



**CAROL DAVILA UNIVERSITY OF MEDICINE AND PHARMACY**  
**BUCHAREST**  
**DOCTORAL SCHOOL**  
**DOMAIN ENDOCRINOLOGY**

**HABILITATION THESIS**

**SENIOR LECTURER**  
**DR. CRISTINA ANA MARIA CĂPĂȚÎNĂ**  
**BUCHAREST 2024**



**“CAROL DAVILA” UNIVERSITY OF  
MEDICINE AND PHARMACY**

**HABILITATION THESIS**

**THE COMPLEXITY OF PITUITARY ♦  
VITAMIN D AND ITS RELATIONSHIP WITH  
BONE MASS AND MUSCULAR FUNCTION**

**SENIOR LECTURER**

**DR. CRISTINA ANA MARIA CĂPĂȚÎNĂ**

**BUCHAREST 2024**



## HABILITATION THESIS

### SUMMARY

I am currently **Senior lecturer**, Discipline of Endocrinology C. I. Parhon National Institute of Endocrinology, Faculty of Medicine, Carol Davila University of Medicine and Pharmacy, Bucharest and **Consultant in Endocrinology**, endocrinology department I (previous department of Pituitary and Neuroendocrine Pathology), C. I. Parhon National Institute of Endocrinology (INECIP), Bucharest. My research activity was and is focused on two main directions: pituitary pathology (particularly pituitary tumors, their complications and management) and the relationship between vitamin D status and musculoskeletal health. In these two research fields I published 24 articles in ISI journals as main author (of them, **19** after obtaining the PhD title) and 21 as secondary author (of them, **12** after obtaining the PhD title), obtaining a **Cumulative Impact Factor main Author of 55.9 (48.5 after obtaining the PhD title) and a Hirsch index of 16.**

My first steps in the research of hypothalamo-pituitary pathology were early in my career, in the context of the admission (by competition) in the first cycle of doctoral studies. Then I worked at the main interest research area of my PhD coordinator, prof dr Coculescu, which was related to the presence and significance of pituitary hormones in the cerebrospinal fluid (CSF) of patients with pituitary adenomas. Later I focused on patients with pituitary tumors. The first significant paper in this field was the result of the retrospective analysis of patients with pituitary tumors diagnosed and followed in the Oxford Centre for Diabetes, Endocrinology and Metabolism (OCDEM), Oxford, aiming to characterise the subset of patients with pituitary apoplexy and revealing an increased risk of tumor recurrence in these patients. We also established an algorithm of differential management

for patients with pituitary apoplexy, in a paper that still represents a reference in the field. In other papers I dealt with the utility and potential longterm adverse effects of GH replacement (still underutilized in our country at that time), optimising the management of central adrenal insufficiency and, together with the distinguished prof dr John Wass, we established an algorithm for treatment of acromegaly. Following this preoccupation I analysed together with a group of colleagues from the department of endocrinology of the Carol Davila University of Medicine and Pharmacy, Bucharest, clinical base INECIP the results of the treatment of Romanian patients with acromegaly, proving a considerable increase of the cure/biochemical control rate in the last decades.

Other pathologies of interest in the field of hypothalamo-pituitary disorders were rare tumors such as gonadotroph functioning adenomas and craniopharyngiomas. These led to the design of an initial algorithm of differential diagnosis and treatment for functioning gonadotroph pituitary adenomas, the analysis of new pathogenesis data in craniopharyngiomas, the clinical characterization and assessment of the therapeutical outcome in the series of patients with craniopharyngioma followed in the university department where I currently work.

Another hypothalamo-pituitary pathology in the center of my research interes was Cushing's disease. Regarding this disorder I approached controversial subjects such as the management of surgically uncured patients, the prevalence and diagnostic and therapeutical modalities for thromboembolic episodes associated with hypercortisolism.

Another research interest was clarifying the tumorigenesis mechanisms in the most frequent sellar tumors by assessing some powerful candidate markers to identify stel cells. I also investigated the quality of life of patients with pituitary adenomas, proving that an adequate care in a tertiary endocrinology center allows maintaining a quality of life similar to that in the general population although the mortality remains slightly increased compared to that of the general population.

I coordinated the design and implementation of the **national registry of acromegaly** (developed with the help of a Pfizer grant for the national Society of Endocrinology). The main objectives of this registry are represented by collecting clinical and biochemical data as well as management and therapeutical results in patients with acromegaly, estimating epidemiological data, defining the individual treatments and therapeutical combinations, the treatment outcome in Romanian patients with acromegaly, trends in acromegaly treatment, changes in the surgical and radiotherapeutical results, the influence of preoperative medical treatment, data related to

comorbidities and mortality. This registry is functional since 2021 and I function as **regional coordinator regional for Bucharest university center** for this registry.

The research interest related to vitamin D deficiency and bone metabolism was the main research direction of my PhD thesis that I presented in public in December 2014: The effects of medium-term treatment with alfacalcidol on the muscular function and physical performance in women with vitamin D deficiency or decreased (coordinator Prof dr Mihai Berteanu). In this thesis I showed that cholecalciferol supplementation or treatment with active analogs of vitamin D (alfacalcidol) increase the muscular force and physical performance in adult women but the effect is much more significant for alfacalcidol, although its administration does not lead to an increase in serum 25OHD levels.

