

# Female pigs can recognise the sex of sperm and influence the sex of their offspring

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Female pigs can recognise the sex of sperm

(Phys.org) —Female pigs' reproductive systems recognise whether a sperm will produce a boy or a girl before it reaches and fertilises the egg, and their oviduct (fallopian tubes) change in response, according to new research from the University of Sheffield and University of Murcia.

Scientists think this may be a way [females](#) unconsciously influence the sex of their [offspring](#).

The findings, reported in the open access journal *BMC Genomics*, show that different genes are active in female pigs' reproductive system cells in experimental conditions when all X (female) or all Y (male) [sperm](#) are

present.

Although in nature the ratio would normally be 50:50, this suggests females might be able to change the environment of the oviduct to favor one sex over the other, giving that sperm a better chance of winning the race to the egg.

Studies of humans and animals have shown that the [sex ratio](#) of offspring can be affected by factors such as the age of the mother, or environmental factors like famines and wars. How and when this happens is unclear.

The international research team from the University of Sheffield and University of Murcia wanted to discover if the sex ratio is influenced in the early stages, before the sperm have even fertilised the egg.

To find out whether females can differentiate between female and male sperm, they inseminated female pigs with sperm that was either all X or all Y. They then analysed the pig oviduct gene expression - the genes that were switched on in the oviduct cells. They found that 501 genes consistently produced proteins in differing amounts depending on whether X or Y sperm was present.

Researchers are still not sure why this ability has evolved, but they speculate that if females can recognise the sex of sperm and change in response, they might be able to create an environment that favors boys or girls.

This could explain how females unconsciously influence the sex ratio of their offspring, but more studies are needed to confirm this.

Lead author Professor Alireza Fazeli from the Department of Human Metabolism at the University of Sheffield said: "What this shows is that

mothers are able to differentiate between the sperm that makes boys and girls. That on its own is amazing. It's also of great scientific and evolutionary importance. If we understand how they can do that, this can revolutionise the field."

**More information:** The complete study, "The battle of the sexes starts in the oviduct: modulation of oviductal transcriptome by X and Y-bearing spermatozoa," is available online:

[www.biomedcentral.com/1471-2164/15/293](http://www.biomedcentral.com/1471-2164/15/293)

Provided by University of Sheffield

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