vetmeduni

Annual Report 2020
University of Veterinary Medicine, Vienna

[Cover] Digital sensors in the halters and a special app are used to trace the horses' activities such as eating, resting, running or rolling.

Photos: (Cover) Thomas Suchanek/Vetmeduni Vienna, (Hen) Michael Bernkopf/Vetmeduni Vienna

University

Poultry health is a key factor in the production of sustainable and safe food of animal origin.

Petra Winter
Rector

The year 2020 was very demanding for all of us. It was all the more impressive how our #TeamVetmeduni showed that even in difficult times we can achieve more by working together. Owing to this team spirit and mutual support we were able not only to meet the pandemic-related challenges of the new normal in teaching, research and patient care but also to attain strategically important goals and initiate new projects in this exceptional year. The present annual report shows our work done across all university areas. No matter how diverse they may be it strikes me as clear that 2020 was also the year of joint efforts, of acting in concert and thus achieving more – a huge thanks to the #TeamVetmeduni and to all who supported our university in this.

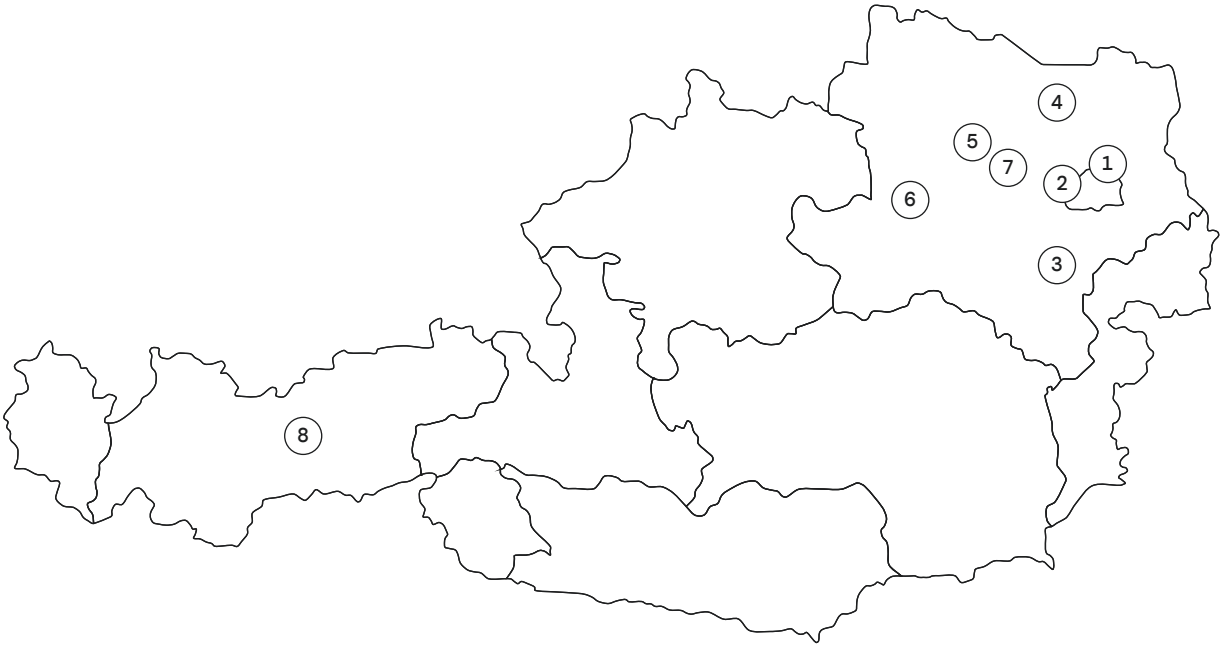
Johannes Khinast
Chairman of the University Council

Vetmeduni Vienna is looking back on an unusual and challenging year. The Corona pandemic caused profound and lasting changes in much of university life that had been previously taken for granted. This applies not only but in particular to teaching, where Corona-related restrictions engendered an even faster progression of digitalisation and where both teachers and students faced major challenges. Nevertheless an excellent and professional cooperation between Rectorate, researchers, teachers and students enabled Vetmeduni Vienna to create a university environment with teaching and research at the highest international level in the face of adversity as is evidenced by persistently top results in international rankings.

Photos: (1) Christian Steinbrenner/Vetmeduni Vienna, (2) Sissi Furgler

Unflappable, committed and innovative: The University of Veterinary Medicine, Vienna, stands for responsible action to ensure the health of humans, animals and the environment.

Sites of Vetmeduni Vienna



1
Vetmeduni Vienna Campus,
Floridsdorf, Vienna

2
Research Institute of Wildlife
Ecology/Konrad Lorenz Institute
of Ethology, Ottakring, Vienna

3
VetFarm
Kremesberg estate, Pottenstein,
Lower Austria
- Rehgras estate, Furth/Triesting,
  Lower Austria
- Haidlhof estate, Bad Vöslau,
  Lower Austria
- Medau estate, Berndorf,
  Lower Austria

4
Wolf Science Center (WSC),
Ernstbrunn, Lower Austria

5
Satellite of the Austrian
Ornithological Centre (AOC),
Seebarn/Grafenwörth, Lower Austria

6
Reproduction Center Wieselburg,
Wieselburg, Lower Austria

7
Interuniversity Department for
Agrobiotechnology, IFA Tulln,
together with the University of Natural
Resources and Life Sciences, Vienna
and the Vienna University of Technology

8
Satellite Office: Ruminants in the
Alpine Region, Innsbruck, Tyrol


1


2


3


4


5


6


7


8

EMAS Certification

Vetmeduni Vienna was again recertified by EMAS (Eco-Management and Audit Scheme). In addition, the university's Environmental Declaration won the award for 'Best Environmental Declaration 2020' by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK).

Start of the Sustainability Campaign

At the beginning of 2020 the University of Veterinary Medicine, Vienna, launched a new initiative under the tenet of the Sustainable Development Goals of the United Nations (UN). Three of the so-called Sustainable Development Goals (SDGs) determine the university's communication focus each for one year at a time.

2020 2021 2022

Breadth and Depth: Together with UniNetZ (cooperation network of 17 universities), Vetmeduni Vienna is working on an options paper for Austria and makes tangible contributions in research, teaching and public relations. In so doing, the university displays its professional expertise which ranges from zoonoses, animal health, biodiversity and food safety to human-animal relations.

For more information go to:
www.vetmeduni.ac.at/universitaet/sustainable-development-goals

Career Development for Scientists

As from 2019, the VEmpowerment initiative implemented two support programmes for young female scientists in 2020: VetWoman and VetTalents, which support career paths and strategic career planning through courses, coaching formats, exchange and networking with role models.

[Career ladder]: The success of VetWoman (programme launched in February 2020) encouraged the university to set up the VetTalents programme in autumn 2020.

VetmedRegio Regionalisation Initiative

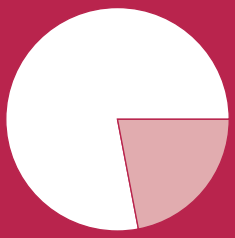
With targeted measures in Austria's federal states, Vetmeduni Vienna raises awareness for the importance of veterinary medicine in society. Moreover, it helps improve veterinary care in rural regions – in particular in the field of livestock farming. VetmedRegio assists and promotes the return of excellently trained alumni to their home regions.

