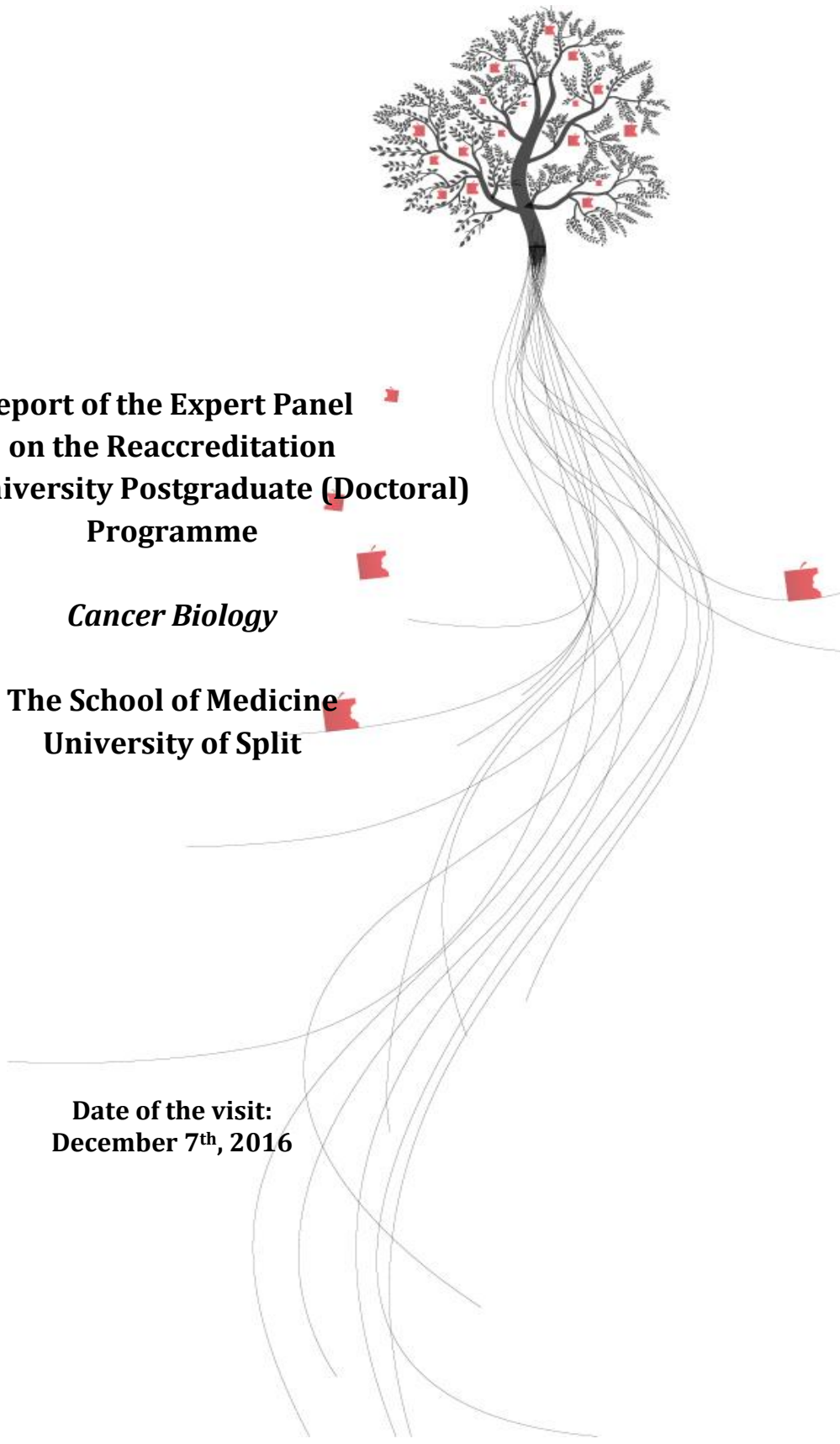

Report of the Expert Panel on the Reaccreditation of the University Postgraduate (Doctoral) Programme

Cancer Biology

The School of Medicine
University of Split

Date of the visit:
December 7th, 2016

May, 2017

CONTENTS

INTRODUCTION

The Expert Panel appointed by the Agency for Science and Higher Education (ASHE) created this Report on the re-accreditation of the university postgraduate (doctoral) programme in *Cancer Biology* of The School of Medicine, University of Split on the basis of the Self-Evaluation Report of the programmes, other documentation submitted and a visit to The School of Medicine, University of Split.

The Agency for Science and Higher Education (ASHE), a public body listed in EQAR (European Quality Assurance Register for Higher Education) and a full member of ENQA (European Association for Quality Assurance in Higher Education), re-accredits higher education institutions (hereinafter: HEIs) and their study programmes in line with the Act on Quality Assurance in Science and Higher Education (Official Gazette 45/09) and the Ordinance on the Content of a Licence and Conditions for Issuing a Licence for Performing Higher Education Activity, Carrying out a Study Programme and Re-Accreditation of Higher Education Institutions (OG 24/10). In this procedure parts of activities of higher education institutions and university postgraduate study programmes are re-accredited.

Expert Panel is appointed by the Agency's Accreditation Council, an independent expert body, to carry out independent evaluation of post-graduate university study programmes.

The Report contains the following elements:

- Short description of the study programme,
- The recommendation of the Expert Panel to the Agency's Accreditation Council,
- Recommendations for institutional improvement and measures to be implemented in the following period (and checked within a follow-up procedure),
- A brief analysis of the institutional advantages and disadvantages,
- A list of good practices found at the institution,
- Conclusions on compliance with the prescribed conditions of delivery of a study programme,
- Conclusions on compliance with the criteria for quality assessment.

