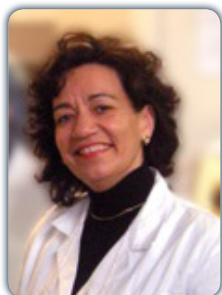


3rd International Conference on Tissue Science & Regenerative Medicine

September 24-26, 2014 Valencia Convention Centre, Spain



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Properties of placenta-derived cells and perspectives in regenerative medicine

Human placenta recently emerged as a novel and attractive resource within the complex and fascinating field of stem cells. Our studies have mostly been focused on cells isolated from a human term placenta tissue referred to as the amniotic membrane, which is a source of mesenchymal stromal cells named human amniotic mesenchymal stromal cells (hAMSC). Along with evidence of cell differentiation potential, we have principally demonstrated a paracrine action of hAMSC. *In vitro* studies showed the ability of these cells to interact with and modulate the functions of a wide variety of immune cells, inducing downregulation of T cell proliferation after allogeneic stimuli, and polarization towards Treg cells. Furthermore hAMSC inhibit maturation of monocytes towards dendritic cells and promote macrophage polarization towards M2 phenotype. These data strongly correlate with the *in vivo* findings showing reduction of inflammation and fibrosis in animal models of cardiac ischemia, lung and liver fibrosis, autoimmune diseases such as arthritis and encephalomyelitis. The low or absent levels of donor cells in host tissues support the hypothesis that the reparative effects exerted by placenta-derived cells may be mostly due to the release of paracrine factors. We have confirmed this by showing the reduction of the progression of fibrosis in a bleomycin lung fibrosis model after injection of conditioned medium derived from the culture of hAMSC.

In conclusion, human placenta cells and their derivatives such as amniotic patches and conditioned medium, might represent a valuable therapeutic tool in degenerative disease based on altered immune reaction and inflammatory processes.

Biography

Ornella Parolini is the Director of E. Menni Research Center, Fondazione Poliambulanza, Brescia, Italy and the President of IPLASS - International Placenta Stem Cell Society. She has pioneered research on human placenta-derived stem cells. Her research is focused on the immunomodulatory, anti-inflammatory, and antifibrotic properties of amniotic and chorionic membrane-derived cells. Parolini has been invited as a speaker to over 80 international congresses and has been organizer and scientific leader of several international events. She is author of over 100 publications in peer-reviewed journals as well as several book chapters. Parolini has one issued and two pending patents.

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