Same degree, same effort?

A patchwork of differing PhD requirements throughout Europe disadvantages graduate students and compromises the quality of science

Consider yourself at the entrance of a maze with the daunting task of reaching its centre. Left alone, without guidance, you can rely only on yourself to find your way through the labyrinth's walls and obstacles. Most likely, you will find yourself aimlessly wandering, trying to cross impassable obstacles and running into many walls along the way. Meanwhile, other contestants are guided throughout their journey, and encounter fewer obstacles. Consequently, whereas they reach the same goal, they spend significantly less time than you. Such contradiction reflects the current situation of PhD candidates at universities and research institutes in Europe.

At least, this is the opinion of a large group of participants of an anonymous survey that addressed several aspects of PhD research in life sciences. The survey asked graduate students and post-doctoral fellows of the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany, to express how they felt about the road towards their PhD degree. Given the international workforce of EMBL, respondents come from virtually every country in Europe. The survey's most important finding was that there is an urgent need to harmonise the requirements for a PhD degree in Europe, as well as the quality of the guidance received throughout PhD programmes. Such harmonisation would not only ease the life of thousands of graduate students, but also increase the quality of science and foster movement of young scientists within the European Union. To promote PhD harmonisation, the European Commission could, and should play a crucial role.

Currently, many European research institutions require their graduate students to produce a minimum number of publications in order to obtain the PhD title. Depending on the country and the univer-

---

Harmonisation would not only ease the life of thousands of graduate students, but also increase the quality of science and foster movement of scientists

---

sity, students need up to five publications, as is the case at Swedish universities. This strict requirement significantly prolongs the time needed to obtain a PhD. Respondents who did not have to publish managed to finish their thesis within four years on average, whereas respondents who needed several publications to graduate spent between five and six years. Even more extreme cases exist, as one respondent said, 'It is not unusual for people to spend eight or more years to finish their PhD.' The survey also revealed that, because of the need to publish, graduate students are reluctant to take on risky, but scientifically rewarding projects. Instead, they choose to work on projects that safely produce data that is somehow publishable. As one student stated

---

As a consequence of this publication requirement, there exist too many boring and useless PhD projects

---

bluntly, 'As a consequence [of this publication requirement], there exist too many boring and useless PhD projects.' Others expressed frustration about spending a lot of time simply to meet the publication requirement. Finally, many respondents found that a strict publication requirement is unnecessary, as students usually want to publish their results anyway. Comments such as 'a publication record is a great help in obtaining a postdoctoral position or fellowship,' or 'I felt a strong motivation to publish to get my commit-

tee biased towards a good grade for me,' explained this urge.

Other European institutes and universities use a fairer evaluation procedure. They judge a potential candidate by the significance, the quality and the originality of his or her work. However, there is no consensus on who ultimately makes such an important decision. Throughout Europe, this is done either by a single supervisor, a supervising committee, the faculty of the university or institute or by any combination of these. This adds another source of variation in the time spent in obtaining the degree. Respondents frequently complained about cases in which the supervisor decides alone. 'If a supervisor has too much control and leans towards keeping students too long [in the laboratory], you find situations where students with a good amount of work done are still in the PhD programme,' said one postdoctoral fellow, summarising the experience of many others. For such reasons, most respondents felt that a thesis committee would be best suited to evaluate whether a candidate's work is sufficient to obtain a PhD.

But to be familiar with a candidate's work and therefore optimally capable of making decisions about the quality of the thesis, such a committee should monitor the progress of a candidate's work on a regular basis. In addition to being judged fairly, candidates would receive better guidance throughout their work. Many postdoctoral fellows, in fact, complained about the lack of effective guidance, and stated that this had a major impact on the quality of their work and the time they

spent in obtaining their degree. Indeed, all too often, guidance means nothing more than sporadic contact with the supervisor. As one respondent stated: 'You depend 100% on your supervisor. If you are lucky, everything goes fine, but if not, you are lost.' In contrast, respondents who were effectively guided said that this created a collaborative and motivating atmosphere. They also noted that it saves a lot of time, as regular discussions are useful for planning future experiments, avoiding mistakes and staying focussed.

Publication requirements, unfair prolongation of thesis work and ineffective guidance can all cause a substantial delay in obtaining a PhD. Accordingly, the age at which candidates receive their title varies significantly in Europe. This causes problems for those who spend many years, and consequently graduate at a time when they consider starting a family and are in need of financial safety. Moreover, some 'older' respondents complained that age can be a negative factor when applying for a postdoctoral position or fellowship. In addition to alleviating such personal disadvantages, similar criteria are likely to promote the mobility of young scientists within Europe. By harmonising standards, universities and institutes would be more willing to accept each other's PhD programmes as equal. Thereby, individual PhD students could travel around more freely and gain valuable international experience at an early stage of their scientific careers.

The best institution to introduce such harmonisation would certainly be the European Union. The European Commission has a strong interest in promoting the movement of young scientists in order to create the 'European Research Area' that Philippe Busquin, the Commissioner for Research, described. Therefore, the Com-

mission has appointed a group of experts to identify obstacles hindering mobility within Europe. Currently, the group is investigating the acceptance of degrees throughout the EU. However, removing obstacles is not so easy. 'Individual member states consider that requirements they impose on their students are their own concern,' said Dr Georges Bingen, the

based on the quality of the work done, when graduation is justified. The European Commission could help to stimulate European synchronisation and assist thesis committees with their task, for example by promoting exchange programmes as mentioned above, or by drafting EU-wide valid guidelines for PhD requirements. A situation in which graduate students, regard-

---

Whereas the value of a PhD degree in the life sciences is considered equal, the time and difficulties involved in obtaining it vary excessively throughout Europe

---

European Commission's official responsible for the work of this group of experts, 'they are reluctant to accept centrally imposed rules.' A better way to create harmonisation, he said, would be to promote greater interaction between European research institutions.

To stimulate the exchange of students, the European Commission has recently launched a new scheme within the system of Marie Curie fellowships that supports PhD students wishing to perform part of their graduate studies abroad. The programme has started this year and will ultimately finance 5000 fellowships for PhD students. 'By stimulating such programmes,' Bingen said, 'an increasing number of students get a chance to interact with scientists from different member states. And, increased interaction will eventually lead to increased harmonisation.'

Whereas the value of a PhD degree in the life sciences is considered equal, the time and difficulties involved in obtaining it vary excessively throughout Europe. Harmonisation would be best promoted by the general implementation of thesis committees to provide guidance and to decide,

less of the country they come from, walk similarly challenging paths will contribute to a more collaborative scientific atmosphere in Europe and thereby increase the international exposure young scientists receive. Such early international experience and exposure to different cultures and perspectives will produce better trained and experienced graduates, who are more able to meet the demands of the international scientific community.

Joep Muijrs

The author is a PhD student at the European Molecular Biology Laboratory in Heidelberg, Germany, and a co-founder of Gene Bridges GmbH.

E-mail: JoepMuijrs@Genebridges.com

DOI: 10.1093/embo-reports/kvd119

Trust, sensitivities and science

Scientists, policy makers and representatives of interest groups met in Brussels to discuss the future of genetic research in Europe

Biotechnology, driven by genome sequence analysis, is making ever greater

strides in medical research. At the same time, however, many people feel threat-

ened by these rapid developments and have raised objections against the further