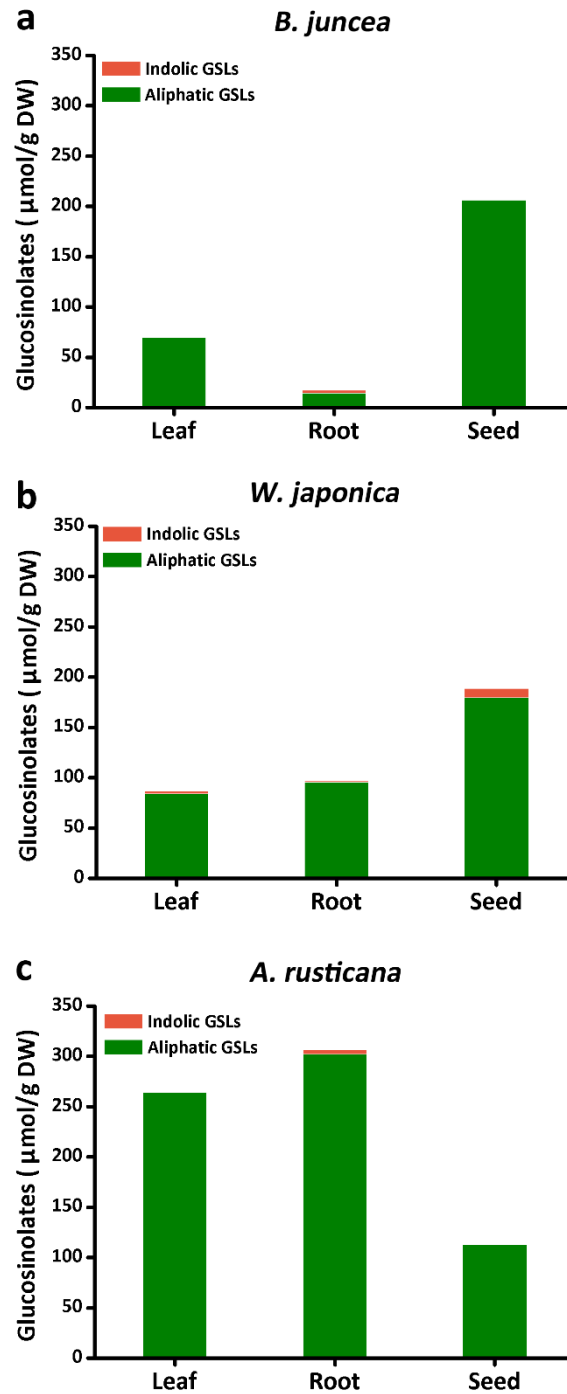
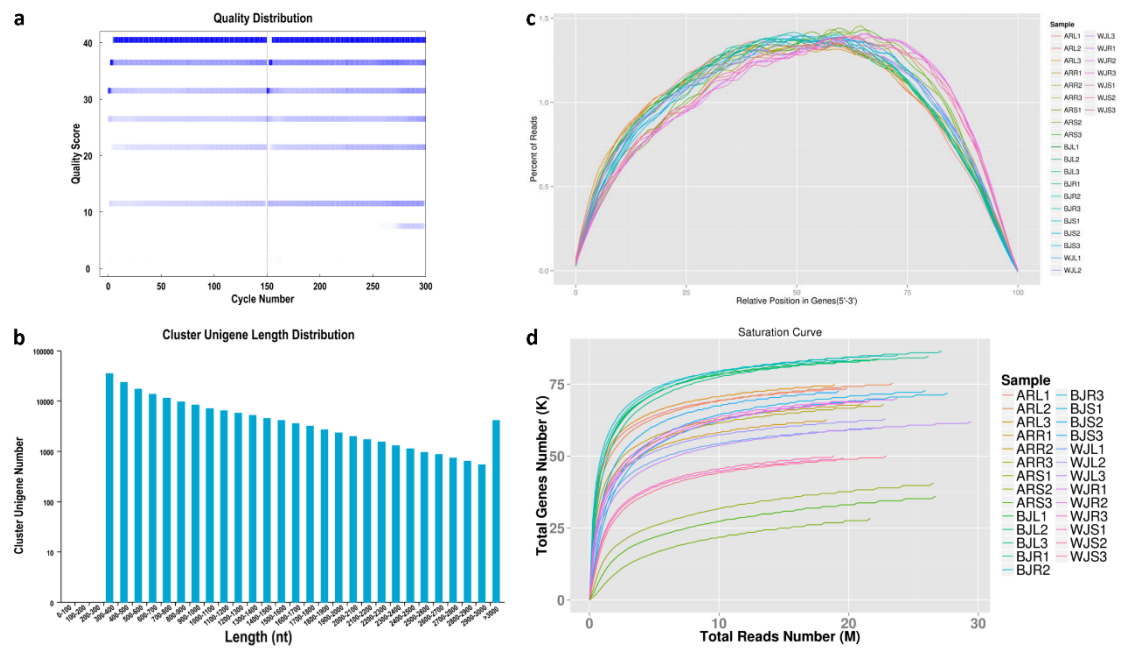
