

Pharmaceutical Industry: Research and Development

Background

Pharmacists in industry are employed in a variety of positions. Although practice titles, descriptions, and prerequisites differ by company, the educational requirements for these positions are often similar. Most pharmacists in industry work in the following areas: research and development (R&D; addressed in this profile), all phases of drug product development, sales and marketing, corporate administration, all phases of clinical trials research, drug information, manufacturing, regulatory affairs, health policy, scientific/professional affairs (e.g., professional relations, professional education, medical science liaison [addressed in a separate profile], medical information), and quality control.

Pharmaceutical industry corporate facilities are located throughout the United States, although there is heavier geographic concentration in the Northeast (including Delaware, New Jersey, New York, and Pennsylvania), the Midwest (including Illinois and Indiana), the Mid-Atlantic (North Carolina), and the West Coast (California), where many biotechnology start-up firms are headquartered. Regional plants and offices exist throughout the country.

R&D pharmacists in the pharmaceutical industry spend 29% of their time doing research. This is followed by 16% of their time spent on project management, 15% of their time for department management activities, 9% for personnel management, and 5% for data management. Notably, they also listed that 22% of their time is spent in other activities not listed in the survey. R&D activities may take on many forms ranging from the development of new chemical/drug entities to the evaluation of existing products for alternative indications.

Characteristics

Twenty-eight pharmacists responded to the 2007 *APhA Career Pathway Evaluation Program* survey. Slightly over three fourths of the respondents (78%) held an entry-level pharmacy degree, with 39% having a PharmD degree. Eighty-six percent indicated an advanced degree (MA, MS, MBA, PhD, or other). Eighteen percent had completed a residency program, 14% a fellowship, 7% had received certificate training, and 7% reported that they had been through some form of other training.

Respondents' average age was 45 years old. More than half (54%) of respondents were female. Income data show 21% earn between \$80,000–\$100,000, while the remaining 79% earn \$100,000 or more per year. Seventeen percent indicated that they earn more than \$170,000 per year. The average time worked per week was 48 hours. Respondents represented 17 states.

The majority of respondents indicated that they were satisfied with their work, with 68% indicating “extremely satisfied” and 32% indicating “somewhat satisfied.” The same percentages also were mentioned by respondents related to their work being challenging, with 68% indicating “extremely challenging” and 32% indicating “somewhat challenging.”

A respondent from Connecticut provided insight that the position offers “challenging meaningful work in a good environment.” A colleague from Texas also indicated “highly varied projects and challenges.” Finally, a respondent from Delaware stated the perspective that R&D provides “long-term job satisfaction as opposed to short-term financial gains.”

Insider’s Perspective

What aspects of the job are most appealing?

Fourteen percent of the pharmacists indicated that two areas provided the most appealing aspects of their work: variety and intellectual stimulation. Three additional items were mentioned by 11% of the respondents: new product development, schedule, and the environment itself.

A pharmacist from Minnesota wrote of enjoying the “environment, lots of variety, people, and job flexibility.” One respondent from Florida summed up the thoughts of many colleagues by stating enjoyment in the “intellectual stimulation, camaraderie with peer scientists, innovative atmosphere, location, corporate objectives, and compensation/benefits.”

What aspects of the job are least appealing?

In contrast to the most appealing aspects, 21% of pharmacists indicated that pressure/stress was the least appealing aspect of their work. This was followed by politics (18%) and no direct patient contact at 10%. Ten percent also listed a lack of resources as a concern. Pharmacists in industry R&D average a 48-hour workweek.

A respondent from New Jersey indicated one of the least appealing aspects was the “high pressure,” which was supported by a colleague from Pennsylvania who stated the least appealing aspect was the “high degree of pressure/stress.”

What advice should students and practitioners consider when selecting the option of working in the pharmaceutical industry doing research and development?

