ABSTRACT

Since 2010 until present I am a Researcher at the Research Center for Functional Genomics, Biomedicine and Translational Medicine from the "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, and I have obtained a PhD in Biotechnology (MEC Order no. 5837 of 04.11.2008). I have over 15 years of experience in fundamental and translational research (cell toxicology, cellular viability, invasion, migration, apoptosis and transcriptomics).

Until present, I have actively participated in more than 20 national and international scientific projects in several fields, including oncology, immunology and nanotechnology. The research results were presented in one book, one immunology course, five international book chapters, two national book chapters and two patents proposal. I am the main author of 95 ISI papers (of which 27 as first author, four as the corresponding author, two as the last author), with a total impact factor of over 3400 points and over 1500 citations. My h-index (web of science) is 27, and my contribution to Science can be accessed here following this link: https://www.ncbi.nlm.nih.gov/pubmed/?term=braicu+c.

My main field of interest is related to functional genomics studies integrated under the concept of translational medicine. In the last years, I gained experience in the analysis of coding and non-coding genes profiling, particularly in several types of cancer (breast, cervical, ovarian and prostate cancer), for prevention, early diagnosis and response to therapeutic agents in oncology. Also I mention that I have expertise in the field of RNA interference, drug resistance, with important implication on establishing new therapeutic strategies.

The most important studies were based on the translational medicine concept, and personalized medicine requirements in different tumour localisation like: breast, ovary, prostate, bladder and colorectal. This allows to accelerate the process of understanding, can highlight the many facets of diseases, such as the data presented for breast, bladder and colorectal cancer. The evaluation of the transcriptomic profile leads to a better knowledge of the biogenesis mechanism and their cellular mechanisms and allowing a better knowledge of multiple oncogenic cascades, as can be seen from the data presented.

The second half of the thesis presents a part of the studies related to understanding the drug resistance mechanisms. Drug resistance continues to be the main constraining factor for attaining remedies in patients with cancer. The difficulty of drug resistance in cancer has strong correspondences to the field of infectious disease, confronted by intrinsic or extrinsic factors. The problem of resistance to therapy in cancer is multifaceted, as was observed in our recent publication on triple-negative breast cancer. These studies allowed the development and characterisation of two cell lines resistant to doxorubicin and paclitaxel. In this context, these novel developments can be further used for the evaluation of novel small molecules combination, being a starting point for cutting-edge research directions.

As for the new research direction, we have in mind to develop a test battery based on organoids and microfluidic system technology for better prediction drug response. It will be focused on developing suitable testing model systems to identify drug targets, screen toxicity, and demonstrate clinical drug efficacy, considering the complex tumour microenvironment.

The research career development plan includes an innovative approach in an interdisciplinary context using high-performance technologies to develop the concept of personalized medicine and treatment for chronic non-communicable diseases. This direction represents the central pillar proposed to carry out my activities in the next years of my career.

Through the proposed research activity, the main aim is to participate in strengthening research, technological development and innovation in the field translational research. This will be achieved by converting science into action, in parallel with the ability to build and sustain relationships between

scientists, from an interdisciplinary perspective, support training activity for the new generation of scientist and promoting the increase of national and international visibility of the host institution.