Editorial

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Cancer Stem Cells:An Overview

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Description

Research has shown that cancer cells aren't all an equivalent. Within a malignant neoplasm or among the circulating cancerous cells of a leukemia, there are often a spread of sorts of cells. The somatic cell theory of cancer proposes that among all cancerous cells, a couple of act as stem cells that reproduce themselves and sustain the cancer, very similar to regular stem cells normally renew and sustain our organs and tissues. In this aspect, cancer cells that aren't stem cells can cause trouble, but they can't sustain and attack on our bodies in future.

(CSCs) are cancer cells (found within tumors or hematological cancers) that possess characteristics related to normal stem cells, specifically the power to offer rise to all or any cell types found in a particular cancer sample. CSCs may generate tumors through the somatic cell processes of self-renewal and differentiation into multiple cell types. Such cells are hypothesized to continue tumors as a definite population and cause relapse and metastasis by giving rise to new tumors.

CSCs are defined by their ability to urge more SCs (self-renewal) and to provide cells that differentiate. Asymmetric cellular division achieves both tasks, together progeny retains SC identity and therefore the other undergoes rounds of cellular division and subsequent post-mitotic differentiation. Consensus has not yet been reached on the standards for classifying CSCs and thus it's not been possible to definitively define the proportion of CSCs sub population during a given tumor, the relevance of CSCs to clinical outcome, and the origin of CSCs. Initially, CSCs were believed to represent a little fraction of the complete cell population during a solid tumor, however, it has been claimed that as many as 25% of cancer cells may have the properties of CSCs. There are multiple theories regarding the origin of CSCs. One of the theories believes that CSCs arise from normal stem cells which attain the power to get tumors when encountering a special mutation or environmental alteration. Some cancer stem cells exhibit similarities with the normal stem cells in cellular property, phenotype, function, etc. For example, the *CD44+/CD24−*/low cell population identified as mammary gland progenitor cells resembles the *CD44+CD24−*/low Lineage− cells used to identify CSCs from breast cancer patients.

Another important implication is that the cancer stem cells that produce to metastases, that is, when cancer travels from one a part of the body to another, and it may also act as a reservoir of cancer cells that may cause relapse post-surgery, radiation or chemotherapy has eliminated all observable signs of a cancer.

Existing cancer treatments have mostly been developed supported animal models, where therapies ready to promote tumor shrinkage were deemed effective. However, animals don't provide an entire model of human disease. In particular, in mice, whose life spans don't exceed two years, tumor relapse is difficult to review.

Gradually it has become clear that multiple number of tumors harbor CSCs in dedicated niches, and yet their identification and eradication has not been as obvious as was initially hoped. Recently developed lineage-tracing and cell-ablation strategies provide insights into CSC plasticity, quiescence, renewal, and therapeutic response.