**Supplemental Table 1.** Primers used in this study. Gene specific cloning primer sequences for GSTs were obtained from the CATMA database [66]. The underlined sequence (5’-CACC-3’) was introduced into the forward primer sequence to facilitate site directed cloning into pENTRTM/D-TOPO. Quantitative RT-PCR primers were designed using QUANTPRIME [73]. The pAGRIKOLA sequencing primers derived from the AGRIKOLA website [20]. The GeneArt® Primer and Construct Design Tool (http://www.thermofisher.com/order/oligoDesigner) was used to design primers for the assembly of the synthetic RNAi fragments.

|  |  |
| --- | --- |
| **Primer** | **5’-3’ Sequences** |
|  |  |
| **Cloning Primers – Single RNAi Fragments** |
|  |  |
| AtHY2\_RNAi\_fw | CACCAGTCAGATTTCAGAGTCATCAACAC; |
| AtHY2\_RNAi\_rv | AATCTCTGTTGATTAGGTAGAGACG |
| AtLNG1\_RNAi\_fw | CACCAGTATCCTCTGAATCGTCCTCG; |
| AtLNG1\_RNAi\_rv | CACCTTGGCGACCCATTG |
| AtTRY\_RNAi\_fw | CACCTGGGATTTGATAGCAGGA; |
| AtTRY\_RNAi\_rv | CACTAGGAAGGATAGATAGAAAAGC |
| AtMAX3\_RNAi\_fw | CACCGATTGGCAAAGCAACAAG; |
| AtMAX3\_RNAi\_rv | CAATGTAACCATCGTCCTCT |
| AtNPQ1\_RNAi\_fw | CACCCCAGAACTCGAAAAAGCAG; |
| AtNPQ1\_RNAi\_rv | GTACAACAATGGTGGTTCTT |
| AtSEX1\_RNAi\_fw | CACCGCAATTTGCCCTCGACAT; |
| AtSEX1\_RNAi\_rv | GCCGACTGATCGACTCCAAG |
| AtGUN4\_RNAi\_fw | CACCCTTCAGACAAGCCGACGAGG; |
| AtGUN4\_RNAi\_rv | AAACGCAGGATGGCTTAAAA |
|  |  |
| **qRT-PCR** |
|  |  |
| AtHY2 | ATCAGGCATGGCTTGAGATGAC; |
| TGGCTCTCACATGAGATGGTTCC |
| AtLNG1 | TTATCCACCGAGACGTGTCACC; |
| CATTGTCACTTGCTTTGCCTGAAG |
| AtTRY | GTACAGACTTGTCGGTGATAGGTG; |
| GAAGCTGGCGTCGTTTATCAGC |
| AtMAX3 | TCGTTGGTGAGCCCATGTTTGTC; |
| TCTCCACCGAAACCGCATACTC |
| AtNPQ1 | GCTTGCGCGTTCCTTATTGTTCC; |
| ATGCACTTTGCGAGTTCTATCCTG |
| AtSEX1 | CAACCTTGATTCGCCTCTGGTG; |
| ACGTCTTATGAACAGCCCAATCG |
| AtGUN4 | CTGCCGTTTCAACCACAAACGC; |
| ACGTCGAATATGGTCGCGGTTTC |
| AtACT2 | CCAGAAGGATGCATATGTTGGTGA; |
| GAGGAGCCTCGGTAAGAAGA |
|  |  |
| **pAGRIKOLA Sequencing Primers** |
|  |  |
| AGRI51 | CAACCACGTCTTCAAAGCAA |
| AGRI56 | CTGGGGTACCGAATTCCTC |
| AGRI64 | CTTGCGCTGCAGTTATCATC |
| AGRI69 | AGGCGTCTCGCATATCTCAT |
| Cat\_Intron | AATTGGGTTCGAAATCGATAAGC |
| Pdk\_Intron | TCTTCTTCGTCTTACACATCACTTG |
|  |  |
| **Primers – Assembling Multiple RNAi Fragments** |
|  |  |
| *(a) Construct HTLNSM* |
|  |  |
| a\_HY2\_FW | GCGCAGCGGCGGCCGCGCTGATACCGCCGCAGTCAGATTTCAGAGTCATCAACA |
| a\_HY2\_RV | TGCTATCAAATCCCAAATCTCTGTTGATTAGGTAGAGAC |
