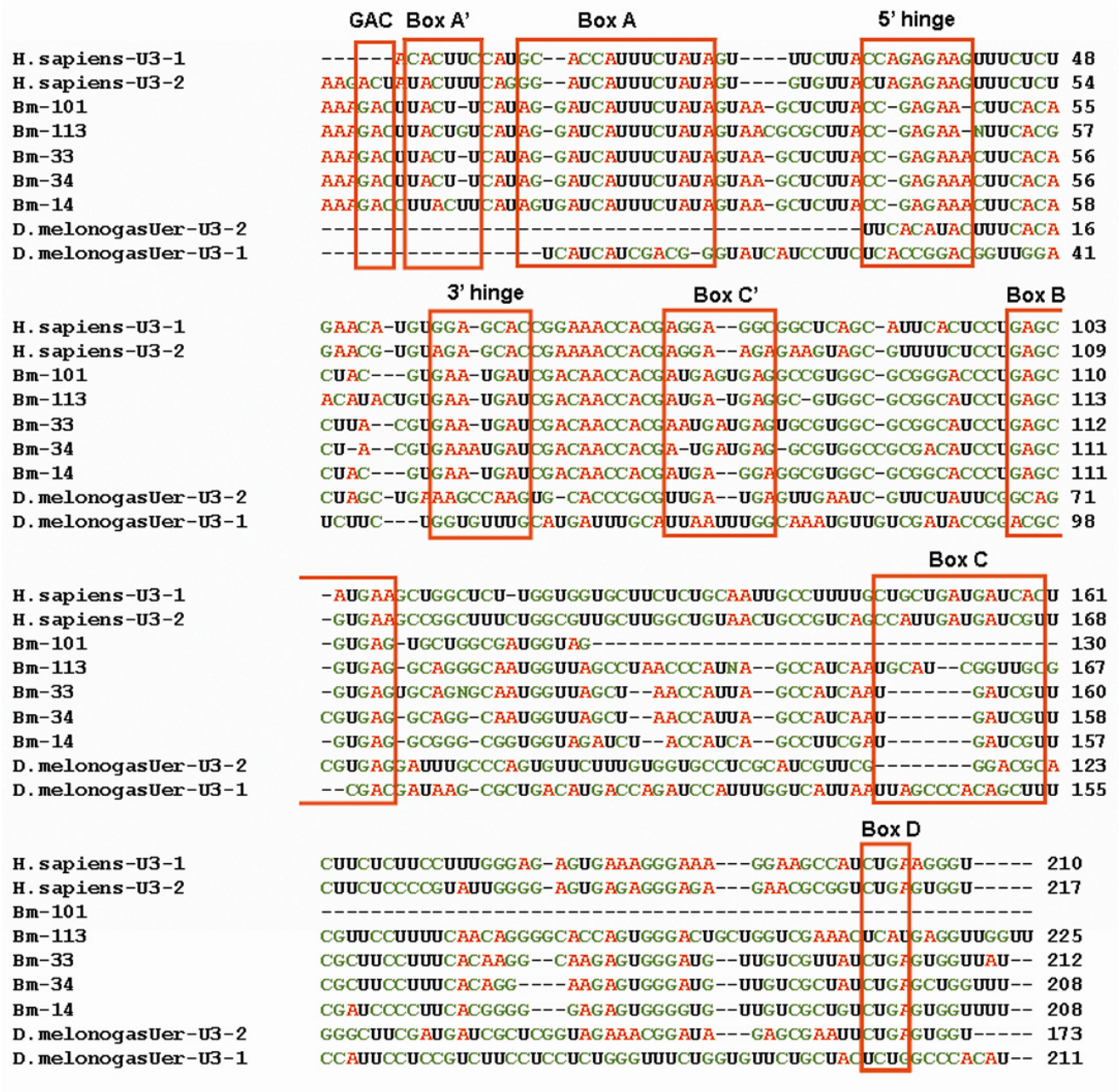
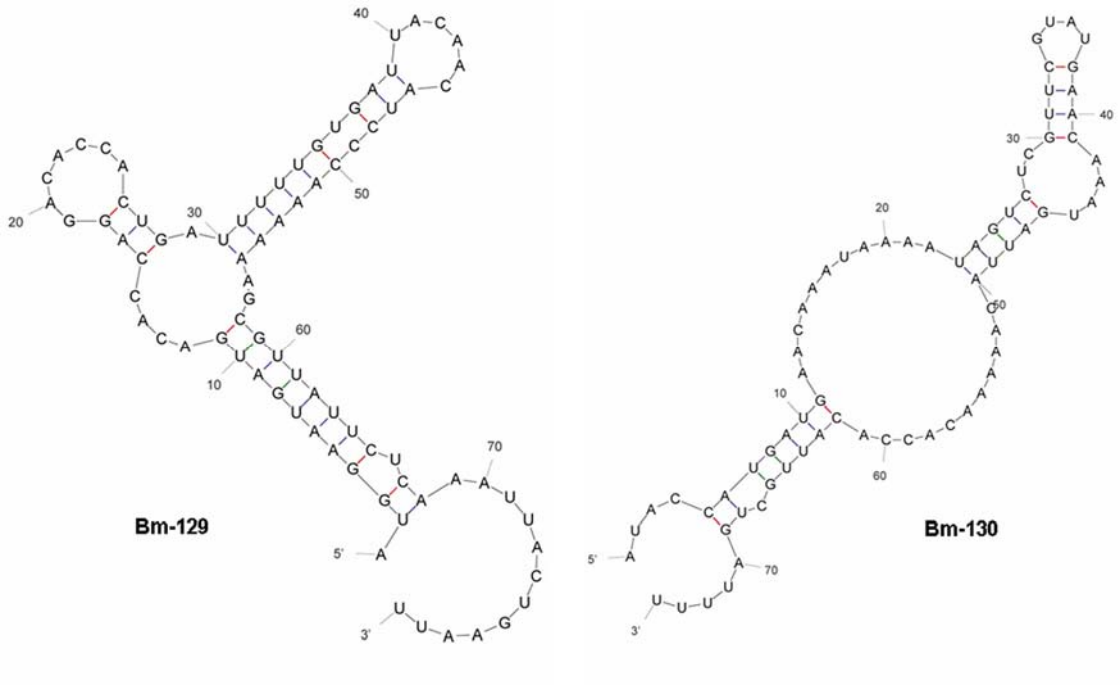
Supplementary data

Li et al. Experimental RNomics and genomic comparative analysis reveal a large group of species-specific small non-message RNAs in the silkworm *Bombyx mori*.

