

The External Foreign Evaluator Report of a Doctoral Domain (DD) Biotechnology for Institution Organizing Doctoral Study Programs (IOSUD) – University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca (USAMVCjN)

Report to Doctoral Domain Team Leader, Prof. Dr Gabriela BAHIRM

by

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Independent external foreign expert evaluation of the doctoral domain Biotechnology at **University of Agricultural Sciences and Veterinary Medicine from Cluj-Napoca (USAMVCjN)** was organized by ARACIS. After acceptance of a formal invitation to participate, Prof. Dr Palić has reviewed available documents in English and, with help of google translator, reviewed further documents and annexes that were originally prepared in Romanian language. Documents were made available by ARACIS via e-mail and via password-protected online access to a cloud server. The evaluation was conducted in a hybrid format, with multiple online meetings via ARACIS and USAMVCjN zoom platforms, with available simultaneous translation from Romanian to English and *vice versa*.

During period from 11-15.10.2021 a series of online meetings were organized for the entire evaluators group and for the doctoral domain evaluators group. This report focuses on the Doctoral Domain of Biotechnology studies evaluation. Prof. Dr Gabriela BAHIRM was the head of the doctoral domain Biotechnology external evaluator team, with Prof. Dr Dušan PALIĆ as foreign evaluator member and Ms Anka Roxana ȘUBA as doctoral student member. In addition to the online meetings with the USAMVCjN representatives, the in person visit to review the infrastructure and available facilities was performed by other evaluation committee members, while Prof. Bahrim and Prof. Palić participated via sharing of the video and photo materials.

After the completion of the accreditation visit, Prof. Palić reviewed notes collected during the meetings, inclusive of comments, questions and answers of the colleagues participating in the meetings. He also reviewed the documents provided by the USAMVCjN after the visit that provided clarifications to some raised issues. The report presented below is based on the information collected during above listed activities, and is organized in the format following the List of Critical Indicators for Doctoral Study Domains as advised by the ARACIS visit coordinator, Prof. Dr Vasilica STAN (Annex 4).

CRITICAL INDICATOR A.2.1.1

Thorough review and evaluation was conducted during preparation and visit to the USAMVCjN of the following: available self-report (Internal evaluation report) of the DD Biotechnology, as well as applicable annexes, meetings with respective University and Domain contact personnel, and video/photo materials from remote visits.

The research infrastructure can be viewed on the page

<https://www.cercetare.usamvcluj.ro/wordpress/unitati-de-cercetare/> and in Annex 8 List of Research Institutes and Laboratories Centers. In terms of biotechnology, most research laboratories operate within the Institute for Life Sciences "King Mihai I of Romania" (<http://cercetare.usamvcluj.ro/ISV/>), with a usable area of 4,192 square meters and a number of 59 research laboratories. The Institute operates the only knowledge-based Biotechnology platform in Romania, and the laboratories within the Institute are equipped with state-of-the-art equipment. In this investment of over 15 million lei, the contribution from USAMV Cluj-Napoca was 4.5 million lei, the rest of the resources being provided by the Ministry of National Education. On the ground floor of the building there are two amphitheaters assigned to scientific activities: defense of doctoral theses, scientific sessions, and presentations. The two amphitheaters are equipped with a video projection system, a translation system, as well as a video and audio transmission system. The research activity in ISV is organized in development research units consisting of several laboratories (CDS 1-15): Phytochemical and metabolomic analysis of agri-food; Agricultural biotechnologies; Proteomics and nutrigenomics; Toxicology; Biophysics; Nanobiotechnologies; Food Biotechnology; Applied microbiology (animal and food); Molecular biology and veterinary parasitology; Beekeeping - Sericulture; Apicultural and sericultural biotechnologies APHIS / DIA laboratory with RENAR / DSVSA accreditation GCEARS-PPM - Research Center - International Sericulture Commission; Biotechnologies in reproduction; Molecular Genetics and Biotechnology; Air quality analysis; Water and noise analysis; Physico-chemical analysis of fodder plants. As it can be observed from the names of CDS and component laboratories, this institute provides the material basis (equipment, computers, software, etc.) specific to the fields of Agronomy, Biotechnology, Animal Husbandry and Veterinary Medicine.