Another focus in this field was the estimation of fracture risk in subpopulations of patients in whom the FRAZ algorithm underestimates this risk, a significant problem dealt with in several other papers.

From the moment of the public presentation of the PhD thesis until now I have been involved in 2 national research projects, one whose main theme was the research idea followed during the doctoral study, the other related to the vitamin D deficit in HIV AIDS patients.

Starting from July 2019 I coordinate **the National Programme for evaluating vitamin D status by measuring serum levels of 25-OH vitamin D in persons at risk**. Within this programme have currently been included over 70.000 persons from the risk groups defined by the Ministry of Health. The results of the blood samples taken in this programme revealed consistently that the prevalence of vitamin D deficiency in subjects at risk is extremely high, underlining also the utility of targeted screening with the objective of early diagnosis and adequate correction of this deficit.

In my university activity I collaborated to both the first and the second edition of the manual for students and residents of the endocrinology department of the Carol Davila UMPH. The international collaborations established during the grants overseas also lead to 2 book chapters related to Cushing's disease in childhood and certain adverse effects of dopamine agonists. Until now my papers have reached over 790 citations in ISI Web of Science Core Collection. I function as a reviewer at over 90 specialised journals, I am also a member of several endocrinology societies.

For my research I obtained several prizes in national competitions. I am member of the editorial board of prestigious journals, I have been involved in the organization of scientific meetings.

The papers I published had a significant impact in the scientific community and reached a large number of citations leading to a current Hirsch index of 16 calculated in ISI Web of Science Core.

I coordinated several students who finalized their bachelors thesis in our discipline. I coordinated scientific sessions of the Scientific Society of Students in Medicine as well as the development of a large project of continuous medical education supported by Bucharest College of Physicians, a very detailed online course of osteoporosis. This addressed all the important educational points for both young doctors preparing to become endocrinologists but also for other doctors involved in the care of osteoporotic patients or even students. For specialists in endocrinology I frequently lecture in the setting of training courses of genetics in endocrinology, secondary diabetes mellitus, endocrinological oncology.

As organiser I contributed to organising different scientific and academic events— courses, symposia and national congresses, especially those organised by the Romanian Society of Endocrinology.

Since 2005 I participated frequently as member, president or secretary in different committees judging job competitions, bachelors theses or promotion examination either in different hospitals or within Carol Davila UMPH.

During my university career I was member in numerous contest committees (specialist or consultant certification), or job competition for positions of university assistant. I am also currently involved in the assessment of the activity of younger colleagues during their doctoral studies.

**Regarding my professional activity**, since June 2013 I am consultant in endocrinology. During my training as registrar in endocrinology I benefited from several training internships at OCDEM, Oxford University. These led to numerous publications and gained me appreciation from the prestigious international expert who gave me the honour to coordinate my work. My research activity in the field of neuroendocrinology led to the invitation to present several oral communications at scientific meetings, both in Romania and abroad. I was equally honoured to be invited to be a part of the **ESE Focus Group for Pituitary and Neuroendocrinology**. From this capacity I actively took part in organizing courses such as **ESE Clinical Updates** or took part in the **Programme Organising Committee for ECE Congresses**. I was also part of the **EndoCompass**, a project designed to establish research priorities in endocrine pathology, at the invitation of the same ESE workgroup.

As an essential objective in the future I set the continuous consolidation of both personal and institutional (Carol Davila UMPH) prestige both nationally and internationally. To that purpose I

intend to continue my professional development on each level— clinical, research and teaching activities.

The strong points of my previous activity are the predisposition for clinical research and careful results analyses, developing new research ideas, my previous experience in developing and unfolding research projects, reports writing, efficient dissemination and publishing of the results. I also intend to become familiar with new techniques of fundamental research in order to create an optimal basis for research ideas and development. These abilities will allow the design of research grant proposals. I also intend to carefully plan the dissemination of the scientific results, an essential step in gaining optimal visibility of the scientific activity.

The international experience obtained by working in collaboration with prestigious research and teaching institutions will be used to develop and improve the activity of the discipline in Carol Davila UMPH and CI Parhon National Institute of Endocrinology. Young students, doctorands, researchers and registrars will be stimulated and supported in developing members of the national and international endocrinology societies and to benefit from all available study and financing opportunities (travel and meeting grants, lab visit grants, early career grants). I will continue the networking aimed at developing the international collaboration in order to support even more these activities.

The objectives and principles in developing the research career development are represented by: obtaining scientific results with clinical applicability, increasing the number of papers in high visibility journals (ISI, BDI); recruiting and supporting young researchers; interdisciplinarity; improving the access to performant research infrastructure; efficient knowledge transfer; extending international collaboration, researchers mobility; ensuring proper ethics of the research process, correlating research, educational activities with clinical practice, consolidating the research team already existent in our discipline, identifying and involving in clinical research activities students and registrars with an interest in clinical or fundamental research activities, active dissemination of the results.

For success in academic career I believe that team work, developing common collaborations and projects, good time management and the ability to efficiently disseminate the results are essential points. The motivation behind this habilitation thesis resides in this consciousness of belonging to a remarkable team, with an exceptional scientific and human structure and with deep profound respect

for the academical values and srtong wish to further transmit to younger colleagues the permanent need for progress and continuous training.