

Stem Cells – types, characteristics, differentiation. Tumoral pathology of the digestive and nervous system

Abstract

In this habilitation thesis I have presented the scientific work I carried out following the defense of my PhD thesis in 2012. The activity in question has been quite significant, materialized in the publication of articles in journals with a high impact factor. I have also carried out research activities in the framework of several projects, as project manager, leader, or member. All this work has been the basis for the present habilitation thesis. The directions I have followed reflect my background as a pathologist, but also my passionate interest in the field of stem cells. These are the two directions on which I have passionately focused my work.

In the field of stem cells I continued the experiments carried out for my PhD thesis, a significant outcome being the development of protocols leading to the differentiation of placental stem cells into pancreatic progenitors and cells capable of secreting insulin. These experiments are an important step forward in our understanding of how cells differentiate in the body and can be used in cell therapies. An important part of my scientific work involved directing a project that aims to translate these results, achieved after more than ten years of stem cell research, into clinical practice. This has been an extremely interesting experience which also helped establish a partnership with private companies involved in stem cell banking. It is important to mention here that these research activities in the field of stem cells led to a patent.

As for the second area, the study of pathology, here I dealt with matters pertaining to digestive, and neurological pathology. I shall only mention here the results obtained during my internship in Paris, which resulted in the publication of an article showing for the first time the role of the STAT3 transcription factor in the epithelial-mesenchymal transition of gastric cancers. In recent years, I have also carried out scientific work in the field of brain tumors and in that of fetal brain development. These have resulted in the publication of several articles and of two chapters in books published abroad. During this period I have also carried out didactic activities in this field, publishing a book on stem cells written together with the other faculty members teaching this discipline. It is the first book devoted to this topic published in our country.

In the future I want to continue the lines of research already started and developed, but I also intend to become involved in the educational process by implementing digital microscopy in our discipline and integrating it into a complex educational management system to be used at university level.