



messerli
Research Institute

Annual Report **2015**

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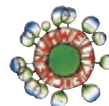
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Reinhold Mitterlehner

Vice Chancellor and Minister of Science, Research and Economy

The Messerli Research Institute is a living example of successful cooperation. The professional quality that has developed through interdisciplinary collaboration is of both scientific and economic value. It is also an important partner to my institution, providing recent support on sensitive topics. The institute's well-rounded profile, thanks to an international team of researchers, creates ideal conditions for further positive development in the future.



Sonja Hammerschmid

Rector of the University of Veterinary Medicine, Vienna

In cooperation with its partner universities and the Messerli Foundation, the Vetmeduni Vienna is now looking back at the Messerli Research Institute's first and highly successful evaluation phase. In a short period of time, economically relevant milestones have been reached, as well as further important landmarks regarding the respectful handling of animals. Examples of this are projects like the free-range pig project, which demands once more the interdisciplinary expertise of our researchers, and promotes our main objective, namely the investigation of human-animal interaction.



Markus Müller

Rector of the Medical University of Vienna

The Messerli Research Institute, established through the collaboration of three domestic universities, is a good example of how to overcome new challenges and, thanks to good networking, stay competitive at an international level. It underlines the top position and excellent reputation of Vienna as a center for research. At the same time, this cooperative endeavor is an example of successfully building bridges between human and veterinary medicine, and social and natural sciences.



Heinz W. Engl

Rector of the University of Vienna

By researching human-animal interaction and its foundation in the areas of animal cognition and behavior, comparative medicine, and ethics, the Messerli Institute delivers a scientific basis for putting the responsible handling of animals into focus. I am very pleased that the Vienna location has been expanded through this ambitious research institute, and that the institute can look back at a successful 2015. The current call for a co-sponsored professorship by the University of Vienna and the Veterinary Medical University of Vienna on the topic “the psychology of human-animal interaction” is a current example of successful cooperation.



Heinz Schweizer

President Messerli Foundation

The Messerli Research Institute aims to foster the well-being of animals through research and education on human-animal interaction. In the five years since its founding, it has developed into a recognized center of competence. The interdisciplinary research that takes place is now part of an international network, and builds the basis for both the human-animal interaction master program, as well as the development of practical guidelines for a justifiable way of dealing with animals. The current yearly report and published information prove this impressively. The Messerli Foundation sincerely thanks everyone who contributed to this wonderful and promising success.



Peter Sandøe

Chair of the Scientific Advisory Board

The Messerli Research Institute investigates the relationship between humans and animals. Their basic vision is to construct a science that does not exclusively focus on animals in regards to their usefulness, for example as food sources, instruments of biomedical research, or companions to humans. Rather, it's about science that is explicitly applied to the well-being of animals, which, as vulnerable beings, cannot elucidate their own requirements and needs. The Scientific Advisory Board supports this important enterprise, as well as the goal of innovative, interdisciplinary collaboration, in which scientific expertise goes hand-in-hand with positive consequences for people and animals.

A look back to the past and the way forward

Herwig Grimm

Spokesperson of the
Messerli Research Institute

As of 2015, the initiation phase is behind us: the Messerli Research Institute is no longer a newcomer to the scientific and societal debate surrounding human-animal interaction. We are thankful for the trust and support received from various sides during this initial phase, and after my first year as spokesperson I am happy to give a short glimpse into our work.

After the initial developmental years, it was high time to reflect on both the paths we forged and plans for the future. To this end, our scientific work from 2012 to 2014 was evaluated by an external, international committee, the members of which were nominated by the Scientific Advisory Board. We can proudly report that, in the eyes of these international experts, the Messerli Research Institute has developed into a visible, attractive and successful research center. Just a few years after its founding, the institute has become highly consulted for questions regarding human-animal interaction. This has been confirmed, last but not least, through media interest in our work. We will continue to work to the motto that, through scientific research, we can better understand the human-animal relationship, and support people in their responsibility to animals. Also in



the future we will pay special attention to interdisciplinary research, and the dissemination of knowledge at all three partner universities as well as the interested public. This will all be done even more comprehensibly in times to come; we are pleased that in 2015 a fourth Messerli professorship was announced on the theme “psychology of human-animal interaction”. This professorship will expand our current research topics of comparative cognition, comparative medicine, and ethics of human-animal interaction.

As the spokesperson of the second period of the Messerli Research Institute, I'd like finish by expressing my gratitude in the name of all Messerli team members to my predecessor Ludwig Huber, who did an excellent job leading the developmental phase and laying solid

foundation for the times to come. Thanks to his commitment, after only a few years we are on the way to contributing to a better cohabitation of humans and animals, in accordance with the ideas and concerns of Mrs. Herta Messerli (1911-2014). Last but not least, sincere thanks to our entire team, who, together with us, develop ambitious plans and realize them.