Members of the Expert Panel:

1. Prof. Michael Drinnen, Newcastle University/Freeman Hospital, UK (site visit: Faculty of Medicine Zagreb and Split)
2. Prof. Albert Selva O'Callaghan, Autonomous University of Barcelona/ Hospital Universitari General Vall d'Hebron, Spain (site visit: Faculty of Medicine Zagreb and Rijeka)
3. Prof. Gernot Riedel, Aberdeen University, UK (site visit: Faculty of Medicine Zagreb and Split)

4. Arturo Moncada Torres, doctoral student, KU Leuven, Belgium (site visit: Faculty of Medicine Zagreb and Rijeka)
5. Dr. Senthil Kaniyappan, postdoctoral researcher, Max Planck Institute of Metabolism Research and DZNE (German Centre for Neurodegenerative Diseases), Germany (site visit: Faculty of Medicine Zagreb and Split)
6. Dr. Patrycja Kozik, Group Leader, MRC Laboratory of Molecular Biology, Cambridge Biomedical Campus, Cambridge University, UK (site visit: Faculty of Medicine Zagreb and Rijeka)
7. Prof. Peter Hylands, King's College London, UK (site visit: Faculty of Pharmacy and Biochemistry, Zagreb)
8. Prof. Gonzalo Herradón, University CEU San Pablo, Spain (site visit: Faculty of Pharmacy and Biochemistry, Zagreb)
9. Marcin Ciszewski, doctoral student, Medical University of Łódź, Poland (site visit: Faculty of Pharmacy and Biochemistry, Zagreb and The School of Medicine Split)
10. Prof. Gábor Gerber, Semmelweis University, Hungary (site visit: School of Dental Medicine Zagreb and Faculty of Medicine Rijeka)
11. Prof. Robert Allaker, Barts and The London School of Medicine and Dentistry, Queen Mary University of London, UK (site visit: School of Dental Medicine, Zagreb)
12. Prof. Pedro Sousa Gomes, University of Porto, Portugal (site visit: School of Dental Medicine Zagreb)
13. Prof. Daniel W Lambert, University of Sheffield, UK (site visit: School of Dental Medicine Zagreb)
14. Prof. Zdenek Broukal, Charles University, Czech Republic (site visit: School of Dental Medicine Zagreb)
15. Nemanja Sarić, doctoral student, King's College London, UK (site visit: School of Dental Medicine Zagreb and The School of Medicine Split)
16. Prof. Suzanne Held, University of Bristol, UK (site visit: Faculty of Veterinary Medicine Zagreb)
17. Prof. David Sargan, University of Cambridge, UK (site visit: Faculty of Veterinary Medicine Zagreb)
18. Vitalina Drobnytska, doctoral student, University of Greenwich, UK (site visit: Faculty of Veterinary Medicine Zagreb).

The School of Medicine, University of Split was visited by the following Expert Panel members:

- Dr. Patrycja Kozik, Group Leader, MRC Laboratory of Molecular Biology, Cambridge Biomedical Campus, Cambridge University, UK
- Nemanja Sarić, doctoral student, King's College London, UK
- Prof. Michael Drinnen, Newcastle University/Freeman Hospital, UK

- Dr. Senthil Kaniyappan, postdoctoral researcher, Max Planck Institute of Metabolism Research and DZNE-German Centre for Neurodegenerative Diseases, Germany
- Prof. Gernot Riedel, Aberdeen University, UK
- Marcin Ciszewski, doctoral student, Medical University of Łódź, Poland.

In the analysis of the documentation, site visit and writing of the report the Panel was supported by:

- Emita Blagdan, coordinator, ASHE
- Marina Matešić, coordinator, ASHE
- Đurđica Dragojević, ASHE, interpreter at the site visit
- Đurđica Dragojević, translator of the Report, ASHE.

During the visit to the Institution the Expert Panel held meetings with the representatives of the following groups:

- Management
- Study programme coordinators
- Doctoral candidates
- Teachers and supervisors
- External stakeholders
- Alumni.

The Expert Panel also had a tour of the library, IT rooms, student register desk and the classrooms.

SHORT DESCRIPTION OF THE STUDY PROGRAMME

Name of the study programme contained in the licence: **Cancer Biology**
Institution providing the programme: **University of Split, School of Medicine**
Education providers: University of Split School of Medicine
Place of delivery: University of Split, School of Medicine
Scientific area and field: Biomedicine, Clinical Medicine

Learning outcomes of the study programme *Postgraduate University Programme in Cancer Biology*:
Graduates acquire contemporary knowledge in the field of cancer biology linked to the molecular pathology basis of disease and the relationship between the organism and the tumour. The acquired knowledge allows a complete understanding of the progression of neoplastic disease and the introduction to the possibilities of integrated therapeutic approaches. During the compulsory laboratory work in scientific centres in the country and abroad, the candidates acquire the basic skills of laboratory work in molecular biomedicine, which are important for the understanding of contemporary diagnostic procedures and carrying out of molecular biomedical research. They learn about all the important features of scientific research with an emphasis on the specificities in the field of molecular oncology. With the help of mentors, the candidates take part in original scientific research alongside their doctoral dissertations from which results are published in indexed scientific journals. Therefore at the completion of the study program they are able to independently conceive and carry out a scientific research assignment and apply it for the purpose of postdoctoral scholarships abroad. With the acquired knowledge and the title of doctor of science, the candidate has a possibility of development of his/her academic and scientific carriers in public and private health and scientific research institutions in the Republic of Croatia.

Number of doctoral candidates: 86
Number of teachers: 75
Number of supervisors: 31

RECOMMENDATION BY THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL

It is the overarching opinion of the panel that this programme does not meet all the requirements stipulated by the accreditation council. While we feel that the majority of the relevant laws and bylaws have been met, the panel has identified a number of critical issues which the School of Medicine and the Programme directors should seek to address over an extended period. It is our impression that both Programme director and supervisors/mentors very openly discussed these concerns and are themselves aware that improvements can and should be implemented (and examples are even listed in the self-evaluation document). This may not be achievable overnight, requires regular internal audits and a careful analysis of (what is noted as limited) finances and how they can creatively ring-fenced in an imaginative and more student friendly manner. A time frame of 3-5 years has been considered as appropriate to implement these changes and the panel suggests at least one interim Expert Audit to monitor progress, provide support and further advice on the planned changes that are in progress.

Upon the completion of the re-accreditation procedure and the examination of the materials submitted (Self-Evaluation Report etc.), the visit to the higher education institution and interviews with HEI members in accordance with the visit protocol, the Expert Panel renders its opinion in which it recommends to the Accreditation Council of the Agency the following: **issue a letter of expectation** for the period up to three (3) years in which period the higher education institution should make the necessary improvements.

