What's up doc? How to start a career in science — the PhD

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Going back to university to complete a PhD may be a path you may not have considered before. According to the Royal Pharmaceutical Society's 2003 "Pharmacy workforce census", only 2.2 per cent of posts held by pharmacists are in academia.

During my preregistration in hospital, I found that most of what clinical care pharmacists can currently offer is at best damage limitation or the slowing of inevitable disease progression. Chronic obstructive pulmonary disease and Parkinson's disease are two examples where this is the case. I wanted to identify new ways of helping patients through research. In fact, many academics do not see themselves as different from practising pharmacists. Matthew Jones, PhD student at the University of Bath, is one of these: "I view myself as a practising pharmacist — although I do not work directly with patients. If things go well, one day my work might help to improve patient care."

There are other reasons to consider a PhD. Perhaps it would suit the way you like to work. This was a factor in my decision, as I like working on a long-term project. As Simon Dawson, first-year PhD student at the School of Pharmacy, University of Bath, puts it: "Practising as a full-time pharmacist just strikes me as . . . a bit of a day-in, day-out kind of life, with no overall goal."

Working in academia can also be a way of avoiding some of the frustrating aspects of practice: "By its very nature, a PhD is an opportunity to do things properly, completely and without compromise, which you cannot always do in front-line pharmacy practice," says Mr Jones.

That is not to say a PhD will not be frustrating at times. You will be concentrating all of your effort on one big project — so there will be a lot riding on it. At times you will feel overwhelmed and unsure of how to proceed, but one of the main reasons to do a PhD is to challenge yourself. To make sure that you can get through and complete it, it is essential that you are interested in the subject.

What areas of research can pharmacists go into? As the MPharm degree touches on many different areas of biomedical science, chances are you can think of many interesting possibilities. Academic pharmacists I know work in a variety of areas, eg, dry powder formulations for inhalers, synthesis of anti-tumour depsipeptides, microbial pathogenesis and connected pathology in cystic fibrosis, and pharmaceutical care for drug users.

If you know that you want to do research, but are not sure what area you want to go into, there are plenty of places to look for ideas. The broadsheet newspapers often carry science stories and interesting articles regularly appear in *The Pharmaceutical Journal*. The staff library at your local hospital will almost certainly carry *Science* or *Nature*, both general science journals, as well of plenty of other titles. When you have some idea of what you are interested in, you can have a look on the internet for research groups that work in this area. You should not necessarily limit yourself to the UK — a PhD is the perfect opportunity to work in another country as I have done.

When you have found groups that you are interested in, it is a good idea to read some of their recent papers. If you do not have access to a university library, you can get an article from the British Library (for about £7.50), or you could contact the authors for a copy. Many will be happy to send it to you by e-mail, especially if you express interest in their research. This also might be a good way to find out if they have funding for any more PhD students.

In the UK, you apply to a particular supervisor and a particular project. It is important for you to find out if they have funding for someone to work on the project. Mostly this comes from research councils or charities. Some departments fund a limited number of places each year, but these may be dependent on you attending an open day. The supervisor can also apply for funding with you as a named student. You are allowed to fund yourself, but this is expensive. It is worth noting here that many supervisors (and funding agencies) insist on your degree being a 2(i) or above. Some supervisors are more flexible, and an MSc or research experience certainly counts in your favour. "Two out of my three PhD students have 2(ii) degrees — it is up to the supervisor whether they want to take the risk", says Jenny Scott from the University of Bath.

PhDs in the US are different in that you have to apply to the department (although it does not hurt to contact a supervisor), and you will attend lectures for the first year or two. An "assistantship" is applied for separately. During the first year, you pick a supervisor to guide your research for the next few years, but they still have to have a project and funding. Also note that PhDs in the US usually take four years or more, compared with three years in the UK.

All the PhD students and lecturers that I consulted agreed that it was important to go to see potential supervisors in person before applying for their project (or perhaps speak on the phone if they are in a different country). First, you need some idea of whether you will get on and will enjoy working together for three years or more. Secondly, this is an excellent chance for you to demonstrate your enthusiasm for research and the project. You can also ask more questions about the project, and your working conditions. For instance, will you have desk space or a computer? Will the supervisor be able to give you much contact time? Bear in mind that a junior lecturer with a small lab may be able to dedicate more time to you than a senior professor with a large lab, who may go on many conferences and have departmental responsibilities.

After seeing your potential supervisor, you might have more of an idea of what they are looking for when you come to write your personal statement. However, your main objective should always be to put across your enthusiasm for the research you will be doing, as you need to convince them that you are committed to taking the project through to completion. You can apply at any time, however most PhDs start in October in the UK and August in the US, and the appearance of funded places may reflect this.

Although it does not suit everyone and there are some disadvantages (eg, salary, see below), a PhD is an opportunity to indulge your curiosity, to discover things that no one has known before, to be at the forefront of your field and to challenge yourself.

Working in academia

A PhD (Doctor of Philosophy/doctorate) is a postgraduate degree earned by a sustained period of independent research (three to five years). It is the first step for anyone aspiring to a career in scientific research and some sectors of the pharmaceutical industry.

To find out more, the website **www.findaphd.com** is a good place to start for general information. Current projects are advertised and there are forums where you can talk to current PhD students.

You will probably earn less than you would working as a pharmacist — stipends for PhD students range from £10–15,000 or more, but this is tax-free. Most pharmacists supplement this with occasional locum work.

If you are interested in doing your PhD in the US, you have to take the "Graduate record examination" before applying (see **www.gre.org**). There is a maths section on this examination for which you are not allowed a calculator —— so your preparation for the registration examination should come in handy. UK citizens planning to study in the US are eligible for scholarships offered by the Fulbright Commission (see **www.fulbright.co.uk**). On this site you can also find out about studying in the US, and they will assess your personal statement for £25.