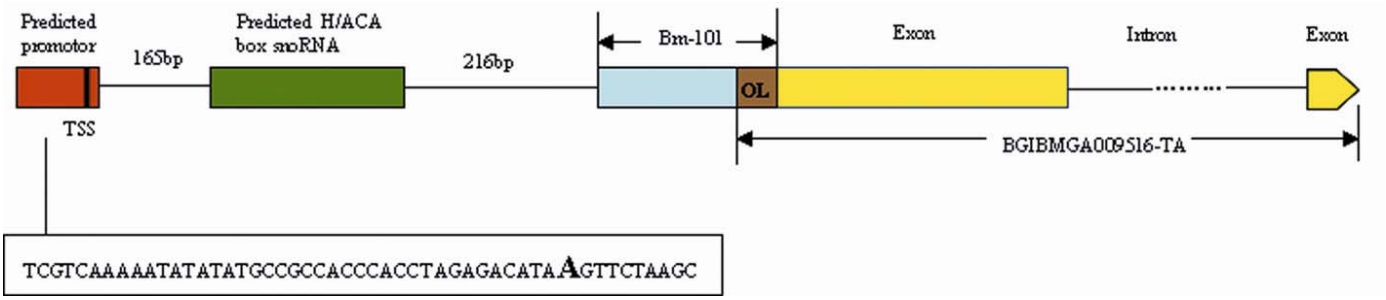
Supplementary Figure 1. Sequence alignment of U3 snoRNAs. (A) The five U3 orthologues are aligned with human and *Drosophila* U3 snoRNAs. Box A', A, C', B, C and D sequences are boxed. (B) Putative base-pairing interactions between Bm-33 and 18S rRNAs.



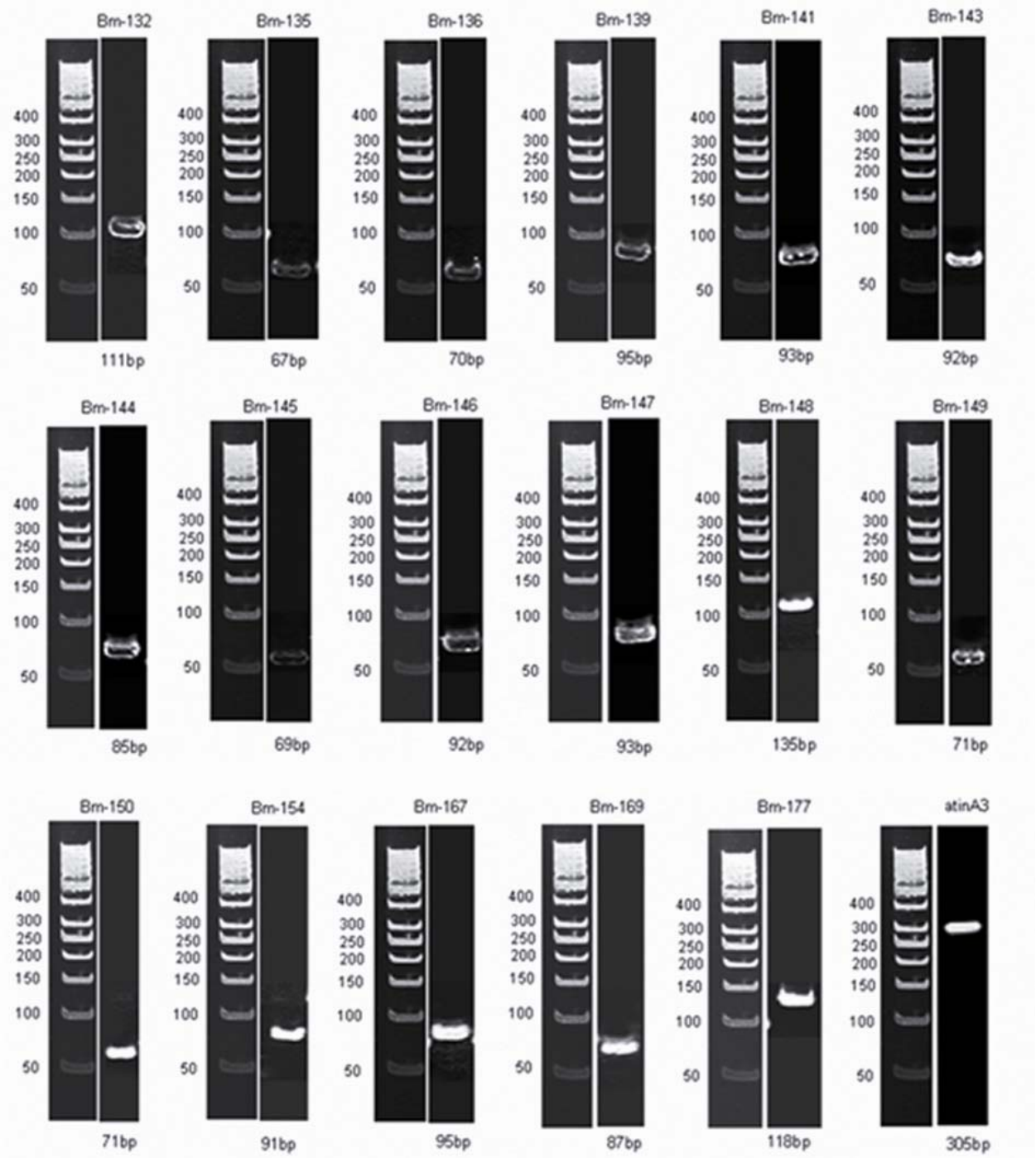
Supplementary Figure 2. Secondary structures of two C/D-H/ACA "hybrid" snoRNAs.