The Messerli Research Institute at a glance

2015

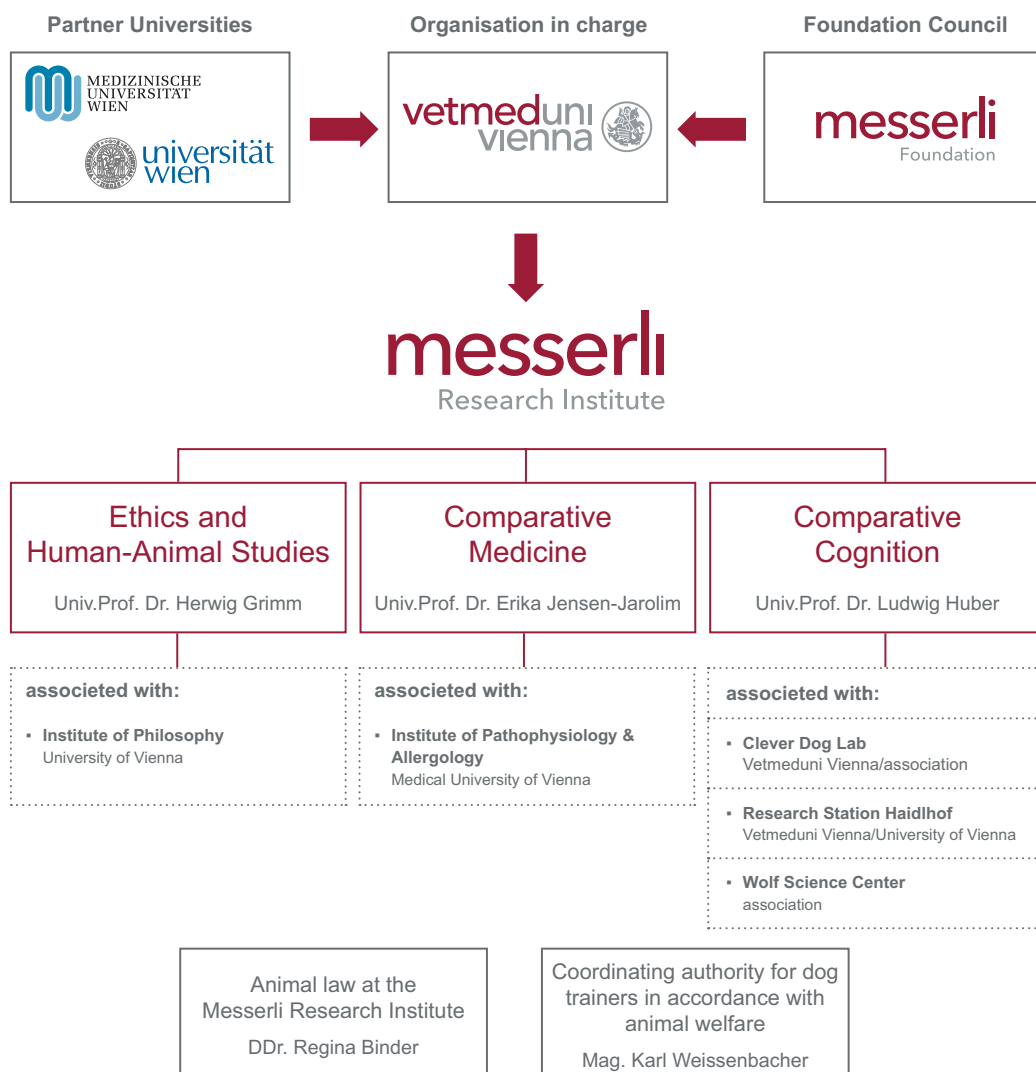
The Messerli Research Institute was founded in 2010, with support from the Messerli Foundation (Sörenberg, Switzerland), under the management of the University of Veterinary Medicine, Vienna, in cooperation with the Medical University of Vienna and the University of Vienna. The professors for the first three units (Comparative Medicine, Comparative Cognition, Ethics and Human-Animal Studies) were appointed in autumn 2011. In March 2012, the institute was officially opened. The work at the Messerli Research Institute has four cornerstones:

- **Research:** The research is devoted to the interaction between humans and animals, as well as its theoretical principles in animal cognition and behaviour, comparative medicine and ethics.
- **Orientation:** The institute's work is characterised by its broad interdisciplinary approach (biology, human medicine, veterinary medicine, philosophy, psychology, law) and strong international focus.
- **Teaching:** Research findings are an integral part of the academic curriculum in the Master's programme and are also designed to provide guidelines for the responsible and acceptable treatment of animals.
- **Practice:** Thus, the Messerli Research Institute considers providing scientific information to aid people responsible in the field of human-animal interactions one of its main responsibilities.



Organisation Chart

The Messerli Research Institute was established at the Vetmeduni Vienna. It is associated with the rectorate and represented by its spokesperson. It comprises three units, each headed by a fully employed professor. The professors have double appointments at the Vetmeduni Vienna and at one of the partner universities (Medical University of Vienna and University of Vienna). Furthermore, the two sub-units Coordinating Office “Dog trainer in accordance with animal welfare” and Animal Law are associated with the Messerli Research Institute. Several associated centres work in cooperation with the partner universities.





Team

Each of the three units of the Messerli Research Institute has one chair, scientific assistant positions, one administrative assistant position and – at the two natural science units – technical posts. Furthermore, there is an IT office supporting all three units. Two of the administrative assistants work partly interdepartmentally. The Unit of Comparative Medicine has one administrative position at the Medical University of Vienna. By the end of 2015, the staff comprised 16 permanently employed personnel. In 2015 the institute employed 40 people on a full-time equivalent basis, of which 16 were permanently employed, and 24 were financed by third-party sources. Further scientists, who are not counted at this point, work at the institute's associated centres.



The Foundation Board



Heinz Schweizer
President Messerli Foundation



Hans Hengartner



Dominique Ammann



Ulrich Fässler



Adrian von Segesser



Sabine Werner

The Scientific Advisory Board



Peter Sandøe (University Copenhagen, Denmark), Chair of the Scientific Advisory Board



Nikola Biller-Andorno (University Zurich, Switzerland)



Christine Nicol (University Bristol, UK)



Frauke Ohl (University Utrecht, Netherlands)



Georg Wick (University Innsbruck, Austria)

In 2015 the Messerli Research Institute was evaluated by a committee of external consultants. Taking on this function were Erika von Mutius, Marek Špinko, and Marcel Verweij. Peter Sandøe, the head of the Scientific Advisory Board, chaired the evaluation committee.

Targets

The Messerli Research Institute develops and broadens scientific findings for the cohabitation of humans and animals. Current questions about the complex relationship between humans and animals and its principles are investigated from a biological, medical and ethical perspective.

Research in Context

The Messerli Research Institute works at the interface between three universities in Vienna: the University of Veterinary Medicine, the Medical University and the University of Vienna. It integrates the universities' existing knowledge and expertise into its own work. Alternatively, research and teaching at the three universities benefit from the institute's research findings and results.

Interdisciplinary research

The institute's three units have their own specific research agenda with a considerable number of projects funded by competitive grants. Interdisciplinary research cooperation between the units is strategically important. Interdisciplinary work and high specialisation shape the institute's unique profile. In the following, selected examples will detail the research topics at each unit.



Comparative Cognition

The ultimate goal of the unit is laying the natural science foundation for animal welfare and human-animal relationships. Its main area of research is comparative cognition, a new discipline at the interface of biology and psychology, which aims at fostering empirical knowledge on cognitive, emotional and social skills in animals. Its underlying motivation is to change not only the general perception of animals but also the way we, humans, define ourselves. Ultimately, this will bring new insights into the fundamental characteristics of human-animal interactions and contribute to a better understanding of such relationships.

Current topics

- cognitive and emotional abilities of dogs and wolves
- perceptual, technical and social abilities of birds
- socio-cognitive abilities of farm animals (pigs)

Staff



www.vetmeduni.ac.at/en/messerli/science/cognition/staff/

Research projects – highlights

Testing for prosocial behavior in pet dogs, pack dogs and wolves

Other-regarding preferences – defined as behaviors that benefit others – are considered to be the foundation of human cooperation. However, the evolutionary origin of these preferences are poorly understood. In the framework of an ERC and FWF project, Friederike Range and her team have explored the proximate mechanisms of prosocial attitudes in canines. Dogs were trained to pull a tray that would deliver food to a partner – either a familiar or unfamiliar dog – in the adjacent enclosure. After a long piloting phase, a major breakthrough was achieved in 2015: pet dogs are more likely to deliver food to their partner

than to a stranger. This study was published in Nature's Scientific Reports. Further studies address whether the relationship between dogs in the same household affects how 'generous' they are to their partner and whether dogs also provide food to their owner rather than an unknown human experimenter. At the Wolf Science Center, by comparing similarly raised wolves and dogs, the researchers examine whether wolves already possess the same prosocial attitudes towards their pack members or if this attitude is an effect of domestication. Studies on food sharing, where dyads of individuals from the same pack have the possibility to eat from the same bowl, and studies using the Celver Dog Lab set-up, where the wolves can actively decide whether to provide food to a pack member or a non-pack member while they themselves receive nothing, are on the way.

