

Table 2

Selling an in Vitro Physiologist to Industry

1. Pharmacological experience—Research; postdoctorate (academic or industrial)
2. Demonstration of excellence and productivity as a researcher in your field
3. Unique approaches to research—ideas and techniques
4. Compatible areas of research interest

try. Similarly, a near immediate start-up with equipment and technical support, as well as continued financial support, are part of most industrial positions.

Another advantage for the research-oriented individual is a lack of teaching load in industry. Thus a greater percentage of time can be devoted to research. Also, pay and benefits are generally greater in industry compared with academia. This is usually true not only during the initial phase of your career but also in subsequent raises and promotions. Finally, the excitement of drug discovery and the opportunity through interactions with medicinal chemists and/or clinicians to design specific pharmacological modulators with potential, ultimately therapeutic usefulness is a unique advantage of the industrial physiology position.

The final area covered deals with the practicalities of obtaining an industrial position (Table 2). What can a graduate or postdoctoral student with a Ph.D. in physiology do to garner an industrial position? Of prime importance is practical pharmacological experience, preferably in the laboratory of a recognized leader in your particular field. This can be gained by incorporation of pharmacologically related problems into your research repertoire or by doing postdoctoral work in a Department of Pharmacology. This objective can be achieved in either an academic or industrial setting, the latter offering the opportunity to gain first-hand knowledge and experience in industrial research.

As with an academic position, the pharmaceutical industry is interested in obtaining top-notch researchers. You are judged in this area, for the most part, as you would be judged by an academician. Thus a demonstration of excellence as a researcher in your field of expertise is essential. Your publication record (number and journals published in), grant awards, personal references, and postdoctoral experiences all are used in this assessment. Of further interest to most companies are unique approaches to research that you may offer. These can be initiated and nurtured during postdoctoral work. It should also be pointed out that a compatible area of research interest is a major factor, especially for the in vitro mechanistic physiologist. Trends and timing of state-of-the-art research cannot be overlooked.

In summary, I would emphasize that the pharmaceutical industry appears to be expanding in its support of physiologically related mechanistic research. A person trained in physiology offers the advantage of application of mechanistic homeostasis to all levels of research. The criteria for obtaining an industrial research position are not very different from those for an academic position: hard work, excellence, and productivity as a researcher are paramount. Thus a good and productive postdoctoral tenure, preferably in the laboratory of a recognized leader in your field, is essential.

What a Director of Pharmacology Looks for in a Physiologist

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This report focuses on both director's and candidates' viewpoints for physiologists exploring career opportunities in the pharmaceutical industry. In our organization a director works closely with senior scientific staff and personnel department representatives to select candidates. Collectively, this experience forms the basis of the director's (employer's) points of view outlined below.

At Warner-Lambert/Parke Davis, 15% of the Ph.D. level scientists within the Pharmacology Department have been trained formally in physiology departments; their subspecialties are predominantly in the cardiovascular and neurology areas. The opinions and discussions with graduate physiologists who have elected to continue their careers in our Pharmacology Department are the basis for the physiologists' (employees') points of view. It is with this background that I will discuss career opportunities for physiologists in the pharmaceutical industry.

Director's (Employer's) Points of View

The key characteristics of successful candidates in our organization are listed in Table 1. In seeking highly trained competent scientists we look for graduates from academic centers of excellence to be specialists or subspecialists in specific areas of research; candidates usually have a minimum of two years of postdoctoral experience. Since not all pharmaceutical organizations have programs in the various subspecialties in physiology, candidates should identify companies with appropriate programs as targets for potential employment.

