

Study reveals how to regenerate mouse ears without a scar

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In contrast to amphibian tissue regeneration, traumatic injuries in mammals typically heal with a fibrous scar. Researchers discovered that some strains of mice heal without a scar, by disrupting a protein, called Sdf1, that normally recruits white blood cells to sites of injury. Blocking Sdf1 function with a drug or by mouse genetics enhanced tissue regeneration and decreased scarring in normal mice.

The team, led by former Stanford pediatric dermatologist Thomas Leung, MD, PhD, now an assistant professor in the Perelman School of Medicine at the University of Pennsylvania, studied how the ears of mice heal from a hole punched through the thin tissue (much like ear piercing in humans). In many strains of mice, the holes heal with a scar and remain visible. In a few others, the holes completely close without a perceptible scar.

They published their work in *Genes and Development*, and their findings may one day lead to advances in [regenerative medicine](#).

Because the drug used to block Sdf1 signaling is already used in medical clinics to mobilize stem cells in transplant patients, Leung is hopeful that it can quickly be tested in humans struggling to heal chronic or slow-healing wounds. He is currently designing a clinical trial to test the drug, called AMD3100.

More information: Thomas H. Leung et al. A cellular, molecular, and pharmacological basis for appendage regeneration in mice, *Genes &*

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