



## Abstract Preview

### Human embryonic stem cell-derivatives in a hydrogel-based skin model

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Cases of massive skin loss upon injury or disease still represent a serious healthcare challenge worldwide, and despite the many alternatives available, results are not yet satisfactory. Skin Tissue Engineering, especially now combined with Stem Cell Research, holds great expectation towards an efficient and high quality skin regeneration. Human embryonic stem cells (hESCs) are quite attractive for this purpose, as they possess both immunoprivileged features and unique self-renewal and differentiation potency, being able to provide unlimited biological material. In this specific work, an innovative hydrogel-based model, together with hESCs-derived epidermal cells is proposed for skin regeneration. hESCs were moved from Mouse embryonic fibroblasts (MEFs), cultured in a feeder-free system comprising Matrigel and mTeSR media, and characterized by immunocytochemistry for pluripotency markers. After expansion, hESCs were differentiated towards the epidermal lineage, by culturing them in Collagen IV coated dishes, and upon supplementation of both Retinoic acid and bone morphogenetic protein 4. Keratin 18/14 positive cells were obtained, confirming the success of the used protocol. Differentiated epidermal cells were purified and cultured onto the hydrogel. Following several culture methodologies optimization, hESCs-derived epidermal cells were able to adhere, proliferate and form a stratified epidermis-like structure demonstrating the potential and expectation for Skin Regeneration.

**Selected Present Form:** Oral

**Selected Symposium:** Cell Therapy, One Step vs. Multistep Cell Preparation Procedures

**SYIS Oral Awards:** Yes

**SYIS Poster Awards:** Yes

**Guenther Schlag Award:** Yes

**Young investigator Travel Awards:** Yes