



**REPORT  
OF THE EXPERT PANEL  
ON THE  
RE-ACCREDITATION OF  
THE DEPARTMENT OF BIOTECHNOLOGY  
UNIVERSITY OF RIJEKA**

**Date of preliminary site visit:  
6<sup>th</sup> June 2022.**

**Date of on-line re-accreditation:  
8<sup>th</sup> till 10<sup>th</sup> June 2022.**

September 2022

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## INTRODUCTION

The Agency for Science and Higher Education (the Agency) is an independent legal entity with public authority, registered in the court register, and a full member of the European Quality Assurance Register for Higher Education (EQAR) and European Association for Quality Assurance in Higher Education (ENQA).

All public and private higher education institutions are subject to re-accreditation, which is conducted in five-year cycles by the Agency, in accordance with the Act on Quality Assurance in Science and Higher Education (Official Gazette 45/09) and subordinate regulations, and by following *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG) and good international practice in quality assurance of higher education and science.

The Agency's Accreditation Council appointed an independent Expert Panel for the evaluation of the Department of Biotechnology University of Rijeka.

Members of the Expert Panel:

- Prof. Roland J. Pieters, Faculty of Science, University of Utrecht, the Kingdom of the Netherlands – **chair of the Expert Panel**
- Prof. Rasmus Prætorius Clausen, Department of Drug Design and Pharmacology, University of Copenhagen, the Kingdom of Denmark
- Prof. dr. sc. Donatella Verbanac, Faculty of Pharmacy and Biochemistry, University of Zagreb, the Republic of Croatia
- Asst. prof. Ana Šešelja Perišin, School of Medicine, University of Split, the Republic of Croatia
- Sofia Shkunnikova, student, Faculty of Pharmacy and Biochemistry, University of Zagreb, the Republic of Croatia

During the online re-accreditation, the Expert Panel held meetings with the following stakeholders:

- Management of the Department (Head of Department, Deputies of Head) and Management of the University of Rijeka (rector)
- Assurance Quality Committee and with the Head of Ethic Committee
- Deputy of Head for Teaching and Quality
- ERASMUS coordinator

- ECTS coordinator
- Coordinator for enrolment of study programmes
- Students
- Full-time teaching staff who are also heads of research projects
- Assistants and post-doctoral students
- Deputy of Head for Research
- Representatives of the business sector, potential employers and external lecturers
- Alumni

Croatian Expert Panel members went to the preliminary site-visit on 6<sup>th</sup> June 2022 during which they had a tour of the laboratories, library, IT classrooms, student administration office and classrooms, and attended sample lectures, where they held a brief Q&A session with students.

During the preliminary site visit, the Expert Panel examined the available additional documents and study programme descriptions (including the learning outcomes).

The Expert Panel drafted this Report on the re-accreditation of the Department of Biotechnology University of Rijeka on the basis of the Department of Biotechnology University of Rijeka self-evaluation report, other relevant documents, preliminary site visit and online meetings.

The Report contains the following elements:

- Short description of the evaluated higher education institution
- Brief analysis of the institutional advantages and disadvantages
- List of institutional good practices
- Analysis of each assessment area, recommendations for improvement and quality grade for each assessment area
- Detailed analysis of each standard, recommendations for improvement and quality grade for each standard
- Appendices (quality assessment summary by each assessment area and standard, and protocol)
- Summary

In the analysis of the documentation, preliminary site visit to the Department of Biotechnology University of Rijeka, online meetings and writing of the Report, the Expert Panel was supported by:

- Frano Pavić, coordinator, ASHE
- Vlatka Šušnjak Kuljiš, assistant coordinator, ASHE
- Dijana Ćurković, PhD, translator of the Report, ASHE.

On the basis of the re-accreditation procedure conducted, and with the prior opinion of the Accreditation Council, the Agency issues a following accreditation recommendation to the Minister for Higher Education and Science:

1. **issuance of a confirmation on compliance with the requirements** for performing the activities, or parts of the activities
2. **denial of license** for performing the activities, or parts of the activities
3. **issuance of a letter of expectation** with the deadline for resolving deficiencies of up to three years. A letter of expectation can include the suspension of student enrolment within a set period.

The accreditation recommendation also includes a quality grade of a higher education institution, and recommendations for quality improvement.

## **SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION**

**NAME OF HIGHER EDUCATION INSTITUTION:** Department of Biotechnology, University of Rijeka

**ADDRESS:** Ul. Radmile Matejčić 2, 51000, Rijeka

**DEAN:** prof. dr. sc. Miranda Mladinić Pejatović

### **ORGANISATIONAL STRUCTURE:**

The Department consists of 2 institutes, 14 laboratories, 2 chairs and the head's office:

- Department of molecular and systemic biomedicine
  - Laboratory for high-flow analysis
  - Laboratory for systemic biomedicine and genomics
  - Laboratory for human genetics and reproduction
  - Laboratory for biochemistry and signal transduction
  - Cell biology laboratory
  - Behavioural genetics laboratory
  - Laboratory of molecular neurobiology
  - Laboratory of molecular virology
  - Laboratory for haematopoiesis
  - Laboratory of molecular immunology
  
- Department of medicinal chemistry
  - Laboratory for analytical biotechnology and proteomics
  - Laboratory for organic chemistry and solid-state chemistry
  - Laboratory for natural compounds and metabolomics
  - Laboratory for physical chemistry
  
- Department for teaching in English
  
- Chair for teaching in doctoral studies

**STUDY PROGRAMMES:***Based on MOZVAG database*

<b>No.</b>	<b>Name of the study programme</b>	<b>Type of programme</b>	<b>Education provider</b>	<b>No. ECTS credits</b>	<b>CQF** Level</b>
1.	Biotechnology and Drug Research	Undergraduate university study programme	University of Rijeka Department of Biotechnology	180	6
2.	Biotechnology for the Life Sciences	Graduate university study programme	University of Rijeka Department of Biotechnology	120	7
3.	Biotechnology in Medicine	Graduate university study programme	University of Rijeka Department of Biotechnology	120	7
4.	Drug Research and Development	Graduate university study programme	University of Rijeka Department of Biotechnology	120	7
5.	Medicinal Chemistry	Graduate university study programme	University of Rijeka Department of Biotechnology	120	7
6.	Pharmacy(*)	Integrated undergraduate and graduate university study programme	University of Rijeka Department of Biotechnology Faculty of Medicine University of Rijeka	300	7
7.	Medical Chemistry	Postgraduate (doctoral) university study programme	University of Rijeka Department of Biotechnology	180	8

\*\* Croatian Qualification Framework

Source: Data generated from the Mozvag Module Browser

(\*) – Study programme carried out by more than one issuing institution and/or education provider.

**NUMBER OF STUDENTS:**

The number of students per study programme for the current academic year is given in Table 3.1 in the Analytic supplement to the Self-evaluation

<b>Study programme name</b>	<b>Full-time students</b>	<b>Part-time students</b>
Biotechnology and Drug Research (2102)	147	0
<b>Total number for undergraduate level</b>	<b>147</b>	<b>0</b>
Drug Research and Development (2103)	39	0
Medicinal Chemistry (2104)	23	0
Biotechnology in Medicine (2105)	41	0
Biotechnology for the Life Sciences (2199)	4	0
<b>Total number for graduate level</b>	<b>107</b>	<b>0</b>
Medical Chemistry (1511)	38	31
<b>Total number for postgraduate doctoral level</b>	<b>38</b>	<b>31</b>
<b>Total number of students on all study programmes</b>	<b>292</b>	<b>31</b>
<b>Total number of students</b>	<b>323</b>	



**NUMBER OF TEACHERS:**

The structure of teaching staff is given in Table 4.1.b of the Analytic Supplement to the Self-evaluation report

<b>Staff</b>	<b>Full-time staff</b>	<b>Cumulative employment</b>	<b>External associates</b>
Full professors with tenure	1	1	7
Full professors	4	1	5
Associate professors	9	-	9
Assistant professors	9	3	13
Scientific advisor (permanent/with tenure)	-	-	-
Scientific advisor	-	-	-
Senior Research Associate	-	-	-
Research Associate	-	-	-
Teaching ranks	1	2	1
Assistants	20	3	2
Postdoctoral researcher	5	1	1
Employees on projects	1	-	-
Expert assistants	1	-	-
Technical staff	5	-	-
Administrative staff	3	-	-
Support staff	-	-	-

**LICENSE FOR SCIENTIFIC ACTIVITY:**

Interdisciplinary field of science

## **SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION**

*Based on Self-evaluation report*

The Department of Biotechnology of the University of Rijeka (hereafter: the Department) is the only academic institution in the Republic of Croatia accredited in the interdisciplinary field of research (as defined under Croatian laws) that provides education to students in the field of biotechnology and drug research, and conducts numerous top scientific and competitive research project grants. Excellence is sought through the systematic recruitment of the best teachers and returnee scientists (i.e., scientists returning to Croatia after work abroad) and the selection of the best students, who work in modern facilities. The Department was founded in 2008 with the mission of "educating highly qualified biotechnology experts for the benefit of human health, science, economy and the entire community in Croatia as well as the development of interdisciplinary scientific research." It is located on the University of Rijeka Campus, and today it is one of the most successful institutions at the University of Rijeka, both in terms of the number of scientific publications and the number of competitive scientific research grants per scientist.

In recent years, the Department has grown significantly in terms of staff and currently has more than 60 employees striving for excellence in education and research in the field of cell and molecular biology (the Department has or has had projects in the field of: neuroscience, haematology, immunology, virology, microbiology, tumour biology, genomics, proteomics, metabolomics, chemistry of natural compounds, synthetic chemistry, computational chemistry, ecology, food technology, etc.).

The Department's focus is on cooperation with the private sector. In 2021, in cooperation with the local pharmaceutical company Jadran Galenski Laboratory (JGL), the Laboratory for Quality Testing of Medicines with a Certificate of Good Manufacturing Practice (GMP) was established and approved by the Agency for Medical Products and Medical Devices of Croatia (HALMED). This is the first GMP laboratory within the academic community in the state and region. The Department offers study programs at all levels, which are organized in cooperation with the Faculty of Medicine of the University of Rijeka, the Ruđer Bošković Institute (RBI) in Zagreb, JGL in Rijeka and Fidelta in Zagreb, which together provide students with theoretical knowledge and practical application of acquired knowledge and skills.

