

The use of glandular-derived stem cells to improve vascularization in scaffold-mediated dermal regeneration

Egaña, José T.

Danner, Sandra

Kremer, Mathias

Rapoport, Daniel H.

Lohmeyer, Jörn A.

Dye, Julian F.

Hopfner, Ursula

Lavandero, Sergio

Kruse, Charli

Machens, Hans Günther

Clinical success in tissue regeneration requires improvements in vascularization capacity of scaffolds. Several efforts have been made in this field including cellular and acellular technologies. In this work we combined the use of stem cells derived from pancreas or submandibular glands expressing green fluorescent protein (GFP+) with a commercially available scaffold for dermal regeneration. Cells were isolated, characterized and seeded in a scaffold for dermal regeneration. Scaffolds containing cells were used to induce dermal regeneration in a full skin defect model. After 3 weeks of in vivo regeneration, tissues were harvested and vascularization was analyzed. Results showed that gland-derived stem cells displayed stem cell features and presented multipotential differentiation capacity because they were able to differentiate in cell types representing the 3 different germ layers. After seeding, cells were homogeneously distributed and formed focal adhesions with the scaffold. Meta