Adult human mesenchymal stem cells and metastatic cancer; “the angel and the devil”?

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Due to proliferative and differentiation potential, adult stem cells are looked upon as promising cell sources for different regenerative therapies. Stem cells induced immunomodulation is of importance for inflammatory and degenerative diseases, as well as for cancer treatment. A close look at adult stem cells biology, properties, characteristics and biological functions, reveals the fact that cancer and stem cells share common cellular characteristics. The maintenance of high proliferative potential, the migratory and homing (“invasiveness”) capabilities, telomere length, telomerase and reverse transcriptase activity and gene expression are only a few of biological characteristic or processes defining in the same time the proliferative, potential reparatory, and the malignant invasive, potentially lethal, phenotype. The paper offers a comparative review of some essential biological processes adult human mesenchymal stem and metastatic cancer cells are involved in. It further proposes a method of computational identification of shared pathways and common expressed genes and proteins. Comparative analysis of accumulated knowledge in the field of adult stem cell biology and metastatic cancer cells has the potential in offering new insights for experiment design in both fields of interest. One of the major threats of therapeutic stem cells manipulation, tumorigenesis can be better understood and successfully prevented. Improved understanding of metastatic cancer cell biology is expected to deliver new therapeutic targets. Regenerative medicine strategies as well as cancer treatment can benefit the proposed systemic comparative approach.

Biography

Luminita Labusca is an experienced senior orthopedic surgeon with interest in knee and arthroscopic surgery, cartilage repair and bone metabolic diseases; has completed her PhD in regenerative medicine and worked as a fellow researcher in REMEDI Galway Ireland. She is the medical advisor in SBIM, a Bio-Informatics and Modeling Frankfurt based company providing services for data mining, bioinformatics and advanced statistics and computer modeling. She is the founder and president of REGENERO Romanian regenerative medicine association and associate professor in stem cell biology in University of Medicine and Pharmacy Iasi Romania

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