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## How hyenas decide whether to form a lion-fighting mob

Cooperative behaviour involves a trade-off between risks and rewards, and can provide benefits that are available only because of group action. Individual spotted hyenas (*Crocuta crocuta*) can join a group to take part in a mobbing behaviour (pictured) that drives away lions (*Panthera leo*) and might thereby provide access to carcasses of animals that have been killed by lions or hyenas.

Mobbing can deter lions as part of the battle between lions and hyenas for resources, but participating can be fatal for hyenas. The identification of factors that predict whether mobbing will occur sheds light on why individuals cooperate in a complex society, as Montgomery *et al*. report in *Proceedings of the Royal Society B* (T. M. Montgomery *et al. Proc. R. Soc. B* **290**, 20231390; 2023).

The authors monitored wild spotted hyenas in a wildlife reserve in Kenya between 1988 and 2016. They found that the quest for food was not necessarily a key driver of mobbing. Lionesses were more likely to be mobbed than were male lions, and a high ratio of hyenas to lions was predictive of mobbing. Social ties between hyenas also boosted the chances of this behaviour occurring. **Mary Abraham**

Evolution

# Genes often uninformative for dating species' origins

**Matt Pennell**

The time frame of a species' origins provides context for evolutionary questions. However, dates from fossils are often inconsistent with estimates from genetic data. Emerging evidence points to a new explanation for this discrepancy.

The history of Earth is characterized by massive extinction events and the expansion of newly emerging groups of organisms. The timing of these extinctions is increasingly well understood, but it has been difficult to pin down dates for the origin of many important groups, including animals, mammals, flowering plants and beetles. A large amount of this uncertainty comes from the conflict between ages estimated solely from the fossil record and those derived from a combination of fossil data and the analysis of genetic differences between living species, known as the molecular clock. For example, analyses using molecular-clock methods date the origin of bilaterians — a group that includes whales, worms and humans — to between 688 million and 596 million years ago[1] but, when examining only the fossil record, the date is around 555 million years ago[2]. Writing in *Systematic Biology*, Budd and Mann[3] provide insights into why this time gap has remained so persistent.

The authors' analyses reveal that, paradoxically, the seemingly information-rich approaches that leverage several types of data for dating might not actually be using much information at all. Currently, molecular dating is done using a method called node dating, in which dates are estimated using what is known