| a\_TRY\_FW | TAATCAACAGAGATTTGGGATTTGATAGCAGGAAGAGTT |
| a\_TRY\_RV | GATTCAGAGGATACTCACTAGGAAGGATAGATAGAAAAG |
| a\_LNG1\_FW | CTATCCTTCCTAGTGAGTATCCTCTGAATCGTCCTCGAG |
| a\_LNG1\_RV | TTTTTCGAGTTCTGGCACCTTGGCGACCCATTGGTCGGT |
| a\_NPQ1\_FW | TGGGTCGCCAAGGTGCCAGAACTCGAAAAAGCAGCAAAA |
| a\_NPQ1\_RV | TCGAGGGCAAATTGCGTACAACAATGGTGGTTCTTGTTT |
| a\_SEX1\_FW | CCACCATTGTTGTACGCAATTTGCCCTCGACATGTGCAA |
| a\_SEX1\_RV | GTTGCTTTGCCAATCGCCGACTGATCGACTCCAAGACAA |
| a\_MAX3\_FW | AGTCGATCAGTCGGCGATTGGCAAAGCAACAAGCTGGAT |
| a\_MAX3\_RV | GCTCACTGACTTTAATTAACTGCGGCGAGGCAATGTAACCATCGTCCTCTTCTT |
|  |
| *(b) Construct NLSHMT* |
|  |  |
| b\_NPQ1\_FW | GCGCAGCGGCGGCCGCGCTGATACCGCCGCCCAGAACTCGAAAAAGCAGCAAAA |
| b\_NPQ1\_RV | GATTCAGAGGATACTGTACAACAATGGTGGTTCTTGTTT |
| b\_LNG1\_FW | CCACCATTGTTGTACAGTATCCTCTGAATCGTCCTCGAG |
| b\_LNG1\_RV | TCGAGGGCAAATTGCCACCTTGGCGACCCATTGGTCGGT |
| b\_SEX1\_FW | TGGGTCGCCAAGGTGGCAATTTGCCCTCGACATGTGCAA |
| b\_SEX1\_RV | CTCTGAAATCTGACTGCCGACTGATCGACTCCAAGACAA |
| b\_HY2\_FW | AGTCGATCAGTCGGCAGTCAGATTTCAGAGTCATCAACA |
| b\_HY2\_RV | GTTGCTTTGCCAATCAATCTCTGTTGATTAGGTAGAGAC |
| b\_MAX3\_FW | TAATCAACAGAGATTGATTGGCAAAGCAACAAGCTGGAT |
| b\_MAX3\_RV | TGCTATCAAATCCCACAATGTAACCATCGTCCTCTTCTT |
| b\_TRY\_FW | ACGATGGTTACATTGTGGGATTTGATAGCAGGAAGAGTT |
| b\_TRY\_RV | GCTCACTGACTTTAATTAACTGCGGCGAGGCACTAGGAAGGATAGATAGAAAAG |
|  |  |
| *(c) Construct LNTMHS* |
|  |  |
| c\_LNG1\_FW | GCGCAGCGGCGGCCGCGCTGATACCGCCGCAGTATCCTCTGAATCGTCCTCGAG |
| c\_LNG1\_RV | same as a\_LNG1\_RV |
| c\_NPQ1\_FW | same as a\_NPQ1\_FW |
| c\_NPQ1\_RV | TGCTATCAAATCCCAGTACAACAATGGTGGTTCTTGTTT |
| c\_TRY\_FW | CCACCATTGTTGTACTGGGATTTGATAGCAGGAAGAGTT |
| c\_TRY\_RV | GTTGCTTTGCCAATCCACTAGGAAGGATAGATAGAAAAG |
| c\_MAX3\_FW | CTATCCTTCCTAGTGGATTGGCAAAGCAACAAGCTGGAT |
| c\_MAX3\_RV | CTCTGAAATCTGACTCAATGTAACCATCGTCCTCTTCTT |
| c\_HY2\_FW | ACGATGGTTACATTGAGTCAGATTTCAGAGTCATCAACA |
| c\_HY2\_RV | TCGAGGGCAAATTGCAATCTCTGTTGATTAGGTAGAGAC |
| c\_SEX1\_FW | TAATCAACAGAGATTGCAATTTGCCCTCGACATGTGCAA |
| c\_SEX1\_RV | GCTCACTGACTTTAATTAACTGCGGCGAGGGCCGACTGATCGACTCCAAGACAA |
|  |  |
| *(d) Construct GHTLNSM* |
|  |  |
| d\_GUN4\_FW | GCGCAGCGGCGGCCGCGCTGATACCGCCGCCTTCAGACAAGCCGACGAGGAGAC |
| d\_GUN4\_RV | CTCTGAAATCTGACTAAACGCAGGATGGCTTAAAACGCA |
| d\_HY2\_FW | AGCCATCCTGCGTTTAGTCAGATTTCAGAGTCATCAACA |
| d\_HY2\_RV | same as a\_HY2\_RV |
| d\_TRY\_FW | same as a\_TRY\_FW |
| d\_TRY\_RV | same as a\_TRY\_RV |
