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Cancer stem cells and challenges

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Cancer arises from the uncontrolled growth and division of cells. Treatments are ineffective and an extension of life is good rather than a cure. However treatments may appear to be successful, but the cancer retune in future. Within any tumour, there are many different kinds of cancer cell, only some cells are killed by a particular treatment. Cancer stem cells (CSCs) are cancer cells that possess characteristics associated with normal stem cells, including self-renewal and differentiation to all cell types. This tumor cells are inherently resistant to radiation and chemotherapy and cause relapse and metastasis by giving rise to new tumors. These cells can be identified by Hoechst dyes via multidrug resistance (MDR) and ATP-binding cassette (ABC) Transporters. A number of cell surface markers have proved useful for isolation of CSC including CD133, CD44, CD24 and ATP-binding cassette B5 (ABCB5). The existence of CSCs has several implications in terms of future cancer treatment and therapies. Include identification, selective drug targets, prevention of metastasis, and development of new intervention strategies. Understanding the biology of cancer stem cells will contribute to the identification of molecular targets important for future therapies.

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