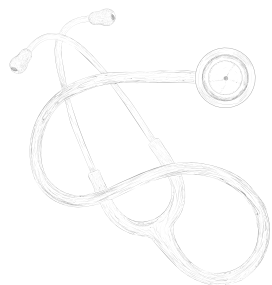


Scientific Society of Veterinary Medicine Students
Faculty of Veterinary Medicine
Institute of Veterinary Medicine
Warsaw University of Life Sciences



10TH

**INTERNATIONAL
SCIENTIFIC
CONFERENCE OF
VETERINARY
MEDICINE STUDENTS**
WARSAW, May 10-11th 2025



NON SIBI SED OMNIBUS
NOT FOR THEMSELVES, BUT FOR EVERYBODY



Abstract Book Project: Edith Bardet, Małgorzata Łabuz,
Ewa Laskowska, Ewelina Pierzecka

Text: Organizing Committee of the 10th International Scientific
Conference of Veterinary Medicine Students

The Abstract Book project and graphical elements were created
with the use of Canva/Canva photo library.

Warsaw, 2025

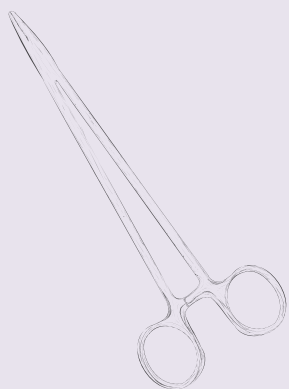
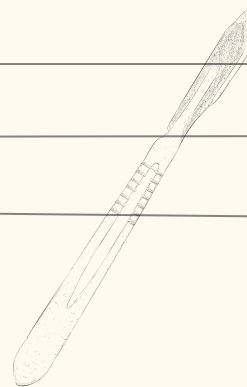
ISBN 978-83-971850-2-9



Wydział Medycyny Weterynaryjnej w Warszawie

TABLE OF CONTENTS

Foreword	4
Honorary Patronage	5
Honorary Committee	6
Supporters	8
Scientific Committee	9
Organizing Committee	10
Conference Schedule	11
Lecturers	16
Abstracts	19
Preclinical sciences session	20
Small animals session	26
Farm animals session	31
Exotic and wildlife animals	40
Poster Session	46
PhD Session	64
Acknowledgement	69
Notes	



WELCOME TO 10TH INTERNATIONAL SCIENTIFIC CONFERENCE OF VETERINARY MEDICINE STUDENTS

Dear Participants,

Welcome to the 10th International Scientific Conference of Veterinary Medicine Students. We are honoured to have you as our Guests for this anniversary edition.

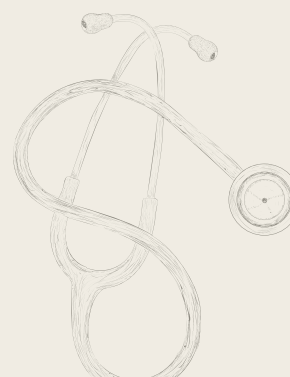
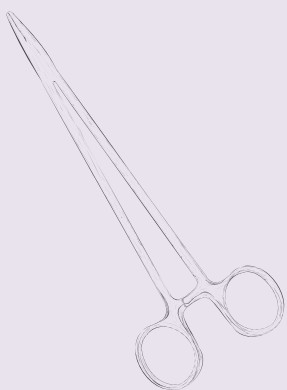
The conference is addressed to young scientists. Six scientific sessions are prepared for you to give you an opportunity to present your research.

We also have planned plenty of amazing lectures from different fields and games to entertain you. This is a great chance to meet and learn from the best.

If you have any questions, please feel free to ask the members of the Organizing Committee for help.

Thank you for joining us, it is an honour to host you.

Yours sincerely,
The Organizing Committee



DEAR PATRONS AND SUPPORTERS

We are incredibly grateful for supporting us in hosting this event.
Your involvement and generosity made it possible to organize the
Conference!

HONORARY PATRONAGE

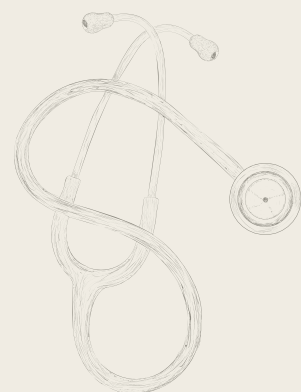


Warsaw University of Life Sciences Rector
Professor Michał Zasada PhD, DSc

HONORARY COMMITTEE



**Instytut Medycyny
Weterynaryjnej**



Director of the Institute
of Veterinary Medicine
Prof. Marcin Bańbura



Dean of the Faculty
of Veterinary Medicine

Michał Skibniewski PhD, DSc, prof. SGGW

SUPPORTERS



**SZKOŁA GŁÓWNA
GOSPODARSTWA
WIEJSKIEGO**

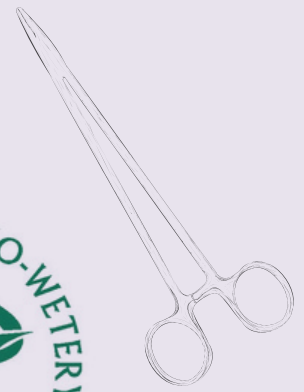


**Wydział Medycyny
Weterynaryjnej**

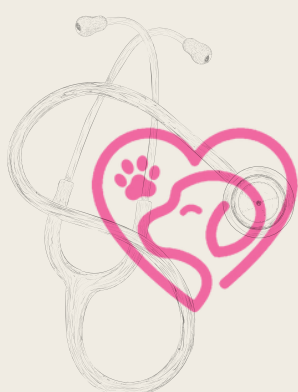


**SAMORZĄD
STUDENTÓW
SGGW**

SUPPORTERS

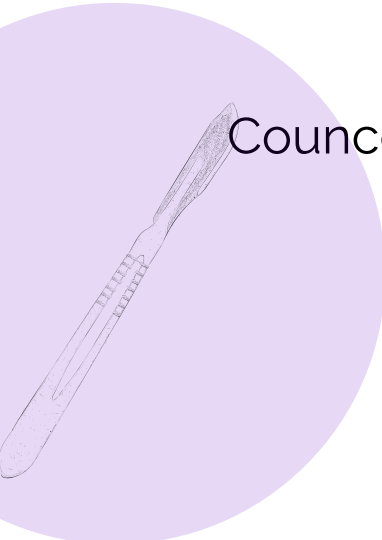


Polskie Towarzystwo
Nauk Weterynaryjnych



PSIA WYGODA

SCIENTIFIC COMMITTEE



Councillor of the Scientific Society of Veterinary
Medicine Students

Paula Kietbik PhD

Kaja Urbańska PhD

Preclinical Sciences Session

Anna Burdzińska PhD, DSc, prof. SGGW

Natalia Dziekan PhD

Tomasz Szara PhD, DSc, prof. SGGW

Small Animals Session

Anna Małek PhD

Agata Wojtkowska PhD

Marta Parzeniecka-Jaworska PhD

Farm Animals Session

Olga Witkowska-Piłaszewicz PhD

Katarzyna Skierbiszewska DVM

Łukasz Zdrojkowski PhD

Poster Session

Dorota Chrobak PhD

Urszula Latek DVM

Łukasz Kiraga PhD

PhD Session

prof. Marcin Bańbura

Katarzyna Kliczkowska PhD

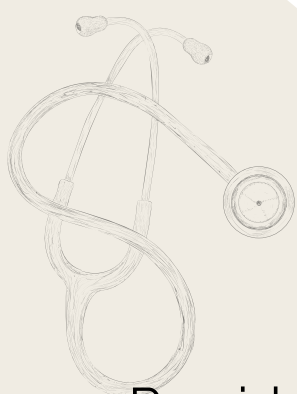
Tomasz Sadkowski PhD, DSc, prof. SGGW

Exotic animals

Aleksandra Ledwoń PhD, DSc

Blanka Orłowska PhD

Paulina Bindas DVM



ORGANIZING COMMITTEE

Ewa Laskowska
President of the Scientific Society of Veterinary
Medicine Students

Paula Kiełbik PhD

Kaja Urbańska PhD

Tomasz Sadkowski PhD, DSc, prof. SGGW

Ewelina Pierzecka

Alicja Dąbrowska

Małgorzata Łabuz

Katarzyna Maj

Edith Bardet

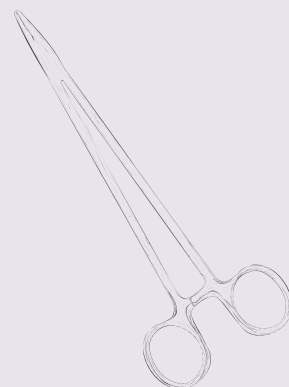
Magdalena Prażmowska

Weronika Białoń

Katarzyna Baranowska

Martyna Szewczyk

Paulina Białas



CONFERENCE SCHEDULE

SAT
10
MAY

8:00 REGISTRATION

8:30 - 9:00

OPENING CEREMONY

9:00 - 9:30

Opening lecture: "Equine Exercise Monitoring: Where Science Meets Practice"
Olga Witkowska - Piłaszewicz DVM, PhD

9:30 - 11:30

Farm Animals Session

11:45 - 12:15

COFFEE BREAK

12:15 - 13:00

Supporter's lecture : Purina
"Not magic but science, how we can make owners less allergenic to their cats via nutrition"
Sybilla Berwid-Wójtowicz PhD

13:00 - 13:45

"Gastric dilatation and torsion - how to manage the situation without panic"
lek. wet. Dominika Ostrowska

13:45 - 14:45

LUNCH BREAK

14:45 - 15:30

Supporter's lecture: Phibro Animal Health
"Facts and myths about poultry industry"
Marta Krupa DVM

15:30 - 16:30

PhD Sessions

15:30 - 17:10

Poster Session

16:30 - 17:15

Small Animals Session

CONFERENCE SCHEDULE

SUN

11

MAY

8:00 REGISTRATION

8:30 - 9:45

Exotic Animals Session

9:45 - 10:30

"Decision-making process in the clinical exam of horses with colic symptoms"

Miłosz Grabski DVM, Dipl. ECVS

10:30 - 11:15

"Principles of equine anesthesia"

Julie Grabska, nurse

11:15 - 11:45

COFFEE BREAK

11:45 - 12:30

"How to start orthopedics? - do's and don'ts"

Tomasz Handzlik DVM

12:30 - 13:15

Online lecture: "Emerging Pathogens and Disease Ecology in wild Snakes"

Daniele Marini DVM

13:15 - 14:15

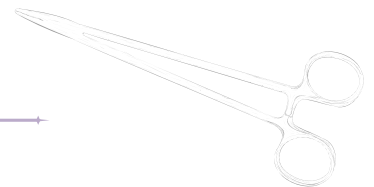
LUNCH BREAK

14:15 - 15:45

Preclinical Session

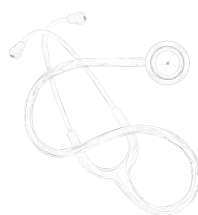
16:30 - 17:15

CLOSING CEREMONY



SESSIONS SCHEDULE

SAT
10
MAY



9:30-11:30 FARM ANIMALS SESSION

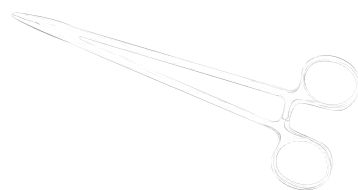
9:30 - 9:45	Katarzyna Baranowska
9:45 - 10:00	Edith Bardet
10:00-10:15	Erwan Degorce
10:15 - 10:30	Julia Konecka
10:30 - 10:45	Dominika Piszczota
10:45 - 11:00	Paulina Rakowska
11:00 - 11:15	Wiktoria Rzepka
11:15 - 11:30	Wiktoria Spinczyk

15:30 - 16:30 PhD SESSIONS

15:30 - 15:45	Hubert Aszteborski
15:45 - 16:00	Adrianna Niedzielska
16:00 - 16:15	Daria Wojewodzic
16:15 - 16:30	Julia Polok-Lipina

15:30 - 17:10 POSTER SESSION

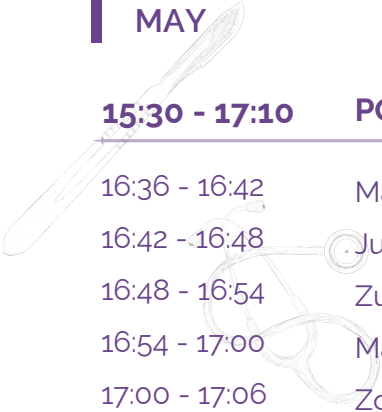
15:30 - 15:36	Aybüke Akta
15:36 - 15:42	Aleksandra Bertman
15:42 - 15:48	İclal Gevşek
15:48 - 15:54	Gabriela Jastrzębska
15:54 - 16:00	Iga Jędrusiak
16:00 - 16:06	Acar Bey Karali
16:06 - 16:12	Iryna Kartel
16:12 - 16:18	Oliwia Kończak
16:18 - 16:24	Mateusz Kubiak
16:24 - 16:30	Leszek Moniakowski
16:30 - 16:36	Aleksandra Modrzewska



SESSIONS SCHEDULE

SAT
10
MAY

15:30 - 17:10 POSTER SESSION

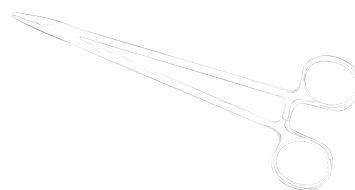


16:36 - 16:42	Maja Połatyńska
16:42 - 16:48	Julia Salmanowicz
16:48 - 16:54	Zuzanna Skrzypczak
16:54 - 17:00	Magdalena Szortyka
17:00 - 17:06	Zoya Sylenko

16:30 - 17:15 SMALL ANIMALS SESSION



16:30 - 16:45	Hazal Duman
16:45 - 17:00	Julia Karbarz
17:00 - 17:15	Kacper Lewikowski



SESSIONS SCHEDULE

SUN

11

MAY

8:30 - 9:45

EXOTIC ANIMALS SESSION

8:30 - 8:45

Roksana Brożyna

8:45 - 9:00

Marios Koufasimis

9:00 - 9:15

Necati Kubilay

9:15 - 9:30

Hasan Yılmaz

14:15 - 15:45

PRECLINICAL SESSION

14:15 - 14:30

Sofiya Klymenko

14:30 - 14:45

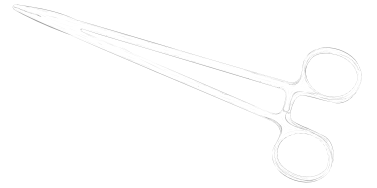
Jakub Masztakowski

14:45 - 15:00

Simge Özüner

15:00 - 15:15

Gökçe Sarı



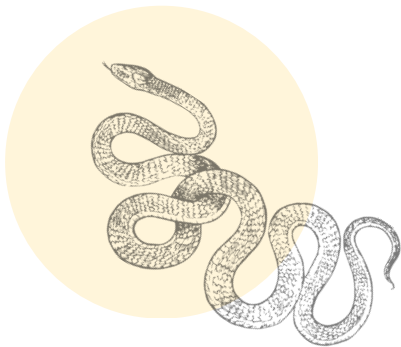
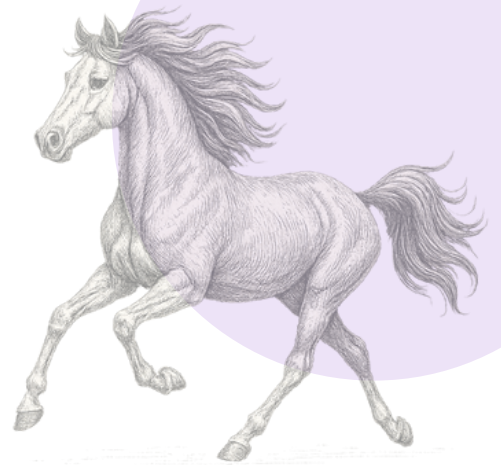
LECTURERS