ASSESSMENT STRATEGY

The assessment of this programme took into account the detailed reports of the post-graduate University study programmes and was pursuant of the *Act on Quality Assurance in Science and Higher Education*. Special weight was given to the self-nominated study objectives, and how these are contained within best practice as stipulated in the Bologna Seminar on "*Doctoral Programmes for the European Knowledge Society*" (for detail and definitions, see below).

i. *The core component of doctoral training is the advancement of knowledge through original research.* At the same time it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia.
ii. *Embedding in institutional strategies and policies:* universities as institutions need to assume responsibility for ensuring that the doctoral programmes and research training they offer are designed to meet new challenges and include appropriate

professional career development opportunities.
iii. *The importance of diversity:* the rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice.
iv. *Doctoral candidates as early stage researchers:* should be recognized as professionals – with commensurate rights – who make a key contribution to the creation of new knowledge.
v. *The crucial role of supervision and assessment:* in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners).
vi. *Achieving critical mass:* Doctoral programmes should seek to achieve critical mass and should draw on different types of innovative practice being introduced in universities across Europe, bearing in mind that different solutions may be appropriate to different contexts and in particular across larger and smaller European countries. These range from graduate schools in major universities to international, national and regional collaboration between universities.
vii. *Duration:* doctoral programmes should operate within an appropriate time duration (three to four years full-time as a rule).
viii. *The promotion of innovative structures:* to meet the challenge of interdisciplinary training and the development of transferable skills.
ix. *Increasing mobility:* Doctoral programmes should seek to offer geographical as well as interdisciplinary and inter-sectoral mobility and international collaboration within an integrated framework of cooperation between universities and other partners.
x. *Ensuring appropriate funding:* the development of quality doctoral programmes and the successful completion by doctoral candidates requires appropriate and sustainable funding.

- CroQF, level 8.2:

Descriptors of learning outcomes for this level are:
knowledge - creating and evaluating new facts, concepts, procedures, principles and theories in a field of research that extends the frontier of knowledge;
cognitive skills - using advanced, complex, original, highly specialized knowledge, skills, activities and procedures required for developing new knowledge and new methods as well as for integrating different fields;
practical skills - creating, evaluating and performing new proposed specialized activities and new methods, instruments, tools and materials;
social skills - creating and applying new social and generally acceptable forms of communication and cooperation in interaction with individuals and groups of different affiliations and different cultural and ethnical origin;

autonomy - demonstrating personal, professional and ethical authority, managing scientific research activities and a commitment to development of new ideas and/or processes;
responsibility - taking ethical and social responsibility for successful execution of research, socially beneficial results and potential social consequences.

- EU Principles for Innovative Doctoral Training

Research Excellence
Striving for excellent research is fundamental to all doctoral education and from this all other elements flow. Academic standards set via peer review procedures and research environments representing a critical mass are required. The new academic generation should be trained to become creative, critical and autonomous intellectual risk takers, pushing the boundaries of frontier research.

Attractive Institutional Environment
Doctoral candidates should find good working conditions to empower them to become independent researchers taking responsibility at an early stage for the scope, direction and progress of their project. These should include career development opportunities, in line with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

Interdisciplinary Research Options
Doctoral training must be embedded in an open research environment and culture to ensure that any appropriate opportunities for cross-fertilisation between disciplines can foster the necessary breadth and interdisciplinary approach.

Exposure to industry and other relevant employment sectors
The term 'industry' is used in the widest sense, including all fields of future workplaces and public engagement, from industry to business, government, NGO's, charities and cultural institutions (e.g. musea). This can include placements during research training; shared funding; involvement of non-academics from relevant industry in informing/delivering teaching and supervision; promoting financial contribution of the relevant industry to doctoral programmes; fostering alumni networks that can support the candidate (for example mentoring schemes) and the programme, and a wide array of people/technology/knowledge transfer activities.

International networking
Doctoral training should provide opportunities for international networking, i.e. through collaborative research, co-tutelle, dual and joint degrees. Mobility should be encouraged, be it through conferences, short research visits and secondments or

longer stays abroad.

Transferable skills training
"Transferable skills are skills learned in one context (for example research) that are useful in another (for example future employment whether that is in research, business etc). They enable subject- and research-related skills to be applied and developed effectively. Transferable skills may be acquired through training or through work experience". It is essential to ensure that enough researchers have the skills demanded by the knowledge based economy. Examples include communication, teamwork, entrepreneurship, project management, IPR, ethics, standardisation etc.

Business should also be more involved in curricula development and doctoral training so that skills better match industry needs, building on the work of the University Business Forum and the outcomes of the EUA DOC-CAREERS project.6 There are good examples of interdisciplinary approaches in universities bringing together skills ranging from research to financial and business skills and from creativity and design to intercultural skills.

Quality Assurance
The accountability procedures must be established on the research base of doctoral education and for that reason, they should be developed separately from the quality assurance in the first and second cycle. The goal of quality assurance in doctoral education should be to enhance the quality of the research environment as well as promoting transparent and accountable procedures for topics such as admission, supervision, awarding the doctorate degree and career development. It is important to stress that this is not about the quality assurance of the PhD itself rather the process or life cycle, from recruitment to graduation.

The common approach should provide a framework of reference, whilst preserving flexibility and autonomy for institutions and doctoral candidates.

These guiding principles seek to establish a common benchmark for scope and quality in PhDs across the EU, in order that qualifications have extrinsic value and can be considered transferrable between member countries. Strategic decisions about the programme should always be made in the best interests of patients and healthcare across the EU in general, and the rest of the world if appropriate. This is in keeping with the research priorities of national agencies such as NICE (National Institute for Health and Care Excellence), as well as the major national and international funding bodies (NIH, NIAAA, MRC, …).

RECOMMENDATIONS FOR THE IMPROVEMENT OF THE STUDY PROGRAMME

The Panel would like to stress, that the PhD programme 'Cancer Biology' has a number of highly recommendable features, but there are multiple issues that need considerable attention in coming years. One element, not specifically listed in the table, concerns the extremely low completion rate of the programme. From its conception in 2006, only 15 students were awarded a PhD with 103 students being admitted so far; nine students have officially withdrawn with unclear reasons why, and 13 students have been in the program already for ten years. It must become the overarching aim of changes to be implemented to curtail longevity of the programme and ascertain a smooth progression of candidates to their academic graduation. We expect a rapid improvement of these metrics as direct evidence for the improvement of the PhD programme.

