

By: [Gina Whitei](#), Science Editor

[Urine Treason: Inbred Males Have No Chance](#)

Olfaction and mating

Inbreeding is extremely harmful from a biological point of view. We all carry bad mutations, but they are hampered by another healthy gene variant in the sets made of two genes in our genome. In inbred animals, bad mutations have a huge chance to be transmitted to the offspring in a double set and to manifest. These effects manifest from weaker biological traits (physic, immunity, and so on) and severe genetic diseases to dead even inside the womb. Such individuals do not represent a viable choice for having a mating partner. A new research published in the journal *Current Biology* shows that female mice have a very subtle method of detecting inbred males: olfaction. Female mice clearly want strong and fit males for fertilization: these males can defend territories where the females find enough food for raising the litter. Inbred males have less physical power for defending large territories, and the territory was thought to be the clue for females in choosing the mate. But even when inbred males had larger territories, the female mice still avoided them. The secret was in their urine: with a sniff of the male excreted liquid, the females make the difference between dominant and weaker males. Females chose males with a high array of smelly proteins in their urine. Males from combination of genetically very different individuals have, of course, a much varied protein composition in their urine as compared to inbred males. "Females may be able to recognize these superior males simply by 'counting' the number of proteins they produce, without waiting to see which might win in a fight," said co-author Michael Thom, a behavioral ecologist at the University of Liverpool in England. The same team had found that mice avoid mating with close relatives to prevent inbreeding. "It seems likely that this will also be important to other animals and could indeed be important to humans. Still, if humans do have an innate way of detecting inbreeding, it will likely differ from that of mice: people don't have special communication proteins in their urine like mice do, and they don't go around sniffing each other's urine!," said co-author Jane Hurst Thom, a behavioral ecologist at the University of Liverpool in England.