Olga Witkowska-Piłaszewicz PhD

Opening Lecture

"Equine Exercise Monitoring: Where Science Meets Practice"



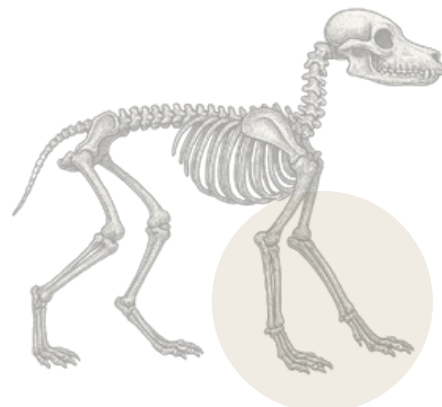
Daniele Marini DVM

"Emerging pathogens and Disease Ecology in wild Snakes"



Tomasz Handzlik DVM

"How to start orthopaedics? - do's and dont's"

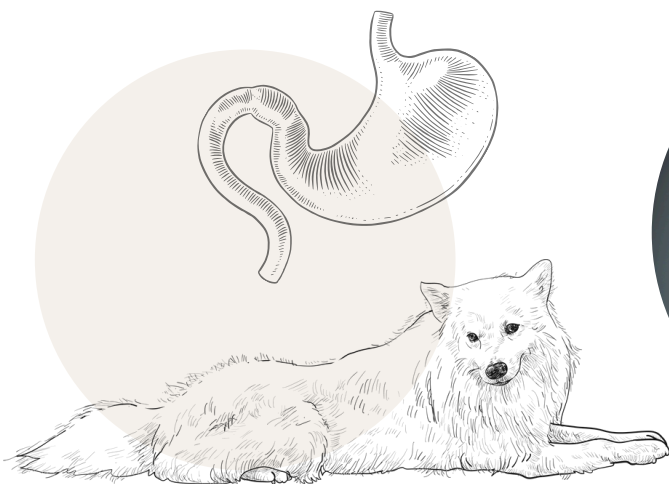
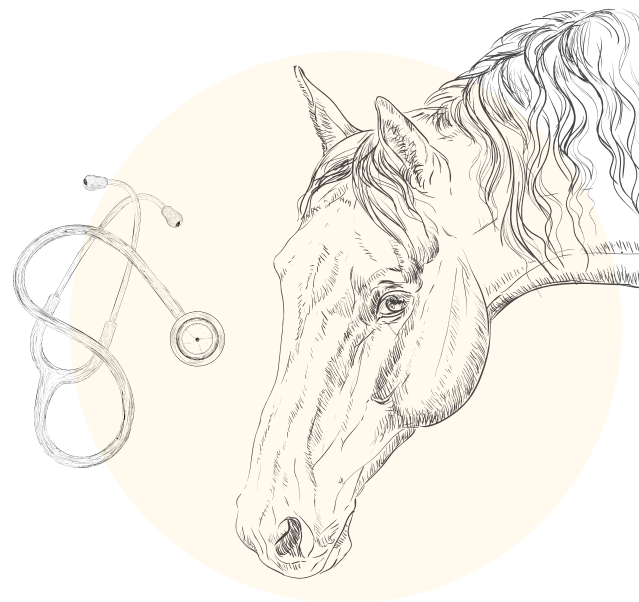




Julie Grabska, Nurse
"Principles of equine anaesthesia"



Miłosz Grabski DVM, Dipl. ECVS
"Decision-making process in the clinical exam of horses with colic symptoms"



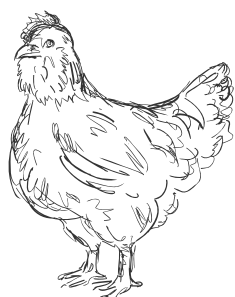
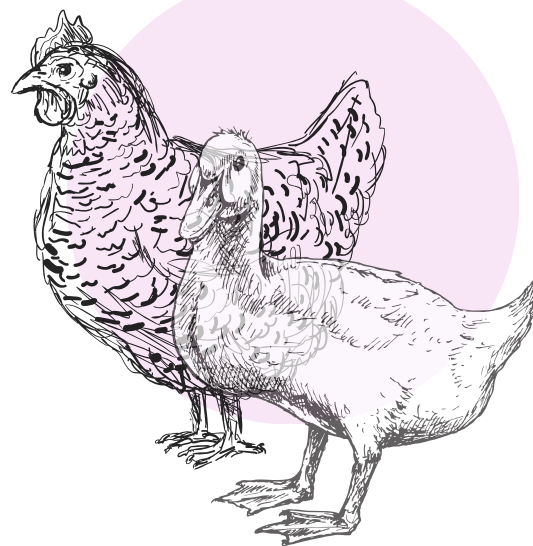
Dominika Ostrowska DVM
"Gastric dilatation and torsion - how to manage the situation without panic"

SUPPORTERS' LECTURES



Marta Krupa DVM

"Facts and myths about poultry industry"

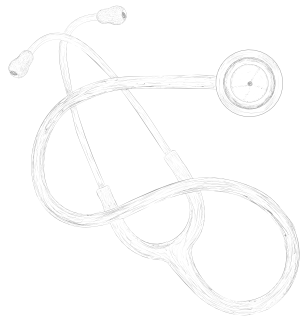
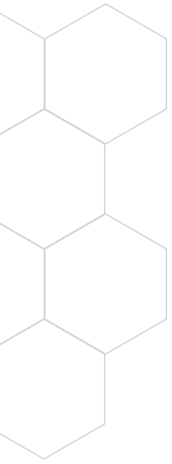


**Sybilla Berwid-Wójtowicz M.Sc.,PhD,
Clinical Nutrition Specialist**

"Not magic but science, how we can make owners less allergenic to their cats via nutrition"

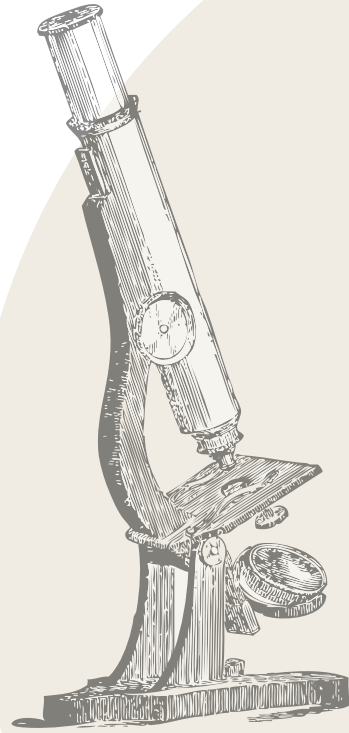


NON SIBI SED OMNIBUS
NOT FOR THEMSELVES, BUT FOR EVERYONE

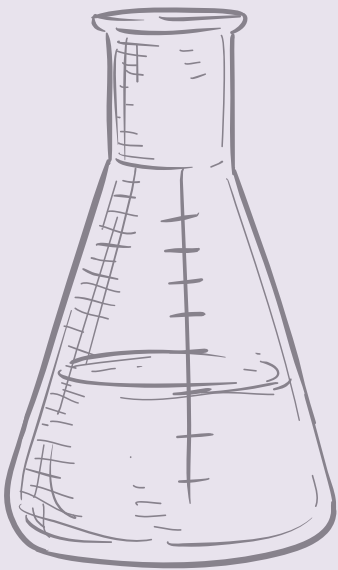


ABSTRACTS





PRECLINICAL SESSION



EVALUATION OF POSTOPERATIVE BONE HEALING IN VETERINARY SURGERY USING GEOMETRIC MORPHOMETRICS

Gökçe SARI (1), Simge ÖZÜNER (1), Ozan GÜNDEMİR (2)

1) Istanbul University- Cerrahpasa, Faculty of Veterinary Medicine, İstanbul, Türkiye

2) Istanbul University- Cerrahpasa, Faculty of Veterinary Medicine, Department of Anatomy, İstanbul, Türkiye

Purpose: This study aims to introduce a novel statistically-based analytical method for evaluating postoperative bone healing in veterinary surgery. This approach has been developed to quantitatively assess bone shape changes following surgical intervention, providing a more objective means of monitoring the healing process. This method holds significant potential for postoperative follow-up and the assessment of surgical success in clinical applications.

Materials and Methods: In this study, two mixed-breed dogs were used to evaluate postoperative bone healing. Computed tomography images obtained after surgical intervention were processed for 3D modeling and analysis, comparing healthy and operated bones using geometric morphometric methods.

Results: The analyses demonstrated that postoperative bone healing is directly associated with shape changes. Localized deformations and morphological alterations during the healing process were found to be directly related to the fracture site in operated bones. Structural changes different from normal bone morphology were observed. These structural alterations could be visually identified, and their differences could also be quantitatively distinguished through numerical analysis.

Conclusion: This study demonstrates that geometric morphometric methods can be an effective tool for evaluating postoperative bone healing. Structural changes associated with the fracture site were successfully analyzed both visually and quantitatively, suggesting that this approach can serve as an objective assessment tool. Further research is needed to explore the clinical application of this method to enhance postoperative monitoring and improve the accuracy of surgical outcome evaluations in veterinary surgery.

INVESTIGATING THE EFFECTS OF SOCIAL MEDIA IN VETERINARY EDUCATION: STUDENT PERCEPTIONS AND EVALUATIONS

Simge Özüner (1), Ozan Gündemir (2)

1) Istanbul University- Cerrahpasa, Faculty of Veterinary Medicine, İstanbul, Türkiye

2) Istanbul University- Cerrahpasa, Faculty of Veterinary Medicine, Department of Anatomy, İstanbul, Türkiye

Background: Social media has become an important tool in education and professional life in recent years. In knowledge-intensive fields such as veterinary education, social media platforms offer potential benefits, including facilitating access to educational materials, enabling information sharing, and enhancing professional skills.

Aim: The aim of this study is to evaluate the impact of social media on veterinary education and to analyze students' perceptions of the professional and academic use of social media. Additionally, the study examines the effects of age, academic year, and daily social media usage on these perceptions.

Material and Methods: This study is a cross-sectional survey conducted among students at Istanbul University-Cerrahpaşa Faculty of Veterinary Medicine. A total of 227 students participated in the study. Participants were from different academic levels, ranging from 1st to 5th year. The survey included demographic questions and 8 Likert-scale questions focusing on the educational and professional impacts of social media.

Results: The results indicated that students' perceptions of social media varied based on their age groups and daily social media usage. The 18–21 age group evaluated the educational and professional impacts of social media more positively, whereas the 22+ age group exhibited a more critical perspective. Additionally, students who used social media for 4 hours or more daily had a more favorable view of sharing surgical videos. Significant differences were identified for certain questions; for instance, both daily social media usage and age groups had noticeable effects on perceptions related to the sharing of surgical videos.

Conclusions: Younger students tended to evaluate the benefits of social media, such as access to educational materials and professional knowledge sharing, more positively, while older students adopted a more critical stance. This study provides valuable insights into optimizing social media use in the context of veterinary education.

Determination of acute toxicity parameters of basidiomycete extract *Inonotus obliquus*

Sofiya Klymenko (1)

Supervisor : prof. Iryna Derkach DVM (1)

1) National University of Life and Environmental Sciences of Ukraine

The sterile (infertile) form of the basidial woody fungus *Inonotus obliquus* of the order *Hymenochaetales*, also called chaga or birch black fungus, is characterised by a wide range of pharmacological effects. It is used as an anti-inflammatory, antioxidant, antibacterial, anthelmintic and antiviral medicinal raw material, for treatment of diabetes, obesity, cancer, liver and kidney disease, and fatigue. However, such use is not always scientifically justified.

The aim of our study was to investigate the parameters of acute toxicity of the aqueous extract of the basidiomycete *Inonotus obliquus*, which was obtained in natural conditions in Ukraine. The study was conducted on white Wistar rats in accordance with generally accepted methods of preclinical studies of new drugs.

It was established that the LD 50 of the test substance for rats by intragastric administration was 8959 mg/kg by the method of G. Kerber, 9175.0 mg/kg by the method of G. Pershin, and 8890 (6510.1 ÷ 11269.9) mg/kg by the method of B. Stabsky. Our data allow us to state that the extract of the basidiomycete *Inonotus obliquus*, according to the classification of chemicals by hazard, corresponds to the IV class of hazard, and according to the classification of substances by toxicity – to the V class and the degree of toxicity – “practically non-toxic substances”. The established pathological changes were identical in the organism of dead rats of the experimental groups and correlated with the dose of the studied extract.

The results obtained are a prerequisite for the next stages of preclinical and clinical studies to scientifically substantiate the use of medicinal raw materials from *Inonotus obliquus* obtained in UKRAINE IN VETERINARY MEDICINE.

Congenital deficiency of the tracheal ring in a female Eurasian sparrowhawk (*Accipiter nisus*, L. 1758) visualized by microcomputed tomography.

Jakub Masztakowski (1), Ewa Laskowska (1), Małgorzata Łabuz (1)

1) Warsaw University of Life Sciences, Scientific Society of Veterinary Medicine Students

There are few literature reports on congenital tracheal disorders in birds. Although these conditions are not common, this does not mean that such cases do not occur and that they cannot be encountered in everyday veterinary practice. Cases of congenital absence of tracheal rings in the dog and cat are described, along with available treatments. The absence of tracheal rings of this nature has not been described in birds so far, but given reports of the possibility of placing endotracheal stents in representatives of the Aves class, it seems possible to treat such conditions, if they would manifest clinical symptoms.

This paper aims to describe a case study of imaging congenital absence of the tracheal ring in a female Eurasian sparrowhawk (*Accipiter nisus*, L.1758). Images of the examined individual were generated using a Carl Zeiss METROTOM 800 industrial CT scanner. The measurements were performed with a resolution of 0.048 mm. In the examined bird, there was an absence of the 45th tracheal ring. This case demonstrates the bird with an absent tracheal ring and, consequently, it demonstrates the possibility of appearance of clinical signs associated with tracheal collapse. Such signs include, for example, respiratory stridor, pathological sounds during inspiration or expiration, coughing, voice change or wheezing. Therefore, this work also aims to highlight the clinical aspect of such anomalies and emphasize the importance of imaging studies in diagnosing domestic and wild living birds.

The main trends in the pharmaceutical market of iron-containing drugs registered in Ukraine

Maksym Kohutych (1), Nazar Yusyn (1)

Supervisor: prof. Iryna Derkach DVM (1)

1) National University of Life and Environmental Sciences of Ukraine

Iron-containing drugs in veterinary medicine are especially relevant for the prevention of iron deficiency anemia in piglets, therefore their use is a scientifically based and necessary preventive measure in modern pig farming.

The results we obtained indicate the main trends in the pharmaceutical market of iron-containing drugs registered in Ukraine as of 1.04.25.

