

Veterinary Research Institute

• YearBook • 2021

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Dear readers,

You are leafing through the new edition of the Yearbook of the Veterinary Research Institute which is the eighth in a row this year. As usual, in the Yearbook, we would like to present to you the most important scientific research activities, significant events and incidental institutional activities that took place in 2021.

In 2021, we marked the second year of COVID-19 pandemic. The measures associated with this pandemic affected the life around the globe. Despite a massive vaccination campaign, our lives were affected by this pandemic for almost all year. And, indeed, the imposed measures had an impact on the operation of the Institute - daily contact limitation, wearing facemasks, disinfection of surfaces, visitation restrictions, limitation of seminars and conferences or their holding virtually, regular antigen testing, employees in guarantine or working from home.... Notwithstanding all these limitations. 2021 was a successful year for the Institute in terms of the achievement of scientific results and their transfer to end-users.

By virtue of the support from the Institute's finances and special resources, 169 papers were published, including 112 papers in peer-reviewed journals categorised in specific research fields as Q1/Q2. Furthermore, it is necessary to underline the achievement of national and international patents awarded to the VRI and other outcomes transferred to end users, including utility models and certified methodologies. These and previous research and development results produced at the VRI led to rating of the Institute as a high-performance institution in both Module 1 and Module 2 of the Methodology 17+ in the field of agricultural sciences.

Furthermore, successful acquisition of national and international projects also plays an important role in producing high-quality results. In 2021, for example, the Institute was granted the following two important international projects: In 2021, as a consortium member, the Institute was awarded, for example, an international project funded under the H2020 programme, entitled NeoGiANT, The power of grape extracts: antimicrobial and antioxidant properties to prevent the use of antibiotics in farmed animals. The project focuses on the use of biologically active substances obtained from grape marc extracts, which have antibacterial properties.

Due to the epidemiological measures, which did not allow face-to-face meetings and events with large numbers of attendees, the traditional professional seminars conducted under the name VRI-FEST, now VRI-ACADEMY, were organized and held online in the form of webinars, while maintaining high numbers of attendees.

In order to keep fulfilling the main mission of the Veterinary Research Institute, i.e. to contribute to the improvement of animal health and sustainable intensification of animal production, it is necessary to strengthen the excellence of research teams and ensure the continuity of development of capacities and the level of scientific infrastructure. In order to strengthen cooperation with agricultural industry and veterinary practices and other potential users of research results and knowledge, the obtaining of financial subsidy from the Smart Accelerator project in the South Moravian Region was a significant achievement. The purpose of this subsidv is to prepare project documentation for the implementation of the follow-up investment and development project "Veterinary biotechnological prototype unit PROBIOVET", the purpose of which is to build a preliminary technology that will enable the development of proof--of-concept activities and strengthen the VRI competence in the field of research and innovation, and, especially, technology transfer to end-users. The Institute also places great emphasis on the environment. At the end of 2020. a reconstructed sewage system and a wastewater treatment plant were put into operation. The year 2021 was a year of trial operation, during which processes were set up to achieve their peak efficiency technologically possible. In 2021, an application was submitted and funding obtained from the Operational Programme Environment for the installation of photovoltaic panels. which will contribute to the production of electricity from renewable resources. My sincere thanks go to all VRI staff members, who contributed to achieving outstanding results despite this difficult time. for their strenuous efforts in fulfilling the tasks set before us as a departmental public research institution.

MVDr. Martin Faldyna, Ph.D.

From 2021 to 2030 and onwards...

SWOT ANALYSIS

Strengths

- The only departmental research Institute specialized in veterinary medicine with history and experience
- Machinery and construction infrastructure with the possibility of further expansion
- Involvement in operational programme projects
- A balanced economy with a reasonably large volume of invoiced activity
- Scientific level- high proportion of outcomes in journals with impact factor (IF)
- Established animal models
- Established quality assurance regimes Good Laboratory
 Practice and accredited laboratories

Opportunities

- Obtaining the HR Award certificate
- Orientation to knowledge transfer, especially to results with legal protection and results transferred to end-users
- Expansion of the research infrastructure, including experimental equipment with the possibility of conducting of experiments in the BSL 3 mode and a prototype/pilot unit
- Political and environmental challenges
- Establishing new strategic partnerships (ISCVBL, foreign institutions, etc.)
- Threats
- Uncertain sources for funding of development and strategic goals
- Reduction in R&D funding at the institutional level
- Loss of motivation of young researchers
- Lack of interest in proof-of-concept results

Weaknesses

- Insufficient proportion of middle-aged scientists
- Training of young scientists
- International relevance of obtaining international projects
- Communication with the public
- Cyber Security

Threats

- Uncertain sources for funding of development and strategic goals
- Reduction in R&D funding at the institutional level
- Loss of motivation of young researchers
- Lack of interest in proof-of-concept results

Significance of the VRI's existence and future

VISION

Conduct of high-quality research for transfer to practical use in veterinary medicine and agriculture, including in the international context.

MISSION

THE FOLLOWING VALUES ARE CONSIDERED AS CRUCIAL BY THE INSTITUTE'S MANAGEMENT:

Support for excellence and innovation- the Institute will support innovative and high-quality research, including transfer of results.

Social responsibility- the Institute will appreciate suggestions from the professional and social public and will deal with publically important needs.

2030

Partnership and cooperation- the Institute will conduct research in cooperation with domestic and foreign partners and ensure the dissemination of results.

Respect and diversity- the Institute will strive to create an environment where each employee will feel respected and motivated.

AIMS

From the point of view of the medium-term mission, it is necessary to intensify the key values and, regarding various subactivities, it is necessary to take into account the following strategic priorities, which set the goals in areas that are crucial for us:

- A farmer-to-fork strategy for fair, healthy and environmentally-friendly food systems
- EU biodiversity strategy for 2030
- National Research, Development and Innovation Policy of the Czech Republic 2021+
- Concept of research, development and innovation of the Ministry of Agriculture for 2023+

The Institute has the following medium-term goals:

• Scientific area

- Increase the number of publications in quality journals with an impact factor above the median of specialisations
- Increase the number of publications in journals for veterinary and agriculture professionals

Application area

- Increase the number of outcomes with legal protection and with granted licence
- Increase cooperation with commercial partners in order to use the applied results and to better target the defined research topics

Project area

- Maintain the volume of financial resources from targeted support projects
- Increase the number of special support projects obtained in cooperation with partners from the industry
- Increase the volume of financial resources obtained by invoiced activities
- Increase the volume of financial resources obtained from international cooperation

Development sphere

- Continue efforts to reduce the energy performance of buildings
- Construction of new infrastructure

TOOLS



The following tools will be used to achieve the goals of the Institute:

- The Institute's Internal system of evaluation of research teams
- Bonus Rules and Licence Rules
- Strategy of a follow-up project of the long-term conceptual development of the research institution
- Use of the institutional asset reproduction fund
- Use of funds from the National Recovery Plan and Operational Programme John Amos Comenius

The Institute runs laboratories for performing experiments under infectious and non-infectious conditions equipped with cutting-edge instruments and also an experimental animal facility for keeping experimental animals, including performance of experiments under BSL 3 regime.

The Institute's premises offer considerable opportunities for further development and renovation of its infrastructure:

On 29 March 2021, the renovated fish virology laboratory was put into operation and use.

In 2021, a subsidy for the construction of a photovoltaic power station was obtained from the Operational Programme Environment under the Specific Objective 5.3- Reduce energy intensity and increase the use of renewable energy sources in buildings of central government institutions in the amount of CZK M2.8.

Strategic plans for scientific infrastructure development within the medium-term concept include the following:

- Further development of the experimental animal facility, consisting in its expansion, including the possibility of its use under the BSL 3 regime
- Obtaining subsidy for the establishment of a pilot plant unit or a prototype workshop in GMP system for proof of concept verification



Significant Events



FISH FACILITY – a recently renovated research facility at a European level was handed over for use

On 29 March 2021, the complete technical equipment of the Fish Facility was handed over and thus an important milestone of the project OP RDE MEYS EF16 019/0000869 "Sustainable production of healthy fish in different aquaculture systems - PROFISH" was reached. After successful accreditation, the renovated fish facility will be used for further research under the project. Total investment was approximately CZK 7.3 million. "The new fish facility will soon undergo the accreditation process for keeping experimental animals. After its successful completion, the tanks will be stocked with cyprinid and salmonid fish. Thanks to the state-of-the--art water purification technology, this facility is ideal for studying fish physiology without the presence of infectious agents. A separate closed water recirculation system for each tank will also enable detailed studies of the impact of chemicals on fish health, from feeds to pharmaceuticals to toxins or pollutants," said MVDr. Lubomír Pojezdal, Ph.D., head of the research group specializing in fish diseases from the Department of Infectious Diseases and Preventive Medicine at the VRI.



Antimicrobials in Livestock 1: Regulation, Science, Practice: A European Perspective

In the first volume of the new publication, an international team of experts led by Mgr. Lucie Pokludová, Ph.D. from the Institute for State Control of Veterinary Biologicals and Medicines, focuses on the use of antimicrobials in livestock from three fundamental perspectives- legislative, scientific knowledge and clinical practice. This gives readers a comprehensive picture of highly debated issues such as antimicrobial resistance and food safety. The second volume devoted primarily to antimicrobials, specifically in selected animal species (pigs, poultry, cattle and horses), should appear at the end of 2021.

All is based on European and global concepts supported by WHO/FAO/ OIE, involving the principles of One Health, One Earth, and Green Deal for Europe, which focus on the limited or judicious use of antimicrobials, thus preventing the emergence of resistance to them. The Czech National Antibiotic Policy is based on these activities.

The entire topic of antimicrobial use, including resistance, is covered in detail in ten chapters.

The Veterinary Research Institute contributed to this book with the chapter "Laboratory Investigations and Result Interpretation", authored by MVDr. Kateřina Nedbalcová, Ph.D. together with Dr. Pokludová. This chapter focuses on laboratory diagnostics as a prerequisite for the correct use of antimicrobials to achieve effective treatment and also to prevent the emergence of antimicrobial resistance. It is divided into four parts: (1) Sampling; (2) What Should the Practitioner know About Laboratory Investigation?; (3) Routine Laboratory Techniques Used for

Susceptibility/Resistance Testing; (4) Data Obtained from Laboratory Investigation and Their Interpretation According to the Current Status of Knowledge. It describes new methodologies so far only used in human medicine, which, however, can be modified for veterinary use. This chapter, mainly devoted to phenotyping methods, is followed by another chapter dealing with molecular biology methods of resistance detection.

