

Description of Supplemental Files:**Supplemental Methods:**

Includes methods and supporting results not discussed directly in the text.

Supplemental Tables:

Supplemental Table 1: All piRNAs identified in hESC and EB libraries

Supplemental Table 2: Sequence and abundance (count) for all isomiR sequences in both libraries

Supplemental Table 3: Measurement of miRNA expression using five different metrics

Supplemental Table 4: Summary of all isomiRs with 3' end modifications in hESC and EB libraries

Supplemental Table 5: Differentially expressed miRNAs based on most common isomiR from each pre-miRNA arm (Full version of Table 1)

Supplemental Table 6: All novel miRNA sequences (includes sequences from Table 2 plus those novel miRNAs that were not differentially expressed including those with counts < 4, hence below error threshold)

Supplemental Table 7: 7-nt seed sequences with significant enrichment in the miRNAs present in hESCs or EBs (full version of Table 3)