The modern pharmaceutical market of veterinary drugs in Ukraine during 2017–2025 is sufficiently supplied with anti-anemic drugs for pigs, but mostly with imported drugs. The share of Ukrainian drugs in this group was larger in 2020, but in 2022 the share of imported drugs again prevailed.

Compared to previous years, the share of iron-containing drugs on the pharmaceutical market in Ukraine is growing. Thus, in 2024, 4 such drugs were registered, and 1 drug was registered, at the beginning of 2025. It should be noted that these are mainly drugs of Ukrainian production in particular 63 % from the total number of iron-containing drugs.

As manufacturers note in the official instructions for the drugs, the active substance is iron in a complex with low-molecular dextran. Such drugs are low-toxic, reliably increase hemoglobin levels. After parenteral administration, iron accumulates in the tissues and is gradually released from the dextran complex, binding to proteins.

It should also be noted the general trend towards the combination of iron dextran with vitamins (especially cyanocobalamin), macro- and microelements in modern anti-anemic iron preparations. Ukrainian scientists pay great attention to the issue of studying the pro-oxidant action of these drugs and the influence of Selenium as one of the effective antioxidants on lipid peroxidation and the antioxidant system as a whole. Thus, in 2024, a new veterinary drug, ferroselenium, was registered, which contains, in addition to the combination of iron dextran and zinccobalamin, also the compound sodium selenite.

Also in Ukraine, the pharmaco-toxicological properties of iron in valence IV and the anti-anemic activity of the iron-containing drug clatroferan for its use in piglets and for its use in pregnant sows are being studied (Derkach I.M., 2018–2025).



SMALL ANIMALS SESSION

Evaluation of Pet Owners' Awareness on Mating, Parturition, Cesarean Section, and Neutering at Istanbul University-Cerrahpaşa Veterinary Faculty Hospital

Hazal DUMAN (1), Res. Assist. Mert SARILAR (2), Prof. Dr. Özge TURNA (3)

1) Istanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, 5th Year, Istanbul, Turkey

2) Istanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, Department of Obstetrics and Gynecology, Istanbul, Turkey

3) Istanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, Department of Obstetrics and Gynecology, Istanbul, Turkey

Reproductive health and management in companion animals are critical in veterinary medicine, and pet owners' knowledge directly influences these processes. Neutering is widely performed to prevent unwanted reproduction, reduce reproductive organ-related diseases, and enhance animal welfare. However, many pet owners lack sufficient knowledge about its effects on health and behavior. Similarly, cesarean section can be life-saving during dystocia, yet owners' awareness of this procedure is often limited. Previously conducted studies have shown variations in pet owners' knowledge levels and demonstrated that increasing awareness positively impacts animal health.

This study aims to assess the knowledge levels and attitudes of pet owners visiting Istanbul University-Cerrahpaşa Veterinary Faculty Hospital regarding parturition, cesarean section, and neutering, and to present scientifically grounded recommendations for potential improvements in these areas.

A questionnaire was administered to pet owners visiting Istanbul

University-Cerrahpaşa Veterinary Faculty Hospital. The survey included questions about participants' demographic characteristics, knowledge of reproductive health methods, neutering preferences, and awareness of cesarean section. Data were analyzed using quantitative methods.

Among the 65 pet owners who participated in the survey, 76.7% were female, while 23.3% were male. In terms of pet ownership, 80% owned cats, whereas 20% owned dogs. The identified cat breeds included British Shorthair, Scottish Fold, Persian, Sphynx, Calico, and Blue Chocolate. Among dog owners, the reported breeds were Kangal, German Shepherd, Doberman, Pomeranian, Terrier, Toy Poodle, Husky, French Bulldog, Maltese, and King Charles.

According to the survey results, 78% of pet owners lacked sufficient knowledge about their pets' reproductive processes. Among those who intended to conduct genetic and health tests before mating, only 13.6% had successfully done so, while 86.4% cited financial constraints and accessibility issues as barriers. Regarding parturition, 78% of respondents had never taken their pets for a reproductive health check-up. Awareness of cesarean section was also limited, with 66.2% having no knowledge of the procedure and only 18.5% possessing adequate information.

In terms of postnatal care, many pet owners preferred to maintain regular communication with veterinarians; however, a significant knowledge gap was observed regarding birth-related complications. The majority of respondents believed that cesarean sections should only be performed in emergency cases. Among those with birthing experience, high rates of neonatal mortality and deficiencies in knowledge were reported.

Regarding neutering, 47.7% of participants correctly identified the reproductive organs removed during the procedure. The most influential factors in the decision to neuter were identified as reproductive control and health concerns

This study highlights the necessity of targeted educational programs—such as seminars, brochures, and active use of social media—to enhance pet owners' awareness of mating, parturition, cesarean section, and neutering. Increasing veterinarians' efforts to educate pet owners will contribute to better reproductive health management and improved animal welfare.

This study was conducted without any financial support.

***Lucilia sericata* as a Marker of Rodenticide and Molluscicide Intoxication in Forensic**

Entomotoxicology

Kacper Lewikowski (1), Kacper Siwiak (1), Alicja Szot (1), Dominika Przygodzka (2), Grzegorz Teresiński (2), Agnieszka Chałabis-Mazurek (1), Piotr Listos (1)

1) University of Life Sciences in Lublin, Faculty of Veterinary Medicine

2) Medical University of Lublin, Department and Chair of Forensic Medicine

Entomotoxicology, the study of toxins in arthropods associated with decomposing remains, provides a unique and valuable method for forensic investigations, particularly in cases where traditional toxicological samples are unavailable or degraded. This study explored the detection of widely used rodenticides—brodifacoum, difenacoum, and bromadiolone—as well as metaldehyde, a molluscicide, through the analysis of *Lucilia sericata* flies, a species commonly associated with cadavers.

Our primary objective was to assess whether these toxic agents could be reliably detected in the developmental stages of *L. sericata*, thereby establishing its forensic utility in cases involving poisoning. The experimental design involved exposing first-instar larvae of *L. sericata* to contaminated tissues, including multiple organ samples artificially dosed with one of the toxicants under investigation. Larvae were then collected at successive developmental stages, encompassing instars 1, 2, and 3, as well as pupae. The samples were subjected to chromatographic analyses to identify and quantify the presence of rodenticides and metaldehyde.

Our findings demonstrated that the tested toxicants could be successfully detected in all developmental stages of *L. sericata*, with notable retention of the toxic agents throughout the larval and pupal stages. These results confirm the feasibility of using *L. sericata* as a bioindicator for poisoning cases involving both rodenticides and molluscicides. This approach has significant practical implications, as it enables the detection of toxic agents even when biological tissues from the victim are compromised or unavailable.

By incorporating entomotoxicological methods into forensic practice, investigators can gain critical insights into cases involving suspected poisoning, particularly those with environmental or criminal dimensions. The use of *L. sericata* for toxicological analysis is especially beneficial for expert witnesses and law enforcement agencies, providing robust and reliable evidence for legal proceedings.

This study was supported through funding from: self-funded

Design and Functional Evaluation of a 3D-Printed Prosthesis for *Canis Familiaris*

Julia Karbarz (1), Eryk Pawełek (2)

1) Warsaw University of Life Sciences

2) Scientific Society Integra, AGH University of Krakow

Amputations of the limb in dogs—whether due to injury, disease, or congenital conditions—can significantly affect a dog’s mobility, behavior, and overall well-being. Despite their remarkable ability to adapt, long-term biomechanical imbalances may lead to strain on remaining limbs, arthritis, or decreased quality of life. While prosthetic solutions exist in human medicine, veterinary prosthetics remain rare, largely due to high costs and limited availability. As a result, many pet owners find these solutions financially inaccessible.

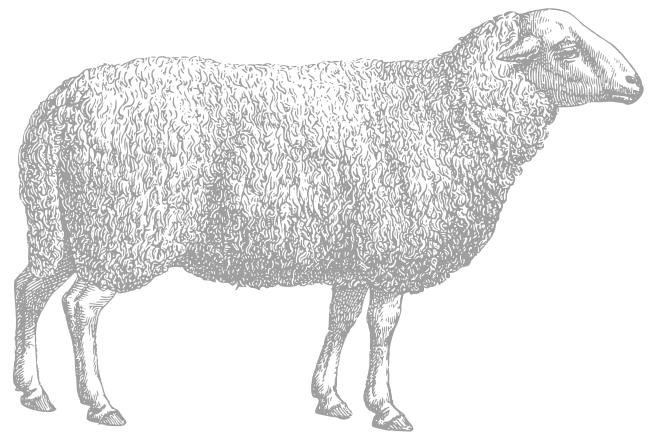
To better understand the real-world relevance and perceived necessity of canine prosthetics, this project began with a series of in-depth interviews and discussions with owners of dogs living with three limbs. A recurring theme emerged: most owners observed that their dogs had adapted surprisingly well without a prosthesis and did not appear to suffer significant limitations in daily functioning. However, many also expressed that they would seriously consider using a prosthetic solution if it were affordable, comfortable, and easy to apply. These honest, experience-based insights became a key driver for the project’s direction.

In response, the main goal of this study was to design a lightweight, ergonomic, and economically viable limb prosthesis for dogs, using computer-aided design (CAD) and 3D printing technology. The design takes into account biomechanical considerations such as gravitational force distribution, center of mass balance, and comfort during locomotion. The prosthesis features ergonomic shaping and ventilation slots to reduce weight and enhance thermoregulation.

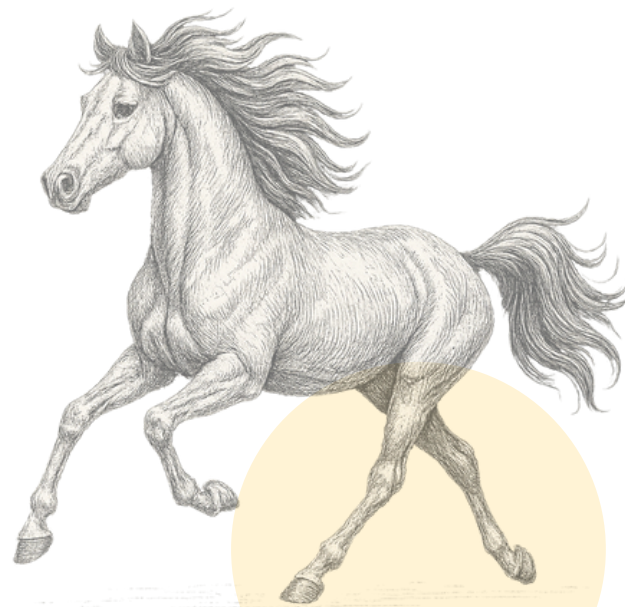
A critical component of the project was a comprehensive materials review. Materials considered included PLA, PETG, TPU, and carbon fiber-reinforced filaments. After evaluation, TPU (thermoplastic polyurethane) emerged as a favorable option due to its elasticity, resistance to wear, biocompatibility, and comfort in movement, making it suitable for dynamic loads and repeated impact. Structural elements requiring rigidity may be printed with carbon-reinforced PETG for added strength without excessive weight.

The final model offers a modular design, enabling easy adjustment or replacement of components. Preliminary static and dynamic simulations indicated satisfactory stress distribution and durability under normal canine activity loads.

This study concludes that low-cost, 3D-printed prostheses present a promising alternative to traditional solutions, particularly in terms of accessibility and personalization. Further research will involve clinical trials with selected canine patients to evaluate real-world performance, adaptation period, and long-term benefits for animal welfare.



FARM ANIMALS SESSION



Occurrence of teeth diseases resulting in teeth extraction and overview of extraction methods in horses referred to the Department of Large Animals and Clinic of Warsaw University of Life Sciences

Katarzyna Baranowska (1),

Supervisor: Kamil Górski, DVM, PhD (2), Małgorzata Domino DVM, MSc, PhD, DSc (2)

1) Scientific Society of Veterinary Medicine Students, Faculty of Veterinary Medicine, Warsaw University of Life Sciences,
Poland

2) Department of Large Animals Diseases and Clinic, Institute of Veterinary Medicine, Warsaw University of Life Sciences,
Poland

Equine dentistry has advanced a lot in recent years and many procedures are performed in the field. However, in some cases it is still better to refer a horse to the clinic. In this study teeth extractions performed at the Department of Large Animals and Clinic of Warsaw University of Life Sciences were evaluated and summarised to highlight dependencies and tendencies of cases referred to the clinics.

Clinical records of all teeth extractions performed in 2024 at the Department of Large Animals and Clinic of Warsaw University of Life Sciences and records of routine post-extraction examinations were examined. Data collected from hospital records included: general status, age, breed and sex, Triadan number of extracted tooth, reason for extraction, extraction technique, standing or general anesthesia.

Data were analysed to assess most frequently extracted teeth, most common reasons of extraction, extraction technique, features of horses affecting necessity of extraction and dependencies between the aforementioned factors. Incisors, canines and premolar and molar teeth were evaluated separately due to different specificity of the teeth and extraction.

The study population consisted of 48 horses aged between 3 and 26 years referred to the Clinic. 12 horses had incisors extracted (89 teeth), 1 horse had canine tooth extracted (1 tooth) and 40 horses had molar or premolar teeth extracted (45 teeth), including 5 horses that had both incisor and molars or premolars extracted.

Among incisors most common reason of extraction was Equine Odontoclastic Tooth Resorption and Hypercementosis Syndrome – 8 horses affected, 78 teeth extracted. All incisor extractions were performed on a standing sedated horse. Horses were aged between 3 and 26 years, mean 19,3 years, median 20 years.

Among premolar and molar most common reason of extraction was fracture of the tooth – 28 horses affected, 31 teeth, followed by apical infection – 4 horses, 4 teeth and on the third place was tooth mobility – 3 horses, 3 teeth. The most frequently extracted teeth were 109 – 15 teeth, and 209 – 15 teeth. More frequently maxillary teeth were extracted – 39 teeth, than mandibular – 6 teeth. Oral extraction was performed on 34 teeth and 11 teeth were extracted via repulsion. In 36 cases extraction was performed on a standing sedated horse and in 4 horses extraction was performed under general anesthesia. The group contained of horses aged between 4 and 26 years, mean 14,6 years, median 13,5 years.

The effects of supportive non-pharmacological therapy in the treatment of Equine Glandular Gastric Disease (EGGD)

Edith Bardet (1)

Supervisor : Elżbieta Stefanik, DVM (2)

1) Scientific Society of Veterinary Medicine Students, Faculty of Veterinary Medicine, Warsaw University of Life Sciences, Poland

2) Department of Large Animals Diseases and Clinic, Institute of Veterinary Medicine, Warsaw University of Life Sciences, Poland

Equine Glandular Gastric Disease (EGGD) is a common disorder affecting horses of all ages and breeds, generally due to their living conditions and useability. The most common treatment options for EGGD include misoprostol, omeprazole, and sucralfate, either administered individually or in combination. However, non-pharmaceutical supplementation is gaining popularity as an additional therapy for EGGD.

The aim of the study was to demonstrate the effects of supportive non-pharmacological therapy combined with pharmaceuticals (omeprazole-sucralfate) in the treatment of Equine Glandular Gastric Disease (EGGD).