## **BRIEF ANALYSIS OF THE INSTITUTIONAL ADVANTAGES AND DISADVANTAGES**

### **ADVANTAGES OF THE INSTITUTION**

1. Management supports student activities
2. Infrastructure
3. Employability
4. Highly motivated students, cooperative student population
5. Highly motivated, ambitious and enthusiastic management
6. Satisfaction of the students
7. Students recruited from the whole country, the better subset of students
8. Interaction with the industry and other stakeholders in regard to teaching/education
9. International mobility, accessibility – courses ran in English
10. Popularization of science
11. High scientific output
12. High research quality on a national level

### **DISADVANTAGES OF THE INSTITUTION**

1. Limited numbers of internal joint projects
2. Redundancy of the study programs (graduate studies)
3. Medicinal chemistry is lacking some of the relevant aspects of the field
4. A need for clear financial plan (short term, medium term, long term)
5. Lack of grants with overhead
6. More administrative support is needed to deal with financial and scientific issues (grants, patents...)
7. The stakeholders have limited impact on their curriculum
8. Better formalization of the existing feedback systems (foreign students, ERASMUS students)
9. Additional work should be done on self-promotion of the institution towards stakeholders
10. Many courses rely too much on individual teachers

## **LIST OF INSTITUTIONAL GOOD PRACTICES**

### **EXAMPLES OF GOOD PRACTICE**

1. Almost all recommendations from the previous re-accreditation were implemented
2. An ambitious strategy is in place
3. Implementing unique teaching methodologies with an emphasis on seminars and presentations
4. Good quality policy and code of ethics
5. Institution encourages the development of its social role
6. Rewarding and facilitating successful applicants for scientific projects
7. A good practice in awarding ECTS points

## **ANALYSIS OF EACH ASSESSMENT AREA, RECOMMENDATIONS FOR IMPROVEMENT AND QUALITY GRADE FOR EACH ASSESSMENT AREA**

### **I. Internal quality assurance and the social role of the higher education institution**

#### **Analysis**

The Department has a solid internal quality assurance mechanism and institutional culture of continuous improvement. It presented its ambitions to become a faculty within the University by the end of 2022. Moreover, it has a suitable ethical policy that follows the code of ethics. This relays institutional policies and mechanisms for ensuring academic integrity and freedom and preventing unethical behaviour, intolerance, and discrimination, including procedures for detecting and addressing instances of plagiarism. All internal quality assurance policies and practices are appropriately aligned with the relevant strategy and development documents of the University of Rijeka and the Department (see analysis of individual standards for further details) and are overseen by the Quality Assurance Committee. As it is highlighted in the examinations of standards, the Department has good governance practices with a very enthusiastic management team. This team is open to cooperation with different private and public bodies, particularly industry, and they have achieved significant results during the last few years. The Department was ready to respond to the recommendations of ASHE evaluations. Following the previous assessment in 2015, the Department managed to renew the certificate to conduct PhD studies and create conditions to start studies in English for PhD students. The implementation of its very ambitious strategy and associated action plan, including recommendations of the previous assessment, is not finished and it is continuing. The Department thoroughly performed a subsequent internal review during the last years ahead of the re-accreditation process. The result of these activities is the yearly report to the Department's Council. Information about organization of the Department, study programmes, scientific activities, activities for popularization of science, international cooperation, and various events at the Department is given through its website, a YouTube channel and a Facebook page, as well as in the printed edition of students' booklets and leaflets, and during the event of the Open Day aimed to inform different students, faculties, stakeholders, and the general public. This is one of the ways to attract new students and increase self-promotion, which is definitively needed. Nevertheless, communication among permanent researchers/teachers, particularly with external teachers, must be improved. This is one of the main goals for the Departments' managerial bodies in the upcoming period. Teaching assessment results and results of student satisfaction testing are not entirely available to all interested parties, and the Department needs to put in additional efforts into improving its website in the upcoming

period (this process has already started). The Department collects information on planned and completed events and activities, which are appropriately communicated.

The Department understands its social role very well. It has well-developed cooperation with the local community through collaborative projects aimed at increasing the competitiveness of the district and the region. Teachers and students are involved in volunteer activities, such as delivering lectures aimed at popularisation of science and collecting donations for those in need. Furthermore, they promote different activities (projects and courses) in cooperation with schools and related institutions.

The procedure of implementing and developing lifelong learning (LLL) programmes is at its beginning, and this will shortly need to be in place to justify the overall vision and mission of the Department.

### **Recommendations for improvement**

- Continue with implementation of recommendations from the previous accreditation.
- Communicate with all employees, including permanent researchers/teachers, and particularly with the external teachers to get everybody familiar with actions and efforts undertaken to improve the performance.
- During the reorganization of the website, information on teaching assessment results (pass rates) and the results of testing student satisfaction should be included.
- Develop and implement LLL programmes to justify and implement the overall vision and mission of the Department.

### **Quality grade**

**Satisfactory level of quality**

## II. Study programmes

### Analysis

The study programmes are of good quality and were created involving stakeholders and teachers. They are generally in line with the strategy.

The students obtain useful knowledge and skills during their studies and this can be seen by the rapid and high employment upon completion. The programmes attract some of the best students in the country, who are well educated.

The Department has involved teachers and stakeholders (students, employers, etc.) in the current programmes, but it does not seem like they are involved in the continuous development of the programmes, to improve the quality and ensure alignment and relevance of courses in the program.

Most courses are run by a single teacher (as are the research groups), and this makes the courses very vulnerable if a teacher gets ill, and it can impact development of the quality, since all development is done alone.

Two programmes have some redundancy in their content ("Biotechnology in medicine" and "Drug research and development") as evidenced by overlap in the courses and it is not clear why both programmes are needed, as opposed to one programme with more electives and flexibility.

In all of the programmes there is a very large portion of required courses, and it is not always clear why they are required (e.g. "Natural Products and Their Application in Pharmacology" is mandatory in three graduate programmes).

Furthermore, the medicinal chemistry programmes have a heavy chemistry focus, and although several courses have examples with drugs, the main content is chemistry and thus several aspects in the field get too little attention. These observations are derived from looking through the course materials, but also by talking to students and other stakeholders.

The Department has very clear processes and structures for assessing and grading ECTS points of courses and extracurricular activities.

### Recommendations for improvement:

- Increased degrees of freedom could be introduced in the programmes by turning some required courses into electives or recommended courses.

- The Department could greatly benefit from involving teachers and stakeholders (students, employers, etc.) more actively in the continuous development of the programmes, to work on the quality and ensure alignment and relevance of the courses in the program. This could be done in the form of an advisory board and/or panel of employers, or in course teams with faculty teachers.
- In general, both research and education could benefit from more mutual collaboration among the faculty staff. Both courses and research groups are conducted as individual activities, as it is in many places. Processes are recommended to improve this, i.e. having at least two teachers on each course as a course team will improve the content and management of the courses and enable support and continuous discussions on the content, quality and relevance. This will improve the quality of the study programmes in the long term.

Quality grade

**Satisfactory level of quality**



### III. Teaching process and student support

#### Analysis

Criteria for enrolment, continuation of studies and transferring from similar programs are in line with the requirements of the study programs, they are clearly defined, published, and consistently applied and regulated by the Department.

The Department gathers and analyses information on student progress. There are adequate mechanisms in place that ensure that the students are involved in the study process and certain decision making that concerns their education and progress.

The Department conducts various forms of teaching that are aimed at acquiring the learning outcomes that are defined by the curricula. Both in lessons and in seminars students are encouraged to actively participate, which is possible because of the small number of students in each class. In addition to the classic *ex cathedra* teaching and seminars, laboratory exercises and fieldwork are performed. The students are supported by the Department and by the University of Rijeka adequately during their studies and the Department employs an adequate number of qualified and committed professional, administrative, and technical staff. The Department monitors the needs of students from vulnerable and under-represented groups. The Department allows students to gain international experience and provides them support from the management, especially the Deputy of Head for Teaching and Quality, the Head of the Office of English Language Teaching, the Erasmus mobility committee and its president, Erasmus coordinator, along with student-mentors. There is a relatively large number of students that take part in the outgoing mobility. The Department ensures adequate study conditions for foreign students and supports them, not only in the academic sense, but also helps them in all areas that are important when moving to a different country. The Department ensures that the students are informed about the criteria and methods of evaluation and grading. All evaluation methods are adapted to the individual needs of students of vulnerable and underrepresented groups. The Department issues diplomas and diploma supplements in accordance with the relevant regulations. The Department monitors employability of its students and available labour market indicators and has successfully implemented new methods of increasing the employability of the graduates, which is shown with a positive trend in their employment.

#### Recommendations for improvement

- Adding the enrolment criteria for undergraduate studies to the webpage of the Department, both in Croatian and in English.
- Ensuring that the Student Office is staffed according to the needs of the Department.

- Creating a formal system of collecting data on student satisfaction with the quality of support of the Department in practical issues of student mobility.
- Creating a formal system for collecting feedback on the satisfaction and needs of international students.
- Creating a system (such as board of examiners) to ensure the objectivity and fairness of evaluation and grading.
- Ensuring that students are graded and/or evaluated on their seminars with the proper feedback that would help them learn and improve.
- Establishing Career Office/Centre at the Department that would help their graduates connect with future employers.
- Improving the relationship and communication between the Department and external stakeholders from industry to get a clear picture about the labour market needs.

Quality grade

**High level of quality**

## IV. Teaching and institutional capacities

### Analysis

The Department ensures the adequate number of teachers, highly qualified for the delivery of undergraduate and graduate programs. The minimum requirement of 50% of courses delivered by the teachers employed at the Department is met regarding the mandatory courses for undergraduate and graduate study programs. The student/staff ratio is more than appropriate to ensure a high-quality level of study programs (7.76 if teachers and assistants are included in the calculation). It is expected that this ratio will slightly increase due to involvement of the Department in the new pharmacy study programme at University of Rijeka, but it will still be significantly higher than the necessary minimum. Teacher workload is well monitored and transparent, although more fairness is needed in the distribution of teaching hours.

The Department has significantly increased the number of teachers and assistants compared to the last re-accreditation process. It follows general conditions and legislation rules for the employment and promotion of teachers and scientists in higher education institutions in Croatia. However, the Department does not have its own additional competitive criteria for the recruitment and promotion of teachers. This could be challenging in the coming years when it is expected that the number of applicants per open position will keep increasing because of huge employment restrictions.

The Department provides an impressive space and equipment available for research and teaching activities. The only segment that could be improved is the number of students' computers relative to the total number of students. The Department has much improved reading for teaching resources in the library since the last re-accreditation process. Though, limited availability of free scientific journals has been pointed out during the meeting with teachers and assistants.

Good connections with institutions abroad represent a great advantage of the Department. Students and staff are aware of the many opportunities for professional development and international mobility and are encouraged to take them, so the mobility has been significant in the last 5 years.

The Department managed its financial resources transparently and rationally in the last 2 years and has positive and ambitious ideas for increasing revenue. It plans to increase its income by increasing the number of international projects with overhead fees and by increasing the provision of external services to stakeholders in the pharmaceutical industry. However, the Department is missing a financial plan, which seems to be necessary for the rational management of the institution's finances. This is necessary,

especially when you have expensive and sophisticated analytical equipment which requires maintenance every year in order to be able to carry out scientific research.

### Recommendations for improvement

- More fairness is needed in the distribution of teaching workload among the Department's staff members to ensure enough time for scientific work to all teachers
- It is recommendable to increase the availability of free scientific journals and databases to teachers and assistants to facilitate access to the latest scientific discoveries and enable the planning of scientific research more easily
- Create additional competitive criteria for the recruitment and promotion of teachers
- Finished teaching competencies course should be a mandatory additional criterion in the recruitment process
- It is recommendable to increase the number of students' computers as one IT classroom seems limited for quality work
- The Department is highly recommended to create a financial plan to ensure self-sustainability. This is especially important because of the small number of students, many research projects without overhead fees and huge costs of equipment maintenance.

### Quality grade

**High level of quality**

## V. Scientific/artistic activity

### Analysis

The number of papers published by the Department is good, in fact, it is the highest number per faculty member at the University of Rijeka. The quality is also good, with over 50% of the papers being in Q1. The same is seen for the number of PhD theses produced. Research collaborations are prevalent with industry and academic partners. Valorisation of knowledge is only just emerging, but it will likely increase, as science progresses and friendly companies are in contact with the Department. People from these external partners participate in teaching of the Department and play an enthusiastic and important role. The popularisation of science creates enthusiasm among the staff and students who participate in activities such as their Open Day, with over 1000 visitors, Brain Awareness Week and Science Night. Indications exist that the Department is being recognized for its achievements in science, bases of funded international projects and a number of editorial board memberships of the staff.

