

Sheep wool growth boosted by reducing cortisol

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University of Adelaide researchers have shown that sheep wool growth can be significantly boosted by manipulating the stress hormone, cortisol, in their pregnant mothers.

The research, at the University's School of Animal and Veterinary Sciences at Roseworthy Campus, produced lambs that were hairier at birth and produced 10% longer [wool](#) fibres over the first three annual shearings.

"Our results indicate that it is possible to alter lifetime wool production of Merino sheep by manipulating cortisol levels during key windows of development in the lamb while it's in the uterus," says lead researcher Dr Melanie McDowall.

"This very quick result to improve yield can be compared to selective breeding which would take many years to see such an extreme improvement in production."

The researchers treated pregnant Merino ewes for 10 days with a cortisol-inhibiting drug metyrapone at a critical time for wool follicle development in the developing lamb fetus.

Another group of pregnant ewes were given a cortisol-like substance and both groups were compared with a control group of pregnant ewes that weren't treated with either drug.

"Right from birth the lamb coats could be distinguished visually," says Dr McDowall. "Those with higher [cortisol levels](#) had tighter, shorter and curlier fleeces. Those with reduced cortisol looked a little like golden retriever puppies, their coats were longer and shaggier.

"Statistically, the fibres on the low-cortisol lambs were longer at birth, and this increased wool growth continued every year for the three years of the research." The [lambs'](#) birthweight were unaffected by the treatments.

Dr McDowall says [cortisol](#) played a role in many biochemical pathways in the body and genetic analysis showed that the treatments affected a number of different genes.

"Practically, for a producer to administer metyrapone to pregnant ewes would be uneconomical," she says. "But because we have identified gene clusters that are key to wool follicle development and shown they can be altered to produce these results, it is possible that further research could lead to more targeted therapeutic treatments."

The research has been published in the journal *Animal Production Science* and was funded by the Sheep Genomics project, a collaboration between Australian Wool Innovation and Meat and Livestock Australia.

Provided by University of Adelaide

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