

Global Wound Care Congress

September 12-13, 2016 San Antonio, USA

NOVEL THERAPEUTICS FOR LOWER EXTREMITY NON-HEALING SKIN WOUNDS: DOES THE ANSWER LIE IN THE EXTRACELLULAR MATRIX?

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Non-healing skin wounds are a major clinical complication associated with aging, diabetes and immobility. Current estimates place the cost of treating these wounds at 2% - 3% of the annual healthcare budgets in developed countries. Many treatments have low clinical efficacy are unpredictable, all too often resulting in limb amputation. Proper wound management from a clinical perspective involves debridement of the damaged tissue, as well as prevention of infection. However to induce healing of the wound, mesenchymal cell recruitment (dermal fibroblasts and perivascular cells) and restoration of blood flow to the wound bed must be achieved. While fibrin and fibronectin normally provide structure to the wound bed during healing, matricellular proteins represent another class of ECM proteins normally upregulated in granulation tissue that modulate the adhesion, migration, proliferation and differentiation of immune cells, perivascular cells, dermal fibroblasts and keratinocytes. As will be demonstrated, based on their described function, the expected pattern of matricellular protein expression within and surrounding chronic skin wounds is highly abnormal which could be partially attributable to the combined presence of tumour necrosis factor alpha and transforming growth factor beta. The loss of expression of matricellular proteins including periostin and connective tissue growth factor (CCN2) appears to have significant functional implications for wound healing, as will be discussed. Finally, based on our analysis of human tissue the development of a granulation tissue mimetic scaffold containing periostin and CCN2 will be highlighted, which appears to “force” wounds into the proliferative phase of healing.

Biography

Hamilton completed his PhD in Cellular Engineering at the University of Glasgow in 2000. He worked as a Research Scientist with Advanced Medical Solutions PLC., in England, followed by postdoctoral studies at the McGowan Institute for Regenerative Medicine, University of Pittsburgh and at the University of British Columbia, Vancouver. He established his independent laboratory at the University of Western Ontario in 2007, which is focused on biomaterials and connective tissue repair. He has published 39 original research articles and serves as an editorial board member for the Journal of Cell Communication & Signaling and The Journal of Cytology & Histology.

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