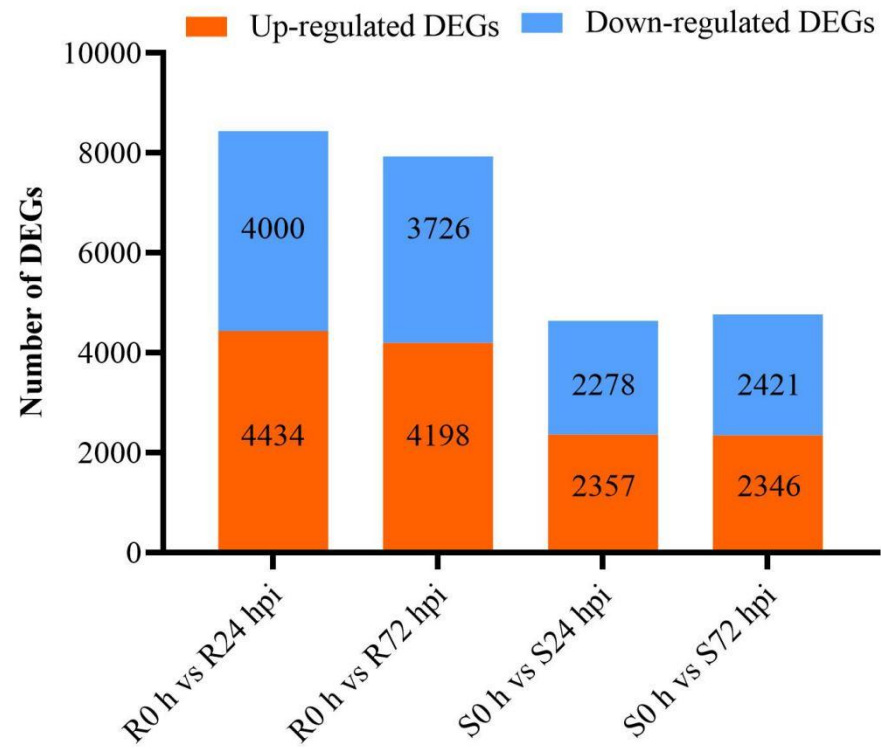
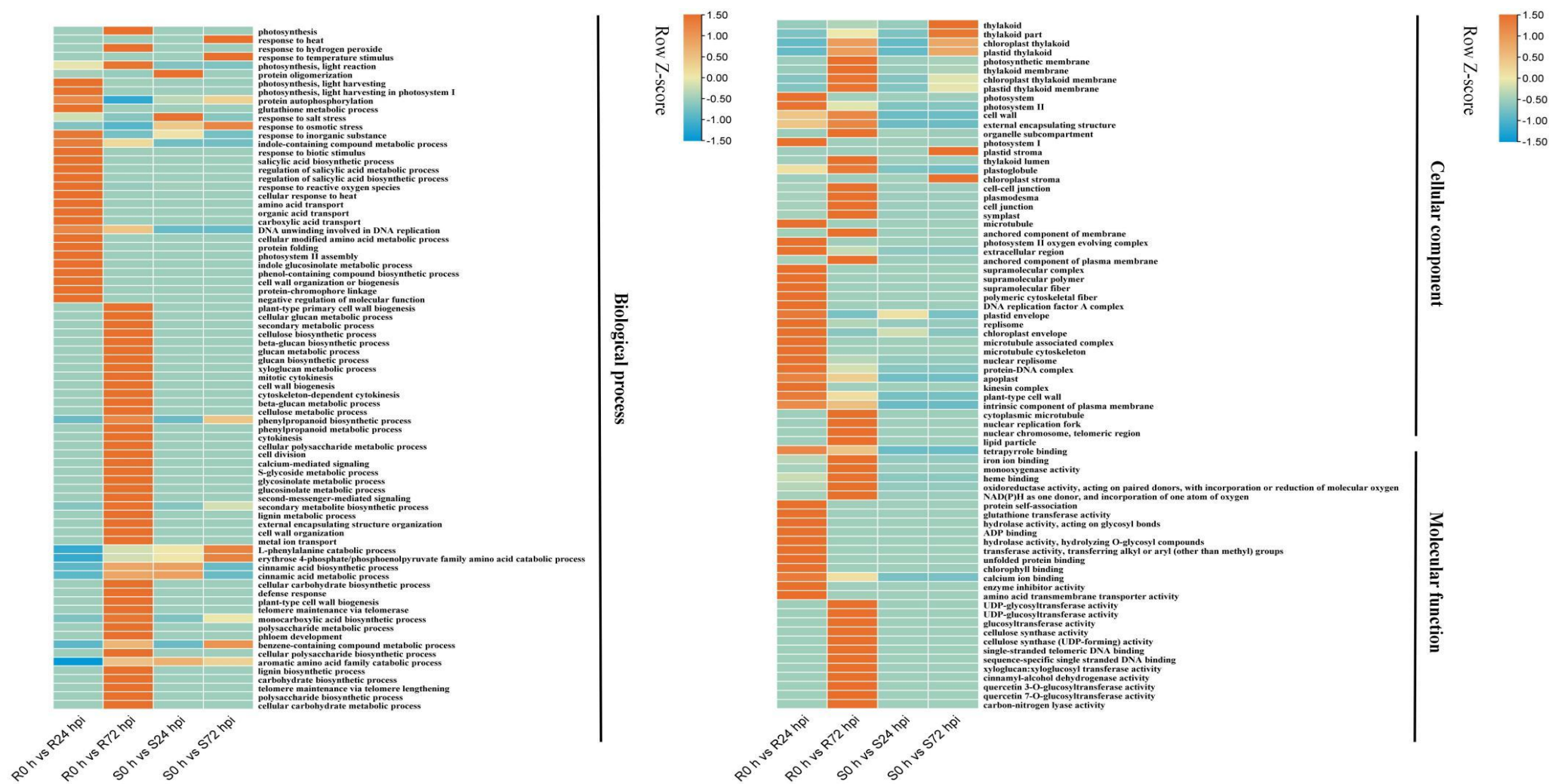


