

**THE VETERINARY FACULTY OF THE UNIVERSITY OF ZAGREB**

**ANALYSIS OF THE IMPLEMENTATION  
OF THE STRATEGIC PROGRAMME OF SCIENTIFIC RESEARCH AT THE VETERINARY  
FACULTY OF THE UNIVERSITY OF ZAGREB, 2016– 2022.**

**Head of Institution: Prof. Nenad Turk, PhD**

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## **1. BASIC PRINCIPLES**

### **Extract from the Development Strategy of the Veterinary Faculty of the University of Zagreb for 2018-2022**

The fundamental activities include encouraging the creation of a new scientific research profile by increasing the quality of scientific research activities, strengthening and investing in research structure, increasing the number of research projects, creating an active and fertile environment for increasing research activities, and provision of a financial and organizational framework for ever increasing research productivity at the Faculty. They also include encouraging the development of scientific research activities in all divisions, departments and clinics, and creating an environment which will encourage individuals and groups of scientists to undertake research and cooperation with a variety of entities, with the application of new knowledge about the sustainable development of society as a whole.

The strategic goal of advancing scientific activities includes the following activities:

- 1.Improving the quality of scientific research activities
- 2.Development of human resources and transfer of knowledge
- 3.Increasing interdisciplinary scientific research activities
- 4.Improving cooperation with industry
- 5.Strengthening national and international recognition

### **Extract from the Strategic Programme of Scientific Research at the Veterinary Faculty of the University of Zagreb, 2016 – 2022.**

#### **THE MISSION OF THE STRATEGIC SCIENTIFIC RESEARCH PROGRAMME AT THE VFUZ**

The mission of this Strategic Programme is to build the Faculty as a strong scientific research institution, with the aim of achieving recognition and excellence in the national and international realm, in the area of the biomedical sciences, the field of veterinary medicine, with its related branches. This will be achieved by raising the quality of scientific research work, increasing the number of scientific articles published in recognized journals, and innovations and patents, cooperation with related higher education and scientific institutions on a national and international level, conducting national and international scientific research projects, and the development and training of human resources.

## **THE VISION OF THE STRATEGIC SCIENTIFIC RESEARCH PROGRAMME AT THE VFUZ**

The vision of the Strategic Programme of scientific research at the Veterinary Faculty of the University of Zagreb, is to position itself as a successful and recognisable scientific research institution, acting in the areas of biomedicine, veterinary medicine and related sciences. The Faculty will promote quality research work through scientific projects in the field of the basic and applied sciences, and interdisciplinary collaborative research and transfer of knowledge, thereby using all its comparative advantages in order to create or improve existing cooperation with scientific, public and economic entities on a national and international level. The Faculty wishes to develop as a scientific research institution whose research and teaching activities will be aligned with all levels of strategic planning.

## **THE STRATEGIC GOALS OF THE FACULTY'S SCIENTIFIC RESEARCH PROGRAMME**

In the long-term the Faculty wants and intends to strengthen its scientific research status in the national and international setting, which is reflected in the long-term striving for quality and lends added value to the development of knowledge and technology, changing the way in which all stakeholders in the system of scientific research perceive the VFUV. The Faculty emphasises the creation of a new scientific research profile by increasing the quality of its scientific research activities. Quality scientific research work will be ensured by strengthening and investing in research structure, increasing the number of research projects, creating an active and fertile environment for increasing research activities, and provision of a financial and organizational framework for ever-increasing research productivity at the Faculty. Further, the Strategic Programme will ensure the development of scientific research activities in all divisions, departments and clinics, and endeavour to create an environment which will encourage individuals and groups of scientists to undertake research and cooperation with a variety of entities, with the application of new knowledge about sustainable development of society as a whole.

In the same way, the aim of the Faculty is to be nationally and internationally competitive in all fields of basic and applied scientific research. In order to achieve the planned goal in the current situation, which is marked by a recession in scientific research and insufficient investment in research infrastructure at the Faculty, radical changes are needed and quality implementation of the planned activities so that the long planned Strategic Programme of Scientific Research can begin to be realized.

Strategic planning includes an analysis of the current situation, a realistic assessment of trends in the future, and recognition of and planning the most important principles for research and development, that is, ways of realizing the planned goals for the sake of the most effective action. The working group for drawing up the Strategic Programme of Scientific Research defined five basic goals in this strategic document, on the basis of which the guidelines for action were adopted. The goals in the Strategic

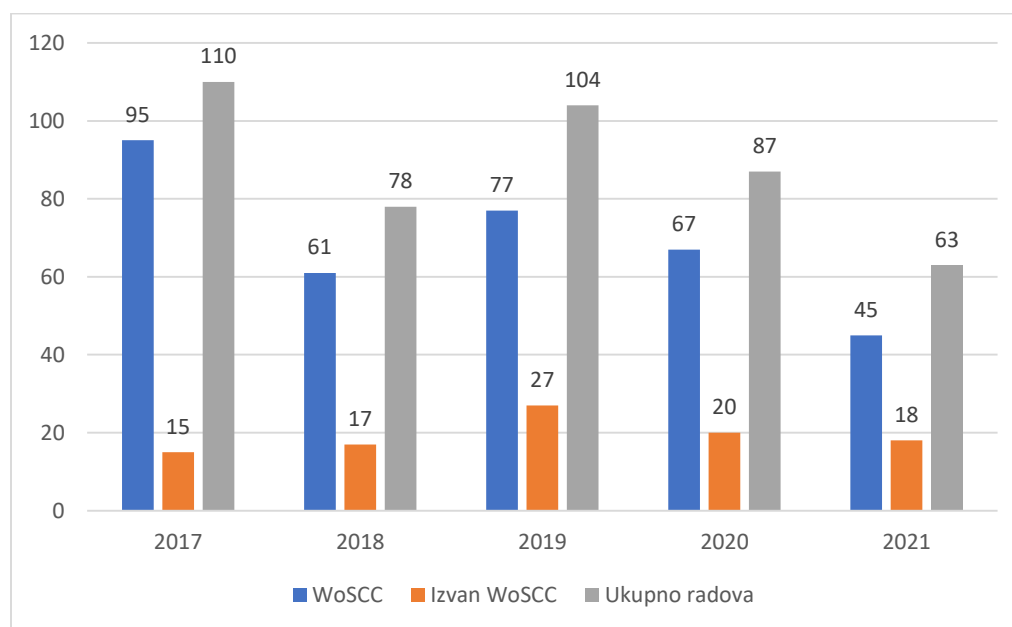
Programmes were planned with the participation of all the divisions, departments and clinics, because growth and development can only be realized through the combined participation of all the organizational units of the Faculty.

The basis for creating specific strategic goals for scientific research was a SWOT analysis, which showed the strengths and opportunities, but more importantly also the threats and weaknesses of the Faculty. In line with the Faculty's basic strategic document - the Development Strategy of the Veterinary Faculty, 2012 - 2017, the mission and long-term vision for scientific activities, and on the basis of the SWOT analysis undertaken, the basic goals of the Strategic Programme were set, divided into five units, within which specific goals were defined for the period from 2016 to 2022.

## 2. ANALYSIS OF IMPLEMENTATION ACCORDING TO GOALS

**Goal 1. Improvement of the quality of scientific research activities, which includes: analysis of scientific research activities, establishing the scientific research profiles and priorities of the Faculty, establishing a system for collecting information, increasing the level of organization of scientific research activities, increasing the number and quality of scientific articles, increasing the number and quality of scientific research projects.**

In the period covered by the Strategic Programme of Scientific Research at the Veterinary Faculty of the University of Zagreb, 2016-2022, the following indicators of scientific activity were achieved: During the five-year period, 441 articles were published, that is, an average of 88.2 a year. Of this number, 345 were published in journals listed in the Web of Science Core Collection (WoSCC), that is, on average 69 articles were published in that database a year.