Prosocial dogs:
One dog is pulling a string and thereby delivers food to another dog



Tolerant wolves:
Aragorn and Tala are feeding from the same food bowl



Photo: © Monty Sioa



Inferential reasoning in kea and Goffin cockatoos

To reason by exclusion – defined as the selection of the correct alternative by logically excluding other potential alternatives – is a human characteristic. Despite some positive evidence (eg. chimpanzees, dolphins and dogs) it remains a contentious issue whether non-human animals possess this cognitive ability. One problem, especially for curious species, is to inhibit exploring a novel solution. Mark O’Hara innovated a new method that takes neophilia into account. He also examined the probability of concurrent decision processes when encountering inconsistent or incomplete information. Importantly, to discourage curiosity in the tested species, two highly explorative and innovative parrots, kea (at Haidlhof) and Goffin cockatoos (in Alice Auerberg’s Goffin Lab), the training included a large amount of novel, unrewarded stimuli. Once habituated to novelty the majority of keas and cockatoos responded to novel stimuli by inferring their correctness via logical exclusion of the alternative more often than this would be expected by chance. Other strategies, which are not mutually exclusive, such as one-trial learning, stimulus preferences and avoiding the negative stimulus, also guided the responses of some individuals. These results confirm previous findings showing the enormous innovativeness and flexibility in problem solving of keas and Goffin cockatoos, including the invention of tool use. The findings have been published in PLOS One.

Goffin cockatoo with reward after choosing correctly on the touchscreen



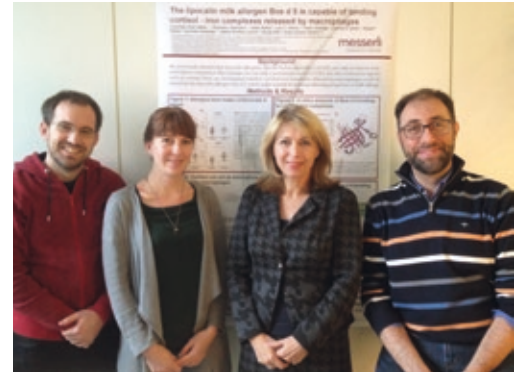


Comparative Medicine

The focus is on the Patient

The Unit for Comparative Medicine brings together the Medical and Veterinary Medical Universities of Vienna. Its mission is therefore to improve the health of both human and animal patients, namely through new allergological and immunological diagnostics and therapies. Organizing joint lectures and One-Health seminars is also included. Collaborations on campus, as well as with national and international partners, have contributed to the perpetuation

of the unit. Scientific research is carried out in part by assistants, Phd, master, and bachelor students. We are especially excited about the successful extension of a project in the allergy-specific research area of the Austrian Science Fund (FWF). The team feels confirmed in its work and is highly motivated to forge ahead.



Team Members



www.vetmeduni.ac.at/en/messlerli/forschung/forschung-komparative-med/mitarbeiterinnen/

Research projects – highlights

On the subject of allergy research, the unit intensively pursued the interesting topic of molecular allergology. What makes an allergen? Lipocalins are important both as allergens and as immunoregulatory proteins in both humans and animals, our researchers reported for the first time (Allergy, 23. October 2015).

Other allergen molecules have enzymatic functions, which means, for example, that they are able to cut apart proteins that are important for building up the skin and mucosal barrier in mammals. Papain is an example of such an industrial enzyme that is used in skin care, cosmetic, and household products for humans and animals. In a transgenic mouse model, our group showed that just half an hour after its application to the skin, papain leads to a loos-

ening of the skin barrier and attraction of inflammatory cells. In addition to its enzymatic effect, papain therefore also works as a strong allergen. As papain is nearly structurally identical to dust-mite allergens, these results are highly relevant for dust-mite allergies. The less mites there are at home, the less potent allergen-enzymes are for the people leaving there. Exposure to enzymes in general should thus be kept as low as possible for both people and animals. This publication was part of the PhD dissertation of team-member Caroline Stremnitzer, financed by the FWF doctoral college CCHD – Cell Communication in Health and Disease (Journal of Investigative Dermatology, 9. April 2015).



Filming in the CompMed-Lab: The theme “enzymes in skin-care products” was picked up by ORF in the series “Konkret”.



Another research highlight directly relevant to the Messerli Research Institute is the subject of cancer. Irene Fördös, in her master's project within the Interdisciplinary Master of Human Animal Interactions (IMHAI) at the Messerli Research Institute, examined the framework for clinical trials in human versus animal cancer patients. The key finding: while clinical trials in humans in the EU and USA are

covered under specific laws, clinical trials in animals still fall under animal protection laws. This may be a limitation in conducting clinical trials with animal patients, as owners find it difficult to consent to treatment for their beloved pets. Human patients, on the other hand, are much more open to participating in clinical trials. This work was published in August (*Journal of Translational Medicine*, 15. August 2015)



The Comparative Medicine Unit works closely with oncologists from the Vetmeduni. Pictured is Irene Flickinger, DMV, with a patient.

Ethics and Human-Animal Studies

Ethical reflection on human-animal interactions, in all of their variable and contradictory facets, is the central theme of this unit. The team's goal is to better understand different types of human-animal interactions along with their prerequisites and inconsistencies, and to clarify human's moral responsibilities towards animals. Questions are dealt with, in both a basic and practical way, regarding the use of animals in agriculture, experimentation, and as pets. The following areas of research are emphasized:

- Development of veterinary medical ethics
- Animal ethics in agriculture, research, and pet keeping
- Researching the ethical relevance of animal cognition
- New approaches to the human-animal interactions

Team Members



www.vetmeduni.ac.at/en/messerli/forschung/forschung-ethik/mitarbeiterinnen/



Research projects – highlights

Ethics in Veterinary Medicine

The research area “Ethics in Veterinary Medicine” was decidedly intensified in 2015: Veterinary medical practice can be understood as a prototype of an ethically demanding field of work. Be it questions of euthanization of pets, care of agricultural stock, or epidemic control in animals. In each of these cases it is clearly necessary to have an ethical orientation when performing veterinary duties, and that veterinarians contribute to such an orientation.

