1. Summary

The university career represents a harmonious blend of didactic-academic activities with scientific research.

I did my first didactic and research activities within the Drug control department at the Faculty of Pharmacy from the "Iuliu Hatieganu" University of Medicine and Pharmacy in Cluj-Napoca. I carried on the researching tradition of my teachers in the field of analytical method development of active substances, alone or in pharmaceutical dosage forms and I performed stability studies on medicine. The research I have done during this period of time led to the completion of the doctoral thesis: "Stability study and analytical characterization of ciprofloxacin". In the meantime I contributed to the development of the discipline "Biological medicine and the biological control of medicine".

After I finished the doctoral thesis, I transferred at the Faculty of Technology of Textiles and Food Products from the "Lucian Blaga" University of Sibiu, where I assumed the disciplines of Food chemistry and Biochemistry. The experience I gathered during this time period allowed me to transfer my knowledge from the analysis of medicine to the analysis of food products. I continued the research activity regarding the medicine analysis amongst the research group of the Faculty of Pharmacy from Cluj-Napoca.

From the year 2005 I assumed the Biochemistry discipline at the Faculty of Medicine from the "Lucian Blaga" University of Sibiu, where I started my collaboration with my colleagues from the department of medical sciences.

Considering my complex professional career, the lines of research that I followed after the completion of my doctoral thesis are: the analysis of medicine, stability studies of medicine, the analysis of biological active compounds from medicinal plants and biomedical studies.

In my so far activity I collaborated with experts in the pharmaceutical and medical field, with chemists and physicists, which led to the obtaining of complex results.

My didactical activity, as an important part of the academic activity, has materialized through the publishing of 9 books for students and future students, like the Chemistry Tests for College Admission.

The research activity was materialized by the participation on 7 research grants (project member, responsible or manager), the publication of over 45 papers in trade journals, including 15 ISI papers and presentations at many scientific manifestations in the scientific field.

The analysis methods that I developed for the study of medicinal substances or pharmaceutical dosage forms are: spectral methods (UV-VIS, NMR, NIR) and chromatographic methods (thin layer chromatography and high performance liquid chromatography).

The most modern and efficient methods of identification and quantification of the active compounds from drugs and vegetal products are the chromatographic methods (HPLC). That is why I focused on the development and validation of these methods. But a very important part of the research is based on spectral methods. The UV-VIS spectrophotometric methods are still frequently used in the chemical and biochemical analysis because they are fast, sensitive and efficient when used in certain domains.

Before obtaining any marketing authorization for a new medicine (original or generic), stability studies need to be conducted. These study the stability of the medicine, meaning the development of several degradation substances in normal conditions of storage and/or conditions of accelerated degradation. The methods used in order to perform these studies were the HPLC methods.

Other line of research was the determination of the serum levels of IL-6, IL-8, TNF-α and leptin from patients with chronic kidney failure that were

subjected to hemodialysis. A decrease in the levels of leptin was determined alongside with a significant increase in IL-8 levels.

Other studies were focused on the treatment of epileptic patients with sodium valproate and levetiracetam. The intra venous administration of sodium valproate demonstrated efficiency in stopping the epileptic status and of underlying seizures, especially to patients with comorbidities. The intravenous administration of levetiracetam can be considered the second line of treatment of the seizures in epilepsy.

In the accreditation process for clinical laboratories, the determination of the reference range values represents an important objective. Thus, together with medical scientists and chemists, we established the reference range values for the hemoglobin and ferritin of children considering age groups. The reference range values are essential for the interpretation of the laboratory results, in order to make medical decisions (normal or pathological values).

The determination of biological active compounds from medicinal plants and the exploitation of the therapeutic potential of these plants represent a topical domain. The species *Salviae* and *Plantago* are medicinal plants that are well known for their antioxidant properties. This is why I evaluated their antioxidant activity through the comparative study of two vegetal sources from two different areas in Romania. The results obtained demonstrated that the species of *Salviae* are rich in polyphenols and the species of *Plantago* are rich in flavonoides, thus their association could possess beneficial effects.

In the university career development I keep two aspects in sight: the didactic plan and the scientific research plan.

For the didactic plan I will pursue the development and modernization of the courses, the practical work sheets and the approach of new and modern teaching and evaluation methods.

For the scientific research plan I will use the acquired knowledge from my past activity in medical research like: the tracking of several serum markers in

order to evaluate treatments or the evolution of disease; the tracking of drug interactions and the effects of several treatments on biochemical parameters.

In order to achieve a high level research, I believe that a close collaboration amongst experts in the medical field is essential.