

Figure S1. Volcano plots of differentially expressed genes (DEGs): **(a)** G1-G2 (G1 compared with G2), **(b)** G2-G3 (G2 compared with G3), **(c)** G3-G4 (G3 compared with G4), **(d)** H1-H2 (H1 compared with H2), **(e)** H2-H3 (H2 compared with H3), **(f)** H3-H4 (H3 compared with H4). G1, 2, 3, and 4 represent four fruit-development stages: 7, 24, 49, and 69 Days After Pollination (DAP), respectively; H1, 2, 3, and 4 represent four fruit-development stages: 7, 24, 110, and 140 DAP, respectively. Up represent up-regulated genes, No sig represent no significance, and Down represent down-regulated genes. G1 and H1 represent 7 DAP; G2 and H2 represent 24 DAP; G3 represents 49 DAP; H3 represents 110 DAP; G4 represents 69 DAP; H4 represents 140 DAP.

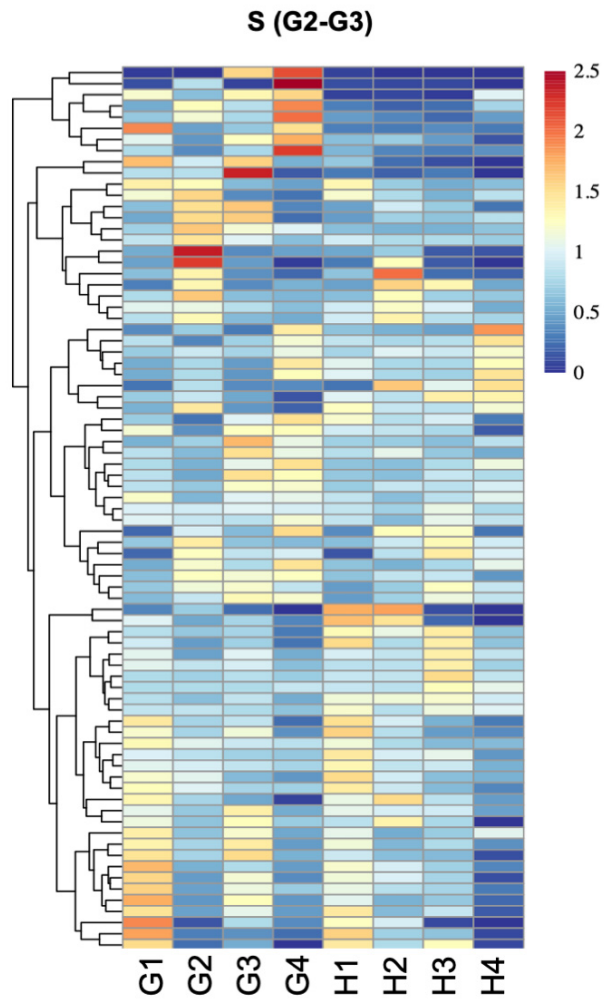


Figure S2. Heat map of specific differential gene expression among S (G2-G3) (specific DEGs of G2 compared with G3). G1 and H1 represent 7 DAP; G2 and H2 represent 24 DAP; G3 represents 49 DAP; H3 represents 110 DAP; G4 represents 69 DAP; H4 represents 140 DAP.