This study is based on records of gastroscopic examinations performed as part of the Equine Clinic WULS's activity in the Mazovia county, Poland. We selected cases that had at least one follow-up examination between 4 and 8 weeks after the first gastroscopy and were treated with omeprazole-sucralfate alone or in combination with non-pharmaceutical supplements. 22 horses were selected and assigned to 4 groups with different treatment protocols: (0) omeprazole-sucralfate, (1) omeprazole-sucralfate and *Hippophae rhamnoides*, (2) omeprazole-sucralfate and probiotics, (3) omeprazole-sucralfate, *Hippophae rhamnoides* and probiotics. Gastric ulcers of the glandular area were evaluated with a scale created for statistical purposes based on the European College of Equine Internal Medicine Consensus Statement. The glandular region was evaluated in three locations with a separate score for each of them: fundus, pylorus and duodenum.

Evaluation and scoring of gastric ulcers were performed for the first gastroscopic examination and every follow-up approximately 4-8 weeks apart. The progress of gastric ulcers under treatment was evaluated in the following way: absence of changes, improvement of every ulcer, improvement of some ulcers or/and deterioration of others / emergence of new ones / absence of changes, deterioration of every ulcer or/and emergence of new ones.

The results are as follows: the best results in general improvement were noticed in group 3 (50%, n = 3) and group 4 (50%, n = 2) where protocols included probiotics. General worsening of ulcers appeared only in group 1 (14.3%, n = 1) and group 3 (25%, n = 1), both treated with *Hippophae rhamnoides*. When interpreting these findings, it is important to consider that ulcer deterioration may result from incorrect administration of prescribed medication or inappropriate environmental and feeding conditions.

In conclusion, the best treatment outcomes were observed in the groups receiving omeprazole-sucralfate in combination with probiotics. Although the results for *Hippophae rhamnoides* were not particularly promising, further studies using different dosages or methods of administration may be warranted.

Evaluation of Serum and Fecal Interleukin Levels in Equine Colic: A Temporal and Comparative Study

Erwan Degorce (1), Natalia Siwińska (2)

1) University of Environmental and Life Sciences, Wrocław

Interleukins are markers of inflammation and their levels are seen to be elevated in acute disease. Proinflammatory cytokines are crucial in the inflammatory pathways and their action results in a cascade of reactions with both local and systemic consequences. Colics, a term used to describe abdominal pain, is an example of pathologies with multiple etiologies where interleukins are involved. They are the leading cause of emergencies in horses worldwide.

Previous studies have shown that detected IL-1 levels were elevated in serum and faeces of colic horses suffering from intestinal strangulations and bowel inflammation, respectively. Serum proinflammatory cytokine levels were also seen to be elevated and maintained their high concentration for over 72h in colic horses (Teschner et al. 2015). However, the concentration of IL-1, IL-6 and IL-8 in both materials have not been compared in healthy and colic horses at time intervals yet.

To assess differences and changes in the level of interleukins (IL-6, IL-8, IL-1 beta) in both serum and faecal samples in colic and healthy horses and monitor their evolution through time.

Serum was collected from jugular vein and fresh fecal samples on day of admission (D0), 24h (D1) and 7 days later (D7) from six healthy and nineteen colic horses. Quantification of IL-1, IL-6, and IL-8 was performed using the MILLIPLEX MAP Equine Cytokine/Chemokine Magnetic Bead Panel (EQCYTMAG93K; Merck KGaA, Darmstadt, Germany) and analyzed via the MAGPIX® Luminex® system.

IL-1 and IL-6 were undetectable in serum samples across both groups, while IL-8 was detectable and exhibited high inter-individual variability in both colic and healthy horses, with no consistent temporal pattern. All three interleukins were detectable in fecal samples, however, no trends indicating increase or decrease over time were observed in either group. There was a positive correlation between serum and fecal interleukin levels, with higher IL-6 and IL-8 in feces than in serum ($p < 0.05$). Additionally, no significant correlations were found between interleukin concentrations and age or sex.

This study demonstrates that serum and fecal interleukin concentrations (IL-1, IL-6, IL-8) in horses with colic do not correlate and do not exhibit consistent temporal changes. The results may have been interfered with by other factors such as antiinflammatory drugs. These findings suggest that interleukins, in their current measurable forms, are not reliable biomarkers for gastrointestinal inflammation in horses and do not support their clinical utility for diagnosis or monitoring in equine colic. Feces may be a more effective material for analyzing gastrointestinal inflammation than serum due to higher detected interleukin levels.

This study was supported through funding from The Young Minds Project of the University of Environmental and Life Sciences, Wrocław.

Clinical case – placenta retention in a 6 year old Hanoverian mare.

Julia Konecka (1)

1) Paul Schockemöhle Pferdehaltung GmbH, Gestüt Lewitz

A Hanoverian mare (5 years old at the time) was bred by stallion Diablue using fresh semen on 30.04.2024. The pregnancy has been confirmed 15 days after breeding via transrectal ultrasound examination. Two additional ultrasound checks have been performed on days 25 and 45 of the pregnancy, and revealed a viable embryo (confirmed heartbeat). The mare gave birth to a 46 kg colt on 10.04.2025, at approximately 5.30 a.m. The first and second phase of labour went correctly, with a duration of the active parturition of 15 minutes. The mare received 3 intramuscular injections of 15 U.I. of oxytocin each, in 1 hour intervals, starting at 6.30 a.m. on the day of birth. The placenta was expelled 4 hours after delivering the foal. Upon examination, the chorionic part of the placenta was haemorrhagic and the tip of the non-pregnant horn was missing. There were no other abnormalities observed. The mare was given 40 ml of Roxacin (Enrofloxacin, 100 mg/ml) and 10 ml of Flunisolil (Flunixin meglumine, 50 mg/ml) intravenously, around 10 a.m. The mare was examined via transrectal ultrasound at 6 p.m. on the day of foaling. The examination revealed accumulation of hyperechoic fluid in the lumen of the body of the uterus, measuring 4 cm deep. The appearance of the right horn was characteristic of uterine horn inversion. Uterine lavage was performed, using 11 l of sterile solution of 0,9% NaCl in total. At the beginning, 3 l were put inside of the uterus and the inverted right uterine horn was manually redirected to the correct location. The fluid drained from the uterus was reddish brown in color and contained blood clots. The uterine lavage was performed several times, by putting 2 l each time inside and then draining it, until the fluid became clear. The missing piece of placenta was manually removed during the lavage. The mare was examined using transrectal ultrasound at around 9 a.m. for 10 consecutive days. The treatment of metritis was successful and the mare showed no clinical signs of uterine infection upon breeding about a month after the birth. Examination of the placenta and transrectal ultrasound in the post-partum mare is crucial to evaluate the risks of after birth complications, thus allowing us to take appropriate measures.

Equine Gastric Ulcer Syndrome (EGUS) in horses – evaluation of the impact of maintenance, use and feeding conditions on the development of pathological changes

Paulina Rakowska (1), Wiktoria Rzepka (1)

1) Poznań University of Life Sciences

Equine Gastric Ulcer Syndrome (EGUS) can be considered an equine civilization disease currently diagnosed among most of the representatives of this species even when they are foals. Risk factors for the development of EGUS primarily include inadequate maintenance and feeding regimes, as well as sports and racing horses, stressful situations, pain and uncontrolled use of nonsteroidal anti-inflammatory drugs. The syndrome of gastric ulcers in horses is currently divided according to international guidelines into Equine Squamous Gastric Disease (ESGD) and Equine Glandular Gastric Disease (EGGD). In recent years, there has been a significant increase in the interest in this topic among owners and breeders.

A survey was conducted among owners whose horses had been diagnosed with gastric ulcer disease by gastroscopy. It was prepared in Google Forms and then shared via Facebook platform's topic groups. The survey included questions about age, sex, breed, temperament and position in the herd as stated by the caregiver, EGUS symptoms and the management, maintenance and diet of the horses suffering from gastric ulcer disease. An analysis of the effect of individual variables (including breed, age, sex, management, number of hours spent outside the stable, companionship on the paddock, comorbidities, e.g. asthma, laminitis) on the incidence of EGUS, including ESGD and EGGD, the grade of lesions and the risk of recurrence was conducted.

Using a survey method, 49 files were received from owners whose horses had been diagnosed with gastric ulcer disease based on gastroscopy. Horses of various hot-blooded breeds (mainly Wielkopolska and noble half-blood) were aged 4-19 years, mostly ridden under saddle – recreationally (N=27) or athletically (N=20). The study group included 29 geldings and 20 mares. 41 horses were evaluated by their owners as nervous, sensitive or energetic, while only 8 as calm/phlegmatic. As many as 38 individuals had lesions in the glandular part of the stomach (EGGD), while the non-glandular part of the stomach was most often found to be grade 2 in lesion severity (ESGD). The most severe grade of ESGD (3 and 4, N=16) was observed in horses used for sports (6) and recreationally (9), as well as in one horse after a sports career. A more extensive analysis of the acquired data will be presented.

Equine Gastric Ulcer Syndrome (EGUS) poses a serious problem among horses ridden under saddle, which requires further exploration and scientific studies on large populations to determine the exact significance of individual risk factors. Despite a high awareness among owners of the maintenance and feeding conditions of horses diagnosed with EGUS, the majority of horses still have unmet basic needs in the form of social relations with other individuals of their own species and unrestricted movement, which can be a source of increased stress parameters.

Commercial feeds used in feeding horses with Equine Gastric Ulcer Syndrome (EGUS) – the analysis of composition and their use in feeding

Wiktoria Rzepka (1), Paulina Rakowska (1)

1) Poznań University of Life Sciences

This paper concerns the nutrition of horses diagnosed with Equine Gastric Ulcer Syndrome (EGUS) which can already be considered an equine civilization disease. The purpose of this study was to comprehensively review commercially available feeds for their legitimacy in the feeding of ulcer horses and to determine whether the composition of currently available products specifically for horses with EGUS corresponds to recommendations available in the literature. The second aim of the work was to analyse the housing conditions and the use of commercial feeds in the daily nutrition of horses with EGUS. To select the most popular commercial feeds intended for horses with EGUS, an internet search engine was used by entering the key words: feed, horses, gastric ulcer disease, stomach ulcers. 20 products were selected for analysis in which the manufacturer declares the safety of feeding feed to horses with EGUS. The composition of the feed was assessed in terms of the presence of cereal grains, alfalfa, herbs and molasses, as well as the involvement of fibre, starch and sugars. The delivered amount of starch (in grams) at the maximum daily ration of a given feed was also calculated, and a result not exceeding 1000g of starch/500kg/day was considered satisfactory. The percentage of fiber at $\geq 15\%$ was considered to meet the requirements of feed for horses with EGUS. The presence of cereal grains (oats, barley, corn, wheat) was considered unacceptable. Also noted was the presence of additives and components with proven protective effects on the gastrointestinal mucosa in horses, including alfalfa, chamomile, fenugreek, plantain and fennel.

Of the 20 commercial feeds analysed, 17 met the assumed requirements: 15% fiber content, no cereal grains, appropriate starch and sugar content and (not necessarily) the presence of components and additives with proven beneficial effects on the horses' digestive system.

To determine the level of adaptation of feeding and maintenance guidelines for horses with EGUS in daily practice, a survey was conducted among owners. Questions included basic data on the age, breed, maintenance and diet of horses suffering from gastric ulcer disease. The survey was developed in Google Forms and then shared via Facebook platform topic groups.

Using a questionnaire method, 49 files were obtained from owners whose horses had been diagnosed with gastric ulcer disease by gastroscopy. Horses of various hot-blooded breeds were aged 4-19 years, mostly used under saddle - recreationally (N=27) or athletically (N=20). Analysis of the obtained data will be presented.

Based on the analysis conducted, it can be concluded that most of the feeds available on the Polish market offer a wide range of options for horses with ulcers, consisting of components with proven effects that effectively support horses diagnosed with EGUS. Moreover, the results of the survey allow us to assume that the awareness and knowledge about EGUS among horse owners as a group is surprisingly high, and that the symptoms characteristic of the disease are becoming better identified by them and prompt them to perform a diagnostic gastroscopic examination.

Microbiological analysis of samples collected from the mare's vagina and the foal's umbilical cord

Dominika Piszczota (1), Antoni Niedziela (1)

1) Poznań University of Life Sciences

The microflora colonizing the mare's vagina and the foal's umbilical cord includes both saprophytic and potentially pathogenic microorganisms. The aim of this study was to identify and assess the microbiological profile of swabs taken from the mare's vagina and the foal's umbilical cord in the early postpartum period, to detect the presence of potentially pathogenic microorganisms, and to evaluate the impact of these identified microbes on the occurrence of diseases in foals after weaning.

The study group consisted of 6 warm-blooded mares and 6 newborn foals. The health status of the foals was monitored until the foals were weaned, with a focus on the occurrence of foal diseases as well as the reproductive status of the mares. Swabs from the foals were collected from the interior of the umbilical cord immediately after it was cut with sterile scissors. Regarding mares, swabs were taken from the reproductive tract – specifically the vagina, after washing and parting the vulvar lips – within 30 minutes after delivery, using a sterile swab. The collected samples were cultured on bacteriological media (Columbia agar, MacConkey). Re-isolated bacterial colonies were stained using the Gram method, followed by catalase and cytochrome oxidase tests. Identification of the isolated bacteria was performed using API tests (API Strep, API Staph, API 20E, API 20 NE, API 50CH).

In all mares, parturition proceeded without complications. All foals stood within one hour, ingested colostrum within two hours, and passed meconium within three hours after birth. The mares expelled the fetal membranes within 2 to 3 hours postpartum. In each mare-foal pair, at least one pathogen was identified that was present both in the foal's umbilical cord and in the mare's reproductive tract. These included *Citrobacter* sp., *Staphylococcus* sp., *Enterococcus* sp. (in two cases), and *E. coli* (in two cases). During postnatal monitoring up to the point of weaning, none of the foals showed clinical signs of any typical disorders of the foal.

The microbiological analysis enabled the identification of microorganisms relevant to the pathology of both endometritis in mares (*Streptococcus equi*, *Escherichia coli*, *Staphylococcus* spp., *Pseudomonas* sp., *Klebsiella pneumoniae*) and neonatal sepsis in foals (*Escherichia coli*, *Klebsiella* sp., *Enterobacter* sp., *Pseudomonas* sp.). Nevertheless, none of the foals exhibited clinical signs of disease up to the point of weaning, which underscores the fundamental importance of the first hours after birth and early colostrum intake as the cornerstone of passive immunity in foals.