"This publication written by an international team of authors provides a comprehensive overview of the use of antimicrobials in the treatment of bacterial infections in farm animals, from laboratory diagnosis of the disease and the principles of antimicrobial treatment selection, through information on antimicrobial consumption, to the EU strategy for the use of antimicrobials in veterinary medicine in view of future possibilities. It explains the current EU antibiotic policy with a focus on judicious use of antimicrobials, and it also highlights possible preventive procedures to avoid the need to use antimicrobials in veterinary medicine", says Kateřina Nedbalcová, co-author of the publication.

The publication: Antimicrobials in Livestock 1: Regulation, Science, Practice: A European Perspective is intended for professionals, but also for those interested from the general public.



Cereal-based foods, foods with additives, benefits and risks in relation to celiac disease

"Farm to Fork" Webinar and workshop which combined the topics of crop production, food production and human and animal health in connection with the consumption of foods containing gluten and artificial additives, was organised by the Veterinary Research Institute within the Czech Technology Platform for Agriculture in cooperation with the Institute of Animal Science, Czech University of Life Sciences Prague and Mendel University in Brno.

The production and consumption of foods which have a positive impact on the environment and public health are highly topical and often discussed by both professionals and the general public.

By virtue of the webinar, the attendees gained a detailed insight into and highly professional information on the issue of celiac disease, the prevalence of which increased in the last decades in the society, while the cause(s) of this increase has/have not been fully clarified. The meeting invite was accepted by specialists in medical sciences, plant production, bakery production experts and scientists dealing with the prevention of digestive tract diseases, in particular with the development and use of probiotics.

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We are heading for the HR Award - Preparatory phase completed

On 15 July 2021, a request was submitted to the European Commission for an assessment of the VRI Action Plan for 2021 - 2023. The Action Plan fulfils the HRS4R concept and the activities submitted will aim to improve the efficiency of human resources management at our Institute. Together with the Action Plan, GAP analysis, feedback from an employee questionnaire survey, and a scorecard of the current recruitment and selection of employees were submitted as a basis for a comprehensive assessment of our application. If the submitted materials are positively evaluated by the European Commission and our submitted strategy is accepted, we as an Institute will receive the HR Award. The prestigious HR Excellence in Research Award ("HR Award") is an award given by the European Commission to research institutions that introduce the HRS4R strategy (The Human Resources Strategy for Researchers). The materials submitted to the European Commission are published at www.vri.cz in the About us section, item HR Award, sub-item Documents, and are available in two language versions (Czech and English).



An insight into the world of microbes and parasites as well as the use of thermal imaging in veterinary medicine was offered at this year's exhibition of the Institute at the SCIENCE FESTIVAL 2021

On 3 and 4 September 2021, Science Festival took place in the Riviera Transport Playground area in Brno. Our Institute again prepared an interesting programme for the visitors. This year, the Institute was represented by colleagues from the Department of Infectious Diseases and Preventive Medicine and the Department of Pharmacology and Toxicology. The exhibition was visited by more than 500 people, mainly pupils of primary and secondary schools, but also their parents and grandparents. Children and young people could observe under the microscope the most common parasites that can attack humans and animals. and they could also learn more about the function of enzymes in our digestive system, especially in relation to gluten intolerance. Moreover, there were also a variety of challenging surveys and guizzes to expand their knowledge in the areas of science. An equally interesting part of the exhibition was the demonstration of remote temperature measurement using thermal imaging, which is currently in use, for example, in the Covid-19 pandemic. We were very pleased with the interest shown by the young visitors; the claim that young people are not interested in anything but PC games was not confirmed at all.



10th CENTRAL EUROPEAN VETERINARY CONGRESS FOCUSED ON FARM ANIMALS

The 10th CENTRAL EUROPEAN VETERINARY CONGRESS FOCUSED ON FARM ANIMALS was held at the Brno Exhibition Centre as part of the international trade fair for livestock production ANIMAL TECH.

In the presence of MVDr. Petra Šimová and MVDr. Ľubomír Kráľ, Presidents of the Czech and Slovak Veterinary Chambers, respectively, MVDr. Zbyněk Semerád, Director General of the State Veterinary Administration of the Czech Republic, and Prof. Jozef Bíreš, DrSc., Director General of the State Veterinary and Food Administration of the Slovak Republic, representatives of the State Veterinary Institutes and veterinary practitioners, the day was filled with a rich professional programme.

The Veterinary Research Institute was represented by MVDr. Soňa Šlosárková, Ph.D., who advised the audience of the project entitled Development of Registration Software for drug usage in pigs at the VRI.

We were also very pleased that MVDr. L'ubomír Kráľ, President of the Slovak Chamber of Veterinary Surgeons, visited the VRI booth at the congress and was very complimentary about it. He said that in Slovakia there is no such institution as the VRI and he would be very pleased if we developed mutual cooperation.



Agricultural Fair "Bread Basket"- Tradition - High Turnout

Agricultural Fair "Bread Basket" in České Budějovice is a large-scale exhibition with a long-term tradition. Customarily, the Veterinary Research Institute participated in the shared presentation of public research institutions founded by the Ministry of Agriculture of the Czech Republic. Although the main aim was to inform general public visitors about the Institute's activities, we took up this opportunity to discuss with the representatives of all sister institutions the possibilities of mutual cooperation in organising some further events and the possibilities of cooperation in research activities.

Ing. Martin Karban, Chairman of the Board of the Exhibition grounds also visited our booth. He expressed his pleasure with the exhibition course and especially with the high turnout. This year's almost100,000 visitors is only slightly less than in the year before "Covid" in 2019. Martin Faldyna, the VRI Director, pointed out that obviously the visitors missed the social interaction with their colleagues and that they were happy the event could take place.

Before exhibition opening, a meeting of the Board of the Czech Academy of Agricultural Sciences was held, where the participants discussed, among other things, the topics concerning the evaluation of research organisations in the agricultural sector and the material of the Concept of Research, Development and Innovation of the Ministry of Agriculture for 2023- 2032.



The 18th VETfair in 2021, Hradec Králové

There is probably no veterinarian who would not know the international veterinary exhibition VETfair. The VRI could not miss such a traditional and prestigious event. Our Institute presented an independent exhibition for the first time. Our main offer to the veterinarians was a wide range of services to be used in their daily work.

"Initially, I was concerned about whether events taking place at the end of summer would affect the interest in the exhibition. I am happy that the involvement of 50 companies and attendance of almost 1,000 visitors from the professional public allayed my concerns. I really wanted the 18th year to take place and the tradition to be maintained, and it was a success," said MVDr. Zdeněk Hanzálek, VETfair organizer.





The VRI role in the CEITEC Consortium was the main aim of Director Tomančák's visit

The discussion on the current and future role of the VRI in the CEITEC scientific consortium was the main purpose of the visit of the Director Dr. Pavel Tomančák to the Veterinary Research Institute where he met with Dr. Martin Faldyna, VRI Director, Dr. Ildikó Csölle Putzová, Vice-Director for Management and Strategic Development and Doc. Martin Anger, Director of the CEITEC organisational unit at the VRI. In addition to presenting the VRI's scientific activities, which correspond in their focus with the activities of the Consortium, part of the visit was devoted to a tour of the accredited VRI experimental facility, including the recently reconstructed fish keeping facility. These scientific infrastructures, combined with the experience of the scientists, represent the greatest potential for further joint activities, which are aimed, among others, at the use of animal models. Doc. Anger emphasized that the VRI is prepared to cooperate in both national and international project plans of the consortium.



Science at the Veterinary Research Institute from a slightly different point of view

Science at the Veterinary Research Institute from a slightly different point of view and in the course of time was the subject of the nationwide science-popularization programme Night of Scientists which took place on Friday, 24 September 2021.

This year's event was affected by the pandemic and was partly moved to the online space. Thus, the opportunity to get a glimpse into the inspiring world of science of Czech scientists was also accessible from home for anyone interested. This year, the VRI scientists prepared two inventive entries, which were demonstrated both online and in person on the premises of the Faculty of Chemistry of the Brno University of Technology. Let's introduce them:

HOW TO ESTIMATE FISH AGE?- was the topic of the exhibition, where visitors could learn, among other things, how to estimate the age of fish by the structure of scales. The exhibition was hosted and held by scientists from the research group Viral Infections of Fish under the leadership of Dr. Lubomír Pojezdal. This group has long been involved in diagnostic and research activities in the field of fish pathogenic viruses and emerging diseases with the potential to threaten the health and domestic fish production.

Because the connecting topic of this year's Night of Scientists was "time", Doc. Ivan Rychlík prepared an online lecture entitled TIME AS A FACTOR INFLUEN-CING THE DEVELOPMENT OF NOT ONLY THE GUT MICROBIOTA IN POULTRY - IS IT POSSIBLE TO DISAGREE? During the audio visual recording presentation, the visitors could see and hear how the intestinal microflora of poultry and humans can be positively influenced. Bacteria with a positive effect on health can be obtained in laboratories and then used for the preparation of defined probiotic mixtures. Why is this important? "Because you can use probiotics instead of antibiotics. In addition, new types of probiotics can be prepared for poultry and humans using a similar approach," says Doc. Rychlik, Head of the Department of Microbiology and Antimicrobial Resistance.

Vets in Prague Castle

On Saturday 2nd October 2021, over 300 veterinarians filled the representative premises of Ball Games Hall of Prague Castle, where the 8th annual congress VETERINARY MEDICINE FOR PRACTICE with a focus on SMALL ANIMALS took place.

At the beginning of the congress, a group of dancers performed an original choreography with the topic of water, and the first preliminary speaker was brought to the scene on the waves.

The opening of the congress, held under the auspices of Ing. Miroslav Toman, CSc., Minister of Agriculture, followed. MVDr. Petra Tomanová, Ph.D. greeted the attendees on behalf of the Minister.

