کنگره بین المللی سلول های بنیادی و پزشکی باز ساختی
Int. Congress on Stem Cells & Regenerative Medicine
20-22 MAY
MASHHAD-IRAI
ACECR
Khorasan Razavi
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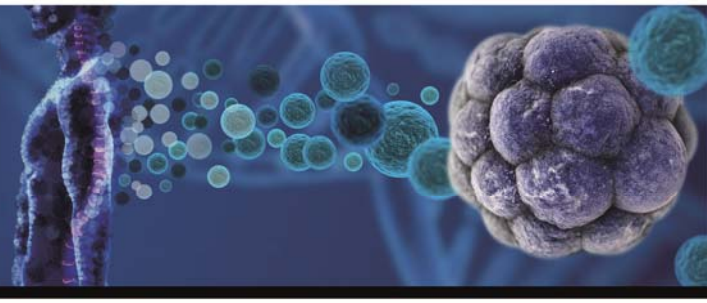

P251- Skin Stem Cells

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Abstract

Skin is the largest organ in the body. Skin is derived from the embryonic ectoderm germ layer. In 2001, isolation of multipotent cells from the dermis was reported. These cells proliferated and differentiated in culture to produce both neural and mesodermal cells, including neurones, glia, smooth muscle and adipocytes. Nestin-positive, skin-derived precursors (SKPs) are a different type of stem cells. Most neural cells generated by SKPs are similar to peripheral neurones and Schwann cells. Thus, SKPs represent an embryonic neural crest-related precursor. SKPs can be derived from human tissue, including as little as 1-2 cm of foreskin sample and small punch biopsies from the scalp. SKPs are an available source of neural precursors, which can be used for regenerative medicine of the nervous system. Some studies have shown that the upper region of hair follicles, the bulge area, constitutes the niche of multipotent stem cells, which are responsible for long-term growth of hair follicles and epidermis regeneration after tissue injury. More specifically, multipotent epithelial stem cells (bESCs) within the bulge area, which express CD34, K5 and a 6 integrin, are able to proliferate and give rise to the follicular epithelium, as well as new cells constituting IFE and sebaceous glands after severe injury. The bulge area in adult mammalian hair follicle also contains a pluripotent epidermal neural crest stem cell (eNCSC) population that shows several properties similar to embryonic neural crest stem cells. The pluripotent eNCSCs in the bulge area are also able to self-renewal and give rise to multiple cells in vivo, including melanocytes, neurons, Schwann cells, smooth muscle cells and chondrocytes.

Keywords: Skin, Stem Cells, Multipotent