

Faculty of Medicine in Rijeka

**Strategy for the Development of Science
2016 – 2020**

Rijeka, July 2016

CONTENT

1. Scientific mission and vision of the Faculty	3
1.1. Scientific mission of the Faculty	
1.2. Scientific vision of the Faculty	
2. Position and scientific potential of the Faculty	4
2.1. SWOT analysis	
2.2. Scientific potential of the Faculty	
3. Strategic objectives of scientific development of the Faculty	6
3.1. Strategic objective: encourage and reward scientific excellence and innovative research	
3.2. Strategic objective: encourage clinical and preclinical groups that have research potential but have not fully achieved it	
3.3. Strategic objective: improve doctoral studies	
4. Expected outcomes of the implementation of strategic objectives	12
5. Success indicators of strategy implementation	13

1. Scientific mission and vision of the Faculty

The Faculty of Medicine in Rijeka was established in November 1955. In parallel with the development of its teaching programmes, it started developing its research activity, which resulted in the first defence of a doctoral thesis already in 1959. The rapid development of basic medical science has given a significant boost to scientific research and professional development of clinical medical sciences, and many reputable clinicians made their first scientific steps in pre-clinical laboratories. Several research groups have achieved significant scientific achievements.

1.1. Scientific mission of the Faculty

The scientific mission of the Faculty of Medicine is to use the results of competitive scientific research as the basis for acquisition of new and relevant skills, enhancing the education of students, future teachers, researchers and clinicians, and improving the medical practice, and thereby contribute to the development of the wider community. The scientific system of the University of Rijeka Faculty of Medicine is based on the principles of respect for scientific excellence and creativity, scientific integrity and ethics, freedom of scientific research, integration of scientific research, education and medical practice, collegiality and cooperation, and social responsibility.

1.2. Scientific vision of the Faculty

The Faculty of Medicine in Rijeka is defined as an investigative higher education institution integrated into the European Research Area. The University of Rijeka Faculty of Medicine will be the leading institution in the Republic of Croatia in the field of biomedical research, comparable with similar institutions in developed countries of the European community.

2. Position and scientific potential of the Faculty

2.1. SWOT analysis

Advantages

- Research groups that achieve a very high level of scientific activity and quality publications.
- Competitive international scientific projects of individual researchers and groups.
- In certain segments, good cooperation with scientists at kin institutions in the country and worldwide.
- Satisfactory basic scientific infrastructure (equipment, laboratories, vivarium, Centre for Proteomics)
- The possibility of using modern scientific equipment of the University of Rijeka.

Shortcomings

- The research activity does not have the status it deserves.
- Poorly developed system of promoting and rewarding scientific excellence.
- Poorly developed clinical and translational research.
- Insufficiently developed basic research, with the exception of several prominent groups.
- Insufficient cooperation within the institution because of uneven quality of research groups and vaguely defined common scientific interest.
- Underdeveloped institutional support mechanisms support for research, development of research careers and development of research groups.
- Inadequate administrative support to research.

Potential

- Creation of a faculty system of science based on achievements within developed areas and the existing positive experience.
- Encouraging the part of researchers who have not achieved their full scientific potential.

- Using infrastructure funds and participation in international scientific developments.
- Connecting with prominent researchers, former students of the Faculty of Medicine in Rijeka (alumni).
- Cooperation with other members of the University of Rijeka and using the scientific infrastructure at the University campus.
- Upgrading the model of rewarding and stimulating the best scientists.

Threats

- The geographical location and strong competition in the region.
- The high competitiveness of biomedical research in the world.
- Centralized, unstable and non-transparent manner of funding science with the possibility of reduction of funds allocated from the state budget.
- Part of researchers at the Faculty of Medicine lack the potential to implement competitive research.
- Clinicians do not have time or space specifically dedicated to research.
- Relativistic attitudes regarding the importance and necessity of competitive scientific research at the Faculty.
- Brain drain.

2.2. Scientific potential of the Faculty

The research areas that are currently at a high international level comprise immunology, virology, regulation of cell growth and tumour biology, and infectious diseases. To this can be included certain areas of gastroenterology, immunometabolism, human genetics, neuroscience, toxicology and cell biology, while research in other fundamental, and in particular clinical areas, is not at the desired level. Analysis of scientific production in the last seven years shows a general trend, with minor fluctuations, of gradual increase in the quality of scientific papers according to the relevant scientometric criteria. However, the most significant research is still limited to individual research clusters, predominantly in basic medical research. Namely, while individual research groups do achieve excellent scientific results, most researchers have still not reached that level, so the imbalance between the two groups and the unsatisfactory distribution of their scientific productivity is still too high. It is evident that some research groups have the potential which they have not yet fully exploited.

