Overview

Like many corporations, industrial research companies in the pharmaceutical, biotechnology, semiconductor, and chemical industries employ individuals in numerous roles. This guide will specifically focus on research-based jobs as well as a few other common entry points for people with advanced degrees in scientific fields. It is not uncommon for industry employees to eventually transition into other roles within the industry.

Research and Development of products are two distinct sectors of industry but for the purposes of this summary, they are considered together. This work bears the most resemblance to the work in an academic research unit. For this reason, it is often the first role that academic researchers envision when they think of "industry" jobs.

Although the research methodologies are often the same or similar as academic labs, there are also several distinctions worth noting:

- **Fast Pace** - there is an emphasis on speed and efficiency. High operating budgets allow for access to a wealth of equipment and materials in order to speed the pace of the projects.
- **Volatility** - projects are continuously being evaluated and may be terminated quickly for a variety of reasons including strategic business decisions. Scientists in industry must be adaptable in this fast-paced environment.
- **Organizational Structure** - there are multiple levels of hierarchy. Instead of one PI making all of the decisions, there are typically several additional layers of management. A successful scientist is expected to eventually take on an increasing amount of management responsibility within this structure.
- **Intellectual Property Policy** - publication policies vary quite a bit within companies. Some are open to publishing in scholarly journals, while others are more guarded about intellectual property. This is worth considering if one wants to consider returning to academia.
- **Diverse Objectives** - whereas most academic research groups focus on new discoveries, this type of work is only one element of the industrial research system. Researchers can be involved in many aspects of the manufacturing process including mass production and quality control.

TRANSITIONING INTO INDUSTRY R&D

Considerations

While some scientists are able to transition directly into an industrial R&D position immediately after they finish their PhD, others do so after a postdoc. Some industry research positions explicitly state that they require experience post-PhD, while others do not say this outright. You may find that having postdoc experience can make you more competitive on the job market, as you can point to years worth of additional experience and further technical expertise. Therefore, PhD students may want to consider if a postdoc, either in academia or industry, would be useful to transitioning into industry research. Postdocs can indeed be a strategic move in helping you to gain specific technical expertise that elevates your application.

Industrial Postdocs

There are a growing number of industrial postdoc programs, which offer a transitionary-like position for academically-trained PhD scientists. Some companies hire fresh PhD's directly into these roles. Industrial postdocs typically pay more than academic postdocs, vary in publication expectations, and can be found in large industrial companies.

TECHNICAL SKILLS FOR INDUSTRY R&D POSITIONS

Aligning Your Skills

Often a company is looking for a candidate with a specific set of technical competencies. Although they may be willing to train on some elements of the work, they prefer that new scientists bring experience in most of the required technical skills so they can start producing quickly. If you apply to a position where you don't have as close a match to the technical skills, you will need to take extra steps to convince the employer why you are an appropriate fit.

How to Prepare

Read job ads and determine which skills are in demand. Identify people on campus who are currently using these techniques and ask them for training. Try to find out when training on specific equipment is being offered by vendors and attend these sessions.

PROFESSIONAL SKILLS FOR INDUSTRY R&D POSITIONS

A variety of professional, or soft, skills are important for industry R&D positions. The table below outlines the motivation behind why employers look for these competencies and how you can develop them now.

Competency	Why they want it	What you can do now
Teamwork	Industry research is highly collaborative. Although it is usually unjustified, academics can be viewed as researchers who are only able to operate independently.	Engage in team projects, inside and outside of research. Try to create a collaboration, or work cross-disciplinarily. Think about how to effectively communicate this experience.
Leadership	Industry employers want scientists who have the potential to lead their own research team eventually. Demonstrating leadership abilities will distinguish a scientist beyond their technical abilities.	Volunteer to manage and mentor others in the lab. Join student organizations and community groups, and take leadership roles.
Communication	In an industrial research setting, one must be able to explain research effectively to a variety of stakeholders at a range of technical specificity. The ability to speak to different audiences and competently explain your work is essential for these roles.	Seek out additional opportunities to present your research or scientific topics more broadly in non-traditional settings. Make sure to convey your communication experience effectively.
Business acumen	Since private sector research is operated as a business, showing familiarity with some common business practices can be advantageous. Any experience working with a company can serve as evidence of the ability to effectively transition out of academia.	Think of the laboratory as a small business: Can you help with any business-like operations or administration? Additionally, working directly with companies is another common way applicants build this familiarity - consider working with a startup at Polsky or MATTER to gain actual industry experience.
Networking	Open positions in industry receive hundreds of applications and it is difficult for them to sort through all of this. A lead on a verified candidate from within the company goes a long way. It also serves as evidence of your proactive nature and social competency.	Talking to current industry scientists is an essential step in trying to secure one of these jobs. They may be able to direct you toward specific units looking for your expertise or even tell you about current or upcoming openings. Many companies have internal referral programs, where employees are incentivized to refer candidates.

