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The challenge of targeting cancer stem cells to halt metastasis

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Abstract

Despite a continuing debate about the existence of cancer stem cells (CSCs), recent discoveries have provided further support for their existence and their roles in drug resistance, cancer recurrence and metastasis. CSC characteristics, such as self-renewal and tumour initiation, and supporting cellular processes, particularly the epithelial-to-mesenchymal transition, are attracting a great deal of attention from cancer researchers as they offer opportunities for discovering novel therapeutic targets for future drug development. However, the identification of potential CSC targets presents clear obstacles due to a lack of truly specific CSC markers and the reality of CSC plasticity, making this task a significant challenge. Agents that target developmental signalling pathways, such as Notch, Wnt and Hedgehog, are now in clinical trials whilst alternative approaches including immune-based therapies and microRNA-mediated pathway inhibitors are producing promising pre-clinical results. Here, we discuss the contribution of CSCs to cancer metastasis and the scope of opportunities for therapeutic

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