Brain size found to have decreased in domesticated cats

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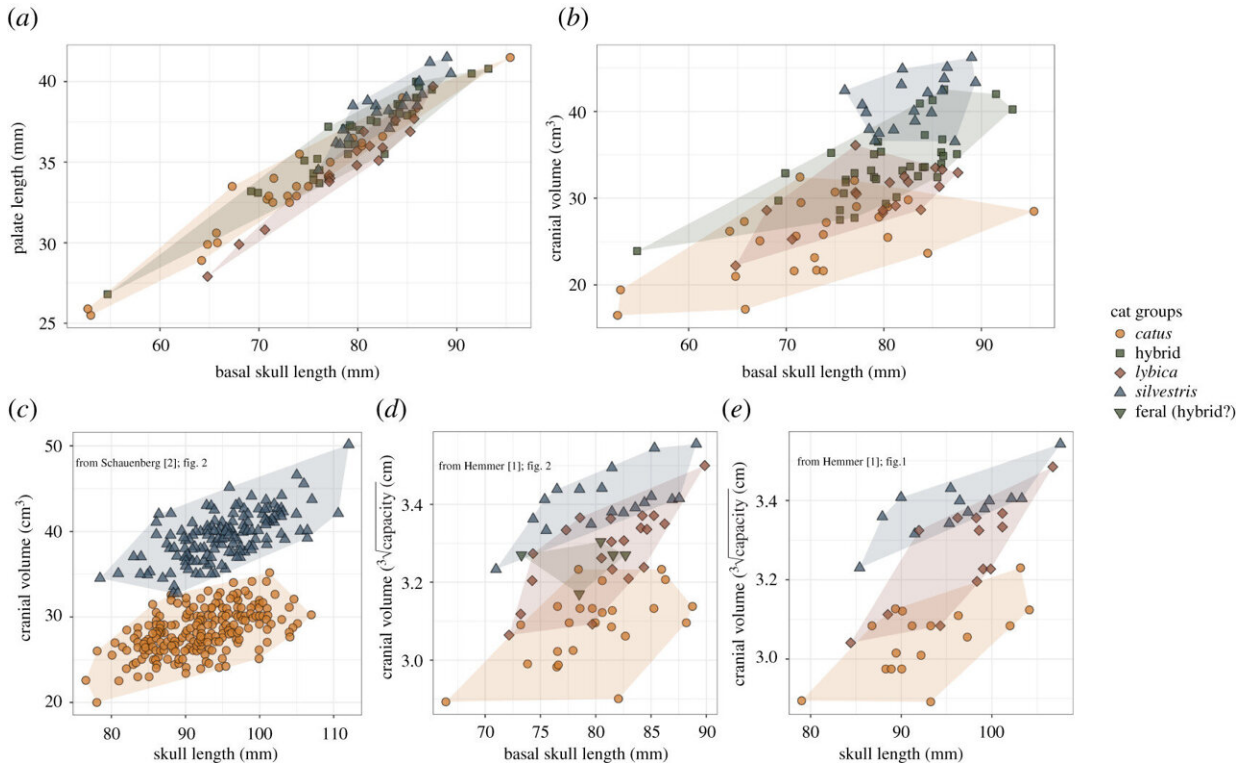
A combined team of researchers from the University of Vienna and National Museums Scotland, has found that the brain size of domestic cats is smaller than their African ancestors. In their paper published in

the journal *Royal Society Open Science*, the group describes how they measured and compared cranial capacity in multiple types of cats and what they found by doing so.

Prior research has shown that domestication of animals by humans generally leads to a decrease in brain size. To date, this has been seen in dogs, sheep and rabbits. In this new effort, the researchers wondered if the same were true of house cats, which first became domesticated approximately 10,000 years ago.

The researchers noted that much of the research done to measure brain size reduction in domesticated animals has become outdated and, in some cases, has been based on inaccurate representations of a given animal's ancestry. Because of this, they chose to start from scratch.

The work involved measuring the cranial capacity of a large number of domesticated cats to arrive at an average size. They then did the same with wild African cats that have been shown to be the ancestors of modern housecats. They found that the brains of domesticated cats are much smaller than their forebears. To show that the decrease in brain size was attributable to domestication, the researchers also measured the cranial capacity of a large number of European wildcats and a large number of hybrids. The brain size of such cats was generally in between that of domesticated housecats and wild African cats.



Palate length and cranial volume of Felis cat species. Domestic cats are represented by orange dots, F. catus × F. silvestris hybrids by olive squares, F. lybica by purple diamonds and F. silvestris by blue triangles. (a) Palate length of all four groups in mm over basal skull length in mm (our data). (b) Cranial volume in cm^3 of all four groups over basal skull length in mm (our data). (c) Cranial volume data of F. catus and F. silvestris cats in cm^3 over the total skull length from [2]. (d) Cube root of cranial volume data for all four groups in cm from [1]. (e) Cube root of cranial volume data for F. catus, F. lybica and F. silvestris cats in cm from [1].

Prior research has suggested that the reason brain size decreases in domesticated animals is because of the decrease in neural crest cells, which are the brain cells that are involved in processing and responding to threats. Domesticated animals, obviously, face far fewer threats than do those in the wild.

The researchers also measured palate size in all of the cats they studied but found no major differences between the groups. Prior research has suggested that as cats became domesticated and subsequently faced fewer threats, their snouts should have grown shorter. But that does not appear to be the case.

More information: Raffaela Lesch et al, Cranial volume and palate length of cats, Felis spp., under domestication, hybridization and in wild populations, *Royal Society Open Science* (2022). DOI: 10.1098/rsos.210477