Book Review

Career Opportunities in Biotechnology and Drug Development



CAREER OPPORTUNITIES

in **BIOTECHNOLOGY**

Toby Freedman, Cold Spring Harbor Laboratory Press, USA, distributed in Australia and New Zealand by Palgrave Macmillan, 2008, 407pp., RRP \$106

"Are there really some jobs for biochemists and molecular biology outside universities? OK, I've met some people working in the medical research

institutes and CSIRO, but surely that's all the possibilities, at least in Australia." Although this is undoubtedly an extreme viewpoint, it's not far removed from the beliefs of most undergraduates, Honours students, PhD students and even postdoctoral fellows. The truth is very different; to cite data close to my own knowledge base, there are more people employed by the five biotechnology companies located in Thebarton (a suburb almost no-one outside of South Australia will even have heard of!) than the combined employment in the biochemistry, microbiology and biotechnology departments of all three South Australian universities. And this comparison is not unduly selective because about 1,200 bioscience graduates are employed by biotechnology and pharmaceutical companies in South Australia and 20 times that throughout the country.

What are these jobs? What qualifications are needed? How much are they paid? Are they likely to be permanent? How do I get one? Will I enjoy it once I'm employed?

This book, written after the author had interviewed more than 200 biotechnology and pharmaceutical industry executives, addresses all of these questions. It is presented in a job-by-job format after some initial chapters that give an industry overview and pointers towards landing a position in industry. The book's first section covers the pros and cons of working in industry and poses the crucial question: why make the transition? It also includes some useful information on preparing resumes, gives constructive advice on increasing the probability that your application will lead to an interview (no surprises) and recommends that all scientists who are seeking a position in industry should network extensively at events where industry is present and should always give business cards to industry people you meet. Interestingly, I don't recall ever getting a business card from a PhD student and only rarely from a university-based postdoctoral fellow. The chapter 'So you want a job in biotechnology and drug development.... finding your way in' is a must read for all graduates who even contemplate a career outside universities.

The remainder of the book contains 20 chapters, each of which addresses careers or groups of careers in the biopharmaceutical industry. A random selection of these includes 'Discovery Research', 'Preclinical Research', 'Project Management', 'Bio/pharmaceutical Product Development', 'Regulatory Affairs', 'Marketing', 'Corporate Communications', Law: Protecting Intellectual Property', *Page 56 AUSTRALIA* 'Health Care Finance: Venture Capital' and 'Recruiting'. Although it may not be obvious from the titles, all of these careers require a bioscience degree and most a PhD. An initial degree in biochemistry or molecular biology would be ideal. Often these positions are combined in the smaller biotechnology companies; for example, a person whose main role is in discovery research would frequently be a project manager and would also have duties in communications and intellectual property management. When you talk to scientists in companies, they often mention that it is these diverse tasks that make their jobs so interesting.

The most frequent entry opportunity into biotechnology or pharmaceutical companies for PhD graduates or postdoctoral fellows is in discovery research. Opportunities also exist for pass degree or Honours graduates in this area, but there is a glass ceiling for those without a PhD, as also occurs in academia. An important factor in the corporate sector is the absolute necessity to be a team player; always the success of the project must come before personal ambitions. The discovery research chapter has sections on the range of career tracks, the steps involved in discovery research, a typical day for an employee, the salaries paid (not in dollars, but relative to other company positions), the positive and negative aspects to a career in discovery research, the greatest challenges, what is needed to be a good candidate and to excel, job security and educational requirements. A highlighted section titled 'You should probably consider a career outside of discovery research if you are...' suggests avoiding this area if you are a micromanager, unwilling to give due credit to others, only interested in publishing cutting-edge papers or motivated mostly by money, among quite a long list. The author argues that an important aspect of a career that starts in discovery research is the ability to move sideways to a wide range of other positions. Some examples cited include patent law, project management regulatory affairs, quality assurance and business development. Indeed, it is this flexibility of different career paths, often within a single company, that markedly distinguishes career opportunities from those in the public sector.

The chapters on sales and marketing are particularly relevant to graduates without a PhD and those who have followed up their undergraduate degree with an MBA. These positions provide substantially higher salaries than those in discovery research and particularly suit those with strong interpersonal skills who enjoy interacting with people. Some of the other aspects listed in the 'Are you a good candidate for...' section in the marketing chapter include strong leadership and communication skills, an ability to listen well, excellent time management, an ability

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to manage stress, being highly motivated, an optimistic attitude and exceptional decision-making skills. And as with all positions in industry, being a team player. For both marketing and sales, an appointee should expect to travel away from their home city typically for 30-40% of their time. An important point made is that there are minimal entrylevel positions in marketing with most people first having experience in sales or possibly in market research. The further opportunities for someone who has demonstrated success in marketing include business development, chief operating officer or perhaps CEO of a company.

The book has been written for an audience in countries where considerable opportunities across all career streams occur in both the biotechnology and pharmaceutical sectors. This is not so valid in Australia where most of the positions available in pharmaceutical companies will be in the sales area. The author also argues that there is merit in commencing employment with a pharmaceutical company because the large size of such companies means that positions will be more discrete and that considerable mentoring will be available. The multi-skilling required in small biotechnology companies can be quite daunting, although mentoring and teamwork will assist a new appointee.

I believe that this book should be available in all university departments rather than held in a central library and that both Honours students and PhD candidates should be introduced to it through a lecture format. It's a tremendously valuable resource.

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