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**BONE MARROW DERIVED MESENCHYMAL STEM CELLS FOR THERAPY OF PANCREATIC CANCER**

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**Introduction:** Human mesenchymal stem cells (MSCs) may participate in repair of damaged tissue. Homing of MSCs to gliomas has been demonstrated already. MSCs have attracted much attention for their potential as attractive target cells for gene delivery to solid tumors.

**Materials and Methods:** Autologous MSCs from BM were isolated by Ficoll centrifugation, plastic adherence and selective culture media. Specific migration was detected by transwell assays. The phenotype of manipulated MSCs was confirmed by growth curves and transdifferentiation assays. Sprouting assays were used for analysis of MSCs' angiogenic potential. siRNA oligonucleotides of HIF-1, VEGF and the death ligand TRAIL were cloned in lentiviral vectors to transfect MSCs. In vivo migration was studied using an orthotopic pancreatic cancer model. **Results:** BM-derived MSCs were selected and a 100% transduced MSC population expressing the lentiviral transferred GFP marker gene and therapeutic genes could be enriched. The lentiviral transduction does not alter the MSCs phenotype and transduced MSCs keep their differentiation capacities. Injection of lentiviral GFP-expressing MSCs into the tail vein of nude mice demonstrated in vivo homing of MSCs to the tumor and migration. Moreover MSCs significantly enhanced the sprouting potential of endothelial cells in spheroid assays.

**Conclusion:**

Lentiviral gene transfer in autologous MSCs does not change their multipotent differentiation phenotype in vitro and maintains their capacity to selectively home to tumor tissues in vivo. Furthermore MSCs enhanced tumor angiogenesis and may promote pancreatic cancer growth. Thus MSCs may be a new tool for cell based therapeutic approaches in pancreatic cancer.