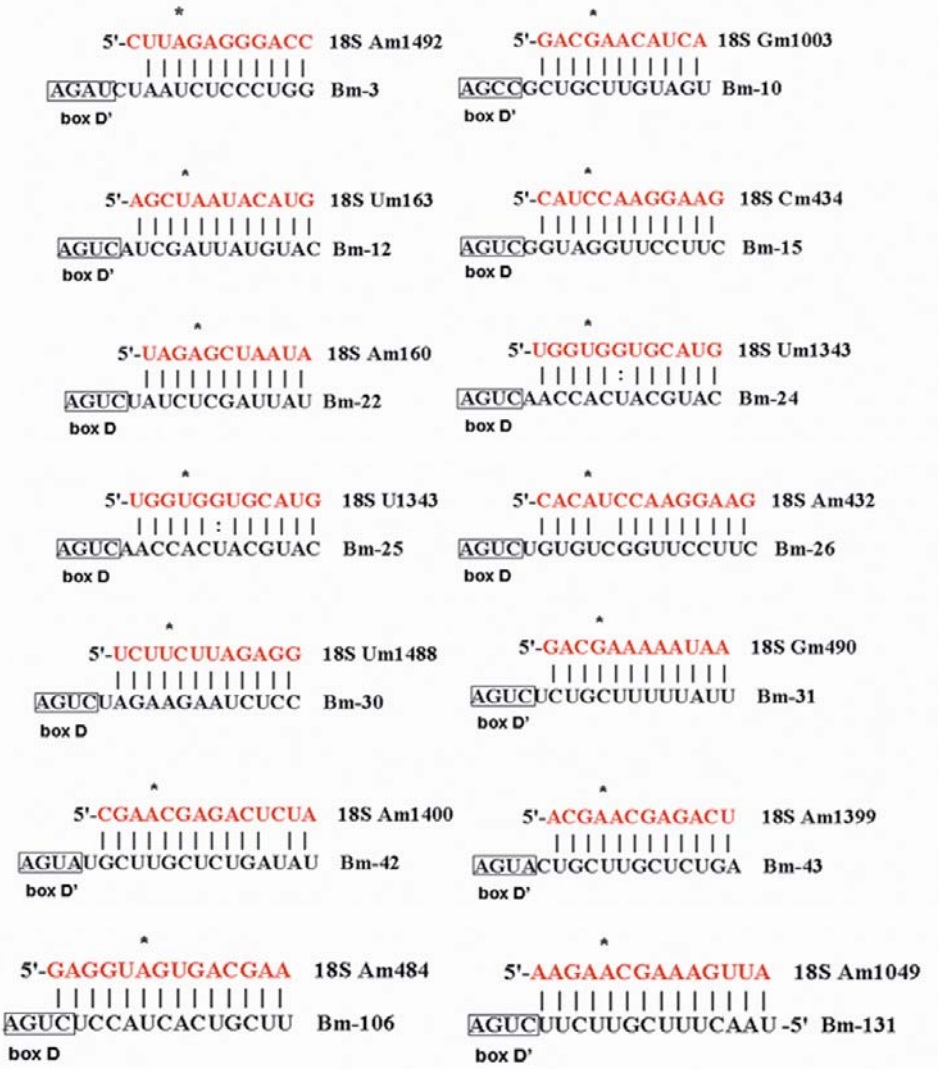
Supplementary Figure 3. Genomic structure of Bm-101. The abbreviation OL represents overlapping regions. A predicted promoter located 567 bp upstream of Bm-101, between which a predicted H/ACA box snoRNA gene with length of 136 bp existed. Bm-101 overlaps 64 bp of the first exon of its downstream gene BGIBMGA009516-TA.



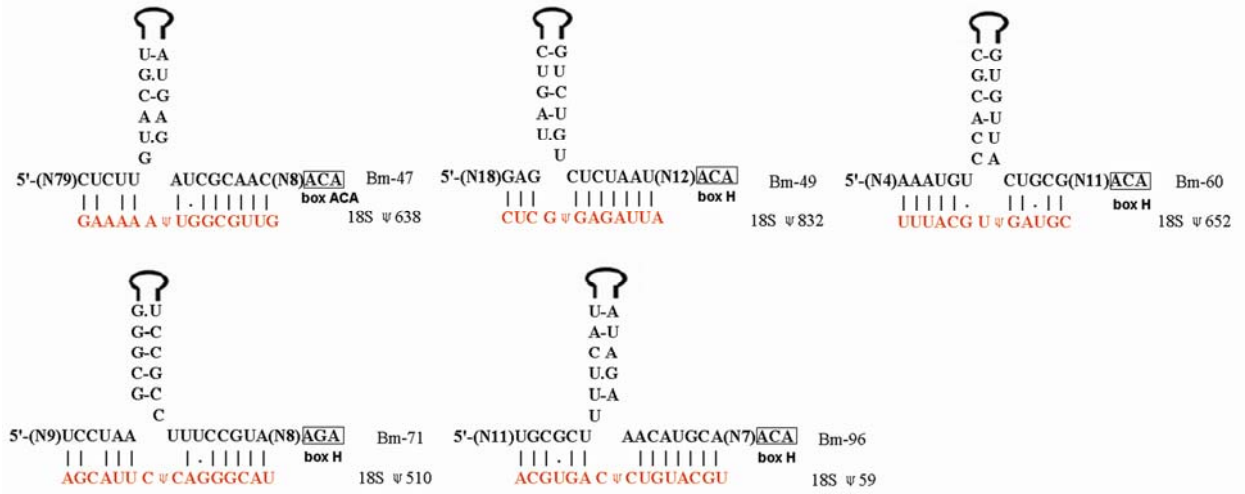
Supplementary Figure 4. RT-PCR results of the unclassified ncRNAs.



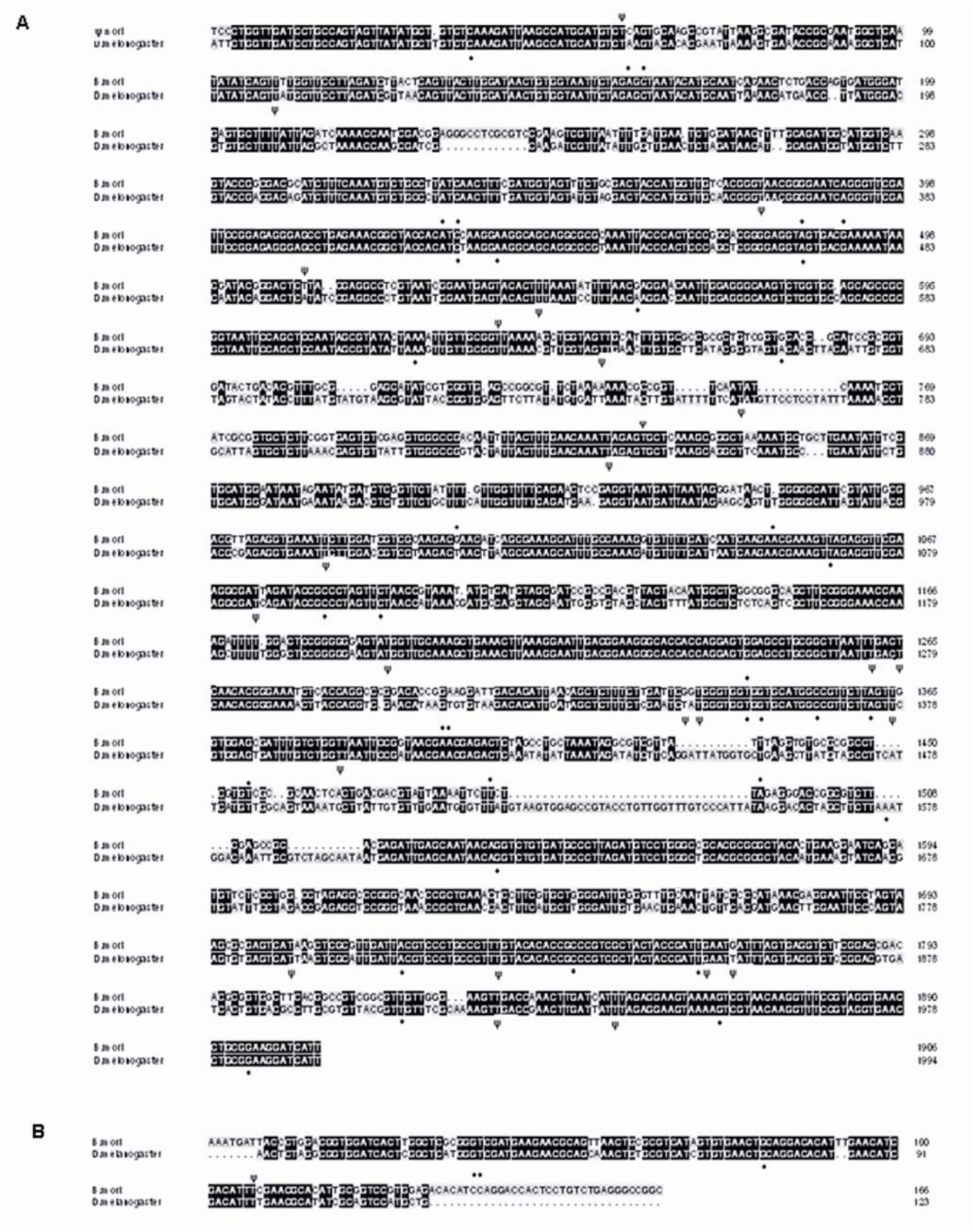
Supplementary Figure 5. Predicted modification sites targeted by novel C/D box snoRNAs. The snoRNA sequences are represented in black and the rRNA or snRNA sequences in red. Box D or D' sequences and base-pairing of complementary sequences are indicated. * - mehtylated nucleotide.