This study was supported through funding from Department of Preclinical Sciences and Infectious Diseases, research task no. 506. JOR.DC.00

Evaluating the Effect of the DIPO-Trainer on the Topline Development of Riding School

Horses

Wiktoria Spinczyk (1), Katarzyna Baranowska (1), Edith Bardet (1), Paulina Białas (1), Natalia Dudziak (1),
Wiktoria Zięba (1)

Supervisor: Natalia Domańska-Kruppa, PhD (2), Elżbieta Stefanik, DVM (2)

(1) The Scientific Society of Veterinary Medicine Students, Faculty of Veterinary Medicine, Warsaw University of Life Sciences,
Poland

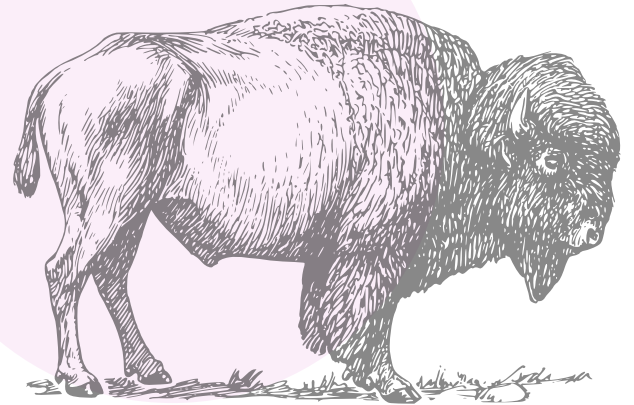
(2) Department of Large Animals Diseases and Clinic, Institute of Veterinary Medicine,
Warsaw University of Life Sciences, Poland

Back pain is a common issue in riding school horses, often resulting from repetitive work, poor rider balance, and ill-fitting tack. It can compromise performance, cause behavioral problems, and lead to long-term musculoskeletal strain. The DIPO-Trainer is an ergonomic lunging aid designed to promote a forward-downward head and neck position without applying pressure to the bit or poll, encouraging correct muscle activation and improved spinal posture.

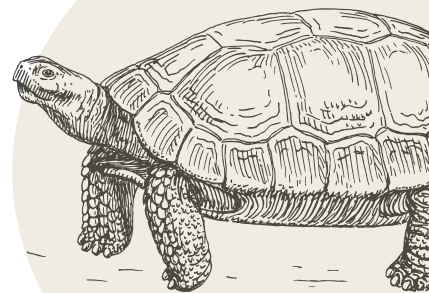
This study aimed to evaluate the effect of an 8-week training program using the DIPO-Trainer on back muscle development and pain sensitivity in riding school horses. Twelve clinically sound horses were randomly assigned to an experimental group ($n = 6$) and a control group ($n = 6$). The experimental group was lunged with the DIPO-Trainer for 15 minutes per session over 8 weeks (24 sessions), while the control group followed the same schedule without a lunging aid. Pre- and post-intervention evaluations included pressure algometry (Th13, Th15, Th18, L1), ultrasonographic assessment of muscle thickness (longissimus dorsi, iliocostalis, splenius, rectus abdominis), longitudinal tissue depth, and topline profiling using the 3/15 transverse ratio.

A significant increase in pain threshold was observed at the L1 left side in the DIPO group ($p < 0.05$), indicating reduced sensitivity. Significant differences in longissimus dorsi thickness were found between groups at Th13, Th15, and Th18, though no time effects or interactions were detected. Longitudinal tissue depth showed a significant Group $\times$ Time interaction ($p = 0.0159$): it decreased in the DIPO group but increased in the control group. The 3/15 ratio at Th13 changed significantly over time and between groups, though without interaction.

These findings suggest that the DIPO-Trainer may help reduce back sensitivity and influence tissue tension, particularly in the lumbar region. However, its effect on muscle development and topline contour was limited. Individual variability and the role of the handler may significantly influence outcomes. Further studies with larger sample sizes and movement analysis are needed to confirm its therapeutic potential.



Exotic and wildlife animals



SUBCUTANEOUS EMPHYSEMA IN DIFFERENT AVIAN SPECIES AND TREATMENT

Ebuderda Günay (1), Necati Kubilay (2)

1) Istanbul University- Cerrahpasa, Faculty of Veterinary Medicine, Department of Wild Animal Diseases and Ecology,
İstanbul, Türkiye

2) Istanbul University-Cerrahpasa, Faculty of Veterinary Medicine, Istanbul, Türkiye

This study aimed to investigate the efficacy of an accessible and cost-effective surgical intervention for the treatment of subcutaneous emphysema in birds, encompassing a diverse range of species and sizes. A total of 17 birds diagnosed with subcutaneous emphysema were treated using a sterile plastic tube as a stent, which was inserted under the skin and secured with a simple interrupted suture. Pre- and postoperative care included administration of antibiotics, anti-inflammatory drugs, and complex vitamins.

The results demonstrated that the proposed method was successful in treating subcutaneous emphysema in all patients, without inducing allergic reactions, inflammation, local or systemic infection, or complications associated with granulation tissue and debris formation. Moreover, the treatment showed broad applicability across different bird species and sizes, unlike alternative techniques such as the Teflon stent and modified syringe methods. The plastic tube stent was removed without anesthesia after approximately one month, with no recurrence observed in any of the cases.

In conclusion, this study presents a simple, inexpensive, and effective surgical intervention for the treatment of subcutaneous emphysema in birds, offering several advantages over previously reported methods. The proposed approach has the potential to improve the standard of care for birds with subcutaneous emphysema and contribute to their overall wellbeing.

Ectopic pregnancy in a European hedgehog (*Erinaceus europaeus*) – the first documented case.

Roksana Broży (1)

1) Warsaw University of Life Sciences

The population of the European hedgehog (*Erinaceus europaeus*) in Poland is estimated to consist of around 8,000 individuals. Research on infectious diseases in the population of this species is being conducted at the Institute of Veterinary Medicine in Warsaw. The aim of the study was to determine the cause of death of one of the European hedgehogs under investigation.

Methods: An adult female hedgehog was brought to the Institute of Veterinary Medicine from a wildlife rehabilitation center in the Mazovian Voivodeship without any medical documentation. A post-mortem examination and histopathological analysis of the reproductive system were carried out.

Results: During the external examination at the start of the post-mortem on frozen material, a protruding lesion was noticed on the right hind limb. After making an incision, the presence of a fetus was found. During further post-mortem examination, another fetus was observed outside the uterus, located in the caudal part of the abdominal cavity. The remaining seven fetuses were found within the uterus. The developmental stage of the fetuses was assessed as advanced. Upon removal, the uterus retained continuity along its entire length, was tense, and shiny. A noticeable white lesion was found on the right horn of the uterus. Histopathological examination revealed that the fetuses outside the uterus were less developed.

Conclusion: Based on the conducted research, an ectopic pregnancy was diagnosed, which has not been previously described in hedgehogs.

This study was supported through funding from Warsaw University of Life Sciences

Wildfire Impact on Chelonians – Rescue, First Aid, and Rehabilitation in Greece (2022-2024)

Marios Koufasimis (1), Silvi Vladova (1)

1) Faculty of Veterinary Medicine, University of Forestry – Sofia, Bulgaria

Forest fires significantly threaten biodiversity, often resulting in mass casualties among terrestrial wildlife. This study focuses on the emergency response and rehabilitation protocols implemented by ANIMA (Hellenic Wildlife Care Association – H.W.C.A.) for tortoises (*Testudo marginata*, *Testudo hermanni*, *Testudo graeca*) affected by the summer forest fires in Greece in the period 2022–2024.

The most common conditions observed in rescued tortoises were thermal burns and dehydration. Initial treatment included wound decontamination with chlorhexidine solution, followed by topical application of silver sulfadiazine to prevent infection and promote healing. In severe cases enrofloxacin and meloxicam were administered at species-specific dosages. Long-term rehabilitation strategies include fluid therapy, nutritional support, and controlled environmental conditions to facilitate shell regeneration and overall recovery.

The study highlights the importance of standardized first aid protocols in wildlife rescue operations. It underscores the role of rehabilitation efforts in mitigating the long-term impact of wildfires on chelonian populations. Strengthening rescue networks and refining treatment methodologies are crucial for enhancing conservation outcomes in fire-affected ecosystems.

From Digital Models to Recovery: A Case Report on 3D Scanning and Printing for Tortoise Shell Reconstruction

Ebuderda Günay (1), Buket Çakar (2), Hasan Yılmaz (3)

1) Istanbul University- Cerrahpasa, Faculty of Veterinary Medicine, Department of Wild Animal Diseases and Ecology,
İstanbul, Türkiye

2) Institute of Graduate Studies, Istanbul University-Cerrahpasa, 34320 Istanbul, Türkiye

3) Istanbul University-Cerrahpasa, Faculty of Veterinary Medicine, Istanbul, Türkiye

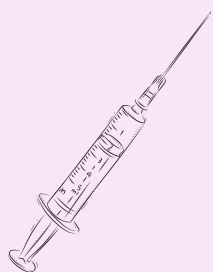
Background: Severe shell injuries in tortoises pose significant challenges due to the slow regenerative capacity of the carapace and high risk of infection. Traditional treatment methods often require long-term wound management, increasing stress and the likelihood of complications such as myiasis. Advances in portable 3D scanning and 3D printing technologies offer a novel approach to injury assessment, prosthetic design, and wound protection, improving recovery outcomes while minimizing stress. Unlike CT imaging, 3D scanning eliminates the need for anesthesia and allows animals to be scanned in their natural environment, reducing handling stress and ensuring a smoother recovery.

Aim: This case report describes the use of a portable 3D scanning and printing workflow in the treatment of a tortoise with a coelomic tear and severe shell infection. The study highlights how 3D scanning enables precise prosthetic customization while reducing the need for invasive procedures, and how 3D-printed porous prosthetics facilitate wound management, minimize infection risks, and support natural tissue regeneration.

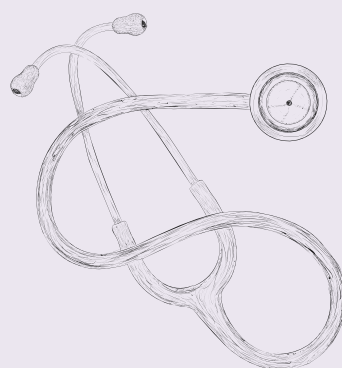
Material and Methods: A tortoise with a large carapace defect and coelomic tear was treated using a multimodal approach. The wound was cleaned with isotonic and metronidazole serum to avoid cytotoxic effects, and systemic antibiotic therapy with enrofloxacin (10 mg/kg) and ceftazidime (20 mg/kg) was administered. Due to the inability to self-feed, nutritional support was provided using Oxbow herbivore critical care powder, and an esophageal feeding tube was placed. Once the infection was controlled, a portable 3D scanner was used to obtain an accurate digital model of the injured carapace in a non-invasive manner, eliminating the need for anesthesia and reducing stress on the animal. This digital model was then used to design a customized, breathable 3D-printed prosthetic that protected the wound, enabled easy dressing changes, and facilitated controlled airflow. Laser therapy and a combination of chlorhexidine gel and hydrogel were applied to enhance granulation, followed by antibiotic (Nitrofurazone) and healing ointments (Centella asiatica + Silver sulfadiazine) to support full recovery.

Results: Healing of the coelomic tear was successfully completed, and carapace regeneration required approximately six months. The 3D-printed porous prosthetic, designed based on precise 3D scans, remained in place to prevent myiasis and promote gradual shell healing. The tortoise was later transferred to a rehabilitation center garden, where monthly follow-ups confirmed continued improvement without complications.

Conclusions: The integration of 3D scanning and 3D printing in veterinary medicine provides an innovative, non-invasive solution for managing severe shell injuries in tortoises. Portable 3D scanners allow for in-situ imaging without anesthesia, significantly reducing stress and improving treatment efficiency compared to traditional methods. 3D-printed porous prosthetics offer effective wound protection, facilitating a controlled healing environment while allowing natural recovery. This approach represents a promising advancement in wildlife rehabilitation, complex wound management, and the broader field of veterinary medicine.



POSTER SESSION



A case of parasitic zoonosis – plagiorchosis, in a bat from the Lower Silesia area

Magdalena Szortyka (1)

Supervisor dr Małgorzata Tarnowska (2)

1) Wrocław University of Environmental and Life Sciences, Faculty of Veterinary Medicine

2) Wrocław University of Environmental and Life Sciences, Department of Biostruktury and Animal Physiology, Division of Histology and Embriology, Faculty of Veterinary Medicine

Common noctule (*Nyctalus noctula*), bats of the family *Vespertilionidae*, are a common species inhabiting Poland. They pose a potential threat to humans due to their carrying pathogenic microorganisms. Therefore, the aim of this study is to present the problem of parasitic zoonosis diagnosed in a bat residing in Wrocław.

The material for the study was collected post-mortem from a male Common noctule bat was fixed for 72 h in 4% formalin solution, washed for 24 h in water, dehydrated and embedded in paraffin. Slides 7 µm thick were stained with haematoxylin and eosin.

The presence of eggs and adult forms of the trematodes *Plagiorchis* spp. in the small intestine, representing a potential zoonotic risk, was demonstrated.

Aquaculture waters as a vector of bacterial antibiotic resistance

Mateusz Kubiak (1), Anna Krawczak (2), Dagmara Lubina (3)

1) Poznań University of Life Sciences

2) Poznań University of Life Sciences

3) Poznań University of Life Sciences

Improper use of antibiotics in farmed fish, as well as their presence in water and sediments, has a significant impact on the development of resistance among microorganisms present in the production ecosystem. Literature reports have shown that freshwater treatment and standard procedures for water and sediment purification are not fully effective in removing pharmaceutical residues, which may contribute to the development of bacterial resistance. The first and most important step in limiting drug resistance among bacteria is to understand the epidemiological situation in a given environment and to identify antibiotic resistance patterns of selected environmental microorganisms. *Aeromonas spp.* are microorganisms that can be isolated from almost any water source, including: drinking water sources, estuaries, wastewater, and aquaculture systems. As opportunistic pathogens, they pose a direct threat to both humans and animals and serve as a reservoir of genes associated with antimicrobial resistance. Although the drug susceptibility of clinical strains has been relatively well studied, little is still known about strains isolated from the environment.

To determine the prevalence of AMR for *Aeromonas sp.* isolated from aquaculture environments, identification of multi-drug resistant strains was performed by biochemical identification and identification of resistance gene expression (by real-time PCR) in environmental samples.

Of the 19 *Aeromonas* isolates, the highest phenotypic resistance, was recorded against the sulfonamides SUL (31.5%) and the trimethoprim potentiated sulfonamides STX (10.5%), both in the inlet water to the holding tank (B1) and in the water supplying the fry pools (D1). Multiple resistance, presenting isolate resistance to (SUL) and (STX), was confirmed only in 2 *Aeromonas hydrophila* isolates taken from the inlet water to the fry pool (D1). Four genes encoding resistance to fluoroquinolones (*qnrA*), eight genes encoding resistance to sulfonamides (*sulI*) and seven genes encoding resistance to trimethoprim (*dhfrI*), and four genes encoding tetracycline resistance (*tetA*) were detected in all bacterial isolates tested.

The results from this stage of the study showed a relationship between phenotypic resistance to SUL and STX and the concentration of *sulI* and *dhfrI* resistance genes, and confirm the thesis that despite the fact that wastewater treatment plants have high efficiency in removing pollutants, some of drug-resistant bacteria and drug-resistance genes enters the receiving waters with the treated wastewater. The research has identified a group of sulfonamide-resistant bioindicators from the *Aeromonas* genus as the one particularly associated with the anthropogenic environmental impact and the potential influence of treated waters on the bacterial biodiversity of the receiver's (fish farm).

Prevalence of *Salmonella* spp. in Slaughterhouses in the Marmara Region: A Microbiological and Molecular Analysis

Alp Emre YILDIZ (1), Acar Bey KARALI (2)

1) Istanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, Department of Food Hygiene and Technology, Avcılar, Istanbul, 34320

2) Istanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, Avcılar, Istanbul, 34320

Salmonella spp. is a major foodborne pathogen that poses a risk to public health. Contamination of carcasses during slaughter can contribute to the spread of this bacterium, making slaughterhouses critical points for monitoring food safety. This study aimed to determine the prevalence and serotype distribution of *Salmonella* spp. in slaughterhouses in the Marmara region of Turkey.

