

# Competing for high status speeds up aging in male baboons

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Male baboons in Amboseli National Park, Kenya, engage in physical competition for high rank, demonstrating the potential costs of attaining high status Credit: Beth Archie (CC BY 4.0)

Battling other male baboons to achieve high social status comes with physiological costs that accelerate aging, according to study published today in *eLife*.

The findings suggest that current life circumstances may be more important contributors to premature aging than early life hardship, at least in baboons.

Chemical changes to DNA, also called [epigenetic changes](#), can be used as a kind of 'clock' to measure aging. While these epigenetic changes usually correspond with age, they can also be used to detect signs of premature aging.

"Environmental stressors can make the clock tick faster, so that some individuals appear biologically older than their actual age and experience a higher risk of age-related disease," explains co-first author Jordan Anderson, a Ph.D. student in Evolutionary Anthropology at Duke University, Durham, North Carolina, US. "We sought to answer what social or early life experiences contribute to accelerated aging in baboons."

The team measured aging in 245 wild baboons from a well-studied population in Kenya using the epigenetic clock and other methods. They found that the epigenetic clock was a good predictor of chronological age overall. But contrary to what they expected, early life adversity was not a good predictor of accelerated aging in the animals.

Instead, they found that the highest-ranking males showed signs of accelerated aging. Higher body mass index, which is associated with having more lean muscle mass in baboons, was also associated with accelerated aging, likely because of the physical demands of maintaining high status. The team was also able to show that the epigenetic clock sped up as the animals climbed the social ladder and slowed down as they moved down it.

"Our results argue that achieving high rank for male baboons—the best predictor of reproductive success in these animals—imposes costs that

are consistent with a 'live fast, die young,' life history strategy," says co-first author Rachel Johnston, Postdoctoral Associate in Evolutionary Anthropology at Duke University.

"While the findings reveal how [social pressures](#) can influence aging for males, we don't see the same effect of rank in female [baboons](#), who are born into their social rank rather than having to fight for it," adds senior author Jenny Tung, Associate Professor in the Departments of Evolutionary Anthropology and Biology at Duke University, and a Faculty Associate of the Duke University Population Research Institute.

"Our results have important implications for research on the social determinants of health in humans and other animals because they show that 'high status' can mean very different things in different contexts. They also highlight the importance of examining the effects of both early life and current life environments on biological aging," Tung concludes.

**More information:** Jordan A Anderson et al, High social status males experience accelerated epigenetic aging in wild baboons, *eLife* (2021). [DOI: 10.7554/eLife.66128](https://doi.org/10.7554/eLife.66128)

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