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More Free Sex for Females Means More and Healthier Babies

Sperm competition discovered in the case of marsupial "mice"

A team from Australian National University has found that some marsupial promiscuous females are more likely to give birth to larger and healthier clutches. "Scientists have developed many theories to explain why some female animals have multiple sex partners: whether it's trading sex for food and protection, dealing with infertile males, or avoiding the negative effects of inbreeding in species that can't recognize their relatives," Dr Diana Fisher said. "Another theory is that mating with multiple males would result in sperm competition. This means that males with the strongest sperm are more likely to become sires and father better quality offspring. Until now, this theory hasn't been demonstrated convincingly." The sperm competition theory seems to be effective amongst brown broad footed marsupial mice (*Antechinus stuartii*) (photo) from the forests of south-eastern Australia. These are mouse-sized, insect-eating relatives of the Tasmanian devil and marsupial "cats", rarely seen, because they are quick, nocturnal, and arboreal. The breeding season lasts 10 to 14 days and female marsupial mice seek out several males in their nests to perform a violent mating and copulation is protracted, lasting till 12 hours in order to ensure a kind of mate guarding. The females can store sperm up to three days in sperm-storage crypts in the ovary and do not ovulate until the end of the breeding season. But why would the female look for multiple mates when this increases the risk of disease and physical injury. Well, it seems this is the best strategy to increase offspring' survival. Stronger males, with more competitive sperm, account for healthier young. Fisher's team captured marsupial mice just before mating season in two successive years. Some females were only allowed one mate, while others had three. Within each "block," each of three males mated once with three different polyandrous females and three times with one of three exclusive females. DNA analysis revealed which males fathered which babies. Males were ranked as more or less competitive, based on the number of offspring they fathered, which varied from zero to 15 babies. Polyandrous females (which had several mates) delivered larger litters than the monogamous females. "In one year, we released families back into the wild when the babies were still in the mother's pouch," Fisher said. "The result was that survival of babies with promiscuous mothers was almost three times as high as those in the monogamous group." "The next year, we kept families in captivity until the babies were almost weaned. Again, babies of promiscuous mothers did much better. Paternity tests showed that the sperm of some males were far more successful than others, and, most important of all, that babies fathered by these males were twice as likely to survive." Although polyandrous females mated with a mixed array of males, most of their ovules were fecundated by sperm of the fit males. As marsupial mice females store sperm, it does not matter the order of copulations; sperm competition will decide. "So that means that females that mate with lots of males get more of their offspring sired by the good-quality males that increase the baby survival," Fisher told. Female's only way to choose the best genes is to mate with many males. Polyandry to ensure male protection during offspring growing is not the case of *Antechinus*: when the babies are born, the fathers are already dead. "They have this short mating season when they just go crazy and after that they drop dead or their immune system collapses and they get gangrene and start hemorrhaging," Fisher said.