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Polyamine mediated regulation of wound healing

The primary function of the epidermis is to serve as a protective barrier against the environment. Loss of skin integrity due to injuries or illness results in wounding. Wound healing is a dynamic process involving changes in gene expression on multiple levels. Here, we describe a role for *AMD1* (Adenosylmethionine Decarboxylase 1), the rate limiting enzyme in the polyamine biosynthesis pathway, in wound healing. The polyamines, spermine, spermidine and putrescine are ubiquitously expressed cations that are essential for cellular function and play a role in a wide array of cellular processes. We show that *AMD1* is expressed in the more differentiated layers of the epidermis and is transiently up-regulated at the wound edge in ex vivo wounded human skin biopsies. Cultured keratinocytes also showed an up-regulation of *AMD1* at the wound edge in a scratch assay. Knock-down of *AMD1* delayed cell migration and closure of the scratch wound suggesting that high polyamine levels are required for cell migration. We have been working to determine the downstream targets of the polyamine pathway in the wound healing response and these findings will be presented. We propose that *AMD1* is an important regulator of cell migration and targets multiple pathways to promote wound healing.

Biography

Leah A Vardy is a Principal Investigator at the Institute of Medical Biology, A*STAR and an Adjunct Assistant Professor at the Nanyang Technological University in Singapore. She has received her PhD at the Imperial Cancer Research Fund in London and has completed her Postdoctoral work at the Whitehead Institute in Cambridge at the MIT, USA. She has authored over 35 peer reviewed scientific articles in a diverse array of systems including yeast, fruit flies, embryonic stem cells and epidermal cells. Her recent lab studies on embryonic stem cells were published in a series of papers. Currently she has been focusing her research on the epidermis and has been addressing the role of the polyamines in skin barrier function, wound healing and tissue repair.

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