

# Inhibiting certain fibroblasts in the skin eliminates scarring in mice

23 April 2021, by Bob Yirka



Credit: martha sexton/public domain

A team of researchers at Stanford University School of Medicine has found that inhibiting the production of a certain fibroblast in the skin can eliminate scarring—at least in mice. In their paper published in the journal *Science*, the group describes their study of the factors involved in the creation of scar tissue and how it led to them finding a way of preventing it from happening. Piotr Konieczny and Shruti Naik with New York University School of Medicine have published a Perspectives piece in the same journal issue outlining the work by the team in California.

Prior research has shown that fibrotic tissue formation in skin wounds evolved as a means for rapid healing—regular skin takes much longer to grow. But now that [medical science](#) has learned to treat wounds better, such rapid repair may not always be needed. In some cases, regular skin could be allowed to grow around wounds until they close. But for that to happen, the natural formation of fibrotic tissue must be inhibited.

Prior research has found that some [dermal](#)

[fibroblasts](#) express the transcription factor Engrailed-1 (En-1) and that it is responsible for creating [scar tissue](#). The researchers with this new effort found that there were subsets of EN-1 fibroblasts that were produced, some of which were pro-fibrotic and some of which were pro-regenerative, depending on which signals were received. And that led them to identify the transcription factor YAP, which they found was a major player involved in the signaling conversation that occurs during wound healing. They then found that they could reprogram the fibroblast cells that would normally stimulate the production of fibrotic tissue, to instead stimulate the production of natural skin. And that led to the generation of new [skin](#) tissue, complete with sweat glands and hair follicles.

The technique has thus far only been tested in mice, so it is unclear whether it will work in humans. Still, Konieczny and Naik suggest that the technique developed by the researchers holds promise for the development of anti-scarring therapies. They note that it could also lead to new research involved in regenerative properties in other parts of the body.

**More information:** Shamik Mascharak et al. Preventing Engrailed-1 activation in fibroblasts yields wound regeneration without scarring, *Science* (2021). [DOI: 10.1126/science.aba2374](https://doi.org/10.1126/science.aba2374)

Piotr Konieczny et al. Healing without scarring, *Science* (2021). [DOI: 10.1126/science.abi5770](https://doi.org/10.1126/science.abi5770)

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