APPLICATION MATERIAL GUIDANCE FOR INDUSTRY R&D POSITIONS

General Advice

To understand what an employer is looking for, pay extra attention to the order and frequency of skills and expertise listed in the job posting itself. Intentionally craft your application materials to emphasize these items clearly to the employer. If a particular technique is repeated multiple times in the job description, make sure it shows up early and often. Or, if the first bullet point describing a position's role is interfacing with multiple teams, you should make sure to emphasize teamwork experience. The job posting tells us precisely what employers want to see.

Resumes

R&D resumes are tailored snapshots of your research achievements and expertise, adjusted to suit each individual job. If you have a wide array of skills or are applying to a variety of roles, consider creating a master resume that is inclusive of everything you've done research-wise. Then, select the most appropriate experiences to include for each application. You may need to shift the order of bullet points describing your research so that the most relevant one is first. It could also mean adjusting your list of technical skills so that you emphasize the top ones.

- **2 pages is appropriate:** a typical order of sections is – education, research experience, technical skills, select publications, and select presentations. Extra space can go to describing leadership experience.
- **Consider starting with a summary section:** this section is an opportunity to brand yourself as a particular type of scientist with the expertise they're looking for.
- **Mirror their language:** incorporate the language of the job posting into your resume. This includes technical skills! Beware of acronyms and list skills as they are listed in the job posting.

Cover Letters

Effective cover letters for R&D positions utilize research stories to emphasize the skills and disciplinary expertise relevant to that job. Select 2-3 relevant research projects from any point in your research career, and tell a story. What was the context, what did *you* do, and what was the outcome? Incorporate details like teamwork and leadership. Then relate it back to the position – how will you apply this experience to that role?

NON-RESEARCH ROLES TO CONSIDER

Field Applications Scientist (FAS)
Many biotechnology companies employ scientists to help with pre- and post-sale support of their proprietary technologies. Sometimes, the FAS will serve as a technical specialist and in others, the FAS will play a significant role in the sale of the technology. The FAS travels with the sales team and performs live product demos and/or presents seminars. The FAS will answer client's technical questions before the sale, and often are contracted to provide support for the product after the sale.

Technical Support Specialist
Similar to FAS positions, companies need specialists with scientific knowledge available to its customers. These roles are typically on-site and much of the support may be done by phone.

Sales Representative
Companies that sell research related products are always looking for people with technical knowledge who can communicate effectively with their customers. Some roles will require previous sales experience, while others are available to "off the bench" scientists.

Medical Science Liaison (MSL)
Biopharma and medical device companies employ scientists to be experts in the science of how their products work. MSLs are charged with delivering unbiased, scientific knowledge about how a product works. They meet with physicians and researchers to discuss technical details of the products including issues like off-label usage of drugs. Researchers with more clinically relevant knowledge may find it easier to make this transition.

Medical Writer
Medical writers manage several different types of scientific and technical communication for biotech, pharma, and device companies. Many medical writers support publications in professional journals, scientific posters, presentations, reports, and other materials. Marketing communications roles create materials intended for the customer, while others may be directed toward regulatory bodies, business partners, or physicians.

Sample Alumni Profiles
- Aparna Vasanthakumar (Postdoc, Medicine, 2015) Principal Research Scientist at AbbVie
- Vishwas Srivastava (PhD, Chemistry, 2018) Process Engineer at Intel
- Jing Li (PhD, Chemistry, 2010) Principal Scientist, Bioanalytical Sciences at Alnylam
- Ketrija Touw (Postdoc, Medicine, 2016) Senior Scientist at Abbott
- Jacob Johansen (PhD, Physics, 2017) AMO Scientist at Honeywell
- Sahar Mozaffari (PhD, Human Genetics, 2018) Statistical Geneticist at 23andMe
- Annie Gai (Postdoc, Molecular Engineering, 2017) Senior Scientist at 3T Biosciences
- Frank Olechnowicz (PhD, Chemistry, 2017) Senior Chemist at Behr

Resources
Books
- Career Opportunities in Biotechnology and Drug Development
- Navigating the Path to Industry

Societies and Associations
- American Medical Writers Association
- Medical Science Liaison Institute
- Medical Science Liaison Society

Articles
- Science Careers Article on Medical Writing
- Science Careers Article on Sales Jobs
- Science Careers Article on Tech Support Jobs
- Science Careers Article on FAS Jobs

Finding Job Postings
- Ed's Job List
- Biospace
- BioPharmGuy
- TheLabRat
- Using the job titles in this guide or technical skills as keywords, search common industry job sites, such as LinkedIn, Glassdoor, and Indeed