

Ss. CYRIL AND METHODIUS UNIVERSITY IN SKOPJE  
FACULTY OF VETERINARY MEDICINE - SKOPJE



# BOOK OF ABSTRACTS

*9<sup>th</sup> International Scientific Meeting  
Days of Veterinary Medicine 2022*

22 - 25 September 2022  
R. of North Macedonia



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**9<sup>th</sup> International Scientific Meeting  
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**Skopje, 2022  
R. N. Macedonia**

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DAYS OF VETERINARY MEDICINE 2022**

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Dear colleagues,

I am pleased to welcome you to the the 9<sup>th</sup> International Scientific Meeting “Days of veterinary medicine – 2022” which will be held in Ohrid, R. of North Macedonia, from 22 to 25 September, 2022.

The event is attractive for all researchers, veterinary practitioners, official veterinarians, professors, PhD and post-doctoral students, offering an excellent opportunity to discuss the challenges and ongoing issues in the veterinary education and science.

As a previous, this year Days of veterinary medicine – 2022 retain the traditional popular format, including a number of invited plenary lectures, short presentations and poster presentations for animal health, animal welfare and reproduction, as well as public health and food safety.

It will also provide three workshops for practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of animal health, reproduction and clinical sciences.

The program for the meetings required dedicated effort of many people, in order to retain its usual popular format, including a number of plenary lectures, short presentations, student papers and poster presentations.

In this occasion I express my gratitude to the members of the International Scientific Committee and Local Committee for their diligent and professional reviewing in electing 104 papers from authors of more than 12 countries to be presented in 10 scientific sessions followed by the oral and poster sessions, 3 clinical workshops and 1 laboratory workshop.

On the behalf of the Organizing Committee, I wish you an enjoyable and pleasant stay in R. N. Macedonia.

I am look forward to welcoming you!

Prof. Dr. Lazo Pendovski,



on behalf of the Organizing Committee of  
the Days of veterinary medicine – 2022

**SCIENTIFIC PROGRAM**  
9<sup>th</sup> INTERNATIONAL SCIENTIFIC MEETING  
DAYS OF VETERINARY MEDICINE – 2022

<b>Thursday (22.09.2022)</b>		
<b>16:00 – 18:30</b>	<b>Arrival of participants and Registration</b>	
<b>19:00 – 19:30</b>	<b>Opening ceremony and welcome</b> Prof. d-r Lazo Pendovski, Dean at the Faculty of Veterinary Medicine – Skopje, UKIM Prof. d-r Nikola Jankulovski, Rector at the Ss. Cyril and Methodius University in Skopje Mr. Ljupcho Nikolovski - Minister of Agriculture, Forestry and Water Economy Dr. Nikolche Babovski, DVM, Director at the Food and Veterinary Agency Dr. Tomislav Nikolovski, DVM, Director of the Macedonian Veterinary Chamber	
<b>19:30 – 20:00</b>	<b>Invited Lecture:</b> <i>New skills and knowledge in veterinary profession</i> Prof. dr. sc. Alen Slavica- Faculty of veterinary medicine, University of Zagreb	
<b>20:00</b>	<b>Welcome Cocktail</b>	
<b>Friday (23.09.2022)</b>		
<b>09:00 – 09:30</b>	<b>Plenary lecture I:</b> <i>Biosecurity in animal production, what, when and how?</i> Prof. dr. Jeroen Dewulf, Faculty of Veterinary Medicine, Ghent University, Belgium (Lecture room 1)	
<b>09:30 – 11:00</b>	<b>Session I:</b> <b>Farm Biosecurity and Environment</b> <i>Chairs: Jeroen Dewulf and Miroslav Kjosevski</i> (Lecture room 1, parallel session)	<b>Session II:</b> <b>Basic sciences and Veterinary education</b> <i>Chairs: Rizah Avdić and Martin Nikolovski</i> (Lecture room 2, parallel session)
	<i>Biosecurity assessment and critical improvement points of dairy cattle farms -</i> Miroslav Kjosevski*, Vanja Kondratenko, Branko Angjelovski, Aleksandar Janevski, Milenko Simovikj, Igor Djadjovski, Aleksandar Dodovski, Kiril Krstevski	<i>Renal microvasculature in the chicken -</i> Nedžad Hadžiomerović*, Rizah Avdić, Faruk Tandir
	<i>Comparison of the two different protocols for biosecurity assessment in commercial pig farms -</i> Branko Angjelovski*, Vanja Kondratenko, Milenko Simovikj, Jovan Bojkovski, Miroslav Kjosevski	<i>Forming new collection of pharyngeal teeth from cyprinid fishes collected in Croatia and neighboring countries -</i> Denis Leiner*, Srebrenka Nejedli, Snježana Čurković, Damir Mihelić
	<i>Assessment of biosecurity measures on the broiler farms in the region of Belgrade city -</i> Jelena Maletic*, Ljiljana Spalević, Vesna Milićević, Bojan Milovanović, Branislav Kureljušić	<i>Radiological diagnosis of an ectopic ureter in a poodle – Case report -</i> Boris Dimitrievski*, Aleksandar Janevski, Marko Mitrović, Dine Mitrov
	<i>Biomonitoring of wastewaters from slaughterhouses in Macedonia</i> Marija Ratkova Manovska, Gordana Ilievska, Snezana Dimitrovska, Ena Dobrik, Miroslav Kjosevski, Biljana Stojanovska Dimzoska, Katerina Blagoevska*	<i>Suppression effects of excessively expressed gene bcl-2 in cell lines of prostate cancer -</i> Igor Esmerov*, Nikola Adamov, Aleksandra Angelevska, Radmila Chrcheva, Ljupco Mickov, Ljupco Angelovski, Nikolaj Markov, Branko Atanasov
	<i>The impact of small hydro power plans on trout fish farms in North Macedonia -</i> Aleksandar Trajchovski*, Misho Hristovski	<i>Digital veterinary education (devet) – an ERASMUS+ project for development/creating of digital materials/tools in the education program of veterinary medicine (outcomes review) -</i> Igor Ulchar*, Ksenija Ilievska, Lazo Pendovski, Zehra Hajruali Musliu, Alen Slavica, Lada Radin, Marko Poletto, Danijela Kirovski, Ljubomir Jovanovic, Ivan Jovanovic



