



Special Issue

Circulating Tumor Cells: Diagnostics and Clinical Applications

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Special Issue Introduction

Major cause of relatively high mortality in cancer patients are due to the dissemination of tumor cells from primary tumor to distance organs which cannot be detected early by present imaging technology. However, one of the most promising development in cancer diagnosis & therapies is an introduction of Circulating Tumor Cells (CTCs) as a minimally invasive technology for monitoring the therapies of metastatic cancers. CTCs are originating from shredding of solid tumor cells in blood circulation and represent the tumour counterpart in vivo. Enumeration and molecular profiling of these CTCs in peripheral blood of metastatic cancer patients allow clinicians to monitor intensity of metastasis cancer along with tumour cell phenotypes for using molecular targeted therapy for better cure. These liquid biopsies allow the characterization of specific biomarkers of CTCs in metastatic cancer patient more precisely than the old method of histopathology of biopsy specimen. Therefore this technology may revolutionize cancer detection and possible therapies for metastatic cancer in near future. However, it remains technically challenging because of very low concentration of CTCs in blood stream of cancer patients and there is a need for establishing well standardised protocol for enumeration of these CTCs according to their original phenotype. Molecular characterization of CTCs is one of the most active areas of translational cancer research and soon, CTCs characterization will contribute to have very specific targeted therapies for metastatic cancer patients and become the hallmark of Personalized Medicine. This special issue on "Circulating Tumor Cells: - Diagnostics & clinical application" mainly discusses an important technical and theoretical aspects of CTCs technologies, including validation of enumeration of CTCs protocols and establishment of various biomarkers involved in cancer development by innovated molecular technologies. It also further evaluates an exact mechanism of metastasis process of various cancers for more specific treatment and cure of this disease.

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