



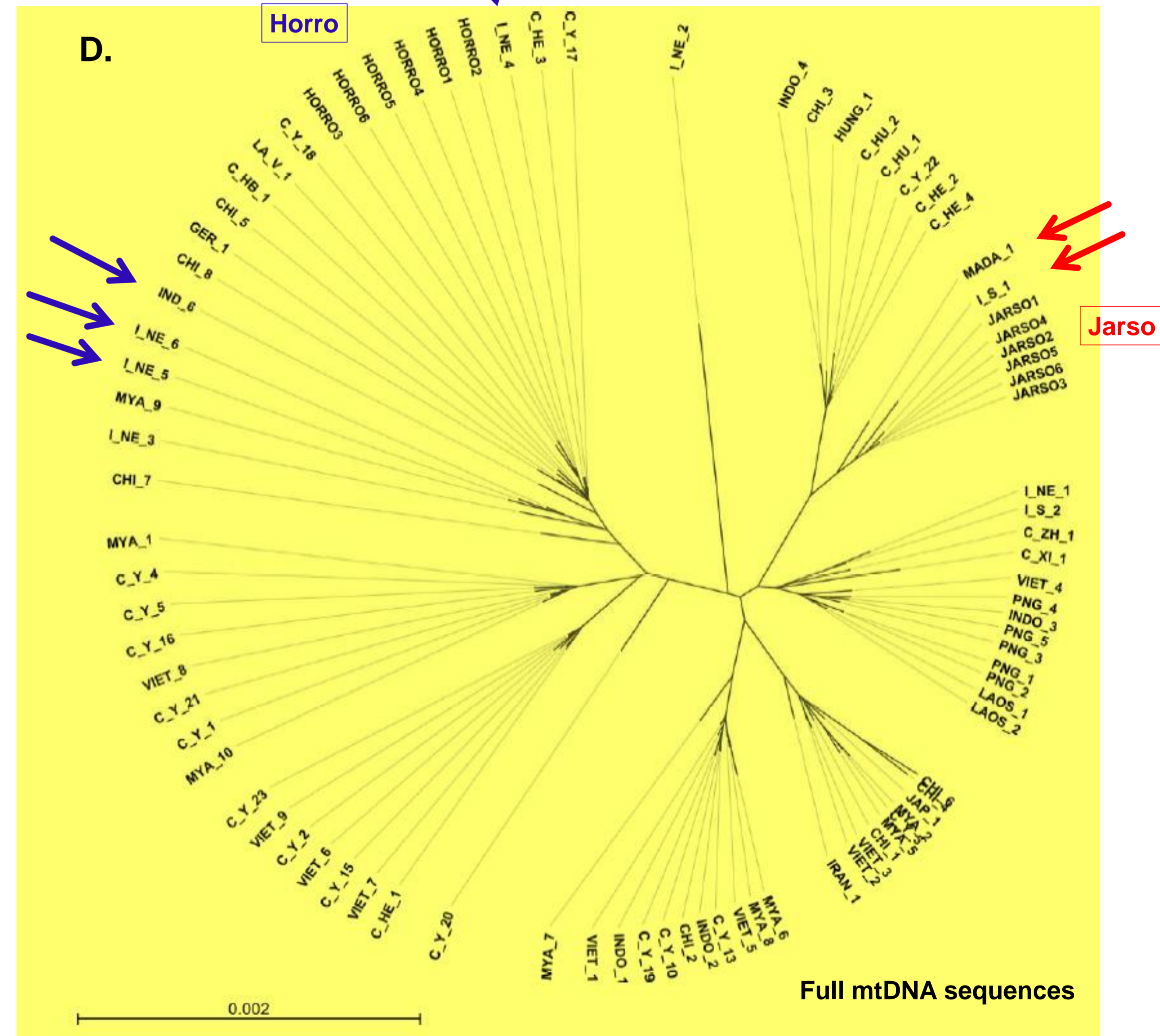
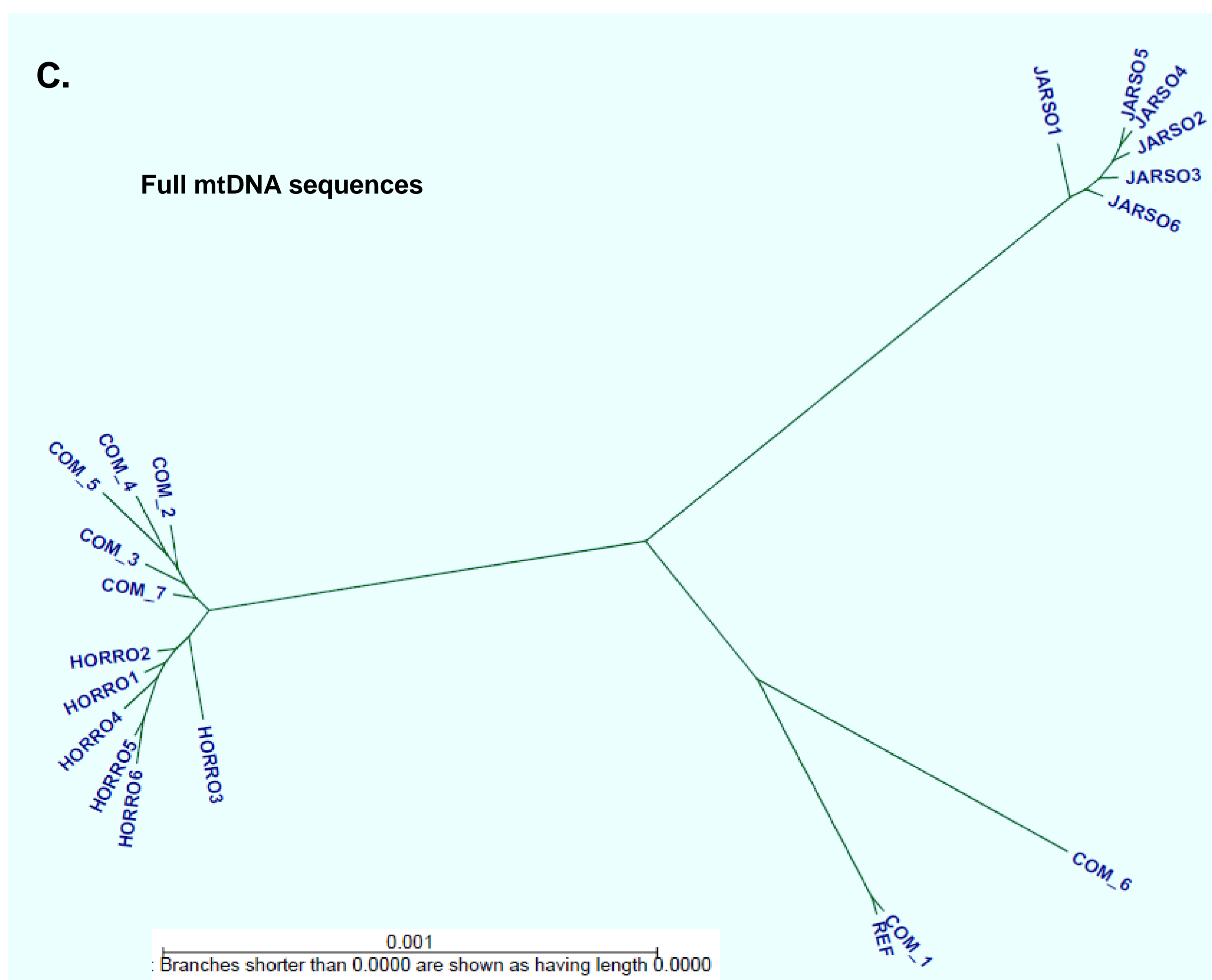
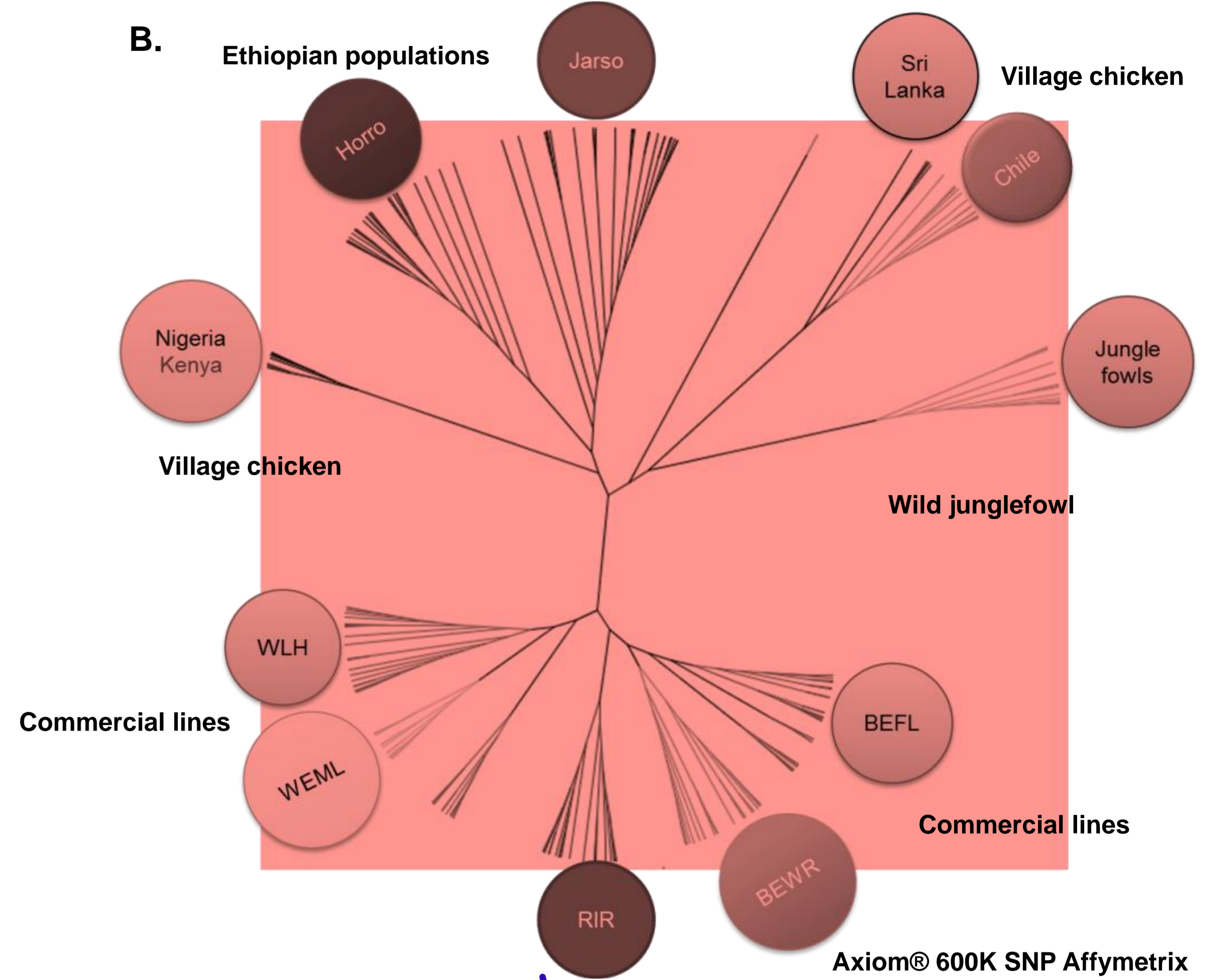
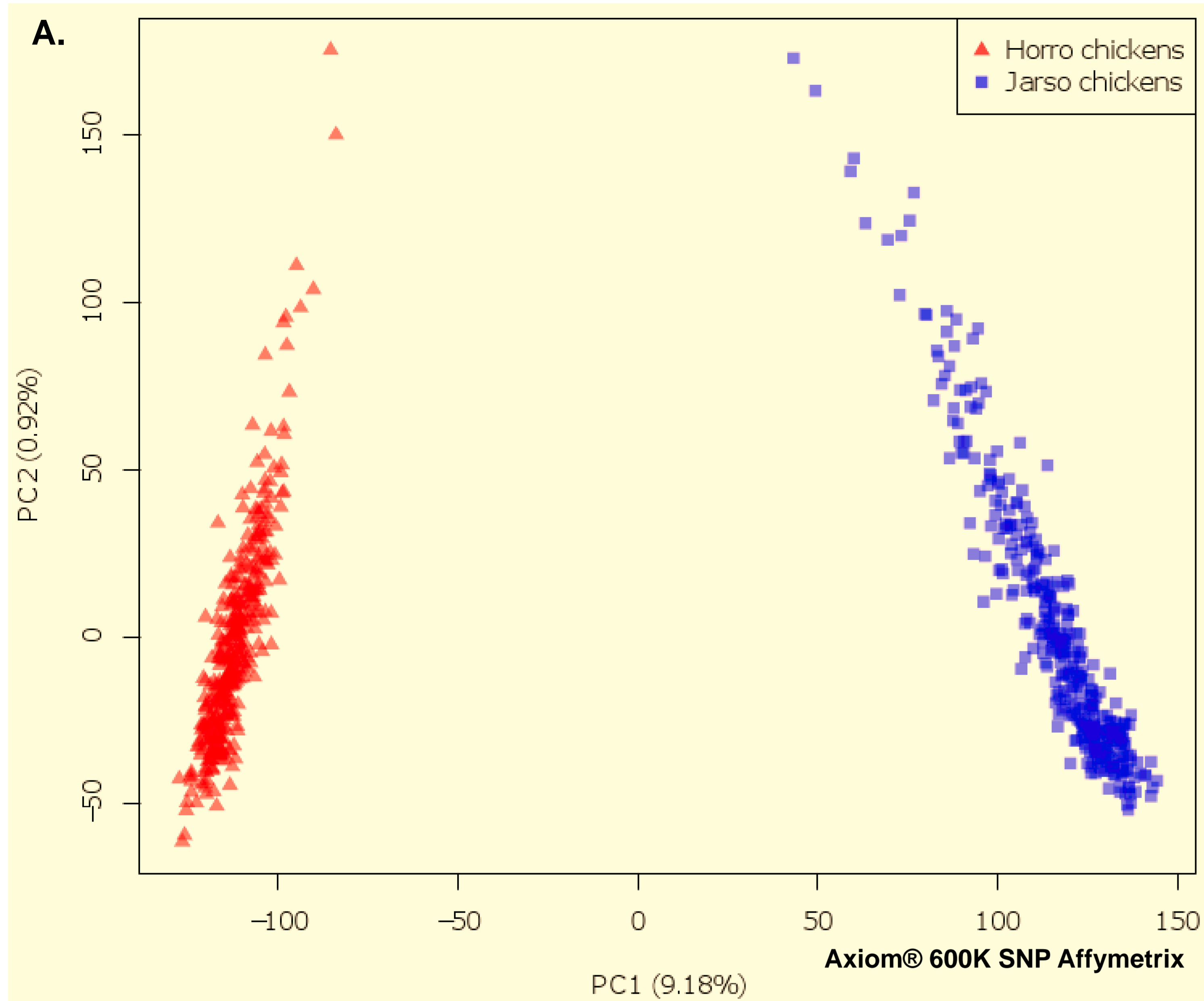
Genetic history of Horro and Jarso chickens



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Ethiopia close to the Arabian Peninsula, the Red Sea Coast and the White Nile River basin has been a gateway for the introduction of livestock domesticates from the Fertile Crescent and Asia into Africa. Here, we report the broad genetic structure and likely origin of two Ethiopian chicken populations, Horro and Jarso, using