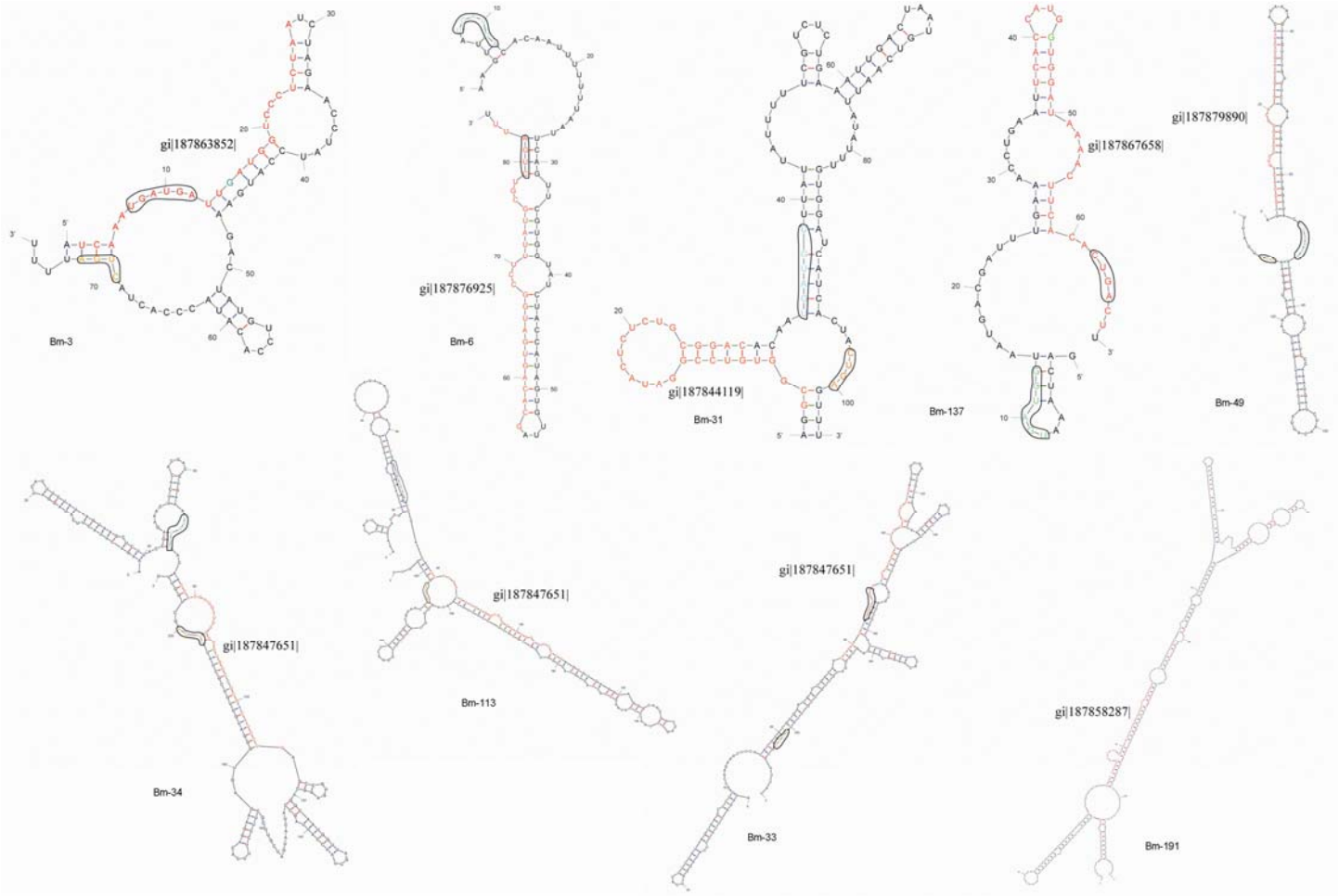
Supplementary Figure 6. Predicted modification sites targeted by novel box H/ACA snoRNAs. The snoRNA sequences are represented in black and the rRNA sequence in red. Box H or ACA sequences and base-pairing of complementary sequences are indicated. Ψ- pseudouridine.



Supplementary Figure 7. Predicted target sites in 18S rRNAs (A) and 5.8S rRNAs (B) from *B. mori* and *D. melanogaster*. Predicted methylation sites were marked with *, predicted pseudouridylation sites with ψ.



Supplementary Figure 8. Schematic representation of secondary structures of full-length ncRNAs, with which piRNAs match. piRNAs are indicated in red, mismatched nucleotides in green. For C/D box snoRNAs, C box is indicated in blue, D box in croci; for H/ACA box snoRNA Bm-49, H box is indicated in blue.



