**Supplemental Table 1. Summary of signaling pathway genes selected for phylogenetic tree and expression analyses**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Genes | KEGG ID # | Maize GDB ID #  | Primers | PCR Efficiency |
| CDPKs  |   |  |   |   |
|   | zma103654421 | GRMZM2G332660 | F\_GCTGGACAAGTACGTGCAGAR\_CAGCATCCTGATCTCCGACT | 0.95 |
|   | zma103633012 | GRMZM2G080871 | F\_GCATCAGAAGACAACGCAAAR\_AGGGCTTGCTAGTTGACGAA | 0.26 |
|   | zma1036647581 | GRMZM2G158721 | F\_ GCGTCAGAAGACAATGCAAAR\_TTGCTGTTTGACGGAGTCTG | N/A |
|   | zma103641008 | GRMZM2G003059 | F\_TGGAATGAACCTGACCATCAR\_CTGGACCTCACTGCTTCTCC | 0.77 |
|   | zma103625979 | GRMZM2G076634 | F\_GGCAACGGTTACCTGGACTAR\_CGAAGAAGAGAAACGCCTTG | 0.42 |
|   | zma100192661 | GRMZM2G311220 | F\_ AAGGACGGCAAGATCAGCTAR\_ATGCTGAGGCTGTTGAACCT | 0.91 |
|   | zma100273840 | GRMZM2G030673 |   |   |
|   | zma100381434 | GRMZM2G088361 |   |   |
|   | zma100281687 | GRMZM2G104125 | F\_GAAATCGTAGGCAGCCCATAR\_AGTTTCTGCCCAAAATGGTG | 0.99 |
|   | zma103644628 | GRMZM2G006404 |   |   |
|   | zma100280693 | GRMZM2G099425 | F\_CATGGCCCCAGAGGTACTAAR\_AGAATGGAGGGACACCACAG | 0.93 |
|   | zma103636213 | GRMZM2G047479 |   |   |
|   | zma100285166 | GRMZM2G028086 |   |   |
|   | zma100277352 | GRMZM2G040743 | F\_GCTTCAAAAGGCTTCAGTGGR\_CTGTCGCTCTGCATCATTGT | 0.76 |
|   | zma100384477 | GRMZM2G347047 | F\_AGCTTGCTGCATCTTCACCTR\_CACTACTCTTGCCCGACCAT | N/A |
|   | zma103653932 | GRMZM2G081310 | F\_AAACCAAACGTTCCTGTTGCR\_TGAGCCAGCTTGAAATTCCT | 0.99 |
|   | zma542224 | GRMZM2G314396 |   |   |
|   | zma100384476 | GRMZM2G321239 |   |   |
|   | zma542227 | GRMZM2G441511 |   |   |
|   | zma606407 | GRMZM2G047486 | F\_AGCTTGCTGCATCTTCACCTR\_CACTACTCTTGCCCGACCAT | 0.87 |
|   | zma103640839 | GRMZM2G347226 |   |   |
|   | zma100381559 | GRMZM2G463464 | F\_GAGGAACAGCTTGCATGTGAR\_GGATGAGGCACACGGTAAGT | 0.98 |
|   | zma541988 | GRMZM2G320506 | F\_AAGTGGACCAGGACAACGACR\_CTCCCTGAACCCGATACTGA | 0.99 |
|   | zma103648263 | GRMZM2G012326 |   |   |
|   | zma103625819 | GRMZM2G027351 | F\_GCAAAGGATTTGGTCAGGAAR\_ACCGGCTTAGAACAGCAGAA | 0.92 |
|   | zma103644148 | GRMZM2G121228 | F\_AAGCAACCTAGGAGCGTGAAR\_AATTACACGGTGGCCTCAAG | 0.89 |
|   | zma103648992 | GRMZM2G365815 | F\_TCAATCACCCATGGATCAAAR\_GGATAGGCACCCAGCTATGA | 0.52 |
|   | zma100286149 | GRMZM2G025387 | F\_CTGACCCTTGGCCTTCAATAR\_AATCCATGGGTGGTTCAAAA | 0.98 |
|   | zma100383602 | GRMZM5G856738 |   |   |
