

The External Evaluation Report of a Doctoral Study Domain

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I. Introduction¹

The Board of Directors of the “Babeş-Bolyai” University of Cluj-Napoca requested the periodic external evaluation of doctoral studies (re-accreditation of an institution organising doctoral study programmes) among which is Biology as a single doctoral study field of **the Doctoral School of Integrative Biology**, organised by the Faculty of Biology and Geology.

In the scope of external evaluation of the University, organising doctoral study programmes, the doctoral study domain of biology was presented by the director of the doctoral school, Professor Marcel Pârnu, and evaluated by the domain evaluation panel:

- Professor Marieta Costache, coordinator (University of Bucharest)
- Professor Mladen Krajacic, international expert (University of Zagreb)
- Ms. Alexandra Bîngă, PhD student (University of Bucharest)

The external evaluation process was accomplished in hybrid mode by combining face-to-face site-visit and online sessions in the period of November 02 to 05, 2021.

“Babeş-Bolyai” University of Cluj-Napoca has the oldest academic/university tradition in Romania, is the largest university of the country, and is ranked on the first position in the period 2016-2019 in the University Metaranking, initiated by the Romanian Ministry of Education and Research. It is internationally recognised for its excellence in teaching and research. The University has a long tradition. Its recent structure has been shaped by dynamic historical circumstances, including multiethnic heritage and continuous multicultural contribution. As a result, “Babeş-Bolyai” is today an university with three lines of study programmes in Romanian, Hungarian and German, encompassing art/humanities, social sciences, life and natural sciences, mathematics/computer sciences, and technology.

¹ Each time when applicable the information shall be presented gender-wise.



Doctoral studies at the University are performed in the scope of 31 doctoral schools, covering 32 study fields. The field of biology is comprised by the Doctoral School of Integrative Biology, which is subordinated to the Faculty of Biology and Geology.

II. Methods used

The evaluation process started with analysis of the Report of Internal Evaluation, prepared by the Doctoral School Council, and signed by the Director of the Doctoral Study School (Professor Marcel Pârvu). The Report of the School under review was accompanied by a number of Annexes, covering all the organising, structural and governing issues. Documents, data and information available on the institutional websites (the University, the Faculty, the Doctoral School) has been analysed.

The face-to-face visit to the Faculty of Biology and Geology (classrooms, research centres with constitutive laboratories, library) was organised for, and accomplished by the Romanian panel members (coordinator, student-member), whereas the international panel member has only participated in online evaluation performances. The later encompassed a series of sessions in which panel members have met the team members who prepare the Report of Internal Evaluation, representatives of academic staff, representatives of both doctoral students and graduates of the Doctoral School, as well as employers of the graduates. Ethics issues were assessed and discussed by IOSUD evaluation panel members only.

The evaluation process was conducted in line with Guidelines regarding the activities carried out during the on-site visit by the Experts' Panel to evaluate a Doctoral Study Domain (ARACIS), the List of the domains, criteria, standards, performance indicators, and the List of critical performance indicators for the periodical external evaluation of Doctoral Study Domains (ARACIS).

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

The Faculty of Biology and Geology with the Doctoral School of Integrative Biology provides all aspects of institutional capacity for an efficient delivery of doctoral study programme in the domain of biology.

Criterion A.1. The administrative, managerial institutional structures and the financial resources

Standard A.1.1. The functional effectiveness is provided for in general legislation at the university level, as well as specific legislation at the doctoral school and the faculty level.

Performance Indicator A.1.1.1.

The general functioning mechanisms of doctoral studies are regulated at the University level by the document adopted by the Senate. Specific mechanisms applied for the Doctoral Study of Biology are based on the internal regulations of the Doctoral School of Integrative Biology. The later were brought at the Faculty of Biology and Geology, and approved at the University level by the Council for Doctoral Studies.

The decision-making structures at the University level (the Senate and the Administrative Council) and the Faculty level (the Faculty Council) are supported by the bodies that are particularly in charge to



manage doctoral education issues (the Institute for Doctoral Studies led by the Council for Doctoral Studies, and the Doctoral School Council, respectively).

Elections for the Doctoral School Council, as well as the Council of Doctoral Schools at the university level, are conducted regularly according appropriate methodology, and encompasses election of both students' representatives and members elected among teachers/supervisors.

Both the admission of doctoral students, and the completion of doctoral studies is conducted using specified methodology.

