

Special Issue on
**Gestational Stem Cells as Valuable Resource for
Regenerative Medicine**

CALL FOR PAPERS

Although embryonic and adult tissues can be used for the isolation of pluripotent stem cells, significant limitations, including ethical concerns, complexity of isolation/culture, and tumorigenicity, have hindered translation of laboratory findings into clinical practice.

The most investigated source of stem cells is bone marrow but its collection is an invasive procedure associated with significant discomfort to the patient and a relatively low number of these cells, which can decrease with donor's age.

The significant recent advances in the field have intensified the search for novel sources of stem cells aside from embryo, human cord blood, or bone marrow. Scientists drew the attention toward amniotic membrane and amniotic fluid stem cells, since these sources possess many advantages: first of all as cells can be extracted from discarded foetal material, it is inexpensive; secondly, abundant stem cells can be obtained; and finally, these stem cell sources are free from ethical considerations.

Amniotic fluid is considered an excellent alternative stem cell resource since amniotic fluid stem cells (AFSCs) represent a class of broadly multipotent stem cells sharing characteristics of both embryonic and adult stem cells. In fact, AFSCs have been shown to differentiate into cell lineages representing all three embryonic germ layers without generating tumors, which make them an ideal candidate for tissue engineering applications. In addition, their ability to engraft in injured organs and modulate immune suggests that cell transplantation may be useful for the treatment of various degenerative and inflammatory diseases affecting major tissues/organs. AF cells could be obtained from the second trimester during amniocentesis (15% of Italian pregnant women) since the cells cultured for cytogenetic tests are often in excess and then discarded. Moreover AF could be also collected at term from routine cesarean sections (35% of deliveries in Italy). In the future, AF cells could be banked and used for autologous or allogeneic cell therapy approaches for treating various diseases.

Also human placenta, which is routinely discarded postpartum, in spite of its natural aging process, is still a rich source of stem cells capable of proliferating and differentiating in many directions still eliciting strong paracrine effects stimulating the repair processes. Placental mesenchymal stem cells (MSCs) and amnion epithelial cells (hAECs) have been shown to differentiate into various cell types including adipogenic, osteogenic, myogenic, endothelial, pulmonary, neurogenic, hepatogenic, cardiac, and pancreatic lineages. Moreover, their reduced immunogenicity and immunomodulatory properties allow their use in allo- and xenotransplantation settings.

This special issue will accept the high quality original research articles and full length reviews on gestational stem cells.

Potential topics include but are not limited to the following:

- ▶ Effect of donor heterogeneity on stem cell potential
- ▶ Novel storage and culture methods
- ▶ Focus on immune-modulatory properties
- ▶ Secretome profile and paracrine effects
- ▶ Clinical and preclinical studies in the treatment of degenerative diseases

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/sci/gscv/>.

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First Round of Reviews

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