I'm a teenage lobotomy

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Whilst investors are fixated on the day-to-day fluctuations of the stock market, artists on when they will be able to sell their next painting and politicians on the question of who will be the next leader of their party (assuredly themselves), a large fraction of academic scientists are obsessed with the issue of 'when will I have done enough to complete my PhD?'

The answer varies enormously according to what country, region, university and faculty they belong to, let alone the expectations and demands of their supervisors, plus their own perception of what's needed to reach the next stage on the career ladder, whether it is postdoctoral research, a teaching position, a job in industry or, as one colleague quaintly put it to me recently, a garbage-man with a PhD.

Questions that frequently arise include: how much of the content must be the student's individual work, how many published papers (if any) are needed, how much detail is appropriate, how to report already published data and even what language(s) may be used. Students agonize over negative findings, failed experiments, lack of coherence (which might be more the fault of the supervisor) and vital data from a collaborator that never arrives. Supervisors are often asked: 'how much will you pay me to stay on for 6 months to finish the work, and if you won't pay me at all why do I need to do the extra experiments?' The answers are often vague or, in students' eyes, inconsistent, even within a single laboratory. Some of the questions themselves make no sense when applied within a different discipline. Universities attempts to harmonize procedures internally often create more problems than they resolve.

On top of all this is the question of how the final thesis is examined and what

grading is attached to it. This varies from a formal procedure that may be little more than a 'show', to a rigorous, line-by-line inquisition that can end up requiring the candidate to re-write large chunks of their life's work. Examiners may number from one to tens, ranging from international experts to dusty professors who have themselves published nothing for decades.

Even the question of what is needed to begin doctoral research seems hugely variable. In my own university, a master's degree is indispensable. Yet, in many institutions in the USA, an MSc is a consolation prize for those who choose not to complete their PhD or who do not reach the required standard. Were we to be recruiting from such places, our formal entry requirement would therefore have to be formulated as 'candidates must have demonstrated prior failure in a doctoral programme'.

These issues were already highlighted in an editorial by my predecessor more than eight years ago [1]. Since then, not much has changed, apart from a welcome increase in the number of international PhD programmes, inching us towards at least the concept of global benchmarks for graduate study.

But it all remains a terrible mess. Graduate students are understandably confused, anxious, cynical and downright angry. As senior academics, we have a collective duty and self-interest to sort things out, at least within the life sciences, so that a PhD means at least approximately the same thing whether it is awarded in France, Finland or Fiji and whether the topic is molecules, molluscs or myopathy. Employers have a right to expect a uniform and identifiable set of skills and accomplishments of someone who successfully completed a PhD. Supervisors of postdocs, those who judge their fellowship applications and, above all, the

postdocs themselves have a right to know what is expected of them, based on the title they hold. It is manifestly unfair for someone who has completed 3 years of solid research training but who has not yet had the opportunity to publish their work in top journals to be compared with someone with a string of accomplished first-author papers already under their belt. It places them in an unjust competition and can ruin their career.

Science is global so we need global norms for something this fundamental. A PhD should be like a driving licence for scientists. There are good drivers and bad drivers, some aiming at the Formula 1 circuit, others who just want to collect their kids safely from school. But they all need to demonstrate their competence based on similar criteria and a similar test of relevant knowledge and skills. The plastic card or its paper counterpart is recognized in just about every country: by the police, insurance companies, car rental outlets, potential employers, even the people who let you into bars.

It's time to act. Hollow excuses won't do: 600 years of august tradition are not obviously preferable to 'some horrid foreign system'. If a sensible reform needs a two-thirds majority in both chambers of parliament, every federal region, the President's signature and that of 126 university chancellors, followed by a supreme court judgement, so be it. To be effective, the impetus must come from us: a bottom-up initiative that creates not just a pressure for change, but concrete proposals for rules and procedures to be adopted universally. We need a few brave PIs, students and other stakeholders to set up a ginger-group to define universal requirements for doctoral entry and exit, then lobby hard for their adoption.

Reference

1. Gannon F (2006) *EMBO Rep* 7: 1061