[Tyrol Rotation]: Students who choose the specialisation track 'ruminant medicine' spend part of their training at the satellite facility in Innsbruck/Tyrol. The varied practical programme focuses on the particularities of Alpine livestock farming. Of special importance is their contact with veterinarians practising in the area.

Illustration: Matthias Moser/Vetmeduni Vienna, Photo: Lorenz Khol/Vetmeduni Vienna

Members of the University

STUDENTS



1,910 women

534 men

2,444 total

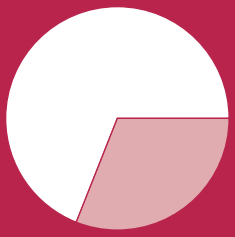
ACADEMIC STAFF

513 women

255 men

768 total

ADMINISTRATIVE & SUPPORT STAFF

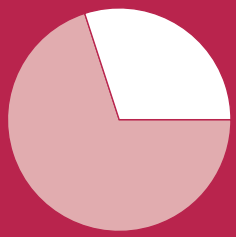


474 women

217 men

691 total

PROFESSORS



12 women

28 men

40 total

STAFF

1,498

Since one person is counted as belonging both to the general (administrative & support) and the academic staff, we have an instance of double counting which is adjusted for in the total number.

STUDENTS

2,444

Total (degree and non-degree students)

ANIMAL PATIENTS

40,979

Total (figures do not include poultry and visits for the purpose of herd health management)

INTERNATIONAL RECOGNITION: FULL EAEVE ACCREDITATION

Vetmeduni Vienna is one of Europe's leading academic education and research establishments of veterinary medicine that is evaluated by the European Association of Establishments for Veterinary Study (EAEVE). In June 2020 Vetmeduni Vienna was awarded by the EAEVE Decision Board (ECOVE) the full EAEVE accreditation for another seven years without any major or minor deficiencies being noted in the EAEVE report.

PLACE 7 IN THE GLOBAL RANKING OF ACADEMIC SUBJECTS

With place 7 Vetmeduni Vienna is again among the top ten in the field of Life Sciences and the related Veterinary Sciences. Since 2017, the number of subjects reviewed and evaluated by this Global Ranking of Academic Subjects in the categories of Natural Sciences, Engineering, Life Sciences, Medical Sciences and Social Sciences has grown to 54, the number of universities covered worldwide to more than 4,000.

NEWS FROM THE INSTITUTES

- The Institute of Topographic Anatomy has been merged with the Institute of Histology to form the Institute of Morphology.
- The Institute of Laboratory Animal Science has been renamed the Institute of In-Vivo and In-Vitro Models.

New Professorships

Michal Kyllar
Histology and Morphology

Maik Dahlhoff
In-Vivo and In-Vitro Models

New Associate and Assistant Professorships

Alice Auersperg
Comparative Cognitive Biology

Franziska Dengler
Physiology

Wilhelm Gerner
Infection Immunology

Dieter Liebhart
Poultry Immunology

Portraits of the new professors in VETMED Magazine:
www.vetmeduni.ac.at/vetmedmagazin

Photos: (Calf) Stephanie Scholz/Vetmeduni Vienna, (1,2,4,6) Michael Bernkopf/Vetmeduni Vienna, (3) Daniel Nowotny, (5) Thomas Suchanek/Vetmeduni Vienna

Teaching

In the Skills Lab VetSim, students may practise tasks on animal models made from synthetic material and enhance their practical skills such as assisting a cow to give birth.

Jürgen Rehage
Vice-Rector for Study Affairs and Clinical Veterinary Medicine

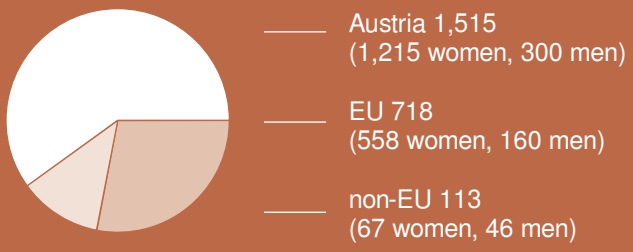
It is an honour for me to deliver greetings in this report. First and foremost, I thank my predecessor Sibylle Kneissl for her work as the organisation of teaching was an enormous challenge in 2020. I see my future task as a unique chance to further develop the study and clinical programmes for the well-being and benefit of the next generation. I want to increasingly encourage students into the fields of livestock medicine and veterinary public health. The new Small Animals Clinic is the best possible answer to the requirements of cutting-edge medicine and represents an attractive teaching hospital for acquiring clinical skills. I wish to express my thanks for the warm welcome and look forward to the exciting tasks ahead and a mutually sincere collaboration.

Sabine Hammer und Anja Joachim
Chairwoman and Deputy Chairwoman of the Senate of the University of Veterinary Medicine, Vienna

This pandemic faced us with previously unknown and unforeseeable challenges. Thanks to the rapid implementation and intensive use of online platforms we were able to maintain communication and teaching, while all of us soon learned to appreciate the outstanding commitment of our technical teams. The team spirit was palpable – even after long hours in front of the screen there still was room for mutual impressions, laughter and chats. These past months showed us clearly that, although we cannot foretell the future, we may hope that the common experience will keep us together in the 'normal' we are so much longing for.

Students

MATRICULATED STUDENTS
BY COUNTRY OF ORIGIN



APPLICANTS/ADMISSIONS 2020 (FOR THE 2020/21 ACADEMIC YEAR)	APPLICANTS WOMEN	APPLICANTS MEN	APPLICANTS TOTAL	ADMISSIONS WOMEN	ADMISSIONS MEN	ADMISSIONS TOTAL
Diploma Programme in Veterinary Medicine	1,164	202	1,366	180	38	218
Bachelor's Programme in Biomedicine and Biotechnology	138	36	174	31	13	44
Bachelor's Programme in Equine Sciences	59	0	59	36	0	36
Interdisciplinary Master's Programme in Human-Animal Interactions	15	4	19	15	4	19
Master's Programme in Comparative Biomedicine	21	5	26	18	2	20
Total	1,397	247	1,644	280	57	337

No figures are available for the Master's Programmes in Wildlife Ecology and Wildlife Management as well as Evolutionary Systems Biology since admission to these programmes is not managed by Vemeduni Vienna.

Education Awards

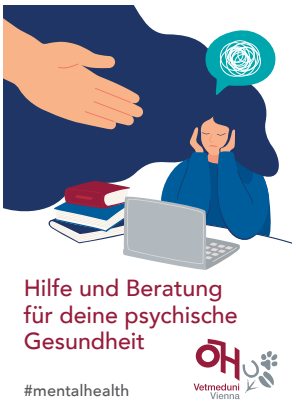
The sixth Teaching Vets Symposium 'Students in Focus' took place on 29 Oct 2020. The keynote speakers Claude Müller and Barbara Schober talked about the topics of 'Flexible study – desired and how is it done?' and 'Self-regulated learning as a key skill and goal of university teaching'. The event was concluded with a ceremony in which awards were presented in the categories of Teacher, Student and Instructor of the Year as well as the Vetucation® Award, the TOP-CASUS®-Case and the Student Award of the Students' Union.

For all award winners see:
www.vetmeduni.ac.at/de/studium/allgemeines/qualitaet/teachingvets/

A Vet Surgery of One's Own: Veterinary Medicine and Economics

In cooperation with the Vienna University of Economics and Business, Vetmeduni Vienna encourages the acquisition of basic knowledge in managing a surgery and counselling third parties (such as farmers) with its compulsory course 'Economics of Veterinary Medicine – A Surgery of One's Own' and the elective 'Applied Entrepreneurship for Vets'. In 2020 podcasts were added to these courses.

