

## Supporting Information

**Table S1 Primers for Cloning**

Name	Sequence (5'-3')
NIgroF	TTAACGTGTTTCGTAATGTGT
NIgroR	TTAGATGTAATTTACCTGGA
NIgro1-LR	TACTCGTTCATGTAAGCGC
NIgro1-LR	CACAGTCCTTAGGGCTTTGC

**Table S2 Primers for qRT-PCR**

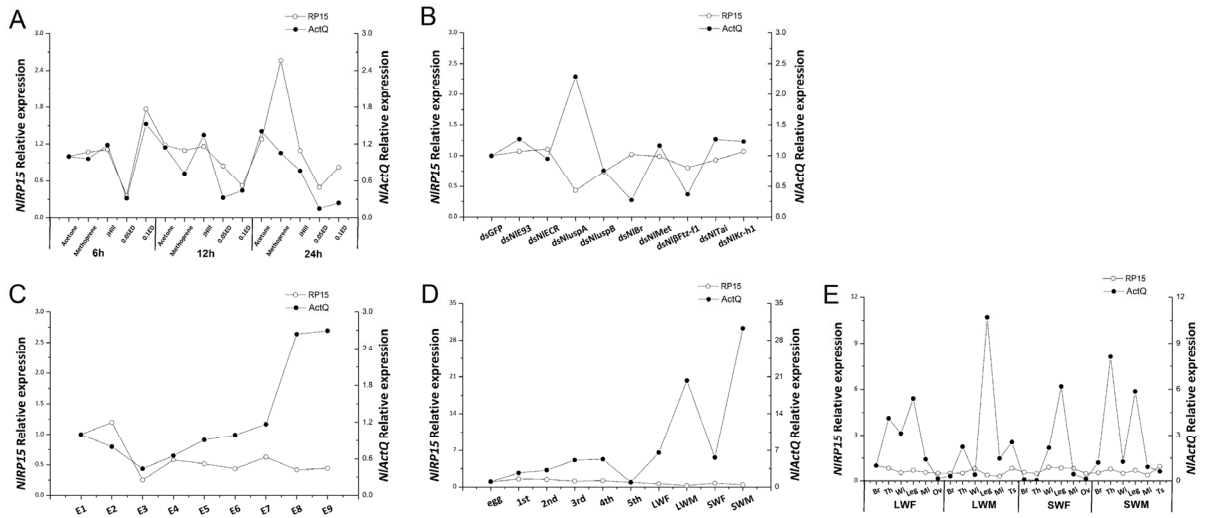
Name	Sequence (5'-3')	Amplification efficiency
NIActinQF	TGGACTTCGAGCAGGAAATGG	99%
NIActinQR	ACGTCGCACTTCATGATCGAG	
NIgroQF	GATCTTCTCGCTGGGCTACT	96%
NIgroQR	AGCTGGTACTTGTCAGGCTT	
NIgro1-LQF	CGCAGAGAGAGCATACACG	95%
NIgro1-LQR	GTGGGCATGGAGAATAGCAA	
NIRP15QF	TAAAAATGGCAGACGAAGAAGAGCCCAA	93%
NIRP15QR	TTCCACGGTTGAAACGTCTGCG	
NIRP11QF	CCGATCGTGTGGCGTTGAAGGG	93%
NIRP11QR	ATGGCCGACATTCTTCCAGGTCC	
NIMetQF	AAAGCCGGTGTCTTTGAAGT	91%
NIMetQR	TTTCAGGATTTGGCCGTTCA	