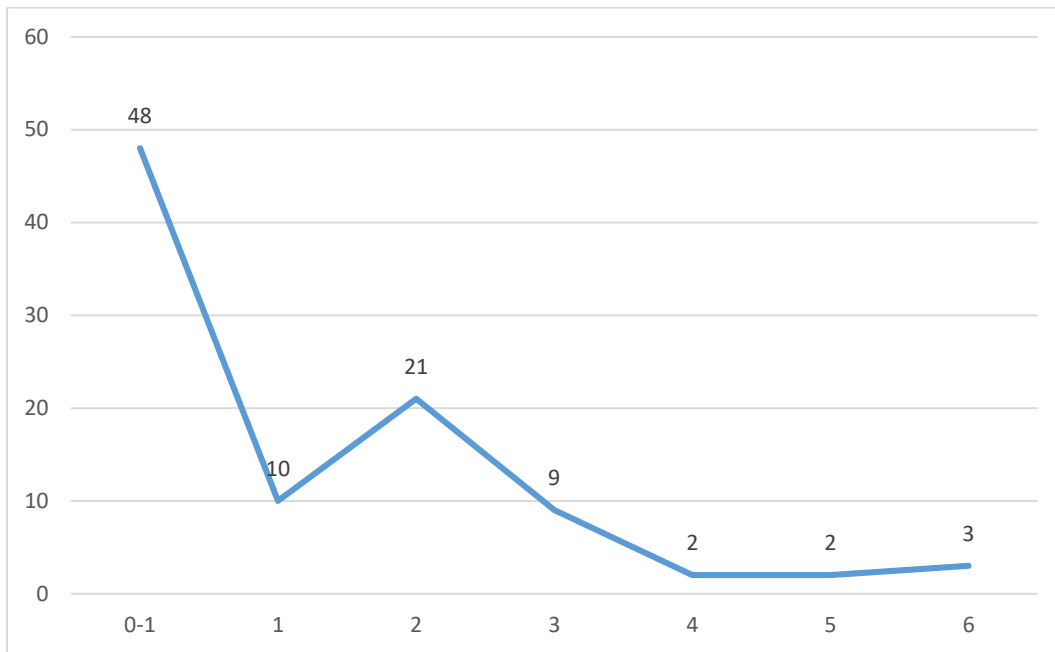


WoSCC, Other, Total Articles

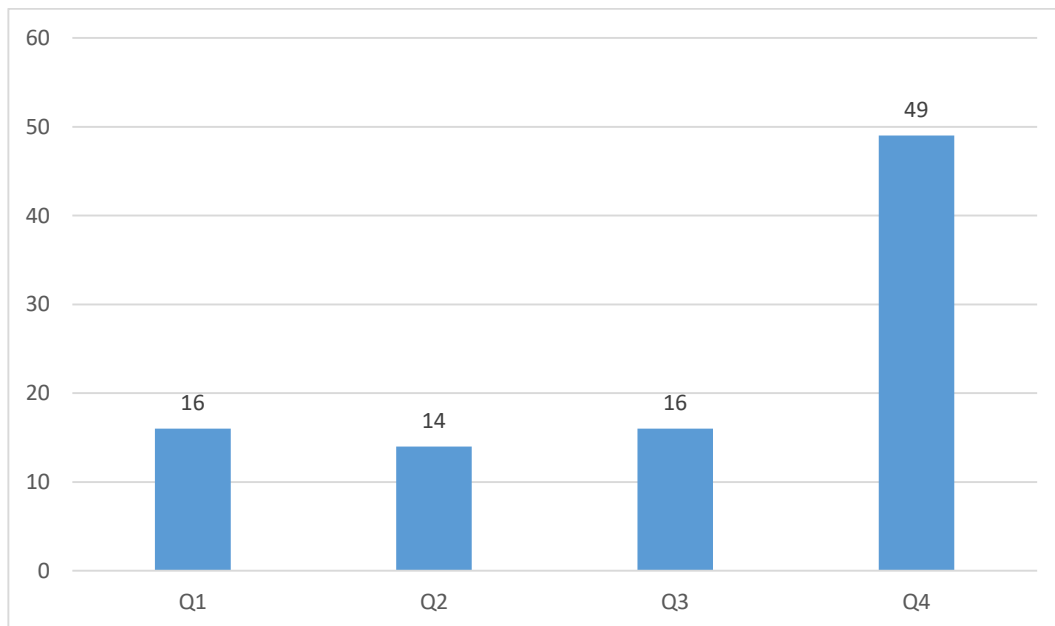
**Graph 1.** The number of articles published per calendar year in journals indexed in the WoSCC base, in other databases (not including journals listed in the WoSCC) and total

A particular aspect of publishing activities is the publication of articles in journals with a higher impact factor. In view of the fact that with the end of project financing by the Ministry of Science, Education and Sport there was a real and justified fear for the scientific recognition of journals in which Faculty staff still publish their articles, this part of the analysis is extremely important for a further understanding of scientific activities. There is a presentation below of the number of articles published according to the

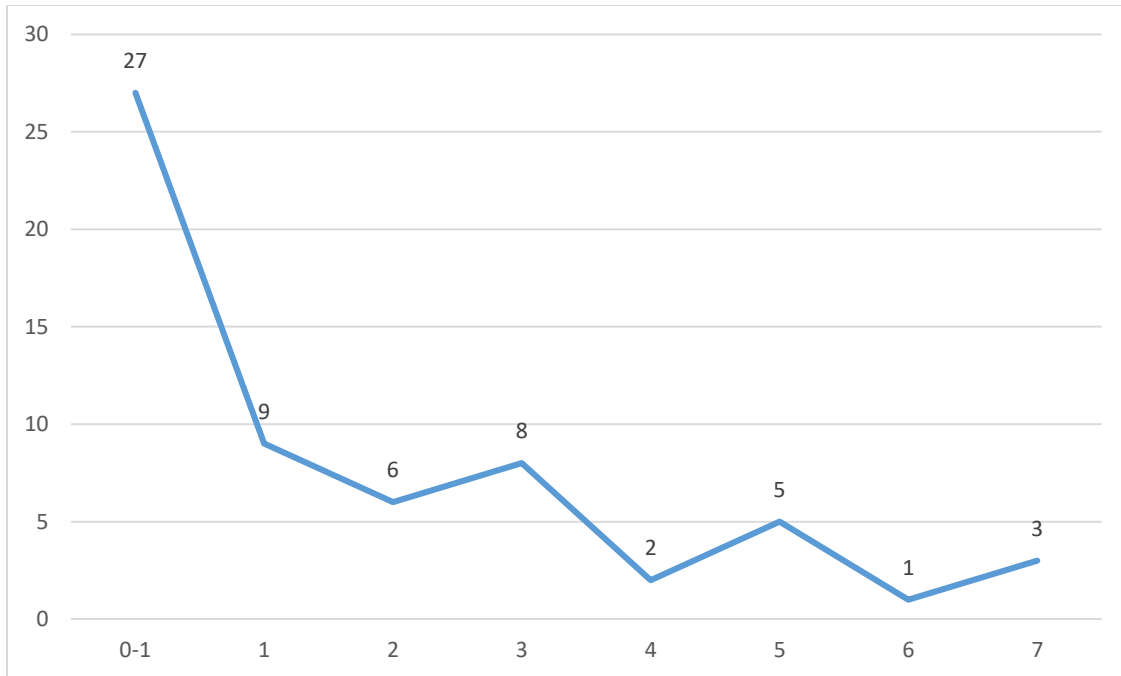
journals' impact factor, including the following impact factors 0-1, 1 (1-2), 2 (2-3), 3 (3-4), 4 (4-5), 5 (5-6) and 6 (6-7). The analysis also includes categorization of articles according to the journal quartile.



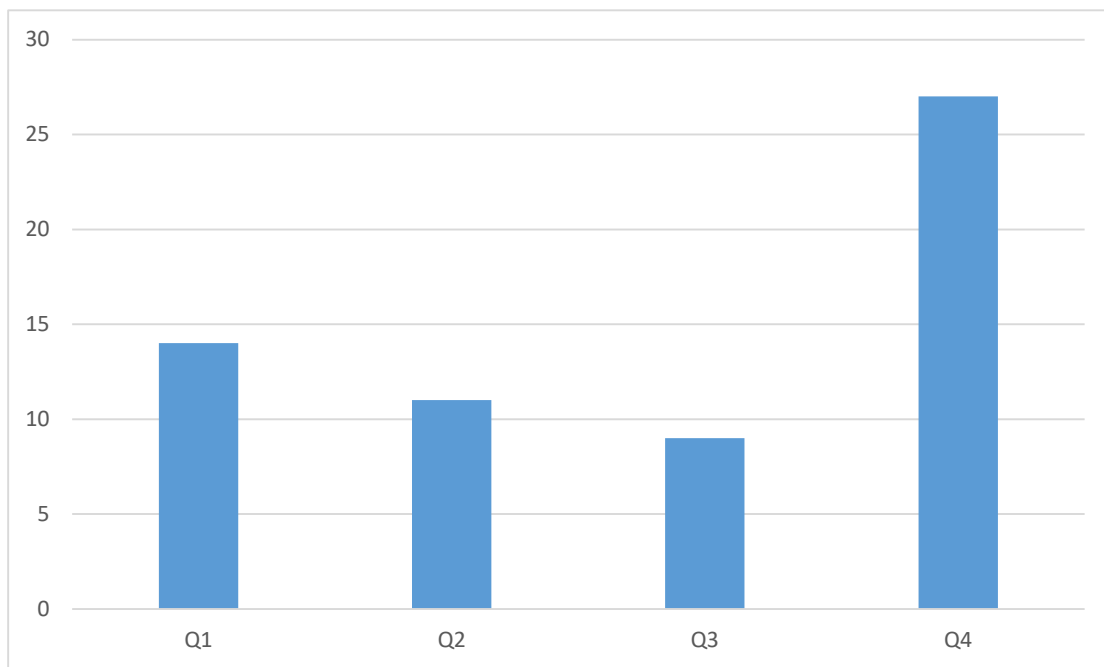
**Graph 2.** The number of articles published in 2017 according to the journals' impact factor



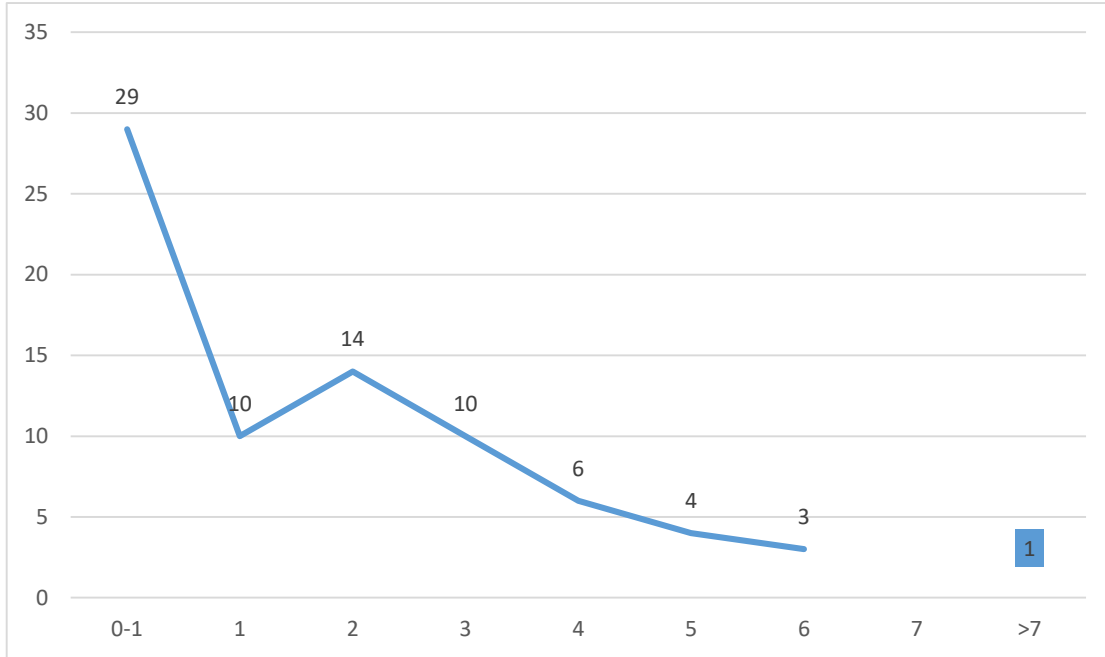
**Graph 3.** The number of articles published in 2017 according to journal quartile