Financial resources are crucial for sustainable success of the Department, and the measures taken to increase income and reduce spending seem promising. A focus on grants with overhead will help in this context. The research infrastructure is very good, modern, and very competitive nationally. Nevertheless, in particular cases the specialized personnel that supports certain complex instruments is lacking. Apart from good research facilities, the teaching labs are also of good quality. The importance of research is also clear from the fact that students who are involved in research, and especially masters research, experience it as an important part of the route to graduation and to secure a possible PhD position.

The Department is making efforts to attract international students and enable their own students to spend some time abroad. Such international contacts will be beneficial for the future. Researchers are free to choose the topics, possibly in the future more direction will be stimulated. The desire to start with bioinformatics was mentioned as an important contribution to future research. Furthermore, the microscopy unit is becoming more and more important with already ca. 50% of the researchers using it. Another focus was to increase attempts for funding with multiple staff members with complementary expertise.

### Recommendations for improvement

- Continually keep the infrastructure up to date, by striving for sufficient financial resources.
- Enhance the international visibility.

- The connection with the dedicated stakeholders should be cherished and enhanced.
- Administrative support needs to be available to facilitate anticipated valorisation.
- The staff should aim for editorial board memberships of higher impact journals.
- The Department could showcase successes of its staff more, such as awards, prestigious grants and high impact papers, and related news items and the occasions where bachelor and masters student are co-authors on papers.

Quality grade

**Satisfactory level of quality**

## **DETAILED ANALYSIS OF EACH STANDARD, RECOMMENDATIONS FOR IMPROVEMENT AND QUALITY GRADE FOR EACH STANDARD**

### **I. Internal quality assurance and the social role of the higher education institution**

#### **1.1. The higher education institution has established a functional internal quality assurance system.**

##### **Analysis**

From the Self-evaluation document, site visit, and various meetings with the responsible personnel, it is clear that the Department has a well-established internal quality assurance system that tries to evaluate significant activities of the Department: study programmes, teaching process, student support, support to students from under-represented and vulnerable groups, learning resources, scientific and professional activities. The examples of related documentation are provided (Examples: 1.1.6.1, 1.1.6.2, 1.1.7.1–1.1.7.6).

Furthermore, during the site visit and meetings with the management, it appeared that the internal quality assurance system involves all stakeholders of the higher education institution in its decision-making process. However, additional efforts are needed to achieve better involvement of external teachers in the whole process and use their expertise in some particular areas. These include further work on harmonizing the study programmes to avoid duplications and using external teachers' experience and networks to expand potential cooperation and contract-based activities with the interested commercial parties.

Although the Department, as a part of the University of Rijeka, relies on the university strategy, they implemented the Department strategy in 2019 (the research strategy is a part of it), and in 2020 it adopted an ambitious action plan with the quality assurance policy included (evidence: 1.1.4.1 and 1.1.4.2).

The implementation of the strategy and the associated action plan includes strategic goals, indicators, purpose, defined rules of assessment, and target values. However, after the meetings, the Expert Panel realized that not all the stakeholders are familiar with these documents, and the conclusion is that the responsible persons will need to put in additional time to talk and discuss with permanent and external teachers about optimizing the current field of work and expanding the possibilities within it.

To a great extent, the Department thoroughly collected and analysed data on its processes, resources, and results, and compared them with key performance indicators set forth in the strategy. The output of this activity is the report presented yearly to the Department Council. The same body, the Council, discusses and adopts financial statements prepared by the rector's office annually. With support of the Ministry of science and education (income from the ministry increased 30% when recognized as the institution providing education in the STEM area), the University of Rijeka, and its own efforts, the Department has managed to improve its financial situation. During the last years, it has thrived, ensuring its economic/financial sustainability as one of the main priorities. Nevertheless, for accreditation purposes, the financial plan presented comprises only two years (evidence: Table 4.11 in the Analytic supplement) since it was communicated to the Panel that there are too many unknowns at the moment. The recommendation is to prepare a new financial plan with all Departments' stakeholders for the next five years.

The Department collects data on quality, particularly education and research activities for students. However, there is still significant room for improvement in these areas, particularly regarding student surveys (Examples 1.1.6.1 and 1.1.6.2) which are not completed as expected. During the meetings, the responsible persons have proposed several ways of dealing with this particular issue. The impression is that implementing compulsory completion of students' survey on teaching before obtaining the final grade would help in effectively managing and improving education and research for the students' related activities.

Finally, the Department and the University are committed to developing and implementing all aspects of human resources management policies that align with professional principles and standards. Awarding excellence in science for those applying for research grants is in place and represents an example of good practice. This practice has also been used for additional efforts to improve educational activities of the teaching staff. However, although the documentation supports this intention, and examples exist, more should be done for a better distribution of the teaching activities and more appreciation for those who perform research and teaching to a great extent in parallel (evidence: 1.1.7.5 and 1.1.7.6).

### **Recommendations for improvement**

- Communicate openly with internal and external personnel/teachers about optimizing the current activities and expanding the possibilities in the field of work in line with strategic documents.
- Increase the students' feedback on the quality of teaching.



- Fulfilling the ambition to have several people apply for funds and work jointly, preferably looking for the grants that have overhead.
- Perform fee-for-service activities for the interested commercial entities.
- Introduce better distribution of teaching activities and appraisal of the personnel who perform excellent research and educational activities.

### Quality grade

#### Satisfactory level of quality

## 1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.

### Analysis

The Department regularly collects and assesses data on achieved results and compares it with the set strategic goals (appendix 4.1.2). This way, the Department tries to improve performance in all the activities it undertakes.

Based on the changes made within three consecutive years (after re-accreditation of the doctoral studies during 2018/2019) in 2019, the Department obtained a favourable opinion, and the Ministry of science and education issued a certificate for conducting doctoral studies (evidence: 1.2.1.2). Following this positive response, the Department created the corresponding action plan for doctoral studies (evidence: 1.2.1.3).

Additionally, in 2019 the Department conducted an internal audit of the quality assurance system and presented the results of their internal self-evaluation to the Quality Committee of the University of Rijeka (evidence: 1.2.1.4). Based on their observations, an action plan has been implemented to overcome the identified shortcomings (evidence: 1.1.4.2). Finally, the Department created and adopted its ambitious strategy for the next five years (2021–2025) (evidence: 1.1.4.1).

From the available documentation, site visits, and various meetings with the employees and stakeholders of the Department, this Panel concludes that most of the recommendations from the previous re-accreditation performed by the ASHE in 2015 are implemented. A detailed list of these is provided in the Self-evaluation report.

Apart from adopting the strategy and revision of the ordinances of the Department, as well as ordinances of internal/workplace organisations, the most significant changes include:

A new study programme in English, "Biotechnology for the Life Sciences," was accredited in 2020. The Department's study programs have been registered for harmonisation with the Croatian Qualifications Framework, and four occupational standards have been proposed. Changes and improvements related to the students, alumni, and data sharing have been made. However, there is still room for improvement and to continue following the recommendations from the previous report.

### Recommendations for improvement

- Continue with the implementation of recommendations from the previous evaluation, particularly:
  - distribution of teaching hours
  - obtaining a critical mass of teachers and resources
  - use of space and equipment
  - financial self-sustainability
  - self-promotion to enhance intersectoral and international cooperation and mobility

### Quality grade

**Satisfactory level of quality**

## **1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.**

### Analysis

The Department follows the principles and procedures of ethical practice of the University of Rijeka and tries to preserve academic integrity in all aspects while conducting interdisciplinary scientific research and professional activities.

Relevant bodies have been appointed to monitor and follow these processes, such as the Department Disciplinary Committee, the Department Ethics Committee, and the Department Appeals Disciplinary Committee. The members of these bodies are listed on the Department's website.

During the site visit and meetings with the management team and responsible persons involved in these bodies, the Expert Panel was able to familiarize with the previous issues and current needs related to the work of these bodies. The procedures for assessing adherence to ethical standards were in place while solving the cases of intolerant/unethical behaviour of some employees conducted at the level of the Ethics or

Disciplinary Committee of the University of Rijeka, which finally resulted in rebukes by the rector of the University of Rijeka. When asked, the management communicated reasonably and openly about dealing with these issues.

The students understand the basic principles of ethical behaviour in research while producing their outputs (papers, thesis). The Department regularly uses Turnitin software for plagiarism check of all student assignments. The prerequisite for students to defend their undergraduate, master's, or doctoral theses is a report on verifying the authenticity of student work obtained via Turnitin.

Additionally, students are aware of the possibility of approaching the students' ombudsperson at the University level. Still, they prefer to communicate issues related to potential conflicts and intolerant behaviour with the responsible person at the Department level. Namely, the Department appointed a dedicated person, a "commissioner," to receive and resolve complaints about protection against discrimination and protection of dignity (evidence: 1.3.4.1). The Expert Panel has the impression that, at the Department's level, the systems for managing conflicts and resolving irregularities are functional and productive.

#### Recommendations for improvement

- The Ethics Committee of the Department (comprised of a member of faculty, a legal officer of the Department, and a student representative), if necessary, conducts procedures for assessing the ethical issues related to research, mainly when experimental methods include work on laboratory animals or human samples (e.g. blood; example: 1.3.5.1). The Panel recommends dividing experimental, research-based ethical requests from the Department's Ethical Committee by establishing an independent commission/body that includes the experts (e.g. from the University of Rijeka) from these particular fields.

#### Quality grade

**High level of quality**

#### **1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).**

##### **Analysis**

The Department's website is the main point of information for interested community about the work and activities carried out at the Department. Additional information is available on the Department's Facebook page and YouTube channel, which is very well organized and brings valuable and attractive material.

Although the most relevant data on study programmes is available on the website in Croatian and English, the enrolment criteria for undergraduate studies are not entirely available.

There is also information related to the administrative and health care support of all students.

Students are encouraged to obtain any additional information through direct contact. Moreover, at the Science Festival event, during which the Open Day of the Department is held, the teachers, personnel, and students are available for providing additional information to interested stakeholders.

The Department also distributes relevant leaflets about the study, and there are promotional videos in different media, including reports in newspapers and TV.

The current webpage highlights upcoming events and news, including recently published papers and job vacancies. However, since the Department is tightly connected with the University of Rijeka, which recently changed its website, a new design will be released, as communicated during the meetings with the responsible personnel.

Nevertheless, additional information on pass rates analyses, graduate employment, drop-out rates, and outcomes of previous evaluations is expected to be included in the new format of the webpage. Current evidence is provided in the form of Tables: 3.2, 3.3, 3.5, and 3.7 of the Analytical Appendix to the Self-evaluation document.

The Department's students and teachers actively promote research and scientific activities to the lay public. For example, the popularisation of science in society is trying to push these activities into primary and secondary schools. The results were exceptional – the Department hosted about 1000 visitors during the Open Day.

### Recommendations for improvement

- Provide information about the enrolment criteria for undergraduate studies on the Department's webpage, in Croatian and English.
- Provide public information on student pass rates, student withdrawal rates, and employment of students.
- The Department should work more on self-promotion and emphasize the awareness of the value of the studies going on at the Department to overcome the issue of poor visibility and recognition of master's study programs among Croatian business entities.

### Quality grade

#### Satisfactory level of quality

#### **1.5. The higher education institution understands and encourages the development of its social role.**

#### Analysis

The Department understands its role in contributing to the development of the economy at the local, national and regional level very well. The University highly supports the Department's focus on cooperation with the private sector, as confirmed during the meeting with the Rector of the University of Rijeka. The Department has a proactive role in developing the pharmaceutical industry in the local community, mainly through cooperation with Jadran Galenski Laboratory d.d. (JGL) and joint development of the GMP facility aimed at providing service in the field of drug development. The GMP facility within the Department (Laboratory for Quality Testing of Medicines) is operational and approved by the Croatian Agency for Medical Products and Medical Devices (HALMED). It is worth mentioning that this is a unique laboratory in the academic community in Croatia and the region (evidence: 1.5.1.1 and 1.5.1.2), and the obtained certificate is valid in the EU. The pharmaceutical sector's cooperation is supported by inviting teachers/external stakeholders to participate in educational activities. Moreover, the Department is involved in additional projects with the private sector and hospitals. It actively supports and embraces initiatives and projects of the local district ("Interpretation Centre for Natural Heritage of the Primorje-Gorski Kotar County and Characterisation of Indigenous Wine Varieties of Kvarner").

