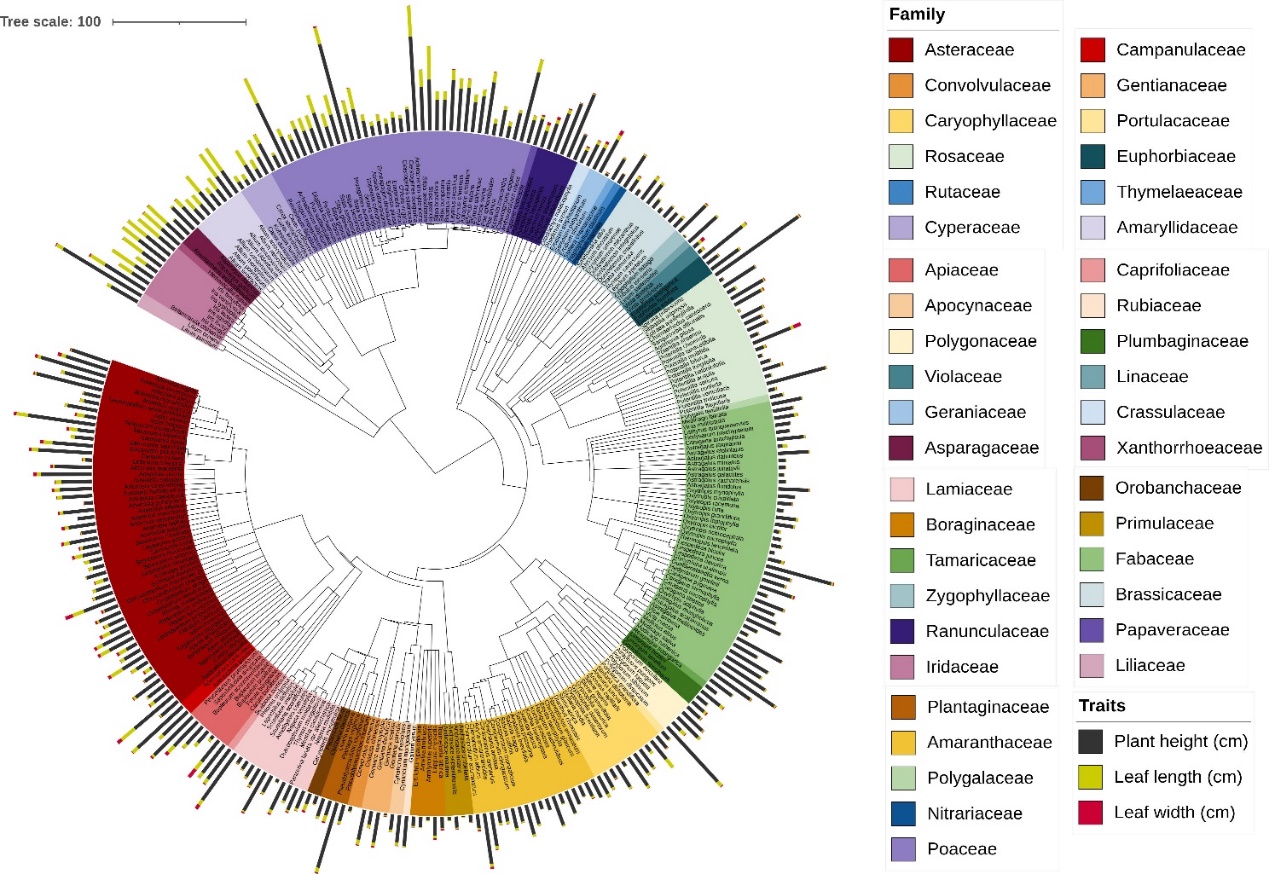
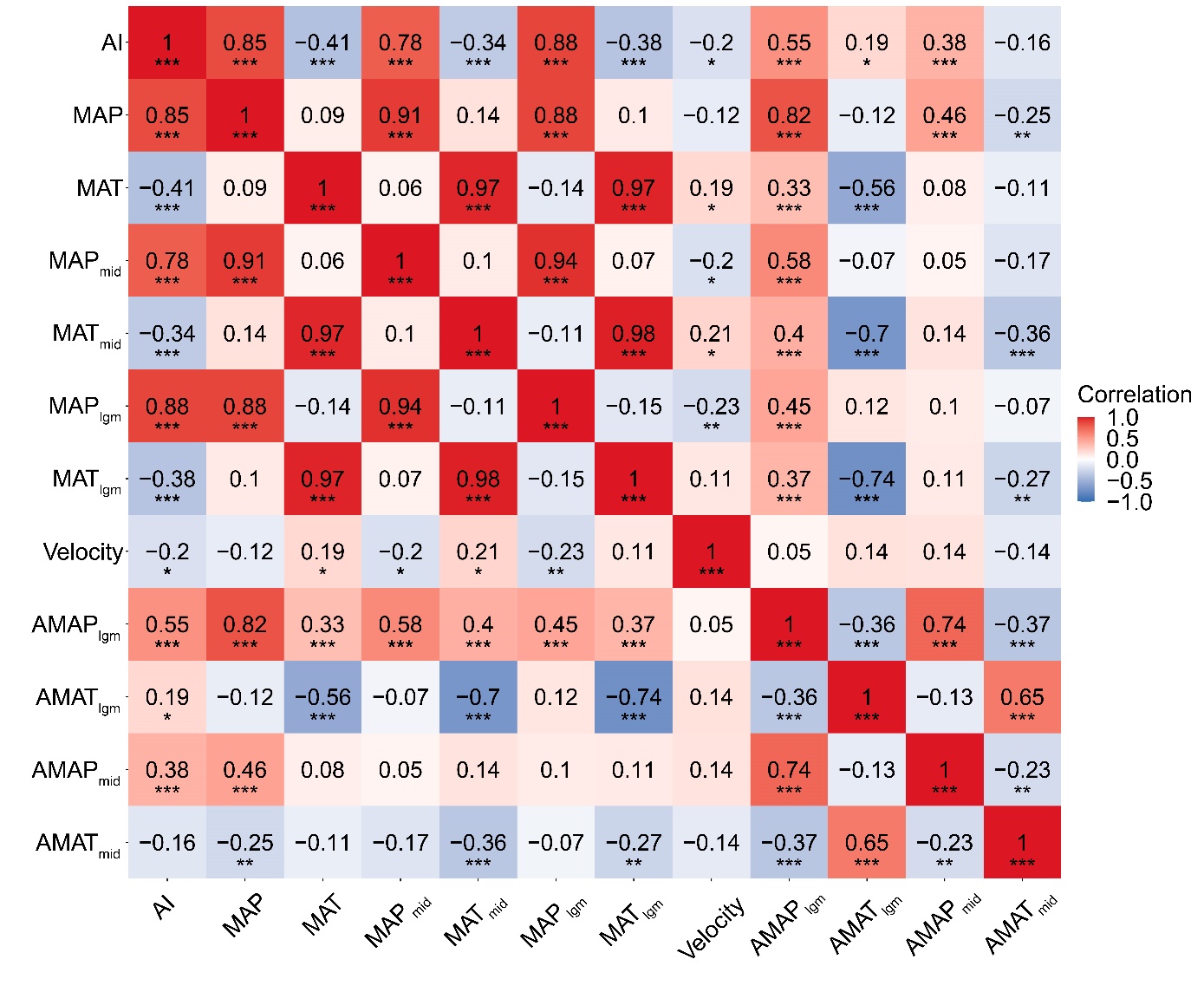


**Fig. S1 Study area and field sampling sites.** (a) Aridity index of current climate; (b) Mean annual temperature of the Mid-Holocene; (c) Mean annual temperature of the Last Glacial Maximum.



**Fig. S2 Phylogenetic trees of herbaceous plants and their traits in steppe on the Mongolian Plateau**



**Fig. S3 Correlation analysis of climate factors**