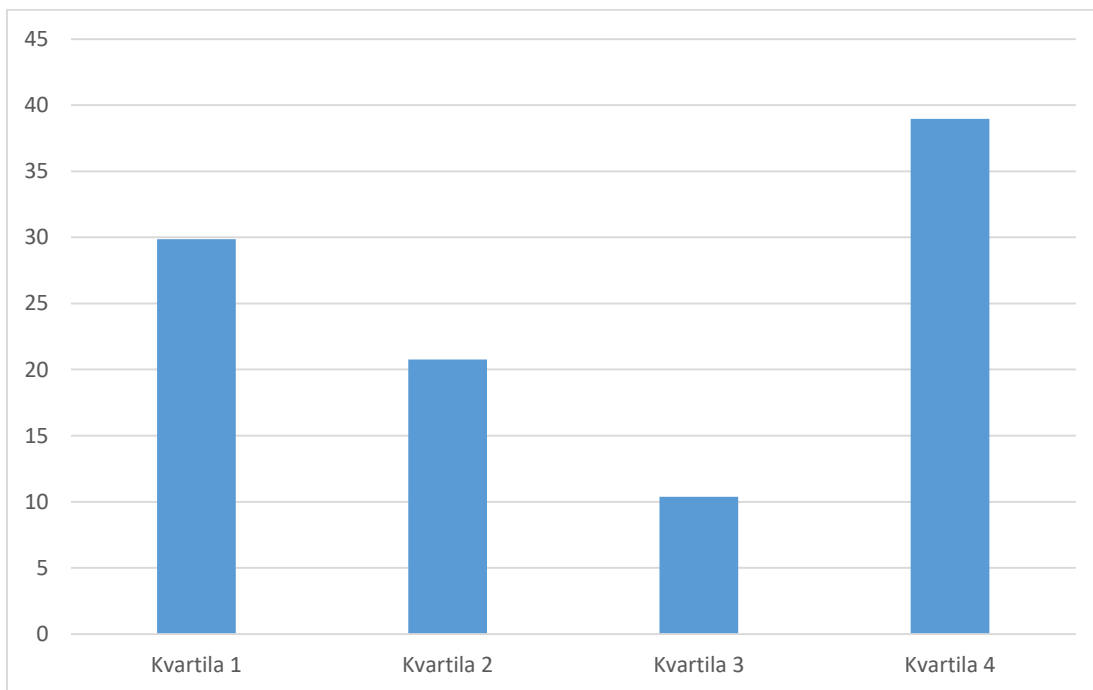
**Graph 4.** The number of articles published in 2018 according to impact factor



**Graph 5.** The number of articles published in 2018 according to journal quartile

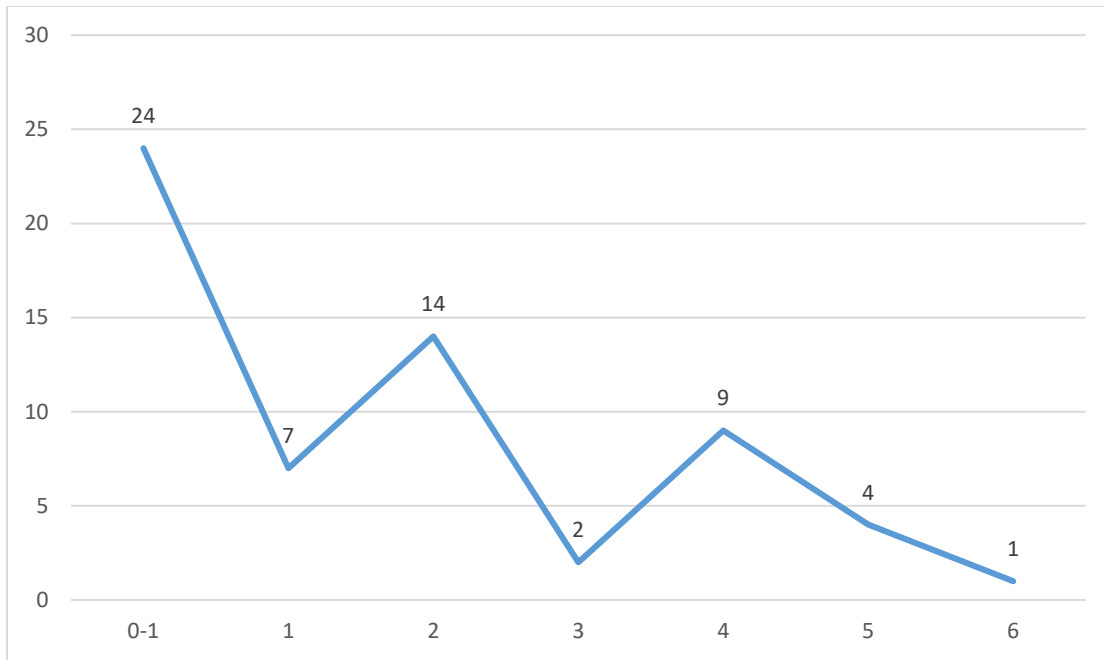


**Graph 6.** The number of articles published in 2019 according to impact factor. A particularly outstanding article in category >7 is the article published in the journal Cell with an impact factor of 41.58.

