

Supplementary Data

Title: Transcriptome analysis provides insights into the stress response crosstalk in apple (*Malus × domestica*) subjected to drought, cold and high salinity

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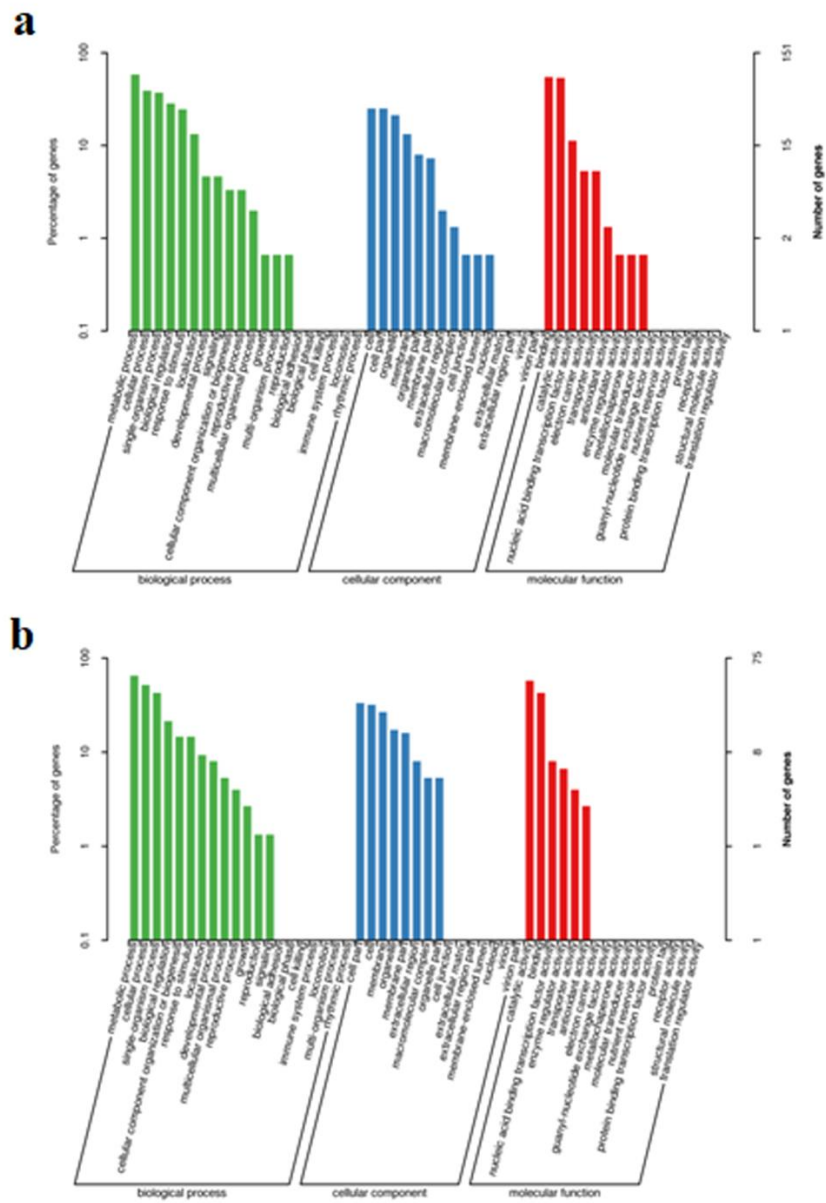
Competing financial interests: The authors declare no competing financial interests.

Supplementary Table 1. Statistics for apple RNA-Seq libraries

Library name	Clean reads	Clean bases	GC Content (%)	Cycle Q30 (%)
Control	27,347,957	8,122,170,498	46.74	93.74
Drought	24,696,421	7,330,831,802	46.37	93.75
Cold	32,648,644	9,755,823,688	47.33	93.54
High-salinity	24,954,185	7,440,833,532	46.60	93.71
Average	27,411,801	8,162,414,880	46.76	93.69