The personnel/teachers and students' representatives are involved in different decision-making bodies at the university level. Employees are also members of various national

panels and committees and actively contribute to foundations of the academic profession and accountability of teachers for development of the University and the local community.

The Department successfully organized four joint interdisciplinary scientific symposia with the Department of Biomedical Sciences of the Croatian Academy of Sciences and Arts (evidence: 1.5.4.1 - 1.5.4.4) in 2016. They disseminated the results in the form of a book (<https://link.springer.com/book/10.1007/978-3-319-39349-0#toc>).

The Department organizes events contributing to the targeted education of different students by organizing the Summer School of Chemistry and Open Day aimed at popularizing science. The Department is where the Croatian Society for Proteomics has its headquarters.

During the site visit, the Expert Panel was able to visit the premises dedicated to the students' organization and get familiar with numerous humanitarian activities of students' associations of the Department, i.e. "Christmas Goodwill Baubles" – humanitarian action to collect the means for the Social Self-Service "St. Elizabeth's Bread" and a dog shelter "Society for the Protection of Animals Rijeka", as well as donations for the victims of the earthquake in Banija (from December 2020).

The Department's staff and students' overall social engagement is high and visible. It also includes volunteer contributions to their early-stage students (free-of-charge counselling) and education of the general public.

#### Recommendations for improvement

None

#### Quality grade

**High level of quality**

## **1.6. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution, and social needs.**

### **Analysis**

Although planned, the lifelong learning (LLL) programmes delivered by the Department are not implemented yet.

The Department envisages two LLL programs to start with: i) training of analysts for work in the GMP laboratory, and ii) education on intellectual property in innovation management in biotechnology and pharmaceutical industry.

Once implemented, these programs will align with the Department's mission and strategic goals and fulfil the requirements expressed by the partners from the private sector (pharmaceutical industry) and related stakeholders, as well as the social needs. Namely, there is a lack of staff trained in GLP/GMP certified laboratories in Croatia, and this will be the first targeted programme to fulfil the present gap at the national level.

The teachers participating in these programmes are identified and belong to pharmaceutical and regulatory sectors. Moreover, according to communication with the management team during the site visit, the teachers who will train the analysts for work in the GMP laboratory have already started working closely with the agency responsible for monitoring and validating certificates. The Department has adopted the standard operating procedure for education within the GMP laboratory (evidence: 1.6.3.1)

### **Recommendations for improvement**

- Create a list of LLL programmes (currently planned and those that will be implemented in the future).
- Provide reports on their syllabi to be visible to all interested stakeholders.
- Precisely define the regulations and operational plan of LLL programmes.
- Provide the evidence of carried out analysis and improvements to the LLL programmes.
- Develop procedures for monitoring student satisfaction at LLL programmes.

### **Quality grade**

#### **Minimum level of quality**

## II. Study programmes

### **2.1. The general objectives of all study programmes are in line with the mission and strategic goals of the higher education institution and the needs of the society.**

#### **Analysis:**

The objectives of the study programmes are in line with the mission and strategic goals of the Department. This is clear by comparing the purpose of the study programmes, which is to provide professionals in “medicine and food” and educate them in “knowledge and skills” in “chemistry, medicine, biotechnology, informatics etc.” Clearly, these areas are strongly supported by the strategy that aims at being “the leading regional centre for education and research in the interdisciplinary field of biotechnology in biomedicine” as described in the research plan.

Clearly, this is also in line with the needs of society, since there is a growing biotech industry in Croatia, and an increasing demand for the candidates in research institutes as well as private and public health organisations. This is achieved by the Department, and it has employed the people with the right qualifications and skills for undertaking this task and they have the needed resources, although it seems the resources are only just adequate, and depend heavily on external teachers giving lectures for free, and this could be a vulnerable situation.

The programmes produce much needed professionals for the national market, but the students are competitive for international employment, which also happens.

This is evidenced by a high employability; evidenced by 2/3 of students being employed already 6 months after graduation, and by talking to alumni and industry stakeholders. Although the programmes fulfil the standards, they can be improved to fulfil the strategy and needs of the society even more.

#### **Recommendations for improvement:**

- External teachers, who are employed at other institutions, should not be responsible for a course by themselves. At least one person from the Department should be involved, and if this is not possible/relevant, then at least 1 more external teacher should be engaged.

#### **Quality grade:**

**Satisfactory level of quality**



## **2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.**

### **Analysis:**

In general, learning outcomes are in line with the qualifications gained. This is clear from looking at the matrix of learning outcomes, the Self-evaluation document and talking to students, alumni, and stakeholders.

Detailed matrices for learning outcomes (see 2.3) are provided and the learning outcomes have been aligned with the level and profile of qualifications that are gained in the study programmes presented at the homepage. For all programmes, the learning outcomes are aligned with the qualifications expected for the programmes, but some topics (i.e. IU3 Explain the structure of elements, inorganic and organic compounds and chemical reactions) are highly represented and thus there is a risk that students may get “overqualified” at the expense of other important topics, or even missing topics.

Most of this alignment seems to be formed internally among teaching staff, Teaching Committee and the Quality Committee, without involvement of stakeholders.

According to the study programmes, the Department has identified, developed, and applied four occupational standards, which were accepted.

The first one is related to undergraduate studies and is recognized under the name assistant in drug production and development. The remaining three standards are associated with the graduate/masters' programs. These are: a biotechnologist of medical chemistry, a biotechnologist in the production and development of drugs, and biomedical biotechnologists. All occupational standards are in the description of study programs, based on learning outcomes, accessible and presented on the Department's website.

As far as the undergraduate university study programme *Biotechnology and Drug Research* is concerned, the programme lasts for three academic years (6 semesters), and the total ECTS credit value is 180 (60 per year).

Gaining 180 ECTS points enables the continuation of education in one of the master's study programs. Students are eligible to enrol in undergraduate studies when they complete a four-year high school and obtain a diploma in the Republic of Croatia or abroad, based on the national exam results and a motivational interview. Students from abroad must hold an equivalent qualification recognised at a national level. However, they

are expected to demonstrate certified competency in the Croatian language by the end of the first year (grade B2).

The undergraduate study programme follows the Dublin Descriptions of Knowledge, as well as the one set up by the Croatian Classification Framework (HKO) and the European Classification Framework (EQF). The learning outcomes of all study programs are harmonised with the strategy of the Department and the strategy of the University of Rijeka. It is worth mentioning that the syllabus for each year has been developed by mostly all of the stakeholders involved in teaching, including the ones from the industry and that the learning outcomes of all study programmes are in line with level 6 and level 7 of the Croatian Qualification Framework.

At this point, it has to be stated that there is a discrepancy in understanding of external teachers' involvement and the Department's management. Management is convinced that all teachers and stakeholders have the same level of knowledge in this process. At the same time, some of the external stakeholders acting voluntarily in their teaching from the very beginning of the introduction of this programme (very helpful and encouraging for the economic situation of the Department) have expressed their wishes and needs to be more involved in these processes.

Regarding the graduate university study programme *Medicinal Chemistry*: learning outcomes of this programme seem to be overlapping with the learning outcomes of the graduate university study programme *Drug research and development* by over 80%. Learning outcomes such as “Set up and test statistical hypotheses, select a test, analyse and interpret results”, „Evaluate scientific literature“, „Compile a scientific research hypothesis and a written research project proposal“ and „Interpret research and design a presentation“ are too general and could be combined into one or two learning outcomes. Learning outcomes that differentiate this programme from the aforementioned graduate university study programme *Drug research and development* are “Analyse materials by chemical techniques and instrumental methods”, “Apply physio-organic and computational chemistry in the design of potential drugs and their synthesis” and “Explain the reactions used in the synthesis of organic compounds”. The three outcomes do not seem to differentiate the two programs enough and they could be combined into one, allowing students the freedom to choose from a larger base of elective courses to cater to their interest in medicinal chemistry or drug research and development. Some basic knowledge/courses that would be relevant and important for medicinal chemistry, such as pharmaceutical/medical chemistry, pharmacology, drug metabolism, seem to be missing from this programme and should be added.

The graduate university study programme *Biotechnology for the life sciences* is a new programme that started only in 2021 and needs more time before conclusions can be drawn about its performance.

**Recommendations for improvement:**

- Monitoring and evaluation of qualifications and learning outcomes are centralized in the Teaching Committee and the Quality Committee of the Department, and external stakeholders are not a part of this. It is desirable to create decentral structures for this assessment, i.e. by creation of advisory boards for all or each programme, or course teams for courses, including students and external stakeholders in these structures. This would enable an outside view on the profile the students come out with.

**Quality grade:**

**Satisfactory level of quality**

**2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.**

**Analysis:**

For each study programme a detailed matrix of learning outcomes for different courses in the programme is provided. 11–17 different learning outcomes are listed for each programme and these outcomes are present in the courses ranging from 1 to 13 matches. Thus, it covers both instances, when there is a risk of redundancy (13) and that of underrepresented outcomes (1). Whether this is in fact the case or it represents different ways of assessing a learning outcome is not clear.

However, these matrices are good and useful and can be elaborated further, i.e. it is odd that IU31 “Interpret research and design a presentation” is not a learning outcome in “Research Proposal & Poster Presentation”. However, these are minor details that do not change the impression of an institution working actively with its learning outcomes and assuring that they are delivered in the courses.

Furthermore, stakeholders and alumni praise the skills of alumni as delivered by the programmes. Both the scientific skills and knowledge, but also the soft skills like presentation, experience, and ability have a strong focus, and are clearly appreciated by the stakeholders.

Clearly, this is in line with the intention, and the Department is certainly able to deliver on its intention, and this is evidenced by several parameters.

#### Recommendations for improvement

None

#### Quality grade:

**High level of quality**

### **2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.**

#### Analysis:

The study programmes are developed systematically and regularly, based on feedback from various stakeholders, but not directly involving them. The Department has a structure for recording the changes to study programmes and monitoring how well they fit the purpose, and the study programmes are clearly published on the internet and are up to date.

The study programmes were originally formed in collaboration with various stakeholders, including research institutions, industry partners, students and possibly the alumni. The level of involvement is not completely clear, though.

The Department is continuously getting feedback. This is done mainly by student feedback, such as student surveys, interviews with student representatives, interviews with alumni, and by Self-evaluation document and mutual evaluation of teachers, interviews, and questionnaires for employers on satisfaction with students' exit competencies.

In this sense, the Department tries to align the programmes with the changing needs of the society at all levels, locally, regionally and nationally.

How this feedback in fact materializes into Department's changes is not quite clear, from the material the Expert Panel has received, and talking to external stakeholders and alumni, i. e. external stakeholders express that they are not actively involved in adjusting existing or forming the programmes. Clearly, the Council of the Department is responsible for the changes in the programmes as addressed in the Self-evaluation document, i. e. this

led to the proposal of having more electives, but that is on top of existing courses and the question is whether there are resources for this in the organisation, and perhaps the course portfolio needs to be restructured in the long run.

All changes and additions to the study programs are archived in both the UniRi Study Centre and the Department, and are publicly published on the Department's website.