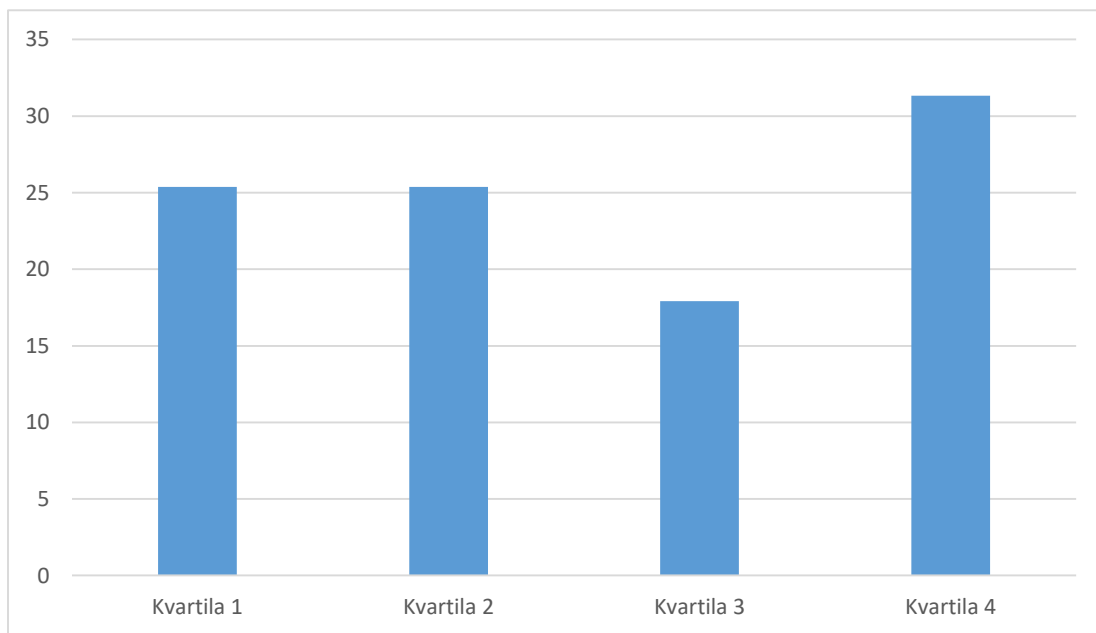


**Graph 7.** The number of articles published in 2019 according to journal quartile

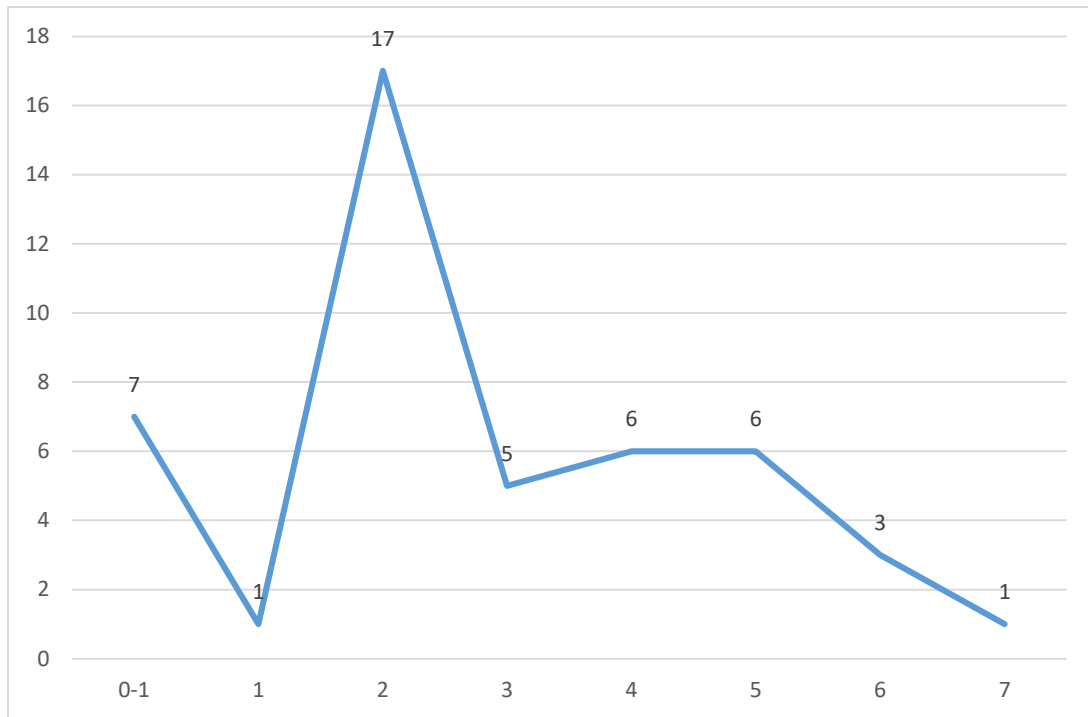




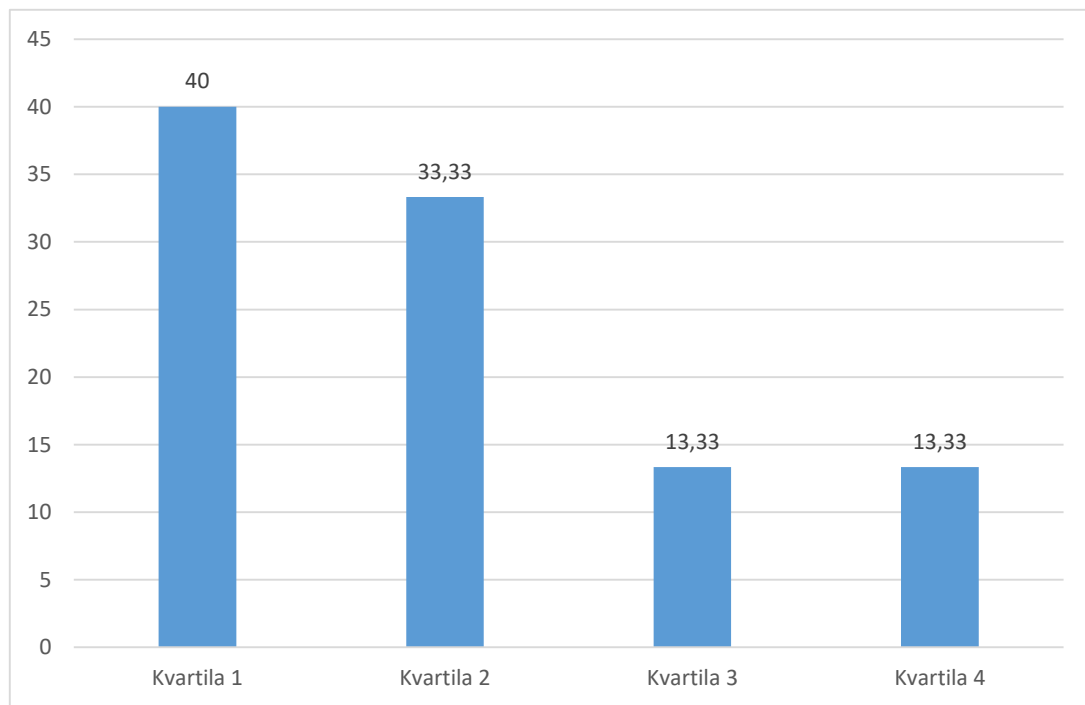
**Graph 8.** The number of articles published in 2020 according to impact factor



**Graph 9.** The number of articles published in 2020 according to journal quartile

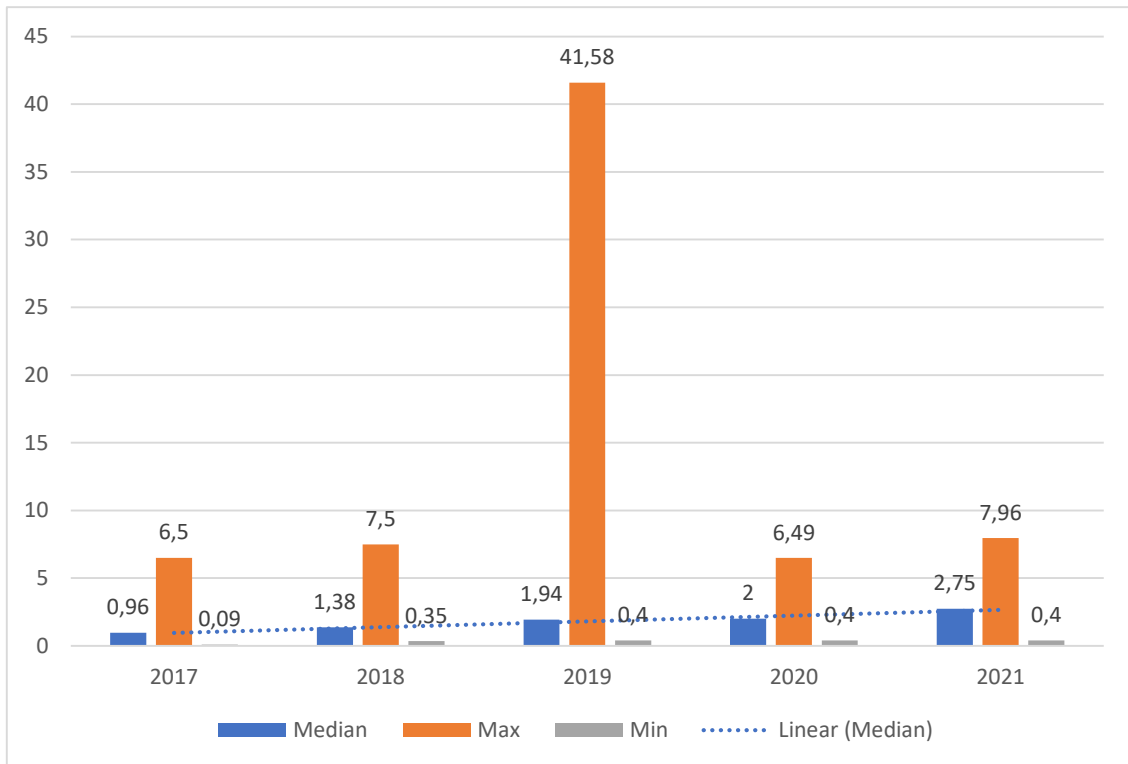


**Graph 10.** The number of articles published in 2021 according to impact factor



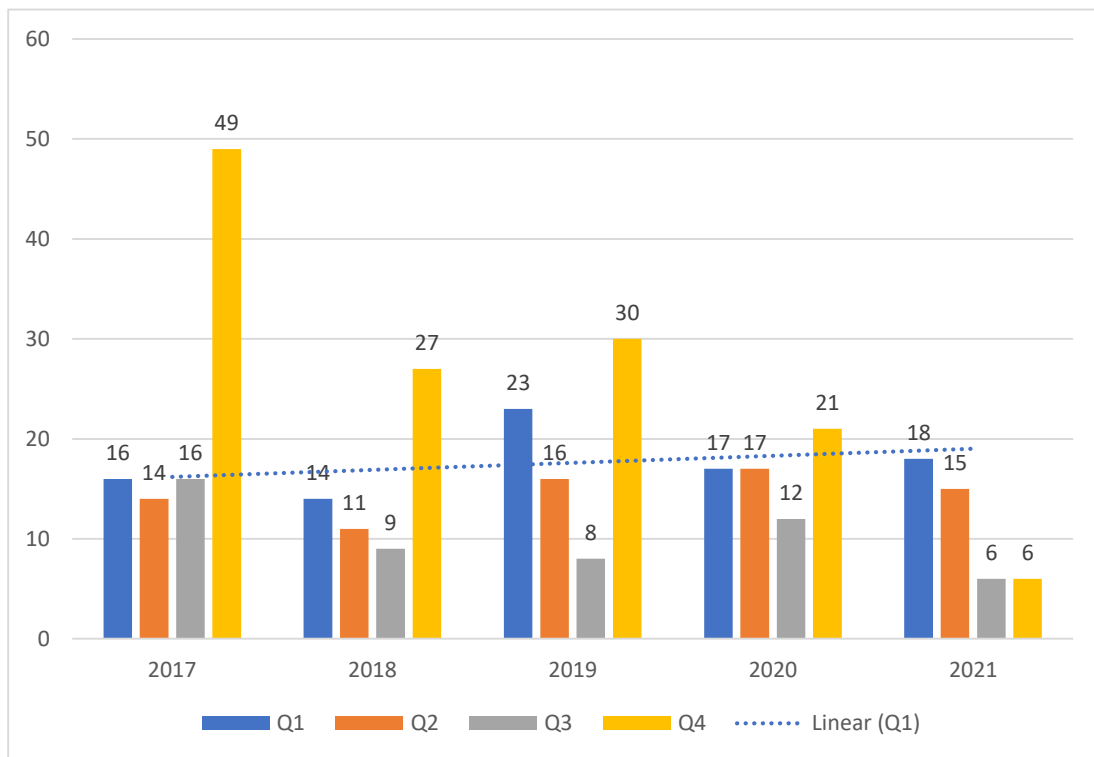
**Graph 11.** The number of articles published in 2021 according to journal quartile

If we compare the data by descriptive value and collectively by year, the following trend is seen:



