

# Liver protein crucial for pregnancy: Mice study provides insight into mechanisms of human reproduction

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A protein first shown to function in the liver plays a crucial role in pregnancy in mice and has a key role in the human menstrual cycle, according to researchers at the University of Montreal.

Mice that were genetically engineered not to produce the liver receptor homolog-1 (Lrh-1) molecule were unable to create the uterine conditions necessary for establishing and sustaining pregnancy, resulting in the formation of defective placentas. The researchers then showed that Lhr-1 was present in the human uterus and the essential processes related to the success of early gestation.

"We previously showed that Lrh-1 is essential for ovulation. Our newest studies have revealed that it is plays an important role in the uterus, raising the possibility that Lrh-1 deficiency contributes to human gestational failure," explained lead author Bruce Murphy, of the university's Animal Reproduction Research Centre. "We worked with mice before looking at human tissues. I believe it premature to propose determination of Lrh-1 in uterine biopsies as a diagnostic tool, but we are working on determining the receptor's pattern of expression across the menstrual cycle."

The researchers also looked at whether [hormone replacement therapy](#) might restore normal uterine functions in the mice. "Progesterone did not make a difference. Although hormone therapy allowed for the

embryos to implant, we saw problems with the lining in the uterus, compromised formation of the placenta, fetal growth retardation and [fetal death](#)," Murphy said. "However, there are new Lrh-1 agonists and antagonists, currently in clinical trials to treat hepatic consequences of type II diabetes, and thus [therapeutic intervention](#) might be possible."

The study was published in *Nature Medicine* on June 30, 2013.

**More information:** Liver receptor homolog-1 is essential for pregnancy, [DOI: 10.1038/nm.3192](https://doi.org/10.1038/nm.3192)

Provided by University of Montreal

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