HABILITATION THESIS

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ABSTRACT

The habilitation thesis entitled " ***Surgical paradigm of prosthetic bioimplants for tissular reconstruction and wounds healing management in veterinary medicine*** " contains the results of my academic, scientific and publishing activities in the field of veterinary surgery, and includes the most relevant personal achievements in scientific research (in the field of veterinary surgery, since 2009, after PhD defense until today).

According to the requirements of the Doctoral School of Veterinary Medicine of the USAMV Cluj-Napoca, I have structured the present thesis in three parts. Part 1 containing data related to my professional, and academic formation. The 2nd part presents the main directions of research that formed the basis of habilitation thesis, and the 3rd part project the plans for the scientific, professional and academic development.

The **first part** of the thesis contains the presentation of the professional training, as well as the achievements on educational, scientific and publishing level.

The academic activity between 2000-2019 was conducted within the Discipline and Surgery Clinic of the Faculty of Veterinary Medicine, part of the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. In addition to the academic activity carried out in the aforementioned discipline, I have benefited from a series of scholarships and internships of training / research at prestigious universities in the veterinary surgical and clinical field as University of Illinois, Purdue University, Texas A&M University, Ross University, Vetmed UNI Vienna, and training centers in Vienna, Stockholm, Munchen, Strassbourg, and European School for Advanced Veterinary Studies(ESAVS).

Since July 2015 until the present, I am enrolled as a Resident of the European College of Veterinary Surgeons (ECVS) specializing in small animals, in an alternative program (Alternate Veterinary Surgery Training Programme A-VSTP) at VetMedUNI Vienna under the supervision of Prof. Dr. Gilles Dupre.

During the 21 years of experience, I was involved and I conducted research activity through the research projects in which I was Director (5) and Member of the research teams (5). The results of the research were materialized by publishing 10 scientific papers in ISI

journals, paper published in indexed ISI proceedings (5), journals and volumes of scientific events indexed in international databases BDI(190), volumes of national conferences (Cluj Napoca, București, Timișoara, Iași Oradea), and volumes of international conferences (Hungary, Austria, Portugal, Australia, Japan). The articles published in ISI-listed and indexed journals, as well as BDI indexed, published as a first/principal author and co-author, were cited in 29 papers published in ISI-listed journals and 25 papers published in BDI indexed journals. I am an active member in scientific national(7) and international(5)organizations, professional associations, scientific reviewer (3).

The teaching publishing activity, after PhD thesis defense , can be quantified as follows: 2 books, 3 didactic text books and 1 practical works.

The **second part** of the habilitation thesis includes the results from the research activity published PhD thesis defense 2009. The second part presents the results structured in two main directions.

Chapter 2.1 of this part, entilted „*Pre-clinical and clinical studies of the prosthetic bioimplants in veterinary medicine*" comprises five sub-sections, which present a brief depiction of bioimplants(up-dated definition, classification), and preclinical and clinical investigations in several bioimplants available for reconstruction and replacement/improvement of anatomical and functional deficits in veterinary medicine, in a few various pathological disorders and them clinical follow-up.

Subsections 2.1.1 and 2.1.2 is describing a pre-clinical study on dogs and short-term follow-up results of using 3D collagen matrix as prosthetic bioimplants for promoting and alveolar *bone* healing and soft tissue(gingiva) reconstruction.

Subsection 2.1.3 present the result of a clinical study on dogs using bioimplants as a synthetic graft for reconstruction of ruptured *ligament* of the head of the femur in traumatic coxofemoral luxation.

Subsection 2.1.4. is depicting the results of preclinical studies on pigs regarding the uses of *vascular* prosthesis as a bioimplant for training and reconstruction of aorta by performing vascular *patch*, vascular *anastomosis*(end-to-end aortic vascular graft anastomosis, termino-lateral) and *bypass*(aorto-aortic and aorto-iliac), by using two types of vascular grafts as polyethylene terephthalate (Dacron) and polytetrafluoroethylene (PTFE or Teflon). The meaning of the study was to train, to simulate a surgical solution in vascular condition in veterinary medicine and to assess the skills and learning curve of the surgeons by to examine the viability and the feasibility of the vascular anastomoses.

Subsection 2.1.5 is a clinical study of using bioimplants as a surgical options for cervical *esophageal* diverticula in dogs, study describing for the first time this surgical approach by using Dacron graft and clinical results.

Chapter 2.2 of this part, entilted „*Studies of soft tissue reconstruction and wound healing management by using alternative ecosafe products*" comprises two sub-sections, which present a short depiction of flaps used for reconstruction of skin defects(vascular anatomy and up-date concept), flap classification(subdermal and axial pattern), clinical investigations in several flaps for cutaneous reconstruction for improving cosmetical appearance and functional deficits in skin defects(or cutaneo-muscular) after oncological surgery or extensive traumatic wounds.

Subsection 2.2.1. approaching the endless topic of *cutaneous reconstruction* in a clinical study in dogs, by using subdermal flaps for assessing the most versatile flaps and them follow-up results.

Subsection 2.2.2. includes a study to develop a formula of *Propolis* solution containing Propolis extract(30% Propolis tincture) which can assist in the integrated management wounds healing and to the evaluate the effects of this formula on the healing process of wounds in rabbits by evaluating the in-vivo healing properties, antimicrobial activity and monitoring the histopathologic aspects and to suggest the most promising concentration for clinical use.

The **third part** of the thesis presents the plans for the scientific, professional and academic development. The development plan of my scientific career has, as its first objective, to increase the professional and scientific quality, and the visibility, to improve the national and international recognition of my own research.

Regarding the research activity, it will be oriented and concentrate, mainly in the fields already considered, but with a prospective to deepening the scientific research and innovation in these fields.

I wish to build an academic career and a professional reputation that ensures the success and increased visibility of the Surgery Department and the Surgery Clinic, and this way, the Faculty of Veterinary Medicine and USAMV Cluj-Napoca.