A

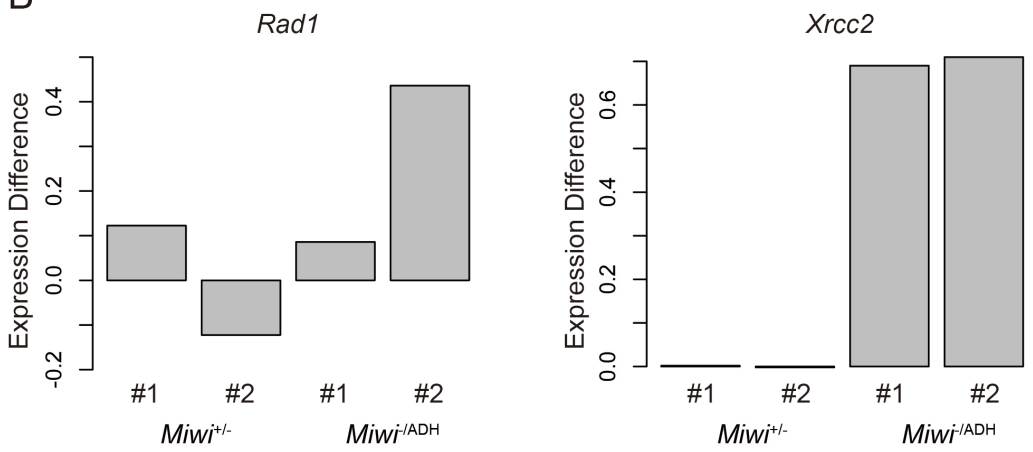
```
Xrcc2 3'UTR:              5'...CCTGCCTCTGCCTCCCAAGTGCTGAGATTAAA...3'
                                 | | ||||| ||||||||||| |||||||
piR-mmu-170840:             3'...AUGAAGACGAAGGGUUCACGACCCUAAUUU...5'
piR-mmu-170840 (Mut):       3'...AUGAAGACGAAGGGUUCACGACAGAUUAAA...5'

Rad1 3'UTR:               5'...CCTGCCTCTGCCTCCCGAGTGCTGGGATTAAA...3'
                                 ||||| |||| ||| |||||||||||||||
piR-mmu-604682:             3'...ACGGAUAUGAAGGGUUCACGACCCUAAUUU...5'
piR-mmu-604682 (Mut):       3'...ACGGAUAUGAAGGGUUCACGACGGAUUAAA...5'

Reporters' sequences:
                          1            1674                          1705        2312
Xrcc2 3'UTR:              ......gaaatccgCCTGCCTCTGCCTCCCAAGTGCTGAGATTAAAgatgtgcg ......
Xrcc2 3'UTR Mut:          ......gaaatccgCCTGCCTCTGCCTCCCAAGTGCTG--------gatgtgcg ......

Reporters' sequences:     1            122                            153         364
Rad1 3'UTR:               ......gaaattcaCCTGCCTCTGCCTCCCGAGTGCTGGGATTAAAggcatgcg......
Rad1 3'UTR Mut:           ......gaaattcaCCTGCCTCTGCCTCCCGAGTGCTG--------ggcatgcg......
```

B



Supplementary information, Figure S9 (A) Predicted piRNA regulatory elements at the 3′UTRs of *Xrcc2, and Rad1*, and the sequences of synthetic piRNAs, negative control piRNA (Mut), and wild-type 3′UTR and mutated 3′UTR Mut luciferase reporters. Numbers on the lower part represent nucleotide positions from the start of each mRNA 3′UTR. The selected piRNAs for reporter assays (piR-mmu-170840 and piR-mmu-604682) were all absent in GC-2spd(ts) cells. (B) Comparison of *Rad1* and *Xrcc2* mRNA levels in *Miwi*$^{-/ADH}$ mouse testes relative to controls (data from GEO: GSE32180).