Infidelity produces faster sperms

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Until now, it has been difficult to prove that fast-swimming sperms have an advantage when it comes to fertilizing an egg. But now a research team at Uppsala University can demonstrate that unfaithful females of the cichlid fish species influence the males' sperms. Increased competition leads to both faster and larger sperms, and the research findings now being published in the scientific journal *PNAS, Proceedings of the National Academy of Sciences*, thus show that the much mythologized size factor does indeed count.

"The competition among sperms to fertilize a female's eggs is an extremely powerful evolutionary force that influences various characteristics of sperms, such as size and speed," says Niclas Kolm, a researcher at Uppsala University, who, in collaboration with scientists from several other universities, has studied the mating system of 29 species of Tanganyika cichlids. "For the first time, we can show a strong link between the degree of sperm competition and the size and speed of the sperms. Males with promiscuous females develop faster and larger sperms than the monogamous species," says Niclas.

"Another unique aspect of the study is that we based our study on an unusually large base, with many fish from many different species. The fish were caught in lakes in Africa, and a special characteristic of this group of fishes is that there are incredible numbers of species," says Niclas. "There's an unbelievable variety of species and different kinds of mating behaviors. There's the whole spectrum of mating systems, from monogamous males to females that mate with many many males."

The findings also show that the speed and the size of sperms are closely related: larger sperms are faster. These sperms swim faster thanks to the greater power of a larger flagellum, but faster sperms also need to have a larger store of energy, which in turn results in larger sperms.

Thanks to new analytical methods, they have also managed to demonstrate the order of this development. The sperms first become faster, then larger, following increased female promiscuity in a species.

“No one has previously been able to show what causes what. Here we can clearly see that female promiscuity determines the character of sperms,” says Niclas.

Provided by Uppsala University