#hvuformentalhealth



Initial psychological care service: In order to support psychological health, the university has introduced a psychological counselling service in association with the Students' Union of Vetmeduni Vienna (HVU). An info folder was prepared under the motto #hvuformentalhealth. It is available at the HVU office and has been posted to students.

VetSim: Patients Made of Plastic

In the specially equipped practice rooms of the Skills Lab VetSim training centre, students can practise numerous tasks of everyday clinical life on animal models made of plastic. In order to widen the range of animal models, new dummies were purchased in 2020 for such areas as equine surgery or dog dental treatment.

[award-winning]: The 'plastic patients' of VetSim were voted Austria's picture of the year at the PR Picture Award 2020 by a jury of news agencies composed of APA, dpa subsidiary news aktuell and news aktuell Switzerland and ranked second in the Social Media category.

Fresh Impetus for Teaching

The monthly 'kick-start breakfast' event offers contributions by experts on pedagogics and didactics and facilitates discussion. The 2020 topics included:

- 'VEthics E-Portfolio – an online ethics course for veterinarians'
- 'Best practice examples: cooperation in specialisation tracks (livestock)'
- 'Digital animal monitoring'

Videos of all lectures can be watched online: http://vetmediathek-gallery.vetmeduni.ac.at/impulsfruehstueck

Photos: (1) Stephanie Scholz/Vetmeduni Vienna, Illustrations: Matthias Moser/Vetmeduni Vienna

Virtual Outpatient Clinic: Learning from Cases

Students in semester 7 and 8 are given the opportunity to get involved in new virtual patient cases within the Clinical Demonstrations Class. It is important for them to keep an eye on every detail of the disease which may lead to the animal patient's successful treatment. Mentors assist the students in the preparation of these case studies, which are made available to lower-semester students.

Interactive Learning Tool 'Poll Everywhere'

In 2020 'Poll Everywhere', a state-of-the art audience response tool for classes with examinations, was introduced as a pilot project and rolled out for students of undergraduate studies. Poll Everywhere is used by teachers to ask students live in the lecture hall or in distance learning for their knowledge and understanding of the subject matter and/or to interact with them. Students may use the system on their PC/laptop, tablet or smartphone. Since its introduction in the winter semester, teachers have asked more than 1,500 questions and received more than 100,000 answers in total.

VetDidactics: 'Students in Focus'

Vetmeduni Vienna seeks to expand the skills of its teachers for the purpose of developing the quality of higher education didactics, the objective being to establish a certification programme which highlights the importance and professionalisation of teaching. Participants are assisted in enhancing the skills necessary to organise their central fields of activity and become multipliers of the 'students in focus' teaching culture.

Courses of Study

Diploma Degree Programme

Veterinary Medicine

Bachelor's Programmes

Biomedicine and Biotechnology

Equine Science[1]

Master's Programmes

Interdisciplinary Master in Human-Animal Interactions

Evolutionary Systems Biology[2]

Comparative Biomedicine – Infection Biomedicine and Tumour Signalling Pathways

Wildlife Ecology and Wildlife Management[1]

Doctoral Programme

Veterinary Medicine

PhD Programme

[1]In cooperation with the University of Natural Resources and Life Sciences (BOKU), Vienna

[2]In cooperation with the University of Vienna

Digitalisation of Teaching

Due to the Corona crisis, the curricula of Vetmeduni Vienna had to be shifted from a mix of presentations in lecture halls, practical training in university clinics, instruction in small groups and supplementary online teaching to a virtual-only teaching format (distance learning).

- Teachers, students and the E-Learning and New Media Team reported in VETMED Magazine 02/2020 on how they dealt with the new situation:

www.vetmeduni.ac.at/vetmedmagazin

Graduates

2019/20	WOMEN	MEN	TOTAL
Bachelor's Programme in Biomedicine and Biotechnology	15	4	19
Master's Programme in Evolutionary Systems Biology[1]	0.56	0.28	0.84
Master's Programme in Biomedicine and Biotechnology	0	0	0
Master's Programme in Comparative Biomedicine	10	5	15
Master's Programme in Wildlife Ecology and Wildlife Management[2]	1.5	0.7	2.2
Interdisciplinary Master's Programme in Human-Animal Interactions	14	1	15
Bachelor's Programme in Equine Sciences[3]	10.05	0	10.05
Diploma Programme in Veterinary Medicine	154	34	188
Doctoral Programme	24	7	31
PhD Studies	13	6	19
total	242.11	57.98	300.09

Note: In the case of cooperation partners, graduates are counted according to the allocation formula

[1]Master's Programme in Evolutionary Systems Biology 0.28 Vetmeduni Vienna; 0.72 University of Vienna

[2]Master's Programme in Wildlife Ecology and Wildlife Management 0.1 Vetmeduni Vienna; 0.9 University of Natural Resources and Life Sciences, Vienna (BOKU)

[3]Bachelor's Programme in Equine Sciences 0.67 Vetmeduni Vienna; 0.33 University of Natural Resources and Life Sciences, Vienna (BOKU)

Photo: (Dog) Stephanie Scholz/Vetmeduni Vienna

Research

In laser physiotherapy, very short high-energy pulses are directed at the tissue. During this procedure both animals and humans wear protective goggles.

Otto Doblhoff-Dier
Vice-Rector for Research and International Relations

The past months were a stark reminder of the importance of science and research for our health and society. Our scientists were able to help address the pandemic in manifold ways: Vetmeduni Vienna could ensure knowledge transfer at many levels by carrying out PCR tests, co-developing a rapid antibody test, counselling stakeholders and informing the interested public. However, the pandemic thwarted many of the university's plans for international activities. With a view to the future, many new projects were submitted instead. At this point I would like to thank all employees of Vetmeduni Vienna for their extraordinary commitment.

Manuela Raith
Vice-Rector for Resources and Digitalisation

In the year under report, our staff had to adapt to an entirely new work situation within a very short period of time. I wish to thank all of them for their exemplary response and hard work to find solutions. I am pleased to report that the university achieved all the indicators necessary for ensuring finance and that we were able to attract additional funds from the Austrian Ministry of Science for future investments in our research and clinical infrastructure. The construction of the new Small Animals Clinic went ahead as planned. Preparations for the new processes in future day-to-day clinical work were up to speed as well. Lastly, it must be mentioned that we received the Environmental Management Award 2020 in the category of Best Environmental Declaration.