09:30 – 11:00	<b>Initial findings of total air dust concentration in cattle and poultry houses in Macedonia-</b> Ena Dobrikj*, Aleksandar Janevski, Aleksandar Dodovski, Miroslav Kjosevski	
11:00 – 11:30	<b>Coffee break &amp; Poster exhibition (Part 1)</b>	
11:30– 12:00	<b>Plenary lecture II:</b> <b>Antimicrobial resistance (AMR) problems in companion animals</b> Prof. dr. Peter Damborg, University of Copenhagen, Denmark (Lecture room 1)	
12:00 – 13:30	<b>Session III: Antimicrobial resistance</b> <i>Chairs: Peter Damborg and Iskra Cvtekovikj</i> (Lecture room 1, parallel session)	<b>Session IV: Animal Welfare and Behaviour</b> <i>Chairs: Vlatko Ilieski</i> (Lecture room 2, parallel session)
	<b>Antimicrobial resistance in staphylococci isolated from dogs in the Republic of North Macedonia</b> - Iskra Cvtekovikj*, Ivana Arsovska, Marija Ratkova Manovska, Mirko Prodanov, Ljubica Rashikj, Zagorka Popova, Igor Djadjovski, Aleksandar Cvtekovikj	<b>Ultrasound – method to assess keel bone fractures in laying hens</b> - Dimitar Bozinovski*, Lazo Pendovski, Miroslav Kjosevski, Martin Nikolovski, Dimitar Terzievski, Vlatko Ilieski
	<b>The occurrence of blaCTX-M, blaSHV, blaTEM genes in extended-spectrum <math>\beta</math>-lactamase producing commensal E.coli isolates from dairy farms in the municipality of Debar</b> - Maksud Kerluku*, Marija Ratkova Manovska, Gordana Ilievska, Dean Jankuloski, Katerina Blagoevska	<b>Stray dog population size trend in the city of Skopje between 2010 and 2020</b> - Dimitar Terzievski*, Miroslav Kjosevski, Dimitar Bozinovski, Vlatko Ilieski
	<b>Antimicrobial susceptibility of Trueperella pyogenes isolates from various clinical specimens of animals</b> - Dilek Öztürk, Sibel Yaman*	<b>Recognition and assessment of pain in dogs after elective surgery in order to improve animal welfare</b> - Dardan Pozhegu*
	<b>Antimicrobial resistance in commensal Escherichia coli isolated from pigs' cecal samples at slaughter</b> - Dean Jankuloski, Marija Ratkova Manovska, Katerina Blagoevska, Gordana Ilievska, Biljana Stojanovska Dimzoska, Mirko Prodanov, Ljupco Angelovski*, Sandra Mojsova, Snezana Dimitrovska	<b>Welfare assessment of pigs in the time of slaughter - stunning quality as a welfare indicator</b> - Emilija Murdjeva*, Branko Angelovski, Mirko Prodanov, Miroslav Kjosevski
	<b>Veterinarian's standpoints regarding antimicrobial stewardship in Serbia-</b> Zorana Kovačević*, Mihajlo Erdeljan, Ivan Stančić, Dragana Tomanić, Zorana Ružić, Ivan Galić, Romel Velev	<b>Welfare assessment of sport horses in stables in Macedonia</b> - Kristina Antovska*, Lazo Pendovski, Vlatko Ilieski, Miroslav Kjosevski
		<b>Survey on recognition of problems of locomotion system in horses in Macedonia</b> - Marija Solakova*, Elena Atanaskova Petrov, Miroslav Kjosevski, Ksenija Ilievska

