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Achieving ORPHEUS Standards in Ukraine: Illusion or Reality?

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While the whole world has been discussing the standards and strategy of Doctor of Philosophy (Ph.D.) programmes as a driving force of biomedical sciences development, Ukrainian science is surviving under limited funding; lack of governmental supporting and systematic quality control; stagnation in national policy of Ph.D. education; and undeveloped international mobility scheme for Ph.D. students. Is it possible to implement high quality standards in such a microenvironment? Not yet. However, awareness of the problem is the first step in its solving. Two years of experience of M. Gorky Donetsk National Medical University's (DonNMU) collaboration with the Organisation for Ph.D. Education in Biomedicine and Health Sciences in the European System (ORPHEUS) has revealed to the development of a new model of Ph.D. education, joining national rules and requirements, but directed to achieving of European standards. This model is funded by DonNMU and targets to the following milestones: (a) optimization of scientific supervision by selection of scientists whose papers are published abroad and cited in international scientific journals; (b) organization of Ph.D. education, including ethics and methodology of scientific research, biostatistics, and fundamental and specialized courses; (c) creation of research environment by implementation of modern methods in universities' clinics and laboratories, and cooperation with leading laboratories and institutions in Ukraine and abroad; (d) development of multidisciplinary scientific projects approach by shifting of clinical medicine to fundamental sciences and collaboration with specialists on chemistry, physics, social sciences, etc.; and (e) strict selection of Ph.D. candidates with certificated English and encouragement of international mobility of Ph.D. students and dissemination of their achievement and experience. Indeed, it is a long and thorny path, but we believe that "You must have long-range goals to keep you from being frustrated by short-range failures", as Charles Noble said.

Keywords: Doctor of Philosophy (Ph.D.) program, reforming, Organisation for Ph.D. Education in Biomedicine and Health Sciences in the European System (ORPHEUS) standards

Introduction

While the whole world is discussing standards and strategies of Doctor of Philosophy (Ph.D.) programmes (Lackovic, 2004; Kovačević, 2013; Campo-Ruiz & Paccini, 2013; Červinka, 2013; Harris, 2014), Ukrainian science is surviving under limited funding and governmental support in a highly centralized system of administration, experiencing deep stagnation in national policy of Ph.D. education and lack of systematic

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quality control. Such problems as discrepancies between educational system in Europe and Ukraine, undeveloped international mobility scheme, and low motivation and scarce career opportunities for young scientists, exacerbate the crisis.

By now, Ukrainian scheme of Ph.D. education is not only irrelevant to the world scientific community, but also has somewhat dubious standards when official requirements do not necessarily coincide with the actual result. For instance, the formal training of a Ph.D. student comprises only philosophy, foreign language, and specialty. The rest of time is considered to be dedicated to self-education and scientific research. Consequently, the most successful students must be those with the strongest self-motivation and, partly, a persistent supervisor. Such an attitude toward tertiary education leaves Ph.D. candidates in Ukraine without highly necessary skills and competencies that are vital for their careers. As a result, a reputational, qualitative, and financial gap grows, limiting probability of Ukrainian young scientists' integration in European scientific community.

Is it possible to implement high quality standards in such a microenvironment? Not yet. Can we, though, run the risk of losing a generation of talented people with further decrease in research and innovation activity in Ukraine while European universities are investing heavily in Ph.D. programmes and the next generation of young people. Who will be the innovators of tomorrow? Not at all, since awareness of the problem is the first step of solving it. To find the ways to tackle this problem, we initiated a Ph.D. programme reform in Ukraine in 2012 (Dumanskiy, Sulaieva, & Zinkovych, 2013).

Organisation for Ph.D. Education in Biomedicine and Health Sciences in the European System (ORPHEUS) Standards

As the first step, we compared Ph.D. programmes in Europe and former Soviet Union countries and found that they are quite different and widely vary in content and organization. To choose the model of Ph.D. programme installation in Ukraine, we addressed the ORPHEUS experience and recommendations.

ORPHEUS is an association of European biomedical and health science faculties and institutions[1]. It is founded in 2004 by the first President Zdravko Lackovic and has a wide range of activities, including the following:

(a) To develop the standards for Ph.D. education;

(b) To safeguard the Ph.D. as a research degree and strengthen career opportunities for Ph.D. graduates;

(c) To give active support and guidance to members of ORPHEUS in enhancing their contributions to medicine and society in general;

(d) To provide information to members of ORPHEUS and all Ph.D. candidates all over Europe;

(e) To represent higher education and research in biomedicine and health sciences and to influence policy making at national, European, and international level;

(f) To encourage cooperation among members of the association and the development of effective bilateral and multilateral networks;

(g) To promote cooperation in research and development of joint Ph.D. programmes;

(h) To promote harmonisation of Ph.D. programmes in biomedicine and health sciences;

(i) To encourage mobility of Ph.D. candidates and academic staff;

(j) To stimulate quality assurance of Ph.D. research and education, and in particular to develop an

[1] For more information, please visit http://www.orpheus-med.org.

accreditation process of Ph.D. programmes in biomedicine and health sciences.