NIβFtz-flQF	CCATGAGAACCCGTAATCCG	95%
NIβFtz-flQR	CACACTCGAGTCCCTTGATG	
NI TaiQF	ATGATCCCAACCACTTCAGC	93%
NI TaiQR	TTCCACTCACACTACCACCA	
NI Kr-h1QF	TGATGAGGCACACGATGACT	96%
NI Kr-h1QR	ATGGAAGGCCACATCAAGAG	
NIE93QF	AACAACCTCCCGAAATGCAT	91%
NIE93QR	TGCATATGATGGTGGTGGTG	
NIECRQF	AAGGCATGTTCCAGCGAAG	97%
NIECRQR	GTGTAGGGCTGGTTGTTGG	
NIUspAQF	CGAGGACTGAGCTTGGAGAA	100%
NIUspAQR	CTAAAGTTGCCACCGTGAG	
NIUspBQF	TGCTTGTCTTCTTATCATCGCT	92%
NIUspBQR	GTCCCACCGAATTCAACGAC	
NI BrQF	CCAGGCAAACAACCCAATC	95%
NI BrQR	CTACACTGCCCCCTTTCACG	
NI VgQF	CACTGCCCCGTGCTGTGCTCTA	91%
NI VgQRNI BrQR	TGACTTCCTTGCTTTGCTCCC	

**Table S3 Primers for dsRNA Synthesis**

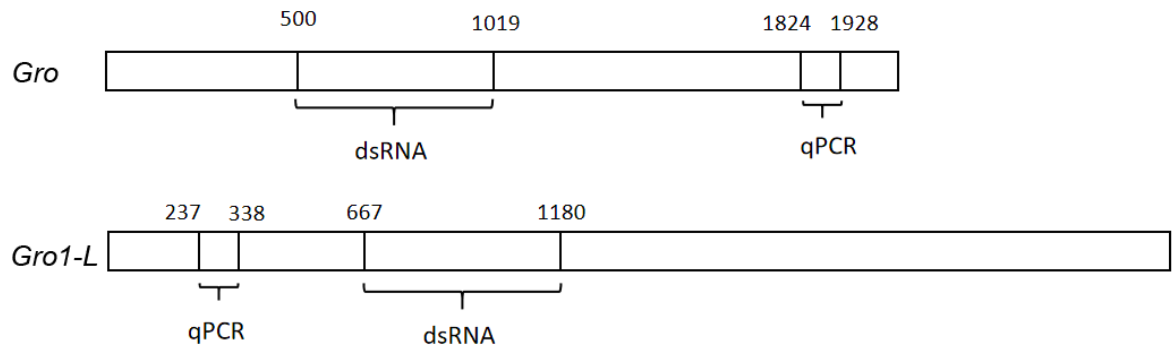
<b>Name</b>	<b>Sequence (5'-3')</b>
ds <i>GFPF</i>	GGATCCTAATACGACTCACTATAGGAAGGGCGAGGAGCTGTTCACCG
ds <i>GFP</i> R	GGATCCTAATACGACTCACTATAGGCAGCAGGACCATGTGATCGCGC
ds <i>NI</i> GroF	TAATACGACTCACTATAGGGAGACCACCAATCACCTTCTCCGATCCG
ds <i>NI</i> GroR	TAATACGACTCACTATAGGGAGACCACCTGCAAGGCGATTAAGTTGG
ds <i>NI</i> GroI-LF	TAATACGACTCACTATAGGGAGACCACGCTTGTGCGACAGTTCCAAG
ds <i>NI</i> GroI-LR	TAATACGACTCACTATAGGGAGACCACCTAGATTGCTTCCGCGTGGT
ds <i>NI</i> MetF	TAATACGACTCACTATAGGGAGACCACCAACCAGCAGATGAACCTGA
ds <i>NI</i> MetR	TAATACGACTCACTATAGGGAGACCACGCAAAGCCTCGTACTCTTGG
ds <i>NI</i> $\beta$ Ftz-fIF	TAATACGACTCACTATAGGGAGACCACCGACCAGATCTCGTTGCTGA
ds <i>NI</i> $\beta$ Ftz-fIR	TAATACGACTCACTATAGGGAGACCACGCAGCCACAAGTAGAATCCG
ds <i>NI</i> TaiF	TAATACGACTCACTATAGGGAGACCACTTCATTCATTCAGGCTCGGC
ds <i>NI</i> TaiR	TAATACGACTCACTATAGGGAGACCACCACTCACACTACCACCACT
ds <i>NI</i> Kr-hIF	TAATACGACTCACTATAGGGAGACCACGTGGGGTTCAGTCCTGAGGA
ds <i>NI</i> Kr-hIR	TAATACGACTCACTATAGGGAGACCACAGTCGAACACACACCGGAG
ds <i>NI</i> E93F	TAATACGACTCACTATAGGGAGACCACGCCAGCTTACATGACGAAGA
ds <i>NI</i> E93R	TAATACGACTCACTATAGGGAGACCACCAGAGTGCAGGATAAATGAC
ds <i>NI</i> ECRF	TAATACGACTCACTATAGGGAGACCACCTTCGGTTGGTGGGTCTCTC
ds <i>NI</i> ECRR	TAATACGACTCACTATAGGGAGACCACGCATTGTCCACCTTCATGCG
ds <i>NI</i> UspAF	TAATACGACTCACTATAGGGAGACCACTCGGTGGTGCTCTTTTGGTG
ds <i>NI</i> UspAR	TAATACGACTCACTATAGGGAGACCACAAGTGTGGTGATCTACTGGTCA

