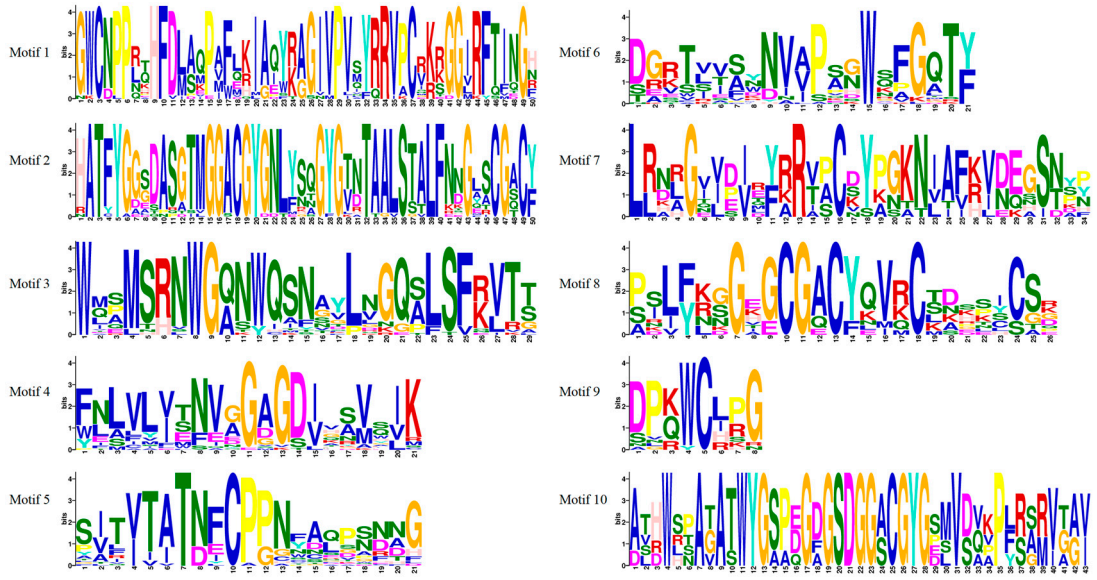


Figure S1. Predicted conserved motifs of carrot DcEXP proteins.

Table S1. Nucleotide sequences of primers used for RT-qPCR.

Gene	Forward primer (5'→3')	Reverse primer (5'→3')
DcEXP1	GCGACAATTACAGCCACCAACATT	ACACCAACAGCCAGTAGCCATTC
DcEXP2	GGTGCTGGTTGTGGTGCTTGTT	CCTTGGTCGCCATAGCCTTGAA
DcEXP3	AGAGCTGCGGGTCTTGTTAC	GGGACAATTCCAGCACGGTA
DcEXP4	AGCAGCACTGAGCTCAACAT	CCACCCGCCATTGTTAGAGT
DcEXP5	GGTTCAAGAACCGGGTGGAT	CCTATCGCTTCCGGTGACTC
DcEXP6	ATGCCTCTGGAACAATGGGG	CCTCCCACATGGAACCCTTC
DcEXP7	AGCCAAGACACCTATATCGCCTCT	CACCACCATTGACAGTCCTTCCAT
DcEXP8	TGGAGCATCATGCGGACAAT	CACACGGGACCCTTTGGTAA
DcEXP9	CAAACTTCTGCCCTCCAAACTATGC	ATCTAACTCCACCACGCTTAACACA
DcEXP10	GTAATCGCGGCACTATCCCA	GCCAGTAAGCTGTTGACCCT
DcEXP11	GGGTCTGAGCTCTGCTTTGT	TCATTGGCAGCCATCCTGTT
DcEXP12	GTTTCTTCGGTGCAGGGGTA	GTTAGGAGGGTCACACCAGC
DcEXP13	ACCTTGCCATGCCCATGTTTCT	CCTTGATGAGGACTCGTTGGATGT
DcEXP14	GGCCAAAATTGGCAGAGCAA	CCGGTGAAGGTCTGACCAAA
DcEXP15	ACATCTGTAACCATCACCGCAACAA	TGCCATCCAGTTCGTTCGTGTG
DcEXP16	AACCAACACGGCTGCTCTAA	CACAGGGGACCCTTCTGAAC
DcEXP17	CGGAGCTTGCTACCAAGTGA	CGAACACCGCCGTTTCTTTT
DcEXP18	CGGGGAACCCTTACTTCACC	GAAAGTGAGCGACTCCCCAA
DcEXP19	GCAAGGAATGTGGAGCTTGC	TCCCTGGTCAACGTGGAATG
DcEXP20	ATTGCCACTCCTCCTCCTCTGTT	TTCACATCCACCATTGATCCGTACC
DcEXP21	TACAATGGGAGGAGCTTGCG	CCAGGGAGACACCACTTGAC
DcEXP22	ACTCCTGCTCCTACATTCCTTCTCC	TCAACGGCTTCACATCCACCATC
DcEXP23	GTGATAACGGTGGGTGGTGT	CAGTTTTGACCCCAGTTGCG
DcEXP24	CAATCACCGTCACCGCCACAA	GCTGTTGCTCTGCCAGTTCTGT
DcEXP25	GGAACTGGGGACAGAACTGG	ACTGAAGGTCTGGCCGAAAG
DcEXP26	AGGAGGGGAGGCATAAGGTT	TGCCAACCAGTCCTTGATCC
DcEXP28	CCGAGTTCCGTGTCGAAAGA	CCTTCTGAATGTCACCGGCT
DcEXP29	GAGGTGCGGAGCTTGTTATGAGT	TTATGGATACGGCGTGGACATCTC
DcEXP30	CAATGGGAGGAGCATGTGGT	GGGCAGAAGTTGGTAGCTGT
DcEXP31	GCAGTGGAAAGGTGGCATTG	CCCAGTTGTGGCTCATGCTA
DcEXP32	CTCAGCTGACCTATGCTCGG	CCCCCTTAACCCATTTCGCT
DcEXP33	CATTCCACGTTGACCAGGGA	TGACCCTGTTTCCATCAGGC
DcEXP34	ACATGGTATGGACCCCCTGA	AGCTGAGCATTGCACCTCAT
DcEXP35	TGGACGGATGGCTCAGACTA	TCTCGCATAACTGCACAGCA
DcEXP36	TGGCTCCTTCTCTGCAACTG	TGAACTCTCCTGGACCCGAT
DcActin	CGGTATTGTGTTGGACTCTGGTGAT	CAGCAAGGTCAAGACGGAGTATGG