3. Strategic objectives of the Faculty

3.1. Strategic objective: encourage and reward scientific excellence and innovative research

Task 3.1.1. Establish several positions for research professors based on scientific independence, international levels of quality and innovation in research

Measure 3.1.1.a. Fulfil the formal requirements for the establishment of the position of research professors.

Entity in charge: Faculty Management. Deadline: 2017.

Indicator: amendments made to the relevant documents.

Measure 3.1.1.b. Define clear criteria based on international recognition and peer evaluation.

Entity in charge: Commission for the Implementation of Scientific Strategy. Deadline: 2018.

Indicator: number of positions of research professors.

Task 3.1.2. Value research work as one of the Faculty's key activities.

Measure 3.1.2.a. Establish an international evaluation of research activity every four years. Entity in charge: Commission for the Implementation of Scientific Strategy. Deadline: 2018.

Indicator: results of international evaluation.

Measure 3.1.2.b. Reduce the teaching workload of outstanding scientists with distinctive scientific achievements. Entity in charge: Faculty Management. Deadline: 2017.

Indicator: recognition of outstanding scientific activity in exchange for teaching obligations.

Measure 3.1.2.c. Value applications to competitive scientific projects that have undergone evaluation. Entity in charge: Faculty Management. Deadline: 2017.

Indicator: established system of incentives for an application that has successfully completed the first evaluation round.

Task 3.1.3. Develop priority areas and support the concept of translational research

Measure 3.1.3.a. Implementation and application of defined directions of development for which human resources have been previously ensured. Entity in charge: Commission for the Implementation of Scientific Strategy. Deadline: 2018.

Indicator: quality and number of scientific papers or projects in the priority areas and translational research, trend in the five-year period

Measure 3.1.3.b. Support to preparation of the TransMedRi project and to the planning of units/content. Entity in charge: Faculty Management and the Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Indicator: completed TransMedRi project.

Measure 3.1.3.c. Ensuring human resources for the realization of translational research. Entity in charge: Faculty Management and the Commission for the Implementation of Scientific Strategy. Deadline: 2019.

Indicator: targeted education of personnel in scientific research centres with expertise in translational research.

Measure 3.1.3.d. Planning the procurement of equipment for the TransMedRi Centre. Entity in charge: Faculty Management and the Commission for the Implementation of Scientific Strategy. Deadline: 2018.

Indicator: approved procurement plan, including the technical specifications made for scientific equipment.

Task 3.1.4. Ensure financial and administrative support to top quality scientific research and projects

Measure 3.1.4.a. Secure part of the funds for research from own and other sources. Entity in charge: Faculty Management. Deadline: 2018.

Indicator: allocation of funds for the development of science in the Faculty budget (percentage of the budget, trend in the absolute amount of funds).

Measure 3.1.4.b. Establish a Researchers Support Fund. Entity in charge: Faculty Management. Deadline: 2017.

Indicator: number of grants approved to Faculty researchers and the total amount of funds.

Measure 3.1.4.c. Ensure administrative support within departments. Entity in charge: heads of institutes and departments. Deadline: 2017.

Indicator: creation of own organizational units for administrative support to researchers.

Measure 3.1.4.d. Ensure administrative support for the application of domestic and international projects of the Faculty. Entity in charge: Faculty Management. Deadline: 2016.

Indicator: number and success of project applications created with the administrative support of the Faculty, in particular of joint applications of clinical and core medical or non-medical research groups.

Measure 3.1.4.e. Adapt the work of the Faculty's Service for Scientific Research to the needs of researchers. Entity in charge: Faculty Management. Deadline: 2016.

Indicator 1: new international scientific cooperation of individual research groups established owing to the administrative support of the Service,

Indicator 2: applications to competitive international and domestic projects with the administrative support of the Service.

Task 3.1.5. Increase the visibility of the best scientific publications and scientific projects of the Faculty

Measure 3.1.5.a. Organise regular scientific forums in which significant publications and research projects of the Faculty will be presented. Entity in charge: Vice Dean for Scientific Research. Deadline: 2017.

Indicator: reports from scientific forums available to teachers.

Measure 3.1.5.b. Establish a system of structured reporting on the scientific achievements of Faculty groups and individuals. Entity in charge: Vice Dean for Scientific Research. Deadline: 2016.
Indicator: research papers and projects with significant contribution of the Faculty staff presented and made available to the teachers.

