Overview report of Molecular Biology, Biochemistry and Biophysics study programmes

Introduction

Eight degree programmes in biochemical sciences, biophysics and molecular biology in three Lithuanian Universities were evaluated by international expert teams in March and September 2014. The March evaluation covered the BA and MA Study Programmes in Molecular Biology in Vilnius University (VU), the Medical and Veterinary Biochemistry Study Programme in Lithuanian University of Health Sciences (LUHS), and the Biochemical Analysis Study Programme in Vytautas Magnus University (VMU). In September, the BA and MA Study Programmes in Biochemistry, and the BA and MA Study Programme in Biophysics in VU were evaluated.

The review teams consisted of the following experts:

March 2014

Prof. Laurent Counillon (France, Team Leader)

Prof. Meza Trine Johansen (Norway)

Prof. Christoph Griesbeck (Austria)

Director Julius Gagilas (Lithuania)

Benas Gabrielis Urbonavičius (Student, Lithuania)

September 2014

Prof. Kari Keinänen (Finland, Team Leader)

Prof. Helmut Grubmüller (Germany)

Doc. Bruno Cardinaud (France)

Prof. Laima Ivanovienė (Lithuania)

Benas Urbonavičius (Student, Lithuania)

All eight programmes were given positive evaluations. Accreditation for six years was recommended for all programmes except for the Biochemical Analysis Study Programme for which a three-year accreditation was recommended.

This overview report, prepared by the two Team Leaders, summarizes the key findings made by the expert teams and presents some overall conclusions. Features shared by all or most of the evaluated programmes are emphasized. For programme-specific questions, the reader is referred to the actual Evaluation Reports. The findings are described under the same headings that are used in the reports.

Aims and outcomes

The evaluated programmes respond to the increasing demand of highly qualified biochemists, biophysicists and molecular biologists by the growing Lithuanian biotechnology and healthcare sectors, which in some areas have already reached a significant and internationally competitive position. Overall, the objectives and learning outcomes of the programmes are appropriate for the study fields, achievable during the course of the programmes and consistent with the needs of the labour market. Based on discussions with graduates and employers during the site visits, the employment rate and future prospects for biochemists and biophysicists are presently good, a strong indicator of properly assigned and reached goals.

There is some natural overlap between the programmes in biochemistry, biophysics and molecular biology, as the distinctions between the different disciplines of these molecular biosciences have become less clear. However, despite the similarities, it is important that the programmes have distinct roles and profiles. In this respect, there is room and need for slight shifts in the direction in some programmes.

Information on the aims and expected outcomes of the programmes are generally clearly formulated and publicly available, although this information is not always as comprehensive and up-to-date as it could be.

Curriculum design

In general, the curricula are appropriate for the level of studies, have a modern appearance, and are comparable to corresponding programmes internationally. With minor exceptions, the curricula are also well-balanced and cover all essential fields with up-to-date information. Most of the programmes integrate students early in research, which is a highly

positive feature. Furthermore, the most programmes have a healthy distribution between theoretical studies and practical training.

One area in which most of the evaluated programmes could perform better relates to incorporation of general topics that a highly relevant to the employment and professional life yet not covered presently at all or to any sufficient extent. Examples of these topics are project management, good laboratory practice, quality assurance, and bioethics and research ethics. Another issue worth consideration is the division between compulsory and elective studies. The team felt that a more rigid structure with less optional courses is generally suitable for bachelor-level programmes, but that master´s level programmes should provide the students with more choices between specialized fields.

In addition, it was noticed that the study schedules of the Lithuanian programs are often different from the general European system (3 years and 180 credits for a Bachelor programme, 2 years and 120 credits for a Master programme). As a result, Lithuanian students will have different duration of studies and number of credits than their colleagues in other countries. Such mismatches may make it more difficult for the Lithuaninan students to participate in European Exchanges and/or to compete with other European students for employment or PhD programmes in the whole European Community

Teaching Staff

Both expert teams found the academic staff of the evaluated programmes to be highly qualified and involved in scientific research, factors which help support maintenance and continuous development of modern education in the molecular biosciences. Another shared impression was the inspired attitude and commitment shown by the teaching staff in spite of often quite heavy workload and modest salaries. International mobility of the teachers varied between the programmes but generally appeared to be lower than what is ideal.

Most of the staff show research activity as indicated by scientific publications, and some do have a really remarkable output, but overall, the scientific visibility especially in the international arena could be higher. Recruitment of new staff is somewhat disadvantaged by low salaries, which also make it necessary for many teachers to have additional teaching hours outside his/her own University.

Facilities and resources

The facilities for teaching and learning, including access to literature databases, and the research infrastructure used by the programmes are of adequate quality and sufficient for successful implementation of the programmes. In fact, in most research laboratories where the research practises and thesis studies are performed, the quality and level of instrumentation appeared to be remarkably good, thanks to recent investments using structural and other EU funds. Furthermore, the review teams were positively impressed by the quality of the libraries, which, in addition to printed textbooks, provide access to e-books, databases and scientific journals. The professionalism and dedication of the librarians were also noted.

Study process and assessment

Admission to the programmes is competitive and quality of the selected students seems high. In general, the students expressed a high level of satisfaction with the provided teaching, opportunities and support. Graduates of the programmes appear to be highly searched for in the labor market, which speaks also for well-functioning study processes.

Some areas for improvement were, however, identified by the review teams. Sufficient practical skills and familiarity with a wide range of research methods are of key importance to the students in the laboratory sciences, and the study processes should facilitate achievement of these practical objectives as efficiently as possible. Laboratory practises and thesis projects are the crucial study components related to development of practical skills. Generally, the procedures of student placement to research projects should be made more efficient and a system of student rotation established in all of the programmes. Rotation between laboratories would give the student a wider perspective to the research methods and environments before entering the final thesis project. Another issue which needs consideration is the rather low level of participation of the students to Erasmus and corresponding exchange programmes. In some cases, this may relate to real or perceived lack of matching courses in the partner Universities. As stated above, this may also be related to the Lithuanian study organization, which is self-consistent, but does not fully match the European system. Improving the exchange conditions would greatly benefit the students and promote internationalization of Lithuanian Universities.

Programme Management

The management duties in the evaluated programmes are properly defined. Most of the programmes operate in an environment and by a staff which is also involved with other study programmes. Therefore, it is important to have a programme-specific organ to take care of short- and long-term planning and to bring together the key participants or stake-holders, faculty or department-level administration, teachers, students and public or private-sector employers. The Study Programme Committee serves this function in all of the programmes, and generally appeared to work reasonably well. An important function of the committee is to gather and analyse the feedback from students and from the job market, and help to find ways to make the needed adjustments to the curriculum or to the study processes accordingly. Regarding this task, a more active participation by the students, and by employers or social partners to the study programme committees is encouraged.

Conclusion

The quality of the evaluated Lithuanian study programmes in the fields of biochemistry, biophysics and molecular biology is generally high, as reflected in the positive evaluations of all eight programmes, which strongly benefit from the dedication of teaching staff and the dynamics that exists between academic, private-sector employers and social partners . Naturally, there is variation between the programmes and in their relative strengths and weaknesses as indicated in detail by the respective evaluation reports. In this short overview , we pointed out some areas where the programmes could be further improved.

Laurent Counillon

Kari Keinänen

January 5, 2014