| d\_LNG1\_FW | same as a\_LNG1\_FW |
| d\_LNG1\_RV | same as a\_LNG1\_RV |
| d\_NPQ1\_FW | same as a\_NPQ1\_FW |
| d\_NPQ1\_RV | same as a\_NPQ1\_RV |
| d\_SEX1\_FW | same as a\_SEX1\_FW |
| d\_SEX1\_RV | same as a\_SEX1\_RV |
| d\_MAX3\_FW | same as a\_MAX3\_FW |
| d\_MAX3\_RV | same as a\_MAX3\_RV |
|  |  |
| *(e) Construct NLSHMTG* |
|  |  |
| e\_NPQ1\_FW | same as b\_NPQ1\_FW |
| e\_NPQ1\_RV | same as b\_NPQ1\_RV |
| e\_LNG1\_FW | same as b\_LNG1\_FW |
| e\_LNG1\_RV | same as b\_LNG1\_RV |
| e\_SEX1\_FW | same as b\_SEX1\_FW |
| e\_SEX1\_RV | same as b\_SEX1\_RV |
| e\_HY2\_FW | same as b\_HY2\_FW |
| e\_HY2\_RV | same as b\_HY2\_RV |
| e\_MAX3\_FW | same as b\_MAX3\_FW |
| e\_MAX3\_RV | same as b\_MAX3\_RV |
| e\_TRY\_FW | same as b\_TRY\_FW |
| e\_TRY\_RV | TCGGCTTGTCTGAAGCACTAGGAAGGATAGATAGAAAAG |
| e\_GUN4\_FW | CTATCCTTCCTAGTGCTTCAGACAAGCCGACGAGGAGAC |
| e\_GUN4\_RV | GCTCACTGACTTTAATTAACTGCGGCGAGGAAACGCAGGATGGCTTAAAACGCA |
|  |  |
| *(f) Construct LNGTMHS* |
|  |  |
| f\_LNG1\_FW | same as c\_LNG1\_FW |
| f\_LNG1\_RV | same as c\_LNG1\_RV |
| f\_NPQ1\_FW | same as c\_NPQ1\_FW |
| f\_NPQ1\_RV | TCGGCTTGTCTGAAGGTACAACAATGGTGGTTCTTGTTT |
| f\_GUN4\_FW | CCACCATTGTTGTACCTTCAGACAAGCCGACGAGGAGAC |
| f\_GUN4\_RV | TGCTATCAAATCCCAAAACGCAGGATGGCTTAAAACGCA |
| f\_TRY\_FW | AGCCATCCTGCGTTTTGGGATTTGATAGCAGGAAGAGTT |
| f\_TRY\_RV | same as c\_TRY\_RV |
| f\_MAX3\_FW | same as c\_MAX3\_FW |
| f\_MAX3\_RV | same as c\_MAX3\_RV |
| f\_HY2\_FW | same as c\_HY2\_FW |
| f\_HY2\_RV | same as c\_HY2\_RV |
| f\_SEX1\_FW | same as c\_SEX1\_FW |
| f\_SEX1\_RV | same as c\_SEX1\_RV |
|  |  |
| **Assembly Proof PCR / Cloning Primers – Multiple RNAi Fragments** |
|  |  |
| *(a) Construct HTLNSM* |
|  |  |
| AtHY2\_for | same as AtHY2\_RNAi\_fw |
| AtMAX3\_rev | same as AtMAX3\_RNAi\_rv |
|  |  |
| *(b) Construct NLSHMT* |
|  |  |
| AtNPQ1\_for | same as AtNPQ1\_RNAi\_fw |
| AtTRY\_rev | same as AtTRY\_RNAi\_rv |
|  |  |
| *(c) Construct LNTMHS* |
|  |  |
| AtLNG1\_for | same as AtLNG1\_RNAi\_fw |
| AtSEX1\_rev | same as AtSEX1\_RNAi\_rv |
|  |  |
| *(d) Construct GHTLNSM* |
|  |  |
| AtGUN4\_for | same as AtGUN4\_RNAi\_fw |
| AtMAX3\_rev | same as AtMAX3\_RNAi\_rv |
|  |  |
| *(e) Construct NLSHMTG* |
|  |  |
| AtNPQ1\_for | same as AtNPQ1\_RNAi\_fw |
| AtGUN4\_rev | same as AtGUN4\_RNAi\_rv |
|  |  |
| *(f) Construct LNGTMHS* |
|  |  |
| AtLNG1\_for | same as AtLNG1\_RNAi\_fw |
| AtSEX1\_rev | same as AtSEX1\_RNAi\_rv |