The Doctoral School Council is headed by the Director, additionally encompassing another full-time doctoral supervisor, a doctoral students' representative and an external member who does not belong to the Doctoral School (four members minimum). The Council is assembled regularly to ensure functional management concerning contracts for doctoral studies, proposals of topics, standards for granting PhD title, and other related issues.

Recommendations:

The indicator is fulfilled.

Performance Indicator A.1.1.2.

Mandatory criteria, procedures and standards, established in the scope of the doctoral school regulations, are applied to all the issues regarding doctoral supervisors, the training programme, obligations of doctoral candidates and prevention of fraud, including plagiarism.

Recommendations:

The indicator is fulfilled.

Standard A.1.2. The Faculty of Biology and Geology with the Doctoral School of Integrative Biology has the logistical resources necessary to carry out the doctoral studies' mission.

Performance Indicator A.1.2.1.

The IT system *AcademicInfo* is implemented through the project, funded by the Ministry of Education and Research. It is continuously provided and maintained by specialists employed by the University Department of Statistics and Informatics.

Recommendations:

The indicator is fulfilled.

Performance Indicator A.1.2.2.

The software used to verify similarities or plagiarism is available to all the teachers and supervisors, and an evidence of its use is demonstrated in the Internal Evaluation Report. It is an object of permanent concern at the University, and its use is considered an obligation of the doctoral studies according to the regulation documents. The iThenticate anti-plagiarism program provided by Turnitin is currently being used.

Recommendations:

The indicator is fulfilled.

Standard A.1.3. The Faculty of Biology and Geology makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.



Performance Indicator A.1.3.1.

The financial resources obtained from doctoral studies are regularly used for research purposes. At the same time, there is a permanent effort at all the institutional level to attract additional funding with the aim of enhancing research environment quality.

During the evaluation period (2016-2020), 29 projects in biology have been granted by national and international sources. Coordinated by the supervisors of the Doctoral School, most of them have engaged doctoral students. Grants are evidenced in the scope of the University Centre for the Management of Scientific Research.

Recommendations:

The indicator is fulfilled.

Performance Indicator *A.1.3.2.

The Doctoral School of Integrative Biology exceeded significantly the criteria raised by ARACIS, as more than 30% of the doctoral students have received additional financing by participating for 12 months in the project “Entrepreneurship for innovation through doctoral and postdoctoral research”, granted by European funds.

There were also additional six-months scholarships financed by the particular project or some other sources, as well as shorter (at least 3 months) mobility grants that doctoral students benefited to gain their international experience.

Recommendations: In spite of exceeding those criteria, the Doctoral School is expected to make additional efforts, trying to take advantage of every research grant by engaging doctoral students. As they are essential engine (together with postdoctoral fellows) of every research intensive university, there has to be no doctoral student who is not engaged in a research project.

The indicator is fulfilled.

Performance Indicator *A.1.3.3.²

Doctoral grants are regularly used to provide research consumables. Much more than 10% of the total amount obtained by the University (institutional contract grants) and collected from doctoral students (tuition fees) is used to reimburse the training expenses of doctoral students. It is important to emphasise that the Doctoral School was continuously increasing percentage of the money invested in doctoral students' participation in conferences, summer schools, courses, or internships abroad. The funds have also been used to support dissemination of results.

High-performance research is also supported by competitiveness grants, ensured by the University. Students of the Doctoral School of Integrative Biology are regularly awarded for papers with international visibility, published in co-authorship with their supervisors.

Recommendations:

The indicator is fulfilled.

² The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.



Criterion A.2. Research infrastructure

Standard A.2.1. The Doctoral School of Integrative Biology has a modern research infrastructure to support the conduct of specific activities in the scope of doctoral study programme in biology.

Performance Indicator A.2.1.1.

The Doctoral School of Integrative Biology relies on modern and efficient research infrastructure of the Faculty of Biology and Geology. It encompasses all the necessary space (amphitheatres, classrooms, seminar and laboratory rooms) and facilities. It is divided and organised among specific research units, and each of them makes relevant information available to doctoral students facilitating an access to the infrastructure of interest. In the field of Biology, there is the Centre for Systemic Biology, Biodiversity and Bioresources that has strategic research infrastructure and belongs to 16 units of excellence in the scope of the University.

Furthermore, in compliance with internal regulations, students of the doctoral school have access to laboratories located in all the University accredited research units, of which the Institute of Advanced Studies in Science and Technology is certainly the most prominent. It is also necessary to mention the Institute for Research, Development and Innovation in Applied Natural Sciences, the Interdisciplinary Research Institute on Bio-Nano-Sciences, and the Emil G. Racoviță Institute for the study of life in extreme conditions.

