

## Interspecific Gene Flow Shaped the Evolution of the Genus *Canis*

The evolutionary history of the wolf-like canids of the genus *Canis* has been heavily debated, especially regarding the number of distinct species and their relationships at the population and species level [1–6]. We assembled a dataset of 48 resequenced genomes spanning all members of the genus *Canis* except the black-backed and side-striped jackals, encompassing the global diversity of seven extant canid lineages. This includes eight new genomes, including the first resequenced Ethiopian wolf (*Canis simensis*), one dhole (*Cuon alpinus*), two East African hunting dogs (*Lycaon pictus*), two Eurasian golden jackals (*Canis aureus*), and two Middle Eastern gray wolves (*Canis lupus*). The relationships between the Ethiopian wolf, African golden wolf, and golden jackal were resolved. We highlight the role of interspecific hybridization in the evolution of this charismatic group. Specifically, we find gene flow between the ancestors of the dhole and African hunting dog and admixture between the gray wolf, coyote (*Canis latrans*), golden jackal, and African golden wolf. Additionally, we report gene flow from gray and Ethiopian wolves to the African golden wolf, suggesting that the African golden wolf originated through hybridization between these species. Finally, we hypothesize that coyotes and gray wolves carry genetic material derived from a “ghost” basal canid lineage.

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