13:30 – 14:30	<b>Lunch</b>
14:30 – 15:00	<p><b>Plenary lecture III:</b> <i>The Practical Application of Regenerative Medicine in Canine Musculoskeletal Conditions</i> Dr Russell Chandler BVSc CertSAO MSc(OrthoEng) MRCVS, Small Animal Orthopaedics Alphavet Referrals Newport, Wales, UK (Lecture room 1)</p>
15:00 – 15:30	<p><b>Plenary lecture IV:</b> <i>Intervertebral disc disease – a marked road or a jungle?</i> Prof. dr. sc. Boris Pirkich, Faculty of veterinary medicine, University of Zagreb, Croatia (Lecture room 1)</p>
15:30 – 16:00	<b>Coffee break &amp; Poster exhibition (Part 2)</b>
16:00 – 17:30	<p><b>Session V:</b> <b>Veterinary Clinical Medicine</b> <i>Chairs: Russell Chandler and Ksenija Ilievska</i> (Lecture room 1)</p>
	<p><i>Topical application of homologous serum for treatment of corneal ulcer in dogs</i> - Ksenija Ilievska*, Elena Atanaskova Petrov, Filip Trojachanec, Jane Vlahov, Plamen Trojachanec</p>
	<p><i>Disease-stage related therapeutic response of mesenchymal stromal cells after intra-articular delivery in a mouse osteoarthritic joint</i> - Ana Ivanovska*, Patrizio Mancuso, Conor Hennessy, Swarna Raman, Steven McLoughlin, Jamie Reilly, Frank Barry, Mary Murphy</p>
	<p><i>Mesenchymal stromal cells lyo-secretome: preliminary clinical application in dogs and horses with naturally occurring osteoarthritis</i> - Priscilla Berni*, Michela Mocchi, Virna Conti, Silvia Dotti, Dario Di Silvestre, Riccardo Villa, Roberto Ramoni, Giulia Passignani, Francesca Brambilla, Maurizio Del Bue, Gianpaolo Squassino, Laura Catenacci, Milena Sorrenti, Lorena Segale, Elia Bari, Pierluigi Mauri, Sara Perteghella, Maria Luisa Torre, Stefano Grolli</p>
	<p><i>Beneficial effect of Acepromazine on incidences of adverse effects associated with morphine premedication in dogs</i> - Jane Vlahov*, Plamen Trojacanec, Todor Novakov, Ksenija Ilievska, Filip Trojacanec</p>
	<p><i>Pre-emptive multimodal analgesia with Morphine-Medetomidine-Ketamine and Acepromazine- Morphine-Ketamine for ovariohysterectomy in dogs</i> - Todor Novakov*, Elena Atanaskova Petrov , Ksenija Ilievska, Irena Celeska, Jane Vlahov, Filip Trojacanec, Plamen Trojacanec</p>
17:30 – 20:30	<b>Guided Ohrid City Tour</b>
20:30 – 22:30	<b>Dinner at National Macedonian Restaurant</b>

