

The Wakeham Review of Science, Technology, Engineering and Mathematics (STEM) Degree Provision and Graduate Employability

Response from the British Pharmacological Society
29 January 2016

Key areas of concern highlighted by the Wakeham Review team:

- Proportion of 2012/13 UK-domiciled Pharmacology graduates studying at English HE institutions that, after 6 months, are:
 - **Unemployed: 12.1%** (compared to 9.2% across all STEM disciplines)
 - **In non-graduate jobs: 37.7%** (compared to 22.1% across all STEM disciplines)
 - **Earning low salaries: 60.3%** (compared to 38.7% across all STEM disciplines)

The Society is committed to understanding and supporting the employability of Pharmacology graduates. However, we do not yet have definitive data to fully explain these findings. We have consulted our community, and have put together general comments, potential explanations and some ideas for further research.

1. General comments

- 1.1 Whilst the comparison with 'all STEM' graduates is interesting, we feel there would be significant value in an additional comparison to 'Biomedical Sciences' programmes. For example, Newcastle University's Destinations of Leavers from Higher Education (DLHE) data from its B210 programme is equivalent to its B940 (Biomedical Sciences) programmes for the percentage in work (82% and 93% respectively) and the % in professional/managerial jobs (46% and 47% respectively).
- 1.2 The sample of Pharmacology graduates is small, and this may introduce bias.
- 1.3 We appreciate that the nature of the DHLE means that only '6 months post-graduation' data is available for review. However, our potential explanations (below) indicate that the picture is likely to be very different later on, and even as early as the 12-month point. This leads us to be extremely cautious when interpreting short-term data.
- 1.4 We note that Pharmacology data is given for B210 courses only, but that there are a variety of courses where Pharmacology is a named, substantive component. Restricting the classification of data in this way may give a limited picture of the value employers place on Pharmacology.
- 1.5 We have chosen not to review the long-DHLE data, because we understand from the review team that Pharmacology graduates make up only a small number of respondents. If Pharmacology graduates are not meaningfully represented in the long-DHLE we do not feel that it is not appropriate for us to comment on this data.
- 1.6 We thank the HEFCE Review team for providing the Society with a further breakdown of the short-term Pharmacology data from the 'Pharmacology, toxicology and

pharmacy' group. Pharmacy graduates have a more distinct employment track and we recommend their data should always be treated (and published) separately.

2. Possible explanations

2.1 Additional data requested from HEFCE by the British Pharmacological Society show that more Pharmacology graduates enter further study compared with all STEM graduates:

- Proportion of 2012/13 UK-domiciled Pharmacology graduates that, after 6 months, are **in Further Study: 26%** (compared to 14% across all STEM disciplines).

This supports the Society's experience that Pharmacology graduates are expected to gain higher degrees (Masters, PhD) or experience in order to progress in a career in research or the biopharmaceutical industry. A traditional employer of Pharmacology graduates is the pharmaceutical sector. This sector is known to not generally employ directly at a graduate level¹. Many of the roles in pharmaceutical companies require students to have higher degrees, or start in a Contract Research Organisation (CROs) and then work their way up.

2.2 Although the number of graduates entering further study remains higher than average, looking at the data over time shows that there is a trend for rising employment and falling further study:

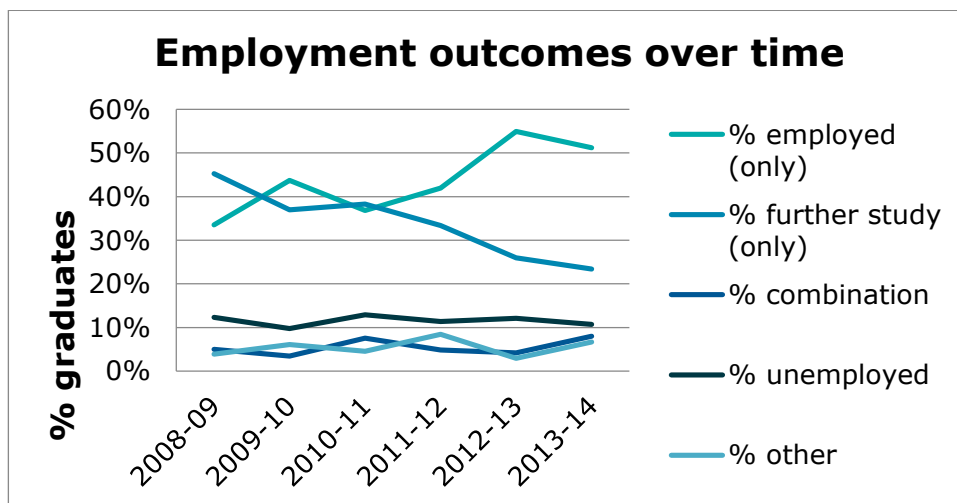


Figure 1. Employment outcomes over time (data provided by HEFCE on request)

This is echoed by the Association of the British Pharmaceutical Industry's (ABPI) 2015 skills report¹, which suggested that graduate employment is increasing in the biopharmaceutical industry. No degree breakdown was given, so it is not possible to separate Pharmacology graduates. The report suggested that the biopharmaceutical industry is employing recent

¹ http://www.abpi.org.uk/our-work/library/industry/Documents/Skills_Gap_Industry.pdf

graduates, but is also requiring 'on the job training'. This would support the idea that graduate entry level roles are lower paid.

