

**Table S1.** Quality control and pre-processing summary for miRNA sequencing data. The raw sequencing reads were subjected to FASTQC for quality control analysis (quality control summary; unique molecular identifiers (UMIs) from raw reads, annotation records; unique search sequences, and raw reads are presented in the table.

## Quality control, UPX

### Quality control summary

| Sample name       | Reads      | UMI reads | Avg Q score, UMI reads | UMI reads annotated | UMI reads annotated with miRBase |
|-------------------|------------|-----------|------------------------|---------------------|----------------------------------|
| 75-1_995475-NM_S5 | 17,309,185 | 1,971,458 | 41.61                  | 99,777 (5.06%)      | 47,801 (2.42%)                   |
| 77-2_995477-RR_S8 | 15,459,630 | 1,621,248 | 42.88                  | 104,790 (6.46%)     | 59,018 (3.64%)                   |
| 78-1_995478-LF_S1 | 13,554,710 | 1,333,922 | 43.72                  | 86,857 (6.51%)      | 47,454 (3.56%)                   |
| 77-1_995477-RF_S7 | 17,514,623 | 1,519,286 | 40.66                  | 114,759 (7.55%)     | 63,364 (4.17%)                   |
| 78-3_995478-RR_S3 | 15,118,051 | 1,908,951 | 47.15                  | 138,642 (7.26%)     | 88,167 (4.62%)                   |
| 78-2_995478-NM_S2 | 16,399,636 | 1,806,355 | 41.67                  | 66,152 (3.66%)      | 20,825 (1.15%)                   |
| 75-2_995475-RR_S6 | 16,435,607 | 1,813,396 | 42.43                  | 101,807 (5.61%)     | 54,623 (3.01%)                   |
| 79-1_995479-LR_S4 | 15,341,847 | 1,939,991 | 45.69                  | 126,657 (6.53%)     | 65,368 (3.37%)                   |

### Creation of UMI reads from raw reads

| Sample name       | Input reads | Avg Q score, input reads | Discarded reads | UMI groups | Merged UMI groups | Avg Q score, UMI reads | Avg reads per UMI | UMIs with less than 9 reads | Max reads per UMI |
|-------------------|-------------|--------------------------|-----------------|------------|-------------------|------------------------|-------------------|-----------------------------|-------------------|
| 75-1_995475-NM_S5 | 17,309,185  | 33.05                    | 14,400,134      | 1,986,869  | 1,971,458         | 41.61                  | 1                 | 99.99%                      | 12                |
| 77-2_995477-RR_S8 | 15,459,630  | 33.07                    | 12,892,652      | 1,638,716  | 1,621,248         | 42.88                  | 1                 | 99.98%                      | 13                |
| 78-1_995478-LF_S1 | 13,554,710  | 33.00                    | 11,348,989      | 1,351,854  | 1,333,922         | 43.72                  | 1                 | 99.98%                      | 13                |
| 77-1_995477-RF_S7 | 17,514,623  | 33.08                    | 15,378,168      | 1,528,136  | 1,519,286         | 40.66                  | 1                 | 100.00%                     | 12                |
| 78-3_995478-RR_S3 | 15,118,051  | 32.96                    | 11,219,901      | 1,959,775  | 1,908,951         | 47.15                  | 2                 | 99.82%                      | 17                |
| 78-2_995478-NM_S2 | 16,399,636  | 33.07                    | 13,726,676      | 1,820,077  | 1,806,355         | 41.67                  | 1                 | 99.99%                      | 12                |
| 75-2_995475-RR_S6 | 16,435,607  | 33.06                    | 13,628,778      | 1,830,207  | 1,813,396         | 42.43                  | 1                 | 99.98%                      | 14                |
| 79-1_995479-LR_S4 | 15,341,847  | 33.03                    | 11,736,333      | 1,979,914  | 1,939,991         | 45.69                  | 1                 | 99.92%                      | 16                |

## Annotation records found

|                         | miRBase (Mus musculus) | piRNA (piRNAdb_mmu.v1.7.6) |
|-------------------------|------------------------|----------------------------|
| Records in source       | 1,234                  | 54,865                     |
| Records found in sample | -                      | -                          |
| 75-1_995475-NM_S5       | 377 (30.55%)           | 478 (0.87%)                |
| 77-2_995477-RR_S8       | 400 (32.41%)           | 298 (0.54%)                |
| 78-1_995478-LF_S1       | 399 (32.33%)           | 286 (0.52%)                |
| 77-1_995477-RF_S7       | 382 (30.96%)           | 320 (0.58%)                |
| 78-3_995478-RR_S3       | 422 (34.20%)           | 301 (0.55%)                |
| 78-2_995478-NM_S2       | 323 (26.18%)           | 359 (0.65%)                |
| 75-2_995475-RR_S6       | 389 (31.52%)           | 402 (0.73%)                |
| 79-1_995479-LR_S4       | 406 (32.90%)           | 337 (0.61%)                |

