



**Figure S1.** Correlation matrix for untransformed BLUP values for 11 elemental grain phenotypes in the Ames panel. Pearson's correlation coefficients ( $r$ ) calculated with the function 'cor' in R are presented in the upper triangle, whereas the corresponding  $P$ -values for the significance of correlations ( $\alpha = 0.05$ ) are displayed below the diagonal. The untransformed BLUP values were used to represent the true directionality of the relationship between phenotypes.