The expert guarantor Prof. MVDr. Miroslav Svoboda, CSc. then opened a busy schedule of lectures. MVDr. Kateřina Nedbalcová, Ph.D. who represented the VRI delivered a lecture entitled "Development of bacterial resistance to antibiotics". Dr. Nedbalcová emphasised that in the near future, it will be necessary to monitor and keep record of antibiotic use by veterinary practitioners for treatment of small animals. This year, the VRI was a partner of this successful event for the second time. We could present the results of veterinary research and popularize science there.







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Outstanding Outcome Awards in 2021

The Czech Academy of Agricultural Sciences (CACS) awarded personalities for their outstanding contribution to the development of science and research in the agriculture sector in 2020 and 2021

The traditional plenary meeting of CACS members connected with the presentation of awards to prominent personalities in science and research for their contribution to the agriculture sector in 2020 and 2021 was accomplished by TV transmission this year due to the coronavirus pandemic, but it did not diminish the importance of the moment.

The following scientists from the Veterinary Research Institute obtained significant awards for 2020:

- Prof. MVDr. Karel HRUŠKA, CSc. received a letter of appreciation for his lifelong contribution to the development of science and research and for his long-standing work for the CAAS.
- Prof. MVDr. Jiří RUBEŠ, CSc. was awarded a gold medal.

Letters of Appreciation for lifelong contribution to the development of science and research and for long-standing work for the CAAS in 2021 were awarded to:

- Prof. MVDr. Miroslav TOMAN, CSc.
- MVDr. Sonia ŠLOSÁRKOVÁ, Ph.D.



MVDr. Soňa Šlosárková, Ph.D.

prof. MVDr. Jiří Rubeš, CSc.

prof. MVDr. Miroslav Toman, CSc.

prof. MVDr. Karel Hruška, CSc.



The VRI scientists were awarded by the Czech Minister of Health for their outcomes

Daniel Růžek and Luděk Eyer were awarded with the Prize of the Czech Minister of Health for Medical Research and Development in appreciation of their research by Adam Vojtěch, Minister of Health. Radim Nencka from the Institute of Organic chemistry and Biochemistry CAS was also involved in the project.

The Czech Republic is one of the countries with the highest incidence of tick-borne encephalitis in the world and the team of Daniel Růžek from the joint virology unit of the Biology Centre CAS and the Veterinary Research Institute, in collaboration with the team of Radim Nencka from the Institute of Organic chemistry and Biochemistry CAS have succeeded in identifying several groups of substances with high antiviral activity, which has been observed not only under in vitro conditions, but in some cases also in laboratory animals infected with a lethal dose of the virus. The newly developed antibodies to tick-borne encephalitis offer great potential. "It is contemplated that if a person has found a tick attached to the skin, has it tested in a laboratory and the tick tested positive, it would be possible to administer these antibodies promptly, which would provide immediate protection to the



person from disease development," said Daniel Růžek. The antibodies should act as an immediate prevention and cure.

Prof. Růžek added: "Our laboratory investigates serious viral diseases of humans, with special attention to tick-borne encephalitis and other viral diseases transmitted by blood-sucking arthropods. In addition, we study other emerging and exotic viral diseases, including COVID-19.

PhD students at the VRI scored points at the international Conference MendelNet 2021

PhD students from the VRI, Department of Infectious Diseases and Preventive Medicine, were particularly successful at the 28th International Conference of Young Scientists MendelNet, which took place online on 10 November 2021. In the section of fisheries and aquaculture, Mgr. Radek Machát won first prize for the presentation entitled: Selected biochemical parameters of two common carp (Cyprinus carpio) breeds infected with koi herpesvirus. Mgr. Aneta Hollerová came third in the contest with the presentation entitled:

Is oral application of plastic particles able to provoke the oxidative stress and alter expression of immunity related genes in rainbow trout? "MendelNet was originally established as a student (pre- and postgraduate) conference at the Faculty of Agronomy of Mendel University. It gradually developed into its current form, and students from

other universities and institutions, including international students, have participated in MendelNet for several years. The evaluated papers are divided into several sections; this year, 8 thematic sections were opened with almost 100 participants. All student papers first go through a peer review process and then are included in the proceedings. After the conference, they are submitted to the "Conference proceedings citation index", which is a database of conference papers under Web of Science. The presentations usually are delivered at Mendel University. However, this year they were presented online due to the pandemic," added Mgr. Radek Machát.

Award for the VRI at International Workshop

At the end of October this year, the Department of Pig Breeding Kostelec nad Orlicí of the Institute of Animal Science hosted the seventeenth year of the international workshop Research in Pig Breeding with participants from Germany and Hungary.

The most votes for the oral presentation went to Ing. Rea Jarošová from the Veterinary Research Institute for her contribution entitled "Cytokine expression by CD163+ monocytes in Actinobacillus pleuropneumoniae-infected pigs". "Our paper was aimed to address the natural immunity response to Actinobacillus pleuropneumoniae in pigs. The main components of the natural immunity fighting bacterial infection are neutrophil granulocytes and monocytes or macrophages. This paper focused on the specific group of CD163+ monocytes that play an important role in inflammation caused by APP. Previous experiments performed by our research group have shown that this subpopulation is the main cell population of monocytes that infiltrates inflamed tissues. At these sites of inflammation, there is an increase in the production of inflammatory cytokines and the aim of this experiment was to determine whether CD163+ monocytes/macrophages are responsible for their production. The result of this study is that in the blood these CD163+monocytes do not produce any cytokines and only after arriving at the site of inflammation, in the lungs, in necrotic lesions, these CD163+monocytes/macrophages are the source of inflammatory cytokines," said Ing. Rea Jarošová.



MendelNet

Conference Brno 2020

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Projects in 2021

New national projects - In 2021, researchers started to implement several national projects under the calls announced by the Czech Health Research Council, Czech Science Foundation, Ministry of the Interior of the Czech Republic and the Ministry of Industry and Trade of the Czech Republic. The strategic projects include the project under the second call Smart accelerator in the South Moravian Region II, ACTIVITY- ASSISTANCE entitled Preparation of the project Veterinary Biotechnological Prototype Unit – PROBIOVET. It is worth mentioning that a subsidy for the constructi-

Unconventional environmental ligands of the Ah receptor and their complex in vitro effects Investigator at the VRI: RNDr. Miroslav MACHALA, CSc.

Polycyclic (PAHs) and heterocyclic aromatic hydrocarbons (HAHs) and their alkylated and oxo-derivatives are important environmental pollutants, but our current knowledge of their toxic effects is mostly limited to a small set of unsubstituted PAHs included in monitoring programmes. In particular, the aim of the project proposal is to gain new insights into the interactions of neglected or newly identified groups of polyaromatic contaminants with the aromatic hydrocarbon receptor (AhR), especially the human AhR; their previously unexplored impact

Use of wastewater surveillance as an early warning tool against the emergence of epidemiological situations Investigator at the VRI: Mgr. Petra VAŠÍČKOVÁ, Ph.D.

The aim of the project is to develop a strategy for early detection of warning signals of an emerging epidemiological situation in the Czech Republic and its localization. This strategy will be an effective tool for the security system and crisis management in the Czech Republic to prevent the epidemic spread of serious diseases. It will be based on systematic monitoring of municipal wastewater (WW) to detect risk microbiological

Glycosphingolipids and their metabolic pathways as potential biomarkers of colon cancer Investigator at the VRI: RNDr. Miroslav MACHALA, CSc.

RColorectal carcinoma is one of the most commonly diagnosed tumours in the Czech Republic and worldwide. Despite advances in the treatment of this disease, it is still a disease with high mortality rates. The identificaon of a photovoltaic power station has been obtained from the Operational Programme Environment under the Specific Objective 5.3 - Reduce energy intensity and increase the use of renewable energy sources in buildings of central government institutions in the amount of CZK 2.8 million. Under the H2020 programme, in 2021, the Institute as a partner was awarded an international project entitled The power of grape extracts: antimicrobial and antioxidant properties to prevent the use of antibiotics in farmed animals- NeoGiANT.



on the nuclear receptors PXR and CAR, key transcriptional regulators of xenobiotic metabolism and endogenous metabolism; and their complex effects on target cells, especially on cellular energy metabolism. Using a battery of in vitro assays and detailed analysis of molecular mechanisms of action, together with targeted chemical analysis of complex environmental samples, we expect the project to bring important information for the evaluation of PAH/HAH toxicity, particularly in relationship to those toxic mechanisms of action that may interfere with metabolism.



agents and biomarkers (neopterin) discharged into WW. It will include optimization of the method for detection of potentially harmful microbiological agents (SARS-CoV-2, hepatitis A virus, etc.) in WW using polymerase chain reaction, including efficient separation. The strategy will be based on the unique data from the pilot monitoring of SARSCoV-2 in WW and will be applicable to other biological agents discharged into WW.



tion of suitable prognostic markers of colon cancer may allow more efficient identification of at-risk patient groups and development of modern forms of targeted therapy. Reprogramming of cancer cell metabolism, including lipid metabolism, is an important part of the process of cell transformation and cancer cell formation. Our preliminary results show that some specific forms of glycosphingolipids (GSL) accumulate in colorectal tumours, suggesting the possibility of using GSL and enzymes involved in their metabolism as potential markers of colon cancer. However, immunohistochemical analyses of the expression of enzymes of GSL metabolism are often difficult to perform, not only because of the unclear role of some enzymes in GSL metabolism, but also the questionable quality of many of the antibodies used. Using a very unique combination of expertise in the analysis of clinical material, appropriate in vitro models and detailed lipidome analysis, our aim is to determine the main types of GSL alterations in patients' tumour tissue and to identify the enzymes responsible for these alterations; validate the function and detection of these enzymes by antibodies in appropriate in vitro models derived from colorectal cancer; and subsequently monitor these alterations using immunohistochemical and other histopathological analyses in a constantly created biobank of clinical material obtained from a well-defined cohort of colon cancer patients. The results produced will allow the identification of new biomarkers associated with GSL metabolism in colon tumours that may help improve the prognosis of the development and progression of this disease, with their potential use in colon cancer monitoring and therapy.

arthropods as vectors) within local ecosystems. The main strength of the

project is the combination of the state-of-the-art molecular approaches

and standard culture, allowing massive screening and detailed genetic

characterization of new agents. Another goal is to obtain live isolates that

will allow us to study their biological properties, pathogenicity and trans-

mission to vertebrates. The project aims to search for emerging infectious

disease threats from the wild, which are often determined by globalisation.