Doctoral students can also use a number of specialised libraries within the Central University Library “Lucian Blaga”, as well as different online resources, services and information. The Botanical Garden, encompassing university herbarium and other material facilities is also available.

As a result of collaboration agreements with institutions outside the University, students have access to the Research Centre for Advanced Medicine, and the Institute of Biological Research in Cluj-Napoca.

Recommendations: In an Internal Evaluation Report, an institution is expected to document that it is concerned with permanent renewal of the research infrastructure. In this term, a list of items purchased during the last evaluation period would be proper. However, according to information supplied in the Internal Evaluation Report, and particularly based on the site-visit, it is possible to conclude that the requirement is fulfilled. In conclusion, the research infrastructure of both the Faculty and the University is considered outstanding and *state-of-the-art*.

The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

Standard A.3.1. At the level of the study domain of biology, there are sufficient qualified staff to ensure the conduct of doctoral study program.



Performance Indicator A.3.1.1.

The Doctoral School of Integrative Biology has 11 doctoral supervisors. All of them exceed the minimum standards set by the CNATDCU Biology and Biochemistry Specialised Commission. Due to the significant surpassing of the minimum standards, the doctoral school has introduced additional criteria when recruiting new supervisors to enhance research performances in the future.

Recommendations:

The indicator is fulfilled.

Performance Indicator *A.3.1.2.

Ten doctoral supervisors, out of 11 who are recently active at the Doctoral School of Integrative Biology, have tenure at the “Babeş-Bolyai” University, and work under permanent employment contracts.

Recommendations:

The indicator is fulfilled.

Performance Indicator A.3.1.3.

Concerning their research proficiency, all the supervisors are related to the disciplines in the scope of doctoral study programme. Thus, both teaching programme (encompassing taught subjects) and individual research programmes with doctoral candidates are delivered by the experts in the field.

Recommendations:

The indicator is fulfilled.

Performance Indicator *A.3.1.4.

Within the Doctoral School of Integrative Biology, there is no PhD supervisor who concomitantly coordinates more than 8 doctoral students. In this study domain, supervisors with more than three doctoral candidates are considered exceptions.

Recommendations: No matter what is allowed by the Romanian law, no one supervisor could have more than three doctoral candidates at the same time. Thus, every case beyond this is a deviation, and a violation of principles that are respected in the European Research Area and the European Higher Education Area. I have learned that some older professors have large teams with a number of collaborators who are able to take an operational supervising/advising role. But in such cases, the older professors are just formal supervisors, which means they could actually not be recognised as persons of commitment to the doctoral process with full responsibility for a doctoral student.

The indicator is fulfilled.

Standard A.3.2. The doctoral advisors within the Study Domain of Biology are carrying out a scientific activity visible at international level.

Performance Indicator A.3.2.1.

The majority of PhD supervisors within the Doctoral School of Integrative Biology are internationally recognised scientists in their areas of expertise. They published at least 5 WoS-indexed publications during the last 5 years. A number of those papers is published in highly ranked journals, often in co-authorship with researchers from abroad. The international awareness of the aforementioned supervisors is presented by a remarkable number of citations. Furthermore, their scientific achievements



are recognised and presented through membership in international professional organisations, and membership on scientific boards of international highly ranked journals in which they have regularly participated as reviewers. It is worth mentioning that 7 supervisors of the Doctoral School have completed their doctorates in biology at seven remarkable universities in Western and Central Europe.

Recommendations:

The indicator is fulfilled.

Performance Indicator *A.3.2.2.

All the doctoral supervisors from DSIB meet at least double minimum standards required by the CNATDCU Biology and Biochemistry Commission.

Recommendations:

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

Performance Indicator *B.1.1.1.

Most of the candidates who apply for admission to DSIB are graduates of the master's programme in biology at UBB. However, the Doctoral School makes significant efforts to attract skilled and ambitious students with good research potential from other HE institutions in Romania or abroad. To enhance its attractivity and competitiveness in terms of international students, the Doctoral School deliver some courses in the scope of doctoral programme in English.

With the ratio of 1.19, the Doctoral School exceeded significantly the minimum requirement regarding candidates from other institutions who have enrolled for the doctoral study programme at DSIB during the last five years.

Recommendations:

The indicator is fulfilled.

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

Performance Indicator *B.1.2.1.