Photos: Christian Steinbrenner/Vetmeduni Vienna

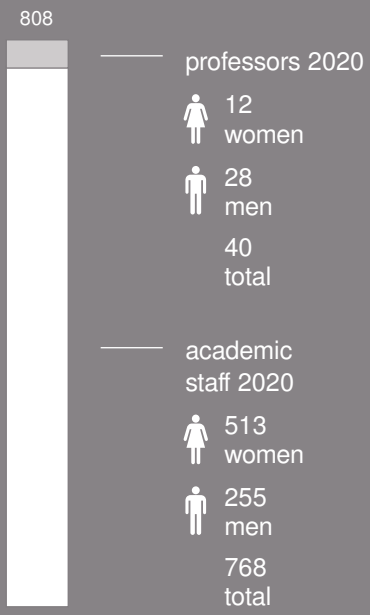
Research

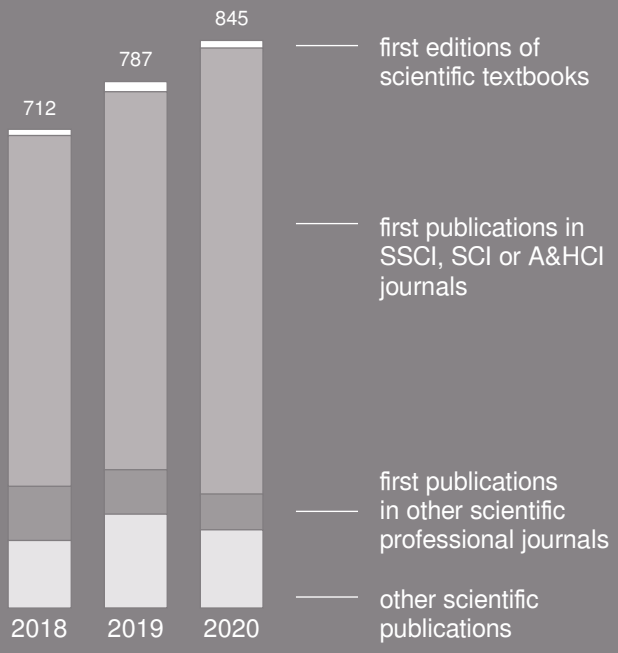
808

ACADEMIC STAFF TOTAL

1,002

SCIENTIFIC PUBLICATIONS





Note: This year the chart does not include any contributions to compilations since no real-life congresses were held due to the Corona pandemic making such figures non-representative.

Continuity in research: in 2020 successful projects were prolonged, expanded or given further thought. Below please find a selection of these exciting research approaches.

CockaTools: Innovative Tool Use and Problem Solving in a Parrot

Project leader: Alice Auersperg
Funding agency: Austrian Science Fund (FWF)

Goffin cockatoos are capable of making and using tools. Our project explores the Goffin cockatoos' use of tools from various angles. We plan to shed light on the birds' natural food acquisition strategies. For this purpose we will conduct research in the Tanimbar Islands of Indonesia and among an imported population in Singapore.

Moreover, the cognitive development of young cockatoos will be examined in greater detail and comparisons made with primates. In the so-called Loro Park in Tenerife, Spain, the animals will be compared in a battery of tests with their closest relatives (Corella cockatoos) to determine whether the Goffin's skills are unique. Another focus will be on exploring the perceptual and cognitive processes of the birds. To this end, researchers measure the visual field of the animals and test how they handle tools in a targeted manner.

Finally, the experts seek to find out whether Goffins make tools of different materials for special functions and can plan the use of tool in an anticipatory manner.

Austrian Science Fund Postdoc Programme (FWF-Zukunftskolleg): Vetmeduni Vienna Establishes Research Platform

Project leader: Dagmar Gotthardt
Funding agency: Austrian Science Fund (FWF)

'PeptAIDes' is one of the newly approved postdoc programmes where Dagmar Gotthardt of the Institute of Pharmacology carries out research concerning the development of peptide therapeutics for the treatment of autoimmune and inflammatory diseases in cooperation with Roland Hellinger and Tim Hendrikx (MedUni Vienna) as well as Eva Zangerl-Plessl and Kirtikumar Jadhav (University of Vienna).

Scientists believe there is great potential for amino acid compounds (peptides) as a starting point for the development of new therapeutic approaches in medication. Peptides show great affinity to their target receptors and promise improved selectivity and a low risk of toxicity. However, many of these active substances never reach patients since it is almost impossible for individual laboratories or researcher to accompany a peptide along all phases of the multidisciplinary development of medicinal agents.

The research platform 'PeptAIDes' includes all the necessary research disciplines and focuses on the development and testing of new therapeutics to treat multiple sclerosis, intestinal diseases and disorders of fat metabolism.

Three-Dimensional Holo'omic Landscapes to Unveil Host-Microbiota Interactions Impacting Animal Production

Project leader: Michael Hess
Funding agency: EU (Commission of the European Union)

New approaches are required to better understand the biomolecular correlations of the interaction between animals and fodder and the microorganisms associated with them. The omics approach plays a key role in this context, its basis being information derived from conventional DNA/RNA sequencing and mass spectrometry. These data, however, do not provide any information on how the various biological elements are spatially distributed in the intestines. Consequently, many interactions between microorganisms, feed and animals remain hidden. The research projects proposes to make much greater use of the potential of the omics approach: a 3D presentation of biomolecules, cells and tissue forms the basis for a better understanding of biomolecular interactions. The 3D omics project is intended to develop, optimise and implement this technology for the first time under experimental conditions. In concrete terms, this involves 3 D omics landscapes which present the ecosystems in the intestines of poultry and pigs to an unprecedented degree of precision. In the future, this technology will influence the breeding and keeping of animals with a special focus on improved animal health and optimised animal welfare.

Prolongation of the SFB 'Monarchies and Hierarchies in Shaping Chromatin Landscapes'

Project leader: Mathias Müller
Funding agency: Austrian Science Fund (FWF)

This special research area (SFB) coordinated by Vetmeduni Vienna unites the forces of seven internationally leading groups of the Vienna Life Science Region with interdisciplinary expertise in the fields of (epi)genetics, infectious and cancer diseases, pharmacology as well as bioinformatics to pursue the vision of further developing comparative medicine and precision medicine.

The dynamic 3 D structure of the chromatin – also called 'landscape' – determines gene regulation and thus cell functions. JAKs (Janus kinases) and STATs (signal transducers and activators of transcription) are key molecules for signal transmission enabling cellular specialisation and communication.

The SFB consortium describes the chromatin dynamics and their dependence on JAKs and STATs in healthy and diseased tissue. The comparative understanding of chromatin modifications in infectious, inflammatory or cancerous diseases in humans and in animal disease models enables researchers to test new therapeutic concepts.

Competence Centre for Feed and Food Quality, Safety and Innovation (FFoQSI)

Project leader: Martin Wagner
Funding agency: Austrian Research Promotion Agency (FFG)

Research along the production chain is complex: changing climate conditions in production, global raw material cycles, largely sustainable modes of production, innovative products, eating habits – all this embedded in an economic environment characterised by digitalisation and efficiency enhancement. This creates challenges for production methods, distribution logistics, traceability, product safety as well as for understanding interdependencies and our purchasing decisions which drive everything.

The development of quality and safety concepts and technological innovations in conjunction with sustainability considerations are the key topics of the FFoQSI centre, which now enters the second period of funding. Under the FFoQSI roof, researchers of leading universities (Vetmeduni Vienna, University of Natural Resources and Life Sciences, Vienna), universities of applied sciences (FH OÖ Wels, FH Campus Vienna), the Austrian Institute of Technology and the RECENDT research centre collaborate in association with 45 partners of the feed and food industry. More than 60 experts address issues around a nationally relevant value chain ranging from plant growing to the processing of feed and food.

Multi-faceted research – the great variety of scientific endeavours at Vetmeduni Vienna is illustrated by the following examples of current research projects newly begun in 2020.

Out of Memory: What do Hibernators Remember?

