P-525: Xenogeneic M2-polarization of Macrophages by Undifferentiated and Differentiated Adipose Tissue-derived Stem Cells

T. C. Santos, D. B. Rodrigues, M. T. Cerqueira, R. P. Pirraco, A. P. Marques, R. L. Reis;

3B's Research Group, Headquarters European Institute of Excellence on Term, ICVS-3B's — PT Government Associate Laboratory, Braga/Guimarães, Portugal, Guimaraes, Portugal.

Mesenchymal stem cells (MSCs) are considered to be ‘‘immunologically privileged.’’ In a previous work when human adipose tissue-derived stem cells (hASCs) subcutaneously implanted in mice we did not identify an adverse host response1. Recently, it was shown that tissue regeneration could benefit from the polarization of M2 macrophages subpopulations 2. In this study we hypothesised that undifferentiated hASCs and derived osteoblasts and chondrocytes are able to switch murine bone marrow-derived macrophages (mBMMØs) into M2 phenotype, aiding tissue regeneration.

Murine BMMØs were plated in direct contact with undifferentiated and osteo or chondro-differentiated hASCs for 4 h, 10 h, 24 h and 72 h. The cytokine profile was analysed by qRT-PCR and the surface markers were detected by flow cytometry. The direct interaction of both cell types was observed by time lapse microscopy.

The results showed that mBMMØs polarized after contacting tissue culture polystyrene. This M2 phenotype was maintained along the experiment in direct contact with both undifferentiated and osteo or chondro-differentiated hASCs. This was confirmed by the expression of IL-1, IL-10, IL-4, TNF-α and IFN-γ (genetic profile) and surface markers (CD206++, CD336++, MHC II+ and CD86++) detection.

These data suggest the potential of hASCs in contemporary xenogenic tissue engineering and regenerative medicine strategies, as well as host immune system modulation in autoimmune diseases.

Acknowledgments: RL3-TECT-NORTE-01-0124-FEDER-000020, co-financed by North Portugal

Regional Operational Program(ON.2-O Novo Norte), under the National Strategic Reference Framework, through the European Regional Development Fund.

1-Santos, TC *et al.,* Tissue Eng A, 19(7–8), 83, 2013

2-Jetten, N. *et al.,* Angiogenesis, 17(1), 109, 2014