

STRESS AND RESILIENCE

## A stressful link with lifespan in wild baboons

Campos, F.A. et al. *Sci Adv* **7**, eabf6759 (2021)

Many of us may have been feeling a bit more stressed out than usual over the past year (and counting!). Chronic stress isn't ideal for our health – elevated levels of glucocorticoids, which are hormones released by the hypothalamus-pituitary-adrenal (HPA) axis in response to stress that prime the body for 'fight or flight,' have been linked to a number of ailments including cardiovascular disease, type 2 diabetes, and immune issues. But whether chronic stress also contributes to cutting years off of our lifespans has been less clear.

Human studies tend to only measure glucocorticoid levels a couple times in a particular subject, while the stressors animals experience in the lab aren't exactly the most natural. Looking outside of the lab, longitudinal studies of wild animals may help establish whether there is indeed a link between stress and mortality.

For decades, researchers working with the [Amboseli Baboon Research Project](#) have been documenting the lives of *Papio cynocephalus* baboons living in southern Kenya. Since 1971 they've collected environmental, demographic, and behavioral data, while regular fecal sampling has been ongoing since 1999. A new study published in *Science Advances* combines life history data with over 14,000 fecal glucocorticoid samples for 242 female baboons over 1,634 total baboon years to model the impact of stress levels and stressful events on lifespan.

Sources of stress for a female baboon include exposure to adverse environmental conditions such as droughts and heat waves, low status in social hierarchies, and pregnancies. The team's model simulations suggest that baboons with elevated fecal glucocorticoid concentrations over the course of their lives will die 5.4 years earlier

on average than more carefree counterparts – for a female baboon, that's over a quarter of its 19-year life expectancy.

That's for a hypothetical baboon experiencing extreme levels of stress per the model and not a causal link, but the results reveal a notable association between repeated and/or sustained stress and decreased lifespan in the animals. Stress does not kill directly and an animal does need to produce glucocorticoids in order to react to threats, but stress levels, which vary by individual, could be used as a prognostic marker of mortality risk as researchers continue to probe how HPA axis activation both helps and harms. Just in case of the latter, let's all go take a deep breath!

Ellen P. Neff

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