Materials and Methods: Between November 2021 and September 2023, 215 swab samples were collected from cattle slaughterhouses in Istanbul and Tekirdağ. The samples included 159 carcass swabs and 56 swabs from food-contact surfaces (knives, hooks, aprons, washing sinks, saws, and floors). The sampling process followed ISO 18593:2018 standards. Bacteriological isolation was performed according to ISO 6579-1:2017, including pre-enrichment, selective enrichment, and biochemical confirmation. Molecular confirmation was conducted using polymerase chain reaction (PCR) targeting the *invA* gene. Serotyping was performed on confirmed isolates, and antimicrobial susceptibility testing was conducted using the disc diffusion method in accordance with EUCAST and CLSI guidelines.

Results: Among the 215 swab samples collected from slaughterhouses, *Salmonella* spp. was detected in only one carcass swab, resulting in a prevalence rate of 0.47%. No contamination was found on other slaughterhouse surfaces, including knives, hooks, washing sinks, saws, or floors. Molecular confirmation identified the positive isolate as *Salmonella Typhimurium*. Antimicrobial susceptibility testing revealed resistance to cefazolin, amoxicillin-clavulanic acid, pefloxacin, and tetracycline, while the isolate remained susceptible to ampicillin, ciprofloxacin, and meropenem.

Discussion and Conclusion: The low prevalence of *Salmonella* spp. in slaughterhouses suggests that current hygiene practices are relatively effective. However, the detection of *S. Typhimurium* with multidrug resistance is concerning. The presence of antimicrobial-resistant *Salmonella* strains in the meat production chain poses a potential risk to food safety and public health. This study highlights the importance of continuous microbiological surveillance, strict hygiene protocols, and antimicrobial stewardship programs to minimize contamination risks in slaughterhouses. Further research should focus on identifying additional risk factors and implementing effective intervention strategies to prevent the spread of resistant *Salmonella* strains in red meat production.

Microbial Surveillance of Urban Pigeons: Isolation of Zoonotic Bacteria, Fungi, and Detection of *Chlamydia psittaci* via Nested PCR

Iga Jędrusiak(1), Kinga Tomaszewska(1), Ewelina Falkowska(1)

Supervisor: dr hab. Magdalena Kizerwetter – Świda (2)

(1) Scientific Society of Veterinary Medicine Students, Warsaw Univeristy of Life Sciences

(2)Warsaw University of Life Sciences

Pigeons living in urban environments serve as reservoirs for numerous microorganisms, including those with zoonotic potential. The One Health concept assumes the inseparability of human, animal, and environmental health, emphasizing their mutual influence, including the transmission of pathogenic strains from pigeons to humans or other animals.

The aim of this study was to determine the occurrence of selected zoonotic microorganisms in pigeons. The study was also focused on isolates exhibiting antimicrobial resistance. The materials for this study were swabs obtained from pigeons residing in various areas of the Mazovian Province in Poland. Two swabs were collected from each bird, one from the choanae (posterior nares), and the second from cloaca. Swabs were inoculated on chromogenic media for the isolation of *Candida* species and Gram-negative rods producing extended-spectrum β -lactamases (ESBLs). The presence of *Salmonella* spp. and coagulase-positive *Staphylococcus* spp. was also investigated. Additionally, bacterial DNA was extracted from all collected swabs with a genomic DNA preparation kit. The isolated DNA was used to detect *Chlamydia psittaci* with the nested PCR technique. *Candida* spp. was most frequently detected among examined pigeons (n43; 65.6%). Gram-negative rods producing ESBL enzymes were found in 34 pigeons (53.1%), coagulase-positive *staphylococci* in 19 examined individuals (29.7%) and *Salmonella* in one bird. Additionally, *C. psittaci* was detected in 8 tested individuals (12,5%).

Our results indicate the occurrence of microorganisms with zoonotic potential in pigeons, especially fungi of the *Candida* genus. The occurrence of these agents poses a potential threat to public health, especially for people who have close contact with pigeons. Our results also highlight that pigeons are a reservoir of bacteria-producing ESBL enzymes. Considering the One Health concept and to assess the potential threat to public health, the occurrence of zoonotic microorganisms and antibiotic-resistant bacteria in pigeons should be constantly monitored.

Nephrotoxic effects of salinomycin- in vitro studies

Oliwia Kończak(1) , Maciej Gogulski (2) , Lidia Radko (2)

(1) Section of Veterinary Pharmacologists and Toxicologists "Paracelsus" SKN Med. Vet,

(2) Department of Preclinical Sciences and Infectious Diseases of Animals, Faculty of Veterinary Medicine and Animal Sciences Poznań University of Life Sciences.

Salinomycin is used in veterinary medicine as a coccidiostat. Every year, monitoring studies find residues of this veterinary drug in food of animal origin (eggs, liver muscle). Presence in the diet of humans and animals can lead to the development of drug resistance and disorders in the normal functioning of the body. Literature data shows that overdose causes kidney damage as evidenced by changes in this organ. The aim of this study was to evaluate the cytotoxicity of salinomycin using in vitro models of kidney cells: human – HEK-293 line; dog – MDCK line; and cat – CRFK line.

Based on the aforementioned cell models, tests were carried out to evaluate the cytotoxicity of the tested veterinary drug. The cellular parameters of toxic effects evaluated were the degree of inhibition of mitochondrial activity (MTT test), lysosomal activity (NRU test), proliferation (TPC test) and cell membrane damage (LDH test). The drug exposure time was 72 h. IC₅₀ values for salinomycin were calculated.

Long-term exposure to salinomycin had cytotoxic effects on kidney cells in the models studied. Human HEK-293 cells were the most sensitive to the drug and canine MDCK cells the least. A salinomycin concentration of 1 µg/ml caused inhibition of all tested cellular parameters in HEK-293 cells and inhibition of mitochondrial and lysosomal activity in CRFK and MDCK cells, respectively. A higher drug concentration of 10 µg/ml inhibited the lysosomal activity of CRFK cells. Calculated IC₅₀ values for salinomycin after exposure of HEK-293 and CRFK cells were in the range of 1.8–17.5 µg/ml and 14.9–36.3 µg/ml, respectively.

Conclusions: The increased risk to human and animal health associated with exceeding permissible concentrations of salinomycin in food products of animal origin carries the risk of nephrotoxic effects. In addition, it is important to seek solutions to reduce the level of veterinary drug residues in food and feed and minimize their toxic effects.

Assessing the veterinary drug toxicity on SH-SY5 cells

Zuzanna Skrzypczak(1), Paula Żakowicz(1), Julia Salmanowicz(1)

Supervisors: Tatiana Wojciechowicz(2), Lidia Radko(3)

(1)Students Scientific Society of Veterinary Medicine, Section of Veterinary Pharmacology and Toxicology "Paracelsus",

(2)Department of Animal Physiology, Biochemistry and Biostructure,

(3)Department of Preclinical Sciences and Infectious Diseases, Faculty of Veterinary Medicine and Animal Sciences, Poznan University of Life Sciences, Poland

Veterinary drug residues in farm animal tissues are a global food safety problem. Introduced in the 1960s, doxycycline is a tetracycline antibiotic used in both veterinary and human medicine due to its broad spectrum of action. Its mechanism of action is based on the inhibition of protein synthesis by binding to the 30s ribosomal subunit. Due to its high lipophilicity, doxycycline penetrates all membranes in the body, reaching high concentrations in all tissues and organs, including the cerebrospinal fluid, crossing the blood-brain barrier.

The aim of the study was to assess the toxicity of long-term exposure of SH-SY5Y cells (a model of human nerve cells) to doxycycline.

The present study was conducted using the human derived neuroblastoma cell line SH-SY5Y. The cells were exposed for 72 hours to the veterinary drug at concentrations ranging from 1,56 to 200 µg/mL. The cytotoxic concentrations (IC₅₀) of the studied drug were assessed by four biochemical endpoints: mitochondrial activity (MTT assay), lysosomal activity (NRU assay), proliferation (TPC assay) and cellular membrane integrity (LHD assay) and DNA synthesis (BrdU assay). Effects on oxidative stress (ROS) stress and cell death were also assessed. The statistical analysis was performed using GraphPad Software.

The doxycycline significantly ($p \leq 0.05$) inhibited mitochondrial activity of SH-SY5Y cells from the concentration of 6,25 µg/ml. At the concentration of 12,5 µg/ml, it inhibited DNA synthesis and caused disintegration of the cellular membrane cells. At higher concentration of 100 µg/ml, decreased total protein content in cell culture was observed. Analysis of the IC₅₀ values for doxycycline on SH-SY5Y nerve cells showed that the IC₅₀ values were lowest in the MTT assays compared to the BrdU and LDH assays. In the TPC and NRU assay, the concentration values (IC₅₀) of the drug exceeded the highest tested concentration (<200 µg/mL).

The increase in ROS production was proportional to the concentration of the veterinary drug. A slight increase in apoptotic and necrotic cells was observed in SH-SY5Y neuronal cells after exposure to doxycycline.

The increased risk to human health associated with the presence of doxycycline in food products highlights the importance of this research in food toxicology. It should be emphasised that there is an increased risk of a synergistic effect of the drug with concomitant drugs that are used by the consumer. The interaction of veterinary medicines with other drugs/substances requires further research.

Cytotoxic effects of doxycycline on HepG2 cells

Julia Salmanowicz(1), Paula Żakowicz(1), Zuzanna Skrzypczak(1)

Supervisor: Tatiana Wojciechowicz(2), Lidia Radko(3)

1) Students Scientific Society of Veterinary Medicine, Section of Veterinary Pharmacology and Toxicology
"Paracelsus",

2) Department of Animal Physiology, Biochemistry and Biostructure,

3) Department of Preclinical Sciences and Infectious Diseases, Faculty of Veterinary Medicine and
Animal Sciences, Poznan University of Life Sciences, Poland

Tetracycline antibiotics are commonly used in veterinary medicine due to their favorable pharmacological properties. One representative of this group is doxycycline, which demonstrates high tissue and body fluid penetration. Monitoring studies of food products of animal origin indicate that the highest concentrations of this drug are found in the liver, even seven days after the end of therapy. These results suggest a significant risk of consumer exposure to doxycycline residues in the diet.

The aim of this study was to assess the toxicity of long-term exposure of HepG2 cells (a human hepatocyte model) to doxycycline.

Materials and Methods: The cytotoxic activity of doxycycline was investigated after a 72-h exposure to HepG2 cells. The cytotoxic concentrations (IC₅₀) of the drug were assessed using four biochemical endpoints: mitochondrial activity (MTT assay), lysosomal activity (NRU assay), proliferation (TPC assay), and cell membrane integrity (LDH assay). Effects on DNA synthesis (BrdU assay), oxidative stress, and cell death were also assessed. Statistical analysis was performed using GraphPad software.

Results: Long-term exposure to doxycycline had little cytotoxic effect on human HepG2 cells. Reduced DNA synthesis was observed at a concentration of 12.5 µg/ml. The mechanism of action of the drug also included inhibition of lysosomal activity at a concentration of 25 µg/ml. Higher concentrations of 50 µg/ml resulted in inhibition of mitochondrial activity, reduced protein content and cell membrane damage. IC₅₀ values ranged from 13.4 to >200 µg/ml. A concentration-dependent increase in oxidative stress and necrotic cells was observed compared to the control.

Conclusions: The increased risk to human health associated with exceeding permissible concentrations of doxycycline in food products of animal origin highlights the need for such studies in view of the increase in resistance and the interactions occurring with other concomitantly used drugs. In addition, it is important to seek solutions to reduce the level of residues of veterinary drugs in food and to minimise their potential toxic effects on consumers.

Evaluation of neonatal puppy vitality following an elective cesarean section with different anesthetic protocols

Aleksandra Modrzewska (1), Małgorzata Ochota (2), Zdzisław Kiełbowicz (3),
Agnieszka Antończyk (3)

1) Wrocław University of Environmental and Life Sciences, 6th year student of Faculty of Veterinary Medicine,

2) Wrocław University of Environmental and Life Sciences, Faculty of Veterinary Medicine, Department of Reproduction and Clinic of Farm Animals, pl. Grunwaldzki 49, 50-366 Wrocław, Poland

3) Wrocław University of Environmental and Life Sciences; Faculty of Veterinary Medicine, Department and Clinic of Surgery; pl. Grunwaldzki 51, 50-366 Wrocław, Poland

Cesarean section (CS) remains a common way of treating cases of birth complications in dogs. However, the anesthesia protocol used for the bitches during the procedure has a significant impact on newborns and their vitality rate. The initial examination of the newborns is based on the Apgar scale, specifically modified for animals. The Apgar scoring system assesses several parameters: heart rate (HR), respiration rate (RR), the irritability reflex detected after gentle compression of the tip of a paw, spontaneous movement of a newborn, and the color of the mucous membranes. This study aimed to compare anesthesia protocols used for CS by analyzing the individual parameters used in the Apgar scale.

In this study, 49 bitches scheduled for planned cesarean section were assigned to three groups: EPI, ALFA, and PROP groups. In the PROP and EPI groups, general anesthesia was induced using propofol, while in the ALFA group drug used for induction of anesthesia was alfaxalone. Anesthesia was maintained with isoflurane in oxygen in all three groups. In the EPI group, a neuraxial block was performed using lidocaine.

The final Apgar scores in newborns from ALFA, PROP, and EPI groups showed no significant differences. However, analysis of the individual components revealed differences in the puppies' overall condition. Puppies in the ALFA group had a heart rate of 130.6 ± 37.9 beats per minute, which was significantly higher than that of the PROP and EPI groups (113.38 ± 46.0 and 112.10 ± 53.5 beats per minute, respectively). Additionally, a greater number of puppies in the ALFA group had pink-red mucous membranes compared to those in the other groups. Furthermore, puppies in the ALFA group received a higher average score for respiratory rate, even though the majority of pups across all three groups fell into the 6 breaths per minute category. Furthermore, our findings show that all three anesthetic protocols tested are safe for puppies, and none of the drugs compared had a more beneficial impact on health or survival during Cesarean sections in dogs.

Survey of geriatric horses: evaluation of horse owners' knowledge of their maintenance and health care requirements.

Aleksandra Bertman(1), Anna Ziubrzycka(1), Aleksandra Kost(1), Klaudia Makowska(1), Aleksandra Kowal(1) , Natalia Siwińska(2) , Agnieszka Żak-Bochenek(3)

1) Faculty of Veterinary Medicine, Wrocław University of Environmental and Life Sciences, 31 Norwida St., 50-375 Wrocław, Poland

2) Department of Internal Medicine and Clinic of Diseases of Horses, Dogs and Cats, Wrocław University of Environmental and Life Sciences, Grunwaldzki Sq. 47; 50-366 Wrocław, Poland

3) Department of Immunology, Pathophysiology and Veterinary Preventive Medicine, Wrocław University of Environmental and Life Sciences, 31 Norwida St., 50-375 Wrocław, Poland

Background: The gradual change in the nature of the horse's livelihood from a working/utility animal to a companion is associated with an increase in the horse's lifespan, leading to a boom in geriatric equine medicine. The quality of life of geriatric horses depends on their caretakers' awareness of their needs.

Objectives: Collect and evaluate data on owners' knowledge of the well-being, special needs, and treatment of their elderly horses.