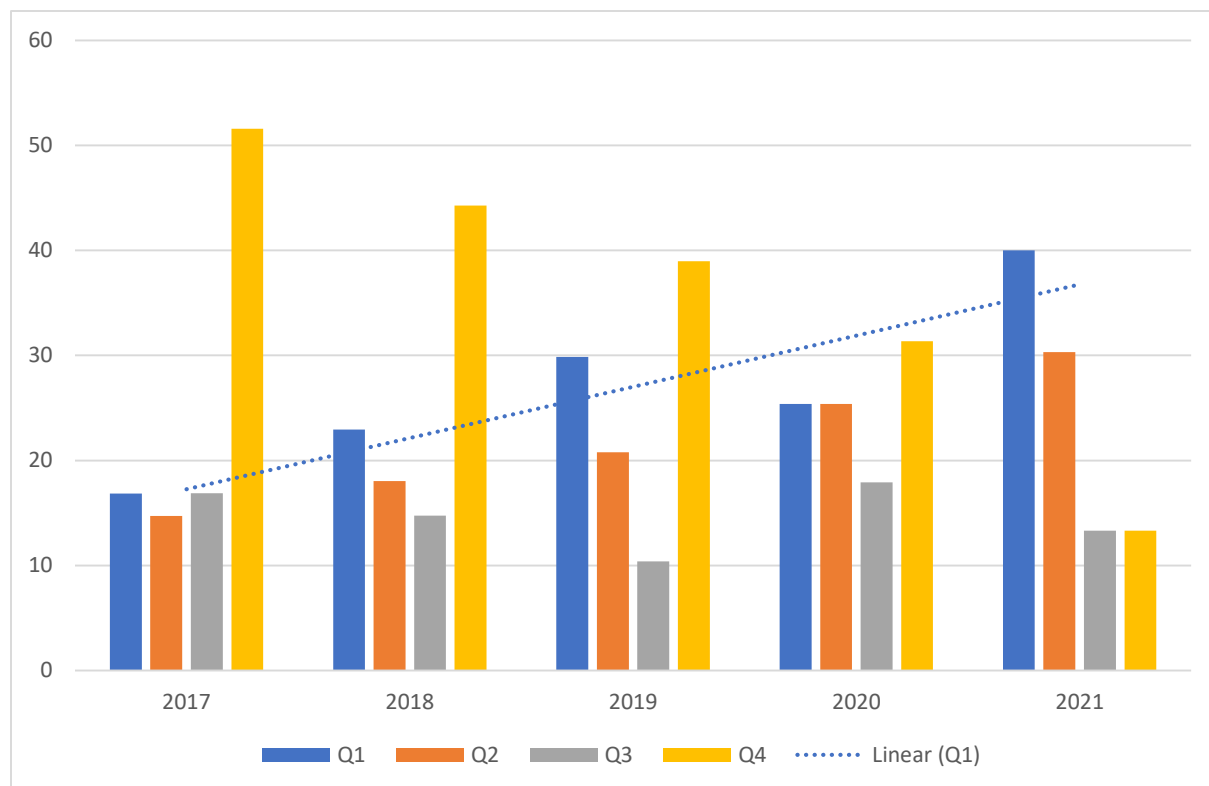
**Graph 12.** The impact factor of journals in which articles were published by Faculty staff by year. The mean values are shown, as well as the highest and lowest impact factors. The trend line shows the movements of the median values.

The mean impact factor of journals in the field of veterinary medicine was approximately 1 for many years. From the five-year period shown it is clear that despite the ending of financing of scientific research projects by the MSES, and the occasionally unfavourable economic climate, as well as the effect of the COVID-19 pandemic, there was a rise in the median from 0.96 in 2017 to 2.75 in 2021. With the exception of a scientific article published in the journal *Cell* (IF = 41.58) in 2019, as a rule the highest impact factor is about 7. There is also a visibly larger proportion of articles published in journals with an impact factor between 2 and 6, whilst the number of articles in journals with an impact factor less than 1 is mainly stable and accounts for up to 30 articles a year.



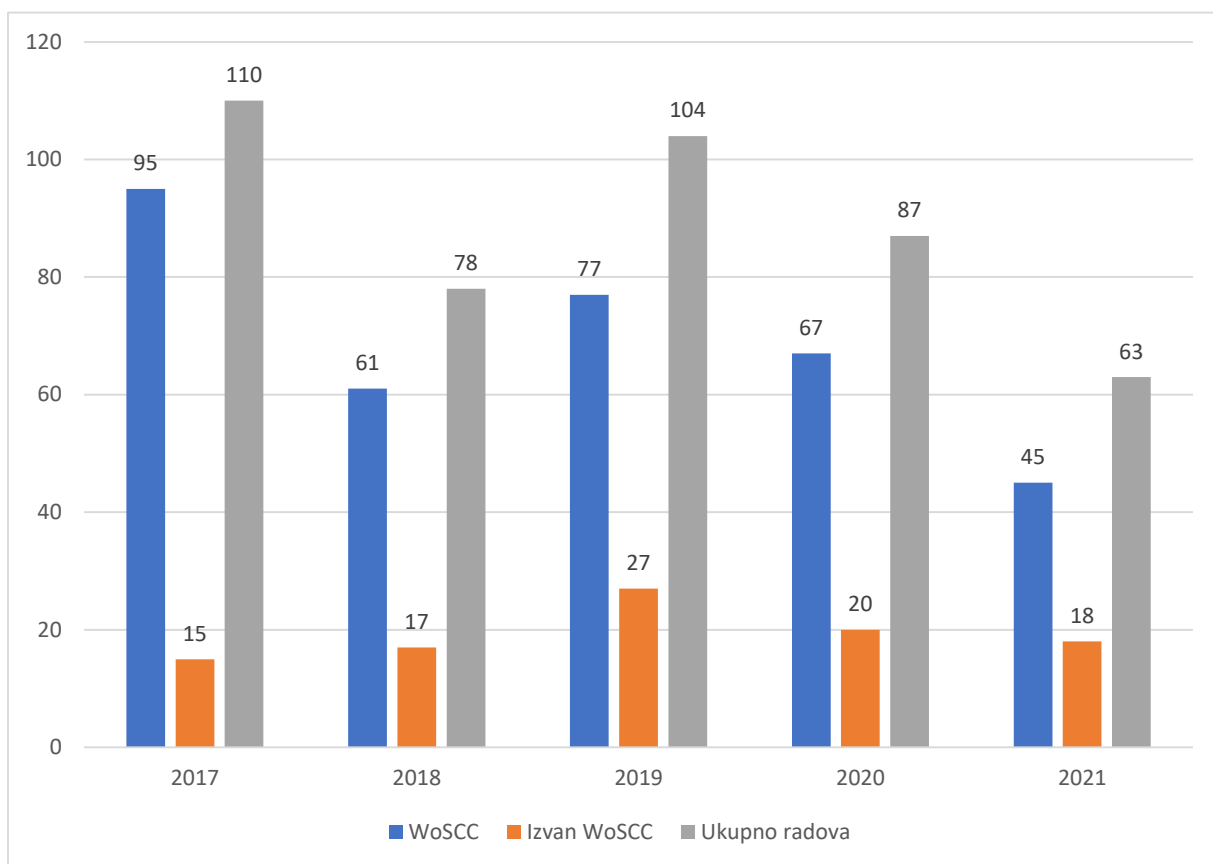
**Graph 13.** Articles by year of publication and the journal quartile. The trend line relates to articles in quartile 1 journals.

As expected, the largest number of journals were published in journals ranked in the 4th quartile. A good many of these articles are articles published in the journal *Veterinarski arhiv*. The remaining quartiles are equally represented, and the trend line indicates an increased number of articles published in quartile 1 journals.



**Graph 14.** The number of articles in journals per quartile in percentages according to the number of articles published in journals indexed in the WoSCC base, by year. The trend line shows the percentage of quartile 1 journals.

The growth in the percentage of articles published in quartile 1 journals is even more obvious if a comparison is made according to the percentage share in relation to the total number of articles published in the year in question.



**Graph 15.** The number of published articles by year in total, according to journals indexed in the WoSCC base, in journals in other databases (not including those in the WoSCC base)

The graph shows that the number of articles published each year ranged from 70 to 110. The fall in the number of articles published in 2021 can be ascribed to the conditions of work during the pandemic, but also the somewhat slower up-dating of the WoSCC base.

By comparison with the Self-analysis Report of the Veterinary Faculty of the University of Zagreb (class: 640-01/15-08/1, reg. no: 251-61-01/139-15-1) for the past five-year period, in chapter 5, Scientific and Professional Work, it is said that the average impact factor of journals in which Faculty staff publish articles is 0.9. In that period the median impact factor was 1.8 on average. More precisely, the median impact factor recorded growth in each year of the period in question from 0.9 to 2.75. Further, the Self-analysis mentions that growth of 43% was recorded in the number of articles published in quartile 1 and 2 journals. In this period, seen in percentages according to the number of articles published, the percentage of articles in quartile 1

alone rose from c. 17% in 2017 to 40% in 2021. At the same time, the number of articles in quartile 4 journals fell from 52% to 13%. Since the publication of articles in the journal Veterinarski arhiv (IF = 0.4; Q4) is a requirement for scientific and teaching promotion, it is expected that a certain larger percentage of articles will continue to be published in quartile 4 journals.

On the basis of all the above, it may be concluded that scientific research work at the Veterinary Faculty of the University of Zagreb is recording a rise in quality, which may be seen by monitoring the impact factor of the journals in which articles are published, as well as the percentage of journals ranked in quartile 1. At the same time, a slight fall in production was recorded, which must be looked at in the light of the special situation of the pandemic, the slower up-dating of the database, but also the fact that quantity has been replaced by quality. The analysis was conducted according to the guidelines for specific goal 1, activities 1.1 to 1.3.

## THE SCIENTIFIC RESEARCH PRIORITIES OF THE FACULTY DIVISIONS

The research priorities of the Divisions of the Veterinary Faculty were drawn up in line with the activities of each department/clinic, inter-institutional cooperation and the criteria of excellence. These priorities were drawn up in line with specific goal 2, activities 2.1. and 2.2.