An admission contest is set up to approve academic, research and professional performances of the doctoral candidates. Their previous academic and research performances are assessed through topics and bibliography, and their interest for scientific research is assessed by a research project and an interview, as well as by written test. Success and average grade during bachelor and master level are assessed and are considered separation criteria.

Recommendations:



The indicator is fulfilled.

Performance Indicator B.1.2.2.

The expelling rate of doctoral students does not exceed 30%. During the last five years, the related values were significantly lower.

Recommendations:

The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

Performance Indicator B.2.1.1.

The training programme of the Doctoral School of Integrative Biology, based on advanced academic studies, offers a number of relevant disciplines, e.g. Environmental Molecular Biology, Phylogeography and Numerical Analysis, Developmental Genetics, Natural Pharmaceutical Extracts, Oxidative Stress in Biological and Biomedical Research...

The programme content is well-defined in DSIB curriculum, encompassing subject sheets (with envisaged learning outcomes) for all the disciplines offered to the students.

For each doctoral student DSIB provides a well-established, clearly developed and monitored training programme, including the research plan and research reports.

Recommendations:

The indicator is fulfilled.

Performance Indicator B.2.1.2.

One discipline of the doctoral training programme – Research Methodology and Ethics – is dedicated to ethics and intellectual property in scientific research.

Recommendations:

The indicator is fulfilled.

Performance Indicator B.2.1.3.

There are mechanisms of internal (at the level of the Faculty of Biology and Geology) and external (at the level of University) evaluations that ensure the academic training programme (disciplines and research activities) addresses the learning outcome, including appropriate knowledge, laboratory skills, responsibility and autonomy of doctoral students.

Recommendations:

The indicator is fulfilled.



Performance Indicator B.2.1.4.

Doctoral students enrolled in the Doctoral School of Integrative Biology permanently benefit from counselling and guidance by a committee consisting of 3 specialists – teachers and/or researchers who hold, as a minimum, a position of lecturer CS (research scientist) III, respectively. In the scope of this committee, a doctoral supervisor has the leading role.

Following completion of the Advanced University Studies Programme, there are reports aimed to establish the rhythm of the Scientific Research Programme (including acceptance of a thesis, two research-progress reports, and finalising one with an approval of the public defence). All the reports are presented by a doctoral candidate, written by a supervisor and accepted in agreement with all the committee members.

Recommendations:

The indicator is fulfilled.

Performance Indicator B.2.1.5.

For the Doctoral Study Domain of Biology, there is an average of 1.47 doctoral students per teacher/researcher included in the guiding/advising process. The ratio must not exceed 3:1.

Recommendations:

The indicator is fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

Performance Indicator B.3.1.1.

Within the past five years, 30 candidates have completed their doctoral study programme and publicly defended their theses. Each of them has published at least one scientific article. Some of the doctoral students at DSIB should be pointed out because of their outstanding achievement. In co-authorship with their supervisors and committee members, they have published papers in prestigious international journals, of which *Nature*, *Cellular Oncology*, *Int. J. Mol. Sci.*, and *PLoS One* could be emphasised. Taking into account ranking of those journals, as well as the first students' position in the co-authors lists, their scientific contribution could be considered original and important.

Recommendations:

The indicator is fulfilled.

Performance Indicator *B.3.1.2.

Doctoral students have also contributed with a number of international conference presentations. Within the last five years, the ratio between the number of doctoral students' presentations and the number of students who have completed their doctoral studies was well above the minimum requirement.

Recommendations:

The indicator is fulfilled.



Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

Performance Indicator *B.3.2.1.

The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the Doctoral School of Biology does not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor. Two exceptions were evidenced in 2019.

Recommendations: The Doctoral School is expected to take care and easily manage this criterion in the future. In this way, the performance indicator marked with asterisk will be fulfilled.

The indicator is partially fulfilled.

Performance Indicator *B.3.2.2.

The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. There was one single exception in 2018, when that ratio was slightly higher.

Recommendations:

The indicator is fulfilled.

Domain C. QUALITY MANAGEMENT

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

Performance Indicator C.1.1.1.

An institutional framework, as well as an operational procedure regarding evaluation and internal monitoring of the Doctoral School of Integrative Biology is established at the University level and the Faculty level. As a result, periodic reports are made to accredit the doctoral school, and the permanent evaluation is performed to ensure proper activity and operational quality. There is a continuous development of the evaluation process. In the scope of the quality assurance, the scientific activities of advisors and doctoral students, as well as the infrastructure, logistics and the training programme are permanently assessed.