Project leader: Claudia Bieber
Funding agency: Austrian Science Fund (FWF)

Hibernation is an extreme form of adaptation adopted by some mammals to survive cold and low-food winters or other adverse environmental conditions. During the so-called 'torpor' state of hibernation, the animals' metabolism – along with heart rate and breathing – is extremely reduced, causing the body temperature to drop down to ambient temperatures or even to zero degrees centigrade. During this period, the brain shows virtually no activity and there is little blood flow to the brain. States of torpor may cover several days or weeks and are interrupted by brief warm-up spells ('arousals') which last only a few hours.

What is the impact of the various states of hibernation on the memory and cognition functions of these animals? Must hibernators rediscover and relearn their environment every year? Do they recognise relatives and members of their group? We intend to examine these contexts in different experiments over a period of four years.

For our study we have chosen the edible dormouse (Glis glis). With hibernation lasting up to eleven months, edible dormice hold the world record in naturally occurring hibernation cycles. Consequently, the negative effects of hibernation on memory should become particularly obvious in edible dormice.

Fundamentals for Creating an Innovative Pan-H3N8 Equine Influenza Vaccine

Project leader: Sabine Brandt (pictured third from left)
Funding agency: Austrian Research Promotion Agency (FFG)

Equine influenza (EI) is one of the respiratory diseases in horses that is of utmost importance for veterinary medicine. Equine influenza is caused by an infection with influenza viruses – equine influenza A viruses (EIV-A) – and presents not only a major health risk but also an economic problem with potentially devastating effects on the horse industry. When for instance Australia was hit by a serious epidemic of equine influenza in 2007, roughly 76,000 horses fell ill entailing costs that ran into the billions. In order to prevent such epidemics, horses participating in sports events must be vaccinated against equine influenza in compliance with the rules of the International Federation for Equestrian Sports (FEI), with the vaccination having been carried out no more than six months previously. However, the vaccines currently available for protecting from infections with the influenza virus are not sufficiently effective. As in human influenza shots, this is due to the ongoing genetic changes of influenza viruses. As a result, disease outbreaks are reported for regularly vaccinated horses as well. The project aims to develop an innovative intranasal vaccine which will be much more effective than the vaccines currently in use and will protect from equine influenza for a longer period of time.

This project is made possible by the FFG's Bridge Programme.

Photos: (1,2) Thomas Suchanek/Vetmeduni Vienna, (3,4) Michael Bernkopf/Vetmeduni Vienna, (5) Martina Russignan

Hepatic Tolerance in Chronically EqHV Infected Horses

Project leader: Jessika-M. Cavalleri
Funding agency: Austrian Science Fund (FWF) and the German Research Funding Organisation (DFG)

The equine hepacivirus (EqHV) represents the closest animal hepacivirus (HV) homologue to the hepatitis C virus (HCV) infecting humans. Like HCV in humans, EqHV in equids may cause acute and chronic infections. Viremia (concentration of viruses in the blood) is likely to persist for months or – in individual cases – even years. Our knowledge about the specific mechanisms of EqHv pathogenesis has so far been very limited, with no specific preventive or therapeutic approaches in place. Thus, the development of a novel general concept for an innovative and rational design of vaccines and therapeutic measures is urgently needed.

The project is intended to examine the immunological effects of therapeutic vaccination against an EqHV infection in chronically infected horses. Its results will help improve our knowledge about the specific immune response to a hepacivirus infection. For this purpose we plan to develop a number of recombinant MVA viruses which express various antigens of EqHV and to examine whether vaccination induces a specific cellular immune response and reduces the viral load in chronically EqHV infected horses.

Exploring and Exploiting Cellular Heterogeneity and Epigenetic Regulation for the Interception of Myeloid Diseases

Project leader: Florian Grebien
Funding agency: EU (Commission of the European Union)

The team around Florian Grebien is part of a top-level international research and training project for PhD candidates. The Innovative Training Networks (ITNs) are funded by the EU within the Marie Skłodowska Curie programme. These research and training networks aim to train a new generation of creative, entrepreneurially thinking and innovative junior researchers. 15 young scientists will receive comprehensive training at various research institutions in Europe to prepare them for the challenges of a career in biomedical research and the biomedical industry. Modern research, complementary training and intensive networking are the most important pillars of the programme. The overarching research objective of the INTERCEPT-MDS network is to better understand misdirected regulatory mechanisms and cellular heterogeneity in diseases of the immune system so as to be able to develop new treatment options for autoimmune diseases or cancer. Using most advanced high-throughput methods such as single-cell analyses of tumour tissue, the researchers hope to contribute to the concept of 'disease interception': ideally, before it can fully develop a disease is identified and treated by removing altered cells.

Urbanisation of a Top Predator: Are Wolves and Humans Adapting to Life Together?

Project leader: Sarah Marshall
Funding agency: Vienna Science, Research and Technology Fund (WWTF)

Urbanisation dramatically changes the habitats of animals and endangers the survival of many species. However, wolves in Italy have (unexpectedly) adapted to highly anthropic environments resulting in increased attacks on pets in private gardens and sightings in towns. An interdisciplinary research team of Vetmeduni Vienna has launched a research project in cooperation with the University of Sassari (Italy) to explore in greater detail the effect of urbanisation on the habits of wolves. The focus will be on analysing the wolves' feeding habits, their fear, risk-taking and aggressive behaviours, as well as their endocrinological and genetic profile. In addition, researchers want to test whether urban wolves show a 'bolder' and 'less shy' temperament than wolves living in more remote areas. The results of this research project are designed to help understand how a more anthropogenic environment could have shaped dogs during domestication.

Fond of Each Other: Positive Human-Animal Interactions

Project leader: Jean-Loup Rault
Funding agency: Austrian Science Fund (FWF)

Positive social interactions have received little scientific interest compared to aggression and other socio-negative patterns of behaviour. Positive social interactions can improve longevity, health and well-being. Nevertheless, the biological mechanisms of these effects remain surprisingly little known. This project investigates how positive human-animal interactions benefit animal welfare. For this purpose we will, firstly, examine the types of behaviour that characterise positive interactions, secondly, identify the role of different neurotransmitters in this context and, thirdly, explore the effects of long-term positive interactions on the brain and the immune system of animals. The studies will be conducted with farm pigs. These domesticated animals are highly social and distinctly motivated to interact with humans. The project pursues a multidisciplinary approach combining behavioural biology, physiology, proteomics, neuroscience and psychoneuroimmunology.

Local Release of an anti-TNF-alpha Antibody in the Gastrointestinal Tract of Swine

Project leader: Lukas Schwarz
Funding agency: Austrian Research Promotion Agency (FFG)

The project aims to develop an oral formulation for therapeutic antibodies to treat gut diseases locally in swine. Administration in the form of tablets would be desirable both for the benefit of the patients and from the viewpoint of health systems. According to current state of the art evidence any systemic administration of therapeutic antibodies after oral ingestion via the gastrointestinal tract in the form of simple tablets or capsules is deemed impossible.

Thus it is not the aim of the project to have the orally administered antibodies enter the bloodstream. However, there are some indications where a local absorption of therapeutic antibodies in the intestinal cells is required and where it would make sense to deliver the antibodies to their destination locally via tablets. Such indications would primarily include inflammatory bowel diseases. Provided that the therapeutic antibodies can, after oral administration, be protected from degradation by intestinal enzymes they may exert a direct, local effect in the intestinal cells. Infliximab is to be applied orally in the swine model and tested for its detection in defecated faeces.