Most respondents indicated the need for pharmacists to look at lifestyle considerations and the opportunities available. Others wrote that it is important to look at additional training, both formal degree training and information training, because this is a requirement in many positions. A Pennsylvania respondent indicated the importance of pharmacists’ “willingness to seek additional advanced education.”

Helping People

Pharmacists within the industry are involved with activities that tend to indirectly help people, looking at the research that they perform. R&D pharmacists can indirectly impact millions of patients with the discoveries and modifications that they make to medications and the understanding of disease.

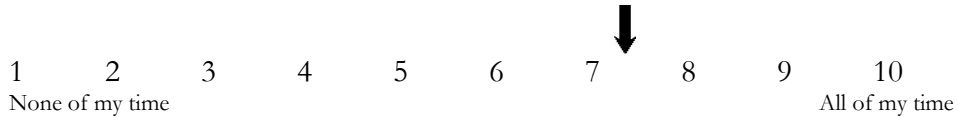
= 2.9
 $\sigma = 2.8$



Collaboration With Other Professionals

Collaboration with other professionals ranks in the upper mid-range among pharmacists working in the industry. Researchers and those in development build up a network of people within and outside the industry.

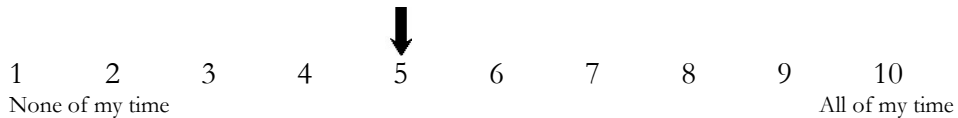
= 7.3
 $\sigma = 2.3$



Educating Other Professionals

Pharmacists are trained to educate other professionals because of their background and knowledge. Many in R&D attend national and international meetings to present information and gather new information from other professionals.

= 5.0
 $\sigma = 2.5$



Variety of Daily Activities

Respondents rated this factor the highest across all profiles. Pharmacists in R&D found the variety of daily activities within their positions to be very appealing. Respondents are involved in meetings, writing, professional reading, travel, and other work activities associated with positions in R&D.

= 8.3
 $\sigma = 1.8$



Multiple Task Handling

Pharmacists in the pharmaceutical industry are used to handling multiple tasks. The variety of work activities they are engaged in require multitasking most of the time. Pharmacists in R&D must juggle many responsibilities.

= 8.4
 $\sigma = 1.8$



Problem Solving

In the pharmaceutical industry, problem solving is very important. Resolving problems can enhance the drug discovery process and move a product to fruition. These positions require pharmacists to create and try untested solutions much of the time.

= 7.5
 $\sigma = 1.7$



Focus of Expertise

Most pharmacists in industry say their pharmacy training and background is crucial to effective performance in their careers. Surprisingly, respondents indicated they tend toward a sharply defined area of expertise. This may be due to the fact that a majority of the work is related to general scientific application.

= 6.4
 $\sigma = 1.8$



Innovative Thinking

Innovative thinking or new ideas are important components of bringing new products to market, the major goal of the pharmaceutical industry. Pharmacists who work in the industry engage in this type of thinking most of the time as reflected by the high range 8.5 rating.

= 8.5
 $\sigma = 0.9$



Applying Scientific Knowledge

The scientific/medical knowledge that a pharmacist has is critical for success in a number of pharmaceutical industry positions. Respondents rated this factor the highest across all profiles and tied for the second highest rating within this profile. It is not surprising that those in R&D apply the scientific knowledge that they have on a regular basis.

= 8.9
 $\sigma = 0.8$



Applying Medical Knowledge

In contrast to the application of scientific knowledge, respondents rated this factor lower at 6.9. Taking into consideration that many of the respondents are working at the very early stages of R&D of a medication or device, they have a lower need to apply medical knowledge.