Supplementary Table 2. Primer sets used for removal of known non-coding RNAs like rRNAs and U snRNAs.

name	*sequence*
16S-1	AAAAAAAAAAAAAAAAAAAAGGTGGAAGGAGGTCAAATAG
16S-2	AAAAAAAAAAAAAAAAAAAAGTAACATCGTGCACACATCG
18S-1	AAAAAAAAAAAAAAAAAAAACTACGGGAATCTACAGGACC
18S-1	AAAAAAAAAAAAAAAAAAAATCGCCTTAATACGGCTTGCA
18S-2	AAAAAAAAAAAAAAAAAAAATTGTGCCCTTTAGAGTGGTC
18S-2	AAAAAAAAAAAAAAAAAAAATATTGAGCCATTCGCGGTAT
18S-3	AAAAAAAAAAAAAAAAAAAACTCTTTGCCGATGGTGTAG
28S-1	AAAAAAAAAAAAAAAAAAACCAGAAAAGTTACCACAGGG
28S-2	AAAAAAAAAAAAAAAAAAAAACACGCCACATCGACATA

28S-3	AAAAAAAAAAAAAAAAAAAACGTGCCTGTAACGGTAGTGTAT
28S-4	AAAAAAAAAAAAAAAAAAAACAAATGCGGTGCTCTTCG
28S-5	AAAAAAAAAAAAAAAAAAAACCACTTGGCACCGTCATCAG
28S-6	AAAAAAAAAAAAAAAAAAAAGGATCACGCGGGAGTTGTAC
28S-7	AAAAAAAAAAAAAAAAAAAACAGAGCACTGGGCAGAAATCA
28S-8	AAAAAAAAAAAAAAAAAAAAGCCCAACCGAGTAAGTAATG
28S-9	AAAAAAAAAAAAAAAAAAAACTACAGACTATTCCGAGCCC
28S-10	AAAAAAAAAAAAAAAAAAAATCACTGATTGGAAACGAGAC
28S-11	AAAAAAAAAAAAAAAAAAAACATTACTTACTCGGTTGGGC
28S-12	AAAAAAAAAAAAAAAAAAAAGCGAAACCCTTCTCCACT
28S-13	AAAAAAAAAAAAAAAAAAAAATGTAGGTAAGGGAAGTCGG
28S-14	AAAAAAAAAAAAAAAAAAAAAGACGAGGGAACGATTATTGA
28S-15	AAAAAAAAAAAAAAAAAAAAAACACGCCACATCGACATA
28S-16	AAAAAAAAAAAAAAAAAAAAGAAACCCTTCTCCACGTCAG
28S-17	AAAAAAAAAAAAAAAAAAAAATCACATTGCGTCAACACCC
28S-18	AAAAAAAAAAAAAAAAAAAATCAGAGCACTGGGCAGAAAT
5.8S-1	AAAAAAAAAAAAAAAAAAAAGATGTTCAAATGTGTCCTGC
5.8S-2	AAAAAAAAAAAAAAAAAAAAGTGGTCCTGGATGTGTCTC
5S-1	AAAAAAAAAAAAAAAAAAAAATCGGACGAGAACCAGTGTA
5S-2	AAAAAAAAAAAAAAAAAAAATGTTGCTTGACTTCGGTGA
5S-3	AAAAAAAAAAAAAAAAAAAAGGTCACCCATCCAAGTACTG
Attacus_ricini_ribosomal_DNA_repeat_unit-1	AAAAAAAAAAAAAAAAAAAAGTCTCAACAGATCGCAGCAC
Attacus_ricini_ribosomal_DNA_repeat_unit-2	AAAAAAAAAAAAAAAAAAAACTCTACCGAGCACAACACCC
Attacus_ricini_ribosomal_DNA_repeat_unit-3	AAAAAAAAAAAAAAAAAAAACGTCTACAGACTATTCCGAGCC
Attacus_ricini_ribosomal_DNA_repeat_unit-4	AAAAAAAAAAAAAAAAAAAAGAGTCTCAACAGATCGCAGCAC
Attacus_ricini_ribosomal_DNA_repeat_unit-5	AAAAAAAAAAAAAAAAAAAATTGTTTAGAGCCTCCCGACT
Attacus_ricini_ribosomal_DNA_repeat_unit-6	AAAAAAAAAAAAAAAAAAAAGATCTCCGCGATCCAAAT
Attacus_ricini_ribosomal_DNA_repeat_unit-7	AAAAAAAAAAAAAAAAAAAAGACCTTCGGAGCCGTGAT
Attacus_ricini_ribosomal_DNA_repeat_unit-8	AAAAAAAAAAAAAAAAAAAAACTCGAACGCTCAGGCAGAA
U1-1	AAAAAAAAAAAAAAAAAAAAGCGAGTTACCCACATTAGGA
U1-2	AAAAAAAAAAAAAAAAAAAACGCAGTCCACGCTACCAAAA
U1-3	AAAAAAAAAAAAAAAAAAAACGTGCGAGTTACCCACATTA
U1-4	AAAAAAAAAAAAAAAAAAAATAGGAATAATCGCAACGGTC
U1-5	AAAAAAAAAAAAAAAAAAAAGAACCGCCTAATTGATCACG
U1-6	AAAAAAAAAAAAAAAAAAAACAATGGAACAGCCTCGCCCT
U2-1	AAAAAAAAAAAAAAAAAAAAGCCCCTAACATCTCGTCA
U2-3	AAAAAAAAAAAAAAAAAAAACCCGAACTTCCCGTCATT
U2-4	AAAAAAAAAAAAAAAAAAAACCCGTGACAGGAGTGGA
U2-5	AAAAAAAAAAAAAAAAAAAAGTGACGAGAGTGGAGCGAGC
U4-1	AAAAAAAAAAAAAAAAAAAAGGCGGGGTATTGGTAAAG
U4-2	AAAAAAAAAAAAAAAAAAAACCATAGCGGACGGTGTTTCA
U5-1	AAAAAAAAAAAAAAAAAAAACGACAGGGCACTACTAAAA
U6-1	AAAAAAAAAAAAAAAAAAAATTTGCGTGTCATCCTTGC
U7-1	AAAAAAAAAAAAAAAAAAAACGGGAACACTCAATGCC

Supplementary Table 3. Probe sets used for ncRNAs microarray.