In 2015 the project “Vethics for Vets – Ethics in official veterinary practice” was brought to a successful conclusion. At the end of the project period an international conference with world-renowned experts (among others Bernard E. Rollin) was held in Vienna. Furthermore, the central results of the projects was published in a so-called “Ethics guide for official veterinary practice”: a 120-page brochure that offers assistance for dealing with central conflicts in veterinary practice. Both conference and “Guide” (as with the whole project) received attention outside Austrian borders. The project “Vethics for Vets” will continue in 2016, with support from the Ministry of Health.

International conference on ethics in veterinary medicine, on the 17th and 18th of September, 2015

Workshop for the discussion process of surgical intervention in agricultural animals.



Catalogue of Criteria for Implementing a Cost-Benefit-Analysis of Animal Experiments

Against the background of the implementation of the EU-Directive 2010/63 into national law, a catalogue of criteria had to be developed on a legal basis. The catalogue of criteria aims at objectifying the harm-benefit analysis of animal experiments. The Ministry of Science, Research and Economics (BMWFW) commissioned the Unit for Ethics and Human-Animal Studies to compile the Catalogue of Criteria by the end of 2015. All future animal experiments in Austria will be subject to a cost-benefit analysis by the authorities, which will take into account the completed catalogue of criteria. Therefore, this project has major relevance to scientific research with animals (and education, in as far as it falls under the jurisdiction of animal welfare law).

In a three-year project, Herwig Grimm (project leader), Vera Marashi (project team member) and Norbert Alzmann (project team member) created a comprehensive method, including ethical aspects, for the cost-benefit analysis and finally handed this over to the BMWFW. More than ten workshops took place with stakeholders and scientists, as well as further workshops for clarification of legal aspects. Based on the methods developed at the Messerli Research Institute, the BMWFW worked out a decree, which after a review phase was made public on December 23rd, 2015.

As animal experimentation is a highly sensitive and controversial issue, unsurprisingly an intense debate developed in and around the project. The project led to, among other things, the Austrian media prominently picking up the topic, and an intense for-or-against discussion ensued. To enable a structured discussion, the Vetmeduni Vienna offered a workshop for journalists to discuss central points surrounding the topic of animal experimentation from a scientific, legal, and ethical perspective.



Coordinating Office for dog trainers in accordance with animal welfare

Dog trainers in accordance with animal welfare



The Coordinating Office has become well established in the public sector. As well as requests by print and online media, in addition to radio and TV stations for input on dog keeping and training and related programmes, the office is regularly asked for advice from the public sector – e.g. by ministries, offices of animal welfare ombudspersons and committees of state parliaments in the Austrian provinces. Therefore, the Coordinating Office can be referred to as an information and counselling centre in the field of dogs. Several talks for cynologists, dog trainers, vets and dog keepers completed the profile in 2015. In its core field of examinations, 46 trainers took the exam in 2015 and 35 of them passed.

University Course of Applied Cynology

The university course (ULG) of applied cynology is now firmly established and has received wide recognition. Proof of this can be found in the many print-published graduate theses in the media, as well as invited conference talks. In accordance with normal Vetmeduni Vienna selections processes, 30 of 38 applicants were accepted to the fifth cohort, which will begin in March 2016.

Assistance and Therapy Dogs



At the beginning of 2015, the Ministry of Social Affairs commissioned a testing and coordination center for conducting the tests for all assistance and therapy dogs. Qualifying an appropriate number of examiners was achieved exceptionally fast. At the start, the number of qualified examiners accepted by the Ministry of Social Affairs was 20 for assistance dogs and 50 for therapy dogs. By the year's end these numbers had grown to an unbelievable 99 for assistance dogs and 230 for therapy dogs, and thus greatly exceeded all expectations. Midway through the year, the first 35 qualified assistance dog teams and the first 40 therapy dog teams received their certificates at a formal ceremony hosted by Minister Hundstorfer and rector Sonja Hammerschmid.

Minister Rudolf Hundstorfer, Rektor Sonja Hammerschmid and prize-winner Wolfgang Niegelhell



Animal Law at the Messerli Research Institute

Animal Law is part of teaching and research at the Messerli Research Institute, focusing on general animal welfare legislation and animal testing legislation. Regina Binder, who also heads the Information and Documentation Office for Animal Welfare and Veterinary Law at the Vetmeduni Vienna, is responsible for this field. The Unit of Ethics and Human-Animal Studies and the Unit of Comparative Medicine have several areas of interdisciplinary collaboration with this field. This collaboration comprises mainly teaching in the Master's programme IMHAI and the scientific discussion of questions arising from current publications and projects. The normative foundations of the various forms of human-animal interaction and their relationship to empirical findings in natural science are central in this cooperation. The focus of 2015 collaboration was the jurisprudential accompaniment of the development of the 2012 animal welfare law requirement for a catalogue of criteria.



Interdisciplinary Master in Human-Animal Interactions (IMHAI)

One of the major targets of the institute is the appropriate training of young experts who are able to ethically reflect on human-animal interactions and their responsibility on a scientific basis. Therefore, the three units of the Messerli Research Institute, together with the Institute of Animal Husbandry and Animal Welfare, designed an international Master's programme in spring 2012 that is unique in its broad interdisciplinary approach. The curriculum comprises aspects of natural sciences, humanities and law in the context of human-animal interaction. The research-oriented programme qualifies graduates for both academic careers and careers in all fields of human-animal interaction.

www.vetmeduni.ac.at/en/messerli/teaching/

In 2015 four graduates completed their studies:

Martina Muhr wrote up her work on the topic "Generation and characterization of a recombinant, soluble form of feline FeRIalpha for chip diagnosis of cat allergy" (Supervisor Erika Jensen-Jarolim, Co-Supervisor Judit Fazekas). She successfully defended her thesis on 20.03.2015.

Second to graduate was Madeleine Leitsberger with her thesis "Objectification and anthropomorphism: How advertisement contributes to instrumentalisation". She successfully defended her thesis on 20.07.2015 (Supervisor Herwig Grimm, Co-Supervisor Judith Benz-Schwarzenburg).

Also successful to graduate was Irene Fördös, on the topic "Clinical Studies in Veterinary Oncology at the Borderline between Preclinics and Clinical Trials: Critical Evaluation of Challenges and Opportunities". The defense took place on 18.08.2015 (Supervisor Erika Jensen-Jarolim, Co-Supervisor Josef Singer).

Last but not least, Bettina Schreiner completed her studies with the thesis "Demethylation of equine sperm DNA during cryopreservation". She successfully defended her thesis on 10.09.2015 (Supervisor Christine Aurich, Co-Supervisor Marc Drillich).

Teachers from the Comparative Medicine Unit at the yearly summer outing. From left to right: Wolfgang Sipos, Peter Pietschmann, Emir Hadzijusufovic, Karin Hufnagl, Julia Walochnik, Günter Waxenecker, Gastgeberin Erika Jensen-Jarolim and Isabella Ellinger.