|   | zma100285607 | GRMZM2G112057 | F\_CTGGGAAGAAACGCAGAAAGR\_ATCCTTCGCGCTTTCAGATA | 0.73 |
|   | zma542526 | GRMZM2G154489 |   |  |
|   | zma54226 | GRMZM2G168706 | F\_GTAGTCCCACCTGTGCCTGTR\_AGGTATGTCACCCCGAACTG | 0.53 |
|   | zma100381527 | GRMZM2G422576 | F\_1TCCATCGTCGTTGTTGTTGTR\_AATCTTACGGCCCTTCCAGT | 0.99 |
|   | zma100217278 | GRMZM2G157068 |   |   |
|   | zma100284681 | GRMZM2G365035 | F\_CCGTGACATTGTTGGAAGTGR\_GTCGTCTTCCACACAGCAAA | N/A |
| CaM-CaML | zma100273665 | GRMZM2G069922 |   |   |
|   | zma100280890 | GRMZM2G357595 | F\_CTTCATTGAATGCTGCCTCAR\_ATGAAGGCCTCGTAGGTGAA | 0.70 |
|   | zma100282374 | GRMZM2G097827 | F\_CGCGTACATCTTCTTCGACAR\_CCGTTCCTGTTCAGATCCAT | 0.95 |
|   | zma100193836 | GRMZM2G006790 |   |   |
|   | zma100193164 | GRMZM2G142693 | F\_AGTTACACCGGGTCAGATGCR\_CAGAAGCAGCAAACAACCAA | 0.95 |
|   | zma100282040 | GRMZM2G155822 | F\_ACTGGGACAAGAATGGAACGR\_GAATCTCCTTCAGCCGACAC | 0.96 |
|   | zma103647156 | ---- | F\_GGACGAGAATGCTCAGAAGCR\_AGTGCGGCCAGTAGAAGAAA |  |
|   | zma103652986 | ---- |   |   |
|   | zma103655062 | GRMZM2G157241 |   |   |
|   | zma100281015 | GRMZM2G033846 | F\_TGAGAGATCCATGGGCTGTTR\_AACCCCAGTCAACCACAGAC | N/A |
|   | zma100284831 | GRMZM2G088819 | F\_GGTCGCGTTTGTTCAGAAATR\_TTTCCATTGTGTGGGTGAGA | 0.91 |
|   | zma103647860 | ---- |   |   |
|   | zma100286265 | umc2252 |   |   |
|   | zma100283599 | GRMZM2G467184 |   |   |
|   | zma100282485 | GRMZM2G096271 |   |   |
|   | zma100381981 | GRMZM2G031329 |   |   |
|   | zma100283718 | GRMZM2G349655 |   |   |
|   | zma100273276 | GRMZM2G309327 |   |   |
|   | zma100382070 | GRMZM2G312661 |   |   |
|   | zma103650717 | GRMZM2G426046 | F\_GGGTCGCAAGCTTATAGCAGR\_CGATACTGCGATGGATGATG | N/A |
|   | zma103652196 | GRMZM2G104523 |   |   |
|   | zma103636275 | GRMZM2G340313 |   |   |
|   | zma100282259 | GRMZM2G407626 |   |   |
|   | zma103651170 | GRMZM2G156377 |   |   |
|   | zma100280813 | GRMZM2G062673 |   |   |
|   | zma100285448 | GRMZM2G133588 |   |   |
|   | zma100276784 | GRMZM2G314292 |   |   |
|   | zma100277478 | GRMZM2G419452 |   |   |
|   | zma100284548 | GRMZM2G097900 |   |   |
|   | zma101027109 | ---- |   |   |
|   | zma103649813 | ---- |   |   |
|   | zma100286243 | GRMZM2G106945 |   |   |
|   | zma100280482 | GRMZM2G474755 |   |   |
|   | zma100284346 | GRMZM2G340807 |   |   |
|   | zma100857006 | ---- |   |   |