Latent zoonoses – discovery of new pathogens in the wild Investigator at the VRI: RNDr. Jiří SALÁT, Ph.D.

The current situation associated with the COVID-19 pandemic is an important reminder that identifying new pathogens in animal reservoirs and the rapid determination of their pathogenic potential are key factors in suppressing global health threats. As wild animals occupy a key role in the circulation and spread of emerging zoonoses, the discovery of new pathogens in the wild remains a major scientific challenge on a global scale. The project aims to uncover the diversity of a wide range of bacterial and viral agents with zoonotic potential (in vertebrates and haematophagous

Textile structures combining virus protection and comfort Investigator at the VRI: Mgr. Petra VAŠÍČKOVÁ, Ph.D.

The aim of the project is to identify, prepare and verify functional materials with antiviral activity. These materials will be incorporated into textile structures in the form of multilayer sandwiches for protective facemasks (type RO - protection against the spread of viruses from infec-

Veterinary medicinal product based on IgY antibody enrichment Investigator at the VRI : Mgr. Hana ŠTĚPÁNOVÁ, Ph.D.

The project outcome will be a non-antibiotic veterinary therapeutic product, which will allow the application to the mammary gland of dairy cows to prevent the development of a serious disease caused by the bacterial species Streptococcus uberis, which currently plays a significant role in

Other project providers











MINISTERSTVO PRŮMYSLU A OBCHODU

ted persons and type RP - protection against the penetration of the virus into bodies of healthy people) and into antiviral textile sandwiches repelling water droplets, mechanically capturing coronaviruses with a special focus on SARS-CoV-2 and enabling their effective inhibition.

the development of mastitis in dairy cows. This product will allow reduction of antibiotic use in animals kept for milk production, which can be a potential source for the development of antibiotic resistance in humans.

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PROBIOVET - VETERINARY BIOTECHNOLOGY PROTOTYPE UNIT

ABOUT The project The project is implemented within the programme Smart Accelerator in the South Moravian Region II. ACTIVITY – ASSISTANCE, No. JMK 118711/2021. The aim of the project is to prepare project documentation and construction documentation, feasibility study up to the stage of implementability of the project plan for the construction of a Veterinary. Biotechnology Prototype Unit (PROBIOVET). The aim of the project is to support the development of proof-of-concept activities and strengthening the VRI competence in the field of innovation and technology transfer.

jihomoravský kraj

Contact: Ing. Ildikó Csölle Putzová, Ph.D., MBA Phone:: +420 777 509 019. E-mail: csolle.putzova@vri.cz



PROGRAM 9 F.i. Professional Consultations

From 1 January 2021 up to and including 31 December 2021, 11,250 minutes, i.e. 187.5 hours of consultations on professional topics and innovations under the National Subsidies of the Ministry of Agriculture, subsidy title Programme 9 F.i. Professional Consultations, i.e. 232 consultations were reported by the VRI scientific and professional staff.

Most of the consultations were provided by the VRI staff to dairy farmers and to pig, sheep and goat breeders.

The topics were largely focused on paratuberculosis and BVD control programmes, as well as on the possibilities of diagnosing bacterial and viral diseases, on the issue of antimicrobial resistance, on control programmes and preventive measures against the occurrence of selected diseases and on the possibilities of controlled reproductive technologies. Furthermore, attention was paid to the evidence of diseases and treatment of cattle in the application "Diary of Diseases and Treatment". Consultations were also provided on rearing of young animals, colostrum and dairy nutrition and diseases in animals on dairy nutrition.

Critical areas for the provision of expert consultations advice include the

following topics:

- Targeted and effective diagnosis and management of diseases in cattle, pigs, sheep and goats, including young animals
- Antimicrobial resistance and the correct use of antimicrobials
- Bovine paratuberculosis control programmes
- Immunomodulation and vaccination possibilities
- Suggested health management practices for calves, dairy cows and weaned and adult pigs
- Possible alternatives to ZnO in pigs
- Quality of insemination doses in farm animal reproduction
- Processing of health data, its current and future use

The guarantor of the programme 9.F.i. Professional Consultations is MVDr. Soňa Šlosárková, Ph.D.

CEREBIT

CENTRE FOR RECOMBINANT BIOTECHNOLOGIES AND IMMUNOTHERAPEUTICS

ABOUT The project The project focuses on the development of recombinant high-affinity ligands, recombinant protein and DNA vaccines with corpuscular carriers and molecular adjuvants, which represents a new biotechnological trend in the development of recombinant vaccines, highly selective immunotherapeutics, diagnostics and theranostics.

PROJECT PARTNERS

UP Olomouc IBT Prague UCT Prague

Contact: PharmDr. Josef Mašek, PhD. Phone: +420 773 775 481, E-mail: masek@vri.cz.





ABOUT The project

PROBIOTIC BACTERIA OF GUT MICROBIOTA AS THE BASIS OF ANIMAL HEALTH AND WELFARE

Selection of new bacterial isolates from poultry and pigs and determination
of their complete genome sequence.

- Verification of the ability of these isolates to colonize the digestive tract of chickens and piglets.
- Testing the host response to colonization by selected bacterial isolates with probiotic potential.
- Identification of probiotic isolates which increase the natural resistance of chickens and piglets to infection with Salmonella, Campylobacter and pathogenic *E. coli*, including antibiotic-resistant clones.

Contact: Doc. RNDr. Ivan Rychlik, Ph.D. Phone: +420 5 3333 1201, E-mail: rychlik@vri.cz



PRO

SUSTAINABLE PRODUCTION OF HEALTHY FISH IN VARIOUS AQUACULTURE SYSTEMS

ABOUT The project

- Study of relationships between fish, pathogens and environmental conditions affecting fish health and economic output from aquaculture production.
- Study of technological, animal husbandry and nutritional factors, the effects of environmental pollution and the use of antibiotics. Other activities will be aimed at the investigation of causative agents of infectious diseases and immune mechanisms.

PROJECT PARTNERS

Mendel University in Brno University of South Bohemia in České Budějovice

Contact: MVDr. Martin Faldyna, Ph.D. Phone: +420 777 786 695 E-mail: faldyna@vri.cz.

EUROSEAN UNDN Exception Shuthull ant, Hreitenich Turits Operational Programme Research Development and Education



HEALTHY AGEING IN INDUSTRIAL ENVIRONMENT

ABOUT The project

- The project addresses the effects of selected environmental and lifestyle risk factors on health and ageing of the population in an industrial area.
- Numerous studies are being conducted under four research programmes in different population samples (mortality, morbidity, molecularepidemiological and genetic studies, cytogenetic studies, exposure studies, fertility studies, increased physical activity studies, socioeconomic and psycho-social studies).

PROJECT PARTNERS

University of Ostrava Institute of Experimental Medicine CAS Faculty of Education, University of Ostrava

Contact: Prof. MYDr. Jiří Rubeš, CSc. Phone: +420 72144 1493, E-mail: rubes@vri.cz



PHARMACOLOGY, IMMUNOTHERAPY, NANOTOXICOLOGY

ABOUT THE PROJECT

T X I

The main goal of the FIT project is to build a European research centre for nanomedicine and medicinal nanotechnologies with a unique infrastructure for research and development of recombinant vaccines and targeted drugs against infections and cancer diseases.

DEPARTMENTS INVOLVED IN THE PROJECT

Infectious Diseases and Preventive Medicine Pharmacology and Toxicology

Contact: PharmDr, Josef Mašek, PhD. Phone: +420 773 775 481, E-mail: masek@vri.cz



CENTRAL EUROPEAN INSTITUTE OF TECHNOLOGY

ABOUT THE PROJECT

Research at the VRI within the framework of CEITEC is focused on basic and Ŷ applied research in the field of reproduction, animal models and advanced light microscopy techniques.

Our workplace is actively involved in a wide network of cooperation with × national and international academic centers and at the same time participates in the production of results transferred to practical use.

PROJECT PARTNERS

Masaryk University Czech Academy of Sciences Mendel University in Brno University of Veterinary and Pharmaceutical Organisational CEITEC VRI Unit Director: Sciences Brno Brno University of Technology

MVDr. Martin Anger, CSc. Phone: +420 5 3333 1411, E-mail: anger@vri.cz



International Cooperation





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NEOGIANT: THE POWER OF GRAPE EXTRACTS: ANTIMICROBIAL AND ANTIOXIDANT PROPERTIES TO PREVENT THE USE OF ANTIBIOTICS **IN FARMED ANIMALS**

ABOUT THE PROJECT The main objective of the NeoGiANT project is to develop and validate an innovative natural formulation from grape extracts with antimicrobial and antioxidant properties, which will be used as a nutritional supplement for farm animals and farmed fish. The aim is to reduce the dependence on the use of antibiotics in animal/aquaculture production. This strategy should make a significant contribution to the fight against antimicrobial resistance (AMR) originating in animal production on farms by providing an economically viable alternative to the routine use of antibiotics.

PARTNERS: CONSORTIUM **OF 20 PARTNERS**

🕻 ALEHOOP

Contact MVDr. Martin Faldyna, Ph.D. Phone: +420 777 786 695. E-mail: martin faldyna@vri.cz



Horizon 2020 European Union Funding for Research & Innovation

BIOREFINERIES FOR THE VALORISATION OF MACROALGAL RESIDUAL BIOMASS AND LEGUME PROCESSING BY-PRODUCTS TO OBTAIN NEW PROTEIN VALUE CHAINS FOR HIGH-VALUE FOOD AND FEED APPLICATIONS (ALEHOOP)

ABOUT THE PROJECT

Obtaining cheap dietary proteins from biomass, algae and byproducts in the production of legumes using biorefineries. This transforms biomass into alternative forms of proteins for a variety of uses, from animal feeds and food supplements to cutting-edge applications in nutritional awareness and health control.