Further courses

Staff members of the Messerli Research Institute did not only teach in the Interdisciplinary Master's in Human-Animal Interaction, but also in the programmes at the Vetmeduni Vienna, as well as at other universities and schools. This contributes to the institute's visibility and network, especially with its partner universities. Cooperation for teaching leads to permanent and intense exchange with the partner universities.

Staff of the Comparative Cognition unit taught courses at the University of Veterinary Medicine (veterinary diploma, modules laboratory animal and experimental animal science, University track applied cynology) as well as at the University of Vienna (Bachelor level biology, Masters level behavior, neurobiology and cognition research). Additionally, several Masters and PhD projects were supervised at both universities.

In 2015 a total of 8 master/diploma theses were successfully completed in the Comparative Cognition Unit. Sandra Burin and Kira Schmitt completed their diploma theses in Veterinary Medicine. Master students who successfully graduated were Viola Färber from the University of Vienna, Lena Schaidl from the University of Natural Resources and Life Sciences Vienna, Danica Randi from the University of Zagreb, Metteo Soliani from the University of Parma, Martina Russignan from the University of Florence, and Gaëlle Mainix from the Université Paris XIII, Sorbonne Cité.

Comparative Medicine was taught in the medical and veterinary medical curricula, the PhD program Immunologie, Doctorate Colleges MCCA, CCHD of the Meduni Vienna, and master courses. In 2015 six PhD candidates were under supervision. Outside of the IMHAI program two master studies were completed (Stefanie Wagner, Heidi Müller). Further master and bachelor theses were supervised, and Erika Jensen-Jarolim and her team regularly take part in PhD-thesis committees and defenses.

Team members from Ethics and Human-Animal Studies taught courses in the veterinary medical curriculum (Ethics in veterinary medicine, ethics of animal welfare, ethics and animal experimentation) as well as at the Institute of Philosophy of the University of Vienna in the area of practical philosophy. Additionally they took part in the study course for practical cynology, the university course for horse-and ungulate shoes, the education of animal welfare speakers (Association for Animal Welfare Education) and the official veterinary training in Bavaria.



Team meeting at the Messerli Free-Range Pig Project (Marianne Wondrak, Lisa-Maria Glenk, Ludwig Huber, Herwig Grimm, Erika Jensen-Jarolim, Judith Benz-Schwarzburg, from left to right)



PhD and doctoral students

DK programmes

Together with colleagues from the University of Vienna, Ludwig Huber brought the PhD programme “Cognition and Communication”, in which he supervised three PhD projects (Mark O’Hara, Stefanie Riemer, Lisa Wallis), to an end. As co-applicant (with Tecumseh Fitch) he applied (FWF) for a second PhD program, this time including Thomas Bugnyar, Leonida Fusani, Walter Hödl, Kurt Kotrschal, Claus Lamm, Friederike Range, Angela Stoeger, and Sabine Tebbich as faculty.

In the Comparative Medicine Unit the education of PhD students is also aimed at immunological-allergological research projects. Students in the following FWF-financed doctoral programmes were supervised by Erika Jensen-Jarolim: Judit Fazekas and Jelena Gotovina in the FWF doctoral programme „Cellular Communications in Health and Disease“ (CCHD), as well as Lukas Einhorn in the FWF-docotral programme „Molecular, Cellular and Clinical Allergy“ (MCCA).

Summer meeting of the PhD program Cognition and Communication at the Konrad Lorenz Research Station in Grünau.



Students of the Comparative Medicine Unit have the opportunity to present their results to the guest speaker and SAB-member Georg Wick.



PhD/doctoral studies

The Unit of Comparative Cognition supervised 12 PhD projects in 2015: on kea (Mark O'Hara), domestic dogs (Anjuli Barber, Soon Young Park, Lisa Wallis, Désirée Brucks, Mylène Quervel-Chaumette, Durga Chapagain), wolves and dogs (Rachel Dale, Jennifer Essler, Akshay Rao, Giulia Cimarelli), and pigs (Marianne Wondrak). The doctoral students were supervised by Ludwig Huber, Friederike Range and Zsófia Virányi.

Aside from the above-mentioned three PhD-students in FWF doctoral programmes, the PhD student Maria Isabel Carvalho da Silva from Portugal completed a six-month research project in the Comparative Medicine Unit. As a result, a research collaboration with her Professor Felisbina Queiroga, University of Trás-os-Montes and Alto Douro was established for

the PhD, regarding immunotolerance in canine tumors. Also supervised were PhD student Galateja Jordakieva in the programme „Immunology“ of the Medical University of Vienna, as well as Ina Herrmann in cooperation with Johann Thalhammer in the programme „Dermatology“. Lastly, Marianne Wondrak of the University of Veterinary Medicine Vienna was co-supervised.

In the Ethics and Human-Animal Studies Unit Herwig Grimm supervised a total of five researchers in three different graduate programmes in 2015: Kerstin Weich and Samuel Camenzind from the PhD programme of the University of Veterinary Medicine Vienna, Svenja Springer und Anne Zintzsch from the doctoral programme of the University of Veterinary Medicine Vienna, and Andreas Aigner from the graduate programme of the Department of Philosophy at the University of Vienna.



PhD student Mylène Quervel-Chaumette explains her studies to students of the Middle-European Master in Cognitive Sciences

2015

Engagement in committees

Highlights

Members of the Unit of Comparative Cognition have been engaged in national and international committees. At the Vetmeduni Vienna, Ludwig Huber has been a member of the Curriculum Commission for several study programmes (including IMHA), of the Scientific Advisory Board of the Animals for Therapy curriculum, and of the Coordination Board of the Teaching and Research Farms Kremesberg (LFG). On an international level, he has been elected as member of the Scientific Advisory Board of the Institute for Advanced Sciences Berlin (WIKO). Friederike Range and Zsófia Virányi headed the Wolf Science Center and the association "Clever Dog Lab".

Particularly honorable were Erika Jensen-Jarolim's duties in the WWTF board of trustees, in the steering committee for the Lower Austrian research and development strategy, in the advisory board of the Department of Health Sciences and Biomedicine at the Danube University Krems, in the aluminium-expert panel of the federal ministry of health, as well as in the University of Veterinary Medicine Vienna's senate. On an international level she was engaged in the European Academy of Allergy and Clinical Immunology Interest Group (IG) „Comparative and Veterinary Allergology“, IG „Allergy Diagnosis“, Taskforces „AllergoOncology“ and „Biomarkers for Allergen Immunotherapy“.