Study design: The study was carried out as a questionnaire on Google Forms, distributed to owners and through equine specialists, veterinary university, and social media.

Methods: The questionnaire was divided into 5 sections, which included questions about general information about the animal, the occurrence of symptoms of aging, special maintenance conditions, and behavioral changes. The last section required owners to take a stand on preventive care issues by choosing "agree" or "disagree" answers. The results were analyzed descriptively.

Results: The data indicated that geriatric horses accounted for an average of 27.7% of all horses kept in stables. 40.4% of the horses surveyed were retired, mainly due to old age and health problems (mainly orthopaedic). The most common symptoms of old age reported were hair depigmentation (62.4% of horses) and muscle wasting (52.9%). In 32.4% of horses age-related disorders were reported, such as joint diseases (105 individuals), dentistry (64) or Pituitary Pars Intermedia Dysfunction (32). 98.9% of the animals have access to a paddock.

The largest group (43.9%) are horses kept in small groups (3–5 individuals). In nearly half of horses the special dietary requirements (46.6%) or care treatments (45.7%) were met. Stereotypies were reported in 176 horses; in 71% of the animals, their severity did not change with age. In the last section, most owners showed that they are aware of what is required of their horses. The only considerable difference between common owner opinion and professional opinion was observed in a question about changes in animal physical condition (56.8% of respondents considered weight loss and deterioration of animal condition to be the result of age-related changes only). 73% of owners defined the geriatric age of a horse as being between 20 and 29 years.

Main limitations: The survey was prepared in an online format, with the result that a limited group of owners active on the Internet participated. It should be noted that the data were collected from subjective opinions of the owners. The research would also be more specific if the study group had been larger.

Conclusions: In most cases owners in Poland had impressionable knowledge regarding their senior horses. But as predicted, not in all cases, therefore further education is recommended.

Skin Lesions of Cats and Dogs:

Bacterial Identification and Antibiotic Susceptibility

Aybüke Akta (1) , Ayşe Ilgın Kekeç (2) , Barış Halaç (2)

1) İstanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, 3 rd grade student, İstanbul, Türkiye

2) İstanbul University-Cerrahpaşa, Faculty of Veterinary Medicine, Department of Microbiology, İstanbul, Türkiye

The study summarized the findings of bacteriological culture and antibiogram tests conducted on skin and wound swab samples of dogs and cats delivered to the laboratory of the Istanbul University-Cerrahpaşa Faculty of Veterinary Medicine, Department of Microbiology throughout 2024. 179 skin and wound swabs were collected and 154 sample (86%) showed bacterial growth. From 154 sample, 188 bacteria were isolated and identified (106/188 from dogs, 82/188 from cat). 63 *Staphylococcus* sp. (76,8%), 6 *Streptococcus* sp. (7,3%), 4 *E. coli* (4,8%), 4 *Pseudomonas aeruginosa* (4,8%), 2 *Corynebacterium* sp. (2,4%), and 3 other bacteria (3,6%) were identified from cats. From the dog samples, 86 *Staphylococcus* sp. (81,1%), 9 *Streptococcus* sp. (8,5%), 3 *E. coli* (2,8%), 4 *Pseudomonas aeruginosa* (3,7%), 1 *Corynebacterium* sp. (0,9%), and 3 other bacteria (2,8%) were identified. Along with the identification studies, antibiotic susceptibilities of the isolates were also determined. For this purpose, resistance to the antibiotics Amoxicillin Clavulanic Acid, Ampicillin Sulbactam, Ceftiofur, Ceftriaxone, Clindamycin, Kanamycin, Amikacin, Gentamicin, Rifampicin, Enrofloxacin, Marbofloxacin, Tetracycline and Sulfamethoxasol Trimetoprim were determined by disk diffusion method and evaluated according to EUCAST standard. As a result of antibiotic susceptibility tests performed on the isolates obtained, it was determined that the highest resistance rate was 48.6% for Tetracycline, and the lowest resistance rate was 20.2% for Marbofloxacin. The highest resistance in cats was found to be Amoxicillin, Clavulanic acid and Clindamycin (41.4%), the lowest resistance was found to be Marbofloxacin (22%), and the highest resistance in dogs was found to be 54.7% for Tetracycline. The lowest resistance rate in dogs was found to be Amikacin (17%). When determining the presence of multiple antibiotic resistance, resistance to 3 or more antibiotic groups was examined in isolates and isolates resistant to 3 or more antibiotic groups were accepted as having multiple antibiotic resistance. This condition existed in 75 of the 188 bacterial isolates (39,9%). 29 of these 75 isolates were isolated from cats and 46 from dogs.

Development and characteristics of single-chain fragment variable antibody recognising DLA-DR antigen

Leszek Moniakowski(1), Aleksandra Studzińska(1), Marek Pieczka1, Arkadiusz Miążek(1)

1). Department of Biochemistry and Molecular Biology, Wrocław University of Environmental and Life Sciences

Increased cell surface expression of a major histocompatibility complex class II antigens DR (MHC-II DR) has been identified as a potential alternative to the CD20 target for immunotherapy of hematological malignancies in humans and dogs. The MHC-II DR alpha chain (in dogs designated as DLA-DR alpha chain) is practically invariable, making it a more versatile therapeutic target. We have produced a murine monoclonal antibody denoted as mAb-B5, recognizing a common epitope for humans and dogs on MHC-II DR alpha chain. The binding of this antibody to its target antigen can elicit a direct cytotoxicity of human and canine B cell lymphomas expressing MHC-II DR in vitro. We have shown that the infusion of B5 in a murine model of disseminated, advanced canine lymphoma mediated >80% improvement in survival and was well tolerated by the animals. Moreover, previous in vitro studies have shown that treatment of canine peripheral blood mononuclear cells with mAb-B5 does not cause leukocyte depletion. To refine the mAb-B5 antibody format in view of reducing its immunogenicity and improving tissue penetrability, here we report on a strategy for engineering mAb-B5 to obtain a bacterially expressed scFv-B5 fragment. Nucleotide sequences of the B5 variable light (VL) and variable heavy (VH) regions were obtained by sequencing mRNA extracted from mAb-B5 producing hybridoma. Based on these sequences, an oligonucleotide construct encoding a single-chain variable fragment (scFv) was synthesized. The scFv was designed in orientation NH₂-VL-linker-VH-COOH. The insert was cloned into the pET-28a(+) expression vector, with a C-terminally attached histidine tag. The construct was expressed in *Escherichia coli* BL21 strain, induced with IPTG, and purified by affinity chromatography on cobalt resin. To determine the affinity and specificity of scFv-B5, we performed a panel of flow cytometry tests on DLA-DR expressing and non-expressing cell lines. We also biotinylated the scFv-B5 fragment to study the kinetics of receptor-dependent internalization of scFv-B5-biotin at various time points. Our data have shown that the scFv-B5 construct retained a high affinity towards its target antigen without losing its specificity. Moreover, we observed a rapid internalization of scFv-B5-biotin via MHC II binding, which opens new avenues for targeted systemic delivery of scFv-B5-cytotoxic drug conjugates to DLA-DR positive lymphoma cells in vivo.

Biomorphological features of the shoulder joint of some parrotiforms

Kartel Iryna (1)

Supervisor: Oleksii O. Melnyk PhD (2)

(1) National University of Life and Environmental Sciences of Ukraine, Kyiv

(2) Department of Biomorphology of Vertebrates named after Academician Volodymyr G. Kasyanenko,
National University of Life and Environmental Sciences of Ukraine, Kyiv

Introduction. The wings of birds are completely free of any supporting functions, their role is mainly limited to flight, which leaves its mark on the degree of development of the humerus as a component of the shoulder joint.

Objective. The aim of our research was to establish the biomorphological features of the skeletal structures of the shoulder joint and to conduct a comparative analysis of the osteometric parameters of the skeletal structures of the shoulder joint of some representatives of the Parrotiformes.

Materials and methods of research. The material for the study was obtained from the funds of the Kasyanenko Department of Vertebrate Biomorphology of the National University of Life and Environmental Sciences of Ukraine, Kyiv Zoo. The studies were conducted on some representatives of a number of parrots, namely: white-crested cockatoo *Cacatua alba*, coral *Nymphicus hollandicus*, budgerigar *Melopsittacus undulatus*, blue-yellow ara *Ara ararauna*, jaco *Psittacus erithacus*, long-winged Senegalese parrot *Poicephalus senegalus*, in the amount of 3 representatives from each species under study. After the osteometric studies were performed according to the scheme developed by us, the digital material obtained was processed statistically. In order to conduct a functional analysis, we determined the correlation of the shoulder joint structures with each other, which made it possible to understand certain patterns of their development

Research results. In the studied parrots (white-crested cockatoo, coral, budgerigar, blue-yellow ara, jacco, long-winged Senegalese parrot), the skeletal structures of the shoulder joint are quite similar in structure, but the ratio of their osteometric parameters has certain differences. Thus, among the studied parrots, the coracoid, relative to the length of the humerus, is the longest in the budgerigar (90.6%), and the shortest in the white-crested cockatoo (53.1%). The base of the coracoid is slightly widened. It is the widest, relative to the total length, in the Long-winged Senegalese parrot (47.6%), and the narrowest in the Budgerigar (24.3%). In other studied parrot species, this indicator has no significant differences. The humerus is mostly V-shaped, with its length relative to the length of the humerus ranging from 41.1% in the White-crested Cockatoo to 95.9% in the Budgerigar. The scapula of parrots is narrow and saber-shaped. Its length ranges from 56.8% in the White-crested Cockatoo to 97% in the Budgerigar. The humerus of the studied parrots in the blue-and-yellow ara (27.4 %) and the coral (27.8 %) is the shortest and almost identical in terms of the ratio of its length to the total length of the wing skeleton. The largest length of this bone (37.3 %) was found in the budgerigar. It should be noted that the head of the humerus of parrot-like parrots is rounded and somewhat compressed in the dorso-ventral direction. The deltoid ridge is pronounced.

Conclusions. The head of the humerus is mostly flattened, which significantly limits rotational movements in the shoulder joint and ensures the stabilization of the wing in flight.

Differences in the ratio of morphometric parameters of the components of the shoulder joint of the studied parrotids are the result of biomorphological adaptations to different speeds and duration of flight.

THE EFFECT OF CMT SCORE ON MILK YIELD AND SOMATIC CELL COUNT ON MILK COMPONENTS IN HOLSTEIN COWS

İclal GEVŞEK (1) , Mert SARILAR (2) , Zeynep GÜNAY UÇMAK (2)

(1) Istanbul University- Cerrahpaşa, Faculty of Veterinary Medicine, Istanbul, Türkiye

(2) Istanbul University- Cerrahpaşa, Faculty of Veterinary Medicine, Department of Obstetrics and Gynecology, Istanbul, Türkiye

Purpose: The aim of the study is to compare the daily milk yield of healthy cows and those diagnosed with subclinical mastitis and to evaluate the relationship between somatic cell count (SCC) and milk components.

Materials and Methods: The study included 43 Holstein cows aged between 3 and 9 years, each of which had given birth at least twice. The daily milk yield of each animal was recorded. Milk samples were collected from all cows for the California Mastitis Test (CMT), SCC assessment, and milk component analysis. Based on these evaluations, 22 cows were diagnosed with subclinical mastitis, while 21 cows were found to be healthy. The optimal SCC value was accepted as <200.000 cells/ml. A total of 42 randomly selected mammary lobes included in the mastitis screening were categorized into two groups based on SCC levels in the milk (<200.000 cells/ml and >200.000 cells/ml) and evaluated in terms of milk components (fat, protein, lactose, dry matter, and freezing point). Statistical analysis was performed by using SPSS 23.0 software.

Results: The mean age of healthy cows ($n=21$) was not significantly different from those diagnosed ($n=22$) with subclinical mastitis cows (5.76 ± 0.34 years vs. 5.27 ± 0.40 years, respectively; $P>0.05$). The mean daily milk yield of healthy cows (25.73 ± 1.0 liters/day) was higher than that of cows diagnosed with subclinical mastitis (20.95 ± 1.21 liters/day) ($P<0.01$). Among the mammary lobes examined, 32 mammary lobes had SCC <200.000 cells/ml (Group SCC+), while 10 had SCC >200.000 cells/ml (Group SCC++). No significant differences were found between these two groups regarding milk fat, dry matter, and freezing point. However, the protein content of milk was higher in the SCC++ group ($2.70\pm0.09\%$) than in the SCC+ group ($2.47\pm0.04\%$) ($P<0.05$). The lactose content was higher in the SCC+ group ($4.98\pm0.03\%$) compared to the SCC++ group ($4.56\pm0.18\%$) ($P=0.001$). Additionally, a positive correlation was found between SCC and milk protein content (%) ($R=0.476$, $P=0.001$). However, SCC showed a negative correlation with milk lactose content (%) ($R=-0.790$, $P<0.001$) and freezing point ($R=-0.604$; $P<0.001$).

Conclusion: The most economical, easy-to-apply, and rapid method for mastitis screening in cows is the CMT test. However, evaluating SCC along with milk parameters such as fat, protein, lactose, dry matter, and freezing point is also necessary for assessing milk quality. In conclusion, SCC is associated with milk lactose, fat, and freezing point, and a decrease in lactose content and freezing point, along with an increase in fat content, can be considered as indicators of mastitis.

Characteristics of *Staphylococci* occurring in individuals of various species of captive animals

Gabriela Jastrzębska (1)

1) Warsaw University of Life Sciences

Staphylococci are opportunistic bacteria which can cause secondary purulent infections. In addition, the occurrence of the bacteria may be connected with specific animal species or the fact that they live in the same area and have contact with each other. The importance of these bacteria increases with the rising multidrug resistance of *Staphylococci*. The aim of this project was to characterise *Staphylococcus* spp. isolated from animals kept in captivity in the "minizoo".

Fourteen nasal swabs were taken from animals such as sheep, goats, alpacas, llamas, Patagonian mara and Indian guanaco. *Staphylococcus* spp. were pre-identified by their phenotypic properties. The DNA was isolated using the isolation kit. Multiplex PCR was used for further identification. Among the tested samples, 12 strains of *Staphylococcus aureus* and two strains of *Staphylococcus delphini* were detected. Two strains were coagulase-negative. The antimicrobial resistance of all strains was evaluated by the disc-diffusion method. All strains were sensitive to 10 antibiotics from different groups. No MLS B resistance phenotype between clindamycin and erythromycin was detected.

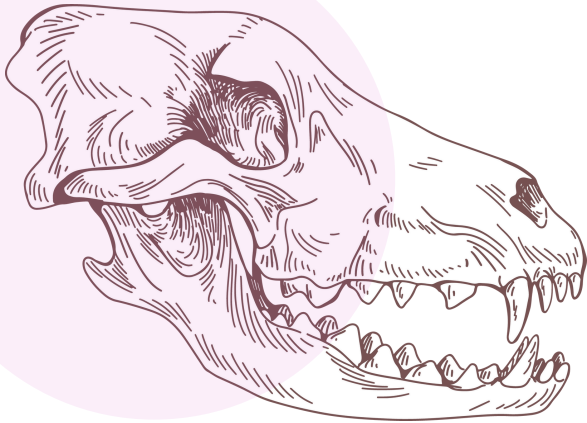
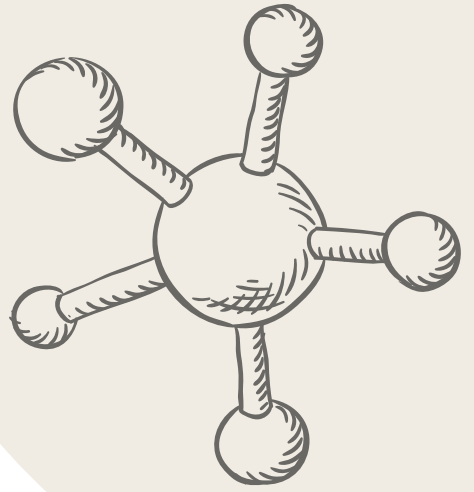
A virulence profile will be determined to further and more accurately characterise the isolated staphylococcal strains.

