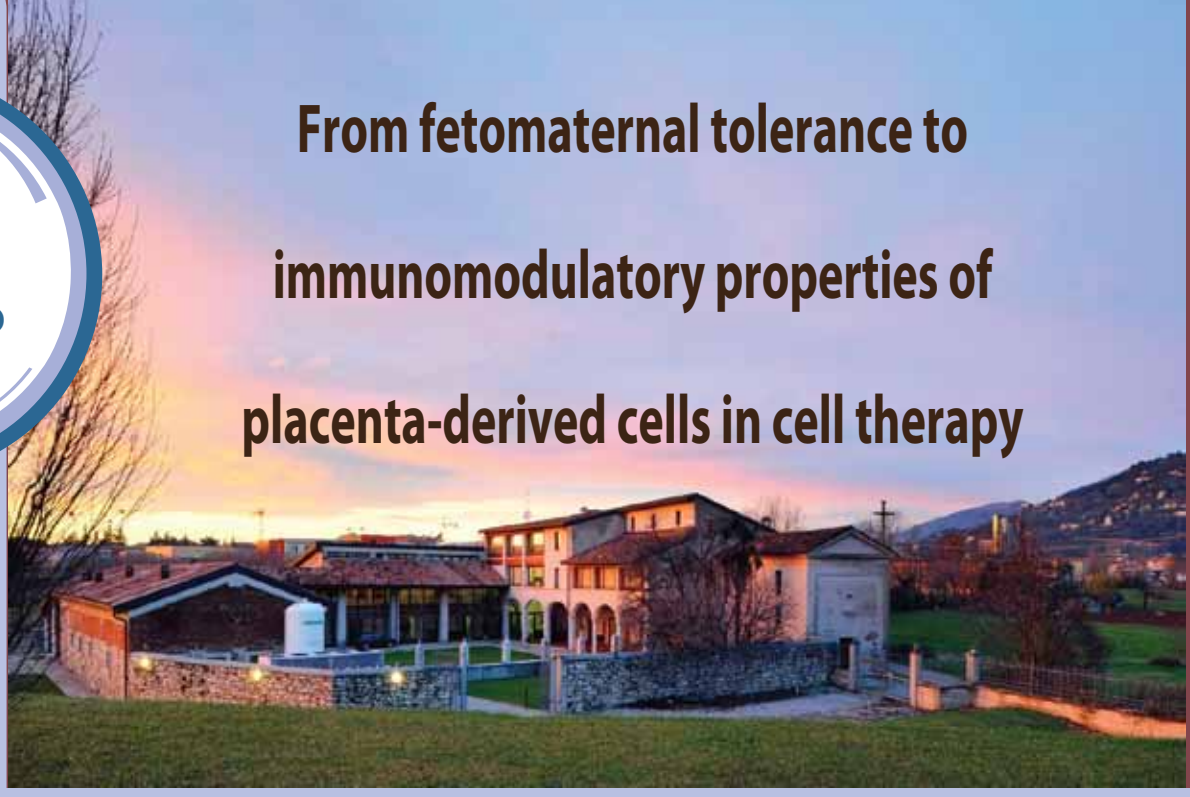
EMBO Workshop

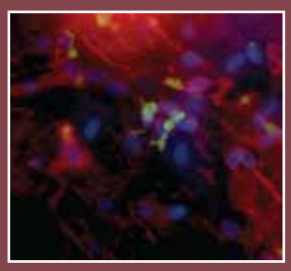
From fetomaternal tolerance to immunomodulatory properties of placenta-derived cells in cell therapy

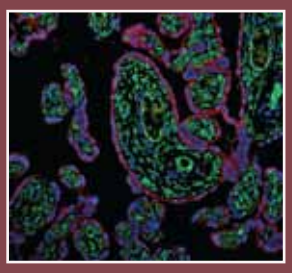


3 - 6 October | 2010 | Brescia | Italy

First meeting of the International Placenta Stem Cell Society (IPLASS)

PROGRAMME & ABSTRACT BOOK





http://cwp.embo.org/w10-33

EMBO European Molecular Biology Organization

Abstract 15

Human Wharton's jelly-derived mesenchymal stem cells express several immunomodulatory molecules both in their naïve state and hepatocyte-like differentiated progeny: prospects for their use in liver diseases.

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Wharton's jelly (WJ), the main constituent of umbilical cord, is a reliable source of mesenchymal stem cells (MSC). WJ-MSC show unique ability in crossing lineage borders. As other extraembryonic mesenchymal populations (placenta and amnion-derived cells), WJ-MSC express several immunomodulatory molecules, essential during the initial phases of human development. Indeed, our recent work pointed out the expression of non-classical HLA molecules as HLA-G in such cells, together with a favorable combination of B7 costimulators. Very few data in literature suggest that some of the immune features of the naïve cells are maintained after performing differentiation.

The aim of this work was extending the knowledge on the expression of immunomodulatory molecules by naïve and differentiated WJ-MSC. To this purpose, WJ-MSC underwent differentiation to osteoblasts, adipocytes and hepatocyte-like cells. Differentiated cells were characterized, by both RT-PCR, ICC and histological stains for the acquisistion of the desired phenotypical features. RT-PCR and ICC were used to investigate the differential expression of immune-related molecules in control and differentiated cells.

WJ-MSC resulted expressing diverse immunomodulatory molecules which spans from non-classical type I HLAs (i.e. HLA-E, -F, -G) , to further members of the B7 family, and of the CEA superfamily, for all of which in vivo immunomodulating functions are known. In addition, we demonstrated for the first time that the expression of these molecules is maintained after performing osteogenic, adipogenic or hepatogenic differentiation. Further experiments are undergoing to better evaluating the implications of these findings in the evolving field of liver regenerative medicine.

Selected for oral presentation