

# Rogue bacteria suspected in IVF failures

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A serendipitous discovery by QUT scientists could help unravel the mystery of why many assisted reproductive procedures for infertility fail to produce a pregnancy.

An initial search for a particular [bacteria](#) in follicular fluid (FF), the fluid which surrounds individual eggs in the ovaries, led to a puzzling finding, QUT researcher Dr Christine Knox from QUT's Institute of Health and Biomedical Innovation (IHBI), said.

"It was noted that FF from some women undergoing assisted reproductive techniques (ART) coagulated in the test tube while FF from other women undergoing ART did not," Dr Knox said.

"We decided to find out why this had happened and conducted a study of FF from 31 women in Brisbane undergoing ART, who showed no clinical signs of ovarian infection."

For this work, Dr Knox received the Wesley Research Institute's 2008 Researcher of the Year with co-researchers Dr John and Janet Allan, Wesley Monash IVF, and the Wesley Research Institute Tissue Bank.

"Our findings were startling: we found 21 of the 31 FF samples contained one or more microorganisms. This in itself was contrary to accepted thought because it was believed the fluid surrounding the ovum was sterile," Dr Knox said.

This finding prompted a larger study by QUT PhD researcher Elise

Pelzer, under a Wesley Research Institute scholarship, working with Dr Knox.

"We tested the FF of 148 women and found bacteria present in the fluid of 99 per cent of the women tested. Only the FF from one woman was sterile," Dr Knox said.

"By testing both vaginal swabs and FF we found that in some women bacteria present in the lower genital tract was transferred to the FF at the time of egg pick-up by the procedure TVOR (transvaginal oocyte, or ovum, retrieval).

"In this process ripened eggs are removed from the ovary by a needle through the vagina. In other women, we found the FF had been infected with unique bacteria not found in the lower genital tract.

"When we looked at pregnancy outcomes in the early study, we found that only 25 per cent of women with FF colonised with unique bacterial species achieved a successful pregnancy," she said.

"By contrast, bacteria introduced into the FF at the time of TVOR did not have the same effect and 50 per cent of these women achieved a successful pregnancy.

"Even though similar numbers of oocytes were collected at the time of TVOR from both groups of women, we also found that eggs from women with colonised FF had a lower rate of fertilisation to start with, which, of course, meant they produced fewer embryos for transfer to the womb."

Dr Knox said the risk factors for having infected FF and poor pregnancy outcomes appeared to be: a longer time of infertility before ART; previous ART with TVOR; and a past history of damage to the Fallopian

tubes.

In this study both culturable and non-culturable bacteria have been detected in the FF samples and, surprisingly, 95 per cent of these samples had more than one type of bacteria in them.

Dr Knox said the findings from the small sample had called for the much larger study which was still continuing at QUT IHBI.

"The results of this larger study, funded by The Wesley Research Institute (WRI), may help us to identify the particular bacterial species that are associated with adverse pregnancy outcomes so that in the future women with these bacteria in FF can be treated to improve the chances of achieving a pregnancy," Dr Knox said.

Provided by Queensland University of Technology ([news](#) : [web](#))

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