Scaffold-based organotypic culture for the long-term cultivation of human epidermal stem cells (P-876)

Key facts

- Organotypic skin culture equivalent suitable for experiment times of at least 10 weeks
- Using fibroblast viscose or rayon scaffold which cannot be degraded by fibroblasts
- Better support of keratinocytes by a mixture of fibroblasts and endothelial cells present in the matrix

Abstract
The skin as the largest organ of the human body does not only protect from the external world but is also a target of many kinds of diseases like cancer, psoriasis or wound closure defects. On the contrary, *in virto* model systems of the skin, suitable for long time culture, are not available today. The aforementioned invention solves this problem and can be used for the production of skin equivalents with a life span of at least 10 weeks.

Development Stage
Cell culture method approved.

The Technology
The central issue of the invention is a viscose or rayon scaffold which cannot be degraded by fibroblasts. Into this nonwoven matrix fibroblasts, or fibroblasts mixed with endothelial cells, which are embedded in a thrombin – fibrinogen mixture are seeded. After 7 days of preculture, keratinocytes are placed on top of the matrix. Thereafter medium is changed and keratinocytes are left air-exposed for the rest of the experiment time. Skin equivalents produced and maintained by the disclosed invention have a superior life span of at least 10 weeks. In addition the uniformity of skin equivalents, compared to *in vivo* models, results in better comparable and more reliable data.

Inventors
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Applications and Commercial Opportunity
Upmentioned skin equivalents are especially useful for *in vitro* long time toxicity studies of any pharmacological or cosmetic compound of interest.

References
“A stable niche supports long-term maintenance of human epidermal stem cells in organotypic cultures.” Muffler S *et al.* in Stem Cells. 2008 Oct; 26(10): 2506-15.

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Intellectual Property
“Scaffold-based organotypic culture for the long-term cultivation of human epidermal stem cells” (Priority EP2371944, WO2011117233, US2013078666, EP2550354)

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