The research equipment of IOSUD is presented on the websites of the research units (<https://cercetare.usamvcluj.ro/ISV/unitati-de-cercetare/>) and is posted on the ERRIS platform. The offer of analytical and scientific consulting services is presented at the link <http://cercetare.usamvcluj.ro/ISV/servicii-analitice/>.

The existing facilities and equipment which are added belong to the departments where the doctoral supervisors carry out their academic activity. The technology transfer center CTT - BIOTECH of USAMV Cluj-Napoca is under construction and aims at ensuring the capitalization of the research results in USAMV Cluj-Napoca for the economic environment. Also, the expertise of the academic community of the University, by facilitating the development, dissemination, protection of industrial property rights, transfer and sale of technologies, inventions and creations of researchers, academic staff, doctoral students and students from USAMV Cluj-Napoca (<https://www.cercetare.usamvcluj.ro/wordpress/ctt-biotech/>).

The opinion of external evaluator is that 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, 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 (online descriptions of the research centers, also supported by the brief information videos). The research centers specifically reviewed during this visit are used in multidisciplinary environment, and by multiple doctoral study domains. The doctoral students from the Biotechnology domain have access to the equipment and infrastructure in the research centers, and are adequately trained and monitored during their activities in the respective laboratories/facilities. Prof.

Palić reviewed video and photo materials recorded during the visits, and additional information about respective laboratories.

The spaces and the material endowment of IOSUD-USAMVCjN allow the realization of the research activities of the doctoral students in the domain of Biotechnology. During systematic review of the documentation made available by the USAMVCjN, as well as interviews and remote site visits, I have determined that USAMVCjN DD Biotechnology has in period from 2015-2020 successfully operated several research laboratories as part of the respective research centers.

Students of the Biotechnology doctoral program appear fully integrated in the work of the research centers and respective laboratories. The availability of venues and the material equipment is satisfactory, and students appear to use these facilities actively in the course of their respective PhD studies, of course, depending on their research topic. They are provided with adequate training in the laboratory safety, hygiene and operation of the equipment. Training is documented and certificates are available in respective student dossiers at the level of the School of Doctoral Studies or in the respective laboratories.

The indicator is fulfilled.

INDICATOR A.3.1.1

The evaluation and review of the provided documents, annexes, web pages, and information collected during the online meetings and remote visits strongly supports the fulfillment of the critical indicators applicable to the domain of Biotechnology doctoral studies. Within the doctoral field of Biotechnologies, supervising activities are carried out by 12 doctoral supervisors, 11 active ones and a retired doctoral supervisor, with the status of associate teacher. All PhD supervisors in the field of Biotechnology meet the CNATDCU qualification standards for commission 14, Plant and Animal Resources Engineering (OM 6129/2016), both for the total score and for each individual criterion (Annex A.3.1.1.a Doctoral supervisors and the degree of standards fulfillment). This annex also presents the degree of compliance with the standards for the categories where restrictions are present (number / pages of books and manuals, number of ISI and BDI articles, number and type of projects).

The indicator is fulfilled

INDICATOR A.3.2.1

Prof. Palić has conducted the review of the self-evaluation report, as well as performed online search via Google Scholar for the respective doctoral study supervisors in the domain Biotechnology. After the review, visit and meetings, Prof. Palić confirms that all supervisors currently affiliated with the DD Biotechnology have satisfied the requirements of at least 5 Web of Science - or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for the domain of Biotechnology. The listed achievements of the doctoral advisors also include international-level contributions that indicate progress in scientific research, development and innovation in the field of biotechnology. The further review of annexes listed below has provided evidence about international awareness of the listed doctoral advisors/supervisors in the area of Biotechnology within the past five years.

