

**STEM CELLS: MSCs Structure Regenerative Microenvironments**  
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The regenerative repair of injured or excised tissues require several components including a sufficient supply of reparative cells, the space to regenerate the missing tissue, and the cytokines and growth factors to molecularly induce and manage the reparative events. Adult Mesenchymal Stem Cells (MSCs) can not only differentiate into specific mesenchymal cell types, but they are able to secrete cytokines and growth factors that are capable of establishing a regenerative microenvironment. Indeed, allogeneic MSCs are able to function in this capacity because some of the secreted bioactive molecules are immuno-repressive for T-cells. Other secreted bioactive factors are angiogenic, anti-apoptotic, anti-scarring, and mitotic for instructive stem or progenitor cells even in older individuals. Data will be presented to show that MSCs can have a positive effect on bone marrow stroma, heart, kidney, spinal cord, meniscus, tendon and brain. The establishment of this therapeutic milieu involves either natural or culture extracted MSCs. Supported by grants from NIH.