Since 2004, ORPHEUS has organized annual thematic European conferences in Zagreb, Helsinki, Aarhus, Vienna, Izmir, Bergen, Prague, and Lausanne. On the basis of those conferences and in cooperation with Association of Medical Schools in Europe (AMSE) and World Federation for Medical Education (WFME), ORPHEUS develops standards for Ph.D. education (ORPHEUS/AMSE/WEMF, 2012).

ORPHEUS Standards as a Tool for Ph.D. Programme Development

The ORPHEUS/AMSE/WFME Ph.D. standards document, published in January 2012, is a practical tool for development and quality assurance of Ph.D. programmes. Another document, the new Ph.D. principles document: "Best Practice Based Principles for Innovative Doctoral Training", approved by the European Union Council of Ministers (2011), is fully compatible with the Ph.D. standards document. For this reason, ORPHEUS has expressed a wish to work closely with the European Commission on implementing this in the field of biomedicine and health sciences. The Ph.D. standards document provides a basis for global conversations concerning the quality and content of Ph.D. programmes.

The Ph.D. standards document is the result of large-scale consultation over many years at ORPHEUS conferences, workshops, and individual contributions from almost all European countries, with the resulting consensus striking a balance between specificity and flexibility. However, one thing is to have an agreed set of standards, another is to have them implemented. The ORPHEUS/AMSE/WFME Ph.D. standards document is a practical tool for quality assurance of Ph.D. programmes (Jonsson, Mulvany, & Lackovic, 2012).

The First Ph.D. Programme in Biomedical Sciences Development in Ukraine

Two years' experience of collaboration with the ORPHEUS has led to the development of a new model of Ph.D. education in Ukraine, joining national rules and requirements and directing to the achievement of European standards. This programme includes changes in:

(a) Admission policy;

(b) Educational courses for Ph.D. candidates;

(c) Requirements for scientific projects;

(d) Demands to supervisors;

(e) Quality assurance.

Formally, the common Ukrainian admission criteria, which are similar to ORPHEUS postulated standards, include:

(a) A master's degree;

(b) Clinical work experience (two years) for candidates in clinical disciplines;

(c) List of publications, reflecting that the candidates have achieved some prior research experience or a scientific review on relevant topics.

In reality, however, they do not correspond. Thus, qualification of Ukrainian and European masters, as well as meaning of "research experience", are rather different.

Revision of Admission Criteria

To create competitive conditions, we have implemented new selection criteria for Ph.D. candidates, so that they are selected not only on the basis of the nationally required entrance exams on philosophy, foreign

language, and specialty, but also on a range of additional qualifications, such as the following:

(a) An International English Language Testing System (IELTS) or Test of English as a Foreign Language (TOEFL) certificate;

(b) Academic effectiveness/achievements;

(c) Number and rating of publications;

(d) Certificate of recognized educational international courses (COURSERA) or lab-training, proving the level of knowledge and skills in biosciences.

Requirements to Supervisors

The second direction of activities was optimization of scientific supervision by selection of people who are scientifically qualified, which means that they will normally have a Ph.D. or Doctor of Sciences (D.Sc.) degree, and are active scholars with a steady scientific production that contributes to the peer-reviewed literature (Harris, 2014).

It is essential to note that Ukrainian biomedical sciences are not sufficiently associated with world scientific community due to many reasons, including not only stagnation of national science and lack of equipment, but also a rather low overall level of scientific staff performance, associated with language barrier, non-recognized qualification, and lack of motivation. That is why few scientists have high personal ranking (score) and publications in international peer-reviewed journals.

We believe that the best way to improve the situation is to use the recommendation of ORPHEUS standards about formal training for supervisors and international co-supervision for Ph.D. students. It is essential that supervisors participate in international schools, since it not only improves the quality of supervision, but also serves as a handy way for internationalization of scientific research in Ukraine. It is also essential for Ukrainian scientists to acquire a broad international scientific networks and to be able to introduce a Ph.D. student into the international scientific community. A further step for Ph.D. supervision improvement might be organization of a bidirectional exchange of academic staff aiming at understanding peculiarities of research environments in different countries and targeted correction of some gaps in local Ph.D. programmes.

