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## Do mesenchymal stem cells and other similar adult stem cells home to tumors where they favor tumor growth: If so, can we use them in clinical trials safely?

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Mesenchymal stem cells (MSC) and other adult mesenchyme (such as adipose derived stem cells (ADS)) are multipotent progenitor cells that exhibit a marked tropism for tumors. We have demonstrated that MSC and ADS form a tumor's fibrovascular network; differentiating into tumor stromal elements such as tumor-associated fibroblasts (TAFs), and vascular pericytes. Despite extensive investigations by us and numerous other groups over the past 10 years, the impact of unmodified MSC on tumor progression remains unclear. Many studies have shown that MSC promote tumor progression and metastasis while other studies report that MSC suppress tumor growth. The reason for this discrepancy is unknown.

The tropism of MSC for tumors makes MSC uniquely destined to function as cellular delivery vehicles for antitumor agents and in our experiments the production of antitumor agents by MSC is likely to overcome any endogenous tumor-promoting effects. However naive MSC are being administered in increasing doses to patients for numerous regenerative medicine and noncancer therapies, unaware if these patients are harbouring any hidden malignancies. While, no evidence of tumor formation has been reported in over 1,000 patients treated with MSC for a variety of indications, so far, the possibility of MSC promoting tumor growth and metastasis raises concerns about the safety of their use as clinical tools. It is therefore important to determine under what conditions MSC enhance or retard tumor growth and to understand their role in tumorigenesis.

## Biography

Frank C. Marini completed his PhD at the University of Texas Health Science Center- M.D.Anderson Cancer Center focused on elucidating the role of tissue resident progenitor cells on tumor formation and progression. During the past 15yrs his group were the first to report the tropism of adult mesenchyme for tumor microenvironments, and their function in tumors as fibrovascular, structural, and vascular elements. He has published over 70 papers and sits on numerous review boards and study sections focused on stem cells, adult stem cells, and pathobiology of tumors. He is currently a professor at Wake Forest Institute of Regenerative Medicine.

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