

Fig. S1 Distribution of main cell shape of the sclerenchymatous layer (SLCS). (a) Frequency distribution of the three SLCS in the association panel. (b-e) Percentage of the three SLCS in the four botanical varieties of peanut.

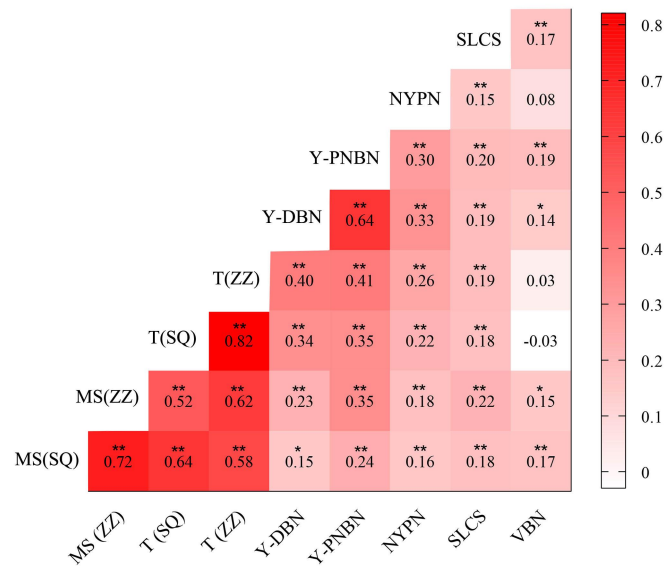


Fig. S2 Pearson correlation coefficients between seven peanut shell traits. Numbers on the principal diagonal indicate correlations between the different traits. *: significant at $P \leq 0.05$; **: significant at $P \leq 0.01$. T, thickness; MS, mechanical strength; Y-DBN, number of Y-shaped distal bifurcations; Y-PNBN, number of Y-shaped proximal ends with no bifurcations; NYPN, number of non-Y-shaped projections; SLCS, main cell shape of sclerenchymatous layer; VBN, number of vascular bundles. SQ, Shangqiu and ZZ, Zhengzhou, represent the two trial locations.