Table S2. The duplicate *DcEXP* gene pairs in carrot.

Gene pair	Duplication type	*Ka*	*Ks*	*Ka*/*Ks*	Selection pressure
DcEXP26/*DcEXP30*	segmental duplicated	0.068	0.856	0.079	purify selection
DcEXP24/*DcEXP26*	segmental duplicated	0.16	1.504	0.106	purify selection
DcEXP25/*DcEXP30*	segmental duplicated	0.195	1.609	0.121	purify selection
DcEXP20/*DcEXP22*	segmental duplicated	0.142	1.443	0.099	purify selection
DcEXP14/*DcEXP21*	segmental duplicated	0.098	1.007	0.097	purify selection
DcEXP15/*DcEXP16*	segmental duplicated	0.078	0.519	0.151	purify selection
DcEXP33/*DcEXP19*	segmental duplicated	0.095	0.665	0.142	purify selection
DcEXP12/*DcEXP24*	segmental duplicated	0.096	0.949	0.101	purify selection
DcEXP12/*DcEXP26*	segmental duplicated	0.134	1.569	0.085	purify selection
DcEXP12/*DcEXP30*	segmental duplicated	0.129	1.521	0.085	purify selection
DcEXP12/*DcEXP25*	segmental duplicated	0.232	1.522	0.152	purify selection
DcEXP8/*DcEXP15*	segmental duplicated	0.103	0.921	0.112	purify selection
DcEXP8/*DcEXP16*	segmental duplicated	0.126	0.97	0.13	purify selection
DcEXP10/*DcEXP20*	segmental duplicated	0.222	1.308	0.17	purify selection
DcEXP10/*DcEXP22*	segmental duplicated	0.179	1.162	0.154	purify selection
DcEXP6/*DcEXP26*	segmental duplicated	0.079	0.828	0.095	purify selection
DcEXP6/*DcEXP30*	segmental duplicated	0.05	0.424	0.119	purify selection
DcEXP6/*DcEXP12*	segmental duplicated	0.147	1.656	0.089	purify selection
DcEXP5/*DcEXP28*	segmental duplicated	0.117	2.647	0.042	purify selection
DcEXP3/*DcEXP5*	segmental duplicated	0.04	0.694	0.057	purify selection
DcEXP5/*DcEXP13*	segmental duplicated	0.107	1.628	0.066	purify selection
DcEXP4/*DcEXP31*	segmental duplicated	0.115	1.302	0.088	purify selection
DcEXP1/*DcEXP31*	segmental duplicated	0.114	1.175	0.097	purify selection
DcEXP1/*DcEXP4*	segmental duplicated	0.037	0.797	0.046	purify selection