Recommendations:

The indicator is fulfilled.

Performance Indicator *C.1.1.2.

At the level of the Doctoral School of Integrative Biology, the Questionnaire for assessing the quality of doctoral studies is applied annually. The doctoral students give suggestions for improvement of the academic and administrative activity. The report of the internal evaluation commission contains a series of recommendations that are transposed in the action plan.



Recommendations:

The indicator is fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

Performance Indicator C.2.1.1.

Information of interest to doctoral students and information of public interest are available on the University website and on the website of the Faculty of Biology and Geology. This information concerns the doctoral school regulations, admission regulations, doctoral studies contract, the regulations for completing the studies including the procedure for public defense of the thesis, the content of the study programme, and the research topics of potential supervisors. Institutional contact data, list of PhD students in the field with basic information, and information about the standards for elaboration of a doctoral thesis are also available.

Recommendations:

The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

Performance Indicator C.2.2.1.

Several academic databases relevant to the doctoral studies domain are available at the University level or through the Central University Library "Lucian Blaga".

Recommendations:

The indicator is fulfilled.

Performance Indicator C.2.2.2.

An electronic system for verifying the degree of similarity with other scientific works is also available. The access is ensured for both supervisors and doctoral students.

Recommendations:

The indicator is fulfilled.

Performance Indicator C.2.2.3.

All doctoral students have access to scientific research laboratories or other facilities of the Faculty of Biology and Geology. Furthermore, they have access at the university level to the Institute for research, Development and Innovation in Applied Natural Sciences, the Institute for Interdisciplinary Research in Bio-Nano-Sciences, and the Institute for the Study of life in extreme conditions. Based on collaboration agreements, doctoral students have also access to research centres that do not belong to the Babeş-Bolyai University. This is ensured by the proper regulations on both the university level and the level of the Doctoral School of Integrative Biology.

Recommendations:

The indicator is fulfilled.



Criterion C.3. Internationalization

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

Performance Indicator *C.3.1.1.

The requirement that at least 35% of doctoral students complete a training course abroad or some other form of mobility, such as participation in international scientific conferences, is fulfilled by DSIB.

Recommendations: This performance indicator can relatively easily be fulfilled by attending conferences. However, a research intensive university/doctoral school has to put emphasis on research training of doctoral students. Additional efforts are always expected to ensure funds, and introduce policies and measures aiming at increasing the duration of doctoral students' internships in advanced laboratories of the internationally recognised scientific institutions. International collaborations would also help in establishing fruitful environment for long-term internships. The latter would additionally contribute to doctoral supervisors' international visibility.

The indicator is fulfilled.

Performance Indicator C.3.1.2.

Invitations of leading experts to deliver courses for doctoral students are reported in the Internal Evaluation Report of the Doctoral School.

Recommendations: It would be useful and attractive for doctoral students to intensify participation of leading international experts in the doctoral study programme.

The indicator is fulfilled.

Performance Indicator C.3.1.3.

During the last five years (the recent evaluation period), at least 10% of the individual doctoral research programmes have been co-supervised by international experts. Accordingly, the doctoral theses within the doctoral school have been written and/or defended in English.

Recommendations: It would be necessary to intensify international collaboration in which doctoral students actively participate. At the same time, international experts are expected to participate more in the doctoral study programme, including their participation in guidance committees and thesis defence committees. Additional efforts are recommended to enhance international visibility of the Doctoral School of Integrative Biology and to attract doctoral candidates from neighbouring countries.

The indicator is fulfilled.

