why a Career in Drug Discovery May Be Right for You

By [Matthew Bell](#) | Mar. 19, 2004 , 10:00 AM



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As a young scientist considering a career in drug discovery, you may have many questions that need answers. How does the pharmaceutical industry work? How would my career progress? What skills are companies looking for? Would I do high-quality science? Is it a better option than academia? The answers to some of these questions depend, of course, on the individual scientist. But the good

company will employ over 1500 scientists, and spend over \$1 million every day, on discovering new biological targets and creating new therapeutics (chemicals, proteins, or vaccines) to move forward into clinical testing. In total it can take more than 10 years to get a new drug to market, and the effort will involve thousands of people from many scientific disciplines.

In such a large and complex organization that there are many different career options for young scientists. If there is a life sciences discipline being pursued in academia, there will be a pharmaceutical industry opportunity in a similar field. No longer limited to biology and chemistry, the pharmaceutical industry offers long-term careers in various disciplines and subdisciplines (see Box 1). Furthermore, "cross-functional" scientists are becoming an increasingly valuable commodity. As systems biology begins to take hold and bear fruit, there will be an increasing opportunity for scientists with multiple degrees: information technology with biology, statistics or mathematics with bioinformatics, pharmacology with genomics, and so forth. The opportunities are many.

Box 1.

Common drug discovery disciplines

Biology

Assay development

Cellular biology

Electrophysiology

Genomics and molecular biology

Medicine

(Behavioral) pharmacology

Physiology

Protein biochemistry, expression, and synthesis

Protein engineering and biopharmaceuticals

Chemistry

Analytical chemistry

Medicinal and synthetic chemistry

Rational design

Computational chemistry

In silico and de novo design

High-throughput screening

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Where do I start, and how does a career progress in industry?

You can make the leap into industry at any point in your science career. A promising young life scientist can secure an entry-level drug discovery position, usually termed "associate scientist" or "scientist," with a bachelor's degree in science. At this level you are responsible for completing basic experiments and will be a member of one or more cross-functional "project teams" that focus on discovering and progressing new medicines. These teams will have representatives from many scientific disciplines: chemistry, biology, and others. With a Ph.D. or postdoctoral experience, you can expect greater seniority and control over your own activities, and you also can expect to be leading these project teams soon. Being "team leader" of a discovery project is akin to being the senior postdoc in an academic lab, controlling the key staff and activities associated with a given line of research.

The most successful team leaders can, in time, move into broader management positions, gaining progressively greater responsibility in terms of staff size, budget, and ability to impact strategy and direction. These people focus on managing other scientists (usually of the same discipline) and eventually attain the title of "director" in most companies; job titles are remarkably consistent between big companies. For many, this is the pinnacle of a successful career in drug discovery, but the most successful and ambitious directors will usually get promoted to head up entire departments, often with upwards of 100 people. Department heads can expect a title of "vice president"; they are akin to the very high-profile, large group, successful principal investigators (PIs) in academia. In the organization I work for there are about 15 vice presidents (senior leaders), and about 60 directors (middle managers) in a discovery organization of 1300 staff.

Many scientists don't like the daily grind of grant writing and administration that comes with a successful career as a PI in academia. Similarly, many scientists in industry have no interest in a progression into management. These scientists prefer to stay close to the science and away from the details of management, politics, and company bureaucracy. Thankfully most pharmaceutical companies recognize this and work especially hard to retain their best scientists, usually by offering an attractive nonmanagement career ladder. In many organizations these bright, dynamic, and innovative scientists can expect to become "distinguished research fellows," on par with the most senior leaders of the organization but without day-to-day management duties and with the time and authority to focus on developing innovative new ideas, new technologies, and new science. It would be like being a "visiting professor" every day.

Why do scientists choose industry?

substantially higher salary (often double the academic level), better working conditions, plentiful equipment, and a superior work environment.

That said, industry isn't for everyone. Some scientists detest the idea of being accountable to a budget, of having to be part of a company culture, or following company strategy. Some scientists will always prefer to write grants and carve out their own niche, which works best in academia—not within a large company. But when you are deciding whether industry or academe is best for you, don't base your decision on the myths that circulate in academic circles (see Box 2). Most are untrue much of the time; others are wrong all of the time.

Box 2.

The five myths of working for industry

1. You don't get to publish

Not true. Most pharmaceutical companies strongly encourage publication of scientific work and often link bonus payments to high publication levels.

2. You don't get to go to conferences

Not true. Pharmaceutical companies generally encourage scientists from all levels to attend key conferences as both delegates and presenters.

3. You just screen or make compounds all day

Not true. A drug discovery operation is made of many different disciplines and involves many activities including a lot of basic research.

4. You are not free to follow your own interests or to be innovative

Not true on both counts. Innovation and creativity is strongly encouraged and scientists spend significant time exploring new hypotheses and approaches.

5. The science is not as good as in academia

Not true. Pharmaceutical companies claim many high-profile publications, patents, and groundbreaking concepts every year.

stone to careers in pharmaceutical patent law, business planning and strategy, project management, operations management, publishing, media, communications and promotional activities, management consulting, competitive research, regulatory support, and business development (setting up alliances with biotechnology partners). These functions are all critical to drug discovery, are intellectually stimulating, and give a great opportunity to stay within science while leaving the lab behind.

What next?

Drug companies are always keen to attract and recruit the best scientists. They are looking for a solid university track record, good publications, and evidence of good communication, team, and leadership skills. If you desire a career in the pharmaceuticals industry, think of yourself as a valuable commodity and network relentlessly. Annual reports and Web sites are great places to start looking for information. Medline is a good resource to identify researchers' names and scientific fields of interest.

Conferences are a great way to introduce your self to companies. Don't limit yourself to the accompanying career fairs. Visit posters and attend talks presented by drug companies and make a point of expressing interest in what they do and asking about potential job openings. Take along CVs and publication reprints. Take advantage of your personal connections; network via colleagues and friends. At the very least, get your resume out to the human resources directors at pharmaceutical or biotechnology companies that interest you. See if internship programs are available. Remember: The more contacts you make, the greater the chance of hitting upon a company that works in a technology or research area that you are interested in, and the greater the chance that one of those companies will be interested in you.

There is no way to tell for sure that a career in industry is right for you, but it has one piece of compelling data in its favor; scientists who move from academia into industry rarely move back again.

Note: The author has a Ph.D. in neuroscience from the University of Cambridge, UK, and now works for Wyeth Research in Philadelphia, as Director, Discovery Research Strategy. He may be contacted by e-mail at BelIM3@Wyeth.com.

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