**Supplementary material**

**Fig. S1. Dynamic expression of sex pheromone communication-related genes *SlitDes5* and *SlitDes11* in the adult female sex pheromone gland (PG) and *SlitOR6*, *SlitOR11*, *SlitOR13*, *SlitOR16*, *SlitPBP1*, *SlitPBP2*, *SlitPBP3* in the male antennae (MA).** The different lowercase letters mean significance between tissues (p < 0.05, ANOVA, LSD). ♀, Female adult; ♂, Male adult; PG, sex pheromone gland; An, antenna. Horizontal axis: the PG or An from virgin female or male moths at 5 - 7 h of the scotophase at different ages (0 to 5-day-old); Vertical axis: the normalized expression of target gene was calculated by Q-gene software.

**Fig. S2. Daily expression of sex pheromone communication-related genes *SlitDes5* and *SlitDes11* in the adult female sex pheromone gland (PG) and *SlitOR6*, *SlitOR11*, *SlitOR13*, *SlitOR16*, *SlitPBP1*, *SlitPBP2*, *SlitPBP3* in the male antennae (MA).** The different lowercase letters mean significance between tissues (p < 0.05, ANOVA, LSD). P, photophase; S, scotophase. Horizontal axis: the different points of samples were collected; Vertical axis: the normalized expression of target gene was calculated by Q-gene software.

**Table S1. Circadian clock genes of *S. litura* and other insects used for constructing phylogenetic trees.**

|  |  |
| --- | --- |
| **Gene name** | **GenBank ID** |
| SlitPer | This study |
| MbraPer | AAS49924.1 |
| SexiPer | AEJ38224.1 |
| AfalPer | AAC72313.1 |
| MsexPer | ABW39272.1 |
| BmorPer | ABF21088.1 |
| DplePer | AAO48719.1 |
| SfruPer | ABW39304.1 |
| GbimPer | BAG48878.1 |
| BgerPer  | AAN02439.2 |
| SlitTim1 | This study |
| AperTim1 | AAF66996.1 |
| BmorTim1 | NP\_001037622.1 |
| SexiTim1 | AEJ38225.1 |
| DpleTim1 | XP\_032510676.1 |
| TcasTim1 | AOR83338.1 |
| PameTim1 | AAM77468.1 |
| GbimTim1 | BAJ16356.1 |
| AaegTim1 | AAY40757.1 |
| SgreTim1 | ADX97416.1 |
| DmelTim1 | AAC46920.1 |
| ScraTim1 | BAB85471.1 |
| SlitTim2 | This study |
| DmelTim2 | NP\_524341.3 |
| TcasTim2 | XP\_008201051.1 |
| DpleTim2 | XP\_032512746.1 |
| DmulTim2 | ATL75375.1 |
| CmarTim2 | AFS34626.1 |
| SlitClK | This study |
| DpleClK | XP\_032526871.1 |
| AperClK | AAR14936.1 |
| DmelClK | AAD10630.1 |
| CbowClK | APP94023.1 |
| MsepClK | ARB18436.1 |
| SexiClK  | AEJ38222.1 |
| TcasClK | NP\_001106937.1 |
| SlitCyc | This study |
| SnonCyc | ABC18168.2 |
| DmelCyc | NP\_524168.2 |
| BmorCyc | NP\_001036982.1 |
| DpleCyc | AAR13012.1 |
| AperCyc | AAR14937.1 |
| AaegCyc | AEX32872.1 |
| GbimCyc | BAN28450.1 |
| LlonCyc | ABI21880.1 |
| SlitCry1 | This study |
| HarmCry1 | ADN94464.1 |
| MbraCry1 | AAY23345.1 |
| AperCry1 | AAK11644.1 |
| DpleCry1 | AAX58599.1 |
| BmorCry1 | NP\_001182628.1 |
| SexiCry1 | ADY17887.1 |
| SlitCry2 | This study |
| BmorCry2 | NP\_001182627.1 |
| AperCry2 | ABO38435.1 |
| DpleCry2  | ABA62409.1 |
| SlitVri | This study |
| SfruVri | AJB84657.1 |
| ObruVri | KOB79426.1 |
| AperVri | AAS92609.1 |
| DpleVri | AAT86041.1 |
| DmelVri | NP\_001285624.1 |
| ApisVri | [ARM65427.1](https://www.ncbi.nlm.nih.gov/protein/1188251110) |

**Table S2. Primers used for qRT-PCR.**

|  |  |  |
| --- | --- | --- |
| **Primer name** | **Forward (5'-3')** | **Reverse (5'-3')** |
| *SlitGAPDH* | TATCAAGCAGAAGGTCAAGG | CGAAGATGGAAGAGTGGTT |
| *SlitEF* | AATCGGTGGTATTGGTACG | TTGACTTCAGTGGTGATGTT |
| *SlitPer* | GAATGCGTTGAATCGGGTGTCG | TCCCTGGCTGAAGGTGGAGTGTT |
| *SlitTim1* | ATTGGTCGGATCTTATCGAGTAT | TGTATCTGGCTTGCTCTGTGCTG |
| *SlitTim2* | AAAGCAGTGGCGGAGATGACG | TCAGCTCGATTCGTTTCTGTTGC |
| *SlitClK* | AATCAACAGTCCTCAAGTCT | CCTCCAATGCCTCCAATA |
| *SlitCyc* | TCCTCCTACGACATATACAAG | GACGCATTCTGGTTGAAG |
| *SlitCry1* | GTCCAGTCGGCCAGGTAGATTT | AGCCAGACGCTGCTGCATTTGT |
| *SlitCry2* | CCCTAACCGATGACCACGACG | CCGACCAAATGAAGCCACCC |
| *SlitVri* | AGACCGCTGAACAGTATG | TTATGTGCTGAAGGGAGAG |
| *SlitPBP1* | GTGAGTGTAATCCACGAATG | TGACCTCTTCCATGATGAC |
| *SlitPBP2* | TGCTATCCTCTGCCTCT | TGTCCACTATCTGCTTCG |
| *SlitPPB3* | ACGAGCGTGATGATGAC | AGGACCTCACTCACAATG |
| *SlitOR6* | TCATTCTATTACTGATGGTGTTC | GCACTTGTTACTGTTAATCCT |
| *SlitOR11* | CTGTCTGTTCAATCTGATACC | TACCATCCACTGAGAGTTG |
| *SlitOR13* | CAGCAGTTGATTCAGTTGT | TGGACACCGACAGTAATC |
| *SlitOR16* | GGATATGTCGTTGCTTGTATT | AATGCCTCGTTCTAATTCAC |
| *SlitDes5* | TGCTGCGGTACATTATGA | AAGGTTGCTATGGACACA |
| *SlitDes11* | GAAGCATCCAGACCTCAA | GGCATCAGCAGTAGATAGTA |