Supplementary Table 2. Summary of Illumina transcriptome assembly for apple

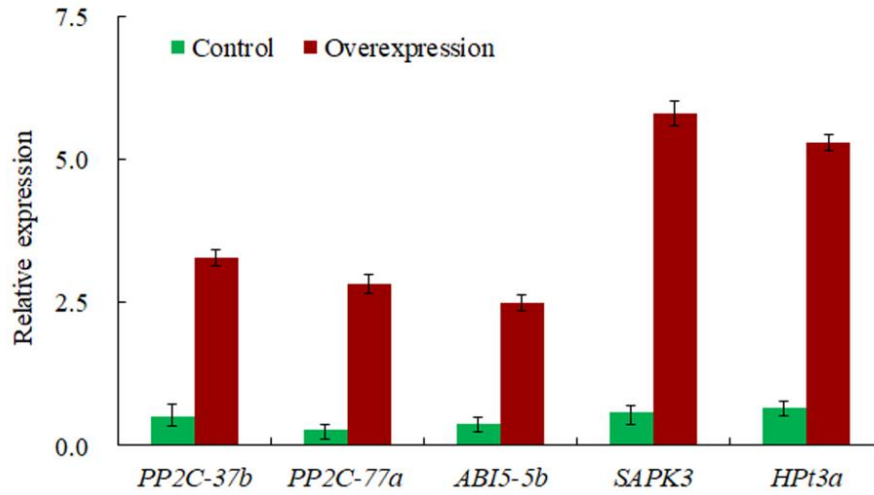
Library	Total Reads	Mapped Reads	Uniq Mapped Reads	Unigene		
				< 300bp	300-1000bp	>1000bp
Transcript	54,823,604	45,451,370 (82.90%)	43,891,393 (80.08%)	4165 (9.52)	18674 (42.68)	20913 (47.80)



Supplementary Figure 1. The result of gene ontology (GO) classification for common differentially expressed genes (DEGs) involved in the crosstalk between drought, cold and high-salinity stress regulation. **a** Upregulated DEGs; **b** Downregulated DEGs.

Supplementary Table 3. Primers used for qRT-PCR of differentially expressed genes (DEGs).

No.	Gene	Sequence No.	Primer Sequence (5' - 3')
1	<i>DGK1</i>	MD06G1200300	Forward: GAGCCAGAGCAAGAAGTCCAAGC Reverse: TGCTCCTCTTGAAACTGGGCTTA
2	<i>ABCB13</i>	MD15G1010400	Forward: CGAGAACAGATGGGATTGGTAAG Reverse: TCTCCTGCCTGAGTGTGTAGC
3	<i>PP2C-37a</i>	MD01G1139200	Forward: GGAACCCAACGGAAATCACT Reverse: GACCTCCTCGTCCATCTCA
4	<i>PP2C-37b</i>	MD07G1203700	Forward: TTGTGGAAGATGATGCTGGTG Reverse: ACACCGAAGTCATACCGAACC
5	<i>PP2C-51a</i>	MD07G1291000	Forward: GGTCATCACTTGGAACGGAAAC Reverse: CATCCTGGTTCGGTTTCGTTT
6	<i>PP2C-51b</i>	MD01G1220800	Forward: TGATGCGATTGATTGGGAGAC Reverse: GCTTCCGTTCCAGTTGATGAC
7	<i>PP2C-56</i>	MD15G1195800	Forward: TGCGTAGGGAGGAACAACAAG Reverse: GCCAAAGAAATGAACGGGTG
8	<i>PP2C-77a</i>	MD02G1084600	Forward: AGTGGATGCTGAGATTGGAGGAG Reverse: TGCTACGATAATATGCGTTGGAC
9	<i>PP2C-77b</i>	MD15G1212000	Forward: CGTGTCAAACGTGGCGATTTC Reverse: CATCGCAAGAACACCGCAAAC
10	<i>SAUR32</i>	MD07G1297400	Forward: GCTGAAAGACATCCCGAAAG Reverse: TTGAACGGTGCGAAACTCCT
11	<i>SAUR40</i>	MD12G1113400	Forward: ACTGGAGTCGTTGAGTAACCCTG Reverse: TCTTCTCCTCCTGCATGTTT
12	<i>ABI5-5a</i>	MD05G1082000	Forward: GGCAGTCTTCGGTGTACTCAT Reverse: AGTCTCCTCAGCGTCCCTAT
13	<i>ABI5-5b</i>	MD15G1081800	Forward: CACTTTGGCTCCGAGTTCAGG Reverse: AGGCACGGGTGACACGGATG
14	<i>ERF1b</i>	MD13G1213100	Forward: GTTGAAAGAGTCCGCAAATCG Reverse: CTTCAAACACCACCACATTCTC
15	<i>SAPK3</i>	MD06G1046300	Forward: GATTTAGTGAAGACGAGGCAAGG Reverse: AGCAATGTATGCAGGTGTTCCA
16	<i>BKII</i>	MD08G1102600	Forward: CTCCTCGCTCCTCCACCAACT Reverse: GTCTCGTGTGTTGCTTCCCTGA
17	<i>HPt3a</i>	MD11G1293900	Forward: GCCGTGACTCAGTGGCAGAAG Reverse: GCACCTATCCAGGCACTGCTA
18	β - <i>ACTIN</i>	XM008356922	Forward: CTGAACCCAAAGGCTAATCG Reverse: ACTGGCGTAGAGGGAAAGAA



Supplementary Figure 2. Overexpression of five common differentially expressed genes (DEGs) in apple calli. GenBank accession numbers: *PP2C-37b* (XM008373834.2); *PP2C-77a* (XM008390079.2); *ABI5-5b* (XM008379818.2); *SAPK3* (NM001320015.1); *HPT3a* (XM008361181.2).