#### **Recommendations for improvement:**

- The Expert Panel recommends that the Department more actively involves stakeholders in the process of monitoring and adjusting programmes. This is more ambitious than getting feedback, but this could provide a long-term assurance of improving and keeping the quality high. There is also a need to involve the teachers in this process more.

#### **Quality grade:**

**Satisfactory level of quality**

### **2.5. The higher education institution ensures that ECTS allocation is adequate.**

#### **Analysis:**

The Department has very clear processes and structures for assessing and grading ECTS points of courses and extracurricular activities. All teachers are familiar with awarding ECTS points to student workload, these gradings are monitored continuously by the Teaching and Quality Committee, through student surveys that are analysed once a year, and disseminated to the Council of the Department. Although this is not described the Expert Panel assumes that larger discrepancies between workload and ECTS points can be addressed properly in this system.

From the University of Rijeka there is a very detailed description on how ECTS points are evaluated for normal curricular activities, but also how they can be supplemented or exchanged for other extracurricular activities, such as student exchange, professional practice and/or laboratory work, presentation or participation at conferences, activities for popularisation of science, and attending workshops, summer schools or courses outside the University.

On the webpage there is a very good description of application for ECTS credits for extracurricular activities, and a clear procedure for the process.

The Department notes in its Strategy that it wants to increase the share of ECTS points achieved through recognition of prior learning, and the Panel can only support this.

#### Recommendations for improvement

None.

#### Quality grade:

**High level of quality**

### **2.6. Student practice is an integral part of study programmes (where applicable).**

#### Analysis:

The Department is very strong on integrating student practice in the study programmes.

During the undergraduate programme there is the completion of 80 hours of mandatory internship in the third year. Furthermore, both undergraduate and masters students may arrange additional internships for which they can be awarded ECTS points upon application. It is possible to substitute elective courses or have ECTS points added for them to the diploma. Many of the internships are at the local company JGL and the Institute of Public Health of the Primorje-Gorski Kotar County. However, if students achieve compatible learning outcomes, they can go to other institutions, such as pharmaceutical companies, medical diagnostic laboratories, quality control laboratories, and this must be approved by the head of the course "Compulsory Internship".

Also, from talking to students, alumni, teachers and external stakeholders it is very clear that standard is a stronghold for the Department. Still, the Department has an intention in their strategy to increase the share of ECTS points courses involving practical competencies and we can only support this.

#### Recommendations for improvement

None

#### Quality grade:

**High level of quality**

### III. Teaching process and student support

#### **3.1. Admission criteria or criteria for the continuation of studies are in line with the requirements of the study programme, clearly defined, published and consistently applied.**

##### **Analysis**

According to the Ordinance on Studies of the University of Rijeka, for each individual academic year, the Senate of the University of Rijeka approves the enrolment quotas and criteria, after which a public call is published. Admission criteria for enrolment for the first year of the undergraduate programme are published on the national platform "Postani student". However, the admission criteria for undergraduate programme are not clearly stated on the webpage of the Department, which should be improved. Aside from the required Matura exam results and high school grades, the high school graduates undergo a motivational interview that is conducted at the Department by a committee of teachers according to the Instructions for Structural Motivational Interview. The final admission list is publicly available.

The criteria for continuation of studies and the criteria for transferring from other similar study programs are clearly stated on the webpage of the Department along with the documents that students need to provide to the Student Office. The criteria are regulated by the Ordinance on studies of the University of Rijeka and are supported by the Department's own conditions for the transition to other years of undergraduate studies, the instructions for applying for transfer and a list of compatible undergraduate studies from which the students may be accepted for this program. All applications of students who want to transfer from other study programs (both domestic and foreign) go through the three-member Committee for Recognition and Evaluation of Prior Learning of the Department, but the final decision is made by the Council of the Department.

Admission criteria for enrolment for all the graduate programs are published on the website of the Department. The final admission list is publicly available.

All the criteria are consistently applied through the Student Office and are in accordance with the Regulations on Studies of the University of Rijeka. All admission procedures are currently conducted online.

##### **Recommendations for improvement**

- The Expert Panel recommends adding the enrolment criteria for undergraduate study to the webpage of the Department both in Croatian and in English.

## Quality grade

### High level of quality

#### **3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.**

##### Analysis

Data on student pass rates, completion and drop-out rates are continuously collected and analysed. Student progress is monitored, and appropriate procedures are defined and known. Syllabi for all the study programs and subjects can be found on the Department's webpage and are available to students from the beginning of the academic year. According to the interview with students it is concluded that they are well informed of expectations from a certain professor and subject from the beginning of the academic year. Teaching methods are regularly and continuously assessed through student surveys, which students fill out through the Studomat app, and then subject-specific surveys for degree course lecturers and staff. ISVU coordinators often have access to these surveys to be able to respond to low scores in the survey in a timely manner. However, during the meetings with the management, teachers, and students the Expert Panel learned that those surveys often get ignored, and the professors are deprived of any feedback from the students. The management stated that this issue should be solved soon on the level of University since they have formed a committee for this specific issue. Some professors implement their own methods to encourage students to fill out those surveys, but most of them did not. The management stated during the on-site meeting that they act on the surveys when the course/professor score is below grade 4 and the most valuable information is found in the open-end question section of the survey.

If there are low pass rates observed, the management has different measures they could implement, depending on the nature of the issue – they have mentioned talking to the professor whose course seems to be problematic, implementing self-evaluation of the professor, taking an additional course on teaching, and assigning them a mentor professor.

The Expert Panel did not get the information on the exact pass rates of the students of the Department. Upon being asked about the topic, the management said that the pass rates depend on many factors, e.g. whether the course is held on undergraduate or graduate level, with the pass rates being lower on undergraduate level.



There is great communication between students and the management that aids in gathering and implementing students' opinion of study programs and courses, which can be demonstrated through several examples, the most impressive being the Department implementing changes into the curricula after consulting with student representatives, thus improving the study programs.

#### Recommendations for improvement

None.

#### Quality grade

**High level of quality**

### **3.3. The higher education institution ensures student-centred learning.**

#### Analysis

The Department conducts various forms of teaching that are aimed at acquiring learning outcomes that are defined by the curricula. In general, there are 4 main forms of education that take place at the Department – lessons, seminars, laboratory work and fieldwork.

Both in lessons and in seminars the students are encouraged to actively participate, which is possible because of the small number of students in each class. Students often get individual or group assignments, such as making a presentation or even writing a Wikipedia article on a certain topic by doing their own research. In addition to the classic *ex cathedra* teaching and seminars, laboratory exercises and fieldwork are all performed. Most of the subjects that have laboratory work and fieldwork are conducted at the undergraduate level.

Teaching methods can be adapted to a diverse student population – the management presented an example of a student with impaired hearing for whom the Department acquired a special microphone and sound equipment, so the student could participate in lessons equally with other students.

The Department conducts various forms of e-learning, and the repositories available on the Department's website, as well as resources provided by Srce (University Computing Centre), are used as teaching materials. The Department has adapted to online teaching using various platforms due to the COVID-19 pandemic. Students have great access to learning infrastructures, such as a computer rooms and internet access on campus. Also, all equipment used for research is available to students that are in the process of writing

their final theses for use under the supervision of their respective mentors. The Department also has some classes that teach students soft skills, such as poster and oral presentations and research planning, with many students participating in research, mostly on graduate level of studies.

Students present at the meeting have stated that they have enough time to prepare for their exam after their lessons end and almost all of them take the exam during the first available term. If a student needs to report an issue or has a question about class, there is a couple of possibilities. Most teachers have designated office hours and reply to students' emails in a timely manner. Student representatives also have monthly meetings with the management of the Department if a certain issue cannot be solved by contacting the professor. All teaching methods are evaluated in the aforementioned surveys.

Apart from formal curriculum and research, students of the Department are very active in their student organisation. They conduct numerous projects both on the level of the Department and on university level, such as open days, the student mentoring program, summer school for 1<sup>st</sup> year students, Sports day, symposium of students of biotechnology "PosteRi", their own newspaper „BioTech“, conference „Future and Perspective“, and others. The Department supports all student activities.

#### Recommendations for improvement

None.

#### Quality grade

**High level of quality**

### **3.4. The higher education institution ensures adequate student support.**

#### **Analysis**

The students are supported by the Department and by the University of Rijeka adequately during their studies, and the Department employs an adequate number of qualified and committed professional, administrative, and technical staff.

Students can access all information regarding their studies on the Department's website and on an online platform "Moodle – Merlin".

Professors support students throughout their subject by being available during office hours and via e-mail for any questions that may arise. For other questions, students are encouraged to contact their student representative who will express their questions and concerns to the management on the monthly meetings. There are also student representatives for all years at the Department Council.

Management supports student research and student projects that aid other students accommodate to their studies (1<sup>st</sup> year students, foreign students) such as the as the Open Day, the Student Mentoring programme, Summer School, conference „Future and Perspective“ and others. However, the management does not organize such projects on its own initiative.

There is a designated coordinator for students with disabilities at the Department. Students that need psychological help can seek it at university level. Students can ask for assistance also in online format. It can be concluded that the psychological help is very flexible and compliant with the students' needs.

The student office is unsatisfactory to students. During the meeting with students, they expressed that the office understaffed and that they are not satisfied with the way of enrolling into elective classes. The current system depends on the speed of application which is not optimal. It should also be noted that the Student Office has two employees which are responsible for over a thousand students of several different departments.

There is also a library and a canteen available to students.

Because of the interdisciplinary nature of the Department, specific skillset and knowledge that the students have, and the relative novelty of study programs the Panel would suggest establishing a career centre that would connect current students to alumni and stakeholders from the industry in a more formal way.

### Recommendations for improvement

- Ensuring that the Student Office is staffed according to the needs of the Department.
- Come up with a better system for enrolling students in the elective classes.
- Establish a career centre that would connect current students with alumni and stakeholders from the industry.

### Quality grade

**Satisfactory level of quality**

## **3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.**

### Analysis

The Department monitors the needs of students from vulnerable and under-represented groups. After enrolment, information is collected on the individual needs of students from those groups. For example, for students with disabilities, it is determined which disability they have and which adjustments in teaching and assessments are needed. Since the Department does not have a lot of students, all cases are assessed and monitored individually. The Department's building is well equipped for students with disabilities, even though there are not such students enrolled. There is a possibility for students with lower finances to be freed from tuition fees totally or partially. The students can request suspension of their study obligations or putting their studies on hold.

### Recommendations for improvement

None.

### Quality grade

**High level of quality**

### **3.6. The higher education institution allows students to gain international experience.**

#### **Analysis**

International experience (outgoing mobility) is gained mainly within the Erasmus international mobility program. Students are informed about the possibilities of attending a part of their studies abroad through Department's webpage, where all the information about upcoming student mobility calls, flyers and posters can be found on the premises of the Department. There are also organized workshops for students where they can learn more about the program. Students interested in international mobility can also contact the Erasmus mobility committee or its president, the Erasmus coordinator, to gain more information about the possibilities of international mobility. The same committee helps students with application for Erasmus, drafting the learning agreement and monitors students that are abroad. Because of the interdisciplinary nature of this Department, students can choose from many available classes in foreign universities for which they will be awarded ECTS points according to the learning agreement. Students can also gain ECTS points and international experience if they enrol in elective classes at foreign universities online.

Data on student satisfaction with the quality of support of the Department in practical issues of student mobility are collected in an informal way. The Expert Panel suggests creating a more structured way to collect data on the student satisfaction with international mobility support.

Students acquire the competencies needed to work in an international environment with the help of an international team of teachers at the Department and by being in contact with foreign students, both by incoming mobility programs and foreign students that are enrolled in the graduate programme held in English. Students also have some classes in undergraduate and graduate programs that are held in English, and they are required to use literature in English. Therefore, all of that helps students that will potentially participate in outgoing mobility to adapt more easily to an international environment.