We propose several measures to improve the programme and consequently the completion rates:

1. **Admission.** Introduce stricter and more transparent admission criteria, possibly decreasing the number of students per intake. Increase competition.
2. **Project/mentor selection.** Project proposal and mentor selection should coincide and happen at the time of application or provide a list of mentors with available projects, laboratory space and resources to accept a student during recruitment.
3. **Monitoring (students' progress).** Introduce measures for monitoring of student progress, as well as co-supervision. Such measures could include a yearly evaluation of progress with a short written, documented report.
4. **Monitoring (supervisors).** Introduce measures for monitoring of mentor selection and performance.

ADVANTAGES OF THE STUDY PROGRAMME

1. **Atmosphere/collaborations.** Good relationships within the programme. Collaborative environment.
2. **Support.** Commitment of the programme leaders and the pastoral support they provide to students.
3. **Student satisfaction.** Several self-driven students, who were able to identify available projects early or international exchange opportunities reported satisfaction with the programme.
4. **Course work.** Flexible course work that can be adapted to individual student's interests.
5. **Publication rates.**

DISADVANTAGES OF THE STUDY PROGRAMME

1. **Lack of monitoring**. Limited student support/progress tracking and supervisor monitoring. With the lack of support structures students' success mostly determined by individual commitment.
2. **Single mentoring.**
3. **Depth of study in PhD research. (as for TRIBE)** From the theses available to review, it was the panel's overall impression that the scientific breadth and depth of theses was in some cases not comparable with those of our Institutions.
   In the majority of theses, there was a single major theme reported. This is typically more in keeping with an MPhil or (in the UK) MD thesis, approximately two years of full-time research work.
   Some theses were very short, in one case around 40 sides of A4 text. The panel feel it unlikely that this would be considered an adequate synthesis of a 3-year programme of PhD-level work unless the quality was unprecedented. This was by no means always the case, and of course it is difficult to judge the scientific quality of a thesis written in an unfamiliar language.
   The panel also acknowledges that the majority of students juggle their medical work with their research, as well as that this might be partly due to limited budget. However, we cannot at present exclude that a lack of supervision and support is the reason behind this variability.
4. **Lack of internationalisation**. Limited opportunities for international mobility (e.g. collaborations), programme not advertised internationally, no opportunities for students to interact with international speakers
5. **Lack of a transparent system for monitoring of students' progress.**

EXAMPLES OF GOOD PRACTICE

1. Collaborative culture between research departments.
2. Use of publications as a metric of quality.

COMPLIANCE WITH THE PRESCRIBED CONDITIONS FOR THE DELIVERY OF A STUDY PROGRAMME

Minimal legal conditions:	**YES/NO notes**
1. Higher education institution (HEI) is listed in the Register of Scientific Organisations in the scientific area of the programme, and has a positive reaccreditation decision on performing higher education activities and scientific activity.	YES
2. HEI delivers programmes in the two cycles leading to the doctoral programme, i.e., first two cycles in the same area and field/fields (for interdisciplinary programmes), and employs a sufficient number of teachers as defined by Article 6 of the Ordinance on the Content of a Licence and Conditions for Issuing a Licence for Performing Higher Education Activity, Carrying out a Study Programme and Re-Accreditation of Higher Education Institutions (OG 24/10).	YES
HEI employs a sufficient number of researchers, as defined by Article 7 of the the Ordinance on Conditions for Issuing Licence for Scientific Activity, Conditions for Re-Accreditation of Scientific Organisations and Content of Licence (OG 83/2010).	YES
3. At least 50% of teaching as expressed in norm-hours is delivered by teachers employed at the HEI (full-time, elected into scientific-teaching titles).	YES
4. Student: teacher ratio at the HEI is below 30:1.	YES
5. HEI ensures that doctoral theses are public.	YES
6. HEI launches the procedure of revoking the academic title if it is determined that it has been attained contrary to the conditions stipulated for its attainment, by severe violation of the studying rules or based on a doctoral thesis (dissertation) that has proved to be a plagiarism or a forgery according to provisions of the statute or other enactments.	YES
Additional/ recommended conditions of the ASHE Accreditation Council for passing a positive opinion	**YES/NO notes**
1. HEI (or HEIs in joint programmes) has at least five teachers appointed to scientific-teaching titles in the field, or fields relevant for the programme involved in its delivery.	YES
2. In the most recent reaccreditation, HEI had the standard Scientific and Professional Activity marked as at least "partly implemented" (3).	YES
3. The doctoral programme is aligned with the HEI's research strategy.	NO (see 2.2.)

4. The candidate : supervisor ratio at the HEI is not above 3:1.	YES
5. All supervisors meet the following conditions: a) PhD, elected into a scientific title, holds a scientific or a scientific-teaching position and/or has at least two years of postdoctoral research experience; b) active researcher in the scientific area of the programme, as evidenced by publications, participation in scientific conferences and/or projects in the past five years (table 2, Supervisors and candidates); c) confirms feasibility of the draft research plan upon admission of the candidate (or submission of the proposal); d) ensures the conditions (and funding) necessary to implement the candidate's research (in line with the draft research plan) as a research project leader, co-leader, participant, collaborator or in other ways; e) trained for the role before assuming it (through workshops, co-supervisions etc.); f) received a positive opinion of the HEI on previous supervisory work.	NO
Some researchers have very low research activity (there was no information provided on the project activity).	
6. All teachers meet the following conditions: a) holds a scientific or a scientific-teaching position; b) active researcher, recognized in the field relevant for the course (table 1, Teachers).	NO
Comment: Some teachers have no research activity and some have no academic title.	
7. The supervisor normally does not participate in the assessment committees.	YES
8. The programme ensures that all candidates spend at least three years doing independent research (while studying, individually, within or outside courses), which includes writing the thesis, publishing, participating in international conferences, field work, attending courses relevant for research etc.	YES
9. For joint programmes and doctoral schools (at the university level): cooperation between HEIs is based on adequate contracts; joint programmes are delivered in cooperation with accredited HEIs; the HEI delivers the programme within a doctoral school in line with the regulations and ensures good coordination aimed at supporting the candidates; at least 80% of courses are delivered by teachers employed at HEIs within the consortium.	-