name	*sequence*
Bm-1	ACAAATTGCTAAATTTTTCATGTTGAAAATTGAACTCTCTCACTGATATT
Bm-2	AGACCTATTCGTGAAGACTAGAACTATTCACTACCCACTAAGCTGAATTT
Bm-3	ATCTAGAACCTATCCATGAAGACTATGTCCACATACCCACTACTGATTTT
Bm-4	TTTTAACATGAAAAATCTTCATGGCTGCATTTTATAAATGTATCTGATTT
Bm-5	TCACATGCTAGACTAATGAATTTTTATGATTCTACTTAAAATCTGAGTTT
Bm-6	TGGTATCTACCATAGTGTTAGCACAGTGATGGCCTTTATGCGTCTGATTT
Bm-7	AACCATTGTGTTATGTGATAGGCACGCGACTTCGTTTTGATAGTTGTACT
Bm-8	GCGACTTCGTTTTGATAGTTAGTACTGCCTTTTCATGATTNCTTGANGCA
Bm-9	AAGCGATTCGCTACGGTGAACGTGACACCTAAGATTAGTCTTTCTGATTT
Bm-10	CGTCGCCGAATGTTACGCATAAGGCGGGCTAAAATCCTTCTGATCCCAAT
Bm-11	GTTGCATTTAGTGACTGTTACCGTTTTGGGAACAATCCAGTAGCCATATG
Bm-12	AATGATGTTTGATCATGTATTAGCTACTGAATCTTTTGATTGAAAATTTT
Bm-13	GCACGCTCCGTCGGCTCCGCGCCGTGACTAAACACTTTGATCGCTGACTT
Bm-15	GCGCAACCATGATTACCACGCATTTCAAACTTCCTTGGATGGCTGAATTT
Bm-16	TGATAAGAGAATCCGTTCCATTTTATTCTGATTATTGTATGACGATTAAT
Bm-17	CCAAGAATACGATAGGAATGTGCCGTCTGATACAAAAATGACGATTATTC
Bm-18	CACATGCGCGTCATCTGATGCTGTGAAAGGTGCAGAGTTGAAGTTCAGTG
Bm-19	CGGGCGGGCTGAATTATACGTACAATGTAATAGGAATGATGTATTGTAAT
Bm-20	ATCTGAGAGCCATGATGTCAATCCATCTACCACCATAGATTTTTCTGATT
Bm-21	TAATTTCTTATTGAACGCCGTGATTACCTTCACCAAGATCGCTGATGTTT
Bm-22	AATGATGAAAAGTGCTAACCATTGATTAAATAATGATTTGCATGTATTAT
Bm-23	GGCCCGCGCCGCTGACCGCGCTCGCCCTGACGACATGGCAGTCTGAATTT
Bm-24	GACATTTCACACCAAATTCTGAAAATTATGATTGATTTTTTAACATGCAT
Bm-25	GCACCAAACACTGAAATATTGTGATTGATTTGAACATGCATCACCAACTG
Bm-26	AATTTGTGTTTTGATTCATAATGATAATCTTCCTTGGCTGTGTCTGAAGA
Bm-27	TATTTCATCTGAAACATGTTATGCTGAAACACCTTGGCTGACTGAGCATT
Bm-28	GGGGCTAACAGTGACTATGGACTTGCTGATCGCAATGTACTGTAGCTCTG
Bm-29	ATGCCAGAAGTTTGGGCTGATGGCTAAAGTAAGGCAACAGCTTTGCTAAT
Bm-30	AATAACTTTCATGATTTGACCAACAAATTTCCTCTAAGAAGATCTGATTT
Bm-31	GGACACAATGATGTTTATTATTTTTCGTCTCTGAAATTGACTAATGTCAA
Bm-33	GAGTGCGTGGCGCGGCATCCTGAGCGTGAGTGCAGNGCAATGGTTAGCTA
Bm-35	TTCCCTCTCTCTCTGTGTATTCCTTGACGACATGGCACTCTGATCCGCTT
Bm-36	AAAATCCGCTCCCTAGCTTATCAACTATCGCAGATTTGCTTGGGCGAATA
Bm-37	GCTCCCTAGCTTATCAACTATCGCAGATTTGCTAGGCGAATGTCTGACGC
Bm-38	AATGATGAGAAAACTACACGAGCCAAAATGTGTTAAGTATGATACAACAC
Bm-39	CACCATCTTTCGACTGATCAAACAGTGCTGCATTCTTATTATCTGATGTT
Bm-40	GTTCTGCTTCTGAGTAAAATTGAAGATAACTTTACCCACATTTCTGATTT
Bm-42	GATGATCTATTAAATATAGTCTCGTTCGTATGAACAAAATATGATTATAA
Bm-43	GTCTCGTTCGTCATGAACACAATGATTACAAATAACACCACATTGCTGAT
Bm-44	GATTGTATCGCCCCTAGCTGAAACTTTGATGATTGATCTTCACTGACATT
Bm-45	GACTAATAGTATCGCCCCTATCTGAAATAATGTTGACCGATCATTTCTGA

Bm-47	TACTCTTGTACGTCCTGTGACGCATGAGATCGCAACCGAATTTACATCTT
Bm-48	ACATTTTTGATATCCTCCTTCCTGGTACTACTAGGATACAAGGAGGTATT
Bm-49	GTCTCTAATCGGATGTGGCTACATAAAATTCCCTACATTAATCCCAAATG
Bm-50	CGCCTTCCCCTTGTGGTAGAGGGTGGCACTCGGCATATTCCATAGCCAAG
Bm-51	GACTGCACACCAGGACACCACTGATTTTTGTGATTAACAACATCCCAAAA
Bm-52	CGGGTGAAGCCGCGTGAGAGTGATGCGTAGCTGTCTTTCATACAGTGATG
Bm-53	CGTCGCTCCTTGCATTTTCTCAATGTTGGGATGTACCGCCANGGAACAAC
Bm-55	TCGGTGCTATAACAGAAAGCTCACCCATTCGAAAGCACAAAATCCTTTCT
Bm-56	GTGAAATTGGTTGTTAGGATTCCAGGCATTGACTTTATGTAAATGGCGAT
Bm-57	GGGAAAATCAATATGCACCGAGCAGAAGATTCAGATAAAATTGTCTGTCT
Bm-58	GCAGCCGTAATAAGTTACGGAAATCATACTGTGCTGTAAAATTGAAATGC
Bm-59	GGAAAGAGTCGGGTTACGCATTACGGGTACAGCAAAGTTGGTTTCGCTTC
Bm-61	ACTTACCTACTCTGAAAAATTATGATTACACAGAGGCTCTTTCTGAGATT
Bm-64	GTTCCCAAAGGAAACATCACTTGTCAGTACACAGTGGGTGGTGTGTCGAC
Bm-65	ATTCACTATGTGTCTCTGTATATGAGTGTCAGTCCCTCGCTAACATTATT
Bm-66	AAGCCACTAGTACAAGAAGCTGGTCGGTTTTCGCGCTTTCATACACATTT
Bm-67	CTCTGGCTTCGCTTTCAGACTAAATGAAACTCTTACAACTTATCCTAGTA
Bm-68	GGATTTTTGTAAAGCCGGCCATTCACTGTAGACAAGTGACATANGTGGTC
Bm-71	CGGGTTGTGTTTTCAACAGCGAATCCGCCTTTCCGTAACGTGGTAGAGTA
Bm-72	CCTCTATCTTTATGTCCAAGGACTGTATGCTACGGCACTAATGATACAAT
Bm-73	TGGTTGCTAGTTACATTAACTTGTGACCCCATGACAGAAAGAAACATCTT
Bm-75	CTCGCACACCGAGGGGGTTTCTTGAGCTAAGTTGGCTACAGTANTGCGCC
Bm-76	GTGTGCCCCTATGGTGACCTGCATTGTGCGGAGTCAACTTTCCTAGCACT
Bm-77	ACATTCCTTGTTACAATCGGGGTTGTGGCCTCCCACGAGTGCAACACTTT
Bm-78	GGGAAGAAAGTTTACTCGGTCACCAATCCCAATGGTGTCGGGTTGTGTAC
Bm-79	TATGAAGCTAAGGTGCAAATTTCTTTTAATTAGAATTAATTAAAAGATTA
Bm-81	TCCCACAGTTTTGCCCCAGGAAGGAACAATGTGACCTGATCTGGCTTCTC
Bm-83	CCCTCCCTTTTATCATAGGGTCGATTAGAGATCGCTTCCGATATTATATA
Bm-84	GATCACCAATAGCTCTTGTTGGTTGTCATTTGATATGTTGTGCCATAGTA
Bm-85	GGCCGCGTTTTTATAGACGCGTGCACTAGAGTCCGTTAGGGTACATAGTT
Bm-86	CTCTGGCATTCTTATTTAGTTTGCTGGTGCTAGATTAACTCGTAGATGAT
Bm-88	AGACTCACAAATTATGTAATTTTTGAGTTTGAGTACGTATCACACATTTT
Bm-89	TGTGAAAACAAAATAAATAAATTGTTGTAACCCATCATGTCAACATACTT
Bm-90	TGATGTATTTGAGGCACTCAAGGGACCTGTTGAATGTTGTGACACTCTTT
Bm-91	GCTTGAGTCATAAGTGTGCTATATCATGATACCTCCAATCTTAGACTGAA
Bm-93	GCGCGCTGTACTAACTAATGCAGCGTTGTCATTATTGTCGCTACATTTTT
Bm-95	CAGTGTGCAAGTACTTAGTAATGTATTCTGCTCATAGGGTAGCTACATTT
Bm-97	GATCTAATTTGCAGTGGAAGAGTATTCTGGCTTGTTTATTGAAGGGTCTT
Bm-98	CATAATTGCATCAGCCTATTGCTATATGCTTGCATGTTATGCTGGTAACA
Bm-100	ATTTTTGTTGGGTACAGGTCGTCCCCTTGAGCTGCTCGCCTACTTTGCAA
Bm-101	TGAGTGAGGCCGTGGCGCGGGACCCTGAGCGTGAGTGCTGGCGATGGTAG
Bm-102	CTGTGTACACTTTTTGTAAGGAATCGTGCACTGATTGCACGAGTCCTCTT
Bm-103	ACTTGTGCTTGTTTTTTGTAAGGGAACTGTACTTTCACGTACAACCTTTT
Bm-104	CCACACTTGAACTTACATAATTGTAGTTATCAAGCGCCAAAAATTGGGGT

