A critical factor for wound healing

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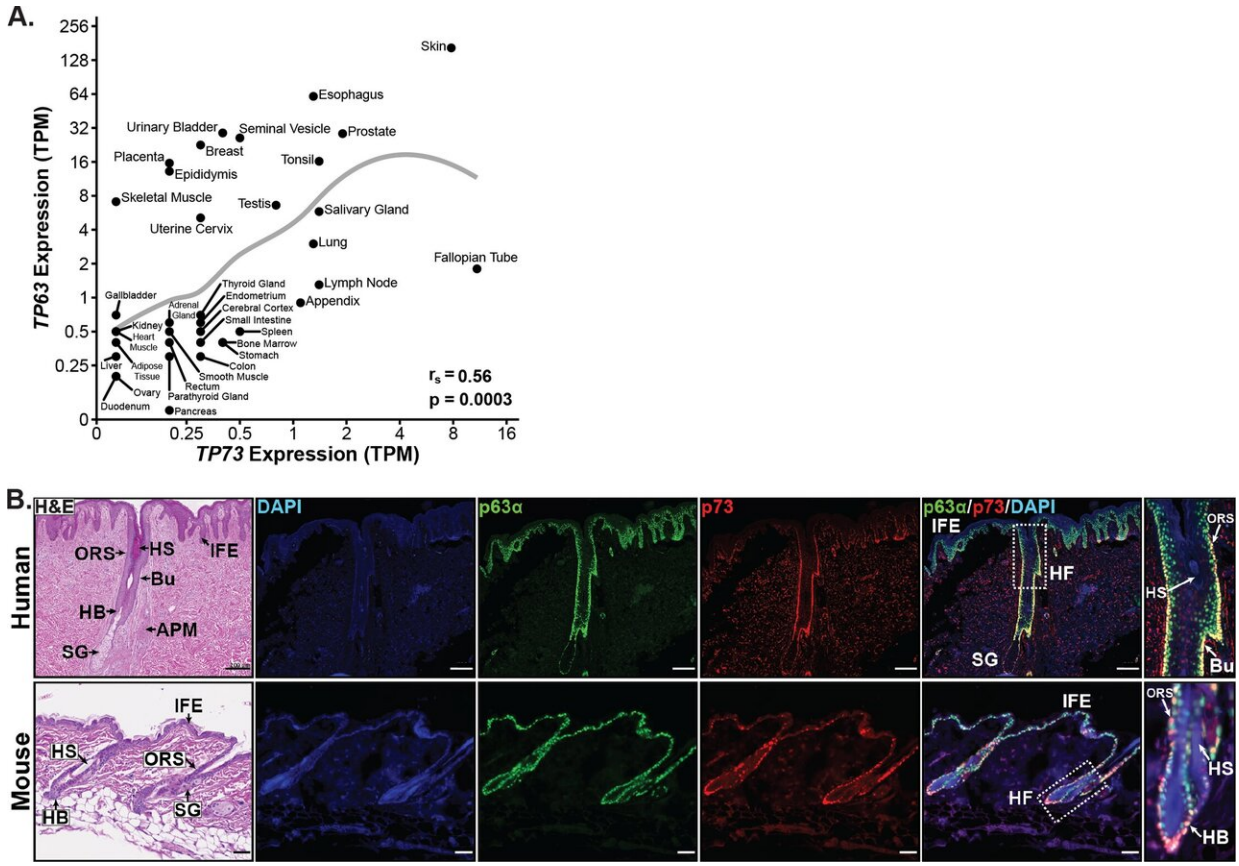

Fig 1. Analysis of p73 and p63 co-expression in human and murine skin. (A) Scatter plot of TP63 versus TP73 RNA-seq expression [units = transcripts per million (TPM)] by human tissue type (n = 37) from the Human Protein Atlas (172 total samples) [30]. Mean expression (TPM + 0.1) for each tissue is plotted on a log2 scale with a LOESS smooth local regression line (gray). Correlation between TP63 and TP73 was quantified using Spearman's rank correlation coefficient (rs). (B) Representative micrographs of H&E and immunofluorescence (IF) staining on serial human (top) and mouse (bottom) skin sections; DAPI (blue), p63α (green), and p73 (red). Regions of the skin in

micrographs are labeled as: interfollicular epidermis (IFE), hair follicle (HF), outer root sheath (ORS), HF bulge (Bu), hair bulb (HB), sebaceous gland (SG), hair shaft (HS), and arrector pili muscle (APM). Scale bars represent 200 μm for human and 50 μm for murine tissue. See also S1 and S2 Figs.
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The p53 family of transcription factors (p63 and p73) plays critical roles in keratinocyte (skin cell) function.

Using mouse skin as a model system, J. Scott Beeler, Jennifer Pietenpol, Ph.D., and colleagues found that p73 is required for the timely healing of cutaneous wounds. In normal tissue, p73 expression increased in response to wounding, whereas p73 deficiency resulted in delayed wound healing, they reported in the journal *PLOS ONE*.

The delay in healing in p73-deficient mice was accompanied by increased levels of biomarkers of the DNA damage response in basal keratinocytes at the epidermal wound edge. They also found that p73 was expressed by epidermal and hair follicle stem cells, which are required for wound healing.

Further, they discovered that p73 isoforms expressed in the skin enhance p63-mediated expression of keratinocyte genes during cellular reprogramming from a mesenchymal to basal keratinocyte-like cell.

The study establishes a role for p73 in cutaneous wound healing through regulation of basal keratinocyte function.

More information: J. Scott Beeler et al. p73 regulates epidermal wound healing and induced keratinocyte programming, *PLOS ONE* (2019). DOI: 10.1371/journal.pone.0218458