The ABPI report also mentioned key areas of Pharmacology (Clinical Pharmacology and Translational Medicine; *in vivo* skills) as priority skills areas for the UK biopharmaceutical industry. In this instance, the apparent mismatch between industry need and graduate skills may be a concern, or it may be that 'on the job' training is an accepted part of a new career track. The falling number of Pharmacology graduates going on to higher degrees may reflect such a career track, or it may signal a problem for the future. It will be important to understand employers' preference for investing in 'on the job' training versus recruiting those with higher degrees.

2.2 The Society feels that the 'non graduate' and 'low salary' data may reflect graduates who:

- Are considering going onto employment/further study to advance a career in Pharmacology, but take some time off, or a work placement to gain experience – perhaps taking a lower paid job to support themselves in the meantime. Anecdotally, we have heard that students who were not immediately successful, or who have not had the time to apply for Masters/PhD in a busy final year, may choose to wait until the next application window.
- Are planning to study medicine, but taking a break in studies. Anecdotally, this seems to be a significant career path for Pharmacology graduates. It would be useful to understand the relative STEM breakdown of UK graduate entry to medical schools. Graduate entry to medicine is highly competitive and places are being cut. For example the University of Warwick received 3000 applications for 170 graduate places², and in 2014 St George's Medical School cut their graduate entry places from 120 to 50³.
- May want to pursue a career outside of research and the biopharmaceutical industry, but find they need to 'up skill' before they are competitive in another sector.
- May want to pursue a career outside of research and the biopharmaceutical industry, but do not access these opportunities immediately. There was some concern from members that the traditionally tight association between Pharmacology and research/the biopharmaceutical industry may not be serving graduates who wish to pursue alternative career paths. Some members speculated that graduates may be less confident in these areas and/or that less-specific STEM degrees may be seen as an advantage by employers.

2.3 The Society's members have also suggested that a shift from 'Big Pharma' to 'small biotech/start up' in the UK life sciences sector may have the following potential consequences:

- That availability of training placements during a degree (e.g. sandwich year/industry placements) has reduced, meaning that sector-experience has to be gained through training post-graduation. This may take the form of low-paid internships or training programmes within a company. For example:

² <http://www.theguardian.com/education/2014/nov/12/studying-medicine-postgraduate-could-make-better-doctor>

³ <http://student.bmj.com/student/view-article.html?id=sbmj.h3283>

"I know that some of our middle ranking students have had very disheartening experiences during their unsuccessful year 2 applications for placements. This may have had a knock-on effect, prompting them to cut short their attempts to get a graduate job in final year. It may also have left many students without the experience they need to compete in the graduate job market, prompting them to seek unpaid/low paid internships on graduation." (Member)

- If even the most attractive top graduates require 'on the job' training, working with employers to develop undergraduate training and graduate level roles may be one approach.

3 Further work

3.1 The Society is committed to understanding the employability of Pharmacology graduates, and the broader value that employers may place on the discipline from other entry routes, e.g. apprenticeships.

3.2 In line with this, the Society feels there is a need to explore the employability of Pharmacology graduates. We would be keen to discuss opportunities to collaborate on some of this work, and explore areas where the Society can lead. Our initial suggestions include work to:

- Compare DHLE data to that collected by HEIs
- Understand which sectors are the biggest employers of Pharmacology graduates, and if/how this differs from other biomedical science degrees
- Analyse the DHLE data to better capture the views/decisions of Pharmacology graduates using qualitative research
- Understand the breakdown of further study by type, and how this has changed over time
- Understand the views of employers regarding a preference for investing in 'on the job' training versus recruiting those with higher degrees.
- Capture additional data from our Young Pharmacologist community, and from Pharmacology graduates
- Understand whether the UK is an attractive location for employers that value Pharmacology graduates. There may not be an issue with training, but with opportunity. If such employers are not choosing the UK, this will directly impact UK competitiveness in drug discovery and development.
- Encourage pharma/biotech to offer more training for undergraduates and recruit more at a graduate level
- Focus on understanding and communicating what is valuable to employers – both in terms of course design/delivery and so students know their options:

"It would be useful if more pharma companies had more recruitment for graduates immediately after completing their degree. Our outcomes, in terms of Graduate Prospects and Graduate Employment have improved dramatically over the past three years for our Medical Sciences degrees (Medical Science, Physiology, Neuroscience and Pharmacology). This could be just because the job market has improved dramatically (the proportion

going into further study has remained steady but the proportion finding graduate level work has increased significantly) or it could be because the Faculty has focused much more on employability.

"In many cases, the students have developed the appropriate skills, but they weren't able to evidence those skills in applications and at job interviews. We have put a lot of resources into giving students information on how to develop the relevant skills, giving them more understanding of the range of roles available (through developing more links with alumni and having a mentoring scheme where employers/alumni mentor current students) and allowing them to practice evidencing their skills, for example through mock interviews." (Member)

- 3.3 We feel that such work could help us understand whether the available employability data reflects an artifact of the survey or if the findings need further attention. Pharmacology is central to innovative research and the discovery of new medicines, and the UK has a strong track record and is internationally respected in this field. It is important that our graduates are attractive to employers – even if on the job training continues to be a recognised necessity. It is equally important that the UK is an attractive environment for the industry itself.
- 3.4 We would be happy to discuss the details of this response. For further information, please contact Dr Anna Zecharia (anna.zecharia@bps.ac.uk), Head of Education, Training & Policy.