

# Researchers identify gene with possible link to infertility in mice

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Virginia Commonwealth University researchers have identified the role of a gene in regulating molecular signals involved with ovarian follicle development, which may one day help shed light on some of the causes of fertility issues in humans.

The steps involved with conception and pregnancy are delicate and complex - particularly the process of folliculogenesis. In females, fertility is dependant on the growth of a follicle, a structure that ultimately transforms to release a mature egg. In an ordinary cycle, one follicle, known as the dominant follicle, matures to release an egg, while the rest of the eggs produced in that cycle will die. Disruption at any stage in the development of the follicle can prevent this maturation and impair fertility, as well as alter the production of hormones in the ovaries.

In the study, published online in the Oct. 1 issue of the journal *Biology of Reproduction*, researchers used a [mouse model](#) to examine the role of a gene known as Smad-3 in the early stages of follicular growth to better understand the molecular mechanisms that could influence fertility. Specifically, they looked at the signaling pathways involved in the follicles' response to follicle stimulating hormone, or FSH. FSH is one of the most important hormones involved in fertility and is responsible for helping a woman's body develop a mature egg.

The team, led by principal investigator Elizabeth McGee, M.D., associate professor of [obstetrics](#) and [gynecology](#) in the VCU School of

Medicine, reported that female mice missing the Smad-3 gene did not experience normal ovulation and were infertile because there is a reduced ability of the follicle to respond to FSH stimulation. Further, the team concluded that Smad-3 regulates follicle growth and an important family of proteins that are essential for follicle development.

"Learning precisely how the FSH receptor is regulated is an important step in understanding the subtle defects in signal transduction that can interfere with follicle development and female fertility and could lead to new types of fertility treatments," said McGee, who is director of reproductive endocrinology and infertility at the VCU Medical Center.

More information:

<http://www.biolreprod.org/content/81/4/730.full.pdf+html>

Source: Virginia Commonwealth University ([news](#) : [web](#))

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