Bm-105	GTCTTAGAATCAAGCAGGGTACATTAAAAACACACTTTCATCCAGGAATG
Bm-106	CAATGAACAAATGTGATTTTATAACAATATTCGTCACTACCTCTGAGATT
Bm-107	GGTATAACGAGGCGCTCTACTAAAACACATGCAGGTTTCATCAATAAATT
Bm-108	CACTATATGAAGGTAGCCACATGGTCTTTGTATCGTTTCAAACTGCAAAT
Bm-109	CACAATGGTTTTGGTAACACTATTTATCAGGGCTTTGTATTGTGGTTGCA
Bm-110	CAGTCCAGCTATATGCAAGGTCAGCCCACATGGTCTTTGTATCGTTTCAC
Bm-112	CGATTTAGGCTCTGTGCCTCTGTGGCATCACCCAATGTAACCGATATCCT
Bm-115	CCCAATTAATGACTCCCAAGCGTACTCAACTCTAGAATTATGACTTCTAA
Bm-116	GTTATATGATGGTAGGCCTCAGAGGTAGATCGTATTGTAGCTAGACGCGA
Bm-117	CCAAAGCCGATGCATGTTCAGGCACCACTAGCATGCGTGACTCTGGATAG
Bm-119	CCCCATCGATGTATGTTGTCGACTGTGGGCAGTAGCATTCACACCACTTT
Bm-121	CGTACTCACATCGATGTATGTTGTCGACTGTGGGCAGTAGCATTCACCAC
Bm-128	GGCGCGGGCGTGACTGCGGGGTTGCCCGGTGAACATGAGATTATGAGATC
Bm-129	AATGATGACACCAGGACACCACTGATTTTTGTGATTACAACATCCCAAAA
Bm-130	GTCTCGTTCGTATGAACAAATGATTACAAAAACACCACATTGCTGATTTT
Bm-131	TCGTTCTTCTGACAAGCGAACGCTTGACAGCTAAATTTTGTTTCTGATTT
Bm-133	GAAACAAAGACACACAAACCTGAATTTAATGTGGAAATCTCCTGCAGTAC
Bm-135	AGGTCCGTGTTTCTGATTGACAGTGACGTCAAATCCTCTCTGTATGATTT
Bm-136	GGACTAGCTTATGTAGCAAGTACGGGTGCAACTTTTTGTACTACAAGTTT
Bm-137	ACGATTTGAAACCTGAATTCACCATGGTGGATAAAACTTCACACTGACTT
Bm-140	ACTTGTTACACCCGCGCCCGGCTGCCGTAAGGGAGTCCGAGCGCAATTTT
Bm-141	CTTATCATAAGTATTTTTGTTGAACCACATACACAGTTTATCGCAGTGTA
Bm-142	TTGCGTGTCAAATGATTGAATTCAAAATGATTCAAGCAAGCTCTGAAATT
Bm-146	TTTTTGTTGGAGCACATTCACTGAATCCTCAGTGAAATAATGTGTCTGTT
Bm-148	ACTTTTGCACGCGATGCTACACGCGACTCGCAGGTCACCAGCTACCCGGG
Bm-151	CTATATTTTTGAGCGCGATTCGCACTACGTCTGTCAGTGTCGAATGCCTT
Bm-152	CGCGGCCCCTCGGGGTCGTGGGGTATGGTTATCAAGACATACTCAACACA
Bm-153	GCACTATAGGTGCCTCAGTACCGTGGATACTTAAAGTTTATGACCTTTTT
Bm-154	GTGCTTGTTTTTGTAAGGAATTGTACGCTTCAATTGTACGAATCCTTCTT
Bm-155	TTGATATTTGCTACTACTGAGTGCCATGACGTCAAAACATTACTGATGTT
Bm-158	GGGACAAGTGACCCTCCATTTTGAATCTACAGCTTGGGTGGTTAAGTCGC
Bm-159	ACTTGAATAATTTTTGTATAATCCGTGAGCGCGTTTGTGCTGCGGTCTTT
Bm-160	TCGTCGGCGCGCCCATCTACGAGTTTCGTGTATCGAGGCCTCAAACCTCA
Bm-162	ACTGTGTACACTTTTTGTAAGGAATCGTGCATTGTGTGTACGAGTCCTTT
Bm-163	GTACTTGTTTTTGTAGAGGAATCGTGCATTTGCATGTACGAAACCTTCAT
Bm-164	GACTGTGCTTGTTTTTGTAAGGGAACTGTACTTTCACGTACAACCTTTTT
Bm-168	CTTCTACAAGTCCTGGGCGCAGATAGCATGCCTGTCCCATGGTATAAAAC
Bm-170	TTTCCGCTCGNCTCGTAGGTCACACTATCGCAGACTTGCCTGTCGAATAT
Bm-171	CATTTGGAAGCCTCGCGCCACCATGGGCTTTGGCTTTAAAAAAGCAGGAT
Bm-172	GACGGTGACCACTTATCATTAGTCTTTTTGCGAGATCACGTTCACAATTG
Bm-173	CATCAGCAATGCCAAGTATTTTTGGAGGACTTGTAACTTGTGATTACAGT
Bm-174	GGCATCGGCAATATTTAAGTTTTTGCAGGACGCGTGATCTGTATTATTTT
Bm-175	TACTGAAAACTGTGCCAACAGGGGAATTTTTTTGAGTCGTTGATGCGCGC
Bm-176	ATGCGCGTCGAGCCTGGTGTCTTCGGGACGCCAAGAGATCCGTGTGTCAA