Saturday (24.09.2022)	
09:00 – 09:30	<p><b>Plenary lecture V:</b> <i>Reproductive management in goat breeding</i> Prof. dr. sc. Juraj Grizelj, Faculty of veterinary medicine, University of Zagreb, Croatia (Lecture room 1, parallel session)</p>
09:30 – 10:30	<p><b>Session VI: Animal Reproduction</b> <i>Chairs: Juraj Grizelj and Toni Dovenski</i> (Lecture room 1, parallel session)</p>
	<p><i>The effect of homologous seminal plasma and reduced glutathione on thawed ram sperm viability and motility</i> - Martin Nikolovski*, Monika Dovenska, Dimitar Bozhinovski, Ljupcho Mickov, Branko Atanasov, Nikola Adamov, Toni Dovenski, Vladimir Petkov</p>
	<p><i>Kinetic parameters of chilled boar spermatozoa from different porcine breeds</i> - Ljupco Mickov*, Branko Atanasov, Martin Nikolovski, Monika Dovenska, Igor Esmerov, Nikola Adamov, Vladimir Petkov, Toni Dovenski</p>
	<p><i>Assessment of in vitro maturation rate of porcine oocytes selected by brilliant cresyl blue staining</i> - Monika Dovenska*, Ljupcho Mickov, Branko Atanasov, Vladimir Petkov, Martin Nikolovski, Toni Dovenski, Florina Popovska-Perchinikj</p>
	<p><i>Introduction of the Ovsynch-8 protocol in small dairy farms in RNM to increase the reproductive efficiency from the first AI postpartum</i> - Kristina Dojchinovska*, Toni Dovenski, Ljupcho Mickov, M. Toshevska, Z. Mihaloski, I. Taleski, Lj. Andreevski, Branko Atanasov</p>
10:30 – 11:00	Coffee break & Poster exhibition (Part 3)

**Clinical Workshop 1:**  
(Lecture room 3, parallel session)

**Orthopedic examination in dogs and cats**  
Prof. dr. sc. Mario Kreszinger  
Faculty of veterinary medicine, University of Zagreb, Croatia

11:00 – 11:30	<b>Plenary lecture VI:</b> <i>Update on activities of the European Reference Laboratory for Listeria monocytogenes: focus on typing area</i> Sandrine Te, French Agency for Food, Environmental and Occupational Health & Safety (ANSES) (Lecture room 1, parallel session)		<p style="text-align: center;"><b>Clinical Workshop 2:</b> (Lecture room 3, parallel session)</p> <p style="text-align: center;"><b>Emergency states in veterinary ophthalmology</b>          Prof. dr. sc. Boric Pirkić          Faculty of veterinary medicine, University of Zagreb, Croatia</p>
11:30 – 13:15	<b>Session VII:</b> <b>Food Safety</b> <i>Chairs: Sandrine Te and Katerina Blagoevska</i> (Lecture room 1, parallel session)	<b>Session VIII:</b> <b>Infectious Diseases in Animals</b> <i>Chair: Lejla Velić and Kiril Krstevski</i> (Lecture room 2, parallel session)	
	<i>Prevalence of serotypes 1/2a and 4b of Listeria monocytogenes from ready-to-eat food products in Kosovo</i> - Besart Jashari*, Katerina Blagoevska, Dafina Mehmetukaj, Dean Jankuloski	<i>Discovery and introduction pattern of panzootic Newcastle disease virus in chickens in Macedonia, 2020</i> - Aleksandar Dodovski*, Renfu Yin	
	<i>Enterotoxigenic staphylococcus strains isolated from raw milk and dairy products from R.N. Macedonia</i> - Marija Ratkova Manovska*, Mirko Prodanov, Dean Jankuloski, Pavle Sekulovski, Katerina Blagoevska	<i>Ovine paratuberculosis: intra-herd incidence study and assessment of commercial (ID. VET, FRANCE) indirect milk elisa test performance in dairy sheep</i> - Anna-Rita Attili, Eleonora Bonacucina, Martina Linardi, Luciana Pacifici, Vincenzo Cuteri*	
<i>Antibacterial activity of goat whey with added kefir grains</i> - Sandra Mojsova*, Vesna Levkov, Ljupco Angelovski	<i>Zoonotic potential of equine-associated viruses</i> - Mihajlo Erdeljan*, Tijana Kukurić, Ivan Stančić, Ivana Davidov, Miodrag Radinović, Annamaria Galfi Vukomanović, Nadežda Tešin		