high density single nucleotide polymorphism (600K) autosomal genome array and full mitochondrial genome sequencing. We identify large genetic divergence between these two populations, both at autosomal and mitochondrial DNA genomes. SNPs analysis including gene pools of domestic village chicken, junglefowl species and subspecies emphasizes the today genetic separation of village chicken from commercial lines. However, mtDNA analysis indicate that the Horro population likely shared a common maternal ancestral population with some commercial lines. Through a phylogeographic analysis of mtDNA of domestic chicken from the Old World, we propose a maternal origin of the Jarso population from the Indian Ocean maritime trading network (linking coastal East Africa, India, Madagascar), while terrestrial trading routes, which started at the North of the Indian subcontinent, may explain the maternal origin of the Horro population.



A. Principal Component Analysis (PCA) of genome wide polymorphic genetic markers (SNPs) of Horro and Jarso populations indicates their genetic differentiation.

B. Autosomal genome-wide 'Identity By State (IBS)' analysis emphasizes the genetic differentiation of commercial chicken lines compared to village chicken, including Horro and Jarso populations, and wild junglefowl.

C. Full mitochondrial DNA sequences analysis reveals a close maternal relation of the Horro population to some commercial chicken lines.

D. Full mitochondrial DNA sequences analysis of village chicken from across the Old World shows that Horro chicken shared a common mtDNA lineage with several domestic chicken from North-East India (→) while the mtDNA lineage of Jarso chicken are shared with sequences found in Madagascar and coastal South India (→).