Self-Regulated Learning in Medical Education

Project leader: Evelyn Steinberg
Funding agency: Austrian Science Fund (FWF)

Learning is a complex process consisting of cognitive, metacognitive, motivational and emotional aspects. In self-regulated learning students set themselves goals and actively pursue them. This process has already been well researched when it comes to learning the theoretical background.

Our research project intends to provide the scientific basis for self-regulated learning in the clinical practical setting. We will develop both a model for self-regulated learning in this real-life setting and a new instrument of data collection for a quantitative diary study. The longitudinal data will be analysed as to whether self-regulated learning in a clinical and practical environment is more of (a) a stable, (b) a situational or (c) a developmental nature.

Students are faced with special challenges primarily during transition from an academic to a clinical and practical setting. The results will indicate whether interventions should focus more (a) on the different types of learners, (b) on the situational factors or (c) on training targeted at the specific stages of transition. This project is intended to help better understand the students' learning in a clinical and practical setting.

Photos: (1,5) Michael Bernkopf/Vetmeduni Vienna, (2,3,4) Thomas Suchanek/Vetmeduni Vienna

STAT1 in Controlling Extramedullary Haematopoiesis (EMH) During Infectious Diseases

Project leader: Birgit Strobl
Co-author: Tanja Bulat
Funding agency: Austrian Science Fund (FWF)

For a successful immune response to infections, a great number of blood cells are essential. Normally, the production of blood cells (haematopoiesis) in adults occurs in the bone marrow (medullary haematopoiesis). If blood formation is insufficient or disturbed in the bone marrow, other organs – mostly the spleen or liver – can take over (extramedullary haematopoiesis or EMH). Although EMH is an important compensatory mechanism, the signals which are triggered by EMH and which regulate the production of specific types of blood cells are largely unknown. In the course of our work on the STAT1 transcription factor in the immune response to infections with herpes viruses (genus cytomegalovirus) in the mouse model, we were able to demonstrate that STAT1-dependent signals in macrophages promote the production of blood platelets and red blood cells in the spleen and thus ensure regeneration of both cell types in the blood. The project intends to clarify the molecular and cellular interrelations that control EMH in the spleens by using 'omics' and imaging approaches. In further translational research, our findings could contribute to the development of stem cell therapies.

Further Insights into the Pathogenesis of Avian Malaria

Project leader: Herbert Weissenböck
Funding agency: Austrian Science Fund (FWF)

There is growing evidence that avian haemosporidian parasites (genera of Plasmodium, Haemoproteus and Leucocytozoon) are not just harmless commensals but are frequently responsible for fatal infections in birds. Pathogenicity is primarily determined by the tissue stages of these parasites, which develop in different cell types and may result in a blockage of blood vessels and in tissue damage. Currently, very little is known about the long-term persistence of these infections, the existence of dormant parasite stages as well as the cell types that are targets of tissue merogony.

In cooperation with partners of the Nature Research Centre Vilnius (Lithuania), the study will use a highly sensitive in situ hybridisation procedure to analyse whether and in which tissues dormant parasite stages are detectable that could cause the disease to resurge after a period of latency. The proliferation of haemosporidian tissue stages appears to be limited to a few specialised host cell types which will be identified by double labelling approaches with antibodies for certain cell markers and molecular probes for haemosporidians. The results of these studies will provide new insights into the pathogenesis of these infections that are so prevalent among wild birds.

VETMEDUNI VIENNA CONDUCTS RESEARCH TO OVERCOME THE COVID-19 CRISIS

TEST CAPACITIES

Development, implementation and validation of PCR analytics by the Institute of Virology and the University Clinic for Poultry and Fish. This enabled the university to offer tests and their analysis to the campus and to the public.

WHO WAS INFECTED AND IS NOW IMMUNE?

A team of experts from three local universities – BOKU, Vetmeduni Vienna and MedUni Vienna – developed the first quantitative SARS CoV 2 antibody test based on the ELISA test method. In cooperation with the industrial partner Technoclone, the antibody test could be rapidly commercialised.

COVID-19 AND BIG DATA

Within a research project on non-pharmaceutical interventions of the Complexity Science Hub Vienna, urgently needed data on the response of governments to the COVID-19 pandemic were collected.

Tips for Pets

The successfully established infographic series 'Tips for Pets' (Tipps fürs Tier), where complex contents from veterinary practice are presented by graphic design, was continued last year. The graphics were shared several times on social media, via the press and research networks helping to spread the information rapidly. Important topics presented in these infographics included 'How to recognise emergencies in dogs and cats', 'Cars: life-threatening heat traps', 'Children and dogs – safe interaction tips', 'Stay healthy over the holidays – identify and prevent hazards during the Christmas season' or 'Vaccinate dogs – no obligation but urgently recommended!'.

Events

Due to safety measures during the COVID-19 pandemic, a number of events were conducted online, others were postponed. Detailed information on the 2020 events are available (in German) on the website of Vetmeduni Vienna in the 'Events' section.

All events:
www.vetmeduni.ac.at/veranstaltungen

- In 2020, the Vetmed Children's University went online. With online reports being made available in compliance with COVID-19 measures. Staff members of Vetmeduni Vienna prepared a total of 40 contributions for an exciting science programme throughout the summer:

Videos of all lectures at:
www.kinderuni.online/bereich/vetmed

- The 4th CEPI Conference on Poultry Nutrition and Poultry Health took place on 29 Oct 2020 organised jointly by the University of Veterinary Medicine, Vienna, and the Szent István University.
- On 31 Jan 2020 the 10th Kremesberg Conference was held at VetFarm focusing on the topic of 'digitalisation in livestock practice'. Alongside in-person participation the conference enabled online participation via livestream.

Awards

Researchers, teachers and students received these awards in 2020.

www.vetmeduni.ac.at/infoservice/news/stipendien-preise

In the Social Media

It is of particular importance to Vetmeduni Vienna to edit scientific findings and practical tips from veterinary medicine in a simple, understandable and creative manner that is easy to remember. In order to reach interested people by easy and straightforward means the university uses social media platforms such as Facebook, Twitter or YouTube. Last year an official Instagram channel joined the university's social media drive with the opportunity of interacting with younger target groups – often future or current students.

VETMED Magazine for Perusal

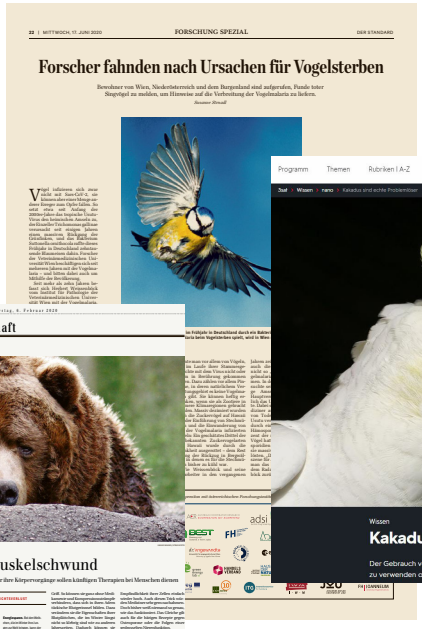
Four times a year VETMED Magazine reports on research projects, cases from practice and news from the campus. Roughly 3,800 subscribers receive the magazine by mail. In June 2020 VETMED's Special Corona Edition revolved around the 'origin of pandemics'. This edition reached 2nd place in the Silver Pen competition (2. Platz der Silbernen Feder) of the Public Relations Association Austria (PRVA).

