

The importance of 'inner values': Female sparrows test the genetic make-up of their mates

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How do females select partners? Darwin's initial idea that the fittest males would be the most desirable and would therefore be most likely to secure partners has represented a cornerstone of evolutionary theory since the publication of "The Descent of Man" in 1871. Darwin proposed that secondary sexual characteristics enabled females to see at a glance which male was "best", i.e. best for every female. This male would be the chosen partner as he would pass on the best possible genes to the next generation, thereby increasing the fitness of the species.

Towards the end of the 20th century, however, a number of researchers – perhaps because they did not see themselves as the most desirable males on offer – began to move away from this idea and to consider instead the notion that different [females](#) may intrinsically prefer different males. There is increasing evidence that animals select [partners](#) that are compatible with them and it has been suggested that the genes of the major histocompatibility complex (MHC) might influence mating preferences. MHC genes have key roles in the immune system and the offspring of partners with very different MHC alleles may be more resistant to disease and thus genetically "fitter".

Hoi's group at the Konrad Lorenz Institute of Ethology, from January 2011 part of the University of Veterinary Medicine, Vienna, investigated this idea in house sparrows. The scientists examine the birds' preferences for partners by means of choice experiments, in which a number of

females were offered a choice of four partners: a "control" female and three different males. Females were found to spend very little time next to the control female, confirming that their preferences were sexual and not merely social. If females sought the "best" mating partner, most females would prefer one or few males but the scientists could find no evidence that this was the case. Furthermore, they could not show that females preferred males with high individual MHC diversities. However, they did find that females with a low number of MHC alleles were most attracted to males carrying a high number of such alleles. This result suggests that the birds have a mechanism for "counting" the number of MHC alleles on offer from individual males.

The work represents the first experimental evidence that birds' mating preferences are influenced by the [genes](#) of the major histocompatibility complex. As Hoi says, "our findings show that birds do not simply select the 'most attractive' partner but instead choose ones with which they are most compatible. Like humans, then, birds seem to pay attention to the 'inner values' of their potential partners."

More information: The paper Female house sparrows "count on" male genes: experimental evidence for MHC-dependent mate preference in birds by Matteo Griggio, Clotilde Biard, Dustin J. Penn and Herbert Hoi is published online by the journal *BMC Evolutionary Biology*.

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