### The Basic and Pre-Clinical Sciences Division

Research into the biochemical markers of metabolic and oxidative stress in reproduction and production diseases in production animals
The effect of meal modulation on the immune defences of animals and the morphometric characteristics of blood and sperm cells
The haematology of domestic and exotic animals in physiological and pathological states
The use of proteomics and mass spectroscopy methods in the study of metabolic disorders in animals and hemostasis disorders
Research into and monitoring of the biology, ecology, health and genetics of populations of large wild animals in Croatia (wolves, bears and lynx) and sea mammals in the Adriatic Sea, and other wild and endangered animal species
Research into the biophysical interaction of organic compounds and DNA/RNA polynucleotides
The synthesis and anti-tumour activity of a new class of molecules with two pharmacophores



## **The Veterinary Public Health and Food Safety Division**

Research into the epizootiology and diagnostics of viral, bacterial, parasitical and fungal infections of domestic and wild birds, farm animals, household pets and exotic animals, with emphasis on zoonoses and monitoring of vectors - carries of causative agents of infectious and parasitic diseases
Research and characterisation of the immunological response caused by artificial infection of poultry and the immuno-reaction prompted by vaccination (with use of immunomodulators) using classical immunological methods
Research into the antimicrobial activities of food microorganism, indigenous starter cultures and bacteriocins and resistance of bacteria to antimicrobial drugs
Research and development of bee products for use in veterinary medicine
Research and development of pentadecapeptide BPC-157 in cooperation with the Medical Faculty of the University of Zagreb
Epidemiological observational research and assessment of risk factors and molecular-epidemiological research of diseases of domestic and wild animals; epidemiological-sociological research of the use of antibiotics in domestic animals; risk assessment related to migration and translocation; framework qualitative risk assessment of potentially threatening infectious diseases in animals in the RC; assessment of the spread of disease using simulations and mathematical models; economic epidemiological analysis of the outbreak of lumpy skin disease and research into the effect of some non-infectious diseases on production economics.

## The Clinics Division

The use of proteomics and other innovative methods in research of the internal organs of animals
Improving the reproduction, health and productivity of farm animals on the basis of assessment of their metabolic, endocrine and anti-oxidation status and meal modulation
Analysis of reproductive potential on the basis of genomes and the prenatal influence of epigenetics on the Lipizzaner population in Croatia
Comparative pathology of tumours of various species of domestic animals in relation to their occurrence in humans and the influence of the tumour on the occurrence of chronic degenerative diseases
Use of modern mathematical models in analysis of tumour morphology
Application of new molecular and chemical methods in forensic veterinary medicine in order to identify animal species and/or individuals within a species from a variety of materials of biological origin
New guidelines in evaluating post-mortal changes in order to establish the time of death of an animal as accurately as possible
Introduction of new models of administrative measures for discovering, control, monitoring, preventing and eradicating the occurrence of parasitical and infectious diseases in animals
Assessment of various diagnostic methods to confirm fascioloidosis in free-living populations of wild deer
Innovative methods in regenerative and transplantation surgery.

## The Animal Production and Biotechnology Division

Genetic evaluation of farm animals regarding their production and functional characteristics
Evaluation, preservation and management of indigenous animal species
Development of models for systematic evaluation of farms in terms of their production goal
Phenotype and genotype features of household pets and horses
Water quality in aquaculture production
New technologies in animal housing
Animal welfare within the concept of "One Health"
Biosecurity on farms
Ichthyopathology, aquaculture and fishing
Biology and pathology of honey bees, bumble bees and solitary bees from the genus <i>Osmia</i>
Feeding bee colonies and the effectiveness of the use of food supplements for bees
The acaricidal efficacy of plant essential oils
The biochemistry of nutrition
The use of nutraceuticals in the diet of farm animals and household pets
Dietetics of dogs and cats
Modulation of the food regime of animals in order to reduce their negative effect on the environment
Biology and pathology of wild animals
Management of wild animals
Management of protected species of animals

In line with specific goal 3, and activities 3.1 to 3.9, the EU Projects Office was opened.

The activities of the EU Projects Office consist of monitoring calls for applications, preparation and implementation of projects financed by the EU, but also other available funds, as well as advising Veterinary Faculty staff in preparing and implementation of their individual projects. There follows below a presentation of some of the projects granted directly through the work of the Office.

At the invitation of the European Regional Development Fund, Improvement and Increasing Rescue Centre Capacities for Wild Animals, in 2020 the Veterinary Faculty registered the project under the title Improvement and Increasing of the Wildlife Rescue Centre Capacities – WildRescueVEF with a total value of 6.4 million HRK, which began in January 2021. The project will last 30 months, and in that period the internal and external facilities of the Veterinary Faculty will be refurbished to increase the capacity for accommodating wild animals. The newly equipped rescue centre will cover about 150 square meters of interior space and 65 square meters of external space. In this way the rescue centre will be able to receive a larger number of wild birds, reptiles, amphibians and small mammals, and will provide more natural accommodation with minimal stress during the period of rehabilitation, as well as safer and simpler release of individual animals into the wild after recovery, in order to preserve biodiversity.

The implementation is under way of two more projects financed by the European Social Fund. The project entitled: Improving professional practice with farm animals and horses at the Veterinary Faculty of the University of Zagreb - VETFARM, with a total value of 3.7 million HRK is intended to improve professional practice with large animals at the Veterinary Faculty, and it is planned to end by 2023. Over the past academic year, as part of the project activities, a **Career Development and Academic and Psychological Counselling Office** has been opened, and the head, Iva Lehunšek Panić, employed. Over the following months she organized and ran a series of workshops and conferences for students and teaching staff.

As part of the project *Development of higher education occupational standards, qualification standards and improvement of the integrated under-graduate and graduate studies in veterinary medicine with the application of the CQS at the Veterinary Faculty of the*

*University of Zagreb*, which ends in 2022, and is valued at 3.9 million HRK, several software solutions have been created to improve monitoring of the quality of classes, four models have been procured to equip the *Clinical Skills Lab*, a number of models for practical teaching have been purchased, and a solution has been introduced for vertical-horizontal integration of the teaching plan.

In 2021 the implementation was completed of the project Establishment of post-graduate specialized studies in veterinary medicine in English, valued at 1.9 million HRK, within which curricula were created for 17 specialized studies in English, and the process of their accreditation at the University and VetCEE is nearing completion. There is more detail at: <https://www.vef.unizg.hr/en/studiranje/postgraduate-master-studies/>.

In 2021 the project *Pan-European soft skills curriculum for undergraduate veterinary education financed from the Erasmus+, Key Activity 2 Strategic Partnerships*, was also completed. The coordinator for the project was the Veterinary Faculty of the University of Zagreb, Lada Radin, PhD, and the partners were the Veterinary Faculties and Universities of Vienna, Ljubljana, Budapest, Hanover, Wirtshafts Universitaet Wien, EAEVE and the international veterinary students' association IVSA. All project activities were successfully brought to an end despite the pandemic, and the four main intellectual achievements (*Recommendations of life skills competences for veterinary students, Soft\* skills curriculum for implementation in veterinary higher education, Training concept for education of teachers involved in soft\* skills teaching and Evaluation tool for pilot implementation*) can be found on the web site [www.softvets.eu](http://www.softvets.eu).

In 2021 the project entitled *Digital education in veterinary studies – DEVet, 2020-1-RS01-KA226-HE-094555*, was launched, financed from the Erasmus+, Key Activities 2, Strategic Partnerships programme. The coordinator of the project is the Veterinary Faculty of the University of Belgrade, and the coordinator at the Veterinary Faculty is Prof. Alen Slavica, PhD. The goals of the project are: to up-grade the system of delivery of digital teaching materials for remote learning and in classrooms (platform for e-learning); to encourage/stimulate teachers to improve their skills in producing better quality digital teaching material; to produce a significant quantity of digital teaching material; to seek out existing, appropriate material for e-learning with open access on the internet and integrate it into the teaching process at all partner faculties.

During the period in question, a database of researchers was created at the Veterinary Faculty, divided up according to individual research teams. A Projects Committee was founded to examine project applications and introduce new activities such as Student Science Day or a scientific research project for post-doctorands. The Office for EU Projects and the Projects Committee are the foundation for management and control of scientific research activities at the Faculty (activity 3.9).

Within the specific goal 4, activities 4.1. to 4.5., the Veterinary Faculty, in line with its capacities, encouraged the foundation and equipping of new laboratories, as well as the foundation of centres of excellence. Within the Clinics Division, a Centre for Experimental Surgery has already existed for some time. Its activities and cooperation with the Medical Faculty of the University of Zagreb have resulted in several projects financed from the HORIZON 2020 fund. In more recent times, (2019) the Centre for Imaging Diagnostics was founded, equipped with new X-ray and US machines, and for the first time a CT machine. In addition, the Centre for Rehabilitation and Sports Medicine was founded. Currently the foundation is under way of the Centre for Pharmacovigilance, the Wild Animals Research Centre, and the Wild Animal Rescue Centre. Further equipping of laboratories with new apparatus was also undertaken as part of project activities. So for example, within the ERAChair project, VetMedZg, a proteomics laboratory was founded and completely equipped. There is a list of the current laboratories and centres of excellence in the Regulations on the Organization and Systematization of Employment Positions of the Veterinary Faculty of the University of Zagreb. (<https://www.vef.unizg.hr/wp-content/uploads/2018/08/Pravilnik-o-ustroju-i-sistemizaciji-objava-2019.pdf>).

Some of the newly procured medical and laboratory equipment is presented in Table 1. Only equipment valued above 50,000 HRK is shown. On a national level, the registration of the equipment is planned in the Šestar database (<https://sestar.irb.hr/>). At the Veterinary Faculty, a list of all equipment is kept in the Accounts department.