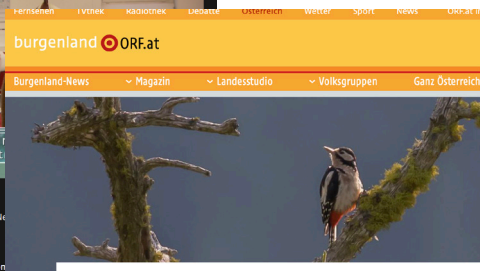
All editions are available online at:
www.vetmeduni.ac.at/vetmedmagazin

Science Communication and Public Relations

Make research feel tangible – Vetmeduni Vienna relies on proactive science communication offering journalists and the interested public comprehensive information. The university provides a look behind the scenes of its teaching, research and hospital work, be it through press releases and press conferences or editing scientific contents for online media, the publication of its own magazine or the use of social media channels.

Vetmeduni Vienna in the Media


Forscher fahnden nach Ursachen für Vogelsterben

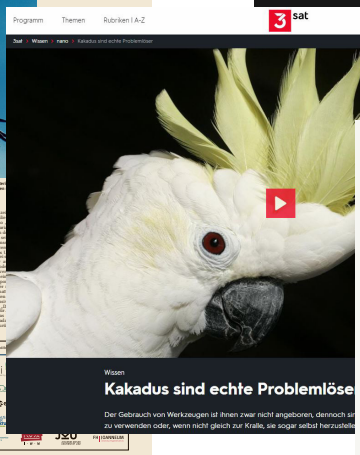


WISSENSCHAFT

Vogelmalaria: Forscher bitten um Mithilfe

Wiener Forscher bitten für ein Projekt, bei dem es um die Verbreitung der Vogelmalaria in Ostösterreich geht, um die Hilfe der Bevölkerung. Wer einen toten Vogel findet, sollte das den Wissenschaftern melden.

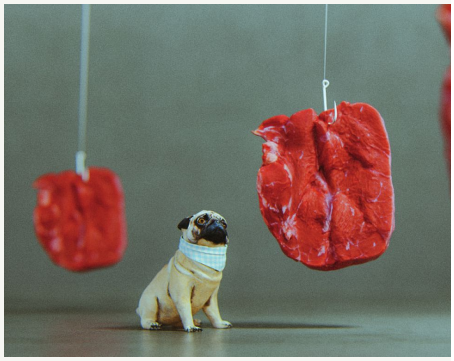
Online seit gestern, 12.00 Uhr




Wissenschaft

Dauerliegen ohne Muskelschwund

Charité weist Coronavirus auch bei geringen Symptomen nach



Vielgeliebtes Schweineschnitzel, wild umstrittenes Hundefleisch

Heißt diskutiert wird in den letzten Jahren neben dem Verzehr von Wildtieren auch der von sogenannten Nutztieren und Haustieren.

Text: Judith Aspöck

PUBLIC RELATIONS 2020

PRESS RESEASES, MEDIA INQUIRIES

CAMPUS

GUIDED TOURS

VETMED MAGAZINE (4 × PER YEAR)

WWW

NEWS ON WEBSITE

INFORMATION FOLDERS

SOCIAL MEDIA

Research Projects at a Glance

FUNDING AGENCY	TITEL	PROJECT LEADER
Office of the Lower Austrian Government	Alternaria alternata allergens for treatment and prevention of fungal allergy	Erika Jensen-Jarolim
Office of the Lower Austrian Government	Konfliktvermeidung: Welche Strategien werden von im Rudel lebenden Wölfen und Hunden verwendet?	Sarah Marshall
Biomin Holding GmbH, Research Center	Testing the Efficacy of ZENzyme and FUMzyme in the Rumen of Cows	Qendrim Zebeli
Blue Sky Vaccines GmbH	Ermittlung des tumortherapeutischen Potenzials einer Vakzine an equinen Sarkoidpatienten	Sabine Brandt
Federal Ministry of Sustainability and Tourism	Untersuchungen zur genetischen Tiergesundheit und Farbgenetik beim Lipizzaner und Noriker mit Fokus auf Melanom, Vitiligo und Roan	Thomas Druml
EU (Commission of the European Union)	3D'omics – Three-dimensional holo'omic landscapes to unveil host-microbiota interactions impacting animal production	Michael Hess
EU (Commission of the European Union)	Exploring and exploiting cellular heterogeneity and epigenetic regulation for the interception of myeloid diseases	Florian Grebien
EU (Commission of the European Union)	A structured open-source dataset on non-pharmaceutical interventions in response to COVID-19 intended for global use	Amelie Desvars
EU (Commission of the European Union)	Cost action CA18208 novel tools for test evaluation and disease prevalence estimation (Harmony)	Amelie Desvars
EU (Commission of the European Union)	CA18217 – European Network for Optimization of Veterinary Antimicrobial Treatment	Clair Firth
EU (Commission of the European Union)	Improving livestock protection for the direct benefit of wolf conservation in the German-speaking Alpine Region	Felix Knauer
Fellinger Cancer Research	Mutant STAT5B in Natural Killer cells – oncogenic driver and therapeutic target in aggressive NK cell malignancies?	Dagmar Gotthardt
FFG	Detektion, Bioforensik und Metagenomik von Bacillus anthracis/hochpathogener B. cereus sensu lato	Monika Ehling-Schulz
FFG	Local antibody delivery to the gastrointestinal tract	Lukas Schwarz
FFG	Grundlagen zur Schaffung eines innovativen Pan-H3N8-Pferdegrippeimpfstoffs	Sabine Brandt
FFG	Österreichisches Kompetenzzentrum für Futter- und Nahrungsmittelqualität, Sicherheit und Innovation	Martin Wagner

Note: This table presents an excerpt from those research projects that were granted funding in 2020. Some projects are subject to confidentiality provisions, so no information on these projects may be published.

FUNDING AGENCY	TITEL	PROJECT LEADER
FWF	Unravelling the role of STAT1 signalling in macrophages in infection-induced extramedullary haematopoiesis (EMH)	Birgit Strobl
FWF	A research platform for the pre-clinical development of future peptide drug candidates	Dagmar Gotthardt
FWF	Chromatin remodelling through oncogenic STAT5 in Peripheral T Cell Leukaemia and Lymphoma	Heidi Neubauer
FWF	Chromatinlandschaften prägende Monarchien und Hierarchien	Mathias Müller
FWF	Cross-Communication between Succinate Dehydrogenase and Fatty Acid Biosynthesis	Karin Nowikovsky
FWF	Immunometabolic maintenance of tissue integrity	Elena Pohl
FWF	Studying adaptation to larval crowding in Drosophila simulans using experimental evolution	Christian Schlötterer
FWF	Partners in crime: STAT3 und CDK6 control transformation in hematopoietic cells	Veronika Sexl
FWF	Further insights into the pathogenesis of avian malaria	Herbert Weissenböck
FWF	Fond of each other: Positive human-animal interactions	Jean-Loup Rault
FWF	Hepatic tolerance in chronic equine hepacivirus infection	Jessika-M. Cavalleri
FWF	CockaTools: Innovative tool use and problem solving in a parrot	Alice Isabel Marie Auersperg
FWF	Characterization of the innate immunity genes in domestic and wild felids, with a focus on natural killer cell receptors (NKRS)	Pamela Burger
FWF	Memory retention and cognition in hibernators	Claudia Bieber
FWF	Proximate mechanisms underlying problem solving abilities in dogs and wolves	Friederike Range
FWF	Testen des Domestikationssyndroms anhand freilebender Hunde	Sarah Marshall
FWF	Fidelity of motor imitation in kea parrots	Raoul Schwing
FWF	Self-regulated learning in medical education: Providing a solid foundation for interventions in the clinical practical setting	Evelyn Steinberg
Game Conservancy Deutschland e.V.	Optimierung von biodiversitätsfördernden Maßnahmen in der Agrarlandschaft	Anna Kübber-Heiss

