

Summary of workshop “feasibility of international PhD-standards”.

Chairmen: Lise Wogensen Bach (Aarhus, Denmark), Andrea Oschewski (Graz, Austria), Chris van Schravendijk (Brussels, Belgium).

The workshop was introduced by CvS reporting on two surveys of the MEDINE networks, where the first referred to organization and structure of doctoral education, while the second survey focused on outcomes. The message of this introduction was that it seems more feasible to reach consensus on outcomes, than on structure (i.e. the way these outcomes are reached by organization).

Following this introduction plus its Q&A session, the second part was presented by LWB. This part consisted of a short presentation of talent and PhD training as part of talent development. Thereafter, based on the document “Standards for PhD education in biomedicine and health sciences in Europe”, the presentation proposed indicators for international standardization of doctoral education and its feasibility. Each slide invited the audience to identify obstacles within the following standards: Admission policy and criteria, PhD training program, PhD thesis and assessment, Research environment, Outcomes and finally Organization. The most important conclusions for each of these standards were:

Admission: We look too much at educational background which may complicate feasibility of standards; instead we should focus on well-defined qualifications. We need independent evaluation of project, but in some places external evaluation has added value.

PhD training program: The courses need to be at post graduate level, specifically aimed for PhD students. These should be both tailored to specific scientific domains, as well as to generic competences. Graduate schools should be encouraged to promote national and international networks organizing common PhD courses within a certain area.

Supervision: No major obstacles were identified, but questions were raised concerning how to train supervisors. A recommendation is to focus young supervisors and then involve senior supervisors as advisers in workshops. Second idea is to write a “profile of the good supervisor” and third is to survey PhD students to identify issues in supervision that can be improved.

PhD thesis: The standard proposes equivalent of at least 3 publications, however, the audience discussed the meaning of this and that numbers are not sufficient. There must be better systems developed to rescue students with lower publication output, considering the dogma “publish or perish”.

PhD thesis assessment: No obstacles were identified, however the lack of resources was a concern for one participant to ensure international composition of PhD thesis jury. Maybe modern IT techniques can help in such cases.

Research environment: It is not very realistic to aspire to standardization within research environment, because major differences exist in Europe according to the metrics proposed (publications, impact factors, funding etc). Joint degree programs can help to overcome some of these obstacles.

Organization: Highly linked to economic resources. The proposed indicators were accepted, but again standardization is often not realistic (see also introduction).

Outcome: There was general agreement on the outcomes, although it was brought up that these are often difficult to measure. Again it appeared that structure and organization are difficult to standardize, but outcomes seem feasible to be harmonized.

New standard was added: This was research integrity, accountability, honesty and awareness of good research attitudes; this gained general appraisal by the participants. It should be a separate section to be valued in its own paragraph.

Finally, we have to consider some obstacles in the feasibility of international PhD standards, which are compliance, interdisciplinarity, academic autonomy/history, resources, cultural and linguistic challenges. There is a tendency in some countries that accreditation policy is being moved from faculty level towards university level. Therefore, labeling at faculty level may interfere at institutional level.

Summary of workshop on “Collaboration between large and small scientific communities”.

Chairmen: Thomas Jørgensen (Brussels, Belgium), Gül Akdogan Güner (Izmir, Turkey), Dušan Meško (Bratislava, Slovakia).

The workshop addressed the following points.

- **Why the Collaboration?** As indicated in the Standards for PhD education in Biomedicine and health Sciences prepared by ORPHEUS-AMSE-WFME, in order to achieve excellence in PhD training, collaboration between scientific communities of different capacities should be encouraged.
- **Role of ORPHEUS:** ORPHEUS could provide the platform for networking between these communities. In addition, in the case of possessing an ORPHEUS label, the communities would have a common language on which to build on the collaboration.
- **Issues in the Collaboration:**
 - The collaboration could encompass not only the PhD level, but also the post-doc level and beyond. The communities could be domestic or international. In some cases, even the scientific communities within the same university may initiate a collaboration.
 - For the PhD levels, joint programmes are the most difficult to establish. Other types would include dual programmes or cotutelle. In addition more informal forms of collaboration could also be installed.
 - In any collaboration, there should be, in agreement from both sides, guidelines of the collaboration. In case funding is applied for, the aim and benefits of the collaboration should be well defined.

Report from workshop on outcomes of PhD training.

Chairmen: Mike Hardman (Macclesfield, UK), Michael Mulvany (Aarhus, Denmark), Jadwiga Mirecka (Krakow, Poland)

The aim of the workshop was to discuss the outcomes that should be expected from PhD training given that most PhD graduates now have to use their talents outside of academia. It was generally agreed that a PhD programme should enable the doctoral candidates to become a qualified researchers. Candidates should -

- have demonstrated the ability as a scientist to conduct responsible, independent research, according to principles of good research practice.
- have demonstrated the ability to conceive, design, implement and adapt a substantial process of original research with scholarly integrity at a level that merits international refereed publication.

