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“A two-component pre-seeded dermal-epidermal scaffold”

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ABSTRACT

We have developed a bilayered dermal-epidermal scaffold for application in the treatment of full thickness skin defects. The dermal component gels in situ and adapts to the lesion shape, delivering human dermal fibroblasts in a matrix of fibrin and cross-linked hyaluronic acid modified with a cell adhesion-promoting peptide. Fibroblasts were able to form a tridimensional matrix due to material features such as tailored mechanical properties, presence of protease degradable elements and cell binding ligands. The epidermal component is a robust membrane containing cross-linked hyaluronic acid and poly-L-lysine, on which keratinocytes were able to attach and to form a monolayer. Amine-aldehyde bonding at the interface between the two components allows the formation of a tightly bound composite scaffold. Both parts of the

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