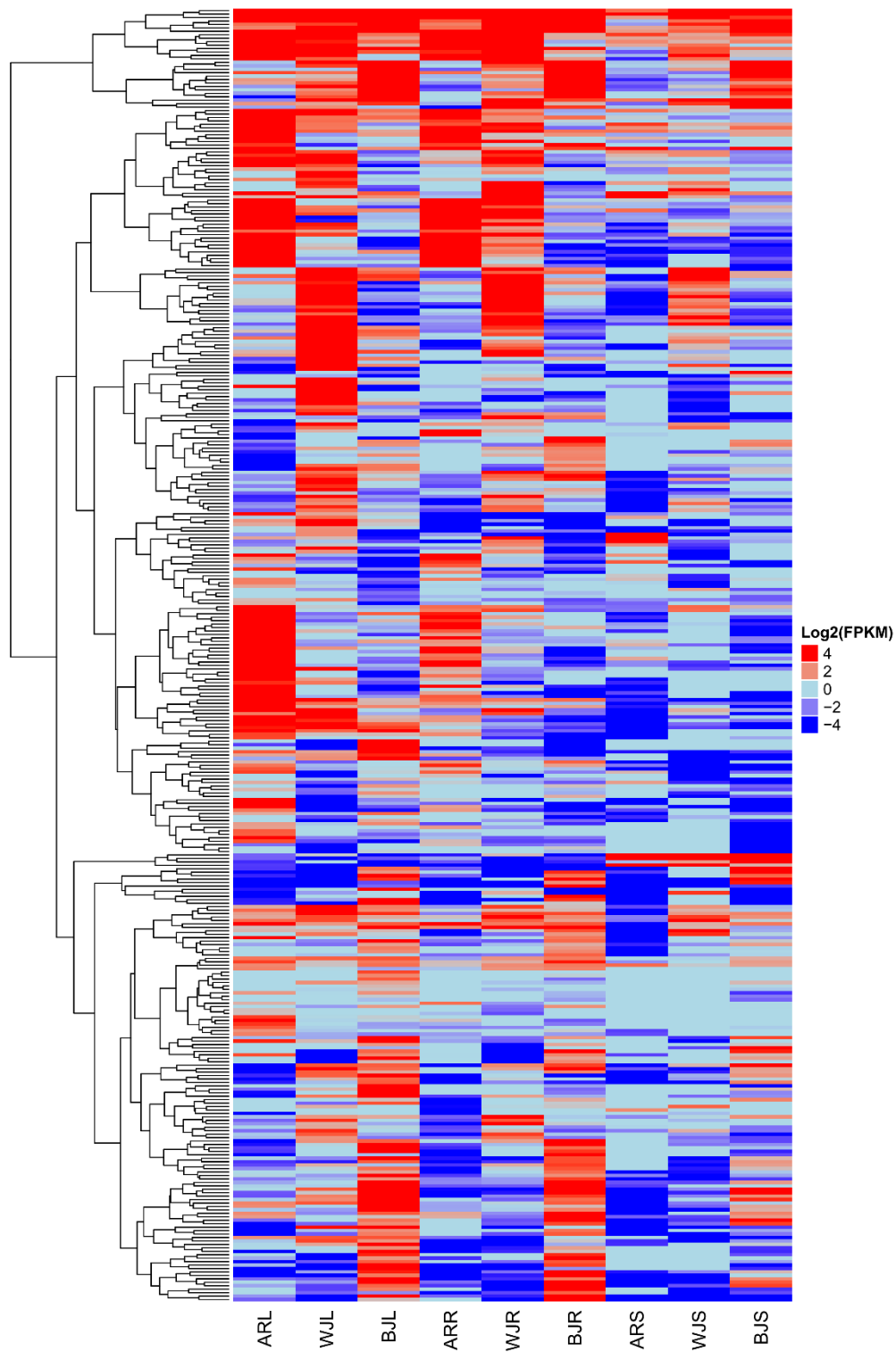




