

**CAROL DAVILA UNIVERSITY OF  
MEDICINE AND PHARMACY  
BUCHAREST**



**HABILITATION THESIS  
ABSTRACT**

**CLASSIC AND MODERN STRATEGIES FOR  
ASSESSING THE BIOCHEMICAL AND  
TOXICOLOGICAL PARAMETERS  
CORRELATED WITH OXIDATIVE STRESS  
AND ASSOCIATED PATHOLOGIES**

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## SUMMARY

The habilitation thesis, entitled “CLASSIC AND MODERN STRATEGIES FOR ASSESSING THE BIOCHEMICAL AND TOXICOLOGICAL PARAMETERS CORRELATED WITH OXIDATIVE STRESS AND ASSOCIATED PATHOLOGIES,” systematizes the most important scientific, professional, and academic results that I achieved after obtaining my PhD (2006), as well as the development plans that I will consider in the future from a scientific, academic, and professional point of view.

The thesis is divided into two main sections. *In the first part of the thesis*, there are summarized and briefly presented selections from the multiple scientific, professional and academic achievements from recent years related to the evaluation of biochemical and toxicological parameters in various pathologies (the personal bibliographic references and the correlation with the updated data from the specialized literature are being indexed in the thesis). *The second part of the thesis* presents the strategies I will follow to develop my scientific, professional and academic research directions in the field of bioanalyzes.

*In the first part of the thesis*, which concentrates on the main directions of research, I presented studies on evaluating the toxicity of transitional metals and oxidative stress in various pathologies, anemia, allergies, brain tumors, and pancreatitis, by applying classical methods (spectrophotometric, chromatographic, immunochemical) and modern analysis methods (sensors and biosensors).

My training and scientific development so far has been carried out in mixed teams in which I have either been a member (25 projects out of which 2 are international) or a project coordinator role (10 of which 6 are international).

My research activity was recognized by the publication of 29 scientific articles included in the ISI Web of Science system (12 as main author), books and book chapters, participation in international and national scientific research projects, obtaining national awards, and being a part of the review team of journals included in international databases.

Another distinct chapter of the habilitation thesis follows *my professional and academic activity* from my graduation from university until the present day.

Completing the bachelor studies through specialized postgraduate studies was materialized by obtaining the corresponding titles and diplomas attesting the Master's in "Medical Biophysics and Cellular Biotechnology" (2013), PhD in Pharmacy (2006), both obtained at UMF "Carol Davila". Details of professional training through participation in international scholarships (Slovenia, Belgium, Portugal, Spain) and continuing education projects (project management, training of trainers, etc.) are mentioned.

I have been working in the Biochemistry Discipline of UMF Carol Davila Medical Faculty since 2001; I went through the competition stages of preparatory assistant, assistant, lecturer and associate professor. As a "teacher", I held courses and seminars for first-year and second-year students (Romanian and English Modules), medical residents of laboratory medicine, master students.

As a result of my collaborations with students from the Faculty of Medicine, I obtained awarded scientific papers at international and national conferences, joint papers published in journals included in international databases, bachelor papers, and dissertation papers (in collaboration with other universities in the country) appreciated with very good qualifications.

I actively participated in the CEEPUS program (Slovenia) or ERASMUS program (Italy), as a lecturer doing teaching activities in the host universities.

My constant work in the educational field was materialized by winning, as a local coordinator, international projects within the program (CEEPUS) in which, acting in international teams, teachers and students (master and doctoral students) from Romania (Brasov, Bucharest, Cluj-Napoca, Constanta, Târgu-Mureș, Sibiu), Italy (Milan), Slovenia (Nova Gorica, Ljubljana), Czech Republic (Prague, Pardubice), Croatia, Macedonia, etc. were involved. As a result of these educational projects, new subjects/modules were introduced in the curricula of the partner universities, itinerant courses were carried out, educational and research studies were carried out jointly (materialized through

joint articles, participation in international conferences in mixed teams), new teaching materials were made and used in the education process (specialized books, courses, e-book, evaluation tests, video materials).

The scientific, professional and academic experiences are also revealed by my participation in the coordination and organization of various international conferences (International Conference – New Trends on Sensing-Monitoring-Telediagnosis for Life Sciences (from 2014 until present)), which had as the main goal the support of the national strategy for research, development and innovation, taking into account the support and promotion of interdisciplinary scientific research and/or exploration in Romania.

*In the second part of the habilitation thesis*, I have presented the development plans for the directions of scientific research, professional training and academic development to be followed in the future.

A special area of my long-term research, which will continue the studies initiated lately, which will have as a key element the transitional metals – implications in various diseases (rare diseases, mitochondrial, neurological, etc.) by addressing their assessments both by classical methods and by modern methods of detection. Phytocompounds, their analysis, and the approach of pathologies from this perspective are other research directions. In this context, we initiated new collaborations with partners from Slovenia and Portugal, specialized in the analysis of phytocompounds and their testing in different cultural environments, but also keeping a close connection with the research team from the University Las Palmas de Gran Canaria (Spain) so that future doctoral students can develop part of the doctoral theses possibly in a joint study, considering that the proposed topics are of interest for the teams abroad.

I intend to participate in future projects in national and international competitions in the biomedical field, in mixed teams involving experienced researchers and young researchers from universities in the country (especially from the Transilvania University of Brasov and the „Carol Davila” University of Medicine and Pharmacy of Bucharest) and abroad.

Being a university teacher for many years, I was glad that I managed to involve students in scientific research activities. The research topics were in the field of biochemistry and were completed as undergraduate papers and as

articles published in specialized journals of international circulation. The results obtained are an additional motivating factor to continue the research activity in the biomedical field, together with young students, master students and, in the future, with PhD students in medicine. I will consider increasing the number of active researchers and strengthening the critical mass of young researchers (Romanian and international) necessary to participate in new interdisciplinary projects and to achieve scientific performance. I believe that together with the young researchers (PhD students, master students, students from the bachelor programs) and with the support of the collaboration of colleagues with proven experience from the medical faculties in Romania and beyond, I can deepen and continue these teaching and research directions, always aiming to identify new opportunities for developing and implementing innovative strategies and new educational technologies.