Preparing for the autumn meeting of the Scientific Advisory Board of the Institute for Advanced Sciences Berlin



The staff of the Ethics and Human-Animal Studies Unit are engaged in panels at the local, national and international levels. Since 2015 Herwig Grimm is the speaker for the Messerli Research Institute. He is in the scientific advisory board for the Theology-Technology-Natural Sciences Institute at the LMU Munich, the board of the European Society for Agricultural and Food Ethics, and the scientific advisory board for the doctoral programme of the Department of Philosophy and active in the Cognitive Science Research Platform, both University of Vienna. Furthermore, he is member of the Ethics and Animal Welfare Committee at the University of Veterinary Medicine Vienna and the scientific advisory

board of the Association for Animal Welfare Education, and the Erna Graff Foundation. Norbert Alzmann is member of the § 15-committee of Baden-Württemberg for the evaluation of animal experiments. Christian Dürnberger is member of the Bavarian Evangelic-Lutheran Church's „Ethik der Nutztierhaltung“ work group.

Organization of the international workshop of the EAACI TaskForce for AllergoOncology in Vienna



Grants and Awards 2015

Four members of the Unit of Comparative Cognition got awards in 2015:

- Stefanie Riemer received her Doctorate degree from the Federal President of Austria (Promotio sub auspiciis praesidentis rei publicae) at the Dies Academicus of the University of Vienna.
- Eva Ringler was awarded the “Award for Promotion of Science” from the City of Vienna for her research on the cognitive behaviour of poison-arrow frogs *Allobates femoralis*.
- Martina Lazzaroni was awarded a three-years project for research on free-ranging dogs from the Austrian Academy of Sciences.
- An impressive victory was clinched by Raoul Schwing at the Science Slam, which was staged for the first time at the Vetmeduni Vienna.



Stefanie Riemer together with Federal President Heinz Fischer, rector Heinz Engl and dean Gerhard Ecker (both University of Vienna)

Martina Lazzaroni was distinguished by the Austrian Academy of Sciences

Eva Ringler doing field work in French Guyana

Raoul Schwing is awarded the 1. prize of the Science Slam contest by rector Sonja Hammerschmid, vice-rector Otto Doblhoff-Dier, and vice-rector Petra Winter



- In January Josef Singer together with Judit Fazekas was awarded Researcher of the Month at the University of Medicine Vienna, for their project “Generation of a canine anti-EGFR antibody”, published in the top-journal Molecular Cancer Therapeutics 2014 Jul;13.
- Josef Singer achieved the renowned Hans and Blanca Moser Promotion Award in the field of translational cancer research from the Austrian Association of Haematology and Oncology
- Josef Singer was also honoured with the Wilhelm Auerswald Award 2015, 1. prize for the best dissertation and the best talk .
- Lukas Einhorn was the Junior Member Poster Prize winner at the annual meeting of the European Academy of Allergy and Clinical Immunology (EAACI) in Barcelona, Spain. Additionally several poster and travel awards were granted to the team

members Judit Fazekas, Lukas Einhorn and Stefanie Wagner of the Comparative Medicine Unit.

- Svenja Springer from the Ethics and Human-Animal Studies Unit received the University of Veterinary Medicine Vienna’s Success Scholarship for the dissertation project „High-tech in Veterinary Medicine: New Possibilities and Growing Responsibilities of Veterinary Professionals“ in 2015



Svenja Springer receives the University of Veterinary Medicine Vienna’s Success Scholarship

Hans and Blanca Moser Award 2015 to Josef Singer
(from left to right: Hellmut Samonigg, Josef Singer, Richard Greil, Ulrich Jäger)



Lukas Einhorn and Stefanie Wagner achieved poster prizes at the annual meeting of the EAACI in Barcelona



2015

Cooperation & International Engagement

The most important partners in 2015

Associated Centres

Institute for Pathophysiology and Allergy Research at the Center for Pathophysiology, Infectiology, and Immunology of the Meduni Vienna

For many years Erika Jensen-Jarolim has worked closely with the Institute for Pathophysiology, Infectiology, and Allergy Research, which is a part of the Center for Pathophysiology, Infectiology, and Immunology of the Meduni Vienna. This connection is pivotal to her double-

appointment, and Erika Jensen-Jarolim is linked to a lab there. The Unit is also a member of the Immunology Research Cluster of the Meduni Vienna.

This close connection is illustrated in 2015 by an excursion of the entire associated Meduni-center to the Vetmeduni Vienna, organized by Erika Jensen-Jarolim. The center's head, Hannes Stockinger, took the opportunity to congratulate Sonja Hammerschmid and her team on the 250th anniversary of the Vetmeduni Vienna. The campus showed its best face on this beautiful day in May.



From left to right:
Ludwig Huber, Erika Jensen-Jarolim,
Vice-Rector Petra Winter, Rector Sonja
Hammerschmid, along with head of
Meduni-center Hannes Stockinger

Clever Log Lab

Research at the Clever Dog Lab in 2015 harvested the investments of the last years to develop new methodologies to study the cognitive abilities and emotional life of pet dogs. Using the touch screen, researchers have shown that dogs are able to discriminate between emotional expressions of humans, even if they can see either only the lower or the upper half of their face (published in *Current Biology*). After training a group of pet dogs of enthusiastic owners for several months, a number of studies used an eye-tracker to explore how dogs look at human faces, gaze cues and gestures in order to gain relevant social information. Another long process of extensive training was rewarded by publishing (in *Nature's Scientific Reports*) a study demonstrating prosociality in dogs for the first time.

Research Station Haidlhof

At Haidlhof, infrastructure for research on cognition in birds (kea and corvids) and farm animals (pigs and chickens) was created in cooperation with the University of Vienna (Department of Cognitive Biology). In 2015 research with the kea furthered proven topics (like cooperation/coordination) as well as venturing down new avenues of inquiry (quantity discrimination, haptic sense, vocalisation). Particularly successful were international cooperation projects, on coordination behavior (together with the University of Strassbourg) and on imitation (together with the University of Rennes). The birth of more piglets and an improvement of the infrastructure have strongly increased the possibilities of the research on free-ranging pigs. The first sub-projects produced interesting results.

Sabrina Karl explains to a guest from Canada (Niko Troje) the eyetracker experiments



Raoul Schwing is baiting the cooperation box for four kea in front of a Terra X film team





Wolf Science Center

The year 2015 was very much focused on research, supported by grants from the WWTF, the ERC, and the Land Niederösterreich. The year started with a review on attentiveness in wolves and dogs (Front Psychol) with over 29 000 views so far. Three other papers were published comparing wolves and dogs on their neophobia (Anim Behav), tolerance (Proc R Soc Lond B) and inhibitory control (Plos One). Furthermore, 19 studies have been conducted with the help of a cohort of highly motivated and bright PhD students (7), master students (8) and interns (7) from all over the world. The year ended with the fantastic news of a successful grant application (WWTF) by Sarah Marshall-Pescini to investigate the role of oxytocin in mitigating some of the differences in dog and wolf social relationships.