Implementation of Ph.D. Education

In Ph.D. reform, we placed a special focus on doctoral education and training and prioritized the development of career opportunities for early stage researchers (Mulvany & Lackovic, 2012). This has became possible through further strengthening of university support to structured doctoral education. The developed Ph.D. programme is multimodal and includes mandatory and elective courses, targeting to stimulate interdisciplinary approach and develop transferable skills.

The mandatory courses include courses in ethics, health and safety, research methodology, statistics, nationally required philosophy, and foreign language. The last course is quite important for Ukraine bearing in mind the language barrier and limited use of English in everyday life. Elective discipline-specific components are directed to support Ph.D. candidates in their scientific research. Development of multidisciplinary educational programmes is useful for shifting clinical medicine to fundamental sciences and collaboration with specialists on chemistry, physics, social sciences, etc..

Courses in transferable skills include training of Ph.D. students in presentation of their research (oral/poster/papers) to academic audiences, in university teaching, in linguistic skills, in grant application, in

critical evaluation of scientific literature, and in career development and networking.

In addition, an obligatory element of Ph.D. training is participation in conferences and workshops in the home country and abroad. The overall workload corresponds to Ukrainian and European standards and is equal to 30 European Credit Transfer and Accumulation System (ECTS) points for three years.

The distribution of the subjects during the years of Ph.D. training is shown in Table 1.

Table 1
Distribution of the Subjects During the Years of Ph.D. Training

Year	Content	Assessment
1	Ethics and methodology of research; Transferable skills training	Project development and defense
	Elective courses on fundamental disciplines, immunology, and molecular biology	Exam on philosophy and foreign language
	Main specialty; teaching training	
2	Elective courses	Exam on specialty; Publications; Presentations
	Specialty; teaching training	
3	Elective courses; trainings of transferable skills	Publications; Dissertation defense
	Specialty; teaching training	

Research Environment Development

One of the most important factors for Ph.D. candidates and institutions is the research environment, which, according to ORPHEUS standards, determines the success of an individual Ph.D. programme. Research environment means not only facilities necessary for the project, but also access to other laboratories, preferably in other countries, to promote internationalization. The best way to fill the gap between high ORPHEUS standards and pure Ukrainian scientific microenvironment is to follow ORPHEUS recommendation: "Institutions lacking facilities or expertise in particular fields should collaborate with stronger institutions…" (ORPHEUS/AMSE/WFME, 2012).

The Role of the University in Quality Assurance of Ph.D. Programme

The role of the university in realization of the programme is based on its primary functions of management and organization of the process and, consequently, requires several steps:

1. Revision of foreign language teaching. According to the evaluation of students' achievements, the points to grasp were: practical, rather than formal evaluation of entry level of a student with subsequent adjustment of the study plan to his/her needs; language practice in the environment of international scientific community (through international mobility scheme, e-learning, etc.); and special attention should be paid to professional skills in language learning;

2. Adapting scientific project according to the world standards realized through basic course and adequate planning;

3. Activization of multidisciplinary research projects;

4. Implementation of new technologies in the body of research;

5. Development of cooperation between universities (workshops, internships, etc.) for technical advancement of research, acquisition of new skills, etc.;

6. Familiarization of students with grants and stipend programs available in the world and encouragement

of participation.

As each of the steps of the programme is assessed by the feedback mechanism with the supervisor, Ph.D. students, Ph.D. management staff, and examination board, it guarantees the quality of acquired skills and knowledge and formation of an adequate set of competences needed for scientific research completion.

Conclusion

Using ORPHEUS standards, a new concept of Ph.D. education was developed in DonNMU. The objectives of new Ph.D. programmes were to reinforce excellence, dynamism, and creativity in scientific research by improvement of young researchers' education, as well as implementation of academic mobility scheme. To support high quality projects, we used the competitive system of admission and activation of cooperation mechanisms through networking at the national and international levels. Placing a special focus on doctoral education and training, we prioritized the development of career opportunities for early stage researchers. The developed Ph.D. programme is multimodal and includes mandatory and elective courses, targeted to stimulate interdisciplinary approaches and develop transferable skills. Development of multidisciplinary educational programmes is useful for shifting of clinical medicine to fundamental sciences and collaboration with specialists on chemistry, physics, social sciences, etc..

In conclusion, we hope that the reform in Ph.D. programmes will allow us to improve the quality of research and professional characteristic of Ph.D. candidates, and connect young Ukrainian scientists with the international scientific community.

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