The microbiota in cardiovascular diseases

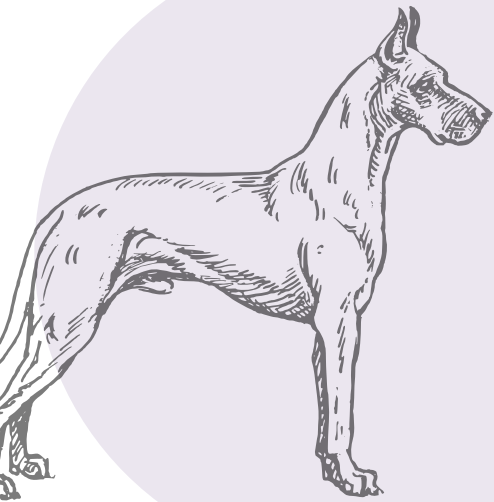
Maja Połatyńska (1)

(1)University of Agriculture in Krakow

The gut microbiota is an important immune and metabolic organ. Gut bacteria produce a variety of metabolites that affect the health not only of the gut, but also of other organ systems, including the heart and the entire cardiovascular system. The term dysbiosis describes changes in the diversity and composition of the microbiota in diseases. Recently, there have been significant advances in research on the gut microbiota in various diseases for the purpose of searching for further metabolic pathways that may find clinical use as biomarkers for faster and more precise diagnosis. An increasing number of studies are pointing to a link between the gut microbiota and heart health. Changes in metabolites produced by intestinal bacteria such as TMAO (trimethylamine oxide), the density of specific bacteria in the gastrointestinal tract such as *Clostridium hiranonis*, among others, or the degree of intestinal damage are observed. A survey of veterinary medical students was conducted to test basic knowledge of the relevance of dysbiosis in the gut microbiota in the development of cardiovascular disease in small animals. The responses from the 22 students indicate that 68.2% of them first encountered this topic when completing the survey, indicating the importance of popularising the topic. Respondents believed that changes in the microbiome influence the incidence and development of cardiovascular conditions to a significant or moderate degree, while scientific reports conducted to date do not provide a clear answer. The juxtaposition of the responses collected in the survey with scientific reports on this topic is the subject of the paper presented here. In order to analyse the relationship between the microbiome and specific heart diseases occurring in small animals, a review of the available literature from the last five years was performed. Mainly the relationship between the microbiota and the most common heart disease in dogs, which is myxomatous mitral valve degeneration (MMVD), but also in more general cases such as congestive heart failure, was analysed. MMVD in dogs is often used as a disease model for similar conditions in humans, hence the importance of this research is added to the possibility of translating the results obtained into possible lines of research in human medicine.



PhD SESSION



First administration of platelet concentrate in Poland for severe thrombocytopenia caused by a tick-borne disease transmitted by *Hyalomma marginatum*

Olga Szymańska DVM (1), Hubert Aszteborski DVM (1,2), Niven Pillay DVN RVN (3),

Anita Piątek PhD DVM (1,4)

1) Veterio Veterinary Clinic, Taśmowa 7a, 02-677 Warsaw, Poland

2) Department of Large Animal Diseases and Clinic, Institute of Veterinary Medicine,
Warsaw University of Life Sciences (WULS), Nowoursynbowska 100, 02-797 Warsaw,
Poland

3) Medivet Chorlton, 511 Wilbraham Rd, Chorlton-cum-Hardy, Manchester M21 0UB,
United Kingdom

4) Military Centre of Pharmacy and Medical Technique, Wojska Polskiego 57, 05-430
Celestynów, Poland

Platelet transfusion is a life-saving procedure in cases of severe thrombocytopenia. However, it is not routinely performed in Poland due to several limitations—including the short shelf life of platelet concentrate and relatively high costs. A 6-year-old mixed-breed dog was admitted to the clinic with a history of suspected *Hyalomma* tick invasion; the tick had been removed the day prior to admission. The patient exhibited hemorrhage at the site of the tick attachment. A blood smear confirmed *Babesia canis* invasion. Hematological analysis revealed anemia (HCT 31%, measured via hematocrit capillary tube), leukopenia ($1.64 \times 10^9/L$), and severe thrombocytopenia ($PLT\ 8 \times 10^9/L$, confirmed by smear evaluation). Total protein concentration, measured concurrently, was found to be 4.9 g/dL. Coagulation parameters were also altered, with activated partial thromboplastin time (APTT) exceeding 120 seconds, elevated fibrinogen levels (682 mg/dL), and a shortened thrombin time (13.7 seconds).

During the first day of the hospitalization medications administered included imidocarb (4.97 mg/kg SC), maropitant (1 mg/kg IV q24h), metamizole (50 mg/kg IV q8-12h), and buprenorphine (10 mcg/kg SC as needed). A single dose of dexamethasone sodiumphosphate (0.2 mg/kg IV) and atropine (0.01 mg/kg SC) was administered. Intensive fluid therapy took place during entire stay at the hospital. On the following day, biochemical evaluation showed increased levels of blood urea nitrogen (38.62 mg/dL), creatine kinase (401.9 U/L), and aspartate aminotransferase (92.2 U/L). Consequently, vitamin K1 (2.5 mg/kg PO q8h), a probiotic, and doxycycline (5 mg/kg PO q12h) due to suspected *Anaplasma* spp. infection were administered.

After 36 hours of hospital treatment, the dog received a transfusion of canine fresh platelet concentrate (four units of 50 mL each) via gravity infusion. The transfusion commenced with an infusion rate of 0.26 mL/kg/h for the first 20 minutes, followed by an increased rate of 5 mL/kg/h until the procedure was completed. The procedure was closely monitored, and all relevant parameters were documented in the transfusion monitoring protocol. On the third day of therapy, abdominocentesis and a transfusion of fresh frozen plasma (two units, total volume 390 mL) were performed due to diagnosed hypoproteinemia (total solids 4.0 g/dL) and its clinical consequence—ascites. Throughout the entire hospitalization, the patient was routinely monitored through clinical examinations, vital sign measurements, venous blood gas analyses, and assessments of hematocrit and total protein levels. In addition, regular hematological and biochemical analyses were conducted. After seven days of intensive hospital care, the patient's level of activity and appetite significantly improved. There was also a marked improvement in both biochemical and hematological parameters.

Despite certain limitations, the described therapy is both valuable and life-saving in the management of thrombocytopenia. The authors suggest it should be considered as a viable therapeutic option in similar clinical cases.

Splenic cDC1 and cDC2 cells exhibit a similar gene expression pattern for cysteine cathepsins and cathepsin-dependent TLR3/7/9 responses in the susceptible BALB/c and resistant C57BL/6 mice during the acute stage of mousepox

Adrianna Niedzielska (1), Zuzanna Biernacka (1), Michał Koper (2), Karolina Gregorczyk- Zboroch (1), Małgorzata Gieryńska (1), Felix N. Toka (1,3) , Lidia Szulc-Dąbrowska (1)

1) Division of Immunology, Department of Preclinical Sciences, Faculty of Veterinary Medicine, Warsaw University of Life Sciences, 02-786 Warsaw, Poland

2) Institute of Genetics and Biotechnology, Faculty of Biology, University of Warsaw, 02-106 Warsaw, Poland

3) Department of Biomedical Sciences, Ross University School of Veterinary Medicine, Basseterre P.O. Box 334, Saint Kitts and Nevis

Cysteine cathepsins (Cts) are important peptidases that mainly function within intracellular acidic compartments, such as lysosomes and endosomes. They are engaged in many functional aspects of conventional dendritic cells (cDCs), enabling them to act as professional antigen-presenting cells (APCs) since cathepsins are essential for protein degradation and the production of peptides required for major histocompatibility complex (MHC) class I and II antigen presentation. Beyond these roles, cysteine cathepsins are crucial in modulating innate immune responses of cDCs during viral infections, influencing virus sensing and uptake, inflammatory response, and cellular adhesion and migration. As endo- lysosomal proteases, cathepsins are required for successful Toll-like receptor (TLR)3/7/9 responses. In the present study, we compared the influence of ectromelia virus (ECTV) infection on the expression of genes for cysteine cathepsins and cathepsin-dependent TLR3/7/9 responses in two splenic cDC subsets: cDC1 and cDC2 in mouse strains that differ in their genetic susceptibility to mousepox. Our study revealed that ECTV does not influence the expression of genes related to cathepsins (*Ctsl*, *Ctsb* and *Ctss*) and the TLR3/7 signaling pathway (*Tlr3*, *Tlr7*, *Irf3*, *Irf5*, *Il1b*, *Tnf*) in both cDC subsets in susceptible BALB/c and resistant C57BL/6 mice. Meanwhile, ECTV up-regulated *Tlr9* expression only in BALB/c cDC2 cells, and *Ifng*, *Irf7*, and *Stat1* expression in cDC1 and cDC2 subsets of both mouse strains. *Ifng* and *Irf7* up-regulation was higher in BALB/c cDC subsets compared to that in C57BL/6 mice. These data suggest that TLR9-mediated IRF7 signaling pathway is strongly activated especially in cDC2 of susceptible BALB/c mice, despite the lack of increase in cathepsin gene expression, the role of these proteases in the TLR9 signaling pathway still cannot be excluded. Further experiments are required to clarify the potential role of cysteine cathepsins in the recognition of DNA by TLR9 in cDCs during ECTV infection.

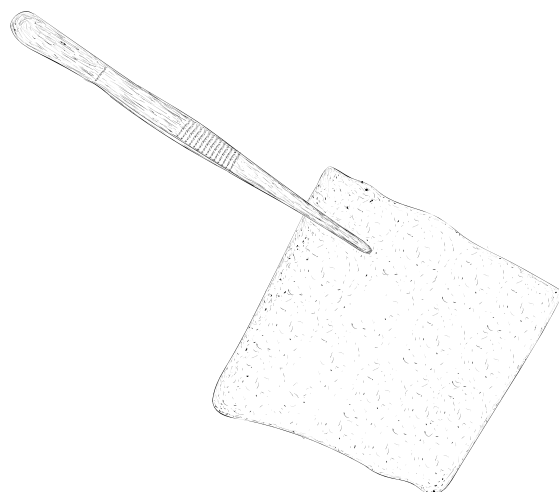
This work was supported by Preludium-Bis NCN grant No. UMO- 2020/39/O/NZ6/03252.

Restrictive and *ad libitum* feeding of puppies and the growth of large and giant breed dogs.

mgr.inż. Daria Wojewodzie (1)

1) Instytut Nauk o Zwierzętach, Szkoła Doktorska SGGW

Animal nutrition is one of the most important factors in the proper development of a growing organism. It determines bone growth, normal body weight, and the occurrence of diseases of the skeletal system, digestive tract, the onset of obesity or food allergies. The main factors that influence proper nutrition are metabolic energy levels, crude protein levels, and the amount and form of daily food. For this reason, the aim of this study was to determine the relationship between the food used in the feeding of large and giant breed puppies, including energy and protein content, and the growth rate of selected large and giant breed puppies. Information on the feeding of large and giant breed puppies was collected using surveys completed online using Google Forms. Surveys were collected in November and December 2023. 210 responses were received. Puppies of large and giant breeds were selected for the questionnaires: Labrador Retriever, Golden Retriever, German Shepherd, St. Bernard, Bernese Mountain Dog, Doberman, Mastiff, and Great Dane. The questionnaire contained questions about the owner's information: age, sex, education and place of residence. In addition, information was obtained about the puppies on age, sex, number of feeds per day, current weight, weight gain and diseases. Caregivers were also able to indicate from which sources they obtain information on dog nutrition and how they feed their puppies: whether they prepare the meals themselves at home and how they balance the dietary intake in terms of energy, protein and calcium and phosphorus. A mixed linear model was used for statistical analysis. It was shown that the level of metabolic energy was statistically significant at 3,900 kcal/kg and influenced the growth rate of large and giant breed puppies with weight gains of 29 to 64.5 kg. Also, the protein level in the feeds used was statistically significant and influenced the weight gain of large and giant breed puppies. In addition, the most statistically significant increase in body weight of large and giant breed puppies occurs at 2–4 months and 5–6 months of age. The growth rate of large and giant breed puppies was statistically significantly influenced by the number of meals fed per day. Understanding the value of correct feeding of puppies during the growth period will allow caregivers to optimize the food intake to meet the animal's needs and avoid unwanted diseases.



Dear All,

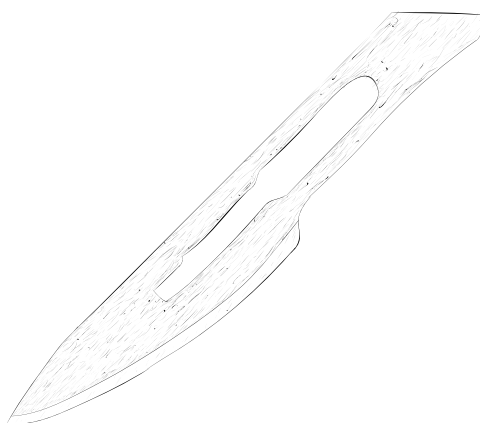
We would like to express our cordial gratitude to all Participants, Jury, Lecturers, Supporters and all who have made the 10th International Scientific Conference of Veterinary Medicine Students successful.

It was a great pleasure to host you. It has been an honour to host you at this event.

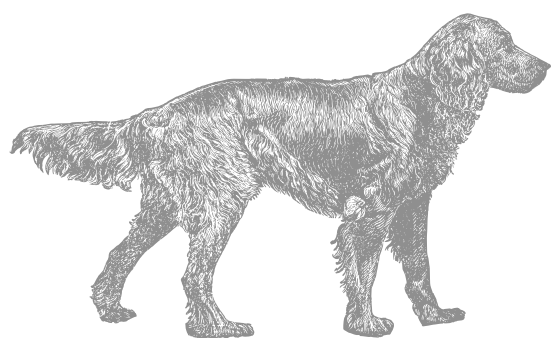
We hope you enjoyed the Conference and the time spent on lectures and sessions was valuable.

We hope to see you soon at the next edition of our Conference.

Yours faithfully,
Organizing Committee



NOTES



2025

Scientific Society of Veterinary Medicine
Students
Faculty of Veterinary Medicine
Institute of Veterinary Medicine
Warsaw University of Life Sciences

Abstract Book Project and Text: Organizing
Committee of the 10th International Scientific
Conference of Veterinary Medicine Students

The Abstract Book project and graphical
elements were created with the use of
Canva/Canva photo library.

ISBN 978-83-971850-2-9



Koło Naukowe Medyków Weterynaryjnych



SGGW



Wydział Medycyny Weterynaryjnej w Warszawie