MedicalXpress

Scientists identify lesion-healing mechanism in psoriasis

October 27 2014

A UC Irvine-led study has revealed the underlying genetic factors that help repair skin lesions caused by psoriasis, which could engender new methods of controlling the lingering condition.

Dr. Bogi Andersen, professor of biological chemistry and endocrinology at UCI, and colleagues discovered that a gene called grainyhead – known to be important in epidermal development and wound healing – triggers a repair pathway for psoriasis lesions. Conversely, they found that deletion of this gene increased the severity and longevity of the disfiguring patches.

"Our research suggests that targeting this mechanism of healing may lead to pharmaceutical products that limit the itchy, painful lesions all psoriasis sufferers must endure," Andersen said. Study results appear online Oct. 27 in *The Journal of Clinical Investigation*.

Psoriasis is a chronic skin condition caused by an overactive immune system in which immune cells secrete inflammatory mediators that cause thickening and other abnormalities in the epidermis, the outermost layer of the skin. These lesions look like scaly plaques, and they heal at a rate dependent upon the severity of the disease.

The researchers learned that in psoriasis a compound called grainyhead-like 3 – which binds to DNA to control the rate of transcription of genetic information from DNA to messenger RNA – orchestrates the activation of an epidermal repair pathway. (The grainyhead gene was

initially discovered in fruit flies, where it's important for wound healing.)

They also found it easier to induce psoriasis-like lesions in mice lacking the GRHL3 gene. Furthermore, these lesions did not resolve properly and persisted even in the face of active immune suppression treatments currently being studied for the disease.

"Our study indicates that an evolutionarily ancient epidermal repair pathway is activated in psoriasis lesions and that this pathway suppresses disease severity and helps heal the lesions," Andersen said. "We speculate that abnormalities in this pathway might contribute to disease severity and that in the future this mechanism could be targeted to help treat psoriasis."

Provided by University of California, Irvine