3.2. Strategic objective: encourage clinical and preclinical groups that have research potential but have not fully achieved it

Task 3.2.1. Initiate new research in areas that are needed by the Faculty

Measure 3.2.1.a. Bring researchers who have experience in such research and create research groups that can continue research in new areas. Entity in charge: Faculty Management, heads of institutes and departments, Commission for the Implementation of Scientific Strategy. Deadline: 2018.

Indicator: achieved targeted transfers of experienced researchers from other institutions.

Measure 3.2.1.b. In cooperation with the heads of departments, develop a plan for the development of insufficiently developed research areas Entity in charge: Faculty Management, heads of institutes and departments. Deadline: 2017.

Indicator: development plan prepared and approved.

Task 3.2.2. Create preconditions for development of clinical laboratories in collaboration with the Clinical Hospital Centre in Rijeka

Measure 3.2.2.a. Initiate work meetings to assess the existing capacities and developing a plan for the period 2016-2020. Entity in charge: Faculty Management, Management of the Clinical Hospital Centre, heads of clinics, institutes and departments. Deadline: 2016.

Indicator: established active working groups of the two institutions.

Measure 3.2.2.b. Encourage the development of clinical research careers in cooperation with the Clinical Hospital Centre. Entity in charge: Faculty Management, heads of departments and clinics. Deadline: 2017.

Indicator: five-year development plan completed, young clinical scientists sent to training abroad in accordance with it.

Task 3.2.3. Encourage the involvement of young clinical researchers in preclinical research laboratories in which cutting-edge research is carried out

Measure 3.2.3.a. Organise working hours to enable preclinical scientific development of young clinicians. Entity in charge: Faculty Management, Management of the Clinical Hospital Centre in Rijeka, heads of institutes, clinics and departments. Deadline: 2018.

Indicator: plan of research activities of young clinical researchers completed and made available.

Measure 3.2.3.b. Systematically monitor the research progress of young clinicians. Entity in charge: Faculty Management, heads of clinics, institutes and departments. Deadline: 2018.

Indicator: progress reports by heads of institutes/departments and clinics every six months.

Task 3.2.4. Provide the most successful young researchers with conditions for achieving their scientific independence.

Measure 3.2.4.a. Define the criteria and mechanisms for scientific independence. Entity in charge: Faculty Management and the Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Measure 3.2.4.b. Ensure infrastructure for scientific independence. Entity in charge: Faculty Management. Deadline: 2019.

Indicator: scientific independence of young researchers on a three-year basis.

3.3. Strategic objective: improve doctoral studies

Task 3.3.1. Align the enrolment quotas in doctoral studies with the actual research capacity of the institution.

Measure 3.3.1.a. Implement a system of continuous evaluation of mentors with clearly defined criteria. Entity in charge: Faculty Management and the Commission for the Implementation of the Strategy. Deadline: 2018.

Indicator: evaluation of the mentoring capacity at the registration of general research topics.

Measure 3.3.1.b. Establish a system of evaluation of general topics of research and selection of doctoral candidates according to the topic/mentors. Entity in charge: Faculty Management and the Commission for Scientific Research. Deadline: 2017.

Indicator: students enrolled in doctoral studies according to evaluated topics/mentors.

Task 3.3.2. Improve the instruction in doctoral studies

Measure 3.3.2.a. Reduce classical forms of instruction and replace part of it with Journal Clubs.

Entity in charge: Vice Deans for Scientific Research and Postgraduate Studies, Coordinators of Doctoral Studies. Deadline: 2017.

Indicator 1: amendments made to implementing curricula,

Indicator 2: surveys conducted among doctoral students about the courses.

Measure 3.3.2.b. Adjust classes to quality research at the Faculty and the Clinical Hospital Centre in Rijeka. Entity in charge: Faculty Management, Vice Dean for Scientific Research, Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Indicator: content topics adjusted in implementing curricula.

Measure 3.3.2.c. Include renowned researchers from abroad in delivering classes. Entity in charge: Vice Dean for Scientific Research, Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Indicator: guest lectures by prominent researchers at the Faculty recognized as part of the training in doctoral studies.

Measure 3.3.2.d. Design a doctoral study for the training of clinical and translational researchers that is aligned with similar doctoral studies abroad. Entity in charge: Vice Dean for Scientific Research, Commission for the Implementation of Scientific Strategy. Deadline: 2018.

Indicator: established connections at the institutional level with foreign institutions delivering doctoral studies.

Measure 3.3.2.e. Include scientific content in undergraduate and graduate study programmes and include part of the best students in research. Entity in charge: Vice Deans for Academic Affairs and Scientific Research, Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Indicator: necessary changes made to the implementing curricula of the integrated studies of medicine and dental medicine.