QUALITY ASSESSMENT

	Quality assessment: **HQ (high level of quality) or** **IN (improvements are necessary)**
1. RESOURCES: TEACHERS, SUPERVISORS, RESEARCH CAPACITIES AND INFRASTRUCTURE	
1.1. HEI is distinguished by its scientific/ artistic achievements in the discipline in which the doctoral study programme is delivered.	**IN** The Expert Panel evaluated the level of quality of scientific output based on Table 1. and 2. The HEI did not provide cumulative data on research outputs in points 1.1. Based on available documents, the panel recommends that in the future supervision should be appointed to the best and most active researchers/teachers, with establishing a threshold of expectations on quantity and especially quality of publications and project activity. Therefore we recommend that the overall quality of publications could be improved.
1.2. The number and workload of teachers involved in the study programme ensure quality doctoral education.	**IN** According to the report, 75% of courses are taught by school's faculty. 25% is delivered by external faculty, including some international institutes. Table 1 suggest that a large proportion of external faculty is not currently engaged in teaching. The panel notes that the thought part of the programme (courses) is 5x as high as compared to American/European programmes. Overall, taught courses provide students with good foundations, however course workload could be balanced better with research requirements of doctoral students. The amount of teachers and teaching hours in the programme and the financial resources needed to support this should perhaps be better allocated to supervision and doctoral project support.
1.3. The teachers are highly qualified	**HQ**

researchers who actively engage with the topics they teach, providing a quality doctoral programme.	50% of the teachers have published > 10 research papers in the last five years. The publications are relevant from the programme area. We would like to point out that the teachers with highest publication rates are based at or associated with foreign institutes, and therefore it is difficult to assess the local input into the publication. Nevertheless, such international links are commendable. The HEI states in SER (p. 6) that until recently, the majority of teachers had MSES projects which are now completed. This might entail that there are no active research projects, although the Panel was unable to establish this for a fact as there were no information in the Tables on project activity. The faculty should invest more effort in attracting research projects.
1.4. The number of supervisors and their qualifications provide for quality in producing the doctoral thesis.	**IN** There are several successful thesis supervisors, who actively participate in research projects and whose students have published their doctoral work (52 papers co-authored by the students). However, while the ratio of supervisors to candidates is not above recommended in the moment 1:3, the system of selection of doctoral supervisors is not very transparent. Many students struggle to find a supervisor for their thesis project and the availability of potential supervisors is not clear. The HEI's SER states that response to supervision is quite low. This has been suggested as one of the reasons for student withdrawals/lower completion rates. Perhaps the programme should admit only highly qualified PhD students that would in turn provide a benefit to the potential supervisors, instead of potential burden. The supervisors should also be expected to actively lead and/or participate in international and/or national scientific research projects so that their future supervisees are then handpicked in accordance to their projects activity and provide addition to their

	team. Supervisor's performance should be formally assessed on the basis of the performance and completion rates. External supervisions should be amended with co-supervisors from the HEI. In general the panel recommends co-supervisor to be appointed in all cases.
1.5. The HEI has developed methods of assessing the qualifications and competencies of teachers and supervisors.	**IN** While we found that this criterion is compliant for teachers (student surveys are in place), we found space for improvements in the aspect of assessing supervision. Teachers are evaluated according to anonymous questionnaires. In the past, the feedback has been considered by the programme directors to introduce improvements. Appropriate mechanisms for assessing and monitoring the qualifications of the supervisors are not formally in place. Student surveys are unappropriated for supervision assessment. The HEI SER states that in "conversation with the students is possible to find out if his/her supervisor is inactive and try to influence, or switch a student to the optimal mentor". The HEI should establish mechanisms of assessing and monitoring the performance of supervision through following and assessing the progress doctoral students.
1.6. The HEI has access to high-quality resources for research, as required by the programme discipline.	**HQ** The SER states that until recently, students' experimental work was organized at the Clinical Institute of Pathology, Forensic Medicine and Cytology, but after the automation of the lab process, it was impossible. Now, research is organised in the new equipped Laboratory of Experimental Pathology, and cooperative histological, biochemical, cytogenetic and molecular genetic laboratories of Medical School. Students can work in high-quality scientific environment, with modern equipment, as well as high-quality resource library and access databases. The panel found/assesses resources compliant. Although we did not have an opportunity to visit laboratories, the feedback we received was generally positive. The majority of is performed in the

	Laboratory of Experimental Pathology, and laboratories of Medical School, where equipment required for histological, biochemical, cytogenetic, and molecular studies is available. Access to library resources needs improvement While supervisors have access to key international journals through other affiliations or personal connections, the access is more complicated for the students. Students should also have a dedicated space of their own for different purposes.
2. INTERNAL QUALITY ASSURANCE OF THE PROGRAMME	
2.1. The HEI has established and accepted effective procedures for proposing, approving and delivering doctoral education. The procedures include identification of scientific/ artistic, cultural, social and economic needs.	**HQ** This PhD programme was established primarily to enable PhD studies for medical doctors. The programme has been launched and approved according to the regulations. However the SER does not discuss the needs identified prior to launching the programme nor the reasons for launching and running the programme. Although the HEI does have established regulations (procedure) on launching and approving programmes, on faculty and university level, the panel found no argumentation on why three separate programmes were launched and what scientific needs it targets. We recommend this be done in the future research strategy of the Faculty.
2.2. The programme is aligned with the HEI research mission and vision, i.e. research strategy.	**IN** The SER does not discuss how the programme is aligned with a quality research strategy, or the development strategy. The available strategy as a supplementary document in SER was in Croatian and for the period of 2010-2014. HEI should develop a sound research strategy with all the necessary areas (including PhD programmes, as well as research goals and responsibilities). Within the strategic document HEI should re-thing the role of its three doctoral programmes in all of its aspects (such as admissions policies, supervision criteria and the benefit of doctoral students to research of the HEI).

