

“CAROL DAVILA” UNIVERSITY OF MEDICINE AND PHARMACY
BUCHAREST, ROMANIA
DOCTORAL SCHOOL
MEDICINE



HABILITATION THESIS

CANDIDATE:

Sebastian Isac

Discipline of Physiology and Neurosciences

Department 1- Functional Sciences

“Carol Davila” University of Medicine and Pharmacy

2023

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**Perspectives of translational medicine: from experimental
neuromodulation to the personalized approach of critical
care patient**

Abstract

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The habilitation thesis reveals my career as a scientist, teacher and medical doctor after finishing the Ph.D. study.

The habilitation thesis is structured in four main parts, which present the most important aspects of my scientific, teaching and clinical activities. This work presents also the future perspectives of my academic development.

The first part refers to scientific activity and it is divided in the following subchapters: experimental research in neuroscience, research in critical care patients with liver diseases and research in critical care patients without chronic liver conditions. Regarding the experimental research in neuroscience, the habilitation thesis refers to the most important studies focused as an extension of the doctoral period. These studies revealed the transgenerational effect of the maternal diet on the immature brain exposed to perinatal asphyxia. I have managed to publish original articles in prestigious journals indexed in WOS (Q1 interval for the domain pediatrics-neonatology). These articles were also acknowledged from UEFISCDI. Moreover, I have successfully coordinated, as project manager, a post-doctoral project entitled: "The potential detrimental effect of the general anesthesia on the immature brain previously exposed to perinatal asphyxia" (PN-III-P1-1.1-PD-2019-1219).

Regarding the research interest in the field of critical care patients with liver diseases, I have accomplished complex clinical studies focused on the postoperative cognitive dysfunction in cirrhotic patients, the impact of COVID-19 on the liver transplanted patients, or the immunosuppressive therapy in liver transplanted patients.

Because of the complexity in management and monitoring of the critical patients that usually requires admission in ICU facilities, the habilitation thesis presents also various interventional clinical studies coordinated by me: the impact of the virtual reality on the postoperative cognitive dysfunction, opioid-sparing alternatives for the perioperative pain management, and advanced intraoperative neuromonitoring.

Finally, I presented the main results of my research activity. These include: coordinator of a two-years postdoctoral project (completed in 2022), over 30 articles published in WOS indexed journals, speaker at over 40 conferences in the field of neurosciences and anesthesia and intensive care. I have a Hirsch index of 6 (WOS) and 7 (Google Scholar) respectively.

The second part of the habilitation thesis refers to the teaching activity, as a result of both: students teaching in the preclinical study years in the field of Physiology and Neurosciences and clinical teaching of the junior anesthesiologists.

Considering the students teaching activities, I have coordinated student groups in practical activity referring to various subjects from Physiology and Neurosciences and students in the final year for their final license work. I am contributing author of an integrative Physiology book, released as a course support for the medical students in the preclinical years (Fiziologie-Note de Curs, București, 2022, Editura universitară Carol Davila). Moreover, I have contributed for the translation of a very prestigious international Medical Physiology book (Tratat de Fiziologie Medicală, Ediția a 3a, Editura Hipocrate). Moreover, I have coordinated a student's research group, as part of the Laboratory for Neurosciences.

Regarding the teaching activity in the relationship with the junior anesthesiologists, the thesis emphasized my interest in coordinating their clinical cases presentation and their involvement in specific clinical research activities. Furthermore, I was involved also in clinical teaching activity of the junior anesthesiologists of various anesthesiologic and intensive care skills, with regard to their curricula. The habilitation thesis reveals also my ability to coordinate a medical student's group with interest in anesthesia and intensive care, in the department I of Anesthesia and Intensive Care from Fundeni Clinical Institute.

The third part of the habilitation thesis is focusing my career as a health care provider. After finishing the medical school in 2011, I have started as junior anesthesiologist in various prestigious university affiliated Hospitals in Germany, like Uniklinik Essen. I have finished the residency in 2017 in Bucharest, Romania (Emergency Clinical Hospital Bucharest). Between 2017 and 2020, I have worked as specialist in Anesthesia and Intensive Care in various hospitals in Bucharest like Filantropia Clinical Hospital Bucharest, and Dr. Victor Gomoiu Children Hospital, Bucharest. Since 2020, I am working as senior anesthesiologist in Department I of Anesthesia and Intensive Care- Fundeni Clinical Institute.

The habilitation thesis reveals also the courses and competences that I have graduated during this period, from which the most relevant is the title of Diplomate of the European Society of Anesthesia (D.E.S.A) received in Maastricht (Holland) in 2018. At present I am enrolled for a Masters degree in *Management of the health care services* at the Management Faculty, Academy of Economic Sciences, Bucharest.

The last part of the habilitation thesis focuses on the future strategies for academic development. There are further divided in three subsections: research, teaching and clinical development strategies. Every subsection reveals general and specific objectives, implementation strategies and anticipated results. The development strategies promote the idea of interrelationship between the three main academic courses that should progress to a sustainable future achievement.

The entire academic pathway of the author was unconditioned sustained by the team from the Physiology Department under the supervision of Prof. Dr. Ana-Maria Zăgrean and Prof. Dr. Leon Zăgrean, from the colleagues of the Department I- Anesthesia and Intensive Care-Fundeni Clinical Institute under the supervision of the Associate Prof. Dr. Gabriela Droc, and, not the least, by the family, which represents the main drive for my academic pathway.