All PhD supervisors in the field of Biotechnology have a prominent and internationally visible scientific activity, as shown in Table 13, in the Individual Standards Compliance Sheets (Annex A.3.1.1) and in Annex A.3.2.1 Visibility of Biotechnology Domain Doctoral Supervisors. All PhD supervisors (**100%**) in the field have at least 5 papers in indexed journals Web of Science, and / or have been members of editorial committees, have participated as guests in scientific events and have been members of doctoral committees. They have also developed patents for inventions and won national and international awards. Of the 12 PhD supervisors, seven have a Hirsch index above 10.

The indicator is fulfilled

INDICATOR B.2.1.5.

In the field of evaluated Biotechnology doctoral university studies, there are appointed teachers/researchers leading doctors or teacher with scientific expertise in the field of the doctoral thesis of the doctoral student under their guidance. The status for the Biotechnology field is presented in Annex B.2.1.5. "Ratio between PhD students and doctoral supervisors providing guidance". The 48 PhD students enrolled between 1.10.2015 and 30.9.2020 are guided by 41 distinct professors, most of whom are from USAMVCjN. There are also professors in the guidance commissions who work in other universities: UMF Cluj-Napoca - Faculty of Pharmacy; UBB Cluj-Napoca - Faculty of Biology. Such diversity demonstrates the interdisciplinary nature of the research conducted. The ratio between the number of doctoral students and the number of teachers in the guidance commissions is 1.17 (≤ 3 -ARACIS standard).

The indicator is fulfilled

INDICATOR B.3.1.1.

Prof. Palić has randomly selected and reviewed five publications as provided in the annexes B3.1.1. (Excluding conference abstracts and non-ISI indexed journals). The conclusion is that at least five published papers in previous 5 years in the domain Biotechnology have provided significant contributions to the field.

The indicator is fulfilled

INDICATOR C.2.1.1.

After review of the internal self-report of USAMVCjN DD Biotechnology, and checking of available online information, Prof. Palić concluded the following about the published data:

The USAMVCjN publishes following information on their web pages; in compliance with the general regulations with online data protection.

(a) *doctoral school regulations;*

<https://www.usamvcluj.ro/wp-content/uploads/2021/05/RU-65-Regulament-de-organizare-s%CC%A6i-funct%CC%A6ionare-al-S%CC%A6colii-Doctorale-de-S%CC%A6tiint%CC%A6e-Agricole-Ingineres%CC%A6ti.pdf>

(b) admission regulations;

<https://www.usamvcluj.ro/wp-content/uploads/2021/06/RU-45-Regulament-privind-organizarea-s%CC%A7i-desfa%CC%86s%CC%A7urarea-concursului-de-admitere-pentru-anul-universitar-2021-2022.pdf>

(c) doctoral studies contract;

<https://www.usamvcluj.ro/invatamant/doctorat/regulamente-proceduri-formulare/>

(d) the regulation for completing the studies, which should also include the procedure for public defense of the thesis;

<https://www.usamvcluj.ro/wp-content/uploads/2021/05/RU-24A-Regulament-de-finalizare-a-studiilor-universitare-de-doctorat-la-IOSUD-USAMVCN-1.pdf> and

<https://www.usamvcluj.ro/wp-content/uploads/2020/04/Procedura-sustinere-teze-online.pdf>

(e) the content of study programs;

<https://www.usamvcluj.ro/invatamant/doctorat/fise-discipline/>

(f) the scientific profile and thematic areas / research topics of the doctoral supervisors in the field, as well as their institutional contact data;

<https://www.usamvcluj.ro/invatamant/doctorat/883-2/>

(g) list of doctoral students in the field with basic information (year of enrollment; leader);

<https://www.usamvcluj.ro/wp-content/uploads/2021/06/Evidenta-doctoranzi-conducatori.pdf>

(h) information about the standards for the elaboration of the doctoral thesis;

https://www.usamvcluj.ro/wp-content/uploads/2020/03/norme_redactionale_teza_de_doctorat-incepand-cu-2015.pdf

