

# First evidence found that 'cryptic female choice' is adaptive

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Dr Patrice Rosengrave

University of Otago researchers studying chinook salmon have provided the first evidence that "cryptic female choice" (CFC) enhances fertilisation success and embryo survival.

Cryptic female choice involves females using physical or chemical

mechanisms to control which male fertilises their eggs after mating, and is known to occur in a number of species.

In 2008, Department of Anatomy researchers Dr Patrice Rosengrave and Professor Neil Gemmell were the first to show that CFC occurred in salmon. When these fish spawn, eggs and [sperm](#) are shed simultaneously into the surrounding water with ovarian fluid being secreted with the eggs.

They demonstrated ovarian fluid helped or hindered sperm swiftness depending on the male it came from.

Now, after conducting a series of competitive and non-competitive fertilisation experiments, the pair and colleagues have provided the first evidence that CFC contributes to reproductive success.

Dr Rosengrave says they found that not only does a particular female's OF give a bigger boost to some male's sperm and not others, these speedier sperm have a significantly higher chance of winning the race to fertilise eggs and the resulting offspring have a better survival rate as embryos.

"Additionally, after assessing the genetic quality of the males we found embryo survival was linked to being sired by higher quality fathers," she says.

The findings may have wider implications for our understanding of animal, or even human, reproduction, she adds.

"There could well be equivalent mechanisms at play in environments such as mucous on vaginal or uterine walls."

The research, which was supported by the Marsden Fund of New

Zealand, appears in the UK journal *Proceedings of the Royal Society B*.

**More information:** Rosengrave P, Montgomerie R, Gemmell N.  
Cryptic female choice enhances fertilization success and embryo  
survival in chinook salmon. *Proc. R. Soc. B*  
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Provided by University of Otago

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