IV. SWOT Analysis

<u>Strengths:</u>	<u>Weaknesses:</u>
<p>- the strengths identified over the entire indicators' analysis report the will be reproduced. Some other general strengths that can be included in the given indicators' analysis can also be included.</p> <p>The structure and functioning of the Doctoral School</p> <ul style="list-style-type: none"> - The doctoral studies in the Doctoral School of Integrative Biology are carried out on the basis of clear regulations, methodologies and procedures that respect the legal provisions in force; - The Doctoral School of Integrative Biology / Biology Domain has the logistical resources necessary to carry out the study program (computer system for the record of doctoral students and their academic path; computer program for verifying the percentage of similarity in all doctoral theses. <p>Research infrastructure.</p> <p>Strong points:</p> <ul style="list-style-type: none"> - the strengths identified during the entire report will be resumed, within the analysis of the indicators. You can formulate other strengths, general, that do not fall into one certain indicator. <p>The structure and functioning of the Doctoral School</p> <ul style="list-style-type: none"> - The doctoral studies in the Doctoral School of Integrative Biology are carried out on the basis of clear regulations, methodologies and procedures that respect the legal provisions in force; - The Doctoral School of Integrative Biology / Biology Domain has the logistical resources necessary to carry out the study program (computer system for the record of doctoral students and their academic path; computer program for verifying the percentage of similarity in all doctoral theses <p>Research infrastructure.</p> <p>Research infrastructure of the Doctoral School Integrative Biology / Biology Domain is modern, adequate and can ensure the development of activities specific to doctoral studies</p> <p>The quality of human resources and its expertise.</p> <ul style="list-style-type: none"> - There is a very good selection of doctoral supervisors, who want to be co-opted into the 	<p>- the weaknesses identified throughout the report will be resumed as part of the indicators' analysis. Other general weaknesses that do not fall within a particular indicator may be formulated.</p> <p>Number and diversity of candidates. The capacity to attract candidates from outside the higher education institution (including from abroad) or in greater numbers than the number of places financed from the state budget is relatively low.</p> <p>The inclusion of experts from outside the institution (national and international) in the commissions for guiding or defending doctoral theses is relatively low.</p> <div style="background-color: #92d050; height: 20px; width: 100%; margin-top: 20px;"></div>

Doctoral School of Integrative Biology, based on the established criteria;

- All 13 PhD supervisors of the Biology Domain, exceed at least 3 times the minimum standards established by the Biology and Biochemistry commission of CNATDCU and are distinguished by the originality and relevance of their academic, scientific and professional contributions.

- Attracting non-governmental financial resources to finance doctorates;

- Coordinating a large number of grants by doctoral supervisors from the Doctoral School of Integrative Biology;

- The members of the Guiding Commissions are very involved in the training and research activity of doctoral students, throughout the doctoral internship and in the period of preparation of the thesis.

The quality of students and their activity:

- Admission of candidates is based on clear criteria of academic performance, research and professional activity. The dropout / expulsion rate of doctoral students is relatively low (below 30%).

- Publication by doctoral students of an appreciable number of scientific articles in journals with good and very good impact factor, in the field of doctoral thesis;

- A very good use of the doctoral grant by doctoral students, in the analyzed period (2016-2020), for professional training expenses;

- Involvement of a part of the doctoral students in the research activity from research grants;

- Obtaining the excellent grade for public defense of the doctoral thesis of 17 doctoral theses out of a total of 30 doctoral theses, completed in the period 2016-2020 (Biology doctoral grades).

Transparency of information

- Information of interest to doctoral students and information of public interest are available for consultation on the University website and on the website of the Doctoral School of Integrative Biology.

- PhD students have the opportunity to access representative databases for the field of Biology and to use the research laboratories of the Faculty of Biology and the university

International collaborations

- There are collaboration agreements (mobility, research internships) with universities and other research institutions in the country and abroad.

<p>The Doctoral School of Integrative Biology / Biology frequently invites international experts to give courses or lectures for doctoral students.</p>	
<p style="text-align: center;"><u>Opportunities:</u></p> <ul style="list-style-type: none"> - possible lines of action for the development of the institution under review shall be identified; - examples of opportunities: a favorable economic environment in the proximity of the assessed institution, the uniqueness of the study programs and their relevance to the local/national market, the overall attractiveness of the study programs etc. - Orientation of doctoral research towards priority areas (for example, health, environment, climate change, etc.); - Increasing the number of interdisciplinary collaborations with specialists in other fields (chemistry, physics, informatics, medicine, etc.) - Attracting candidates from abroad (EU and non-EU countries, including the Republic of Moldova and Ukraine) <p>Realization of infrastructure and research projects within the National Development and Resilience Plan in the period 2022-2026</p> <ul style="list-style-type: none"> - Increasing the number of doctoral students able to complete the doctoral thesis during the doctoral internship of 3 years or at most in 4 years, by starting the research topic at master's level; - A greater number of doctoral theses written in English and their publication on the site; - - Increasing the international scientific visibility, by providing the necessary young staff for higher education and providing the necessary staff for research institutes in the field of Biology by recruiting valuable PhD students of the Doctoral School; - Increasing the number of international collaborations, with international specialists open for collaborations in the context of accessing financial resources from international grants and other collaborations; 	<p style="text-align: center;"><u>Threats:</u></p> <ul style="list-style-type: none"> - the possible causes of the deficient aspects (the causes of the identified weaknesses), which are practically the threats to the proper functioning of the institution, shall be identified; - besides, there may be external threats, such as: the inopportune economic environment in the proximity of the assessed institution, the conduct of low attractiveness study programs for both candidates and the labor market etc. - the possible causes of the aspects that function poorly are identified (the causes of the identified weaknesses), these representing, practically, the threats on the good functioning of the institution; - in addition, there may be external threats, such as: the inappropriate economic environment in the vicinity of the assessed institution, the development of low-attractiveness study programs for both candidates and labour market etc. - Underfunding doctoral programs and research at national level - Inflexible administrative procedures that may hinder or even block the research process (e.g. procurement procedures, settlement of field trips) - Decreasing the quality of human resources (graduates of master's programs) who want to access the doctoral program due to the decrease in the number of high school graduates who want to pursue higher education; - The flow of well-trained undergraduate and master's graduates to doctoral study programs in the EU and the USA.

