What are the similarities and differences of doing biochemistry in China compared to the UK? My career path has given me opportunities to consider this question. I started as an undergraduate in Cambridge, progressing to a PhD and then a College Research Fellowship. Since then, a period of nearly 15 years, I have been based in China. During that time, I have spent regular sabbatical periods back in Cambridge, as well as building close collaborative connections in other European universities. My general conclusion is that the job of an academic is pretty similar wherever you are: the freedoms, the constraints, the joys, the frustrations. The challenges my Chinese colleagues and I face here are generally mirrored in the experiences of colleagues in the UK and elsewhere. That said, this period of 15 years has been a remarkable period in the development and expansion of scientific research in China. I hope that in sharing some of my experiences and observations, I can convey a picture of Chinese science, albeit from the limited angle of my own personal lens.

I work at the Institute of Biophysics (IBP), one of the 100 or so research institutes belonging to the Chinese Academy of Sciences (CAS). IBP has close ties to the Biochemical Society and Portland Press: the Biochemical Journal China Office, established in 2011, is housed within IBP, and our institute director, Professor Xu Tao, is the Vice-Chair of the journal for the Asia-Pacific region. I have been on the Editorial Advisory Board of the Biochemical Journal since 2009, I recently edited a volume of Essays in Biochemistry, and I currently serve as a local ambassador for the Biochemical Society. The Biochemical Society has been active in forging links with sister societies in China, beginning with a joint conference with the Chinese Protein Society held in Shanghai as part of the Centenary celebrations in 2011.

I have been at IBP since 2000, initially supported by UK-funded fellowships from the Royal Society and the Royal Commission for the Exhibition of 1851. Two years later I was offered a faculty position to stay on, which I accepted. IBP currently has around 80 Principal Investigators (PIs), at least 70% of whom are Chinese scientists who have been recruited back from abroad in the last 10 years. The remainder are elected members of CAS (Chinese equivalent of FRS), plus a small number of ‘home grown’ younger PIs.

The blossoming of Chinese science in recent years has been fuelled by schemes such as ‘100 talents’ which provides start-up funds, salary enhancements and housing subsidies for well qualified Chinese post-doctoral researchers who have trained overseas and are ready to return and establish an independent lab. The ‘1000 talents’ program has helped recruit more senior Chinese scientists who have reached tenured status overseas to return to work in China on a full-time or part-time basis. However, the contribution of those who originally established the reputation of IBP and whose careers developed here, perhaps with a few years spent abroad, should not be underestimated.

Achieving promotion within the Chinese system has always been a rather exacting process, arguably tougher than ‘parachuting’ into a fully-independent PI position after postdoc training abroad. I joined IBP before this mass reverse exodus, when I became one of very few faculty under the age of 40 (or 50 or 60 for that matter). I joined a department (overseen by the late
Tsou Chen-Lu, who did his PhD in Cambridge under Keilin, graduating in 1951) which had weekly seminars held (theoretically at least) in English and maintained a strong emphasis on publishing in international journals. (Professor Tsou's PhD work on cytochrome c was published in a paper in Nature followed by a series of seven papers in the Biochemical Journal.) I saw real passion for rigorous science. Another striking feature was the significant proportion of female role models among my senior colleagues. (The male to female ratio at IBP now at the PI level is around six to one, so similar to the UK, for all the same reasons.)

The changes in IBP in 15 years have been dramatic. The level of facilities when I joined could be said to approach ‘international’ standards; but the improvements in infrastructure in recent years mean that it would now be difficult to find anywhere in the UK which could match it. The influx of returnees from abroad has provided a young and vibrant band of PIs. There is some very exciting, daring science going on, and there is a lot of interaction with labs abroad.

However, the most striking difference when comparing IBP with the best labs in Europe or the USA is that science in China remains largely mono-cultural. (In the time I have been here, I have remained the only non-Asian PI; the other non-Chinese PI is from Japan.) As a result, the natural language of both administration and science is Chinese. While there is little immediate incentive to change this, it presents a significant barrier to attracting a more diverse faculty body. Neighbouring top universities such as Tsinghua have been more deliberate in recruiting international faculty members. However, given that grants in China are still written in Chinese, for a foreigner to survive in the system requires a great deal of help from Chinese colleagues.

I am fortunate in having had the opportunity to study Chinese intensively before embarking on my Beijing adventure. (I had tinkered with learning Chinese since my time as an undergraduate, so had already reached ‘survival level’ before taking a year out to study full-time prior to starting research work in Beijing.) By now I’ve acquired ‘professional level competency’, meaning I can cope with group meetings and seminars in Chinese, wade my way slowly through my PhD students’ theses, and deal with the seemingly endless forms and admin emails we receive. Nevertheless, grant writing, or even more terrifying, delivering an oral defence of a grant application, continues to be a major challenge. I am fortunate to have built up a fantastic team of permanent staff within my group (my PI position comes with three additional post-doctoral staff positions, and I can appoint additional research assistants if funding allows). My ability to function relatively well within the Chinese system is very much dependent on this team.

As a research institute we deal mainly with graduate students. A Master’s degree in China takes three years, of which the first year is spent on taught courses. For a student who already holds a Master’s degree, the PhD takes a further three years. The majority of our students enter our joint Masters/PhD program, which begins with the year of taught courses followed by four years of research. The PhD degree at IBP requires publication of at least one SCI paper as first (or joint first) author. The CAS Graduate School (recently renamed the University of the Chinese Academy of Sciences, UCAS) has its own faculty, who are mainly responsible for delivering the Master’s level courses. However, faculty from CAS institutes can also contribute to teaching there. I was asked a couple of years ago (as part of a drive to involve CAS research faculty in teaching at neighbouring universities) to take on a teaching role for the Biochemistry seminar class as part of the Life Sciences degree at Peking University. (The Biochemistry course at Peking University is taught in English.) I enjoy the interaction with very able undergraduates, many of whom will continue in science, though most will probably choose to go abroad to further their studies. Competing with overseas opportunities to recruit the best students for our graduate program, especially given the lack of regular contact with undergraduates, is always a challenge. (As of this year, UCAS has its first intake of undergraduate students, Which should help counter this problem.)

Many people are aware of the emphasis on relationships or guanxi in China and ask me how Chinese culture affects the way science is done. The recent announcements of planned changes to the way that science funding is organized in China seems to be a reaction to the perceived need to build relationships with administrators to increase your chances in obtaining certain sought-after grants. On the positive side, the teacher-student relationship is traditionally given great weight in China, with a high degree of mutual respect, affection and loyalty. It is a relationship that does not stop with graduation but is expected to be lifelong. Of course it is naïve to say that relationships are not vitally important in any and every culture and country. I have a number of strong collaborations with European groups which have flourished despite the distance. I also have some great collaborations with Chinese colleagues. We all (sooner or later learn to) choose our collaborators carefully. I think it would be fair to say, both from personal experience and from observing the interactions of my Chinese colleagues, that there is more potential for complexity in relationships here. However, time and time again I have concluded that people are essentially the same the world over.