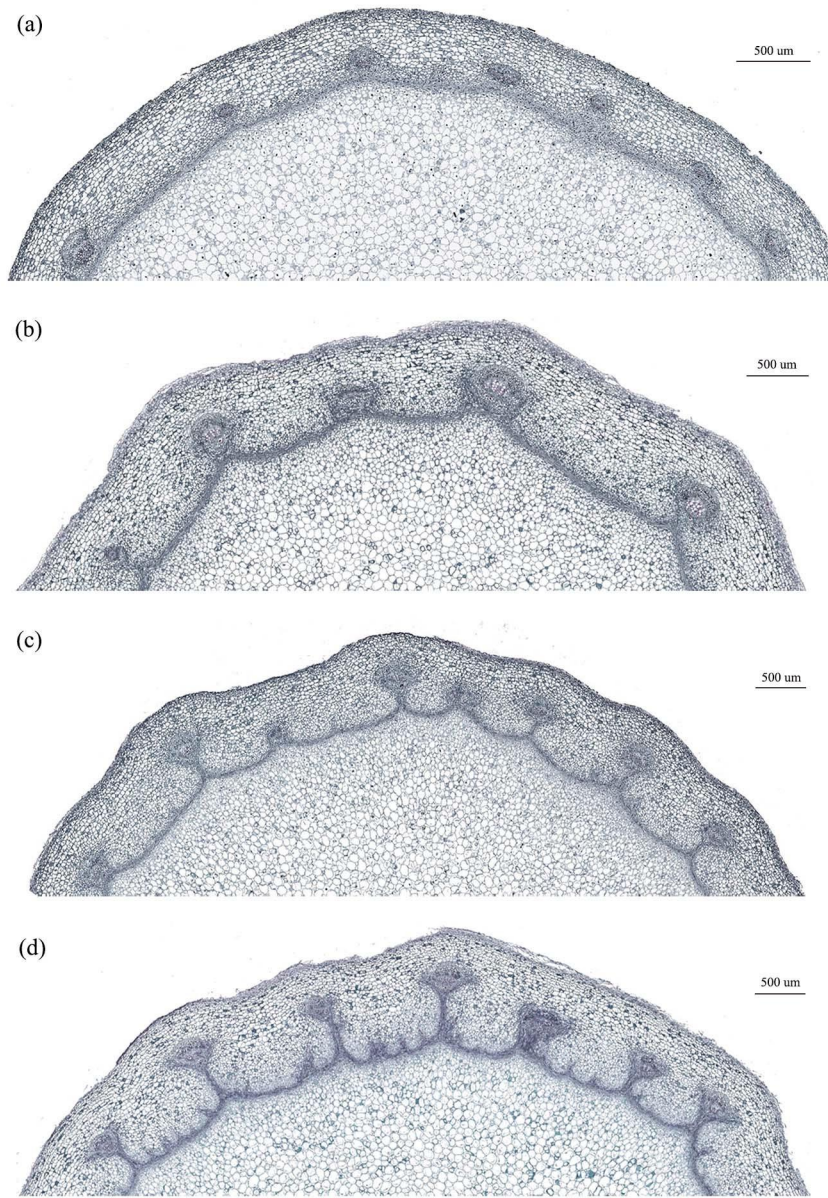


Fig. S3 Cross-section of the peanut shell among four different botanical varieties. (a) var. *hypogaea*; (b) var. *hirsuta*; (c) var. *vulgaris*; (d) var. *fastigiata*.