In addition, doctoral candidates should develop at least some of the following generic competences. Candidates should -

- have developed specific competences relevant to specific employment opportunities (e.g. in the pharmaceutical industry);
- have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;
- have developed the ability to communicate with their peers, the wider scholarly community and with society in general about their areas of expertise;
- have developed the ability to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge-based society.
- have developed further competencies including leadership, ability to supervise work of others, project management and ability to teach.

The competences developed could be listed in a portfolio of the doctoral candidate's scientific activities during the PhD training.

The scientific outcome is evaluated through assessment of the thesis. The workshop discussed in detail the format of the thesis and the assessment. It was agreed that the value of the thesis is enhanced if it includes published papers or manuscripts ready for submission. Theses that include papers or manuscripts must also (in accordance with the ORPHEUS standards) include a broad introduction including an extensive review of the literature, critical analysis of the methods used, possible inclusion of data not in the accompanying papers/manuscripts and discussion of the results of the project in the context of the literature, broader than in the accompanying papers/manuscripts. According to the ORPHEUS standards, the benchmark for the scientific level of the thesis is the outcome to be expected from 3-4 years of scientific research at international level. This level is set by ORPHEUS as the equivalent of three articles in middle-ranking journals, and it is up to the assessment committee to determine whether this level is reached whatever the format. Thus apart from theses based on e.g. three papers/manuscripts, satisfactory theses could include monographs or a thesis with only one manuscript published in a particularly high-ranking journal.

Assessment of the thesis should include both a written evaluation and an oral examination. The assessment should be based on all parts of the thesis, not only the accompanying papers/manuscripts. The oral examination should be detailed enough to ensure that the thesis is the candidate's own work, and that the candidate is able to put the results into scientific context. ORPHEUS recommends that the oral examination is public, eventually preceded by a closed examination by the assessment committee. The workshop recommended that there should be a real possibility for failure. The chances of failure will be greatly reduced if the development of the thesis is regularly monitored during the PhD programme by the candidate's supervisor(s) with a formative feedback to prevent not properly prepared students reaching the stage of the thesis defence.

There was consensus that the generic competences listed above should also be evaluated.

Assessment of these competences should be more formative than summative with multiple methods used based on direct observation on the performance. The set of particular skills required could vary depending on the career plans of the student. Thus submitted theses should be accompanied by documentation of the degree to which these competences have been achieved. This documentation

should be evaluated by the assessment committee and form part of their decision concerning the award of the PhD degree.

Summary of workshop on “Research education and global health“.

Chairmen: Rune Nilsen (Bergen, Norway), Simona Dragan (Temisoara, Romania), Ana Borovečki (Zagreb, Croatia)

The workshop addressed the following question “What are the challenges in research education and collaboration between Europe and other countries?”, and in particular:

- a) Can we and do we address specific needs of both small and large scientific communities? What types of experts do we need for countries like Vietnam and what for countries like USA? Can a PhD programme in e.g. Cameroon be of benefit for global health?
- b) As global health issues have a great component of interdisciplinarity, how do we ensure this in the research training agenda and in the recruitment of doctoral candidates?
- c) As research training should be done as part of good and solid research groups, how do we ensure this in the context of global health and as part of collaborations?
- d) How to avoid brain drain and promote brain circulation?
- e) Do we always promote equality in our collaboration? Can this be improved and how? Good and bad examples.
- f) Can we within ORPHEUS help to avoid pitfalls?

The answers to these questions dealing with research education and global health are summarized as follows:

- 1) High quality research should be the basis for all PhD training. This should include a participative role of students and the institutions involved, also small and weak partner institutions involved. PhD programmes should demand that the candidates are all part of strong and robust research environment preferably also partner and home institutions of the students.
- 2) The thematic focus for the research should be relevant for home institutions. Also the training for the students should include presentation and discussions on the major global challenges. In the health field, the issues of “Global burden of diseases” and the concept “10/90 dilemma” should be addressed.
- 3) Institutional partnerships should be the basis for the joint research as well as for the training part, and should address the institutional needs for the partner institutions as institutional development, staff development, and also ensure openness towards interdisciplinarity, team building, and networking.
- 4) It is important for each institution to address global healthcare issues and the brain drain challenges. In particular these issues should be part of the strategy and then as an important leadership obligations at the institution

Possibilities and challenges for the ORPHEUS policy for the future are:

1. Strengthening the processes for good doctoral programme development with the global perspectives
2. Strengthening institutional partnerships as part of good PhD program development
3. Development of matching platforms contact and active development of relations for research groups, research training staff and students.
4. Utilising modern concepts of social digital media and communication for enabling the network, research collaboration and supervision in the research process and research training
5. Enabling an overview of relevant high quality portals for research training courses in global health issues such as Massive Open Online Courses (MOOC), MIT openCourseWare, Coursera, iTunes U, etc.