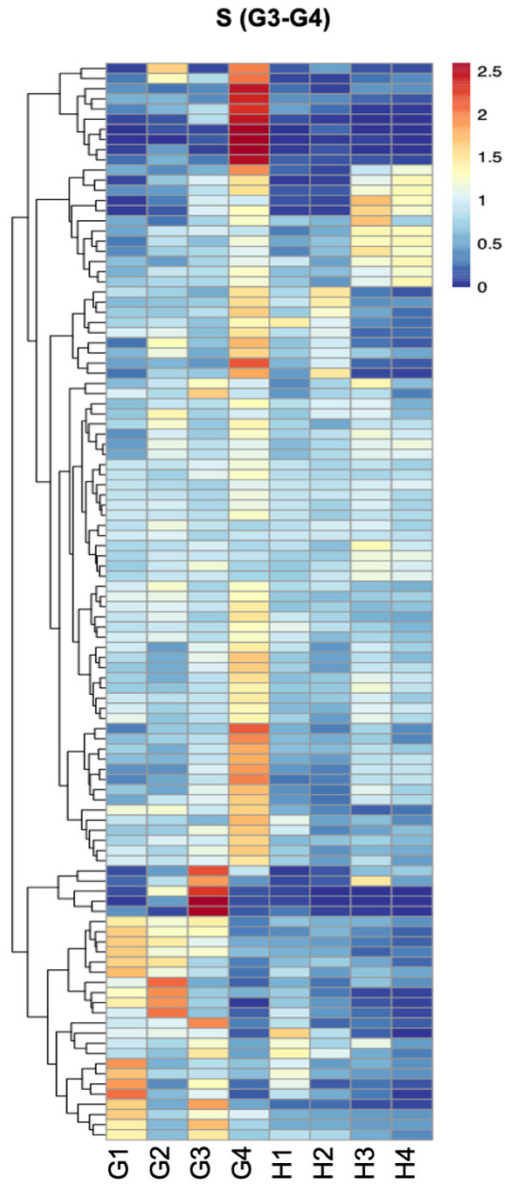


Figure S3. Heat map of specific differential gene expression among S (G3-G4) (specific DEGs of G3 compared with G4). G1 and H1 represent 7 DAP; G2 and H2 represent 24 DAP; G3 represents 49 DAP; H3 represents 110 DAP; G4 represents 69 DAP; H4 represents 140 DAP.

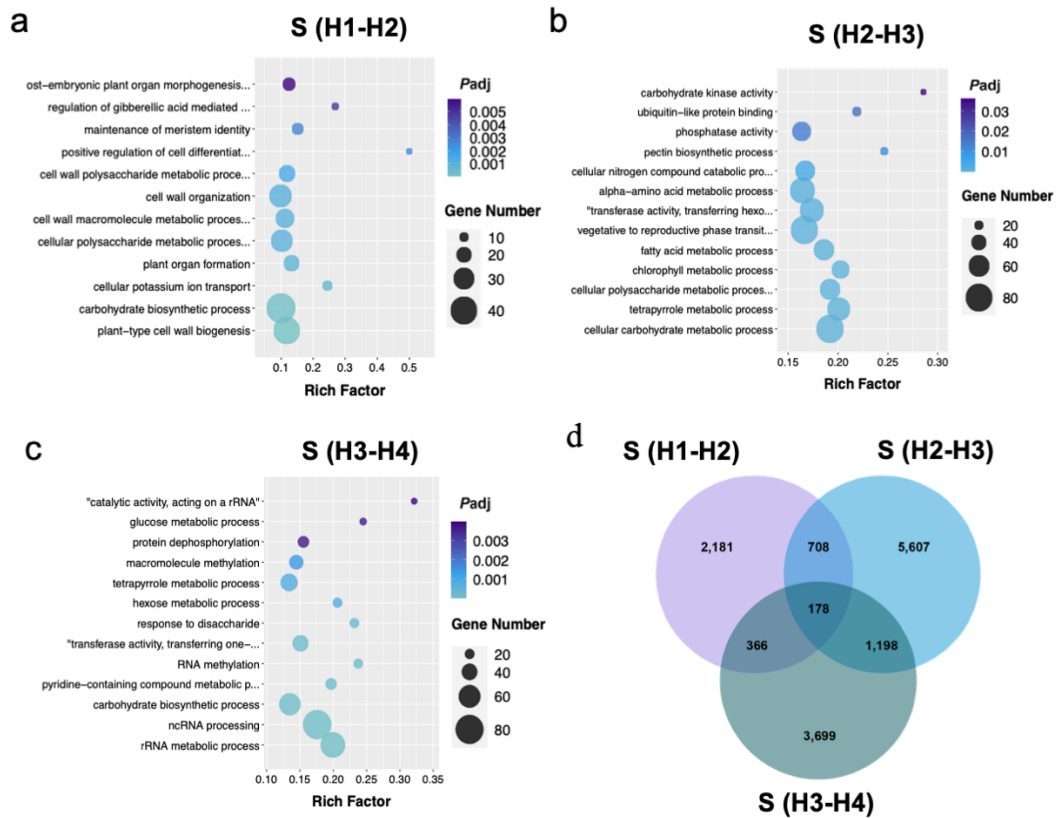


Figure S4. Specific differential gene expression analysis of HF: GO pathway assignment of differential repression among **(a)** S (H1-H2) (specific DEGs of H1 compared with H2), **(b)** S (H2-H3) (specific DEGs of H2 compared with H3), **(c)** S (H3-H4) (specific DEGs of H3 compared with H4), The dot color represents the *p*-value, and the dot size represents the number of differential expression genes. **(d)** Venn diagram of differential expression among S (H1-H2), S (H2-H3), S (H3-H4). H1 represents 7 DAP; H2 represents 24 DAP; H3 represents 110 DAP; H4 represents 140 DAP.