PARTNERS: CONSORTIUM **OF 16 PARTNERS**

Contact: MVDr. Martin Faldyna, Ph.D. Phone: +420 777 786 695 E-mail: faldyna@vri.cz



Horizon 2020 **European Union Funding** for Research & Innovation







THE ONE HEALTH EUROPEAN JOINT PROGRAMME

ONE HEALTH

ABOUT The aim is to create a sustainable European One Health THE PROJECT framework by integration and alignment of medical, veterinary and food production research through shered programming of research agendas matching the needs of European and national policy makers and stakeholders.

The project includes:

- Foodborne Zoonoses (FBZ)
- Antimicrobial Resistance (AMR)
- Emerging Threats (ET)

PARTNERS: CONSORTIUM OF 37 PARTNERS



Contact: doc, RNDr. Ivan Rychlik, Ph.D., tel.: +420 777 786 322, e-mail: ivan.rychlik@vri.cz



INTERREG CROSS-BORDER COOPERATION V-A AUSTRIA-CZECH REPUBLIC FOR PROGRAMMING PERIOD 2014- 2020

Initiative for the promotion of research and innovation capacity of veterinary service in poultry production

ABOUT The project

The main goal of the project is to increase and improve poultry products in the region. The importance of this goal is reflected in the worldwide increased demand for poultry products, especially poultry meat. A prerequisite for increasing production is the health of the animals and the associated welfare. Iceland R Norway Liechtenstein Norway Norway grants grants

TBFVnet - A NETWORK OF LABORATORIES THAT STUDY AND SURVEY TICK-BORNE FLAVIVIRUSES

ABOUT The project TBFVnet is a joint research platform consisting of a network of associated laboratories to investigate the biology and pathogenesis of tick-borne encephalitis virus (TBFV) disease and to study novel antivirals. TBFVnet also aims to integrate research in this area by sharing common tools, expertise and best practices, and passing them on to neighboring countries.

PARTNERS: CONSORTIUM OF 6 PARTNERS Contact: prof. doc. RNDr. Daniel Růžek, CSc. Phone: +420 777 786 218, E-mail: daniel.ruzek@vri.cz

Projects for reducing energy consumption in buildings

FVE for the Veterinary Research Institute

Within the Operational Programme Environment under the Specific Objective 5.3 - Reduce energy intensity and increase the use of renewable energy sources in buildings of central government institutions, the VRI obtained a subsidy in the amount of CZK 2.8 million for the construction of a photovoltaic power plant. The power plant will be installed on the roof of a building attached to the ground solid foundation and registered in the Land Registry on plot No. 731, and the technology will be located in a technical room of the same building on plot No. 731 Medlánky. The building is used as an animal facility. The power plant will consist of a total of 249 photovoltaic panels with an output of 360 Wp, the total installed capacity of the photovoltaic system is 89.64 kWp. A more detailed description is given in the project documentation and other annexes to the concerned tender.

Contact Ing. Jiří Svoboda, email: jiri.svoboda@vri.cz Phone: +420 777 787 275



EVROPSKÁ UNIE Evropské strukturální a investiční fondy Operační program Životní prostředí



Ministerstvo životního prostředí České republiky





Transfer of Results to End-users

Transfer of new knowledge and commercialization of new technologies is a very important activity complementing the main mission of the Institute. The intellectual property protection policy is primarily focused on ensuring the use of the outcomes created by the employees so that they produce maximum benefit for the VRI. The centre coordinating the activities related to the commercialization of new knowledge and technologies developed in the departments of the Institute is the Centre for Technology Transfer and Project Support (CTT PS). The main activities of CTT PS include monitoring of research activities and new knowledge, evaluation of commercial potential of the new knowledge, ensuring intellectual property protection of generated results, managing the intellectual property portfolio, consulting, providing contractual documents, preparing internal regulations, licensing policy, promoting results, counselling services, analyses and provision of external legal services.

CTT PS maintains the database of the Institute's intellectual property. As of 31 December 2021, the VRI has registered a total of 14 national patents, 31 utility models and 4 international patents. In 2021, one Canadian patent and 3 utility models were registered.

In 2021, the following European patent EP 3535238 was granted: Aminooxylipids for the construction of self-assembling liposomal systems enabling their subsequent modification by biologically functional molecules, which was prepared in cooperation with the University of Chemistry and Technology, Prague and Apigenex s.r.o.

One of the key tasks of the CTT PS in 2021 was to strengthen cooperation with agricultural and veterinary spheres and other potential customers of research results and knowledge. Cooperation was established with the commercial and non-profit spheres in the form of applied research projects and expert activities with an effort for a long-term mutually beneficial effect.

In accordance with the Institute's strategic objectives, a project was proposed for the construction of a veterinary biotechnology prototype unit, which received support under the call JMK Smart Accelerator of Assistance entitled: Preparation of the project Veterinary Biotechnology Prototype Unit. Thanks to the subsidy of approx. CZK 800 thousand obtained from the project, the feasibility study of this project, which is crucial for the Institute, will be prepared. It should provide conditions for creating specific new prototypes, strengthen cooperation among subjects of the innovation environment within the region and subjects outside the region and, among other things, contribute to the growth of their competi-

tive ability.

In the spring of 2021, the production and distribution of the Immunoenzymatic kit was launched for screening of antibodies to Mycobacterium paratuberculosis in bovine serum, plasma and milk, developed under the project NAZV QI101A094 at the Department of Infectious Diseases and Preventive Medicine of the VRI in the form of ELISA diagnostics. This diagnostic kit is available as PTB Ab ELISA 480 from the TestLine Clinical Diagnostics s.r.o.

In 2021, contracts for cooperation with domestic and foreign partners, especially from the application sphere, were made in the area of commercialisation of research and development results in the amount of approx. CZK 16.2M. These collaborations were implemented in the form of licence agreements, contract research agreements and custom research.



Certified methodologies

Applied result No.	Title of the applied result	Authors
Methodology 132/2020, ISBN 978-80-88233-94-7	Qualitative detection of SARS-CoV-2 virus by MOL-PCR	KRÁSNA Magdaléna; HRDÝ Jakub; MALENOVSKÁ Hana
Methodology 135/2020, ISBN 978-80-88233-97-8	Qualitative detection of swine influenza by MOL-PCR	KRÁSNA Magdaléna; HRDÝ Jakub; MALENOVSKÁ Hana
Methodology 134/2020, ISBN 978-80-88233-96-1	Qualitative detection of porcine reproductive and respiratory syndro- me virus (PRRSV) by MOL-PCR	KRÁSNA Magdaléna; HRDÝ Jakub; MALENOVSKÁ Hana
Methodology 126/2020, ISBN 978-80-88233-90-9	Qualitative detection of bovine herpesvirus 1 by MOL-PCR	HRDÝ Jakub; JELÍNKOVÁ Pavlína
Methodology 133/2020, ISBN 978-80-88233-95-4	Qualitative detection of Cryptosporidium spp. by MOL-PCR	MARKOVÁ Jiřina
Methodology 125/2020, ISBN 978-80-88233-89-3	Qualitative detection of the tapeworm Echinococcus multilocularis by MOL-PCR	MARKOVÁ Jiřina
Methodology 127/2020, ISBN 978-80-88233-91-6	Qualitative detection of Mycobacterium tuberculosis complex by MOL-PCR	JELÍNKOVÁ Pavlína; SLANÁ Iva; VOLF Jiří
Methodology 124/2020, ISBN 978-80-88233-88-6	Qualitative detection of Mycobacterium avium complex and deter- mination of Mycobacterium avium subsp. avium and Mycobacterium avium subsp. hominisuis by MOL-PCR	JELÍNKOVÁ Pavlína; SLANÁ Iva; VOLF Jiří
Methodology 129/2020, ISBN 978-80-88233-93-0	Qualitative detection of Mycobacterium avium subsp. paratuberculo- sis by MOL-PCR	JELÍNKOVÁ Pavlína; SLANÁ Iva; VOLF Jiří
Methodology 128/2020, ISBN 978-80-88233-92-3	Qualitative detection of Rickettsia spp. by MOL-PCR	JELÍNKOVÁ Pavlína; VOLF Jiří
Methodology 139/2021, ISBN 978-80-7672-011-4	Innovation of methods to produce bovine embryos of the desired genome	MACHATKOVÁ Marie; TRÁVNÍČKOVÁ Ivona; HULÍNSKÁ Pavlína; HANZALOVÁ Kateřina
Methodology 181, ISBN 978-80-7514-099-9,	Diagnostics of carp mortality in spring	Piačková Veronika; Zusková Eliška; Kroupová Kocour Hana; Máchová Jana; VESELÝ Tomáš; MATĚJÍČKOVÁ Kateřina; POJEZDAL Ľubomír; Papežíková Ivana; Syrová Eva; Palíková Miroslava
Methodology MZE- 67432/2021-18141	Intrafollicular transfer of bovine oocytes	Čech Svatopluk; ANDRLÍKOVÁ Michaela; Kos Vojtěch; Marková Beáta; Štenclová Lucie
Methodology 190, ISBN 978-80-7514-139-2	Prevention of the emergence and spread of carp oedema virus disea- se/ koi sleeping disease(CEVD/KSD) on carp and koi carp farms	Piačková Veronika; Palíková Miroslava; POJEZDAL Ľubomír; Zusková Eliška; Papežíková Ivana; MATĚJĺČKOVÁ Kateřina
Methodology, ISBN 978- 80-7403-266-0	Preventive measures to increase the level of biosecurity against the spread of African swine fever	Novák Pavel; Malá Gabriela; PRODĚLALOVÁ Jana
Methodology 140/2021, ISBN 978-80-7672-016-9	Monitoring and evaluation of antimicrobial consumption and health management systems in pig herds	BERNARDY Jan; FLEISCHER Petr; ŠLOSÁRKOVÁ Soňa; NECHVÁTALOVÁ Kateři- na; KUČEROVÁ Jarmila; FALDYNA Martin