Institute of Philosophy of the University of Vienna

The Institute of Philosophy of the University of Vienna is highly visible on the international level. It can rely on the many areas of competence of its members, who impart knowledge with a wide-range of courses and high standards of specialization. Due to the double-appointment and corresponding teaching and research activities of Herwig Grimm, and the teaching activities of Martin Huth, there is intense exchange and regular cooperation in the area of teaching with the Department of Philosophy of the University of Vienna. Outside of teaching, team members are also involved in research, conferences, and promotional programs at the Department of Philosophy.



The training of wolves at the Wolf Science Center demonstrated for visitors

Cooperation with our partner universities

University of Veterinary Medicine, Vienna

- Clinical Unit of Anaesthesiology and Perioperative Intensive-Care Medicine
- Clinical Unit of Diagnostic Imaging
- Equine University Clinic
- Institute of Animal Husbandry and Animal Welfare
- Institute of Laboratory Animal Science
- Institute of Medical Biochemistry
- Institute of Population Genetics
- Konrad Lorenz Institute of Ethology
- Research Group Oncology (RGO) of the Horse Surgery Clinic
- University Clinic for Poultry and Fish Medicine
- University Clinic for Small Animals
- University Clinic for Swine
- VetCore

University of Vienna

- Cognitive Science Platform
- Department of Behavioural Biology and Human-Animal Relationships Research Group
- Department of Cognitive Biology
- Department of Integrative Zoology
- Faculty of Psychology
- Institut für Theater-, Film- und Medienwissenschaft
- Institute of Philosophy
- Institute Vienna Circle

Medical University of Vienna

- Center for Biomedical Engineering and Physics
- Center for Pathophysiology, Infectiology and Immunology
- Comprehensive Cancer Center
- Department of Child and Adolescent Psychiatry
- Department of Dermatology
- Department of Psychiatry and Psychotherapy
- Department of Radiotherapy
- Department of Surgery
- Immunology Research Cluster
- Preclinical Imaging Cluster

Further national partners

- Catholic-Theological Private University Linz
- Network Berufliche Assistenz, Vienna
- Technical University of Vienna
- Therapy Animal Research and Education Center
- University of Natural Resources and Life Sciences, Vienna
- Zoo Schönbrunn



Mark O'Hara und Tri Haryoko (left) following the traces of Goffin cockatoos in the fields of Tutukembong

Further international partners

In 2015 members of the Comparative Cognition unit collaborated with scientists from universities in France (Rennes, Strassbourg), Italy (Milan, Padua, Parma, Rome and Rovereto), Hungary (Eötvös Loránd and Semmelweis in Budapest), Great Britain (Bristol, Exeter, Lincoln and Oxford), Sweden (Lund), Belgium (Ghent), Japan (Tokio), USA (Duke, Minnesota, Nebraska, Atlanta), New Zealand (Christchurch, Auckland, Waikato) and Indonesia (Cibinong, West-Java).

The Comparative Medicine Unit is in cooperation with organizations in Great Britain (Imperial London, Kings College), Spain (Polytechnical University of Madrid), Germany (Clinics of the University of Munich, Research Center Borstel, University of Lübeck, University of Kiel, MediGene Martinsried), Portugal (University of Trás-os-Montes and Alto Douro) and Japan (Tokyo University of Agriculture, Tokio).

The Unit of Ethics and Human-Animal Interactions Studies is in cooperation with scientists at university organizations in, among others, Germany (Ludwig-Maximilians University Munich) and Switzerland (Universities of Zürich and Basel), with the main points of research being veterinary medical ethics and animal ethics. In 2015 the cooperation was intensified with the Institute for Technology, Theology, and Natural Sciences (TTN) at the LMU Munich. Together with the TTM, a two-day conference was held in November on the topic "livestock as fellow creatures" at Lake Starnberger, during which the ethics module was designed for the Bavarian official veterinary training course.

Cooperation with networks and societies

Members of the Comparative Cognition unit are connected with groups from eleven European countries (European Science Foundation network Comparative Cognition), and with researchers from societies in Europe (Ethological Society), USA (Comparative Cognition Society), Australia (Canine Science Forum) and New Zealand (Kea Conservation Trust).

A strong scientific presence in the topics of allergology and immunology is important for the Unit of Comparative Medicine. As a board member of the recently-founded Interest Group for Comparative and Veterinary Allergy of the European Academy of Allergology and Clinical Immunology, Erika Jensen-Jarolim not only had the opportunity to give the plenary talk "Allergy management: from humans to animals and back", but she also organized the keynote speaker Oscar L. Frick, University of San Francisco. He was one of the first to recognize the significance of dogs as models for food allergy.

Researchers from the University of Rennes (France) visiting the Kea Lab



In the Unit for Ethics in Human-Animal Interactions Studies there are collaborations with platforms and associations in the area of animal ethics, including the Research Initiative for Animal Theory (FITT), the colloquium of the Alliance for Humans and Animals, the European Society for Agricultural and Food Ethics, the European Academy of Arts and Sciences, Minding Animals Germany and Minding Animals International.

Board members with keynote speaker Oscar L. Frick. From left to right: Student member Ahmed Adel Seida, Eliane Marti, Oscar Frick, Erika Jensen-Jarolim, Ralf Müller.



Guest Researchers at the Messerli Research Institute

As in previous years, numerous guest researchers from around the globe have enriched the teams of the Comparative Cognition unit in the Clever Dog Lab, at the Wolf Science Center and the Haidlhof; amongst others they originated from Italy, England, Switzerland, France, the Netherlands, Hungary, Czech Republic, Germany, Portugal, Sweden, Croatia, Poland, Brazil and the USA.

Additionally, the Unit of Comparative Medicine – with its two complementary locations – was an attractive destination for applications by international Master and PhD students. The guests came from Switzerland, Hungary and Portugal.

In the Unit for Ethics and Human-Animal Interaction Studies, guest-research was conducted by Amelie Buhl for the doctoral program “Law and Animals: Ethics at Crossroads” (University of Basel) and Susana Monso (“Morality and mindreading in nonhuman animals”) PhD candidate at the Universidad Nacional de Educación a Distancia (UNED) Madrid.



Richard Byrne (St. Andrews) visits the free-ranging Kune Kune pig herd at Haidlhof

2015

Society & Public Relations

The Messerli Research Institute is committed to continuous knowledge transfer to the public sphere, in line with its principles as defined in its mission statement. The institute maintains cooperation with partners from different fields. Thus, the institute contributes to the promotion of a scientifically sound and ethically acceptable treatment of animals in our society.