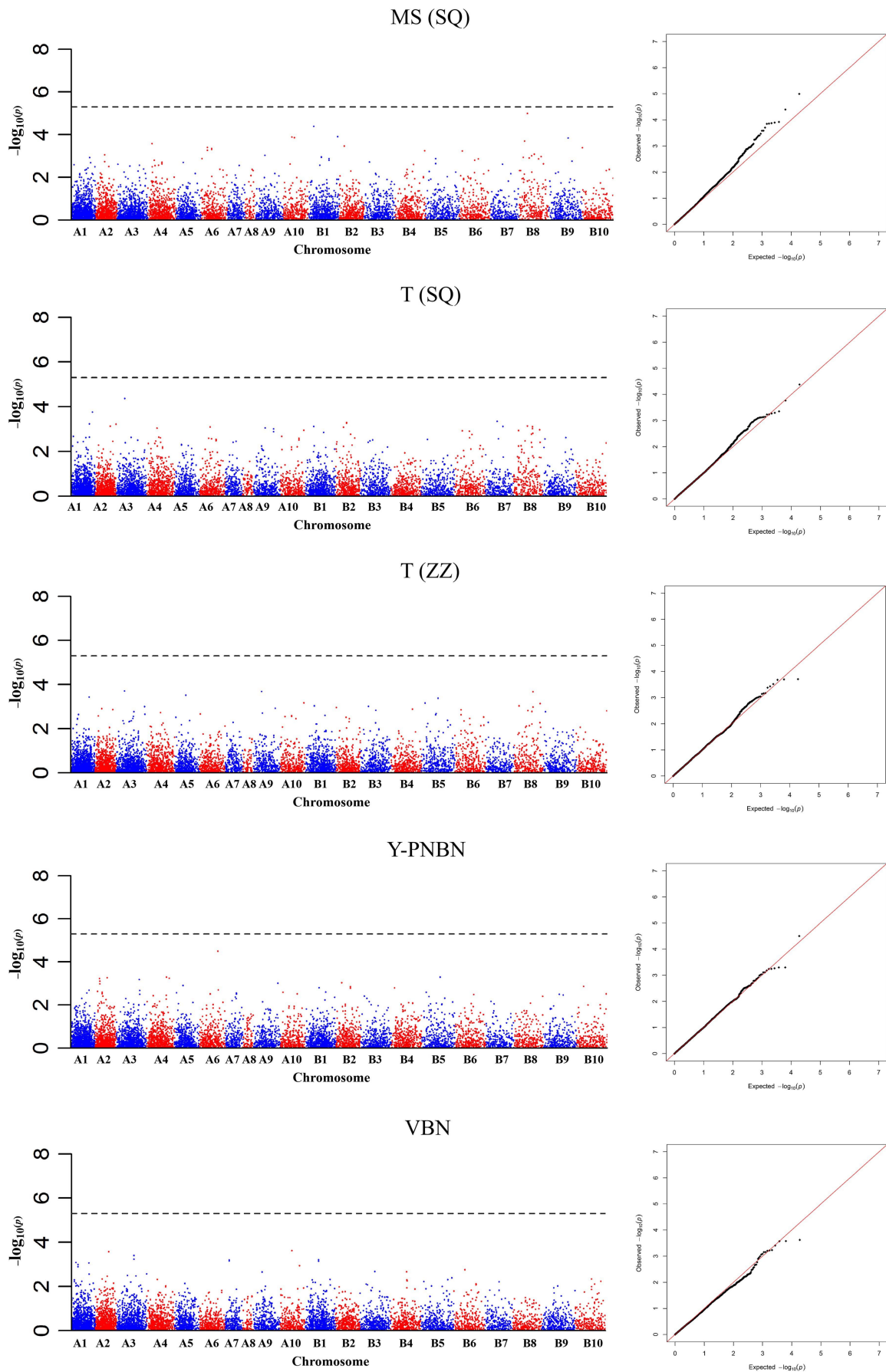


Fig. S4 Manhattan and Q-Q plots for other peanut shell-related traits. Mechanical strength at Shangqiu (MS (SQ)), thickness at Shangqiu and Zhengzhou (T (SQ) and T (ZZ)), number of Y-shaped proximal no bifurcation (Y-PNBN), number of vascular bundle (VBN). The dotted black line indicates the genome-wide

significance threshold: $-\log_{10}(\text{P value}) = 5.3$.

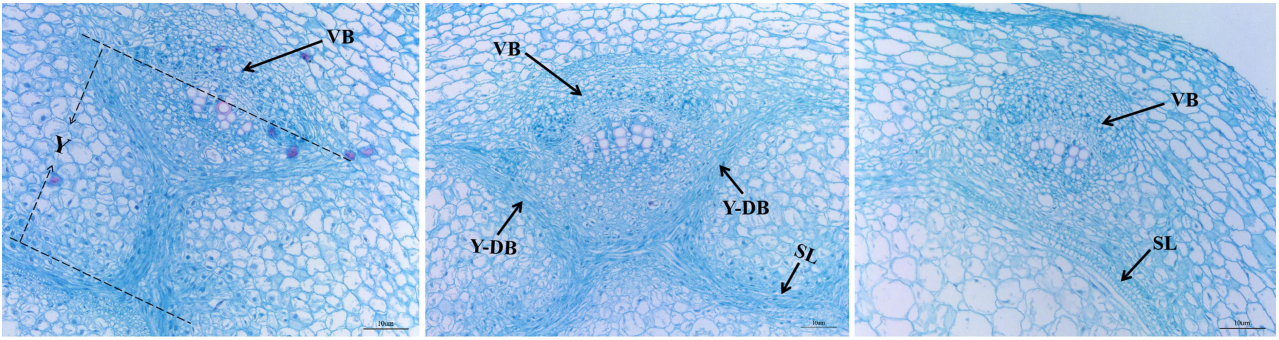


Fig. S5 Three representative distributions of vascular bundles. VB, vascular bundle; Y, Y-shaped projection; Y-DB, Y-shaped distal bifurcation; SL, sclerenchymatous layer.