## Unique search sequences

| Sample name       | Annotated (of total) | Annotated with miRBase (Mus musculus) (of total) | Annotated with piRNA (piRNAdb_mmu.v1.7.6) (of total) | Unannotated (of total) | Total (of total) |
|-------------------|----------------------|--------------------------------------------------|------------------------------------------------------|------------------------|------------------|
| 75-1_995475-NM_S5 | 11,746 (1.80%)       | 6,045 (0.93%)                                    | 5,701 (0.87%)                                        | 641,703 (98.20%)       | 653,449 (100%)   |
| 77-2_995477-RR_S8 | 10,692 (2.10%)       | 5,772 (1.13%)                                    | 4,920 (0.97%)                                        | 498,294 (97.90%)       | 508,986 (100%)   |
| 78-1_995478-LF_S1 | 9,228 (2.17%)        | 4,911 (1.15%)                                    | 4,317 (1.01%)                                        | 416,158 (97.83%)       | 425,386 (100%)   |
| 77-1_995477-RF_S7 | 10,798 (2.21%)       | 5,806 (1.19%)                                    | 4,992 (1.02%)                                        | 478,532 (97.79%)       | 489,330 (100%)   |
| 78-3_995478-RR_S3 | 11,258 (2.28%)       | 6,546 (1.33%)                                    | 4,712 (0.95%)                                        | 482,530 (97.72%)       | 493,788 (100%)   |
| 78-2_995478-NM_S2 | 8,738 (1.32%)        | 3,914 (0.59%)                                    | 4,824 (0.73%)                                        | 653,615 (98.68%)       | 662,353 (100%)   |
| 75-2_995475-RR_S6 | 11,300 (1.87%)       | 5,823 (0.96%)                                    | 5,477 (0.91%)                                        | 592,138 (98.13%)       | 603,438 (100%)   |
| 79-1_995479-LR_S4 | 11,744 (2.29%)       | 6,170 (1.20%)                                    | 5,574 (1.08%)                                        | 502,029 (97.71%)       | 513,773 (100%)   |

## Reads

| Sample name       | Annotated (of total) |                | Annotated with miRBase (Mus musculus) (of total) |                    | Annotated with piRNA (piRNAdb_mmu.v1.7.6) (of total) |  | Unannotated (of total) | Total (of total) |
|-------------------|----------------------|----------------|--------------------------------------------------|--------------------|------------------------------------------------------|--|------------------------|------------------|
| 75-1_995475-NM_S5 | 99,777 (5.06%)       | 47,801 (2.42%) | 51,976 (2.64%)                                   | 1,871,597 (94.94%) | 1,971,374 (100%)                                     |  |                        |                  |
| 77-2_995477-RR_S8 | 104,790 (6.46%)      | 59,018 (3.64%) | 45,772 (2.82%)                                   | 1,516,378 (93.54%) | 1,621,168 (100%)                                     |  |                        |                  |
| 78-1_995478-LF_S1 | 86,857 (6.51%)       | 47,454 (3.56%) | 39,403 (2.95%)                                   | 1,246,979 (93.49%) | 1,333,836 (100%)                                     |  |                        |                  |
| 77-1_995477-RF_S7 | 114,759 (7.55%)      | 63,364 (4.17%) | 51,395 (3.38%)                                   | 1,404,480 (92.45%) | 1,519,239 (100%)                                     |  |                        |                  |
| 78-3_995478-RR_S3 | 138,642 (7.26%)      | 88,167 (4.62%) | 50,475 (2.64%)                                   | 1,770,145 (92.74%) | 1,908,787 (100%)                                     |  |                        |                  |
| 78-2_995478-NM_S2 | 66,152 (3.66%)       | 20,825 (1.15%) | 45,327 (2.51%)                                   | 1,740,137 (96.34%) | 1,806,289 (100%)                                     |  |                        |                  |
| 75-2_995475-RR_S6 | 101,807 (5.61%)      | 54,623 (3.01%) | 47,184 (2.60%)                                   | 1,711,505 (94.39%) | 1,813,312 (100%)                                     |  |                        |                  |
| 79-1_995479-LR_S4 | 126,657 (6.53%)      | 65,368 (3.37%) | 61,289 (3.16%)                                   | 1,813,203 (93.47%) | 1,939,860 (100%)                                     |  |                        |                  |