2.3. The HEI systematically monitors the success of the programmes through periodic reviews, and implements improvements.	**IN** Student surveys are mentioned in the SER under this criterion, as well as the external evaluations of the Agency, but no mention of HEI's own internal quality procedures. The programme directors monitor the progress and publications of the students within the programme and a detailed list was provided to the committee. Considering low completion rates, it is unclear how this information is used to implement change. In general, the feedback is predominantly collected on an ad-hoc basis from the students but clear procedures for implementing changes (e.g. to improve completion rates) are not in place. No evidence was provided for collecting feedback from alumni or other stakeholders. HEI should establish mechanisms for periodically reviewing and improving the quality of the doctoral programme and this should particularly include: - periodical (international) programme reviews; - continuous monitoring and analyses of research productivity of supervisors and success of the candidates; - collecting and analysing data and feedback from candidates, alumni (and drop-outs), especially in relation to improving the supervision system and providing support to students; - collecting and analysing feedback from other stakeholders but also establishing more formal contracts and agreements with the employers of students so that this guarantees support to students from both sides (particularly hospital management); - finally, HEI should document evidence on changes implemented on the basis of these procedures.
2.4. HEI continuously monitors supervisors' performance and has mechanisms for evaluating supervisors, and, if necessary, changing them and mediating between the supervisors and the	**IN** While a supervisor can be changed, there is no formal procedure and each case is dealt with individually. No evidence for systematic monitoring or awarding of supervisors has been provided by the HEI. The only metric used to assess quality of supervision is the

candidates.	number of student-lead publications, however it is not clear how this metric is used for improving the quality of supervision. HEI should introduce an intuition-wide system of following the progress of students and assessing the quality of supervision (progress reports that are then evaluated at the doctoral committee level both in terms of supervisor's competences and engagement and in terms of selecting students that are capable of successfully finishing). There should be clear expectations of what successful supervision is and what is expected of student to achieve year by year.
2.5. HEI assures academic integrity and freedom.	**IN** Faculty provides guidelines according to the Regulations and of Ethics Code and research activities should be approved by the Ethics Committee of Clinical Hospital Center or Medical faculty. However, there is no system for systematic detection of potential plagiarism or academic fraud. Depending on publishers to check for plagiarism in articles that are published before defence is not enough and more structured approach to this should be introduced on institutional and university level (informing the students, giving them a proper training in referencing and consequences of plagiarism and fraud, instructions for supervisors and evaluators of thesis etc.).
2.6. The process of developing and defending the thesis proposal is transparent and objective, and includes a public presentation.	**HQ** The procedures are provided in School's Regulations. A PhD Committee is appointed to evaluate the topic, doctoral dissertation and participate in defence. The Commission includes at least one member from another institution. The panel however recommends that some form or a draft of a thesis proposal be submitted upon admissions and that instead of extensive classes and courses the students dedicate more time from day one on developing a high quality and sustainable research plan (and defend it earlier). Supervision/teacher resources should be put to this use in order to help

	students in this initial phase which in turn requires that supervisions should be appointed as early as possible.
2.7. Thesis assessment results from a scientifically sound assessment of an independent committee.	**HQ** We found this compliant but with space for improvements. The programme has developed the procedures of producing and defending the doctoral thesis and has produced all the regulations and forms. The committee is composed of at least one external member (from another institution). However, it was not clear how these committees were appointed in order to achieve excellence and objectivity. We recommend that the independence of the panel and quality of assessment be improved by increasing internationalisation of the chosen members. This will contribute to international standards of defended PhD research and it will benefit candidates' international connections. International members can be alternatively included in pre-defence (paper-based) assessment of the submitted thesis before viva. English written thesis should be encouraged. Article-based thesis should be evaluated with the same rigour as the monographs and the fact that articles were published should not impede the academic assessment of the contribution.
2.8. The HEI publishes all necessary information on the study programme, admissions, delivery and conditions for progression and completion, in accessible outlets and media.	**HQ** We found this compliant. Detailed information about the study program is presented on the University website. It is praiseworthy that the Faculty has organised a doctoral school though there seems to be difference in quality assurance between programmes. However, some improvements could be made in this regard, e.g. in making potential supervisors list (and their field of expertise) available for prospective students. Also once established, HEI should inform its prospective and active students on expectations through the programme (a path of progression that is expected of them).
2.9. Funds collected for the needs of	**IN**

doctoral education are distributed transparently and in a way that ensures sustainability and further development of doctoral education (ensures that candidates' research is carried out and supported, so that doctoral education can be completed successfully).	The approximate budget was included in the report with the majority of income generated from the tuition fees. 30% of this budget is allocated for new equipment, but no rules concerning the selection and purchase of this equipment was provided to the panel. A substantial proportion of the budget is allocated towards improvements or fees (20% for each), e.g. conference participation. The majority of resources and consumable costs for (assistants') research are coming from supervisor's grants. We acknowledge that limited funding is providing a major roadblock in achieving higher research output. However, the school did not provide evidence for attempts to secure additional funding. To insure further development of the doctoral programme, funds could be allocated to support research of (all) students (equally) and engaged and successful supervision.
2.10. Tuition fees are determined on the basis of transparent criteria (and real costs of studying).	**HQ** The tuition fee is lower than that of comparable programmes. The rationale for this fee is presented in the documentation. For recommendations see 2.9.
3. SUPPORT TO DOCTORAL CANDIDATES AND THEIR PROGRESSION	
3.1. The HEI establishes admission quotas with respect to its teaching and supervision capacities.	**IN** Admission quotas are up to 20 students every two years. They are defined by the Faculty Council on suggestion of the Council of Study, taking care on availability of potential mentors and their load with current doctoral candidate. In the moment the ratio is 86 candidates to 31 supervisors. The admission procedures are not very strict. Possibly too many students are being admitted considering the capacity of the supervisors to provide and fund projects. Many supervisors appear inactive; many students struggle to find an appropriate supervisor after admission into the programme. The obligations of the supervisors are not clearly outlined.