|   | zma100286292 | GRMZM2G152432 |   |   |
|   | zma100280614 | GRMZM2G847466 |   |   |
|   | zma100381663 | GRMZM2G072052 |   |   |
|   | zma103655921 | ---- |   |   |
|   | zma100284444 | GRMZM2G048846 |   |   |
|   | zma100283515 | GRMZM2G096228 |   |   |
|   | zma103645035 | ---- |   |   |
|   | zma103635808 | GRMZM2G005557 |   |   |
|   | zma103637586 | GRMZM2G355525 |   |   |
|   | zma100272455 | GRMZM2G324643 |   |   |
|   | zma606468 | GRMZM2G149923 |   |   |
|   | zma100285141 | GRMZM2G115628 |  F\_CAAGACGAAGGAACCAGGAGR\_GGCAGAACGAGTCGAGTTTC | 0.90 |
|   | zma100285551 | GRMZM2G146720 |   |   |
|   | zma1002502442 | ---- |   |   |
|   | zma100281919 | ---- |   |   |
|   | zma100381315 | GRMZM2G430600 |   |   |
|   | zma542420 | GRMZM2G152891 |   |   |
|   | zma100217114 | GRMZM2G39244 |   |   |
|   | zma103634668 | GRMZM2G044963 |   |   |
|   | zma103639205 | GRMZM2G029107 |   |   |
|   | zma541661 | GRMZM2G004703 |   |   |
|   | zma542415 | GRMZM2G067511 |   |   |
|   | zma542415 | GRMZM2G117582 |   |   |
|   | zma542465 | ---- |   |   |
| RBO | zma100274717 | GRMZM2G089285 | F\_TGGTACTCGCACCATGTGTTR\_CGACATACATCCACGTCGTC |  |
|  | zma103643238 | GRMZM2G448185 | F\_CAGCAGGGACAAGAAGAAGGR\_TAGACGACGATGAGCAGGTG | 0.92 |
|   | zma100037794 | GRMZM2G138152 |   |   |
|   | zma100101532 | GRMZM2G043435 | F\_GAGCTTTGGCAACTGGAGACR\_CCAGCAAGGTTCTGGCTTAG | 0.97 |
|   | zma100136880 | GRMZM2G441541, rbohD |   |   |
|   | zma103648044 | GRMZM2G037993 |   |   |
|   | zma103648040 | GRMZM2G065144 | F\_TGTTCTGGGACCAAATCTCCR\_ATCTCCTCCTCGGTGATCCT | 0.77 |
|   | zma103648043 | GRMZM2G358619 |   |  |
|   | zma100381459 | GRMZM2G300965 | F\_CTCATCAGCATCGTCAAGGAR\_CGCGTGCACCAGTAGAAGTA | N/A |
|   | zma103635158 | GRMZM2G022547 | F\_ACCGTGACAGCCTTGGATACR\_TTTCGAGCTATGCGTTGTTG | 0.76 |
|   | zma100384248 | GRMZM2G034896, IDP491 |   |  |
|  WRKY | zma100275623 | GRMZM2G151407 | F\_CGCCCTTTCTAGTTCAGTCGR\_GAGACTTCTTGGGCTTGGTG | 0.95 |
|   | zma100383070 | GRMZM5G816457 | F\_TCTTCTCTCTCCGGCGTAAAR\_GGGGAGTCAGGAAAAGAAGG | 0.94 |
|  | zma100384128 | GRMZM2G052671 |  F\_CCTCCACCACCAATACCATCR\_ATACTTGCGCCACCGATAAC | 0.92 |
|   | zma103641750 | GRMZM2G031963 |  F\_CTCCAGTCACAGGTTGAGCAR\_CAGCTCTGGATTGGAAGACC | N/A |
|   | zma103654474 | GRMZM2G027972 |  F\_CGTGAATCAGAAACCGACCTR\_CACCAGATGGAATTGTCACG | N/A |
|  | WRKY 83 | GRMZM2G012724 | F\_ACCTGATCGCGTCTCAGTCTR\_CCTTGAAGGAAGGGAAGGAC | 0.99 |