ds <i>NIUspBF</i>	TAATACGACTCACTATAGGGAGACCACTGCTTGTCTTCTTATCATCGCT
ds <i>NIUspBR</i>	TAATACGACTCACTATAGGGAGACCACGTAAGTGTGGTGATCTACTGG
ds <i>NIBrF</i>	TAATACGACTCACTATAGGGAGACCACCGTCATCTCGGACAGTGCTA
ds <i>NIBrR</i>	TAATACGACTCACTATAGGGAGACCACCGAAGTCCCTGAGACAAAGC

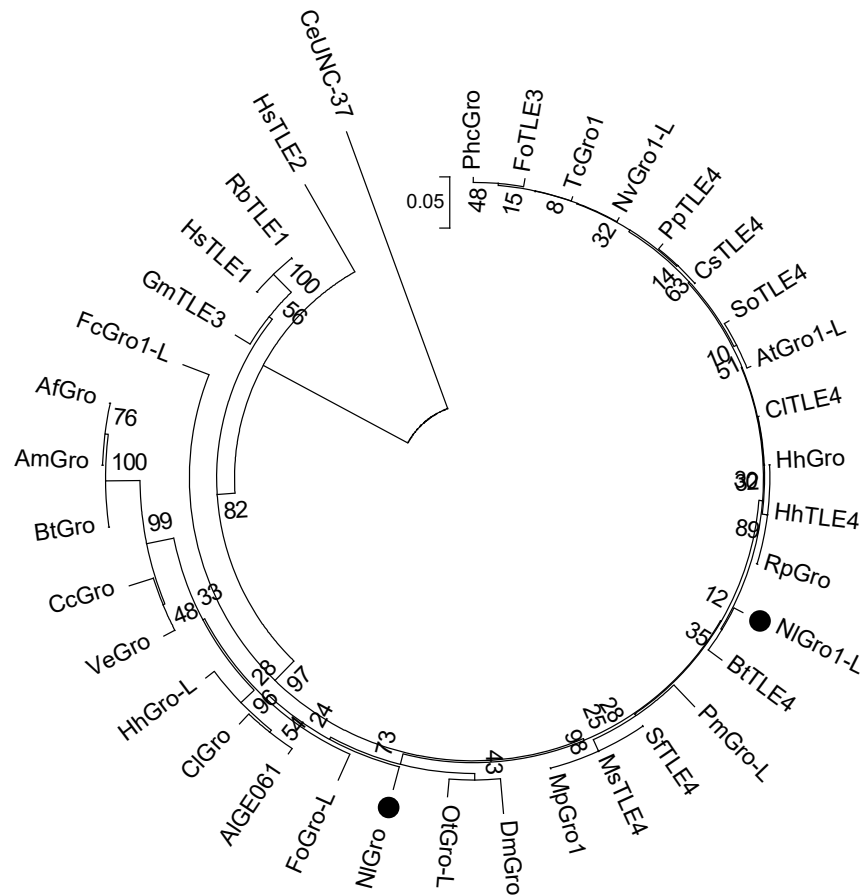


**Figure S1 Stability of the reference genes, *NIRP15* and *NIActin*.**

Here *NIRP11* was used as a reference gene. A-E are different groups of templates. A, JHIII and ecdysone treatment experiment; B, RNAi experiment; C, samples from different