Supplementary Fig. 1. Aliphatic and indolic GSLs in leaf, root and seed of *B. juncea*, *W. japonica* and *A. rusticana*.



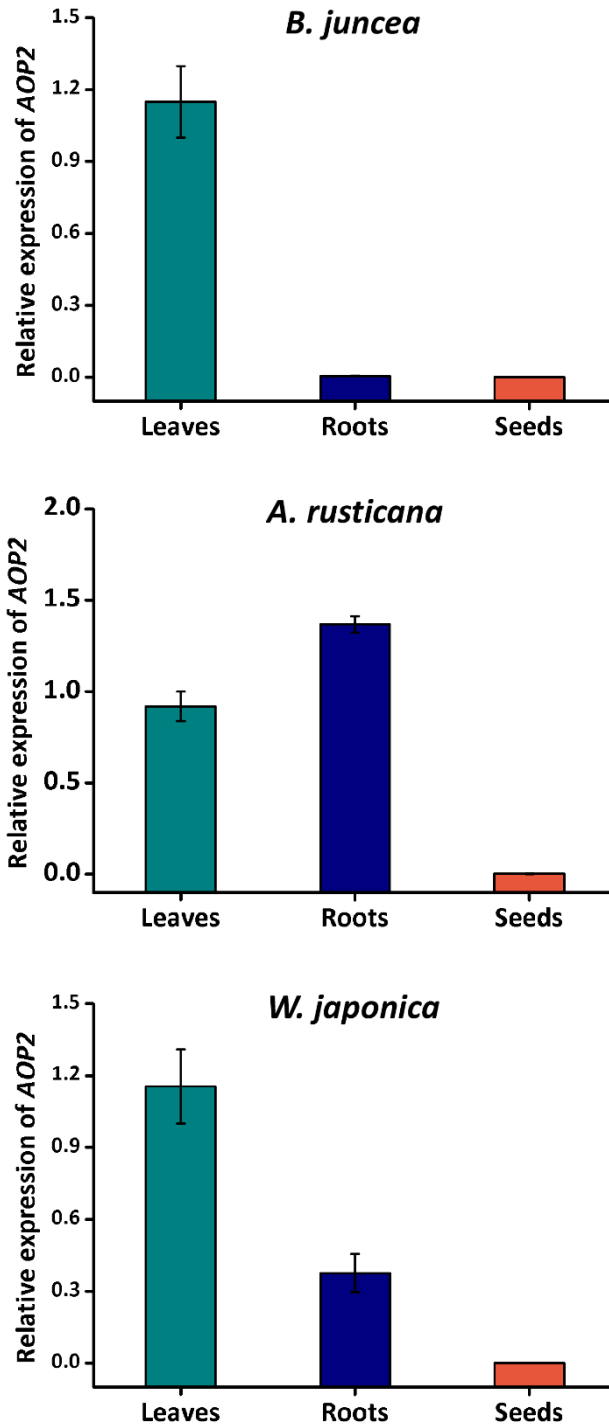
Supplementary Fig. 2. Quality assessment of RNA-seq in leaf, root and seed of *B. juncea*, *W. japonica* and *A. rusticana*. **a**, Quality distribution of sequencing bases. **b**, Distribution of unigenes length after transcriptome assembly. **c**, Distribution of mapped reads located in mRNAs. **d**, Simulated diagram of saturation of sequencing.