	The HEI needs to provide clearly defined obligations and expectations of supervisors and co-supervisors, candidates and research teams in terms of contact hours they spend with their students, progress reports, and assessment of progress and student expectations in progression through the programme.
3.2. The HEI establishes admission quotas on the basis of scientific/ artistic, cultural, social, economic and other needs.	**IN** The HEI has not provided any discussion on the admission quotas with respect to the needs of the society and the academia, nor there was any analysis of the completion/success rate presented. Since the HEI has two more PhD programmes with significant number of enrolled, HEI should think through its overall admissions quota policy and admission criteria in order to assure their PhD programmes are research focused with high quality supervision. The completion rates are very low with <15% students graduated so far (e.g. from the 2006 and 2008 intakes, 30% of students graduated to date, and 15% officially withdrew). To our knowledge there are very limited research opportunities with businesses, limited knowledge transfer and IP outputs, and no innovative companies established by the students. Since the PhD programme is geared towards PhD degrees for medics, the program meets the current society requirements in Croatia - the majority of students become practising physicians and according to the report, no students are unemployed.
3.3. The HEI establishes the admission quotas taking into account the funding available to the candidates that is, on the basis of the absorption potentials of research projects or other sources of funding.	**IN** The SER states, up to recently, substantial number of PhD candidates was funded by the MZOŠ scientific projects or institutions Clinical Hospital Center Split and MedILS. Faculty employees like assistants and scientific novices do not pay intuition and students from Health Studies pay only 50% of tuition. However HEI does not establish admission quotas taking into account the funding available to the candidates. Absorption potentials of research projects

	are either very limited or not available to (all) doctoral students. At present majority of candidates pay their own tuition and have no source of funding. HEI should improve these numbers so that more PhD students have full time and part-time funding. Agreements should be made with health care institutions/hospitals so that some support is given to doctors who are enrolled in a programme. Same or similar agreement can be reached with other employers. This should also entail smaller enrolment numbers.
3.4. The HEI should pay attention to the number of candidates admitted as to provide each with an advisor (a potential supervisor). From the point of admission to the end of doctoral education, efforts are invested so that each candidate has a sustainable research plan and is able to complete doctoral research successfully.	**IN** This is one of the major issues noticed by the panel. The candidates are admitted without ensuring a priori availability of projects or supervisors. Following the year of coursework, students often struggle to find a lab/supervisor to commence their research work. There is no clarity as to which supervisors have means to accept a student and a project available. We recommend that this be improved. The candidates who are also young residents in hospitals, which make the majority, understandably take longer to finish but we encourage HEI to think through systematically what can be done in order to attain support for such candidates from admissions onwards (agreements with hospitals, co-supervision, greater expectations from candidates but also greater involvement from supervisors, selection process for those who show no result, etc.).
3.5. The HEI ensures that interested, talented and highly motivated candidates are recruited internationally.	**IN** The HEI stated that through public competition, students with medical degree or other degree in biomedicine, with point average ≥3.5, can apply. Necessary documentation are: a motivation letter, the written recommendations of two professors and English certificate of proficiency. We are not convinced that these are the criteria though which best prospective applicants are recognised. Further on, although the SER outlines the admission criteria, no information on acceptance rates are

	provided. It was pointed out to the panel that in certain years, it was difficult for the HEI to find a sufficient number of applicants. No international recruitment strategies. In order to recruit interested, talented and highly motivated candidates, research proposal with potential supervisors should be introduced to admissions procedure. Procedure should be based on choosing the best applicants based on research competences. This procedure should be international as much as possible.
3.6. The selection process is public and based on choosing the best applicants.	**IN** Appropriate selection criteria should be established (research proposal) in order to have transparent evaluation of research substance and clear expectations of what skills and features a potential/future PhD candidate should have.
3.7. The HEI ensures that the selection procedure is transparent and in line with published criteria, and that there is a transparent complaints procedure.	**HQ** According to SER, the HEI ensures that the selection is clear and that applicants have a right to complain. We found that there was no official complaints procedure, but program directors stressed their efforts to communicate with the students. If 3.5 and 3.6 is introduced and a more competitive procedure is in place, complaint procedure should be developed.
3.8. There is a possibility to recognize applicants' and candidates' prior learning.	**HQ** The HEI has established a procedure of recognizing prior learning and achievements relevant for the doctoral programme, e.g. recognition of ECTS from a master of science or another doctoral programme (began, or completed), publications etc., but not yet for non-formal and informal learning.
3.9. Candidates' rights and obligations are defined in relevant HEI regulations and a contract on studying that provides for a high level of supervisory and institutional support to the candidates.	**IN** SER states only little detail here (there is a contract in place) and does not provide much grounds to assess how does the institution uphold "a high level of supervisory and institutional support to the candidates". We have made recommendations in this regard (mechanisms for quality supervision and supervision assessment) elsewhere and as for

	institutional support see recommendations below.
3.10. There are institutional support mechanisms for candidates' successful progression.	**IN** The panel assessed that there are limited institutional support measures to the candidates (especially for those that are not employed on HEI). Support (financial support taken from tuition fund) is provided only to employees of the HEI (that do not pay tuition) while others that pay tuitions themselves do not seem to receive the same support. According to SER, institutional support consists of one annual meeting of students with the Council. One part of tuition is used for laboratories in which practical part of the study is performed. Part of the tuition is also spent on participation fees to conferences and courses (ISABS, Cochrane symposium). Part of tuition is used for buying computer programmes, laboratory materials and equipment that are necessary for successful progression of theses. Out of 15 candidate theses, 10 were result of direct support of the Faculty because candidates were assistants. This means that support is given only to those students that work at the HEI. HEI should provide for the same kind of support to all of the PhD students based on merit and needs of sustainable and quality research.
4. PROGRAMME AND OUTCOMES	
4.1. The content and quality of the doctoral programme are aligned with internationally recognized standards.	**IN** According to SER the study program of 180 ECTS points consists of: - 15 ECTS in compulsory courses and - 45 ECTS in elective courses. That makes 1/3 of a three year programme. 75 ECTS is given to research activities and 60 more to dissertation. With this amount of courses and exams it is hard to achieve a goal of the European and international standards as well as the CroQF (defining that programmes should provide for at least three years of independent research experience).

	Therefore we find it hard to compare to international standards the following areas: The admission criteria applied so far are not comparable. Volume of teaching and number of courses are significantly higher compared to international standards. The supervision procedures do not comply with international standards. The body of research required for the PhD seems less extensive compared to international standards. Since majority of students are also practicing medicine, the amount of time spent in the lab is significantly lower compared to international standards. This also results in long duration of the PhD (several students have been in the programme for over ten years). This significantly impacts international competitiveness of PhD projects. We encourage HEI to consult international standards in this regard.
4.2. Programme learning outcomes, as well as the learning outcomes of modules and subject units, are aligned with the level 8.2 of the CroQF. They clearly describe the competencies the candidates will develop during the doctoral programme, including the ethical requirements of doing research.	**IN** See 4.1.
4.3. Programme learning outcomes are logically and clearly connected with teaching contents, as well as the contents included in supervision and research.	**IN** The program does not have a clear structure and monitoring system based on the learning outcomes. Learning outcomes vary per individual and are difficult to assess. Although they might be logically and clearly aligned throughout the programme, and allow for a level of individual flexibility, they do not reflect the goal of the doctoral education to be