**Table 1.** Newly procured equipment individually valued above 50,000.00 HRK

Title of equipment	Quantity	Procurement	Value	Date of
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		value	correction	procurement
Medicine program packet (digital networking of X-ray and US diagnostics)	1.00	109,990.00	73,326.67	8/29/2018
Endoscope column with 3 probes	1.00	94,000.00	57,966.67	11/30/2018
US Philips apparatus CV	1.00	870,000.00	507,500.00	1/16/2019
Siemens Multix Compact apparatus (mobile X-ray machine)	1.00	52,199.00	30,449.42	1/31/2019
CT apparatus Somatom Go Now	1.00	1,322,375.00	595,068.75	9/3/2019
X-ray Multix Fusion Analog	1.00	495,425.00	222,941.25	9/3/2019
Anaesthesiology apparatus Carestation 650 A1	1.00	140,000.00	58,333.33	11/19/2019
Ultrasound system MYLAB TWICE	1.00	79,173.85	22,432.59	7/31/2020
CT Injector Accutron CT-D	1.00	98,850.00	1,647.50	11/11/2021
Laparoscopic set	1.00	56,071.15	53,267.59	3/13/2017
Biochemical analyser Architect C4000	1.00	410,400.00	348,840.00	9/22/2017
Microscopic digital camera with software	1.00	62,932.63	53,492.75	9/29/2017
PCR equipment	1.00	129,890.48	101,747.55	1/23/2018
Histokinette for creating pathological preparations	1.00	109,200.00	80,080.00	4/13/2018
Rotational microtome	1.00	54,000.00	35,100.00	9/11/2018
ELISA reader and washer	1.00	66,412.50	39,847.50	12/31/2018
Steriliser LIS bundle	1.00	78,936.00	47,361.60	12/31/2018
High-performance liquid chromatograph	1.00	331,250.00	331,250.00	4/30/2019
Gas chromatograph (Carnivora Dinarica project)	1.00	173,129.18	173,129.18	5/17/2019
Portable spectrophotometer CM-600d	1.00	76,062.50	32,960.42	10/31/2019
Nano spectrophotometer	1.00	59,062.50	12,796.88	11/24/2020
Automatic colony counter	1.00	86,143.75	32,303.91	3/16/2021

SCAN1200				
Lab. scanner Western Blot Taric 85258019	1.00	59,978.24	7,497.28	9/24/2021
Multiplex analyser BMG LABTECH Cariostar Plus (INOMILKO)	1.00	280,000.00	23,333.33	10/25/2021
Dispersion platform and CM5000 cutter BIODOT (INOMILKO)	1.00	487,062.50	20,294.27	11/9/2021
Haematology counter URIT 5160	1.00	68,231.25	35,252.81	5/31/2019

The activities within specific goal 5 were conducted according to the possibilities for employment, by means of the implementation of appropriate staffing policies and provision of foundations for staff promotions. The results of a positive environment for scientific research creativity are shown in the analysis of Goal 1.



## SCIENTIFIC RESEARCH PROJECTS

As part of specific goal 3, activities 3.4, 3.5 and 3.6 are set out in the database on the link <http://bit.ly/2Fie3LP>. In addition, there is information about the projects on the links <https://www.vef.unizg.hr/status/aktualni-projekti/> and <https://www.vef.unizg.hr/status/završeni-projekti/>.

For the needs of activity 3.7 a separate part of the Faculty's web site was created, dedicated exclusively to science: <https://www.vef.unizg.hr/znanstveni-rad/>.

As part of the activities 3.8 and 3.9 the Projects Committee was founded, which acts together with the Office for EU Projects.

Within specific goal 6, the structure of projects at the Veterinary Faculty is shown, according to type and finance model.

**Table 2.** Projects by type and financing mode.

First year	Funds	Croatian Science Foundation	Other	Cooperation with industry	Cooperation with the management of protected areas and local government	Total by source of financing	
						National	EU
2017	2	2	1		5	9	2
2018	10	3		2	1	4	10
2019	5		2	5	2	2	7
2020	4	1		4	2	3	4
2021	3			1			3
Total	24	6	3	12	10	16	26

As part of Activity 6.6. it must be emphasized that Faculty staff have a large number of workshops and panels available, which are regularly advertised on the Faculty's web site. Most of the workshops are provided by the Central Computer Centre (SRCE). This is a list showing only the workshops organized as part of individual projects at the Veterinary Faculty:

- Workshop on Studying and Evaluation Aimed at Learning Outcomes, 7.12.2019.

- English languages courses, November 2019- March 2021
- Team Mediation, 9.– 10.7.2020.
- Development of a Personal Brand, VZS, 9.– 12.10.2019.
- Presentation and Communication Skills in Professional Life, VZS, 9.– 12.10.2019.
- Methods for Giving Opinions, VZS, 9.– 12.10.2019.
- Entrepreneurial Mindset Training, Zagreb, 7.– 9.2.2020.
- Teacher training workshop on innovative approaches to teaching and learning with ICT, Ljubljana 3.– 5.2020.
- Communication skills in veterinary medicine, Budapest, 12.– 14.2020.
- Sustainable Development Measures, 25th March 2021.
- Prevention of Discrimination, Providing Equal Opportunities and Respect for Diversity, 8th April 2021.
- The Coaching Approach in Work with Students, 19th and 20th April 2021.

**Goal 2. Development of human resources and transfer of knowledge, including: development of the competences of scientific researchers, development of scientific research activities through post-graduate studies, provision of systematic support for research and scientists through a system of awards for the best scientists by field on the basis of the number and quality of scientific articles, and the number of projects being run at the Faculty.**

In line with its strategic development, and on the basis of the Annual Employment Plan, the Faculty plans the required number of teachers, associates, administrative and auxiliary staff, taking into account the available resources, the study programmes and the number of students. A decision on employment is made at several levels of agreement: the Committee for the award of scientific, scientific-teaching, teaching and associate titles at a session renders a decision to launch the employment procedure, which is confirmed by the Faculty Council and sent to the University and Ministry. The University verifies alignment with the existing plan and total University quotas for all employment positions, then approves the employment position and gives consent for launching the employment procedure by publishing a public call for applicants. Calls for applicants for vacancies are prescribed by national regulations, the University and Faculty regulations, and are published in official and public newsletters, on the web site and the Euraxess portal.

The Committee for Award of Scientific, Scientific Teaching, Teaching and Associate Titles proposes to the Faculty the appointment of a professional committee in procedures for awards of scientific, scientific teaching, teaching and associate titles, proposes to the Faculty Council to accept the reports of the professional committee in procedures to award titles (<https://www.vef.unizg.hr/o-fakultetu/povjerenstva-fakultetskoga-vijeca/povjerenstvo-za-izbor-u-znanstvena-znanstveno-nastavna-nastavna-i-suradnicka-zvanja/>).

For the first employment with the title of assistant, clearly defined criteria of excellence are taken into account which include success in studies, as well as additional achievements in scientific work, inclusion in classes as a demonstrator, continuous work in the departments/clinics, and other achievements by the candidate ([https://www.vef.unizg.hr/wp-content/uploads/2018/10/20120322-pov-15-uputa\\_izbori\\_suradnicko\\_zvanje.rtf](https://www.vef.unizg.hr/wp-content/uploads/2018/10/20120322-pov-15-uputa_izbori_suradnicko_zvanje.rtf)). In the period in question, three regular promotions of Faculty staff took place, as well as the employment of new

assistants on the basis of vacancies, since some staff members retired. In addition, some of the new staff were employed on a temporary basis through Croatian Science Foundation projects (Career Development Project) and also projects financed by the EU. Overall in this period, 76 members of staff were promoted to scientific-teaching titles, of which 16 were promoted to assistant professor, 29 to associate professor, 18 to full professor, and 13 to distinguished professor.

**Table 3.** Promotions of Faculty staff in the period in question

<b>Year of promotion</b>	<b>Assistant Professor</b>	<b>Associate Professor</b>	<b>Full Professor</b>	<b>Distinguished Professor</b>
2017	4	5	2	1
2018	3	6	8	2
2019	7	5	1	1
2020	1	6	2	6
2021	1	7	5	3
<b>Total</b>	<b>16</b>	<b>29</b>	<b>18</b>	<b>13</b>

In order to monitor and encourage the development of assistants, a Plan for the Development of Assistants was introduced, with obligatory reporting on the implementation of that plan. The plan is drawn up by the assistant's mentor ([http://www.vef.unizg.hr/wp-content/uploads/2018/11/a15\\_20180418-pravilnik\\_o\\_ocjenjivanju\\_rada\\_asistenata\\_poslijedok\\_i\\_voditelja\\_asistenta\\_2\\_406.pdf](http://www.vef.unizg.hr/wp-content/uploads/2018/11/a15_20180418-pravilnik_o_ocjenjivanju_rada_asistenata_poslijedok_i_voditelja_asistenta_2_406.pdf)).

Moreover, the Veterinary Faculty gives a scholarship for one project by a post-doctorand each year. The goal of this project is to acquaint post-doctorands with the preparation of documentation and registration of their own projects, implementation of a project and realization of its goals, and in the end, reporting on the realization of the project goals.

The mobility of teachers and students from the Faculty is monitored on the level of the two main sources of financing, the CEEPUS programme (the Central European Exchange Programme for University Studies) and ERASMUS+. The Veterinary Faculty encourages the mobility of students, teachers and non-teaching staff through a coordinator for each of these programmes..

Mobility

**The CEEPUS Programme**

**Table 4.** Mobility by teaching staff and associates 2016/2017

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	6		8	
<b>Professional</b>				

**Table 5.** Mobility by teaching staff and associates 2017/2018

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	7		7	

<b>Professional</b>				
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**Table 6.** Mobility by teaching staff and associates 2018/2019

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	5		6	
<b>Professional</b>				

**Table 7.** Mobility by teaching staff and associates ukupno 2019/2020

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>			3	
<b>Professional</b>				

**Table 8.** Mobility by teaching staff and associates 2020/2021

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	1			
<b>Professional</b>				

**Table 9.** Total mobility by teaching staff and associates in past 5 academic years

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	19		24	
<b>Professional</b>				

Mobility within the CEEPUS programme is an important part of the mobility of staff and students at the Veterinary Faculty. Unfortunately it is obvious that the COVID-19 pandemic significantly reduced out-going mobility.