= 6.9
 $\sigma = 2.1$



Creating New Knowledge by Conducting Research

R&D pharmacists rated this factor the highest across all profiles at 7.2. In this career path, pharmacists may be involved in R&D of new products and/or devices, the multiple phases of clinical trials, and other forms of research that create new knowledge. As noted earlier, respondents indicated they spend almost one third of their time engaged in research activities.

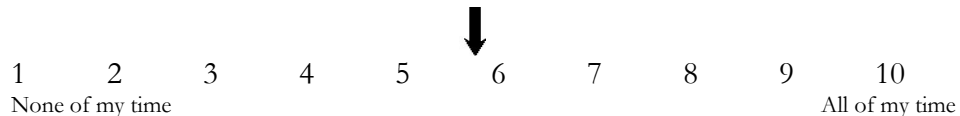
= 7.2
 $\sigma = 2.4$



Management/Supervision of Others

Supervising and managing others was the work activity reported to consume the third most amount of time for a pharmacist working in R&D. Taking into account that 68% of the respondents are in some type of management position, this reinforces the time they spend on this activity.

= 5.8
 $\sigma = 2.6$



Management/Supervision of a Business

Not surprisingly, R&D pharmacists spend less time on management of a business compared with personnel management. This may, however, depend on the company one works for because in some companies R&D is established as a distinct work unit that runs as a separate business within the organization.

= 5.0
 $\sigma = 2.7$



Pressure/Stress

Mentioned as one of the least appealing aspects of their work, respondents rated this factor an upper mid-range 7.0. Often, pharmacists are pressured to handle many projects and responsibilities at one time and those in the industry are no exception. Those in research face the challenges of moving as quickly as possible within the budgetary allowances for a given project. Pressure also varies with the project assigned to the pharmacist.

= 7.0
 $\sigma = 1.9$



Work Schedule

Work schedule in R&D somewhat depends on the project the pharmacist is working on and the deadlines that need to be met. When the team is working on deadlines for FDA submissions, the schedule can become unpredictable.

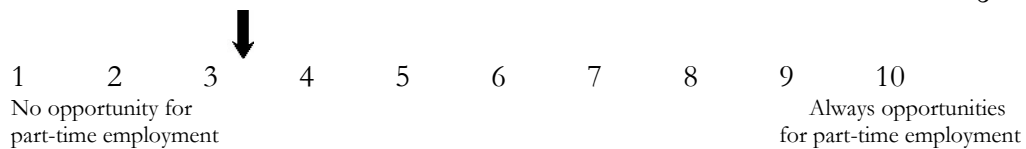
= 7.1
 $\sigma = 2.3$



Part-Time Opportunities

Part-time opportunities are very limited in R&D. Much of this is based on the need for those in R&D to understand what has happened previously with the work. In addition, because of the number of meetings required in some of the projects, it would be difficult for a part-time researcher to keep up-to-date with all the information.

= 3.3
 $\sigma = 2.8$



Job-Sharing Opportunities

Job-sharing received a low range response from respondents at 2.9.

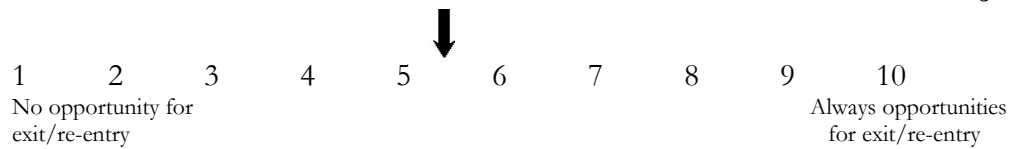
= 2.9
 $\sigma = 2.3$



Exit/Re-entry Opportunities

Exit/re-entry opportunities are mid-range in this practice environment. R&D pharmacists rated this factor at the 5.4 level.

= 5.4
 $\sigma = 2.6$



Parental Leave Opportunities

R&D respondents rated this factor the third highest in the profile at 8.8. Considering many are employed by larger organizations, parental leave opportunities are a benefit offered to many.

