

Gene discovery points towards non-hormonal male contraceptive

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A new type of male contraceptive could be created thanks to the discovery of a key gene essential for sperm development.

The finding could lead to alternatives to conventional male contraceptives that rely on disrupting the production of hormones, such as [testosterone](#) and can cause side-effects such as [irritability](#), [mood swings](#) and [acne](#).

Research, led by the University of Edinburgh, has shown how a gene – *Katnall* – is critical to enable sperm to mature in the testes.

If scientists can regulate the *Katnall* gene in the testes, they could prevent sperm from maturing completely, making them ineffective, without changing [hormone](#) levels.

The research, which is published in the journal *PLoS Genetics*, could also help in finding treatments for cases of male infertility, when malfunction of the *Katnall* gene hampers sperm development.

Dr Lee Smith, Reader in Genetic Endocrinology at the Medical Research Council Centre for Reproductive Health at the University of Edinburgh, said: "If we can find a way to target this gene in the testes, we could potentially develop a non-hormonal contraceptive.

"The important thing is that the effects of such a drug would be reversible because *Katnall* only affects sperm cells in the later stages of

development, so it would not hinder the early stages of sperm production and the overall ability to produce sperm.

"Although other research is being carried out into non-hormonal male contraceptives, identification of a gene that controls sperm production in the way *Katnal1* does is unique and a significant step forward in our understanding of testis biology."

Scientists funded by the Medical Research Council found that male mice, which were modified so they did not have the *Katnal1* gene, were infertile.

Further investigation showed that this was because the gene was needed to allow the sperm to develop and mature.

The researchers showed that *Katnal1* was needed to regulate a scaffolding structure, known as microtubules, which forms part of the cells that support and provide nutrients to developing sperm.

Break down and rebuilding of these microtubules, enable the sperm cells to move within the testes as they mature. *Katnal1* acts as the essential controller of this process.

More information: Smith LB, Milne L, Nelson N, Eddie S, Brown P, et al. (2012) KATNAL1 Regulation of Sertoli Cell Microtubule Dynamics Is Essential for Spermiogenesis and Male Fertility. *PLoS Genet* 8(5): e1002697. [doi:10.1371/journal.pgen.1002697](https://doi.org/10.1371/journal.pgen.1002697)

Provided by University of Edinburgh

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