

Table S1. Raw data of the midgut and whole-body transcriptome results.

| Sample | Total read base | Total reads | GC (%) | Q (20) | Q (30) |
|------------|-----------------|-------------|--------|--------|--------|
| Midgut | 5,497,308,800 | 54,428,800 | 52.49 | 98.13 | 96.79 |
| Whole-body | 6,040,056,944 | 59,802,544 | 52.57 | 98.11 | 96.78 |

Total read bases: Total reads x Read length; Total reads: Total number of reads; GC(%): GC content; Q20 (%): Ratio of reads that have phred quality score over 20; Q30 (%): Ratio of reads that have phred quality score over 30.

Table S2. Mapped data stats. # of processed reads: # of cleaned reads after trimming. Number of mapped reads: # of reads mapped to reference. # of suppressed reads by multiple mapping: Number of reads removed due to multiple mapping. overall read mapping ratio: Number of total mapped reads / # of total processed reads.

| Sample | Read type | # of processed reads | # of mapped reads | # of suppressed reads by multiple mapping | Overall read mapping ratio |
|------------|-----------|----------------------|--------------------|-------------------------------------------|----------------------------|
| Midgut | 1 | 27,105,105 | 21,403,526 (79.0%) | 1,507,409 (7.0%) | 78.9% |
| Midgut | 2 | 27,105,105 | 21,363,944 (78.8%) | 1,505,599 (7.0%) | |
| Whole-body | 1 | 29,777,714 | 23,486,620 (78.9%) | 1,601,068 (6.8%) | 78.8% |
| Whole-body | 2 | 29,777,714 | 23,429,654 (78.7%) | 1,593,793 (6.8%) | |

Table S3. The most upregulated genes in the midgut of *Drosophila suzukii* are found in *Drosophila melanogaster*.

| Search Gene | Found FBGN | Found Gene | imaginal disc, larvae L3 | central nervous system, larvae L3 | head, virgin 1-day female | salivary gland, larvae L3 | digestive system, larvae L3 | digestive system, 1-day adult | digestive system, 4-day adult | digestive system, 20-day adult | fat body, larvae L3 | carcass, larvae L3 | ovary, mated 4-day female | testis, mated 4-day male |
|-------------|-------------|------------|--------------------------|-----------------------------------|---------------------------|---------------------------|-----------------------------|-------------------------------|-------------------------------|--------------------------------|---------------------|--------------------|---------------------------|--------------------------|
| CG3934 | FBgn0037783 | Npc2c | 19 | 0 | 0 | 2 | 155 | 25 | 8 | 10 | 0 | 1 | 0 | 0 |
| CG7170 | FBgn0035887 | Jon66Cii | 302 | 0 | 0 | 43 | 1430 | 5 | 2 | 11 | 1 | 5 | 0 | 0 |
| CG18548 | FBgn0042206 | GstD10 | 6 | 0 | 1 | 1 | 14 | 54 | 33 | 20 | 68 | 1 | 0 | 7 |
| CG5246 | FBgn0038484 | CG5246 | 9 | 0 | 0 | 1 | 42 | 66 | 38 | 38 | 1 | 0 | 0 | 2 |
| CG14746 | FBgn0043576 | CG14743 | 81 | 0 | 0 | 2 | 147 | 302 | 227 | 200 | 12 | 1 | 0 | 3 |
| CG7118 | FBgn0035886 | Jon66Ci | 1519 | 0 | 0 | 318 | 8900 | 43 | 27 | 116 | 2 | 32 | 0 | 0 |
| CG12092 | FBgn0261675 | Npc1b | 1 | 0 | 0 | 0 | 18 | 41 | 36 | 43 | 0 | 0 | 0 | 0 |
| CG8221 | FBgn0020506 | Amyrel | 28 | 0 | 0 | 1 | 36 | 6 | 2 | 4 | 0 | 0 | 0 | 0 |
| CG8695 | FBgn0002571 | Mal-A3 | 26 | 0 | 0 | 0 | 20 | 200 | 88 | 112 | 0 | 0 | 0 | 14 |
| CG7381 | FBgn0038098 | CG7381 | 3 | 1 | 4 | 0 | 46 | 74 | 71 | 80 | 0 | 1 | 21 | 1 |
| CG30502 | FBgn0050502 | fa2h | 1 | 0 | 0 | 0 | 11 | 34 | 34 | 37 | 0 | 0 | 0 | 0 |
| CG14820 | FBgn0035718 | CG14820 | 1 | 0 | 0 | 0 | 8 | 64 | 45 | 32 | 0 | 0 | 0 | 1 |
| CG33346 | FBgn0053346 | CG33346 | 25 | 2 | 0 | 11 | 833 | 341 | 175 | 216 | 1 | 5 | 0 | 2 |
| CG10827 | FBgn0038845 | CG10827 | 24 | 0 | 0 | 1 | 84 | 233 | 131 | 166 | 0 | 0 | 0 | 10 |
| CG40305 | FBgn0044872 | FucTC | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 2 | 0 | 0 | 0 | 0 |
| CG9903 | FBgn0030756 | CG9903 | 9 | 0 | 0 | 6 | 241 | 22 | 12 | 12 | 0 | 1 | 0 | 1 |
| CG15818 | FBgn0031910 | CG15818 | 59 | 10 | 0 | 26 | 2001 | 53 | 47 | 60 | 0 | 15 | 0 | 0 |
| CG8907 | FBgn0038466 | CG8907 | 5 | 0 | 0 | 1 | 35 | 69 | 55 | 79 | 1 | 0 | 0 | 1 |
| CG6417 | FBgn0032435 | Oatp33Eb | 6 | 0 | 0 | 1 | 57 | 55 | 46 | 69 | 0 | 0 | 0 | 2 |

Table S4. List of the primers used in this study

| Gene Name | DS Number | Forward (5' - 3') | Reverse (5' - 3') |
|------------|---------------|------------------------|-------------------------|
| DH31-R | DS10_00006592 | GGATTCGACCCAGCAAGATT | TTACGCAGGTGGTGTAGTTG |
| Toll-9 | DS10_00007171 | GCTCTTCATGTCGGGCAATA | GTAGGTCAGGAAGTTGGTGAAG |
| snakeskin | DS10_00008095 | ACGTGGTTGGCTGCATTA | CTCCGAGTTCACATAGAGGAATC |
| methuselah | DS10_00013361 | GTTCCCGAATGGTTCGTATCT | CTTATGTGGCTCTCCACCTTT |
| NPF-R | DS10_00008044 | GTGAGTCAGGCCACTCTTT | GACATGCTCTGGGAGTTCTT |
| Gr43a | DS10_00005654 | AGACCATGTACCGCATCAAG | TTCTCGTAGCCCAGGAAGTA |
| Adsn1-R | DS10_00012673 | CGGAGGAATCCACTGAAACTAA | CTGATCGTGGTTGCTGACTAT |
| Adsn2-R | DS10_00012139 | GCCGCCGATGTCTTTAGTAT | TCCGTGGTCATGACTTTCTG |
| Rpn2 | Reference 1 | TCAGCGGCAACTTCTCCTTT | CGCGAGATATTCAGCTCCTCA |
| Rpt6 | Reference 2 | AGAAGGTGCTGGTCAAGGTG | TAGCTCTCATTTGCAGGGC |