(i) links to abstracts of doctoral theses to be defended publicly, as well as the date, time, place where they will be defended, at least 20 days before the defense

<https://www.usamvcluj.ro/invatamant/doctorat/sustineri-teze-de-doctorat/>

The indicator is fulfilled

GENERAL COMMENTS AND RECOMMENDATIONS:

After careful review of different information sources (self-evaluation reports, applicable annexes, meetings, video calls, web pages, and further clarifications) about the Doctoral study Domain Biotechnology of USAMVCjN the foreign evaluator Prof. Dušan Palić offers following comments and recommendations:



The overall organization of the evaluation by the ARACIS and USAMVCJN was excellent. Specifically the participation in the online meetings was good, and very useful for international evaluators was the availability of simultaneous translation. I have to add here that the choice of translation services for the Domain Biotechnology was excellent and has helped significantly in this evaluation. The schedule for the meetings was intense, especially if the colleagues were involved in more than one domain or in a domain in parallel with institutional level evaluation. While there are some components of in-person visit that make evaluators job easier, having video conferences is proving to be a viable alternative. Along the same lines, review of the research facilities and infrastructure is always better to be conducted in person, as video and photo materials can only get you so far. The ARACIS staff did a very good job to coordinate meetings with USAMVCjN representatives. I am satisfied with the evaluation process overall, and hope that future evaluations will have more in-person opportunities.

The colleagues representing the USAMVCjN have been very cooperative and trying to accommodate our questions within the limitations of the remote/video communication. I am very satisfied with their attitude and praise their openness and patience during the meetings.

Regarding the overall evaluation of the Biotechnology doctoral domain, I am impressed by the infrastructure and facilities that are at student's disposal for practical and experimental parts of their doctoral work. I am also satisfied with the quality of doctoral work performed in previous 5 years, as the number of Q1/2 peer reviewed publications produced by the doctoral students is very good. I am also very happy to see that there are ongoing improvements in the infrastructure at USAMVCjN, and I look forward to possible future in-person visit.

One particular note goes to the presence and active participation of Prof. Dr. Carmen Socaciu. Prof. Socaciu was instrumental in establishing this relatively new doctoral domain at USAMVCjN, and it was a pleasure to see how this domain grew over the years, to reach significant number (currently 48, plus several students with some prolongations due to COVID-19 pandemic) of students in this field. It was also very informative to find out that most of the current doctoral student advisors (also some of the evaluation team members) have been former students or associates of Prof Socaciu. It is impressive how the network for this doctoral study domain has been utilized to provide support to former and current doctoral students, as confirmed with discussions with former graduates and current students, as well as employers.

It is of course understood that the number of doctoral students strongly depends on availability of funding, and it is especially important that USAMVCjN appears to have mechanisms of supporting students in different areas and providing finances for promoting student visibility and international connectivity. This was evidenced in significant number of doctoral students that have participated in Erasmus program exchanges, and the level of international cooperation that was presented during the meetings and in the reports.

Considering available research center infrastructure and equipment, it appears that the material base for doctoral training invites the increase in number of Romanian, but more specifically international students, even for shorter visits or as part of Erasmus exchange programs to visit Romanian facilities, instead only sending Romanian students abroad. It is my general recommendation is that USAMVCjN, possibly through coordination with the local or state government, or businesses, makes an effort to increase



funding opportunities for doctoral students from Romania. In addition, it would be also valuable in my opinion to see more opportunities for recruitment of international doctoral students who would add to the diversity of the doctoral programs. Possible future venues for increasing doctoral student resources at national level are participation of the Romanian government in the program of EU Partnerships (https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-partnerships-horizon-europe/candidates-food-security_en)

Dear ARACIS colleagues, Dear USAMVCjN colleagues, I was very pleased to have an opportunity to participate in this evaluation, and I was impressed with the quality and consistency of the good work that you are presenting in the doctoral study domain of Biotechnology, and moreover, in the whole institutional environment. I wish you all the best and I am certain that you will continue to improve in many areas.

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