Supplementary information, Data S3 Both ancient origin and true admixture are compatible with the mixed components observed in the structure analysis

In the structure analysis presented in the Figure 1D, there are several breeds showing "mixed proportions" between the southern East Asian component and the European breeds. Many of these breeds are of ancient origin. We hypothesize that ancient origin might be the reason for the observed mixed components, as breeds of ancient origin are genetically intermediates between the southern East Asian lineages and European breeds. In other words, patterns of "mixed components" are not always indicative of true population admixture.

We did a simulation study mimicking a serial founding scenario. In the demographic simulation, a series of populations branch off from an ancestral population creating a series of sister groups (Supplementary information, Figure S3A). Among all populations, we allowed two populations (pop3 and pop4) to have an ancient origin and two other populations (pop5 and pop6) to be of true admixture between two distant clades (Supplementary information, Figure S3A). We expected the true admixed populations to show "mixed components" in the structure analysis. The question here is then, whether populations of ancient origin would also show "mixed components".

When we performed the structure analysis (Supplementary information, Figure S3B), both the true admixed individuals and breeds of ancient origin have levels of mixed components. Given the fact that populations of ancient origin tend to reside in the intermediate distance between the distal clades, structure analysis thus tends to infer "mixed components" for them. Hence, we conclude that, both ancient origin and true admixture can be responsible for the observed mixed components found in our structure analysis.