Functional pattern

Applied result No.	Title of the applied result	Authors
Functional pattern 1056/2021, ISBN 978-80-7672-007-7	Multiplex TaqMan qPCR system for determination and quantifica- tion of potentially pathogenic microalgae of the genus Prototheca in milk samples	BAČOVÁ Romana; MORÁVKOVÁ Monika; KRÁLÍK Petr.
Functional pattern HL1/ FZU/2020	Functional biochip with ultra-resistant polymer layer for rapid detection of SARS-CoV-2 virus by QCM	Forinová Michala; Pilipenco Alina; Víšová Ivana; Horák Petr; Vrabcová Markéta; HÖNIG Václav; PALUS Martin; Štěrba Ján; Dejneka Alexandr; Lísalová Hana
Functional pattern HL1/ FZU/2021	Ultra-resistant biochip surface with a terpolymer layer post-modi- fied with a specific antibody for rapid detection of SARS virus- -CoV-2 by QCM method	Lísalová Hana; Víšová Ivana; Horák Petr; Forinová Michala; Pilipenco Alina; Vrabcová Markéta; Arnoštová Judita; Dejneka Alexandr; HÖNIG Václav; PALUS Martin; Štěrba Ján
Functional pattern 4176/2021, ISBN 978-80-7672-012-1	A diagnostic tool for multiplex detection and differentiation of the main bacterial agents causing abscesses in small ruminants	JELÍNKOVÁ Pavlína; MARKOVÁ Jiřina; REICHELOVÁ Markéta
Functional pattern 4374/2021, ISBN 978-80-7672-014-5	Specific detection of selected species of the genus Lactobacillus in chicken crops and a product affecting the colonization of chicken crops in the first week of life	RYCHLÍK Ivan; FALDYNOVÁ Marcela; KUBASOVÁ Tereza; ŠEBKOVÁ Alena; MATIAŠOVICOVÁ Jitka
Functional pattern 4478/2021, ISBN 978-80-7672-015-2	DNA analysis of African swine fever virus using electrochemical methods	Rychlý Ondřej; Hosnedlová Božena; KIZEK René; KRZYŽÁNKOVÁ Miroslava
Functional pattern 413/2021, ISBN 978-80-7672-005-3	Super absorbent probiotic bedding	Vopravil Jan; FALDYNA Martin; Khel Tomáš; Erbeková Jana.
Functional pattern 4935/2021, ISBN 978-80-7672-017-6	Probiotic mixture for newborn piglets inhibiting the occurrence of entero-pathogenic bacteria	RYCHLÍK Ivan; JUŘICOVÁ Helena; MATIAŠOVICOVÁ Jitka; MATIAŠOVIC Ján

Prototype

Applied result No.	Title of the applied result	Authors
405/2021, ISBN 978-80-7672- 006-0	Diagnostický prostředek pro simultánní detekci influenzy typu A (IVA), influenzy typu B (IVB) a koronaviru SARS-CoV-2	HRDÝ Jakub; KRÁSNA Magdaléna

Utility model

Applied result No.	Title of the applied result	Authors
Utility model 35280	Double layer skin replacement	Vojtová Lucy; Pavliňáková Veronika; Kacvinská Katarína; Žídek Jan; Lipový Břetislav; Holoubek Jakub; Knoz Martin; FALDYNA Martin; GÖPFERT Eduard; VICENOVÁ Monika
Utility model 35185	Probiotic product for poultry	RYCHLÍK Ivan; FALDYNOVÁ Marcela; KUBASOVÁ Tereza; VOLF Jiří; JUŘICOVÁ Helena; MATIAŠOVICOVÁ Jitka; KARASOVÁ Daniela; CRHÁ- NOVÁ Magdaléna; ŠEBKOVÁ Alena; SEIDLEROVÁ Zuzana; Čížek Alois
Utility model 35668	Bioresorbable hybrid spinal replacement for intervertebral fusion	Vojtová Lucy; Dorazilová Jana; FALDYNA Martin; GÖPFERT Eduard; Kaiser Jozef; Krtička Milan; Nekuda Vladimír; Plánka Ladislav; Sedlá- ček Radek; Šťastný Přemysl; Trunec Martin; Zikmund Tomáš

Verified technology

Applied result No.	Title of the applied result	Authors
Verified technology 2021/3077	Superabsorbent probiotic culture for direct application to litter	PAVLOVÁ Martina, SOUKUPOVÁ Pavlína, RODÁKOVÁ Jarmila, HONZOVÁ Hana, VOPRAVIL Jan, KHEL Tomáš, KINCL David, KADLEC Robert, LEVÁ Lenka, SMRŽOVÁ Zora, FALDYNA Martin

Patent

Applied result No.	Title of the applied result	Authors
Patent CA 3039404	AMINOOXYLIPIDS FOR THE CONSTRUCTION OF SELF-ASSEMBLING LIPOSOMAL SYSTEMS ENABLING THEIR SUBSEQUENT MODIFICATION BY BIOLOGICALLY FUNCTIONAL MOLECULES	Ledvina Miroslav; Effenberg Roman; TURÁNEK Jaroslav; BARTHELDYOVÁ Eliška; Drož Ladislav; MAŠEK Josef; HUBATKA František
Patent 307672	Vaccine for oral administration to farm animals	RYCHLÍK Ivan; KARASOVÁ Daniela; ŠEBKOVÁ Alena; HAVLÍČ- KOVÁ Hana; MATULOVÁ Marta, ŠIŠÁK František
European Patent Office, Patent CZ/ EP 3535238	AMINOOXYLIPIDS FOR THE CONSTRUCTION OF SELF-ASSEMBLING LIPOSOMAL SYSTEMS ENABLING THEIR SUBSEQUENT MODIFICATION BY BIOLOGICALLY FUNCTIONAL MOLECULES	Ledvina Miroslav; Effenberg Roman; TURÁNEK Jaroslav; BARTHELDYOVÁ Eliška; Drož Ladislav; MAŠEK Josef; HUBATKA František

Software

Applied result No.	Title of the applied result	Authors
Software 5158/2021	Pig treatment diary- Program/software for on-line evidence of veteri- nary medicinal products VLP/P consumption and veterinary diary	Hájek Michal; FLEISCHER Petr; ŠLOSÁRKOVÁ Soňa; BER- NARDY Jan; NECHVÁTALOVÁ Kateřina; KUČEROVÁ Jarmila



Incidental Institutional Activities

Small Art Gallery

In 2021, our Small Art Gallery hosted 7 exhibitions of photographs, graphic arts, wood engravings, paintings etc. Some artists organized private viewing to their exhibitions.

- Jánuš Kubíček "Vanitas" drawings, graphics, decals
- Dana Teturová "Water and Girls" mosaics and watercolours
- Linda Čihařová "Nanocommunities Stories Revealed" photographs
- Pavel Kulich "Viruses and vaccines: past, present
 - Electron microscopy,
 - photos"
- Aneta Baklová "Portraits of animals" drawings
- František Maršálek "Farewell" photos
- Jánuš Kubíček "The origin of the graphic sheet" Author's birth centenary

Library

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In 2021, the Library continuously updated its book fund and magazine fund, purchased books and periodicals, and provided bibliographic and library services, including book lending and providing papers published in journals from its own fund, as well as from other Czech libraries and from abroad. In addition, it also fulfilled the requirements of the Interlibrary loan services for other libraries in the Czech Republic. As well as in previous years, the online access to full-texts of requested papers in databases offered by Elsevier (ScienceDirect and Scopus), Springer, Wiley and Blackwell and to the abstract and citation database Web of Science (Web of Knowledge) was made possible for the VRI researchers. In addition to professional literature, the VRI Library also provides lending of fiction books within the Employees' Library.

The activity of the Small Art Gallery is provided by MgA. Sylva Tománková. For the history of exhibitions and current exhibitions please visit the following website:





Revitalisation of the Park at the VRI

Not only is science at the forefront of the VRI management's interest, but so is the environment, among others, the Institute's extensive park. On the basis of an expert dendrological survey, a restoration plan has been created and, by the end of this year, 12 trees and 1597 shrubs are to be planted in about eight groups. As part of the revitalisation, two outdoor seating areas have been placed in the "park".

Due to drought, the park's greenery has been damaged in recent years. Therefore, a dendrological survey was carried out by a qualified person and the trees and shrubs that could not be saved were cut down. Subsequently, new planting was proposed in accordance with the existing VRI park. Regarding trees that could be at the risk of breakage, cabling and bracing was proposed, as well as the treatment of trees. However, before planting could take place, the park was hit by a strong windstorm that uprooted and damaged some trees, which eventually had to be removed. Replacement of these trees has been incorporated into the planting plan. Planting started last week and will continue until about halfway through December. The proposed tree treatment will take place next spring.



Institute staff support frontline health workers

The extraordinary commitment of our health workers in the combat against Covid 19 and their extreme fatigue and frustration, led the VRI staff to take a respectable initiative in support and acknowledgement of their work which is important for the whole society.

The organisers obtained a nameless list of health workers from the Clinic of Infectious Diseases at the University Hospital Brno- and presented them with a dinner invitation. The principle of the event consisted in buying a voucher for a specific person chosen by the donor, attaching a personal message, a picture from a child and a voucher to a restaurant. Additional purpose of this initiative was an effort to support the restaurant industry, a sector which also suffers.

"We believe that this event could help at least partially to recharge the mental strength that our healthcare workers are lacking in these gloomy times. We were also motivated by the words of the Senior Consultant who expressed her pleasure and thanks," said Dr Janda, one of the organisers of the initiative.



THE VRI ACADEMY

Given the continuing coronavirus pandemic in 2021, the Veterinary Research Institute in Brno hosted webinars/seminars under the name "VRI ACADEMY". The events were organised predominantly within the Czech Technology Platform for Agriculture, of which the VRI is a member, i.e. with the financial support from the Ministry of Agriculture. The webinars/seminars were designed for experts from the field of agricultural primary production, veterinary medicine and food industry. Their aim was, in addition to further education of the professional public, mainly to ensure the transfer of new research findings into agriculture industry and veterinary profession. Within the framework of individual seminars, scientists from the VRI in Brno as well as from related research and other professional institutions presented their work.

