Medical Xpress

Sweat glands play major role in healing human wounds, research shows

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Credit: University of Michigan Health System

Turns out the same glands that make you sweat are responsible for another job vital to your health: they help heal wounds.

Human skin is rich with millions of eccrine sweat glands that help your body cool down after a trip to the gym or on a warm day. These same glands, new University of Michigan Health System research shows, also happen to play a key role in providing cells for recovering skin wounds – such as scrapes, burns and ulcers.

The findings were released online ahead of print in the American Journal of Pathology.

"Skin ulcers – including those caused by diabetes or bed sores – and

other non-healing wounds remain a tremendous burden on health services and communities around the world," says lead author Laure Rittié, Ph.D., research assistant professor of dermatology at the University of Michigan Medical School.

"Treating chronic wounds costs tens of billions of dollars annually in the United States alone, and this price tag just keeps rising. Something isn't working."

Now, U-M researchers believe they have discovered one of the body's most powerful secret weapons in healing.

"By identifying a key process of wound closure, we can examine drug therapies with a new target in mind: sweat glands, which are very under-studied," Rittié says. "We're hoping this will stimulate research in a promising, new direction."

Previous understanding of wound closure was that new skin cells originate from hair follicles and from intact skin at the edge of the wound. The U-M findings demonstrate that cells arise from beneath the wound, and suggest that human eccrine sweat glands also store an important reservoir of adult stem cells that can quickly be recruited to aid wound healing.

"It may be surprising that it's taken until now to discover the sweat glands' vital role in wound repair," Rittié says. "But there's a good reason why these specific glands are under-studied – eccrine sweat glands are unique to humans and absent in the body skin of laboratory animals that are commonly used for wound healing research.

"We have discovered that humans heal their skin in a very unique way, different from other mammals," Rittié adds. "The regenerative potential of sweat glands has been one of our body's best-kept secrets. Our

findings certainly advance our understanding of the normal healing process and will hopefully pave the way for designing better, targeted therapies."

More information: dx.doi.org/10.1016/j.ajpath.2012.09.019

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