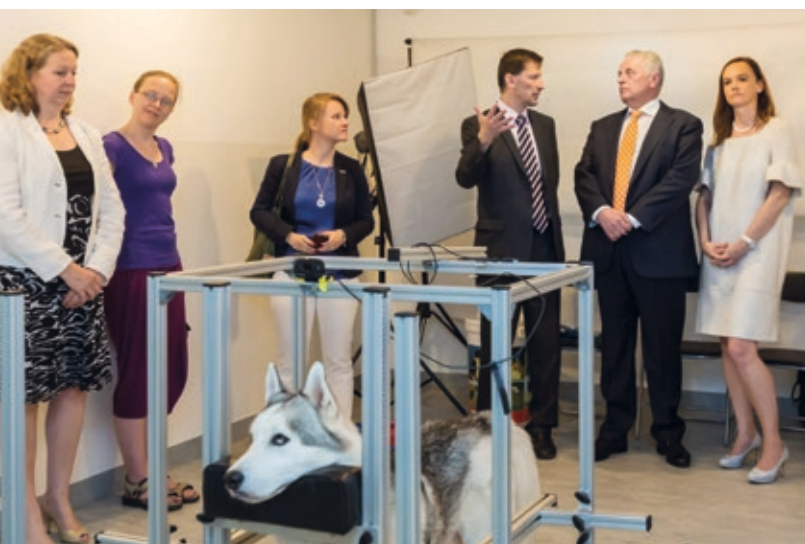
Media Highlights

A detailed documentation of the institute's media coverage can be found on www.vetmeduni.ac.at/en/messerli/infoservice/press/

The study on discriminating emotions in human faces by dogs garnered huge media attention (200 reports in 2 weeks). Also in media were

those on prosocial behaviour in dogs, food sharing in wolves, logical reasoning in kea, tool use in Goffin cockatoos and brood care in poison-arrow frogs, as well as visits of VIPs like Minister of Social Affairs Rudolf Hundstorfer in the Clever Dog Lab.

Minister of Social Affairs Rudolf Hundstorfer together with rector Sonja Hammerschmid at the Clever Dog Lab



A film team of the ORF (ZIB1) filming a dog showing the ability to discriminate human emotions on the touch screen



There were a variety of interviews on the research areas of the Comparative Medicine Unit on radio stations Ö1 and Ö3, as well as in print media, for example in Profil. As a highlight, journalist Katharina Reigersberg portrayed Erika Jensen-Jarolim for an Austrian National Holiday television program on the theme “Homeland to Great Sons and Daughters”.

In the Unit of Ethics and Human-Animal Interaction Studies, the project on cost-benefit analysis of animal experimentation gained much media attention. The media attention stayed high for the entire year, and was reflected in a number of newspaper articles, as well as radio and television programs. Further, the topic of ethics in veterinary medicine received excellent media coverage in veterinary medical news.

Clip from “Homeland to Great Sons and Daughters”, ORF 2, 25.10.2015



Events

2015

Members of the Messerli Research Institute were involved in several national and international conferences in 2015. They acted as hosts, co-organisers, committee members etc. Thus, they contributed to the institute's visibility in Austria and abroad and promoted the network of researchers in the field of human-animal interaction.



Several members of the Comparative Cognition unit presented plenary talks at a conference in Erice (Sicily, Italy)



Raoul Schwing explaining research with kea at the Open Day of the Teaching and Research Farm Kremesberg

The Comparative Medicine Unit organized, in addition to a number of on-time seminars, the symposium on the topic “3R – Reduction, Replacement, Refinement”, and on “PV – Papilloma Virus Infection in Humans and Animals”. On the first of September there was a relaunch of the seminars under the new title “One Health”.



3R symposium 2015. From left to right: Berthold Huppertz, Barbara Obermayer-Pietsch, Elisabeth Fröhlich from Graz with Erika Jensen-Jarolim.



Top experts Reinhard Kirnbauer of Vienna and Angelika B. Riemer of Heidelberg came to the One-Health Symposium on papilloma viruses

12th international Kant conference “Nature and Freedom” at the University of Vienna (21st-25th September, 2015)



Conference “Livestock as Fellow Creature” in cooperation with the TNN Institute of the LMU Munich and the Evangelical Academy Tutzing (17.-18.11.2015)

Workshop human-animal interactions: lecture by Carol J. Adams from the USA on “The Sexual Politics of Meat” (26.11.2015)

Conference “Corporeal Animals – Embodied Mind” at the Department of Philosophy of the University of Vienna



Three important infrastructure plans were realized at the Haidlhof Research Station.

- The majority of Ministry of Science funded measures for the expansion and improvement of the spatial and technical infrastructure were completed. This has made available an additional 15 work spaces, a large seminar room and a common room for the staff. Additionally further testing rooms for chickens and pigs were created and the IT infrastructure was expanded by two independent networks with large servers.
- The availability of electricity was secured through the connection of the free-ranging pig lab to the EVN power grid with a 500 m power cable. The simultaneous installation of a fiber optics cable allows a connection to the Haidlhof IT network.
- Finally, a new aviary complex for kea and corvids was established, sponsored by the Land Niederösterreich and from own funds. This will now allow school classes and larger groups of private persons to be introduced to the research at the Haidlhof, without interrupting on-going experiments.

Student meeting in the new seminar room of the old Haidlhof farm house



New aviaries for kea and corvids at the Haidlhof Research Station



The FWF funded project of Eva Ringler to study the reproduction and brood care of *Allobates femoralis* can be conducted in the FrogLab at the Biocenter Althanstrasse of the University of Vienna (Faculty of Life Sciences). The former aquarium room was adapted to frog husbandry in 2012, and equipped with air-conditioning, ventilation and also fully automatized light and rain systems. In the terrariums and testing areas, the behavioural patterns which can be flexibly adapted to changing environmental conditions, increasing reproductive success, can be studied. The first experiments conducted in 2015 were highly successful.

The new Frog Lab at the Biocenter Althanstrasse



Social Events

2015



Raoul Schwing welcomes institute members to Haidlhof Research Station at the 2015 retreat.



Marianne Wondrak introduces the Kune-Kune pigs at the Messerli Retreat



New sand has to be spread out in the kea aviary: Sabine Viemann, Tilmann Lange, Katharina Huchler, Franz Weiss, Christine Schwab, Cinthia da Silva (from left to right)



Hiking to a windmill at the ethics retreat in Retz.



Judith Fazekas: Researcher of the Month with Josef Singer in 2015. Prize was handed out by Gerhard Lechner and Vice-Rector Michaela Fritz of the Meduni Vienna.



CompMed stays ahead. Erika Jensen-Jarolim with international colleagues Desiré Linnemann and Edda Fiebiger at the American Academy AAAAI in Houston.



Open House at the Vetmed campus: Allergies in humans and animals are explained at the CompMed-stand by Ina Herrmann and Lukas Einhorn



The CompMed team runs: (from left to right) Sarah Meitz, Maria Isabell de Silva Carvalho, Ina Herrmann and Stefanie Wagner ran at the Vienna Energie Run.



Swiss guest student Heidi Müller (3rd, first row) and CompMed team after her master's defense with co-supervisor Arthur Helbling (Bern, Switzerland) via Skype.

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