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Reindeer Antlers' Amazing Skin Regeneration may someday help Heal Human Injuries

It's the only organ in mammals that fully regenerates each year, and at incredible speed, says researcher

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The fuzzy covering on reindeer antlers, could hold the key to scar-free, speedy healing for severe human skin injuries and burns, say researchers in southern Alberta.

The hairy skin on reindeer antlers, known as Velvet, has the ability to "almost perfectly" regenerate in a way that hasn't been observed in any other large mammal, said Jeff Biernaskie, associate professor at the University of Calgary's department of comparative biology and experimental medicine.

He and a group of researchers are studying how exactly that happens, because they want to replicate those results in human skin regeneration.



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Researchers are studying the regenerative properties of reindeer antlers with the hope of one day being able to mimic that tissue regeneration in human medicine.
(Colin Hall/CBC)

A series of experiments were conducted on reindeer, also known as caribou in North America. Researchers made small wounds on their velvet, and similar small wounds on different parts of the animals' bodies while anesthetized.

While the latter scarred, the cuts on the velvet virtually disappeared within a month, covered by new skin with the normal level of pigmentation and hair follicles, Biernaskie said.

"It's a remarkable feat that's really not observed in any other large animal at all," said the researcher.

Biernaskie, who also serves as the Calgary Firefighters Burn Treatment Society chair, suggested those regenerative properties could one day be harnessed in a topical cream or injectable therapeutic that would speed human healing.



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Another fascinating characteristic of reindeer antlers is the rate at which they can grow.

Male and female reindeer shed their antlers each winter and grow a new, identical set over the spring and summer, at incredible rates of up to 2 centimetres / 3/4 inch per day.



The reindeer being studied as part of research into human skin regeneration are part of a herd acquired in 2008 by the University of Calgary's faculty of veterinary medicine. (Colin Hall/CBC)

"This is faster than any tumour. This is faster than any other tissue, as far as I know, in the animal kingdom that can grow that quickly, other than potentially in the embryo," Biernaskie said.

He said it was "fascinating" that such rapid growth could occur without generating any tumours.



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Biernaskie hopes that by studying how those reindeer cells co-ordinate with one another, doctors may gain a better understanding of how and why cell growth may become cancerous.

While elk also grow new antlers, only the males are capable of doing so. The fact that female reindeer are able to grow new antlers leads Biernaskie to believe that it isn't a hormonal regulation, but a cellular mechanism, that facilitates this remarkable growth.

He hopes to publish the findings of his research early as possible in coming years.

Just another "Magical" component of Reindeer!