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Mammal mums can alter their offspring's sex

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Knowing whether a pregnancy will produce a boy or girl is not left up to chance for some mammals - UK biologists claim they have conclusive proof that zebras, bison and certain other mammals actively adjust the sex of their offspring.

It has long been known that many insects, birds and fish are capable of influencing the sex of their offspring, but the idea of gender adjustment in mammals has been controversial. American biologist Robert Trivers first suggested that female red deer alter the sex of their offspring according to their physical condition at the time of conception, and the idea has been debated for the 30 years since.

"We looked at all 73 of the different studies carried out into sex adjustment in ungulates - herbivorous mammals with hooved feet - and found a consistent pattern across the different species. Sons were produced in higher numbers by mothers who were in good condition and daughters were preferentially produced by mothers in poor condition," explains Stuart West at the University of Edinburgh, who carried out the study with Ben Sheldon from Oxford University.

"In ungulate species, a few strong males control a large number of females, so only a small proportion of males get to mate, whereas most of the females will mate.

"Therefore high quality females were more likely to undergo the greater demands of producing sons, as the sons were more likely to be of high quality and therefore have a chance of mating. Conversely, if maternal quality was poor, the ungulates produced daughters, since poor quality daughters had a greater chance of mating than poor quality sons," he told **New Scientist**.

Selective fertilisation

West found that in studies where the correlation between maternal quality and offspring gender had been shown to be weak or inconclusive, the data for maternal quality had often been collected from the animals long after conception and sometimes from the dead animal.

"The gender of the offspring can itself alter the status and quality of the mother from what it was prior to conception," he notes.

The physiological mechanism behind maternal gender control is not understood, but it is thought that some hormonal regulation enables selective fertilisation of either male or female gametes. Ungulates, which include deer,

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sheep and pigs, are the only mammals in which the phenomenon has now been confirmed, says West - studies into gender adjustment in primates have so far proved inconclusive.

[Ben Sheldon, Oxford](#)
[Robert Trivers, Rutgers University](#)
[American Naturalist](#)

Journal reference: *American Naturalist* (vol 163, p 40)

Gaia Vince

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