Table S1 Ka/Ks analysis and duplication date estimated for grape duplicated *XTH* paralogs.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Paralogous Pairs | Ks | Ka | Ka/Ks | Duplication Date (million years ago) | Duplicate Type |
| VvXTH6/7VvXTH8/9VvXTH14/15VvXTH17/19VvXTH17/20VvXTH17/21VvXTH17/22VvXTH17/23VvXTH17/24VvXTH17/25VvXTH17/26VvXTH17/27VvXTH17/28VvXTH17/29VvXTH17/30VvXTH18/19VvXTH18/20VvXTH18/21VvXTH18/23VvXTH18/24VvXTH18/25VvXTH18/26VvXTH18/27VvXTH18/28VvXTH18/29VvXTH18/30VvXTH19/20VvXTH19/21VvXTH19/22VvXTH19/23VvXTH19/24VvXTH19/25VvXTH19/26VvXTH19/27VvXTH19/28VvXTH19/29VvXTH19/30VvXTH20/21VvXTH20/22VvXTH20/23VvXTH20/24VvXTH20/25VvXTH20/26VvXTH20/28VvXTH20/29VvXTH21/25VvXTH21/26VvXTH22/23VvXTH22/24VvXTH22/25VvXTH22/26VvXTH22/28VvXTH22/29VvXTH23/24VvXTH23/25VvXTH23/26VvXTH23/27VvXTH23/28VvXTH23/29VvXTH23/30VvXTH24/25VvXTH24/26VvXTH24/27VvXTH24/28VvXTH24/29VvXTH24/30VvXTH25/26VvXTH25/27VvXTH25/28VvXTH25/29VvXTH25/30VvXTH26/27VvXTH26/28VvXTH26/29VvXTH26/30VvXTH27/28VvXTH27/29VvXTH27/30VvXTH28/29VvXTH28/30VvXTH29/30 | 0.63370.03780.68000.36480.54720.90160.93490.55400.25240.45110.52640.39950.43850.32550.16390.58960.55190.91160.28180.48500.30150.35330.63400.27820.18870.43150.43520.87210.91490.48810.28160.45130.50870.35830.43460.52100.32610.95520.87720.47750.49180.49180.54200.43530.51071.01901.00220.80650.79360.76190.79260.72130.79500.51370.19310.16980.66780.16460.40120.50920.56250.52780.19770.54290.36250.18330.21730.62430.08630.32490.52960.73570.16380.42270.53960.63310.53120.32990.30910.49400.3508 | 0.07740.00620.08910.02600.07150.14620.09590.04140.02100.03520.04280.08860.03860.05450.02510.06620.08970.15240.03650.06720.02950.03480.12460.03110.02370.07490.08990.15230.12120.06550.04120.05650.06620.09100.05740.05240.05290.14860.12440.07470.10210.07620.08170.07550.09730.14450.15180.12760.13050.13040.12510.12670.11390.08280.02180.02110.13480.02110.04740.10030.07850.07830.06330.07720.04700.03300.01880.13600.01050.04550.09360.14660.01810.04660.09450.13740.10210.09460.04120.09120.0519 | 0.12210.16410.13110.07130.13070.16220.10260.07480.08340.07800.08130.22170.08800.16760.15290.11220.16260.16720.12960.13860.09780.09840.19660.11170.12560.17360.20650.17470.13250.13420.14650.12530.13010.25400.13220.10050.16230.15560.14180.15640.20760.15500.15070.17360.19050.14180.15150.15820.16440.17110.15780.17560.14320.16120.11310.12450.20190.12830.11830.19690.13950.14840.32030.14220.12960.18010.08660.21790.12130.14020.17670.19930.11040.11030.17520.21710.19220.28680.13330.18470.1480 | 48.752.9152.3128.0642.0969.3671.9242.6219.4134.7040.4930.7333.7325.0412.6145.3642.4570.1221.6837.3123.2027.1848.7721.4014.5133.1933.4867.0970.3837.5521.6634.7139.1327.5733.4340.0825.0873.4867.4736.7337.8337.8341.6933.4839.2978.3977.0962.0461.0458.6160.9755.4961.1639.5114.8613.0651.3712.6630.8639.1743.2740.6015.2141.7627.8814.1016.7148.026.6424.9940.7456.5912.6032.5241.5148.7040.8625.3823.7838.0026.98 | tandemtandem tandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandem tandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandem tandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandem tandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandem tandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandem tandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandemtandem tandemtandemtandemtandemtandemtandemtandem |

Table S2 Primers used for qRT-PCR in this study.