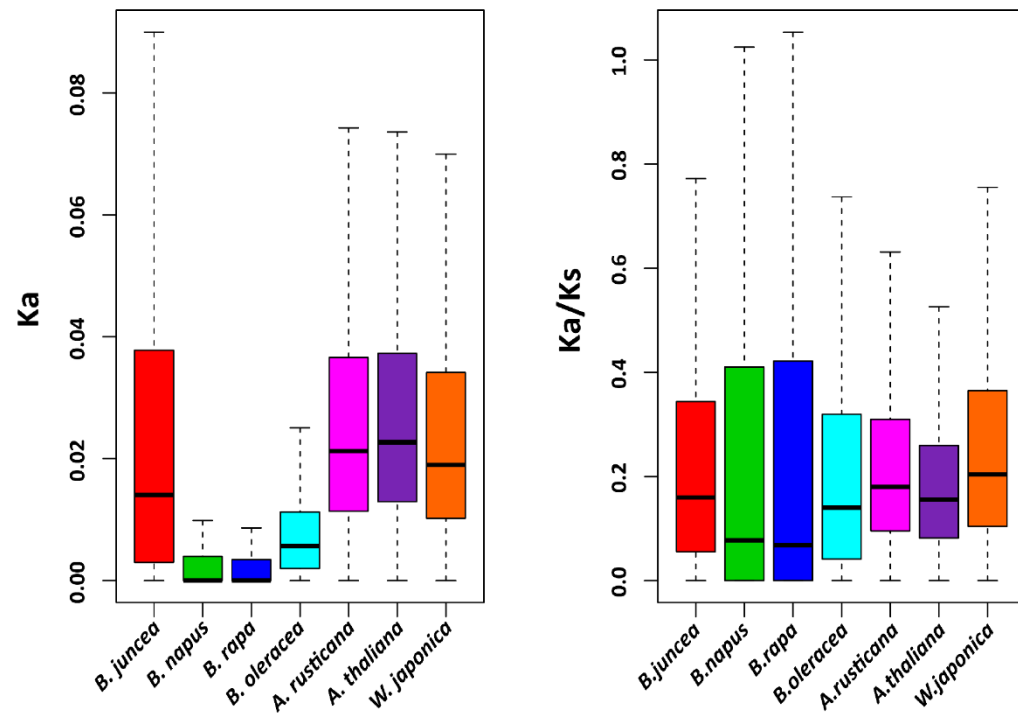
Supplementary Fig. 3. Differential expressed genes related to GSLs metabolism in *B.*

***juncea*, *W. japonica* and *A. rusticana*.** BJ, *B. juncea*. AR, *A. rusticana*. WJ, *W. japonica*.

L, leaf. R, root. S, seed.



Supplementary Fig. 4. Transcriptional expression patterns of *AOP2* in leaves, roots and seeds of wasabi, horseradish and mustard species (error bars indicate standard deviation; n = 3 biologically independent samples).



Supplementary Fig. 5. Ka and Ka/Ks calculation in seven species of *Brassicaceae* using all one-to-one orthologs.