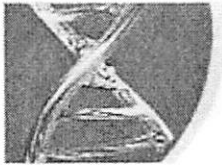


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## SP0054 The Many Faces of Mesenchymal Stem Cell Immunomodulation

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### Abstract

Mesenchymal stem cells (MSC) initially isolated in bone marrow have been since identified in other tissues including adipose, synovium, periosteum, perichondrium, dental pulp and tonsil. These cells are characterized by their phenotype and their capacity to differentiate into chondrocytes, osteoblasts and adipocytes. Moreover, MSC potently modulate immune responses, display healing capacities, prevent fibrosis and improve angiogenesis. Taking into account these unique properties, an interest in MSC research has increased over the last decade bringing them into the clinic as a novel therapeutic tool for a variety of autoimmune diseases. The justification to use MSC for the treatment of autoimmune diseases was initially shown in experimental autoimmune encephalomyelitis (EAE). Then, for the treatment of refractory Crohn's disease the use of autologous bone marrow derived MSC also revealed a significant improvement of the clinical condition of the patients. In patients with systemic lupus erythematosus (SLE) although initial studies using autologous MSC led to unsatisfactory results more recent investigations reported a therapeutic effect of allogeneic MSC. Along with these encouraging results obtained with MSC, their mechanisms of action are still under investigation. Lately, we extensively studied the mechanisms involved in the immunomodulatory properties of MSC both *in vitro* and *in vivo*. First, we showed that MSC contribute to the generation of an immunosuppressive environment via the inhibition of proinflammatory T cells and the induction of T cells with a regulatory phenotype. More specifically, we showed that MSC inhibitory effect on the Th17 cell development in favour of the generation of regulatory T cells is mediated

by a Giltz-dependent Activin A production. In contrast, on mature Th17 cells we described a cell-to-cell contact depend mechanism mediated through the up-regulation of PD-L1 expression by MSC. *In vivo*, in a murine model of rheumatoid arthritis (RA) we demonstrated the requirement for Giltz in the therapeutic effect of MSC mediated in part through the generation of regulatory Th17. The suppressive function of MSC confers on them the potential to be used for therapeutic applications in autoimmune diseases.

Disclosure of Interest None declared

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