Bm-177	GAGACCTGATGACGAGTCGTAGATTATGCAGGATGACTGGGTAAACGCTC
Bm-180	GTCGTACGTGCAATTTTTGGTAGTCGGACATGCGTACTGCGCAGTCCTTT
Bm-183	ACTTTTTCGAAAACCCCCTTACTGCTATTTAGCGGTTCCTCGGGTTCTTT

Supplementary Table 4. Primer sets used for ncRNAs RACE.

name	***sequence***
5'RACE	
5CD	GGAGTAGCATGCGTGACGAAA
Bm-6-R	ATCAGACGCATAAAGGCCAT
Bm-14-R	AAAACCACTCAGACAGCGAC
Bm-36-R	GTCAAGATATTCGCCCAAGC
Bm-48-R	AGTAGTACCAGGAAGGAGGATAT
Bm-51-R	ACACCAGGACACCACTGATT
Bm-86-R	AAGAATGTACCCTTAACCC
Bm-92-R	AGGATTCGTACAATTGAACG
Bm-100-R	AAAGTAGGCGAGCAGCTCAA
Bm-101-R	CTACCATCGCCAGCACTCAC
Bm-102-R	AGGACTCGTGCAATCAGTGC
Bm-103-R	AAAGGTTGTACGTGAAAGTACAG
Bm-111-R	GGCATATAGCTGTATTTAATGTAC
Bm-128-R	TAATCTCATGTTCACCGGGC
Bm-162-R	ACTCGTACACACAATGCAC
Bm-183-R	CGAGGAACCGCTAAATAG
Bm-187-R	AAGTGTGGCTGTCAAAAAT
3'RACE	
3RT	CCCTGTGAGCTCGTGGTCAA
Bm-6-F	GTTCGTGGTATCTACCATAGTGTT
Bm-14-F	CTATAGTAAGCTCTTACCGAGAAAC
Bm-16-F	CCATGATGATAAGAGAATCC
Bm-19-F	GTAGTAGCATGCATGATGATTTTATTACG
Bm-36-F	TGACTCGACTGAACAGCGAA
Bm-37-F	AGCAGTCAGAAGGGTCTT
Bm-39-F	TAGTAGCATGCGTGATGATTTTCAA
Bm-48-F	ATGCAATAATGAGACTTCGATC
Bm-51-F	TTCAGTAATTGTGAGAATAACGC
Bm-71-F	TTCCACGTCATATCCTAAG
Bm-92-F	GAGATATAAGGTTTAAAAGTCGCAC
Bm-100-F	TGCCTCAATCTAATGAGTAAGG
Bm-101-F	TCATTTCTATAGTAAGCTCTTACCG
Bm-102-F	GAGTCAACTCCAGGTCATCG
Bm-103-F	TGAGACATGAGGTTGAAAGTC

Bm-111-F	ATTCCTCATACCTTTGGCAT
Bm-128-F	GCCCGATGACGAAAGAAAAG
Bm-131-F	GTAGTAGCATGCTTTACAAACAATAACTTT
Bm-133-F	GTAGTAGCATGCATGATGAAACAAAGA
Bm-160-F	AAAGTCTCCGAAGCGAAGT
Bm-173-F	TAGTAGCATGCAGGACATACGAATAAC

Supplementary Table 5. Primer sets used for Semi-Quantitative RT-PCR of host or sense-antisense gene pairs of ncRNAs.

name	***sequence***
BGIBMGA000829-TA-F	CTCTACAATTTAACACTGCAAGG
BGIBMGA000829-TA-R	TGCACCAATCATAACAGCTC
BGIBMGA007175-TA-F	ATGGAGAAAATAGGACAGTC
BGIBMGA007175-TA-R	CGTTCTGTATTTGGTTATCT
BGIBMGA007380-TA-F	ATGTCGATGCCCGGGAATGG
BGIBMGA007380-TA-R	TGGCACACTTGGATGGGCTG
BGIBMGA007469-TA-F	ATGGGTGACATCGAAGACAC
BGIBMGA007469-TA-R	GCCATCATCCGAGATATCAG
BGIBMGA007879-TA-F	ATGGGATTCGTTAAAGTTGT
BGIBMGA007879-TA-F	TGTGCCAGTGTATAAGGTGT
actinA3-F	ATGTGCGACGAAGAAGTTGC
actinA3-R	TCTGTTGGCCTTGGGGTT

Supplementary Table 6. ncRNAs matched with piRNAs.

ncRNA name	***hit piRNA name***	***piRNA length***	***mismatch***	***identity***	***query start***	***query end***	***E value***	***score***
Bm-3	gi|187863852|dbj|AB410685.1|	26	0	100	2	28	1.00E-04	38.2
Bm-6	gi|187876925|dbj|AB402485.1|	29	1	100	56	83	6.00E-10	56
Bm-31	gi|187844119|dbj|AB403156.1|	28	2	100	3	28	1.00E-08	52
Bm-33	gi|187847651|dbj|AB388767.1|	31	0	96.3	79	109	4.00E-04	38.2
Bm-34	gi|187847651|dbj|AB388767.1|	31	0	100	77	106	1.00E-04	40.1
Bm-49	gi|187879890|dbj|AB398256.1|	29	0	100	3	31	3.00E-10	58
Bm-113	gi|187847651|dbj|AB388767.1|	31	0	100	80	110	3.00E-11	61.9
Bm-137	gi|187867658|dbj|AB411311.1|	30	0	100	45	67	5.00E-07	46.1
Bm-191	gi|187858287|dbj|AB415181.1|	30	1	100	68	96	6.00E-10	58

Supplementary Table 7. Primer sets for Gel shift assay.

name	*sequence*
Bm-15-T7-F	GAAATTAATACGACTCACTATAGGTTCAATGATGATACAATG
Bm-15-R	ATTCAGCCATCCAAGGAAGTTTG
BGIBMGA011962-TA-T7-F	GAAATTAATACGACTCACTATAGGATGAAGTCATCGAGGTAT
BGIBMGA011962-TA-R	TTACCAGTTGGAGCGAGGATATC