A great number of students participate in outgoing mobility which suggests that the Department supports and motivates their students in partaking in the mobility programs.

#### **Recommendations for improvement**

- Creating a formal system of collecting data on student satisfaction with the quality of support of the Department in practical issues of student mobility.

#### **Quality grade**

**High level of quality**

### **3.7. The higher education institution ensures adequate study conditions for foreign students.**

#### **Analysis**

There is a graduate university study programme “Biotechnology for Life Sciences” held at the Department that is conducted in English. The study is intended for domestic and foreign students with an interest in the field of biotechnology and life sciences. All information about the study is on a separate website that is also in English. Foreign students can also partake in the Erasmus incoming mobility and study at the Department, which provides some classes in English apart from the graduate programme in English. If need be, some classes that are originally held in Croatian can be held in English for a larger number of foreign students that are enrolled in the class. The Department has a number of native English speakers as well as teachers fluent in English that allows for a better experience, both for foreign and Croatian students.

Foreign students have the support of the management, especially deputy head for teaching and quality, the head of the office of English language teaching, the Erasmus mobility committee and its president, the Erasmus coordinator, along with student-mentors. The Erasmus mobility committee with its president helps foreign students with visa, social insurance and any other practical issues they face when coming to Croatia.

Feedback on the satisfaction and needs of international students is collected in informal conversations and should be formalized to ensure adequate quality control of the graduate programme that is on the same level as the undergraduate and graduate programs in Croatian.

The Croatian language learning programme for foreign students is provided at university level, and is conducted at the Faculty of Philosophy.

#### **Recommendations for improvement**

- Creating a formal system for collecting feedback on the satisfaction and needs of international students.

#### **Quality grade**

**High level of quality**

### **3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.**

#### **Analysis**

Students are informed about the criteria and methods of evaluation and grading in the introductory lecture of each course; however, they are not published on the Department's webpage. Students are mostly satisfied with the way that their work is graded, which they have expressed in the meeting, as well as in surveys conducted by the Department.

After taking an exam, students are allowed to have insight into their exam and the right answers. Teachers reply to e-mails promptly and allow the students to come during the office hours if they are having difficulties with the material. If the student is not satisfied with their grade, there is an option to refuse the grade and retake the exam. In general, students can retake the same exam up to 3 times. If any other issues with the grading arise, students can appeal to the teacher or deputy head for teaching and quality themselves, or through the student representatives.

Some subjects have oral exams after the written part of the exam. Most of the time there are 2 or more students at a time to ensure that the exam is objective and held to certain academic standards. However, sometimes the student is alone with the teacher, which is not a good practice.

Besides the exams, students are also evaluated on their seminars, lab reports and fieldwork reports, which are mandatory. Most of the time the reports are not graded, but evaluated, and the student gets feedback on what is done well and what could be improved in the report. Seminars often do not have proper feedback that would help students improve and learn.

All evaluation methods are adapted to the individual needs of students of vulnerable and underrepresented groups.

#### **Recommendations for improvement**

- Publishing the criteria for evaluation and grading on the Department's website before the beginning of each academic year.
- Providing more support and initiative for the development of skills related to the various assessment methods.
- Creating a system (such as the board of examiners) to ensure objectivity and fairness of evaluation and grading.
- Ensuring that all oral exams are being conducted with a witness, and held to the highest academic standards.

- Ensuring that students are graded and/or evaluated on their seminars with proper feedback that would help them learn and improve.
- Conducting and analysing surveys for employers to receive feedback on their satisfaction with the quality of the graduated students' knowledge gained during the study process.

Quality grade

**Satisfactory level of quality**

### **3.9. The higher education institution issues diplomas and Diploma Supplements in accordance with the relevant regulations.**

Analysis

For completing undergraduate studies and completed graduate studies at the Department, students are awarded a certificate and a supplementary study document (in Croatian and English) in accordance with the Ordinance on the form of the diploma certificate and the content and form of the degree certificates, confirmation and matriculation statement of the University of Rijeka. The Department issues a supplementary study transcript, free of charge, in Croatian and English to students who complete undergraduate and graduate studies.

Recommendations for improvement

None.

Quality grade

**High level of quality**



### **3.10. The higher education institution is committed to the employability of graduates.**

#### **Analysis**

The employability of graduates is continually monitored. The Department has successfully implemented new methods of increasing the employability of the students, which is shown with a positive trend in their employment. Because of the interdisciplinarity of the programs, graduates are able to find jobs in an array of different institutions and on different positions. The quotas are in line with social and labour market and the Department does not plan on increasing them in the future. Students are able to connect with future employers in classes (because some of them are external stakeholders that teach at the Department), during their student practice which is mandatory for undergraduate studies and at different events that are organized by the student organizations of the Department. The Department has a good relationship with their alumni, which is maintained through the alumni club of the Department (Alumni BIOTECH).

Within the University counselling centre, there is a Career Office which provides support to students in planning future careers and offers various activities. However, because of the novelty of such interdisciplinary study programs that the Department offers and lack of education of the labour marker about the graduates, the Panel members are of the opinion that the Department should consider establishing their own career office/centre that would help their graduates connect with future employers.

#### **Recommendations for improvement**

- Establishing a career office/centre at the Department that would help its graduates connect with future employers.
- The Department is encouraged to inform students about the opportunities to continue education or to find employment after graduation.
- The Department should be dedicated to informing students about students' future career planning, and their competitiveness in the labour market.
- Improving the relationship and communication between the Department and external stakeholders from the industry to get a clear picture about the labour market needs.

#### **Quality grade**

**Satisfactory level of quality**

## IV. Teaching and institutional capacities

### 4.1. The higher education institution ensures adequate teaching capacities.

#### Analysis

The number and qualifications of teachers employed in the Department are appropriate for the delivery of all undergraduate and graduate study programs and achievements of the intended learning outcomes. According to the AZVO analysis of conditions for conducting study programs from May 2022, the teachers employed in the Department deliver more than a minimum of 50% of standardized hours of all mandatory subjects in all study programs. According to the data from the Analytic Supplement (Table 4.1.a), 23 full time employed teachers (FTE) and 5 partial time employed teachers are employed at the Department – 7 full professors (2 full professors with tenure), 9 associate professors, and 12 assistant professors. Furthermore, there are 20 assistants and 5 post-doctoral researchers, most of which are employed on projects. From the last re-accreditation, the number of teachers and associates has increased significantly in the last 5 years – The Department recruited 10 new teachers and 22 associates which was in line with previous re-accreditation recommendations (Table 4.2). Based on the above-mentioned data, the Expert Panel has also concluded that the Department has adequate number of scientists.

The student/teacher ratio is more than appropriate to ensure a high-quality level of study programs. According to the Ordinance for performing higher education activity, the ratio should not be more than 1:30, and at the Department it equals to 12.30 if FTE teachers are taken in calculation, or even less, 7.76 if assistants are added in calculation with coefficient 0.5. Since the academic year 2021/2022, the Department participates in teaching at the pharmacy study program, which started at the University of Rijeka. Therefore, it is expected that the student/teacher ratio will increase a little as the number of students will slightly increase in the next few years, but it will still be significantly higher than the necessary minimum (Development Strategy of the Department, University of Rijeka 2021–2025).

Detailed information on the teacher workload indicated an unequal distribution of the workload. Also, a few teachers have a high number of teaching hours and they are overloaded, and a few teachers are far from the minimum teaching workload they should have according to their contracts. However, the teacher workload is in most cases in line with relevant legislation and policies and collective agreements.

Teachers are qualified for the courses they deliver. Most of the Departments' teachers are established scientists with international experience and more than 50% of all teachers at

the Department have been scientifically promoted within the interdisciplinary field of biotechnology in biomedicine.

#### Recommendations for improvement

- The Expert Panel recommends the development of guidelines for the distribution of the teaching workload among teachers. This could ensure a more uniform distribution of the teaching workload and provide approximately equal time for scientific development to all teachers.

#### Quality grade

**High level of quality**

#### **4.2. Teacher recruitment, advancement and re-appointment is based on objective and transparent procedures which include the evaluation of excellence.**

##### Analysis

Teacher appointment (recruitment) procedures are in line with development goals of the HEI. The Department has significantly increased the number of teachers and assistants compared to the last re-accreditation process, even with national restrictions present in higher education in Croatia in recent years. Today they represent a large university department.

The Department follows general conditions and legislation rules for the employment and promotion of teachers and scientists in higher education institutions in Croatia.

They take into consideration the previous activities of candidates when selecting, appointing and evaluating teachers, also in line with the legislation. The recruitment process is well managed and transparent.

The promotion of teachers into higher ranks is based on evaluation and rewarding of excellence, which was explained in detail in the Self-evaluation document, but also confirmed during the re-accreditation process in conversation of the Expert Panel members with HEI's teachers.

The Department has described in their strategy programme that promotions are performed in accordance with the needs of the Department (Development Strategy of the

Department, University of Rijeka 2021–2025). However, the HEI does not have its own additional competitive criteria for recruitment and promotion of teachers. It could be expected in the next few years that the number of applicants per open position will keep constantly increasing because of huge employment restrictions by the Ministry of Science and Education. During the meeting with the management and teaching staff, the Expert Panel has concluded that the Department is working on a draft version of this document, but a consensus was not reached between the HEI board members.

A certificate of attendance of a course on teaching skills and methods should be one of the mandatory additional criteria during the teacher recruitment process. The main reason is that teachers at HEI mostly finished study programs in the field of biotechnology, medicine, and natural sciences, and those study programs in Croatia do not provide students this type of knowledge and skills during their education. This would increase the quality of the recruitment process itself, and also help and make it easier for the teachers to start a career as a teacher at HEI after gaining some basic knowledge about teaching methods.

#### Recommendations for improvement

- It would be advisable for the Department to create a document with additional competitive criteria for the recruitment and promotion of teachers.
- It is recommended that one of the additional Department's criteria in the recruitment process should be a certificate of completion of a course or workshop about teaching skills and methods.

#### Quality grade

**Satisfactory level of quality**

### **4.3. The higher education institution provides support to teachers in their professional development.**

#### **Analysis**

The Department provides opportunities for improvement of teaching competencies for their teacher through the lifelong learning (LLL) programme at the University of Rijeka. The LLL programme named "Teacher Competences in Higher Education: Learning and Teaching", has been implemented at the faculty of philosophy in Rijeka and it should support university teachers to gain the basic knowledge and skills needed for teaching in higher education. However, according to the Panel members' meeting with the teaching staff during the re-accreditation process, only a few teachers declared that they have finished this course. As the main problem of non-attendance, they pointed out that the course is held only once a year, it has a large number of hours which are performed in a block, it's only in Croatian and it is difficult to coordinate all the other work obligations with attendance of the LLL program. University of Rijeka has a Centre for Teacher Education that regularly organizes workshops for improvement of the teaching competencies of their teachers (e-learning workshops, a workshop for the use of the Merlin platform, a workshop for the use of the Coursera tool, etc.).

All teachers at the Department are encouraged to attend courses to improve teaching competencies. However, all of these activities are not mandatory, so their attendance depends on the interest of each teacher to improve himself.

The Department analyses the level of student satisfaction through the questionnaire surveys and acts consequently if the results are not positive. In general, assessments within survey results are mostly positive, but they are rarely statistically valid due to the small number of students who fill in these questionnaires even though the results directly affect the teacher's promotion.