To be successful, a candidate must be interested in new drug discovery and development. The industrial setting is not incompatible with, nor does it preclude, the individual from conducting the highest quality mechanistic-based research, a point often misunderstood. In the pharmaceutical industry it is also essential that multidisciplinary teams work together toward the achievement of their research goals. If a candidate is unwilling or incapable of this approach, industry may not be the place to go. Innovativeness and creativity, characteristics not always identified as team processes, are nonetheless important qualities used in identifying

Table 1

Key Characteristics of Successful Candidates

- Training in academic center(s) of excellence, Ph.D., postdoctoral experience
- Career objectives—goal-oriented individuals who are interested in new drug discovery
- A team person (multidisciplinary approach)
- Communication skills—oral and written
- Leadership skills—effectively interacting at all levels within the organization

Table 2
Dimensions Used for Evaluating Candidates

Technical proficiency
Oral communication
Innovativeness (creativity)
Job motivation
Career ambition
Judgement
Initiative
Planning and organization
Tenacity (persistence)
Behavioral flexibility
Rapport building
Controlled demeanor
Impact (image)

successful candidates. The capability to recognize problems and generate imaginative and creative solutions in work-related situations are highly desirable traits, and an appropriate balance of activities (team, departmental, and individual) is attainable and works well in the pharmaceutical industry.

Candidates should have excellent oral and written communicative skills. Their research seminar (part of the interview process), publications, and presentations at scientific meetings provide the potential employer with an excellent opportunity to evaluate these skills. Candidates without strength in these areas or unwilling to develop them will probably not do well in the pharmaceutical industry (or in academia)! Finally, candidates must have or show the potential to develop strong interpersonal skills. They must provide leadership to their scientific unit and interact effectively at all levels within the research organization. A more comprehensive list of dimensions used in our organization for evaluating candidates is outlined in Table 2. While the immediate supervisor will not have any difficulty in judging the scientific qualifications of the candidate, he or she may lack the skills and experience for selecting the best candidate(s). The director, personnel department, immediate supervisors, peer-group scientists, and others provide valuable input into candidate selection by expressing their views on characteristics such as those outlined in Table 2.

Employees' Points of View

Recently hired physiologists in our department responded to a short questionnaire on who should or should not pursue careers in the pharmaceutical industry; candidates should pay particular attention to these profiles (Table 3). Although the number of respondents is low and limited to employees in our organization, I believe they are representative of candidate physiologists' viewpoints.

Table 3
Who Should Seek Out a Career
in the Pharmaceutical Industry?

Someone who has an interest in new drug discovery (goal-oriented research)
Someone who is able to accept the "team" approach to problem solving
Career goal is broad-based goal-oriented (applied) research
Disease/treatment orientation
Someone who wishes to avoid intense competition for research resources of academia
Someone who likes writing and open discussions with colleagues
Someone willing and able to meet specific deadlines
Someone willing to interact with individuals with diverse backgrounds
People with strong (diverse) scientific backgrounds and willingness to apply this knowledge
Organized and flexible—willingness to expand interests and knowledge

Given the information contained in this overview, I would summarize by providing the following recommendations to physiologists seeking employment in industry.

1) Get as much information as possible about career opportunities in the pharmaceutical industry from experienced people. This can be obtained in a variety of ways, both informally (as in discussions at scientific meetings, e.g., the Federation Meetings or personal contacts) or more formally via interviews.

2) Make certain that you research the company—most organizations are delighted to send you publication booklets, annual reports, etc. Read the employees' publications; go to their presentations at scientific meetings. Industrial pharmacologists often participate in university seminar programs; this affords another excellent opportunity to gain insights about the company.

3) Match your training to company research interests; identify and select appropriate companies to pursue.

The real "take-home" message that I can give you is to make an informed decision regarding the potential of a career in the pharmaceutical industry. Dr. David Bohr expressed this view in somewhat different terms (1):

Choosing a job might not be as crucial as those two other biggies—selecting the right spouse and picking the right profession—but it's close. In most cases, these choices are made on the basis of personal biases, but better selections can be made by being maximally informed of all options."

1. Bohr, David F. How to get a job in physiology. In: *Career Opportunities in Physiology*, edited by D. J. Ramsay. Bethesda, MD: Am. Physiol. Soc., 1984, p. 27-28.