Testis size matters for genome evolution

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In many primates, females mate with multiple partners, causing an often-intense competition amongst males to pass along their DNA to be king of the genome as well as the jungle.

In the advanced online edition of *Molecular Biology and Evolution*, author Alex Wong used a published sequence dataset from 55 species of primates to test for a correlation between molecular evolutionary rates across a genome (substitution rates) and testes weights, used in the study as a proxy for increased sperm production and competition. It is widely thought that the production of increased numbers of sperm results from more rounds of cell division ——and with more cell division, more mutations arise during sperm production.

"In general, the speed of genome evolution is higher for species in which males have large testes in comparison to species in which males have small testes," said Wong. "This finding helps us to understand why genomes evolve at different rates in different species, and has implications for our understanding of the relationship between female mate choice and the overall fitness of a population."

Wong applied a sophisticated evolutionary method to detect a correlation between testes size and substitution rate in primates, and found a positive correlation when accounting for other confounding factors. This finding could provide support for the general prediction that sperm competition should result in higher substitution rates as a consequence of higher spermatogenic activity in species that mate with more than one male.

"The current finding of covariance between sperm competition intensity and substitution rates adds to a growing body of knowledge concerning the sources of substitution rate variation," said Wong. "The extent to which this covariance is widespread is not yet clear; application of robust comparative methods to large phylogenetic datasets in other taxa, such as birds and insects, will help to establish its generality."

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