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
1.	PI	<p>A.1.1.1. The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:</p> <p>a) the internal regulations of the Doctoral School;</p> <p>b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;</p> <p>c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);</p> <p>d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;</p> <p>e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;</p> <p>f) the contract for doctoral studies;</p> <p>g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.</p>	The indicator is fulfilled.	
2.	PI	<p>A.1.1.2. The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.</p>	The indicator is fulfilled.	
3.	PI	<p>A.1.2.1. The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.</p>	The indicator is fulfilled.	
4.	PI	<p>A.1.2.2. The existence and use of an appropriate software program and evidence</p>	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		of its use to verify the percentage of similarity in all doctoral theses.		
5.	IP	A.1.3.1. Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.	The indicator is fulfilled.	
6.	PI *	A.1.3.2. The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.	The indicator is fulfilled.	In spite of exceeding those criteria, the Doctoral School is expected to make additional efforts, trying to take advantage of every research grant by engaging doctoral students. As they are essential engine (together with postdoctoral fellows) of every research intensive university, there has to be no doctoral student who is not engaged in a research project.
7.	PI *	A.1.3.3. At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).	The indicator is fulfilled.	
8.	CPI	A.2.1.1. The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers,	The indicator is fulfilled.	In an Internal Evaluation Report, an institution is expected to document that it is concerned with permanent renewal of the research infrastructure. In this term, a list of

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly		items purchased during the last evaluation period would be proper. However, according to information supplied in the Internal Evaluation Report, and particularly based on the site-visit, it is possible to conclude that the requirement is fulfilled. In conclusion, the research infrastructure of both the Faculty and the University is considered outstanding and <i>state-of-the-art</i> .
9.	CPI	A.3.1.1. Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.	The indicator is fulfilled.	
10.	PI *	A.3.1.2. At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.	The indicator is fulfilled.	
11.	PI	A.3.1.3. The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.	The indicator is fulfilled.	
12.	PI *	A.3.1.4. The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than	The indicator is fulfilled.	No matter what is allowed by the Romanian law, no one supervisor could have more than three doctoral candidates at the

