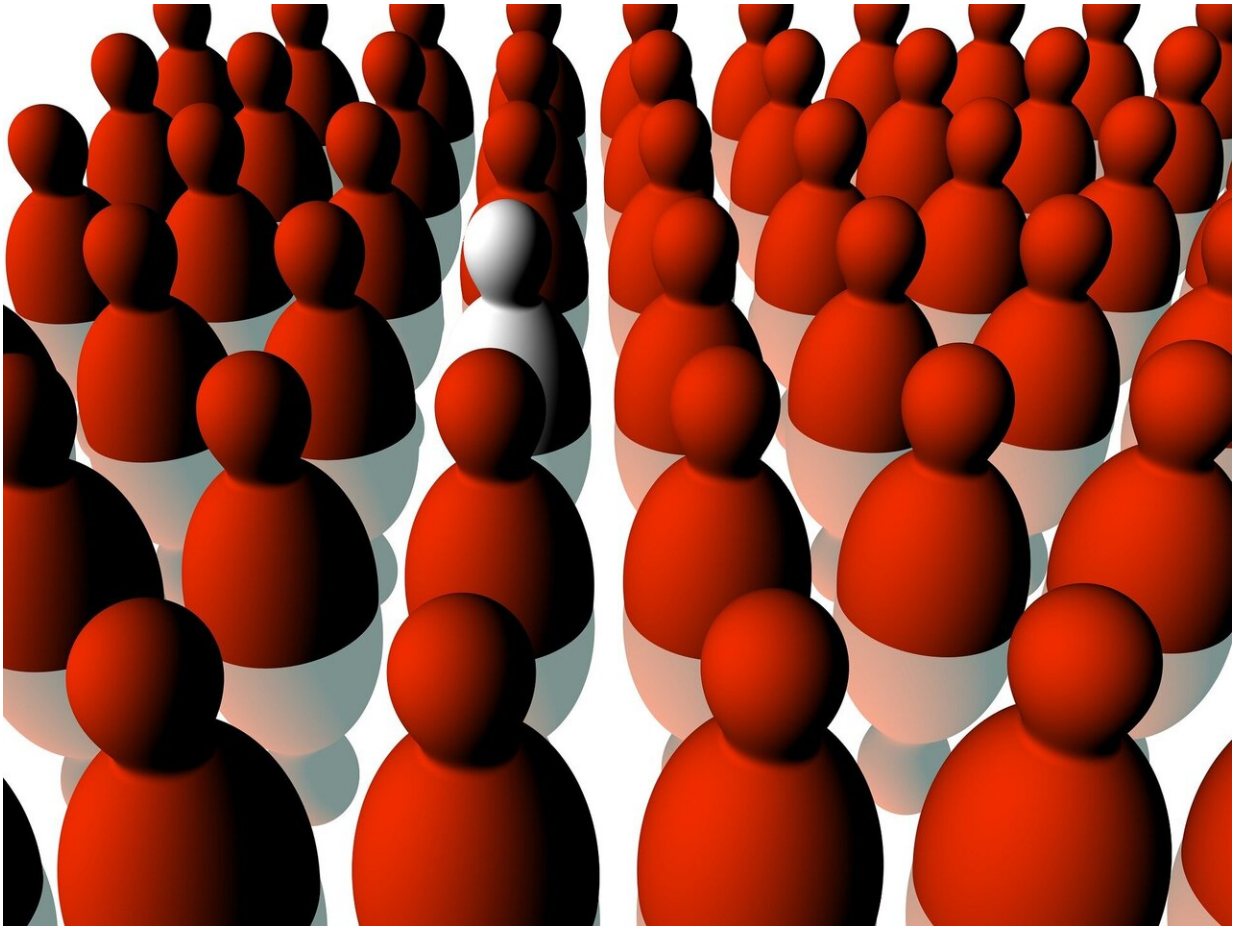
A genetic tug-of-war between the sexes begets variation

November 18 2019



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In species with sexual reproduction, no two individuals are alike, and

scientists have long struggled to understand why there is so much genetic variation. In a new study published in *Nature Ecology & Evolution*, a team of researchers from the University of Uppsala in Sweden now show that a genetic tug-of-war between the sexes acts to maintain variation.

For important traits such as lifespan and metabolism, the interests of the sexes can differ. In many species, males favor a "live-fast-die-young" lifestyle, whereas a slower pace of life is beneficial for females. This sexual conflict can lead to different gene variants being favored in males and females, which can lead to a balance in which both variants, one being good for males and one for females, are maintained in populations. The team from Uppsala analyzed the DNA sequence of many thousands of genes in great detail and found a clear footprint of this sort of balance in different populations of beetles.

"We were surprised to see that hundreds of different genes are apparently involved in sexual conflict," says Professor Göran Arnqvist, who led the research team. "Most of the genes that showed this form of balance were genes that are turned on, or expressed, more in females than in males and were genes known to affect metabolism and reproduction."

"Many of these genes are of really fundamental importance for male and female life histories, so this form of genetic conflict between the sexes seems to contribute in a very important way to the maintenance of genetic variation," Arnqvist continues. "Differences between males and females can, apparently, help create genetic diversity."

More information: The genomic footprint of sexual conflict, *Nature Ecology & Evolution* (2019). DOI: 10.1038/s41559-019-1041-9 , nature.com/articles/s41559-019-1041-9