”VICTOR BABEŞ” UNIVERSITY OF
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# THE COMPREHENSIVE USE OF CLINICAL, GENETIC AND LABORATORY BIOMARKERS TO ASSESS TUMOR PROGRESSION IN THE PRACTICE OF CLINICAL ONCOLOGY

## ABSTRACT

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I indicated in the habilitation thesis my main academic, professional and scientific achievements. I am a senior physician, a specialist in medical oncology, PhD, an associate professor, and coordinator in medical oncology residency. At this moment, I am the head of the Oncology Department of the University of Medicine and Pharmacy "Victor Babeș" Timișoara, the vice-president of the Romanian National Society of Medical Oncology and the vice-president of the Oncology Commission of the Ministry of Health. Since 2005 I am the president of the OncoHelp Association and I built through this association the largest multidisciplinary oncology hospital in the western part of the country. I have participated in over 40 clinical trials as a principal investigator, study coordinator or sub-investigator. I organized numerous conferences on oncological topics, developed a series of teaching materials, and conducted multiple undergraduate theses.

My main field of research has been to **identify tumour biomarkers** with clinical applicability for medical practice. The role of tumour biomarkers is essential in the usual practice for diagnosis, prognosis and treatment. I evaluated a series of potential biomarkers and the results were materialized in numerous publications in this field.

To evaluate some **genetic markers,** I analyzed, within a multinational team, the ***mutations of the RAS signalling pathway*** in colorectal cancer in a mixed population of patients in Romania and Greece. This mutation is one of the most important elements of the therapeutic decision in metastatic disease. I showed the frequency with which these mutations occur in the analyzed populations, their specific differences and their clinical and pathological implications. In a similar population, I also assessed the ***mutations involved in hereditary breast and colorectal cancer syndrome*** by performing the analysis of a complex panel of genes with a role in these diseases. I have shown the most common mutations responsible for hereditary cancers in the Balkans and the methods by which these mutations are most accurately detected.

I collaborate with other colleagues in evaluating **serum markers.** I analyzed the ***potential of plasmatic microRNAs*** as biomarkers for early detection in prostate cancer. I have shown that microRNA-150-5p is best suited for this purpose. I evaluated how the ***level of specific chemokines*** in plasma breast cancer changes and the association of these changes with certain clinical and pathological features. I

showed that CXCL8 and CXCL10 are associated with unfavourable clinical and pathological factors, that CXCL9 can identify a subgroup with a favourable prognosis in ER-negative breast cancers and that the CXCL8, CXCL9 and CCL22 panel has the potential to identify breast neoplasms specifically. I analyzed the ***level of hypermethylation of some genes*** as a potential biomarker of an early prostate cancer. I have shown that the level of GSTP1, RASSF1A and RARbeta2 genes hypermethylation may be useful in identifying malignancy in the prostate and this hypermethylation is associated with the PSA and Gleason score.

During the evaluation of some **clinical markers,** I retrospectively analyzed a series of patients with metastatic non-small cell lung cancer treated with immunotherapy and showed which biomarkers are possible predictors of the response to this type of treatment. I retrospectively analyzed patients who underwent cisplatin chemotherapy and indicated potential protective factors for renal dysfunction induced by this treatment - female gender, young age, weight (BMI of 25-30 kg/$m^2$), absence of anaemia at onset. I evaluated hemogram values in patients undergoing chemotherapy and showed that the progressive reduction in haemoglobin depends on the type of chemotherapy used and the initial clearance of creatinine. I have also demonstrated that anaemia appears more quickly during cytostatic treatment in obese or extreme ages. I analyzed a number of patients with pericarditis and cancer and shown that pericarditis is a common symptom associated with progressive cancer, which can be considered the alarm signal to determine a possible recurrence / progression as fast as we can.

In the next period, I intend to develop clinical research in the field of oncology in the western part of the country. I intend to engage in doctoral and postdoctoral research with as many young people as possible during their specialization period. I will try to harmonize the collection of specific data at a national level for retrospective analyses. I will try to identify an algorithm for predicting the response to immunotherapy in lung cancer. I will further develop the OncoHelp Cancer Center and the Romanian National Society of Medical Oncology. I will develop the Oncology Department within UMF Timișoara by attracting new members and organizing multiple postgraduate courses.