	researched based. Supervisory work and research is not emphasized enough in the programme.
4.4. The doctoral programme ensures the achievement of learning outcomes and competencies aligned with the level 8.2 of the CroQF.	**IN** Based on the sample of theses, and the overall structure of the programme, the panel assesses that improvements are necessary in the area of admissions criteria, research amount and research output in the final achievement of learning outcomes. As stated above, the body of research required for the PhD seems less extensive compared to international standards. The amount of time spent in the lab is significantly lower compared to international standards.
4.5. Teaching methods (and ECTS, if applicable) are appropriate for level 8.2 of the CroQF and assure achievement of clearly defined learning outcomes.	**IN** We did not have a direct exposure to teaching methods. Although students are satisfied with teaching methods, in our opinion, the majority of courses is lecture based. Generally, there is too much focus on such lectures as compared to research work. Instead of teaching taking 1/3 of the programme focus should be on structured research, monitoring the progress and high quality support to students by supervisors. If any courses are needed (thought part could be significantly decreased if stricter admissions criteria are in place) then these should be focused on research methodologies, on developing and sharing individual research skills (colloquia and peer learning); everything else should be moved to the supervision and research part of the programme (experimental and laboratory work and other forms of activities).
4.6. The programme enables acquisition of general (transferable) skills.	**HQ** Students acquire transferable skill such as data collection and analysis, writing, etc. Student symposia or other venues to share research data would provide means for acquiring presentation and communication skills. Designated space and time for PhD students to share their experiences in peer-learning process should be made available and instigated.

4.7. Teaching content is adapted to the needs of current and future research and candidates' training (individual course plans, generic skills etc.).	**IN** See the previous comments under 4.1-4.5.
4.8. The programme ensures quality through international connections and teacher and candidate mobility.	**IN** The programme engages some of the high quality world class researchers. However, their involvement in the programme is unclear and some have not been involved extensively with actual coursework or supervisions. We encourage, if possible, that their contribution to PhD students (to their research) be essential. Four students have participated in international projects and spent time in foreign laboratories. Also, we note there is little if no effort to recruit international students to the programme. Generally we feel that increasing internationality would be important for the maintaining high research standards. This can be achieved in several ways (e.g. inviting international speakers, encouraging students to apply for travel funding to attend international conferences etc.), but institution needs to take an active role in achieving this goal. Some areas can be improved without extra funding: - HEI can systematically provide proper information on opportunities for candidate mobility, enable bilateral contracts, encourage students through supervisory contact, - attract international faculty and PhD candidates to (part of the) programme (environment is attractive enough but local students should benefit from these visits); - the HEI should uphold European Charter of Researchers and Code of Conduct when employing assistants and staff internationally in order to achieve to some extent some internationalisation in its community. Additionally international committee members should

	be engaged in thesis assessments. Encouragements should be made in order for students to write their thesis in a foreign language.

NOTE: RECOMMENDATIONS OF THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL AND QUALITY LABEL

The role of the Expert Panel in the re-accreditation of doctoral study programmes is manifold. The Expert Panel or part of the Expert Panel visiting a higher education institution drafts a report on the basis of a self-evaluation report, the accompanying relevant documentation, and a site visit to HEI. The draft report is adopted by all members of the Cluster Expert Panel, while the president of the Cluster Expert Panel is responsible for coordinating the assessment levels.

The report contains an assessment on whether a doctoral study programme delivered at a higher education institution complies with the prescribed laws and by-laws, as well as any additional/recommended requirements defined by the Agency's Accreditation Council, and whether a higher education institution can obtain a positive, i.e. satisfactory quality assessment according to the criteria set out in this document. Moreover, the Expert Panel must make recommendations for quality improvement.
Based on the assessment of all these elements, the Expert Panel may propose to the Accreditation Council of the Agency to issue either a confirmation on compliance, a letter of expectation for the period up to three (3) years in which period the higher education institution should eliminate the identified deficiencies, or to deny the license.

If the Expert Panel has assessed that a doctoral study programme delivered by a higher education institution does not meet legal and other requirements or that the quality of a study programme is not ensured (i.e. that HEI does not meet additional requirements or recommendations made by the Accreditation Council, or has a very poor quality assessment), they should propose to the Accreditation Council to deny the license.

If the Expert Panel considers that the relevant laws and bylaws have been met by a higher education institution, but that certain elements mentioned above do not meet the quality requirements, while they consider that the identified shortcomings can be corrected within a time frame of three years, they should issue a letter of expectation.

If the Expert Panel considers that all legal and additional/recommended requirements have been met and the quality assessment is satisfactory, i.e. that a study programme fulfils the learning outcomes appropriately defined for that level and scientific area, they may propose the issuance of a certificate and have a HEI commit to quality improvement and reporting to the Agency during the follow-up period.

Finally, if the Expert Panel has, in accordance with the criteria mentioned above, proposed issuing the certificate of compliance and assessed that, in addition to meeting the minimum quality requirements – i.e. the qualification framework level - for a study programme, the programme should be identified as a doctoral programme of a 'high level of quality', the Expert Panel may propose to the Agency's Accreditation Council that such a doctoral study programme be awarded the 'high quality label'. Thus the Agency, with the consent of the Accreditation Council, grants a higher education institution the right to use the label for their academic and promotional purposes.
The 'high quality label' cannot be proposed or awarded to a programme or a higher education institution that does not comply with the requirements laid down by the laws and bylaws mentioned in this document, and any additional requirements recommended by the Accreditation Council. Moreover, the quality assessment awarded to a study programme should reflect a high level of quality

inasmuch that at least half of the sub-criteria in each of the quality assessment criteria are assessed as being of high quality. The Accreditation Council of the Agency issues a final opinion on the label awarded. The content and form of the quality labels shall be prescribed by the Agency in a relevant general act.

The Accreditation Council of the Agency discusses the final report with all recommendations and suggestions, and issues their opinion on the report. Based on a prior opinion of the Accreditation Council, the Agency issues an Accreditation Recommendation to the minister responsible for science and higher education, and upon receipt of the minister's final decision on the outcome of the procedure, awards the 'high quality label" to a higher education institution.