As most of the Department's teachers were educated and worked abroad, the Department has established good connections for international cooperation and mobility. Also, the Expert Panel noticed during the meetings that both, staff and students, are well aware of all possibilities for international mobilities. Therefore, there are high numbers in comparison to the total number of staff members of the Department that indicates high international mobility of teachers, associates and administrative staff (Table 4.5 and 4.6). In the last 5 years, the Department has achieved 32 outgoing mobilities and 18 incoming mobilities. Analysing the international mobilities, which lasted up to 3 months, 21 teacher mobilities were achieved in the last 5 years, and the largest proportion of teachers went abroad for scientific training (50%).

## Recommendations for improvement

None.

## Quality grade

**High level of quality**

**4.4. The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific/artistic activity.**

## Analysis

The university departments building of University of Rijeka, where the Department is located, provides appropriate space, equipment and an entire infrastructure for teaching and scientific activities. The Panel members who visited Rijeka on the 6th of June 2022 were impressed with the space and equipment available for research and teaching. The Department has almost 2600 m<sup>2</sup> for all their activities (laboratories, lecture rooms, workspace for students, common spaces, library, etc.). On the premises of the Department, each student has 7.991 m<sup>2</sup> of useful space, which is significantly more than the minimum requirement of 1.25 m<sup>2</sup> per student. The Department has 3 lecture halls, 4 huge teaching laboratories, 33 teaching offices, and 43 scientific laboratories (Table 4.8). The Expert Panel members from abroad who could not come to the site had the opportunity to watch a short video clip about the premises. All lecture halls and teaching offices are equipped with computers and, in the last 2 years, the Department also equipped the first computer room (17 computers) (Table 4.8). From various meetings with students, teaching staff, assistants, post-docs and even with alumni, all of them seem to be very satisfied with space, equipment and entire infrastructure of the Department. They believe that the space and equipment in the laboratories enable them to successfully provide or acquire skills and knowledge and conduct scientific projects.

From the Self-evaluation document, site visit, and various meetings, it is evident that the Department is equipped with a lot of expensive analytical equipment, which enables scientific research in the field of high-throughput technology and cell visualization (Table 4.9). Also, the members of the Department can use the Bura Supercomputer at University of Rijeka for bioinformatics analysis and drug design.

### Recommendations for improvement

- Although the Department has recently equipped one IT classroom with computers, additional acquisition of computers for students is recommended. Computers are increasingly being used in classes for virtual simulations, scientific literature search, and since the COVID-19 pandemic, there has been a significant increase in conducting online exams also. Considering the number of students in the Department and their additional increase because of the new pharmacy study program, 17 computers and only one IT classroom seem limited.

### Quality grade

#### High level of quality

#### **4.5. The library and library equipment, including the access to additional resources, ensure the availability of literature and other resources necessary for a high-quality study, research and teaching.**

### Analysis

The Department as a part of the University of Rijeka does not have its own library, but uses resources of the campus branch of the University of Rijeka library. This library branch is located in the basement of the University Department's building and it is responsible for providing library services to students and teachers at the Department. During the site visit, national panel members had the opportunity to see the library. The total area of the library is 355 m<sup>2</sup>, 221 m<sup>2</sup> of which is available to users (Table 4.10). It is well equipped with enough reading material for courses, which is an improvement compared to the last re-accreditation process and now the number of compulsory literature items for a particular course is at least 20% of the number of students enrolled in that course. During the meeting with students, they expressed thoughts about this and also the working hours of the library. However, during the meeting with teachers, assistants and postdoctoral students, they pointed out the problem of limited availability of scientific articles. Even though it seems that the library provides quite a large number of electronic journals with full access (N=12252), biotechnology is an exceptionally competitive scientific field, and obviously, the listed free journals do not sufficiently satisfy the scientific needs of the staff in the Department. Therefore, they need to additionally pay the fees from their scientific projects to get access to full texts of articles in many scientific journals.

### Recommendations for improvement

- It would be advisable to plan a yearly budget for ensuring online access to more international journals. This could significantly facilitate and improve the everyday work of the Department staff.
- It is hard to always have mandatory literature in Croatian, especially considering the rapid development of the biotechnology field. However, teachers should at least provide students with support materials in Croatian in case the mandatory literature is in English.

### Quality grade

#### Satisfactory level of quality

## 4.6. The higher education institution rationally manages its financial resources.

### Analysis

The Department has managed its financial resources transparently and rationally in the last 2 years. From discussion with the management of the Department during the visit, it was determined that the Department had some financial problems a few years ago, but the new management managed to significantly reduce them and control business expenses. It is evident that they had a significant increase in income, but also in expenses in the last two years (Tables 4.11 and 4.12). From the income table, it is evident that the Department has a high income from scientific projects (almost 25% of total income), which indicates the great success of the staff in the scientific field. However, the funded projects are predominantly from the Croatian Science Foundation, and they do not provide overhead fees. The management informed the Expert Panel during the site visit that they plan to increase the income by increasing the number of international projects with overhead fees and by increasing the provision of external services to stakeholders in the pharmaceutical industry. According to the income from the students, the Department has a relatively small number of students and therefore low income from school fees. The management of the Department specified that their future development plan does not include a significant increase in the number of students because they believe that this would have a negative impact on the quality of teaching, and it is important for them to maintain a high level of teaching quality.

The Department has extremely positive and ambitious ideas for increasing revenue. However, there is no financial plan even for the next year, especially for the next 5 years. The Expert Panel was informed that the Department does not know how to predict



funding from projects and how to create such a financial plan considering the COVID-19 pandemic and the reduced number of open tenders for scientific projects in Croatia. As the Department owns expensive and sophisticated analytical equipment, which needs expensive maintenance in order to be able to carry out scientific research, it would be advisable to have a financial plan that will minimally include predictable costs, such as regular equipment maintenance.

#### Recommendations for improvement

- The Department is highly recommended to create a financial plan to ensure self-sustainability, as at this moment one is completely missing. The plan should include short, medium and long-term financial costs projection. This is especially important because of the small number of students, research projects without overhead fees (at the moment), and the huge costs of maintenance of the equipment. Some of the costs are hard to predict, but fixed annual costs for equipment maintenance and personnel costs should have to be known to the management of the HEI at any moment.

#### Quality grade

**Satisfactory level of quality**

## V. Scientific/artistic activity

### 5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.

#### Analysis

The number of papers published by the Department, i.e. 160 over the last 5 years is a good number, which translates to the highest number per faculty member of the University of Rijeka (1.5). Additionally, the quality is also on a good level, with over 50% of the papers being in Q1 (i.e. top quartile of journals in their various fields). The Department keeps track of research performance of its staff, and the results are publicly available, and there is a healthy drive among the staff to improve themselves. Successful staff is also provided with additional funds to facilitate the work. The output is also consistent with the number of PhD theses produces (ca. 60), again a large portion of the University of Rijeka. Staff and also PhD students regularly participate in local, national and international conferences, as was indicated by them. Facilities to perform good research are present.

#### Recommendations for improvement

- Continually keep the infrastructure up to date, by striving for sufficient financial resources.
- Enhance the international visibility.

#### Quality grade

**High level of quality**

## **5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.**

### **Analysis**

Researchers are free to choose the topics, in the future more direction will possibly be created by stimulating measures, right now the research agenda is not coloured by interactions with society. Collaborations have formed naturally with the industry and academic partners, as evidenced by the fact that 100 of the 169 papers are the result of such collaborations.

Valorisation of knowledge is emerging, but patents have not yet been filed. Activities related to knowledge transfer were present, such as the focus on creating skills, space and knowledge for GMP productions, with the help from e.g. the company JGL.

Teachers participate with external organizations, but more importantly the external partners participate in teaching at the Department and play an enthusiastic and important role. The staff participates in grant panels of the Croatian Science Foundation, in advisory boards of the home university and in selected cases in the political arena. A major successful activity undertaken by the Department is the popularisation of science. Staff and students often participate in activities such as their Open Day, with over 1000 visitors recently, as well as Brain Awareness Week and Science Night.

### **Recommendations for improvement**

- The strength of the Department is that it has strong, often historical, connections with companies and institutes. Members thereof often volunteer their time to teach, but do not always feel that their specific expertise and knowledge is used, e.g. in efforts to improve the teaching curriculum. The connection with these dedicated stakeholders should be maintained and enhanced.
- In anticipation that sciences progress to the point that they may yield patentable results, administrative support needs to be available to facilitate this. There is a university wide Technology Transfer Office, but the whole process needs to be facilitated at the Department as well.

### **Quality grade**

**Satisfactory level of quality**

### **5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.**

#### **Analysis**

Indications exist that the Department is being recognized for its achievements in science. This can be seen because the Department has secured a good number of international projects for which reputation and scientific quality is important in selection. There are also 6 cases in which the staff members are members of editorial boards of scientific journals. Furthermore, indications of staff being offered invited lectures were seen.

#### **Recommendations for improvement**

- The staff should aim for editorial board memberships of higher impact journals.
- The Department could showcase the successes of their staff more, such as awards, prestigious grants, high impact papers, and related news items.

#### **Quality grade**

**Satisfactory level of quality**

### **5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.**

#### **Analysis**

An important aspect for sustainable success of the Department is having enough financial resources. It was clear from the visit that the Department already took measures to increase income and reduce spending. Another important financial issue is the overhead costs that grants do (EU) or do not (Croatian Science Foundation) provide. In this context, the Croatian grants reduce resources of the Department and the aim is to enhance the number of EU grants with overheads. Currently, the research infrastructure is very good, modern and very competitive nationally, and will remain so in the coming years. Nevertheless, in selected cases the specialized personnel that supports certain complex instruments is lacking.

A good measure to keep staff motivated is the offering of 10,000 HRK per year for people who secured grants or who were positively evaluated in big international grant contests.

The Department is making efforts to attract international students and enable their own students to spend some time abroad. Such international contacts will be beneficial for the future.

While the Department does not follow a specific research agenda, issues of preference are clearly present. The plan to start with bioinformatics was mentioned as an important contribution to future research. Furthermore, the microscopy unit is becoming more and more important with already ca. 50% of the researchers using it. With focus, this facility will be continually upgraded, which will secure long term advanced research. Another mentioned aim was to increase attempts for funding of multiple staff members with complementary expertise.

### Recommendations for improvement

- As already suggested by the Department: increase the number of grants that cover overhead costs.
- Provide a more detailed financial planning for short, medium and long term expenses.
- Further increase international visibility of the Department.
- Further enhance the microscopy facility, since it is one of the strengths of the Department.
- Further stimulate joint grant applications and projects among staff members with different expertise.

### Quality grade

**Satisfactory level of quality**

## **5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.**

### **Analysis**

While the research facilities are very good, as mentioned above, they are of limited use for teaching purposes. Nevertheless, researchers at the forefront of science are more likely to include the most relevant and timely aspects of science to their teachings. Evidence of this was seen in the general satisfaction of students by the teachings, and the staff agrees that good research is a prerequisite for good teaching. Apart from good research facilities, the teaching labs are also of a good quality.

The importance of research is also clear from the fact that students who are involved in research, and especially masters research, experience it as an important part of the route to graduation and to secure a possible PhD position.

### **Recommendations for improvement**

- Showcase the occasions where bachelor and masters students are co-authors of papers.