embryonic stages, E: Embryo; 1-9 day(s) after eggs were laid; D, developmental stages. Egg: egg; 1st to 5th: 1<sup>st</sup> to 5<sup>th</sup> instar nymph; LWF: long-winged female, LWM: long-winged male, SWF: short-winged female, SWM: short-winged male; E, different tissues. Br: Brain; Th: Thorax; Wi: fore-wing; Leg: Leg; Mi: mid-gut; Ov: Ovary; Ts: testis; LWF: long-winged female, LWM: long-winged male, SWF: short-winged female, SWM: short-winged male.



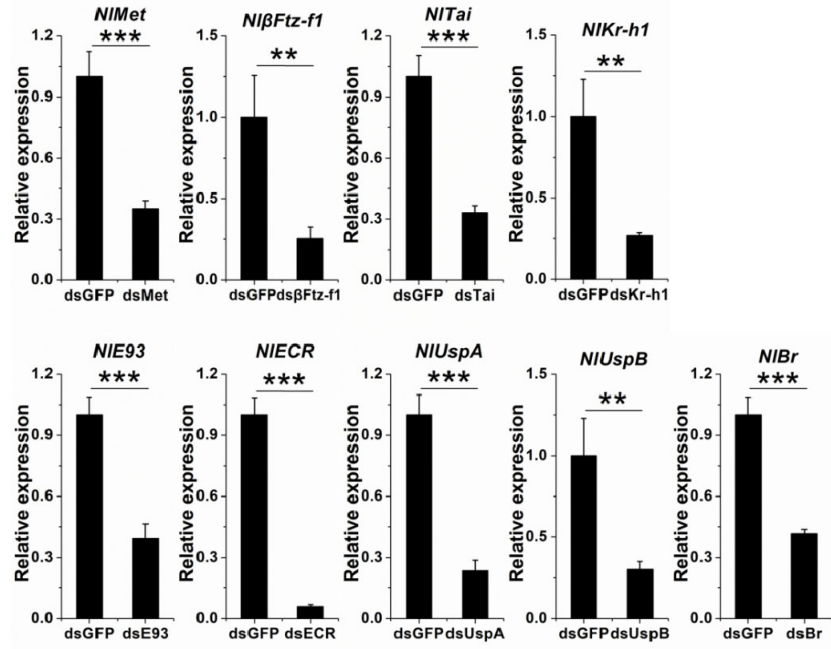
**Figure S2 Region of dsRNA and qRT-PCR primers.**