FUNDING AGENCY	TITEL	PROJECT LEADER
International Human Frontier Science Program Organization	Sounds and pheromones: neural networks merging olfactory and acoustic cues in sexual imprinting	Dustin Penn
L'Agence nationale de la recherche	HYPOxemia and HYPOthermia in foraging elephant seals: diving into physiological conundrums	Sylvain Giroud
Linnaeus University	Telomere dynamics in naked mole-rats	Dustin Penn
Austrian Academy of Sciences	Oncogenic mechanisms of mutant STAT5B in natural killer cells	Klara Klein-Eberl
Austrian Academy of Sciences	Identification of actionable dependencies among direct transcriptional gene targets of the NUP98-JARID1A fusion protein in Acute Myeloid Leukemia	Selina Tröster
Austrian Agency for International Mobility and Cooperation	Conference on Environmental Health and Food Security	Friederike Hilbert
City of Vienna	CDK8 is a checkpoint blocking NK cell anti-tumor functions in triple negative breast cancer	Dagmar Gotthardt
Stiftung Pro Pferd	Vorkommen von Equinem Parvovirus – Hepatitis (EqPVH) bei Pferden mit Leberveränderungen und mögliche Übertragungswege bei subklinisch infizierten hospitalisierten Pferden	Jessika-M. Cavalleri
Stiftung Pro Pferd	Osteoarthritis-on-a-chip	Florien Jenner
Stiftung Pro Pferd	Secretome versus extracellular vesicles in tendinopathy treatment	Florien Jenner
Teagasc – the Agriculture and Food Development Authority	Social stability as a foundation to improve health and welfare in pigs: The role of intraspecific communication	Jean-Loup Rault
UK Research and Innovation	Agency, Rationality, and Epistemic Defeat (ARED)	Zsofia Viranyi
Uniwersytet Wroclawski	International multicentric platform as a key element for the effective scientific research	Sabine Schäfer-Somi
Austrian Power Grid	Masterplan zum Trassenmanagement der Austrian Power Grid	Richard Zink
Austrian Power Grid	Vogelschutz an Freileitungen der Austrian Power Grid	Richard Zink
Verein Salzburger Tiergesundheitsdienst	Untersuchungen zum Kolostrummanagement und zur Kolostrumqualität im Bundesland Salzburg	Thomas Wittek
WWTF	Corona-Virus-spezifische Antikörpertests zur Beurteilung der Immunität in der Bevölkerung	Wilhelm Gerner
WWTF	Urbanisierung eines Spitzenraubtiers: Passen sich Wölfe und Menschen an ein gemeinsames Leben an?	Sarah Marshall

Photo: (Pig) Thomas Suchanek/Vetmeduni Vienna

Healing

At the five species-specific university clinics students learn the proper handling of animals and important steps in examining e.g. a breeding sow.

Residency Programmes

ANAESTHESIA AND ANALGESIA ECVAA

(European College of Veterinary Anaesthesia and Analgesia)

OPHTHALMOLOGY ECVO

(European College of Veterinary Ophthalmology)

DIAGNOSTIC IMAGING ECVDI

(European College of Veterinary Diagnostic Imaging, Small Animal Track)

SURGERY, LARGE ANIMALS ECVS

(European College of Veterinary Surgery, Large Animal Surgery)

SURGERY, SMALL ANIMALS ECVS

(European College of Veterinary Surgery, Small Animal Surgery)

DERMATOLOGY ECVD

(European College of Veterinary Dermatology)

POULTRY MEDICINE ECPVS

(European College of Poultry Veterinary Science)

INTERNAL MEDICINE, COMPANION ANIMALS ECVIM-CA

(European College of Veterinary Internal Medicine, Companion Animals)

INTERNAL MEDICINE, COMPANION ANIMALS, ONCOLOGY ECVIM-CA, ONCOLOGY

(European College of Veterinary Internal Medicine, Companion Animals – Oncology)

INTERNAL MEDICINE, HORSES ECEIM

(European College of Equine Internal Medicine)

REPRODUCTIVE MEDICINE ECAR

(European College of Animal Reproduction)

BOVINE HEALTH MANAGEMENT ECBHM

(European College of Bovine Health Management)

PORCINE HEALTH MANAGEMENT ECPHM

(European College of Porcine Health Management)

SPORTS MEDICINE ECVSMR

(European College of Veterinary Sports Medicine and Rehabilitation, Small Animal Track)

VETERINARY PARASITOLOGY EVPC

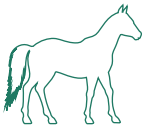
(European Veterinary Parasitology College)

VETERINARY PATHOLOGY ECVP

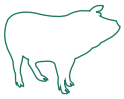
(European College of Veterinary Pathologists)

5 UNIVERSITY CLINICS FOR

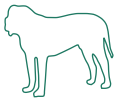
POULTRY AND FISH



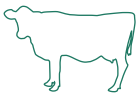
HORSES



SWINE



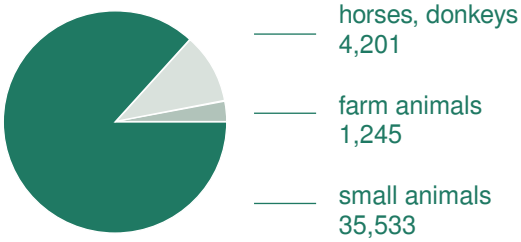
SAMLL ANIMALS



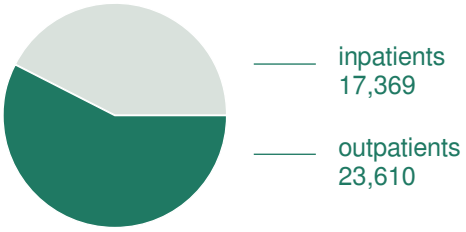
RUMINANTS

PATIENT VISITS 2020

2020 TOTAL 40,979



TYPE OF CARE GIVEN TO ANIMAL PATIENTS



Figures exclude poultry and visits for the purpose of herd health management (livestock)

The University Clinic for Poultry and Fish managed a total of 29,152 patients and samples in 2020.

RESIDENTS

20

Number of Residents who were in training in 2020 and quality-assured by the Residency Advisory Board.

DIPLOMATES

81

Number of Diplomates as at 31 Dec 2020.

Campus Tour 2020 during the Pandemic

Photos: (COVID) Michael Bernkopf/Vetmeduni Vienna, (3.KTK) Thomas Suchanek/Vetmeduni Vienna

Construction Progress for the New Small Animals Clinic – KTK NEU

After the demolition of the former KC building on the campus of Vetmeduni Vienna, construction work for the new University Clinic for Small Animals started at the beginning of 2020. Erection of the three-floor shell progressed rapidly and according to schedule throughout the year. The new Small Animals Clinic is expected to start full operation after its completion in 2022.

Current and detailed information on the new building of the University Clinic for Small Animals, numerous photos and videos of construction work are available at: www.vetmeduni.ac.at/kleintierklinikneu

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