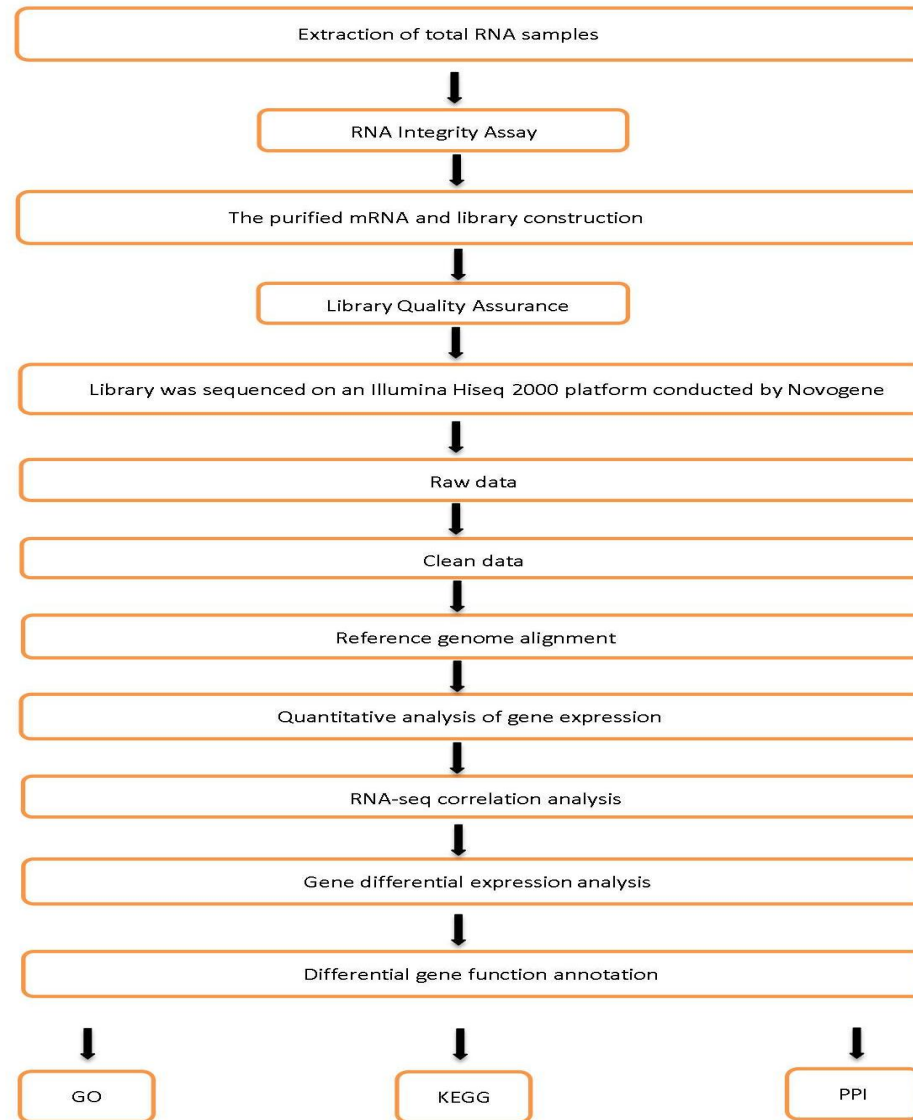
**Supplementary Figure S1** Morphological structure of *P. viticola* in the two grape varieties 'Zitian Seedless' and 'Kober 5BB' infected by downy mildew strains BS-4-MW. Encysted zoospores: within 2 hours of infestation, zoospores were observed to invade the stomata; dpi: day post infestation; green arrows:invasive hyphae; white arrows: haustoria; green arrow: red arrows: sporangium; Bars: 20  $\mu\text{m}$  (first two lines), 40 $\mu\text{m}$  (the 3rd and 4th lines), 100 $\mu\text{m}$  (last line).



**Supplementary Figure S2** Number of up- and down-regulated genes in 'Kober 5BB' and 'Zitian Seedless' following inoculation with *P.viticola* BS-4-MW.



**Supplementary Figure S3** Heatmap of enriched GO terms identified from DEGs in resistant (‘Kober 5BB’) and susceptible (‘Zitian Seedless’) grape cultivars. Terms are considered enriched when  $P < 0.05$ . R resistant cultivar *Vitis* rootstocks ‘Kober 5BB’. S *Vitis vinifera* cv. ‘Zitian Seedless’.



**Supplementary Figure S4** A flowchart to summarize the transcriptome data and analysis approach.