= 8.8
 $\sigma = 1.9$



Leisure/Family Time

Respondents gave this factor the highest across all other profiles at a rating of 7.8. Those in R&D indicated that they have opportunities for free time.

= 7.8
 $\sigma = 2.0$



Job Security

With so many mergers and consolidations in the industry, many pharmacists believe they could gain employment quickly if they were displaced from one company. The skills that R&D pharmacists hold also seem to be transferable to other areas within the company that employs them. The rating of 6.7 provides some sense of security among the respondents.

= 6.7
 $\sigma = 2.2$



Opportunities for Advancement

Pharmacists agree that the industry offers advancement opportunities, as seen by the 8.1 rating for this factor. Pharmacists can move up into management roles, create and lead new departments, and perform any number of important roles in industry. Advancement opportunities will vary from company to company depending on their size and needs.

= 8.1
 $\sigma = 1.8$



Opportunities for Leadership Development

Leadership development opportunities are highly available within the industry as reflected by the high range rating of 8.1. Developing highly refined written and oral communications skills are critical for many leadership positions in the pharmaceutical industry.

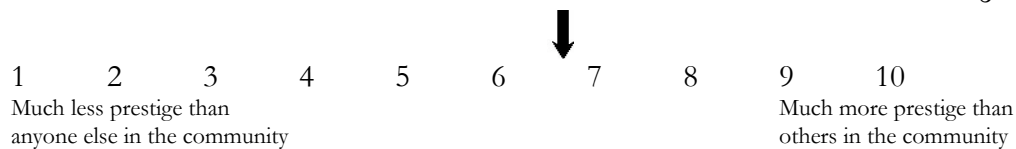
= 8.1
 $\sigma = 1.7$



Community Prestige

Community prestige depends somewhat on the location of the industry and what the individual company does in the community. R&D respondents felt that they do have prestige in the community.

= 6.6
 $\sigma = 1.9$



Professional Involvement

Pharmacists working in the industry are very involved at pharmacy meetings and professional activities. Oftentimes, pharmacists in industry are called upon to share their knowledge of current research activities. Typically, this involvement depends on the individual pharmacist's desire to be involved with the profession.

= 8.0
 $\sigma = 2.3$



Income

Respondents feel that they are properly compensated for their work, as noted by the 8.4 rating for this critical factor.

= 8.4
 $\sigma = 2.1$



Benefits (vacation, health, retirement)

Benefits often go hand in hand with income and pharmacists in industry have very good benefit packages, reflected by the high range 9.1 rating—the highest rating in this profile. A key difference in benefit packages within the industry may be the availability of stock options and other bonuses based on goals.

= 9.1
 $\sigma = 1.1$



Geographic Location

As mentioned earlier, there are many locations where R&D pharmacists can work within the industry. However, certain regions have a larger number of company corporate offices, which can limit some movement. Taking into account that the R&D sites for industry are not as numerous as other sites for the company (e.g., regional sales offices) the rating of 4.5 provides an understanding that there are some limitations to choices of location.

= 4.5

$\sigma = 2.7$



Autonomy

R&D pharmacists indicate that they have autonomy in much of their work. While they do work in teams and collaborate with others, they are responsible for many aspects of the project work.

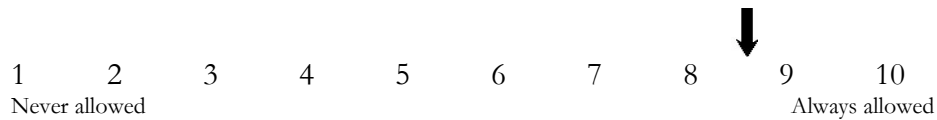
= 7.5
 $\sigma = 1.8$



Self-Worth

A pharmacist in the industry has a wealth of knowledge. As mentioned earlier, much of the work that these pharmacists perform has an indirect impact on patients' lives thereby providing a sense of self-worth.