The webinars/seminars were of great interest to the professional public. The participants were mainly farm animals breeders, veterinarians, representatives of feed production companies and other companies providing services in agriculture, MENDELU students, employees of the state administration and various scientific institutions. New knowledge was presented by experts on the subject, independent of commercial interests, in a comprehensible form with regard to the audience, who are often confronted with the presented issues on a daily basis in connection with their own employment. After the event, the recording of the webinar was usually posted on the Institute's website (www.vri.cz, tab Cooperation with practice/VRI ACADEMY and CTPZ). The VRI ACA-DEMY as a natural continuation of the former VRI Fest emphasises the adaptation of current topics for the general public, and its attendance gave evidence of the professional



and social level of the project. The main organizer is MVDr. Soňa Šlosárková, Ph.D.

The following VRI employees actively participated in these webinars/ seminars: MVDr. Jan Bernardy, Ph.D., Mgr. Magdalena Crhánová, Ph.D., MVDr. Petr Fleischer, Ph.D., Mgr. Jan Gebauer, Ph.D., Mgr. Tereza Kubasová, Ph.D., Mgr. Kristína Pútecová, Doc. RNDr. Ivan Rychlík, Ph.D., MVDr. Soňa Šlosárková, Ph.D., Mgr. Michaela Šťastná, Ing. Kamil Šťastný, Ph.D. and MVDr. Jiří Volf, Ph.D.

VRI ACADEMY and other professional and educational events

Name of event	Author	Date
Seminar on poultry intestinal health	RYCHLÍK Ivan	14.05.2021
Cereal foods, foods with additives. Their benefits and risks in relation to celiac disease $-$ VRI ACADEMY VIII	JANDA Lubomír	03.06.2021
Proper function of the poultry digestive tract – VRI ACADEMY VIII	RYCHLÍK Ivan	26.05.2021
Health problems of small ruminants – VRI ACADEMY VIII	ŠLOSÁRKOVÁ Soňa	21.10.2021
New knowledge and new methods to prove the abuse of anabolic steroids in the fattening of farm animals- specifically pigs – VRI ACADEMY VIII	ŠŤASTNÝ Kamil	11.11.2021
Proper use of antimicrobials in livestock farms to reduce the development of antimicrobial resistance- VRI ACADEMY VIII.	ŠLOSÁRKOVÁ Soňa	16.11.2021
Calf health management in dairy herds- VRI ACADEMY VIII.	ŠLOSÁRKOVÁ Soňa	30.11.2021
Microbiology webinar	JUŘICOVÁ Helena	25.11.2021



Additional Activities

Veterinary Committee for Food Safety in 2021

The work of the Committee was carried out in 2021 according to the approved plan of activities. The professional activity of the Committee members and external experts, invited to assist in performing the tasks, was concentrated on making studies and giving opinions focused on the issues closely related to animal health, animal welfare, zoonoses, hygiene of farms, safety of animal products and animal feeds.

Members of the Committee in 2021:

Chairperson of the Committee: RNDr. Miroslav Machala, CSc. (VRI) Secretary of the Committee: MVDr. Ivana Koláčková, Ph.D. (VRI)

Members:

MVDr. Pavel Alexa, CSc. (VRI, former employee)

doc. MVDr. Jan Bardoň, Ph.D., MBA (State Veterinary Institute in Olomouc)

prof. MVDr. Ing. Petr Doležal, CSc. (MENDELU)

prof. MVDr. Alfred Hera, CSc., (ISCVBM Brno)

MVDr. Václav Jordán (Agris Medlov, former employee)

doc. MVDr. Renáta Karpíšková, Ph.D. (VRI /LF MUNI Brno)

MVDr. Eva Renčová (ISCVBM Brno)

prof. MVDr. Vladimír Večerek, CSc. (VETUNI Brno)

prof. MVDr. Lenka Vorlová, PhD. (VETUNI Brno).

The following members were co-opted to the VCFS (in charge from 1 January 2022):

prof. RNDr. Daniel Růžek, Ph.D. (VRI Brno)

MVDr. Ivana Koláčková, Ph.D. (Hospital in Boskovice) Mgr. Petra Vašíčková, Ph.D. (VRI) Professional activity of the Committee focused mainly on the preparation of six scientific studies:

1. Verification of the established withdrawal period of Ivermix pulvis for wild boar and monitoring of the antiparasitic effect of that veterinary medicinal product in roe deer (Prof. Hera et al.)

2. Methicillin-resistant Staphylococcus aureus MRSA in food of animal origin from the Czech market network and their characteristics (Doc. Karpíšková et al.)

3. Prevalence of bacterial toxin colibactin producers in food, food animals and humans and comparison of its cytotoxic effects (Dr. Straková et al.)

4. Prevalence of selected viral agents in samples of pork products from the retail market in the Czech Republic (Ing. Dr. Krzyžánková et al.)

5. Prevalence of specific Toxoplasma gondii antibodies in small ruminants (Dr. Marková et al.)

6. Technological defects and their prevalence during slaughter of market animals in abattoirs (Dr. Doleželová et al.).

In addition, an expert opinion provided on request of the Food Safety Coordination Group was prepared within the framework of the RDE, aimed at assessing whether short-term storage of packaged meat at temperatures above the storage temperature causes massive multiplication of microorganisms.



Collection of Animal Pathogenic Microorganisms (CAPM)

• Deposition of:

- New bacterial and viral isolates into the CAPM
- Cultures of microorganisms for the purposes of patent procedures in the Czech Republic
- Storage in safe deposit (cultures remain the property of the depositor)

• Areas of advisory services

- Taxonomy of bacteria and viruses
- Growing bacterial cultures
- Isolation and growth of viruses in cell cultures and chicken embryos
- Detection of mycoplasma contamination in viral and cell cultures and its elimination
- Cryopreservation of bacteria, viruses and cell cultures
- Biosafety and biosecurity

Head: MVDr. Markéta Reichelová Contact: Phone: +420 5 33332131, E-mail: reichelova@vri.cz



Centre of Laboratories-Testing laboratory No. 1354

Accredited entity according to ČSN EN 1SO/IEC 17025:2005

01- Laboratory for Animal Health and Food Safety

Testing for mycobacterial infections in animals; detection of the etiologi agents of paratuberculosis, avian tuberculosis and the other mycobacterial infectiols; detection of the presence of specific DNA sequences by PCR; detection of human noroviruses, hepatitis A and E viruses.

02- Laboratory for Food and Feed Adulteration, Detection Methods Detection of vegetable DNA in foods; identification of animal species and tissue specific DNA and mRNA; marine fish species identification (Gadidae, Scombridae and Clupeidae) in foods and biological material.

03- Laboratory for E. coli infections

Detection of Shiga-toxigenic *Escheríchia coli* (ISO/TS 13136); typing of *E. coli* somatic antigen; detection of-Shiga toxins, adherence factor intimin, enterohemoLysin, enterotoxins and differentiation of stx2e.

04- Laboratory for Cytogenetics

Conventional cytogenetic testing of animals.

05 - Laboratory for Electron Microscopy

Detection of viruses using negative staining.

06 - Laboratory for Viral Diseases of Fish

Isolation of fish viral pathogens on cell lines; detection of viral fish pathogens by ELISA; determination of the presence of selected DNA and RNA sequences in fish viruses.

07- Laboratory for Spermatology and Andrology

Semen analysis; determination of the functions of male reproductive organs; biological safety testing of various materials for sperm.

08 - Laboratory for Viral Diseases of Cattle

Bovine viral diarrhoea (BVD) and infectious bovine rhinotracheitis (IBR) – detection of the viruses and antibodies by ELISA.

09 - Laboratory for Typing of Bacteria

Detection of *Listeria monocytogenes* (EN ISO 11290), *Salmonella* spp. (ČSN EN ISO 6579) and *Campylobacter* spp.; detection of Staphylococcus aureus by PCR; serotyping of *Listeria monocytogenes* and *Salmonella* spp.; phage typing of Salmonella; macro-restriction analysis of bacteria by PFGE.

- Distribution of cultures of animal pathogenic bacteria and viruses
 Database of available strains is accessible through the Internet at
- Database of available strains is accessible through the internet a http://www.vurv.cz/ collections/vurv.exe/ search?lang=cz
- Lyophilisation services



Identifying Data

Identifying data Identification No.: 00027162 Tax Identification No.: CZ00027162 Address: Hudcova 296/70 621 00 Brno Czech Republic Phone: + 420 533 331 111 Fax: +420 541 211 229 E-mail: vri@vri.cz http://www.vri.cz ID Data Mailbox: 3gsnh8r Founder: Ministry of Agriculture of the Czech Republic Based in: Těšnov 17 117 05 Praha 1 Identification No.: 00020478

The Veterinary Research Institute location on the map GPS Loc: 49°23728"N, 16°57948"E

The Institute was founded on the basis of the Deed of Establishment Ref. No.: 22970/2006 – 11000, in accordance with § 3 of Act No. 341/2005 Coll., on public research institutions. The Veterinary Research Institute has become a public research institution with effect from 1 January, 2007

From the Deed of Establishment of the Veterinary Research Institute, as of 8 February 2018. The register of public research institutions: http://rvvi.msmt.cz/detail.php?ic=00027162

VETERINARY RESEARCH INSTITUTE



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BASIC PERSONNEL DATA

Total number of employees on 31st December, 2021	287
FTE personnel on 31st December, 2021	226.2
Disabled personnel	9

The average gross monthly salary of VRI employees in 2021 was 40,430. When compared with the previous year, this represents an increase of CZK1,764 per month, which means that its year-over-year growth rate was 4.5%. The national average for 4. Q 2021, published on the Czech Republic's Statistical Office website on 7th March, 2021, was CZK 40,135. The average gross salary indicator is calcu-

lated as the arithmetic mean (this is not the salary of one employee) and includes bonuses, salary compensation and overtime paid to FTE employees. Gross salaries are paid net of income tax, statutory health and social security contributions, and any other deductions agreed with individual employees. After deducting all these contributions, the employee is paid net salary. Neither compensation nor other personal costs were included in the calculation of the average gross salary, i.e. the costs paid on the basis of non-employment agreements (work agreements) and bonuses paid to statutory bodies.



Long-term conceptual development of the research organization for 2018 - 2022

Decision number MZE-RO 0518

Investigator: MVDr. Martin Faldyna, Ph.D.

