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## Targeting cancer stem cells in hepatocellular carcinoma: Therapeutic opportunities and challenges

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Hepatocellular carcinoma remains one of the most prevalent malignancies worldwide with chemoresistance and recurrence being the major hurdles leading to the failure of conventional anti-cancer treatment. Acquired resistance and metastasis are the two key challenges thought to be caused by cancer stem cells (CSC), a sub-population of cancer cells with stem cell properties, which are enriched upon conventional chemo- or radio-therapy. Numerous lines of evidence unravel the molecular mechanism underlying differential phenotypic behaviour of CSC, importantly; (1) the stem cell related signaling pathways, including Wnt/ $\beta$ -catenin, Sonic Hedgehog, Notch and PI3K/Akt/mTOR, (2) microRNA and epigenetics (3) the epithelial-mesenchymal transition and (4) evading from the immune system. Acquisition of these properties masking CSCs from being targeted by anti-cancer agents. Therefore, development of new strategies and discovery of inhibitors/lead compounds to enhance the chemosensitisation in CSC via reversal of EMT, modulation of critical regulators such as signaling pathways, microRNA and epigenetics, have the potential to be developed as an adjuvant anti-cancer treatment modalities. The current effort are channeled towards the development and formulation of these molecules using nanotechnology approaches to overcome the pharmacokinetic and pharmacodynamic drawbacks in order to develop an effective and targeted therapy for eradicating cancer.

### Biography

Thamil Selvee Ramasamy earned her PhD in Clinical Medicine Research Programme from Imperial College London, UK. Currently, she serves as the Head of Cell & Molecular Biology Laboratory, Central Research Facility and as a Senior Lecturer at the Department of Molecular Medicine, Faculty of Medicine, University of Malaya. She has been actively engaged in stem cell research for a decade now and been invited to present the research findings in many national/international meetings. Currently, she also serves as the President of Tissue Engineering and Regenerative Medicine Society of Malaysia. She acts as a Sub-editor and Peer-Reviewer of a number of academic journals.

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