<b>11:30 – 13:15</b>	<p><b><i>Bacterial contamination in different stages of poultry slaughtering process</i></b> - Mirko Prodanov*, Marija Ratkova Manovska, Sandra Mojsova, Ljupco Angelovski, Dean Jankuloski</p>	<p><b><i>Re-emergence of rabies in Bosnia Herzegovina after the offset of oral rabies vaccination</i></b> - Eterović Toni*, Lejla Velić, Oliver Stevanović, Amer Alić</p>	<p><b>Clinical Workshop 2:</b> (Lecture room 3, parallel session)</p> <p><b>Emergency states in veterinary ophthalmology</b> Prof. dr. sc. Boric Pirkić Faculty of veterinary medicine, University of Zagreb, Croatia</p>
	<p><b><i>Occurrence of aflatoxins, ochratoxin A and zearalenone in poultry feed</i></b> - Ida Kucinoska*, Biljana Stojanovska-Dimzoska, Aleksandra Angeleska, Katerina Blagoevska, Gordana Ilievska, Dushica Koceva, Elizabeta Dimitrieska-Stojkovic</p>	<p><b><i>Detection and genetic characterisation of porcine circovirus type 2 in Macedonian wild boar and domestic pig population</i></b> - Zagorka Popova Hristovska, Kiril Krstevski*, Ivan Matevski, Stefanija Markozanova, Dine Mitrov, Igor Djadjovski</p>	
	<p><b><i>Presence of heavy metals in animal feeds of plant origin</i></b> - Dushica Koceva*, Elizabeta Dimitrieska-Stojkovic, Biljana Stojanovska-Dimzoska, Aleksandra Angeleska</p>	<p><b><i>Presence and prevalence of non-regulated infectious diseases with high economic impact on Macedonian dairy farms</i></b> - Ivan Matevski*, Igor Djadjovski, Kiril Krstevski</p>	
	<p><b><i>Proposed chemical substances as quality parameters of chocolate</i></b> - Stefan Jovanov*, Risto Uzunov, Tome Nestorovski, Zehra H. Musliu, Velimir Stojkovski</p>		
<b>13:15 – 14:00</b>	<b>Lunch</b>		

14:00 – 14:30	<b>Plenary lecture VII:</b> <i>Virtual slaughterhouse simulators as a complement, not a substitute of abattoir visits, in veterinary public health education</i> Prof. dr. Andrej Kirbiš, Faculty of Veterinary Medicine, University of Ljubljana Ljubljana, Slovenia (Lecture room 1, parallel session)		<p style="text-align: center;"><b>Clinical Workshop 3:</b> (Lecture room 3, parallel session)</p> <p style="text-align: center;"><b>The practical application of regenerative medicine in canine musculoskeletal conditions</b></p> <p style="text-align: center;">Dr Russell Chandler BVSc CertSAO MSc(OrthoEng) MRCVS, Small Animal Orthopaedics Alphavet Referrals Newport, Wales, UK</p>
	<b>Session IX: Methods and Models</b> <i>Chairs: Andrej Kirbiš and Dean Jankuloski</i> (Lecture room 1, parallel session)	<b>Session X: Parasitic Diseases in Animals</b> <i>Chairs: Aleksandar Cvetkovikj and Jasmin Omeragić</i> (Lecture room 2, parallel session)	
14:30 – 16:15	<i>Evaluation of the performance of a real time PCR method for detection of Salmonella spp. invA gene in chicken meat -</i> Gordana Ilievska, Marija Ratkova Manovska, Dean Jankuloski, Katerina Blagoevska*	<i>Clinicopathological alterations in pet dogs naturally infected with Ehrlichia canis and Leishmania infantum in Macedonia – case study -</i> Elena Atanaskova Petrov*, Ksenija Ilievska, Todor Novakov, Ljubica Rashik, Igor Djadjovski, Miroslav Kjosevski, Irena Celeska	
	<i>Identification of meat species based on DNA hybridization, real-time PCR and fatty acid profile with GC-FID -</i> Dafina Mehmetukaj*, Vlora Zogëjani, Armend Cana, Xhavit Bytyçi, Besart Jashari, Zehra Hajrullai Musliu, Katerina Blagoevska, Dean Jankuloski	<i>Investigation of gastrointestinal helminth infections of horses in Thrace region, Türkiye -</i> Fatma Nur Dal*, Şakir Pehlivan, Kerem Öter, İbrahim Kurban, Aynur Gülanber	