A project supported from the VRI's finances entitled "Long-term conceptual development of the research organization for the period of 2018 - 2022" (DKRVO) was designed and approved in 2017 and thus 2021 was the fourth, i.e. the penultimate year of the implementation. Funds received by the Veterinary Research Institute in the form of the Institute's support were used for funding the activities in accordance with the Institution's Deed of Establishment focused on "the development of scientific disciplines of veterinary medicine, veterinary hygiene and ecology and related biomedical, agricultural and food sciences and tackling tasks arising from agricultural, environmental needs and rural development to protect animal and human health". The implementation of specific activities at the Institute within the framework of the Long-term concept of development of a research organization was carried out through the implementation of 16 research projects, which in their focus covered the whole range of issues that the VRI deals with professionally. From an aspect of farm animal species, individual research plans focused on diseases of poultry, ruminants, pigs, fish and bees. Regarding pathogens, the activities were focused on zoonoses of viral origin and zoonoses and diseases of bacterial origin, and their antimicrobial resistance. In the field of feed safety, the attention was concentrated on microbiological safety of foods and feeds and methods for the identification of their adulteration. Part of the activities was focused on genetics and embryo development. The last areas studied were environmental contaminants, pharmacology and nanotoxicology. The 17th research project was a continuation of activities related to the sustainability of the OP R&D&I project Centre for Advanced Microbiology and Immunology in Veterinary Medicine AdmireVet.

Although the year 2021 was significantly affected by the COVID19 pandemic and some activities were limited to some extent, all indicators exceeded the planned values. For example, the Institute's staff were authors or co-authors of 112 publications in journals with impact factor above the median of the branches. In fact, this is double the planned value. Furthermore, 3 patents and 3 utility models were granted and 16 methodologies were certified. Some of the scientific work results were also presented to veterinary practitioners and farmers in the form of publications in specialized journals intended for the readers in this field. These numbers documented that the results of the Institute's R&D activities are suitable for end-users as well as for the professional public. Therefore, it can be stated that the institutional support funds were used in accordance with the plan.



SUBJECT OF THE MAIN ACTIVITIES

Basic and applied research and development in veterinary medicine, veterinary hygiene and ecology and related biomedical, agricultural and food sciences:

- Involvement in international and national centres of research and development,
- Activities of reference laboratories,
- Operation of the Collection of Animal Pathogenic Microorganisms,
- Scientific, professional and educational cooperation,
- Transfer of research and development results, including new technologies, to end users,
- Verification and dissemination of research results within the Institute's authority,

- Hosting and holding of professional courses, seminars, and conferences, workshops and other professional events,
- Function of an information centre and support of publishing in the field of veterinary medicine and food safety,
- Experimentation,
- Agricultural activities.



OTHER ACTIVITIES

Other activities relate to the major activities in the fields of veterinary medicine, veterinary hygiene and ecology and related biomedical, agricultural and food sciences:

- Activities under the National Programme of Conservation and use of genetic resources of plants, animals and microorganisms important for nutrition and agriculture in conformity with Act No. 148/2003 Coll., on conservation and use of genetic resources of plants and microorganisms important for nutrition and agriculture and on amending Act No. 368/1992 Coll., on administrative fees, as amended (Act on Genetic Resources of plants and microorganisms).
- 2. Activity of the Veterinary Committee for Food Safety on the basis of the Resolution of the Government of the CR No. 1320 of 10 December 2001 concerning food safety strategy in the Czech Republic.
- 3. Expert witness activities in the fields of healthcare and agriculture; zoonotic diseases and infections of farm animals.

- 4. Commercial, financial, organizational and economic consulting.
- 5. Holding of professional courses, training and other educational activities, including lecturing activities.
- 6. Providing software and consultancy in hardware and software.
- 7. Graphics and drawing services.
- 8. Publishing services.

COMPLEMENTARY ACTIVITIES

FREE TRADES:

- 1. Activities of business, finance, organization and economic consultants
- 2. Research and development in sciences, technology and social sciences
- 3. Providing software, and consultancy in hardware and software
- 4. Copying services
- 5. Graphic art services
- 6. Specialized retail-sale and mixed goods
- 7. Hosting professional courses, trainings and other education, including lecturing
- 8. Publishing
- 9. Production of food products
- 10. Accommodation services

EXPERIMENTAL ACTIVITIES

Experiments with the use of live animal models are carried out on the basis of accreditation (58809/2014-MZE17214, valid until 22 March 2020). The goal is to create best conditions for experiments of the highest quality, corresponding to international standards with applying high ethical standards. Consideration is given to reducing the number of experimental animals used in approved experiments. All animal experiments are carried out according to the approved methodological procedure of the ordering party. The following animals are used in the experiments: cattle, sheep, goats, pigs, dogs, cats, rabbits, chickens, guinea pigs, rats, hamsters, mice and fish. 10 projects proposals dealing with the following areas were submi-

AGRICULTURAL ACTIVITIES

Part of the VRI agricultural area is designed for farm animal evacuation in case of fire or other emergency events. This area is inevitable and conforms to the current legislation.

NON-TRADE ACTIVITIES



- 2. Agricultural production, provision of works and services in agriculture, production and sale of animals and animal and vegetable products.
- 3. Expert witness activities in the fields of healthcare and agriculture zoonotic diseases and infections of farm animals.



tted for approval: Basic research, translational or applied research, development, production or testing of the quality, efficacy and safety of pharmaceuticals, foods, feeds and other substances or products, and in the field of higher education or doctoral study in order to obtain, maintain or improve professional knowledge. The experiments were carried out under the projects funded by the Czech Research Council (AZV), National Agency for Agricultural Research (NAZV), Czech Science Foundation (GAČR), Technology Agency of the Czech Republic (TACR) and the Operational Programme Research, Development and Education (OP RDE).



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THE VRI AUTHORITIES

Statutory representative of the VRI: MVDr. Martin Faldyna, Ph.D.

THE VRI BOARD

Member's name	Function	Organisation
RNDr. Jana Prodělalová, Ph.D.	Chairperson	VRI
doc. MVDr. Martin Anger, CSc.	Deputy-Chairperson	VRI
MVDr. Kamil Kovařčík, Ph.D.	Member	VRI
MVDr. Martin Faldyna, Ph.D.	Member	VRI
PharmDr. Josef Mašek, Ph.D.	Member	VRI
MVDr. Ján Matiašovic, Ph.D.	Member	VRI
RNDr. Petra Musilová, Ph.D.	Member	VRI
MVDr. Kateřina Nedbalcová, Ph.D.	Member	VRI
RNDr. Jana Prodělalová, Ph.D.	Member	VRI
MVDr. Markéta Reichelová	Member	VRI
Ing. Kamil Šťastný, Ph.D.	Member	VRI
Ing. Pavlína Adam, Ph.D.	External member	Ministry of Agriculture CR
MVDr. Jiří Bureš	External member	State Control of Veterinary Biologicals and Medicines
doc. Dr. Ing. Josef Kučera	External member	Czech-Moravian Breeders Association, a.s.
prof. MVDr. Vladimír Celer, Ph.D.	External member	University of Veterinary Sciences Brno, from 27 January 2021
MVDr. Kamil Sedlák, Ph.D.	External member	State Veterinary Institute, Prague, from 27 January 2021

MEMBERS OF THE SUPERVISORY BOARD

Member's name	Function	Organisation
doc. MVDr. Milan Malena, Ph.D.	Chairperson	
Mgr. Tomáš Jírů	Deputy-Chairperson	Regional Veterinary Administration for Pardubice Region (28 May 2019 – 28 May 2024)
Ing. Iva Blažková, Ph.D.	Member	Ministry of Agriculture (26 May 2016 – 26 May 2021)
Mgr. Jaroslav Hejátko	Member	Ministry of Agriculture (1 May 2019 – 1 May 2024)
Ing. Ondřej Sirko	Member	State Veterinary Administration (27 May 2021 – 27 May 2026)
MVDr. Martin Beňka	Member	State Veterinary Administration (7 December 2017 – 7 December 2022)
Ing. Jan Vodička	Member	Ministry of Agriculture (5 September 2019 – 5 September 2024)
prof. MVDr. Alfred Hera, CSc.	Member	ISCVBM (13 November 2020 – 1 November 2025)

DIRECTOR'S BOARD

Member's name	Department
MVDr. Ján Matiašovic, Ph.D.	Department of Infectious Diseases and Preventive Medicine
doc. RNDr. Ivan Rychlík, Ph.D.	Department of Microbiology and Antimicrobial Resistance
doc. MVDr. Martin Anger, CSc.	Department of Genetics and Reproductive Biotechnologies
PharmDr. Josef Mašek, Ph.D.	Department of Pharmacology and Toxicology

Member's name	Unit
Ing. Ildikó Csölle Putzová, Ph.D., MBA	Centre for Technology Transfer and Project Support
Ing. Vladimír Grof, appointed up to 13 January 2021, Tomáš Kapounek, BA (Hons) appointed for the period 14 January 2021-14 July 2021, Jiří Zemek appointed from 15 July 2021	Informatics Unit
Bc. Petra Borovcová up to 30 June 2021, Ing. Martina Ježko- vá from 1 July 2021	Economics Unit
Marie Sobotková	Experimental Animal Facility
Ing. Iva Stránská (appointed for the period 1-31 January 2021) Ing. Jiří Svoboda from 1 February 2021	Technical Unit
Ing. Iva Stránská	Safety officer
Pavla Dvořáková, Ing. Jan Rázek	Director's Office
Mgr. Simona Hošková	HR Officer
Ing. Jiří Kolísek	HR Coordinator
Irena Smrčková, MSc.	Internal Auditor
MVDr. Kateřina Nedbalcová, Ph.D.	Veterinary Trade Union

THE ACTIVITIES OF THE VRI BOARD IN 2021

In 2021, four regular meetings were held by the VRI Board. Due to the continuing bad COVID-19 epidemiological situation, the first two meetings were held online via Webex. The meetings included formal acts related to the Institute's operation. The VRI Board members approved the Institute's budget for 2021 and approved the Annual Report of the Institute for 2020. Furthermore, the VRI Board members discussed and approved changes to the bonus rules, working group evaluation system and changes to the organisation of the departments and designations of work teams. During the year, project proposals submitted under open calls from various providers were discussed. At the October meeting, the VRI Board's activities in its term of office between 2017 and 2021 was recapitulated and the major challenges to be addressed by the Institute were summarised.





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