

Creating regenerative environments with materials

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Abstract

The long-term outcome following wounding depends strongly on the environment that is created within the damaged tissue. Acute inflammation results in the upregulation of cytokines such as TGF- β 1, which cause the differentiation of cells within the wound into myofibroblasts, cells which contract the wound bed and deposit collagen more rapidly than the fibroblasts that are normally present in a tissue. Although this rapid production of collagen and contraction of the wound results in closure, it also results in scarring, which can cause psychosocial impacts, as well as limiting movement and if on the surface of the eye, blindness. We have developed a range of technologies that aim to modulate the wound environment and thereby limit or even eliminate scarring on the surface of the skin and in the eye. This talk will describe the development of these technologies that have been designed to limit the scarring process, by sequestering pro-fibrotic growth factors or reducing their activity in the site of a wound. It will describe how we have taken these technologies through the translational pathway, from preclinical testing through to manufacture using GMP processes. It will also highlight some of the hurdles that we have had to overcome in taking our novel technologies through to the clinic.

Biography

Liam M Grover is a Professor of Biomaterials Science at the University of Birmingham. His research focusses on investigating the interactions between materials and biological systems, a greater understanding of which has enabled him to develop a host of novel materials that have been used for skeletal reconstruction and the treatment of scarring. He has published more than 180 peer reviewed publications and filed more than 10 patents. He has raised in excess of £30m of research funding, and is the founder-director of the Healthcare Technologies Institute, which is based in the Institute of Translational Medicine at the University of Birmingham. The institute seeks to take novel interventions to the point of clinical trial, supporting the full translational process. He has taken three new medical interventions to the point of clinical trial. He was the youngest full Professor ever appointed to the University of Birmingham at the age of 32.