<b>14:30 – 16:15</b>	<p><b>Diagnostic performance of eight PCR protocols and one indirect ELISA in naturally small ruminant lentiviruses infected ewes in Greece</b> - Aphrodite I. Kalogianni*, Ioannis Bossis, Ilias G. Bouzalas, Athanasios I. Gelasakis</p>	<p><b>Prevalence and genetic characterization of Echinococcus granulosus in domestic ruminants in North Macedonia</b> - Ljubica Rashikj*, Aleksandar Cvetkovikj, Ivana Arsovska, Iskra Cvetkovikj, Jovana Stefanovska</p>	<p><b>Clinical Workshop 3:</b> (Lecture room 3, parallel session)</p> <p><b>The practical application of regenerative medicine in canine musculoskeletal conditions</b> Dr Russell Chandler BVSc CertSAO MSc(OrthoEng) MRCVS, Small Animal Orthopaedics Alphavet Referrals Newport, Wales, UK</p>
	<p><b>Suitability of using the ISO 13730:1996 method for total phosphorous quantification in milk and milk products</b> - Tome Nestorovski*, Stefan Jovanov, Riste Uzunov, Ana Angelovska, Zehra Hajrulai Musliu, Radmila Crceva Nikolovska</p>	<p><b>Investigation of parasitic diseases in wild animals in the federation of Bosnia and Herzegovina</b> - Jasmin Omeragić, Naida Kapo*, Darinka Klarić Soldo, Vedad Škapur, Saša Kunovac, Ermin Šaljić, Šejla Goletić, Adis Softić, Sabina Šerić-Haračić, Teufik Goletić</p>	
	<p><b>Verification of a sampling method for animal feed from different origins used for chemical analysis</b> - Ana Angelovska*, Radmila Crceva Nikolovska, Aleksandra Angeleska, Tome Nestorovski, Dean Jankuloski, Mirko Prodanov, Zehra Hajrulai Musliu</p>	<p><b>Gastrointestinal helminths of goats breeding at mountain area of central Serbia</b> - Pavlović Ivan*, Radanović Oliver, Zdravković Nemanja, Savić Božidar, Tasić Aleksandra, Pavlović Marija</p>	
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**SMALL ANIMAL MODEL IN THE DEVELOPMENT OF  
RADIOPHARMACEUTICALS - THE STEP FORWARD TO  
CLINICAL STUDIES**

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Experimental design is a critical component for the success of research activities involving development and evaluation of new radiopharmaceuticals. Experimental animal models have substantially contributed to a better understanding of mechanisms of disease and show the novel approaches in imaging and image analysis were equally important to meet the challenges of analyzing the complex mechanisms underlying pathophysiological processes in vivo. Proper animal models are key factors for successful pharmaceutical and medicinal experiments. To reduce animal number for ethical and financial reasons, cost-efficient methods where high quantities of data are achieved fast are optimal. Biodistribution and pharmacokinetics studies diagnostic or therapeutic radiopharmaceuticals by SPECT or PET imaging followed by *post mortem* analysis in diseases model gives a good start point for further steps toward clinical applications. In this presentation, targeting properties, biodistribution and pharmacokinetics of different molecules, as potential radiopharmaceuticals have been studied in small animal models using suitable imaging modalities and *post mortem* analysis. The following experimentally designed animal models have been introduced in our work so far as an essential part in the development of new radiopharmaceutical products and quality control of existing radiopharmaceutical products. Rat models were used to establish: stasis-induced thrombus in the femoral vein after injection of thromboplastin to demonstrate Deep Venous Thrombosis; induced amyloidosis by multiple application of beta2-microglobulin for determination of the existence of the depositing osteoarticular tissues, condition associated with hemodialysis in patients with chronic kidney diseases; collagen-induced arthritis as a model of inflammatory arthritis; bacterial abscesses by the injection of *Staphylococcus aureus*. Mouse models were used for: in vivo evaluation of the radiolabelled conjugated antibodies in normal Balb/c mice and nude mice xenografts; *per os* administration of iodine labeled BSA loaded microspheres to show the strong adjuvant effect by inducing IgA secretion at the genito-urinary mucosa; athymic nude mice tumor bearing to demonstrate

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specificity of pre-targeting technique referred to the Affinity Enhancement System (AES) uses bispecific antibodies and radiolabeled bivalent haptens. The use of experimental animal models in the design of new drugs including radiopharmaceuticals is a key part of preclinical trials. Usually this approach can not fully replicate human disease or the varied and complex physical and psychological manifestations of human conditions. For these reasons the process of experimental design should be carried out routinely to ensure the generation of valid, reproducible and published data.

**Key words:** experimental design, rat models, Affinity Enhancement System (AES), radiopharmaceutical products