= 8.6
 $\sigma = 1.4$



Future Focus

Companies rely on pharmacists not only to meet short-term objectives, but to lay the groundwork for future goal achievement by positively positioning the company with important stakeholders. Those in R&D look to the future for new product development and the opportunity to fulfill an unmet medical need.

= 8.2
 $\sigma = 1.7$



Professional Prestige

Pharmacists working in the industry report a moderate opportunity to develop professional prestige among other pharmacists in the profession. Such opportunities may include educating practitioners about newer research or by attending national and international meetings to exchange information.

= 7.9
 $\sigma = 1.8$



Unique Practice Environment

Reflected by a 7.7 rating, pharmacists in R&D feel their positions are somewhat unique. They have the opportunity to work in a number of different areas, with people in positions ranging from administrative to highly specialized sciences and with many different products and therapeutic areas.

= 7.7
 $\sigma = 2.1$



Advanced Degree

More often than not, an advanced degree helps to be successful in the pharmaceutical industry. This is especially true in the R&D side of the business. Advanced degrees are required to move into a leadership role within specific departments.

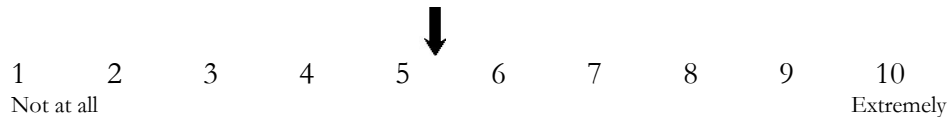
= 8.0
 $\sigma = 2.1$



Entrepreneurial Opportunity

Ranked in the mid-range at 5.3, pharmacists in industry feel they have some entrepreneurial opportunity. Opportunities vary by position and company.

= 5.3
 $\sigma = 2.3$



Additional Training

Pharmacists in R&D find additional training is required for many positions. Keeping up with new scientific knowledge from the biotechnology and genetics fields is important in these positions.

= 7.1
 $\sigma = 2.5$



Interacting With Colleagues

Rated at 8.7, respondents scored this factor the highest across all profiles. Considering the type of work that is accomplished in R&D, it is not uncommon for pharmacists to interact with many different colleagues in a given day.

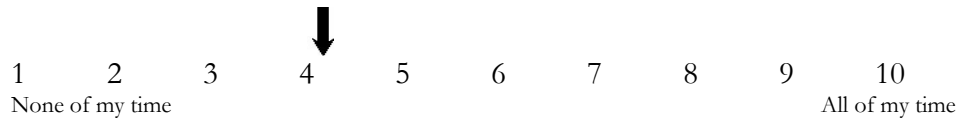
= 8.7
 $\sigma = 1.2$



Travel

R&D pharmacists for the most part have lower needs to travel for their day-to-day activities. However, there are opportunities to travel for research meetings both within the company and external to the company.

= 4.1
 $\sigma = 1.9$



Writing

Respondents indicated that they do have a need for writing in their work. Progress reports are just one of many reports that are necessary when working on a large-scale research or development project. Additionally, departments tend to request activity reports to help look at financial considerations for the budgets that they distribute within R&D.

= 6.6
 $\sigma = 1.9$



Working With Teams

Scoring the highest rating across all profiles, R&D respondents indicated that they work in teams most of the time. This is not surprising if one takes into account some of the factors mentioned earlier regarding interaction with colleagues.

= 8.5
 $\sigma = 1.0$



“On Call”

Respondents indicated that they have little, if any, “on call” responsibilities.

= 1.9
 $\sigma = 1.5$



Work on Holidays

R&D pharmacists rarely, if ever, work on holidays.

= 1.6
 $\sigma = 1.4$



Work on Weekends

Similar to the above factor, respondents rarely work on weekends. However, this is project specific.