Task 3.3.3. Increase mentoring capacity

Measure 3.3.3.a. Introduce mandatory training of mentors in doctoral studies. Entity in charge: Faculty Management, Vice Dean for Scientific Research, Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Indicator: scientific advancement conditioned on mentor training.

Measure 3.3.3.b. Value mentorship. Entity in charge: Faculty Management, Commission for the Implementation of Scientific Strategy. Deadline: 2017.

Indicator 1: recognition of mentoring work on doctoral students' training within the total teaching and research workload of the research and teaching staff,

Indicator 2: at least two thirds of the Faculty's teachers are active mentors active in at least one doctoral thesis.

Task 3.3.4. Increase the quality of studying and of doctoral theses

Measure 3.3.4.a. Evaluate the general topics of research proposed to doctoral students at enrolment. Entity in charge: Faculty Management, Vice Dean for Scientific Research, Commission for the Implementation of Scientific Strategy, Commission f Scientific Research. Deadline: 2017.

Indicator 1: established system and mechanism for evaluation,

Indicator 2: the average number of publications arising from the topics of doctoral theses,

Indicator 3: the average ranking of the journals in which publication resulting from the topics of doctoral theses have been published.

Measure 3.3.4.b. Establish a system for monitoring the progress of doctoral students during their study. Entity in charge: Faculty Management, Vice Dean for Scientific Research, Commission for Scientific Research. Deadline: 2017.

Indicator 1: regular conferences with presentations of the progress made in the doctoral research within the given time frames,

Indicator 2: rate of successful completion of the doctoral study by defence of the doctoral thesis.

4. Expected outcomes of the implementation of strategic objectives

The implementation of the strategic objectives is expected to result in a significant improvement in terms of increased visibility and competitiveness of the Faculty as a scientific institution. The first strategic objective is directed towards the Faculty's best scientists and groups who can achieve greater progress than others. By establishing the position of research professors and the system evaluation of research work, hope to send a clear message to teachers and associates that we see science as one of the key activities by which the competitiveness of the Faculty can be measures at the international level. The establishment of the TransMedRi Centre will boost translational research and motivate research projects at clinics that will use part of the vast preclinical scientific potential of the best research groups. TransMedRi can be one of the most important instruments for achieving the strategic objectives regarding convergence between basic and clinical sciences at the Faculty. Scientific work of the Faculty will receive part of the necessary funds from our own budget and the administrative support that will be at the service of the development of science. We expect an increase in the number and quality of applications to international and domestic competitive projects. Science will be significantly more visible in the regular operations of the Faculty, which in turn should result in increased interest of young physicians to opt for a scientific research career.

Incentive measures aimed at the preclinical and clinical groups that have not reached their research potential, and encouragement for their scientific activities provided by strengthening the established research groups are expected to result in a synergy and momentum in the development of science that will bring us closer to similar institutions in developed countries of the European community, such as Austria or Italy. We expect a higher participation of new researchers and groups from various Faculty's institutes and departments, their interconnections and linking with the existing successful research groups, in particular through the TransMedRi project. We wish to achieve better institutional linking of the Faculty and the Clinical Hospital Centre as its main teaching base in the development of scientific careers of clinical researchers, create personnel and organizational prerequisites for the development of clinical research laboratories, and significantly increase the overall scientific activity at the clinics.

We expect a continuous increase in the number of scientific papers based on our own research, especially in clinical medicine, with a greater involvement of students and specializing physicians in scientific research work. At the same time, we expect an increase in the quality of scientific papers, which is in line with our third strategic objective, which refers to raising the scientific level

of doctoral theses. The planned fundamental reform of doctoral studies is intended to improve the scientific quality of doctoral theses and publications of research papers in better ranking scientific journals. The strategy also aims to increase the mentoring capacity, which we see as an important limiting factor for the quality of doctoral theses.

Through a consistent implementation of the set strategic goals, which will be monitored by a special commission, we expect to raise the overall research capacity of the institution.

5. Success indicators of strategy implementation

- 5.1. A minimum 50% increase in the number of investigations led by the employees of the Faculty, with continuous annual growth.
- 5.2. A minimum of 15 active clinical studies conducted by the employees of the Faculty.
- 5.3. A minimum 30% increase in the revenue from international and domestic competitive projects.
- 5.4. Enrolment in doctoral studies exclusively conditioned on a validated topic, research plan and mentor.
- 5.5. A minimum 30% increase in the institutional investment in science.
- 5.6. Active Research Support Fund.