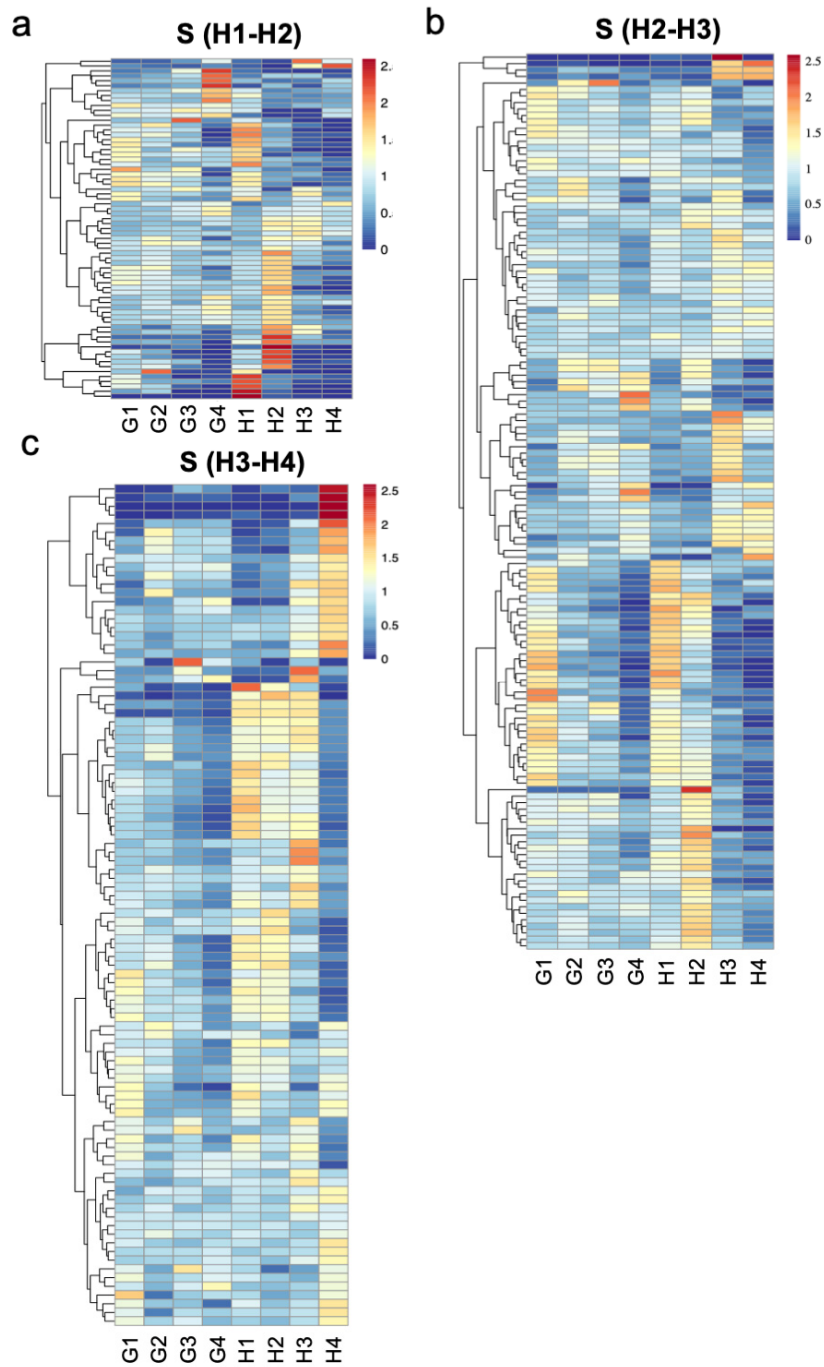


Figure S5. Heat map of specific differential gene expression at different developmental stages in HF: **(a) S (H1-H2)** (specific DEGs of H1 compared with H2), **(b) S (H2-H3)** (specific DEGs of H2 compared with H3), **(c) S (H3-H4)** (specific DEGs of H3 compared with H4). G1 and H1 represent 7 DAP; G2 and H2 represent 24 DAP; G3 represents 49 DAP; H3 represents 110 DAP; G4 represents 69 DAP; H4 represents 140 DAP.