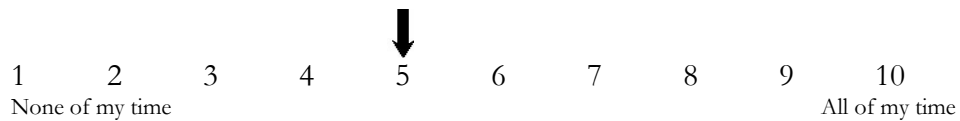
= 2.6
 $\sigma = 1.8$



Presentations

Respondents indicated that they spend some time giving presentations. These presentations can be internal to their own department and to a broader audience at international R&D meetings.

= 5.0
 $\sigma = 2.3$



Mean Scores for Critical Factors

1. Interaction With Patients	2.1
2. Conducting Physical Assessments	1.5
3. Interpreting Laboratory Values	2.8
4. Continuity of Relationships	3.5
5. Helping People	2.9
6. Collaboration With Other Professionals	7.3
7. Educating Other Professionals	5.0
8. Variety of Daily Activities	8.3
9. Multiple Task Handling	8.4
10. Problem Solving	7.5
11. Focus of Expertise	6.4
12. Innovative Thinking	8.5
13. Applying Scientific Knowledge	8.9
14. Applying Medical Knowledge	6.9
15. Creating New Knowledge by Conducting Research	7.2
16. Management/Supervision of Others	5.8
17. Management/Supervision of a Business	5.0
18. Pressure/Stress	7.0
19. Work Schedule	7.1
20. Part-Time Opportunities	3.3
21. Job-Sharing Opportunities	2.9
22. Exit/Re-entry Opportunities	5.4
23. Parental Leave Opportunities	8.8
24. Leisure/Family Time	7.8
25. Job Security	6.7
26. Opportunities for Advancement	8.1
27. Opportunities for Leadership Development	8.1
28. Community Prestige	6.6
29. Professional Involvement	8.0
30. Income	8.4
31. Benefits (vacation, health, retirement)	9.1
32. Geographic Location	4.5
33. Autonomy	7.5
34. Self-Worth	8.6
35. Future Focus	8.2
36. Professional Prestige	7.9
37. Unique Practice Environment	7.7
38. Advanced Degree	8.0
39. Entrepreneurial Opportunity	5.3
40. Additional Training	7.1
41. Interacting With Colleagues	8.7
42. Travel	4.1
43. Writing	6.6
44. Working With Teams	8.5
45. "On Call"	1.9
46. Work on Holidays	1.6
47. Work on Weekends	2.6
48. Presentations	5.0

Reference

Schommer JC, Brown LM, Sogol EM. *Career Pathway Evaluation Program 2007 Pharmacist Profile Survey*. June 2007.

Professional Organizations

Accreditation Council for Pharmacy Education (ACPE)
20 North Clark Street, Suite 2500, Chicago, IL 60602
Tel: 312-664-3575 Fax: 312-664-4652
www.acpe-accredit.org

American Association of Pharmaceutical Scientists (AAPS)
2107 Wilson Blvd., Suite 700, Arlington, VA 22201
Tel: 703-243-2800 Fax: 703-243-9650
www.aaps.org

American Foundation for Pharmaceutical Education (AFPE)
One Church Street, Suite 202, Rockville, MD 20850
Tel: 301-738-2160 Fax: 301-738-2161
www.afpenet.org

American Pharmacists Association (APhA)
1100 15th Street NW, Suite 400, Washington, DC 20005
Tel: 800-237-APhA Fax: 202-783-2351
www.pharmacist.com

National Pharmaceutical Association (NPhA)
107 Kilmayne Drive, Suite C, Cary, NC 27511
Tel: 800-944-NPhA Fax: 919-469-5870
www.npha.net

Pharmaceutical Research and Manufacturers of America (PhRMA)
950 F Street NW, Washington, DC 20004
Tel: 202-835-3400 Fax: 202-835-3414
www.phrma.org

NOTE: For further pharmacy organization information, please visit the American Association of Colleges of Pharmacy Web site at www.aacp.org and click on the “Related Pharmacy Organizations” link.