Supplementary Table 4. Primers used for qRT-PCR of drought, cold and salinity related genes

No.	Gene	Primer sequence (5' - 3')	GenBank Accession No.
1	<i>CSD1</i>	Forward: CTGGGCCACACTTCAATCCTAA Reverse: TAGAGGTATCTGCTTGCAATAAGA	LOC103450984
2	<i>APX2a</i>	Forward: GAAGCACTGTGCTCCGATAGTC Reverse: GAATCTCAGGCCCTCTGTAAAC	LOC103413735
3	<i>CAT1</i>	Forward: CCGAGAGGTCCAATTCTGCTC Reverse: CTCGAAGGAAGTCAGCACATGT	LOC103412104
4	<i>DHAR3</i>	Forward: CGTTTGTGCCAAGGCTTCCGTT Reverse: CACAGGAACTTTACCTTCTGGGTA	LOC103444197
5	<i>GPX6</i>	Forward: CCATGCAACCAGTTTGGAGCC Reverse: GAGAAGTTCACCTTGATGCTGTCA	LOC103446626
6	<i>NCED2</i>	Forward: CTGAAACAGGGGACCTCAAA Reverse: CGTAGCTAAGCGCAAGAGT	KJ719311
7	<i>OST1</i>	Forward: CTTGTTGGTGCTTATCCCTTTG Reverse: CAGTGAAGATTCGGGAAAGGAG	KJ563286
8	<i>DREB2A</i>	Forward: GAGCAGGCGAGATGGGAACT Reverse: TCCCTTGCCTTTCATACAGC	XM008355947
9	<i>DREB2B</i>	Forward: CCAGCCACAAACCCTAACTCA Reverse: TTGGAGGTTCTTGCTTAACTTGG	XM008393437
10	<i>DREB2C</i>	Forward: CACCAATCCCACAGCACAAAC Reverse: GTGTCACCCACAACGACTAAACC	JQ669818
11	<i>DREB6</i>	Forward: GCTTCTGTGACGCCAAGCTTC Reverse: TTAAGTGAAGATCGAAGCCCAATC	GU732446
12	<i>LOS5</i>	Forward: GATTCACCGTGGAAAGTTGG Reverse: TGATTGGCAGTCTCGCTTG	XM008373811
13	<i>NP1</i>	Forward: CTCCCATTGTTATCATTCTGTGTC Reverse: TTGTCGCCCTTGGAATTGGAAC	XM008387740
14	<i>CBF1</i>	Forward: CTGAGGAGTCGGATGAGGTTTG Reverse: CATAAGGGCACGTCAGCACAA	DQ074478
15	<i>CBF2</i>	Forward: GAGTGTGAAAGCGGCGATGA Reverse: GCCCTTCCGCATACTATCCAG	KC603712
16	<i>CBF3</i>	Forward: GGCTCGGAACTTATCCAACCTG Reverse: CCGACACTCCGCCAAACTCA	XM008363090
17	<i>ICE1</i>	Forward: CAACACCGAGAACAAGGACGAG Reverse: AGCAGCGAAGACAAGTTGGGAT	NM_001294038
18	<i>ZAT10</i>	Forward: ACCACAGCCACTAAAGCAACA Reverse: GAGCACTCGTGGGACCTTC	HM122498
19	<i>SOS1</i>	Forward: CTCAAGAGGGTGCAGGACGTGTC Reverse: CCTTCAGCTATAACAACCTCACTC	XM_008352758
20	<i>SOS2</i>	Forward: CAAAAGCACCATTCTCAAGCAC Reverse: CCGACCAGCCAAAACCTCT	XM008364679
21	<i>SOS3</i>	Forward: CTGGCTATGAGGACCCTGCGAC Reverse: GATCGAACAAATTCTCCAAACTC	XM008378497
22	<i>NHX1</i>	Forward: CCAGCACTGTCGTTTCACTCAC Reverse: CTCGAGCTTTCGAACCTGTAC	XM008352393