

Researchers find factor that delays wound healing

October 17 2017, by Mike Addelman

New research carried out at The University of Manchester has identified a bacterium—normally present on the skin that causes poor wound healing in certain conditions.

Pseudomonas aeruginosa and its variants are associated with delays in [wound healing](#).

Damage to a receptor that allows the body to recognise the [bacteria](#) is associated with a change in the balance of the community of bacteria present normally on the skin. And according to Dr Sheena Cruickshank, the shift in balance has an enormous impact on the ability of the wound to heal.

The study was carried out at Manchester and co-led by Dr Cruickshank and Dr Matthew Hardman, who is now at now at The University of Hull. The bacterium has previously been associated with wound infections, and such infection is a major complication of [skin wounds](#) that fail to heal. At least one in 10 people will develop a wound that heals poorly.

The research, published in the *Journal of Investigative Dermatology* and funded by the Medical Research Council, casts new light on why one in 10 people will develop a [wound infection](#) which does not heal well.

The research was carried out using mice that were previously shown to heal poorly. The mice lack the receptor Nod2 that recognises bacterial components and has been shown to help regulate the host response to

bacteria. The team found that mice lacking Nod2 had more *Pseudomonas aeruginosa* than [normal mice](#), which is associated with delayed wound healing.

The bacteria also caused normal mice to heal poorly. The team says the findings are also applicable to humans as *Pseudomonas aeruginosa* is associated with [infected wounds](#) that heal poorly in people. Dr Cruickshank said, "There is an urgent need to understand the bacterial communities in our skin and why so many of us will develop wounds that do not heal.

"Wounds can be caused by a multitude of factors from trauma to bed sores, but infection is a complication that can, on occasion, lead to life-threatening illness. Many people are struggling with wounds that heal poorly, but this new study suggests that the types of bacteria present may be responsible for our failure to heal, which is important for considering how we manage wound treatment."

More information: Helen Williams et al. Cutaneous Nod2 Expression Regulates the Skin Microbiome and Wound Healing in a Murine Model, *Journal of Investigative Dermatology* (2017). [DOI: 10.1016/j.jid.2017.05.029](#)

Provided by University of Manchester

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