

Small dogs originated in the Middle East

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A Chihuahua is walked by its handler at a dog show in the southern Israeli town of Arad in 2008. Small domesticated dogs probably originated in the Middle East more than 12,000 years ago as the descendants of grey wolves, according to a gene study published on Wednesday.

A genetic study has found that small domestic dogs probably originated in the Middle East more than 12,000 years ago. Researchers writing in the open access journal *BMC Biology* traced the evolutionary history of the IGF1 gene, finding that the version of the gene that is a major determinant of small size probably originated as a result of the domestication of the Middle Eastern gray wolf.

Melissa Gray and Robert Wayne, from the University of California, Los Angeles, led a team of researchers who surveyed a large sample of gray wolf populations. She said, "The mutation for small body size post-dates the domestication of dogs. However, because all small dogs possess this variant of IGF1, it probably arose early in their history. Our results show

that the version of the IGF1 gene found in small dogs is closely related to that found in Middle Eastern wolves and is consistent with an ancient origin in this region of small domestic dogs".

Previous archeological work in the Middle East has unearthed the remains of small domestic dogs dating to 12,000 years ago. Sites in Belgium, Germany and Western Russia contain older remains (13,000-31,000 years ago), but these are of larger dogs. These findings support the hypothesis put forward by Gray and colleagues that small body size evolved in the Middle East.

Reduction in body size is a common feature of domestication and has been seen in other domesticated animals including cattle, pigs and goats. According to Gray, "Small size could have been more desirable in more densely packed agricultural societies, in which dogs may have lived partly indoors or in confined outdoor spaces".

More information: The IGF1 small dog haplotype is derived from Middle Eastern gray wolves, Melissa M. Gray, Nathan B. Sutter, Elaine A. Ostrander and Robert K. Wayne, *BMC Biology* (in press), www.biomedcentral.com/bmcbiol/

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