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| --- | --- |
| Name | Primer sequence |
| VvXTH-1-F | GCTGATTTGCTCTGTTCTTGGT |
| VvXTH-1-R | CGACGACAACTCCTGCTGTA |
| VvXTH-3-F | CCTGTGGAATGCGGATGACT |
| VvXTH-3-R | ATGGTGTATTTCTGGCGGACCC |
| VvHTX-4-F | CCGTGGAAGGGAAGAGAGGTAT |
| VvHTX-4-R | TGGCTTTGATGGGTAGTCGC |
| VvXTH-5-F | GCCCATTCATAGCCTCATTCAG |
| VvXTH-5-R | TGAGATGATGTGTCCTAACCCA |
| VvXTH-6-F | TCCCAAAGAACCAGCCCAT |
| VvXTH-6-R | GGACACCTTGAGGAAAGCGT |
| VvXTH-7-F | ACAAGGTCTCTGGCTCTGG |
| VvXTH-7-R | GACAGTGCCAGCAGAGTTG |
| VvHTX-10-F | GAAGGGAAGTGGAGATGGAAGA |
| VvHTX-10-R | TGCGGGAAATGTAGCGTCA |
| VvXTH-14-F | TGTGGAATGCTGATAACTGGGC |
| VvXTH-14-R | AGGACCAAATACAGGCGGCA |
| VvXTH-15-F | GGGAAAGGGAATAGAGAGCAGC |
| VvXTH-15-R | TCTTGTTGCCCAGTCATCAGC |
| VvXTH-17-F | CGGGCGTGCTAAGATACTCAAC |
| VvXTH-17-R | TGCTGTTCTCTGTTTCCCTTGC |
| VvXTH-20-F | TGGAATGCTGATGACTGGGC |
| VvXTH-20-R | CTGTGGGAAACGCTTTGTGTC |
| VvXTH-31-F | ATGCCTGTGAGTGCCCAATA |
| VvXTH-31-R | GGTGGCTCTGGTGTAGGTTC |
| VvXTH-32-F | CCACCACCCGTTTCCAATA |
| VvXTH-32-R | TTCGCTTGTCTTTGCCCA |
| VvXTH-34-F | CACCCGTAACTTCCACACCTAC |
| VvXTH-34-R | CCTCATTGGCTGGTTCTTTGG |
| Vvβ-actin7-F | TCAGGAAGGACCTCTATGGC |
| Vvβ-actin7-RVvβ-actin101-FVvβ-actin101-R | CTGTGGACAATGGATGGACCTACAATTCCATCATGAAGTGTGATGTTAGAAGCACTTCCTGTGAACAATG |



Figure S1 The relative expression of (A) *VvXTH4* and (B) *VvXTH20* in grapevine roots under salt stress normalize using *Vvβ-actin7* and *Vvβ-actin101*, respectively.



Figure S2 The comparison between quantitative qRT-PCR data and Microarray data.

The relative expressions of 14 selected *VvXTHs* were performed with qRT-PCR. The relative expression of tendril-FS was set up as 1. The y-axis indicates the folds of gene expression relative to tendril. Vertical bars indicate the standard error of the mean.

Note: Tendril-FS: A pool of mature-coiled tendrils collected at fruit set (berry size was ∼4 mm diameter); Root: Developing young roots; Stem-G: Stems collected starting from the second node from the tip; Leaf-FS: Mature leaves collected when the berry size was ∼4 mm diameter; Flower-FB: Flowers were collected at the beginning of flowering.



Figure S3 Heatmap of *cis*-element analysis

The prediction analysis was performed by using (A) plantCARE and (B) New PLACE. Columns represent *VvXTH* members, while rows show different *Cis*-element. The color intensity and number in the cells indicate the numbers of *cis*-element in these *VvXTH.*