## ERASMUS+

**Table 10.** Mobility by teaching staff and associates 2016/2017

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>			5	
<b>Professional</b>	1		4	

**Table 11.** Mobility by non-teaching staff

The number of professional visits by non-teaching staff from this faculty abroad	
<i>Up to 3 months</i>	<i>More than 3 months</i>
2	

**Table 12.** Mobility by teaching staff and associates 2017/2018

Type of	Out-going mobility	In-coming
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mobility			<b>mobility</b>	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	1		7	
<b>Professional</b>	1		11	

**Table 13.** Mobility by non-teaching staff

The number of professional visits by non-teaching staff from this faculty abroad	
<i>Up to 3 months</i>	<i>More than 3 months</i>
3	0

**Table 14.** Mobility by teaching staff and associates 2018/2019

Type of mobility	<b>Out-going mobility</b>		<b>In-coming mobility</b>	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	7		4	
<b>Professional</b>			6	

**Table 15.** Mobility by non-teaching staff

The number of professional visits by non-teaching staff from this faculty abroad	
<i>Up to 3 months</i>	<i>More than 3 months</i>
3	0

**Table 16.** Mobility by teaching staff and associates 2019/2020

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>	4		1	
<b>Professional</b>				

**Table 17.** Mobility by non-teaching staff

The number of professional visits by non-teaching staff from this faculty abroad	
<i>Up to 3 months</i>	<i>More than 3 months</i>
1	0

**Table 18.** Mobility by teaching staff and associates 2020/2021

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				
<b>Artistic</b>				
<b>Teaching</b>			1	
<b>Professional</b>			5	

**Table 19.** Mobility by non-teaching staff

The number of professional visits by non-teaching staff from this faculty abroad	
Up to 3 months	More than 3 months
0	0

**Table 20.** Total mobility by teaching staff and associates in the last 5 academic years

Type of mobility	Out-going mobility		In-coming mobility	
	Up to 3 months	3 and more months	Up to 3 months	3 months and more
<b>Scientific</b>				

<b>Artistic</b>				
<b>Teaching</b>	12		18	
<b>Professional</b>	2		21	

**Table 21.** Total mobility by non-teaching staff in the last 5 academic years

The number of professional visits by non-teaching staff from this faculty abroad	
<i>Up to 3 months</i>	<i>More than 3 months</i>
9	0

Just as in the case of mobility through the CEEPUS programme, in the ERASMUS+ programme the effect of the global situation are visible in the last two years of the period in question.

The activities within specific goal 2 were conducted according to the Strategic Plan. Thus, in line with Activity 2.1. within the ESF project, under the acronym VETFARM, external associate PhD dissertations were planned that were directly related to research in industry, in the currently deficit field of breeding, production and health care of large animals. Moreover, the Veterinary Faculty drew up Regulations on Doctoral Studies which open the possibility of interdisciplinary candidates (enrolment of candidates from other scientific fields) and further emphasize the international nature of the studies, but also set higher entry criteria, abolishing the recommendations of teaching staff in the case of a grade average lower than 3.5. This ensures the basic prerequisite for additional safeguarding of the high quality of the studies, and at the same time the requirement for the added value of the studies is met through the interdisciplinary candidates.

In view of the fact that no workshops are held for mentors of doctorands on the level of the University of Zagreb, the Veterinary Faculty regularly holds workshops for mentors once a year, and they are a requirement for mentoring doctoral candidates. All doctoral candidates must submit a report

once a year on the prescribed forms of the University of Zagreb, designated as DR.SC.-04 and DR.SC.-05. A Development Plan was introduced for doctorands, with a Report and a LabBook of research, for each doctorand by name (Activity 2.6). In the case of a grade average lower than 3.0, an interview is conducted aimed at resolving the deficiencies.

Post-graduate studies are regularly promoted amongst students on the integrated under-graduate and graduate studies in veterinary medicine, through the mandatory subjects such as Introduction to Veterinary Medicine, but also through the PhD Day, PhD Minutes and Student Science Day (Activity 2.10). In addition, through the PhD Day, the International Veterinary Science Scientific and Profession Congress and the obligation to acquire a minimum of 10 ECTS through scientific activity during PhD studies, candidates are encouraged to implement Activity 2.8.

In 2021 certificates were obtained for 15 new post-graduate university specialist studies in English, whereby the raising of the competence of teaching staff was ensured (Activity 2.4). In addition, four courses (Pig Production and Health Management, Companion Animal Medicine, Bovine Health and Production and Laboratory Animal Medicine) went sent for evaluation and accreditations by VetCEE. At the time of writing this analysis, the programme Pig Production and Health Management had been accepted by VetCEE (<https://www.vetcee.eu/approved-vetcee-programmes>), whilst the others are still in the process of assessment. Apart from these programmes, there are another two being evaluated by the University of Zagreb: Veterinary Surgery – Small Animals (for which reviews have been received) and Companion Animal Medicine. <https://www.vetcee.eu/approved-vetcee-programmes>

Specific goal 3 is being implemented in that on the occasion of ceremonies to mark the Faculty Day awards are presented for the most successful members of Faculty staff. In the scientific part these awards include the Award for First Authorship of a scientific paper with the highest impact factor in the previous academic year, the Award for the Best Young Scientist, and the Award for the Best Scientific Team. The awards are allocated on the basis of an analysis of the available databases, and depend on production in the year in question.

**Goal 3. Increasing interdisciplinary scientific research activities, including: establishing interdisciplinary scientific research activities, strengthening cooperation with institutions in the biomedical and biotechnical fields.**

The activities that are part of this goal are planned as two specific goals and seven activities within them. The interdisciplinary activities achieved can be seen in published scientific papers and co-authorship in them, as well as cooperation on various projects. Interdisciplinary work is also seen in studies with associates from other divisions of the Veterinary Faculty, work with scientists from other components of the University of Zagreb, and also with other institutions within this country and abroad. Today we can say with certainty that interdisciplinary work is the foundation of scientific activity at the Veterinary Faculty of the University of Zagreb, and may be seen on the link <https://www.webofscience.com/wos/woscc/summary/cb64219e-9408-49c2-a4b0-f66e15880eb1-27eff80e/relevance/1>.

**Goal 4. Improving cooperation with industry, including: strengthening cooperation with commercial entities, formation of scientific-professional teams for cooperation with industry according to area of interest and type of animal**

Cooperation with industry is an integral part of scientific research, aimed at transfer of knowledge to industry. In the field of health protection and improvement of the production capacities of farm animals, fish and bees (Specific goal 1, Activity 1.1.) we should point out in particular cooperation through the projects VETFARM, MANNA and CEKOM 3LJ. Within these projects cooperation was planned with several Croatian and foreign breeders, including the completion of a minimum of five PhD dissertations. Moreover, within projects aimed at developing individual diagnostic methods (diagnostics for mastitis) or improvement of food production (production of cheese, microencapsulation etc.) the primary emphasis is on the development of cooperation with industry. Cooperation is particularly intense in the field of bee-keeping, wild animals and game animals (Activities 1.3 and 1.4.) through cooperation with bee-keepers, units that manage protected natural areas, bodies of local government, hunting associations and, especially, Hrvatske šume d.o.o. (*Croatian Forests*). Life-long learning courses (Activity 1.5.) are run on a regular basis (so-called *core courses*), but also at the request of other stakeholders, primarily the Ministry of Agriculture (for example courses in bee-keeping and African swine flu in wild boar), and the Croatian Veterinary Chamber, and partially on the basis of requests from veterinarians working in-field.

**Goal 5. Strengthening national and international recognition, including: development of the national recognition and media presentation of the Faculty; strengthening cooperation with prestigious international scientific institutions, raising the level of the Faculty's international recognition**

The Veterinary Faculty of the University of Zagreb is an internationally recognized institution, primarily through the evaluation and full accreditation by EAEVE. In addition, the Veterinary Faculty is also responsible for four approved residency programmes with the European College of Zoological Medicine, the European College of Veterinary Pathology, the European College of Veterinary Dermatology and European College of Veterinary Sports Medicine and Rehabilitation. Research cooperation has been established on international projects with scientists from abroad or through institutional cooperation on the basis of bilateral agreements signed between the Veterinary Faculty of the University of Zagreb and veterinary colleges in Vienna, Budapest, Brno, Košice, Ljubljana, Sarajevo and Wrocław. A special form of cooperation has been established with the Veterinary University in Vienna, where many Faculty staff have spent time undergoing training. Many members of Faculty staff have received national and international awards for their scientific, professional, teaching and social achievements. The Faculty also presents awards to students and staff. The Awards Committee monitors public calls for applications for awards and recognition published by state institutions, associations and other entities in the field of biomedical, natural, biotechnical and other sciences, and proposals are encouraged for allocating them to deserving staff of the Veterinary Faculty. The Faculty Council decides on all proposals. The Committee proposes awards and recognitions to the FC, and they are presented on the occasion of anniversaries, jubilees and other events. The Regulations on Awards and Recognition prescribes which awards and public prizes the Faculty may present to staff, students, individuals and legal entities outside the Faculty ([http://www.vef.unizg.hr/wp-content/uploads/2018/11/a18\\_20130128-pravilnik\\_o\\_nagradama\\_i\\_priznanjima.pdf](http://www.vef.unizg.hr/wp-content/uploads/2018/11/a18_20130128-pravilnik_o_nagradama_i_priznanjima.pdf)).

Notices about presentation of awards or prizes to staff or students are open to the interested public through the web site and are also published in the Year Book.



**Table 22.** Prominent positions held by Faculty staff in this country and abroad

Academic year	Member of staff	Role
2018./2019.	Prof. Estella Prukner-Radovčić PhD	president of the European Federation of World Poultry Science Association (EF WPSA) and president of the Poultry Science Association
	Ass. Prof. Dean Konjević, PhD	Outreach Committee <i>ECZM</i>
2019./2020.	Prof. Nenad Turk, PhD	treasurer of EAEVE and representative of Region 7 in the same organization
2020./2021.	Prof. Lidija Kozačinski, PhD	member of the Management Board of the European Food Safety Agency (EFSA)
	Prof. Jasna Aladrović, PhD	President of the association International Society of Education in Animal Science
	Ass. Prof. Zoran Vrbanac, PhD	Vice-President of ECVSMR

Faculty staff take part as editors-in-chief or members of editorial boards in the work of 40 different national and international journals.

It is also necessary to mention invited lectures. These activities are encouraged on the level of the Faculty, and on a national and international level. They are noted in the reports of professional committees for the award of titles, and the wider public are informed about them through the Yearbook. An overview of these activities in the past academic years shows that staff with scientific-teaching and associate titles held:

- 2018/2019 – 36 invited lectures in this country and abroad
- 2019/2020 – 25 invited lectures in this country and abroad
- 2020/2021 – 23 invited lectures in this country and abroad