### **Quality grade**

**High level of quality**

## APPENDICES

### 1. Quality assessment summary – tables

<i>Quality grade by assessment area</i>				
<i>Assessment area</i>	Unsatisfactory level of quality	Minimum level of quality	Satisfactory level of quality	High level of quality
<i>I. Internal quality assurance and the social role of the higher education institution</i>			X	
<i>II. Study programmes</i>			X	
<i>III. Teaching process and student support</i>				X
<i>IV. Teaching and institutional capacities</i>				X
<i>V. Scientific/artistic activity</i>			X	

<i>Quality grade by standard</i>				
<i>I. Internal quality assurance and the social role of the higher education institution</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
1.1. The higher education institution has established a functional internal quality assurance system.			X	
1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.			X	
1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.				X
1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).			X	
1.5. The higher education institution understands and encourages the development of its social role.				X
1.6. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution, and social needs.		X		



<i>Quality grade by standard</i>				
<i>II. Study programmes</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
2.1. The general objectives of all study programmes are in line with the mission and strategic goals of the higher education institution and the needs of the society.			X	
2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.			X	
2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.				X
2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.			X	
2.5. The higher education institution ensures that ECTS points allocation is adequate.				X
2.6. Student practice is an integral part of study programmes (where applicable).				X

### *Quality grade by standard*

<i>III. Teaching process and student support</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
3.1. Admission criteria or criteria for the continuation of studies are in line with the requirements of the study programme, clearly defined, published and consistently applied.				X
3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.				X
3.3. The higher education institution ensures student-centred learning.				X
3.4. The higher education institution ensures adequate student support.			X	
3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.				X
3.6. The higher education institution allows students to gain international experience.				X
3.7. The higher education institution ensures adequate study conditions for foreign students.				X
3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.			X	
3.9. The higher education institution issues diplomas and Diploma Supplements in accordance with the relevant regulations.				X
3.10. The higher education institution is committed to the employability of graduates.			X	

<i>Quality grade by standard</i>				
<i>IV. Teaching and institutional capacities</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
4.1. The higher education institution ensures adequate teaching capacities.				X
4.2. Teacher recruitment, advancement and re-appointment is based on objective and transparent procedures which include the evaluation of excellence.			X	
4.3. The higher education institution provides support to teachers in their professional development.				X
4.4. The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific/artistic activity.				X
4.5. The library and library equipment, including the access to additional resources, ensure the availability of literature and other resources necessary for a high-quality study, research and teaching.			X	
4.6. The higher education institution rationally manages its financial resources.			X	

### *Quality grade by standard*

<i>V. Scientific/artistic activity</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.				<b>X</b>
5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.			<b>X</b>	
5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.			<b>X</b>	
5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.			<b>X</b>	
5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.				<b>X</b>

## 2. Site visit protocol

### Edukacija članova stručnog povjerenstva u virtualnom okruženju Training for the Expert Panel members

	Utorak, 24. svibnja 2022.	Tuesday, 24 May 2022.
<b>09:55 – 10:00</b>	Spajanje na poveznicu Zoom	Joining the Zoom meeting via link
<b>10:00 – 13:00</b>	<ul style="list-style-type: none"> <li>• Predstavljanje AZVO-a</li> <li>• Pregled sustava visokog obrazovanja u RH</li> <li>• Postupak reakreditacije</li> <li>• Standardi za vrednovanje kvalitete</li> <li>• Kako napisati Završno izvješće</li> <li>• Priprema Povjerenstva za posjet visokom učilištu (rasprava o Samoanalizi i popratnim dokumentima)</li> <li>• Rasprava o pripremljenim pitanjima</li> <li>• Imenovanje Predsjednika Povjerenstva</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation of ASHE</li> <li>• Overview of the higher education system in Croatia</li> <li>• Re-accreditation procedure</li> <li>• Standards for the evaluation of quality</li> <li>• How to write the Final report</li> <li>• Preparation of the Panel for the visit to HEI (discussion on the Self-evaluation report and supporting documents)</li> <li>• Discussion on pre-prepared questions</li> <li>• Appointment of Expert Panel Chair</li> </ul>

**Reakreditacija**  
**Odjela za biotehnologiju**  
**Sveučilišta u Rijeci**  
**Radmile Matejčić 2, 51000 Rijeka**

**Re-accreditation of the**  
**Department of Biotechnology**  
**University of Rijeka**  
**Radmile Matejčić 2, 51000 Rijeka**

**Preliminarni posjet Stručnog povjerenstva visokom učilištu**  
**Preliminary site-visit of Expert Panel members to the HEI**

	<b>Ponedjeljak, 6. lipnja 2022.</b>	<b>Monday, 6 June 2022</b>
<b>09:00 – 09:15</b>	Spajanje dijela članova Povjerenstva na poveznicu Zoom	Joining the part of the Expert Panel members to the Zoom meeting
<b>09:15 – 10:15</b>	Sastanak članova Stručnog povjerenstva s upravom Odjela (pročelnica, zamjenice pročelnice) i Upravom Sveučilišta (rektorica)	Meeting with the management of the Department (Head of Department, Deputies of Head) and Management of the University of Rijeka (rector)
<b>10:15 – 10:30</b>	<i>Pauza</i>	<i>Break</i>
<b>10:30 – 11:30</b>	Sastanak članova Stručnog povjerenstva s Povjerenstvom za unapređenje i osiguranje kvalitete te voditeljicom povjerenstva za etičnost	Meeting with the Assurance Quality Committee and with the Head of Ethic Committee
<b>11:30 – 12:45</b>	<b>Obilazak Odjela</b> (predavaonice, informatičke učionice, knjižnica, prostorije za studente,	<b>Tour of the Department</b> (classrooms, computer classrooms, library, student premises, students' office,

	studentska referada, nastavnički kabineti, laboratoriji) i <b>prisustvovanje nastavi</b>	teachers' offices, laboratories) <b>and attendance of the teaching classes</b>
<b>12:45 - 14:15</b>	<b>Analiza dokumenata</b>	<b>Document analysis</b>
<b>14:15 - ...</b>	<i>Ručak za članove Povjerenstva u organizaciji AZVO-a</i>	<i>Working lunch for the members of the Panel organized by ASHE</i>

**Prvi dan reakreditacije u virtualnom okruženju**  
**First day of re-accreditation in virtual form**

	Srijeda, 8. lipnja 2022.	Wednesday, 8 June 2022.
<b>11:15 - 11:45</b>	Sastanak s upravom visokog učilišta (pročelnica, zamjenici pročelnice)	Meeting with the management of the Department (Head of Department, Deputies of Head)
<b>11:45 - 12:00</b>	<i>Pauza</i>	<i>Break</i>
<b>12:00 - 13:00</b>	<ul style="list-style-type: none"> <li>• Sastanak članova Stručnog povjerenstava sa zamjenicom pročelnice za nastavu i kvalitetu</li> <li>• ERASMUS koordinatorom</li> <li>• ECTS koordinatorom</li> <li>• Koordinatorom za upise stud. programa</li> </ul>	<ul style="list-style-type: none"> <li>• Meeting of the Expert Panel and the Deputy of Head for Teaching and Quality</li> <li>• ERASMUS coordinator</li> <li>• ECTS coordinator</li> <li>• Coordinator for enrolment of study programmes</li> </ul>
<b>13:00 - 13:15</b>	<i>Pauza</i>	<i>Break</i>
<b>13:15 - 14:00</b>	Sastanak sa studentima svih studijskih programa	Meeting with students of all study programmes
<b>14:00 - 14:45</b>	<i>Pauza</i>	<i>Break</i>
<b>14:45 - 16:00</b>	Sastanak s nastavnicima u stalnom radnom odnosu koji su i nositelji znanstvenih projekata, osim onih na rukovodećim mjestima	Meeting with full-time employed teachers who are also heads of research projects, except those in managerial positions

<b>16:00 – 16:15</b>	<i>Pauza</i>	<i>Break</i>
<b>16:15 – 16:45</b>	Organizacija dodatnog sastanka o otvorenim pitanjima – prema potrebi	Organisation of an additional meeting on open questions – if needed

**Drugi dan reakreditacije u virtualnom okruženju**  
**Second day of re-accreditation in virtual form**

	Četvrtak, 9. lipnja 2022.	Thursday, 9 June 2022
<b>9:00 – 9:45</b>	Sastanak s asistentima i poslijedoktorantima	Meeting with teaching assistants and post-doctoral students
<b>9:45 – 10:00</b>	<i>Pauza</i>	<i>Break</i>
<b>10:00 – 10:45</b>	Sastanak članova Stručnog povjerenstva zamjenicom pročelnice za znanost	Meeting with the Deputy of Head for Research
<b>10:45 – 11:00</b>	<i>Pauza</i>	<i>Break</i>
<b>11:00 – 12:00</b>	Sastanak s vanjskim dionicima s kojima visoko učilište surađuje (predstavnici strukovnih i profesionalnih udruženja, poslovna zajednica, poslodavci, stručnjaci iz prakse, organizacije civilnog društva...) te <b>vanjskim suradnicima</b>	Meeting with external stakeholders (representatives of professional organisations, professional experts, non-governmental organisations) and <b>external lecturers</b>
<b>12:00 – 12:15</b>	<i>Pauza</i>	<i>Break</i>
<b>12:15 – 13:00</b>	Sastanak s alumnijima (bivši studenti koji nisu zaposlenici visokog učilišta)	Meeting with Alumni (former students who are not employed by the HEI)



**Treći dan reakreditacije u virtualnom okruženju**  
**Third day of re-accreditation in virtual form**

	<b>Petak, 10. lipnja 2022.</b>	<b>Friday, 10 June 2022</b>
<b>10:30 - 11:00</b>	Organizacija dodatnog sastanka o otvorenim pitanjima – prema potrebi	Organisation of an additional meeting on open questions – if needed
<b>11:00 - 12:00</b>	Interni sastanak članova Stručnog povjerenstva i priprema za završni sastanak	Internal meeting of the Expert Panel members – preparation for exit meeting
<b>12:00 - 12:15</b>	Završni sastanak s upravom Odjela	Exit meeting with the management of the Department (Head of Department, Deputies of Head)
<b>12:15 - 13:15</b>	<i>Pauza</i>	<i>Break</i>
<b>13:15 - 16:00</b>	Rad na Završnom izvješću te ocjenjivanje standarda	Drafting the Final Report and assessment of standards



## SUMMARY

The Department of Biotechnology at the University of Rijeka is a relatively young department with an impressive status and set of achievements already. It has a very modern infrastructure for both its research and teaching activities. Its management shows great enthusiasm, which can also be seen in the student population. This is especially evident from the successful efforts made for popularization of science. The students are recruited from the whole country and beyond, and are very good and motivated. When finishing the curriculum, they are rapidly employed and found to be effective co-workers. These indicators speak to the quality of the Department. Its research is also on a good level, with an increasing output and funding profile, ranking high among the University of Rijeka faculties, as well as nationally. Internationalization is regularly achieved and increasingly successful.

The Department has a healthy ambition to expand and increase the numbers of EU projects and foreign students. All of its ambitions require a proper cash flow, especially for the infrastructure. Even though steps were taken to increase available funds, a more systematic strategy and financial plan should be employed. In line with the growth ambition, there is also the need to increase administrative facilities, e.g. to facilitate patenting and improve grant writing and management of consortia projects. On the teaching side, the Panel was surprised to find no board of examiners, as is common at many universities to ensure proper and fair testing and grading. Furthermore, efforts may need to be enhanced to provide all faculty members with fair teaching and research load, and should also consider reducing the number of study programs, but provide more flexibility within a study program.

The Department is well embedded in the local scientific community of industry, research institutes and even hospitals, many of which have historical ties to the Department. This is a precious connection and through external teachings provides the students with important practical knowledge in classes and internships. The Department should make efforts to involve the external stakeholder more in the teaching and research activities, without losing its academic independence and its role in fundamental research.

Overall, the Expert Panel universally observed a vibrant department, which is not without issues, but which has created a strong community of students and faculty members as well as stakeholders. It is having an impact on the country, and can strengthen its position even more, especially internationally.