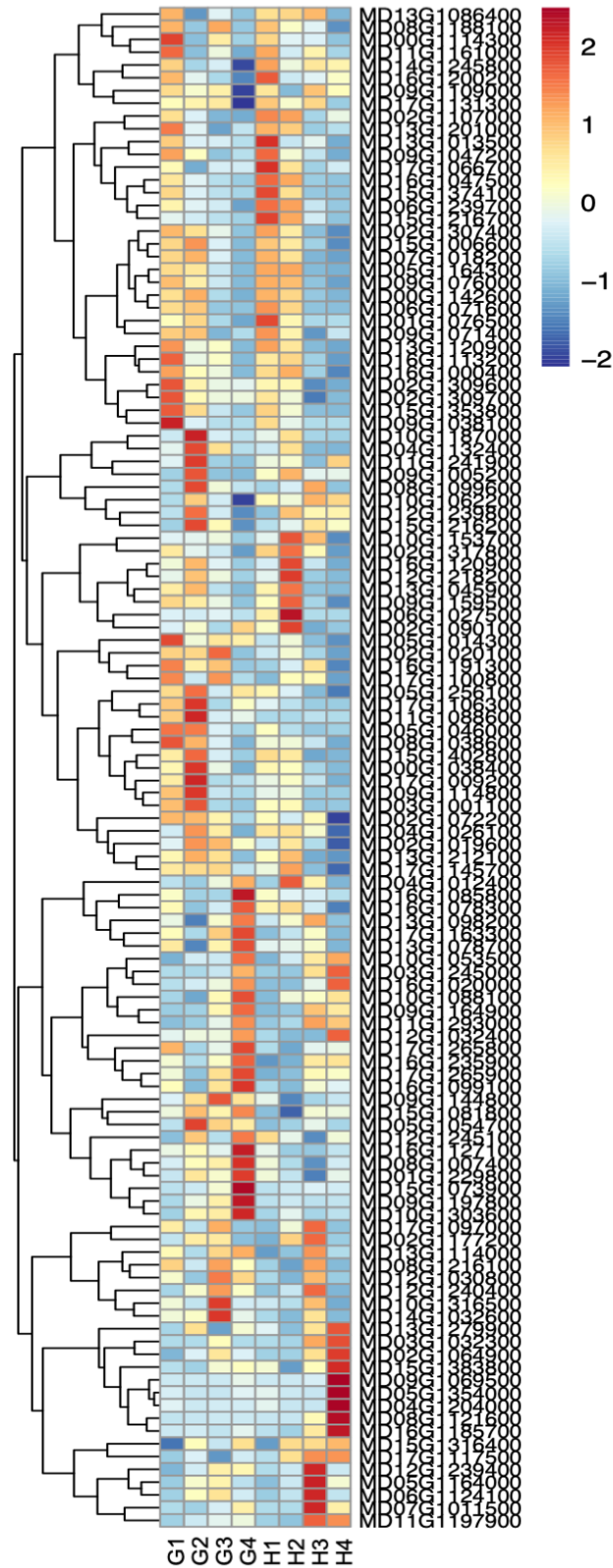


Figure S6. DEGs expression levels of hormone metabolic pathways in 'Geneva Early' and 'Hanfu' apple fruit at different developmental stages: G1 and H1 represent 7 DAP; G2 and H2 represent 24 DAP; G3 represents 49 DAP; H3 represents 110 DAP; G4 represents 69 DAP; H4 represents 140 DAP.

Supplemental Table S1: Primers used in this study

Name	Primer (5' to 3')	Purpose
SEX4-qF	ACGGTTCCTCGAATCTTGTC	RT-qPCR
SEX4-qR	AGCTGTTTCCAATCTCCACTCA	RT-qPCR
ADG7-qF	ACGTCAGCGTTCAGGAAGAA	RT-qPCR
ADG7-qR	CCGAGACTCCGATGTAGCAG	RT-qPCR
SUSY3-qF	CGAGACCCGACGTTATCTGG	RT-qPCR
SUSY3-qR	ATTTACCTTGCGAGTCGCCG	RT-qPCR
vGT2-qF	TCCATCAGTTGGTGGAAGGC	RT-qPCR
vGT2-qR	AAGCACAAGCTTTTGGTCGC	RT-qPCR
ACO2-qF	GCTGCTGGACTTGTTGTGTG	RT-qPCR
ACO2-qR	TGATCAGGTCTGGGTGGGA	RT-qPCR
ACO4-qF	GTTGAAACTGCCCAGGTCT	RT-qPCR
ACO4-qR	CTTTGAAGAACATGGATCCCTCA	RT-qPCR

Supplemental Table S2: Differentially Expressed Genes (DEGs) number
of GE and HF apple fruit

	Up-regulated genes	Down-regulated genes
G1-G2	4,854	4,427
G2-G3	5,235	4,688
G3-G4	7,088	4,059
H1-H2	4,562	2,593
H2-H3	8,203	4,570
H3-H4	5,813	3,829