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		12, who are themselves studying in doctoral programs does not exceed 20%.		same time. Thus, every case beyond this is a deviation, and a violation of principles that are respected in the European Research Area and the European Higher Education Area. I have learned that some older professors have large teams with a number of collaborators who are able to take an operational supervising/advising role. But in such cases, the older professors are just formal supervisors, which means they could actually not be recognised as persons of commitment to the doctoral process with full responsibility for a doctoral student.
13.	CPI	<p>A.3.2.1. At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and</p>	<p>The indicator is fulfilled.</p>	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		international competitions, membership on juries or umpire teams in artistic events or international competitions.		
14.	PI *	A.3.2.2. At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years	The indicator is fulfilled.	
15.	PI *	B.1.1.1. The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.	The indicator is fulfilled.	
16.	PI *	B.1.2.1. Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.	The indicator is fulfilled.	
17.	PI	B.1.2.2. The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission does not exceed 30%.	The indicator is fulfilled.	
18.	PI	B.2.1.1. The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		the research methodology and/or the statistical data processing.		
19.	PI	B.2.1.2. At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.	The indicator is fulfilled.	
20.	PI	B.2.1.3. The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes”, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities.	The indicator is fulfilled.	
21.	PI	B.2.1.4. All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.	The indicator is fulfilled.	
22.	CPI	B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.	The indicator is fulfilled.	
23.	CPI	B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor’s title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain	The indicator is fulfilled.	
24.	PI *	B.3.1.2. The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.		
25.	PI *	B.3.2.1. The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.	<u>The indicator is partially fulfilled.</u>	The Doctoral School is expected to take care and easily manage this criterion in the future. In this way, the performance indicator marked with asterisk will be fulfilled.
26.	PI *	B.3.2.2. The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.	<u>The indicator is fulfilled.</u>	
27.	PI	C.1.1.1. The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory: a) the scientific work of Doctoral advisors; b) the infrastructure and logistics necessary to carry out the research activity; c) the procedures and subsequent rules based on which doctoral studies are organized; d) the scientific activity of doctoral students; e) the training program based on advanced academic studies of doctoral students; f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.	<u>The indicator is fulfilled.</u>	
28.	PI *	C.1.1.2. Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as	<u>The indicator is fulfilled.</u>	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.		
29.	CPI	<p>C.2.1.1. The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:</p> <ul style="list-style-type: none"> a) the Doctoral School regulation; b) the admission regulation; c) the doctoral studies contract; d) the study completion regulation including the procedure for the public presentation of the thesis; e) the content of training program based on advanced academic studies; f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data; g) the list of doctoral students within the domain with necessary information (year of registration; advisor); h) information on the standards for developing the doctoral thesis; i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation. 	The indicator is fulfilled.	
30.	PI	<p>C.2.2.1. All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.</p>	The indicator is fulfilled.	
31.	PI	<p>C.2.2.2. Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.</p>	The indicator is fulfilled.	
32.	PI	<p>C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific</p>	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		domain/domains within the Doctoral School, according to internal order procedures.		
33.	PI *	<p>C.3.1.1. IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.</p>	<p>The indicator is fulfilled.</p>	<p>This performance indicator can relatively easily be fulfilled by attending conferences. However, a research intensive university / doctoral school has to put emphasis on research training of doctoral students. Additional efforts are always expected to ensure funds, and introduce policies and measures aiming at increasing the duration of doctoral students' internships in advanced laboratories of the internationally recognised scientific institutions. International collaborations would also help in establishing fruitful environment for long-term internships. The later would additionally contribute to doctoral supervisors' international visibility.</p>
34.	PI	<p>C.3.1.2. In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.</p>	<p>The indicator is fulfilled.</p>	<p>It would be useful and attractive for doctoral students to intensify participation of leading international experts in the doctoral study programme.</p>
35.	PI	<p>C.3.1.3. The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).</p>	<p>The indicator is fulfilled.</p>	<p>It would be necessary to intensify international collaboration in which doctoral students actively participate. At the same time, international experts are expected to participate more in the doctoral study programme, including their participation in guidance committees and thesis defence committees. Additional efforts are recommended to enhance</p>



No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
				international visibility of the Doctoral School of Intgrative Biology and to take the opportunity to attract doctoral candidates from neighbouring countries.



VI. Conclusions and general recommendations

The Doctoral School of Integrative Biology is based on regulations that comply with the national laws and legal provisions. It has all the necessary logistical resources and research infrastructure that is considered superior and *state-of-the-art*. The high-performance human resources go far beyond the minimal national standards. Selection of the PhD students relies on the criteria based on academic and research performances. The research activities of the doctoral school provide significant scientific outcome with students' co-authorship in a number of papers, of which many have been published in highly impacted journals. Doctoral students are properly supported by their supervisors and other members of guidance committees. In general, the quality assurance issues are properly managed. The graduates have good employability, in both academia and research institutes, or private sector.

Additional efforts are expected towards improvement of all the aspects of internationalisation, including students' long-term research trainings abroad, and recruitment of both foreign students and teachers, or guidance-committees members

VII. Annexes

The following types of documents shall be attached:

- *The detailed schedule of the evaluation visit – MANDATORY.*
- *The survey questionnaire applied to doctoral students or academic staff in the doctoral study domain under review, the results - optional (e.g., in graphic form) and their interpretation - if applicable.*
- *Scanned documents – any document requested from the IOSUD during the evaluation visit and received, which is not found in the internal evaluation file received before the visit and referred to in the report.*
- *Pictures – if relevant issues are raised regarding the condition of the student residences, cafeterias, premises for teaching and learning activities, library etc.*
- *Screenshots/Print screens of the Doctoral School/IOSUD website proving specific claims in the report, accompanied by the date when they were accessed and saved.*
- *Any other documents relevant to the evaluation process referred to in the report.*

Zagreb, November 15, 2021.