

**University of Medicine and Pharmacy “Carol Davila” Bucharest
Faculty of Medicine**



SUMMARY HABILITATION THESIS

**ADVANCEMENTS, INNOVATIONS AND
ENDEAVORS IN MODERN OPHTHALMOLOGY**

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BUCHAREST

SUMMARY

The habilitation thesis titled "Advancements, Innovations, and Endeavors in modern ophthalmology" is structured and composed according to the guidelines set forth by the National Council for Attesting Titles, Diplomas, and Certificates (C.N.A.T.D.C.U.). It showcases the significant academic, scientific, and professional accomplishments I have attained since earning my PhD in Medicine in 2012 and outlines my future goals for my teaching career.

The paper has 3 main chapters.

In *Chapter one*, a comprehensive overview is provided of my scientific, academic and professional journey, detailing the chronologic stages that have led me to where I am today. Additionally, this chapter highlights the key publications and scientific articles that I have authored throughout my career.

Chapter two presents the direction of development of my research activity and academic pursuits. This is achieved by considering two crucial factors: my extensive scientific and professional experience, as well as, the various opportunities that have arisen through my collaborations with esteemed clinics and medical centers.

Chapter three focuses on the most recent and significant references that were utilized in the creation and presentation of this paper.

My thesis showcases on one hand my expertise in the field of glaucoma surgery (including didactic abilities and research achievements), which I have gained through my work at the Glaucoma Department of The Emergency Eye Hospital in Bucharest and the Retina Clinic and on the other hand my experience in diagnosis and treatment of infectious keratitis and macular degeneration. The Emergency Eye Hospital is the largest ophthalmological emergency hospital in our country, specializing in complex cases and providing top-notch medical care and surgical treatment for pathologies such as cataracts, glaucoma, ocular emergencies, and corneal transplantation. Meanwhile, the Retina Clinic is a private practice with highly experienced doctors who specialize in posterior segment pathology. Through my work with patients suffering from diabetic retinopathy and secondary glaucoma, including neovascular glaucoma and secondary glaucoma after vitreoretinal surgery, I have acquired extensive knowledge and skills in this area.

Chapter 1: "Professional, didactic and scientific achievements" retrospectively details the evolution and growth of my surgical and teaching career, highlighting the scientific contribution of my work, my abilities to coordinate a research team, conduct projects, organize and manage university and post-university activities, facilitating the understanding of studies and research, focusing on the independent development of future didactic and scientific career, providing novelty and quality in the medical learning and educational system, for the benefit of the next generation of doctors. My medical career began after passing the residency exam in the field of surgical specialties. All my medical degrees (resident, specialist and primary doctor) were graduated from the Emergency Eye Hospital, Bucharest. My passion for glaucoma surgery began during my residency and has grown exponentially since then. After presenting my doctoral thesis „Glaucoma artificial drainage devices, Ahmed valve, the management of postoperative

complications”, in 2012, I have become an expert in the field, having performed over 2000 successful glaucoma surgeries since 2011.

Through active participation in numerous international medical courses, conferences, and congresses, I gained valuable insights into the field of minimally invasive glaucoma procedures and end-stage glaucoma approaches. The implementation of these new techniques has been essential in improving the quality of life for my patients. The primary objective of glaucoma surgeries is to reduce intraocular pressure using minimally invasive procedures, with shorter operation times, and fewer and milder intra-operative and post-operative complications. Consequently, I have integrated the use of sub-Tenon's anesthesia instead of retrobulbar block for various surgeries, including trabeculectomy and artificial glaucoma devices implantation, and have begun using releasable sutures for trabeculectomy flaps and Ex-PRESS shunt insertions. Additionally, I have adopted micropulse transscleral cyclophotocoagulation, a new non-invasive method of LASER treatment for glaucoma. This treatment can be used before or after other procedures or medication, is repeatable, and is suitable for all stages of glaucoma. For end-stage glaucoma, surgery may be more harmful, with higher risks of vision loss, comparing to the LASER procedure.

Infectious keratitis is a leading cause of corneal blindness, recognized by the World Health Organization (WHO) as a "silent epidemic" with almost 2 million new cases reported worldwide each year. Photooxidative corneal crosslinking (CXL) shows promise in treating infectious keratitis, offering the advantage of producing consistent results regardless of the specific microorganism responsible for the infection. CXL is considered a "broad-spectrum" treatment that can yield highly positive outcomes in the management and progression of infectious keratitis.

The rapid diagnosis of macular degeneration depends on the capability of using new imaging techniques, such as Optical Coherence Tomography (OCT), OCT – Angiography and Adaptive Optics. The efficacy, efficiency and safety of the new molecules targeting VEGF (Vascular Endothelial Growth Factor) were proved lately by the results of medical and surgical ophthalmology.

All my research findings and results were shared with colleagues through active participation in congresses and scientific meetings and collaboration with students and resident doctors. My professional achievements led to important didactic and scientific accomplishments.

Chapter 2 titled "**Plans for Evolution and Development of Academic Career**" outlines my proposals for advancing my career in a three-pronged approach. These approaches include professional, didactic, and scientific research development. My primary objective is to further develop my glaucoma surgery skills gained through 23 years of uninterrupted clinical and surgical practice, by collaborating with colleagues from other universities, participating in various post-university courses, as well as attending national and international ophthalmological scientific events, in order to continuously enhance my knowledge. Additionally, I intend to establish a clinical studies department that will enable me to participate in different ophthalmology-related clinical studies while also providing the opportunity to develop our own research projects.

Furthermore, I will focus on ophthalmogenetics, as it has the potential to unlock solutions to cases with unknown etiopathogenic factors.

The evolution of a teacher, especially in the field of medicine, should be closely guided by some values: strong foundation of professional training, communication and social skills, the ability to adapt and collaborate within a team, research skills and the capacity to understand the human nature of the medical profession. As a teacher, I aim to develop an effective educational system that is tailored to different types of students, thereby optimizing our strategies to ensure that every student is motivated to learn. Although it may be challenging to determine why each student chose to study medicine and what their aspirations are, it is essential that we, as teachers, take advantage of their desire to learn and construct a well-defined personal medical culture. During my lectures and practice activities, I strive to stimulate students' inner motivation so that the knowledge I offer becomes a foundation for their medical education rather than just a subject for a final exam.

Regarding post-university medical education, I believe that the relationship between the coordinating doctor and resident doctors should be the best example of mentorship.

Chapter 3: "Bibliography" contains the references used for structuring and presenting this thesis.