**Figure S3 Phylogenetic analysis of Gro and Gro1-L**

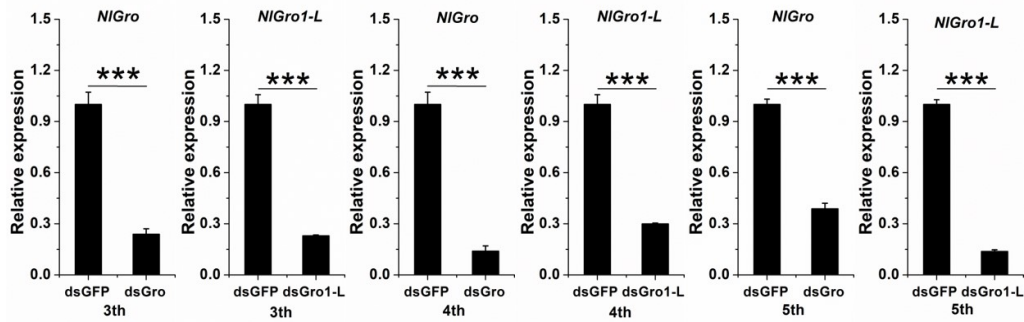
*NiGro*, *Nilaparvata lugens* Gro (XP\_022195835.1); *NiGro1-L*, *Nilaparvata lugens* Gro1-L (XP\_022189353.1); *DmGro*, *Drosophila melanogaster* Gro (NP\_733133.1); *HsTLE1*, *Homo sapiens* TLE1 (NP\_001290032.1); *HsTLE2*, *Homo sapiens* TLE2 (NP\_003251.2); *CeUNC-37*, *Caenorhabditis elegans* UNC-37 (NP\_491932.1); *AlGE061*, *Apolygus lucorum* GE061

(KAE9440368.1); *HhGro-L*, *Halyomorpha halys Gro-L* (XP\_014275615.1); *ClGro*, *Cimex lectularius Gro* (XP\_024082808.1); *FoGro-L*, *Frankliniella occidentalis Gro-L* (XP\_026282736.1); *VeGro*, *Vollenhovia emeryi Gro* (XP\_011882917.1); *CcGro*, *Cephus cinctus Gro* (XP\_024938868.1); *BtGro*, *Bombus terrestris Gro* (XP\_012164601.1); *AmGro*, *Apis mellifera Gro* (XP\_006564194.1); *AfGro*, *Apis florea Gro* (XP\_012342289.1); *FcGro1-L*, *Folsomia candida Gro1-L* (XP\_021968336.1); *GmTLE3*, *Gadus morhua TLE3* (XP\_030232419.1); *RbTLE1*, *Rhinopithecus bieti TLE1* (XP\_017727850.1); *HhGro*, *Halyomorpha halys Gro* (XP\_014282834.1); *CITLE4*, *Cimex lectularius TLE4* (XP\_014258830.1); *HhTLE4*, *Halyomorpha halys TLE4* (XP\_014282837.1); *RpGro*, *Riptortus pedestris Gro* (BAN21009.1); *SoTLE4*, *Sitophilus oryzae TLE4* (XP\_030760956.1); *PpTLE4*, *Photinus pyralis TLE4* (XP\_031338821.1); *TcGro1*, *Tribolium castaneum Gro1* (XP\_008201485.1); *NvGro1-L*, *Nicrophorus vespilloides Gro1-L* (XP\_017770757.1); *BtTLE4*, *Bemisia tabaci TLE4* (XP\_018908679.1); *AtGro1-L*, *Aethina tumida Gro1-L* (XP\_019871485.1); *SfTLE4*, *Sipha flava TLE4* (XP\_025405291.1); *MsTLE4*, *Melanaphis sacchari TLE4* (XP\_025193209.1); *FoTLE3*, *Frankliniella occidentalis TLE3* (XP\_026289757.1); *MpGro1*, *Myzus persicae Gro1* (XP\_022168813.1); *CsTLE4*, *Cryptotermes secundus TLE4* (PNF31698.1); *PmGro-L*, *Papilio machaon Gro-L* (XP\_014357517.1); *PhcGro*, *Pediculus humanus corporis Gro-L* (XP\_002427252.1); *OtGro-L*, *Onthophagus taurus Gro-L* (XP\_022914630.1). The phylogenetic tree was constructed by Neighbor-joining method using the MEGA 6 software. Bootstrap=1000



**Figure S4 RNAi efficiency of hormone related genes**

Student's *t* test was used. \*\*:  $P < 0.01$ , \*\*\*:  $P < 0.001$ .



**Figure S5 RNAi efficiency of *NIGro* and *NIGro1-L***

Student's *t* test was used. \*\*\*:  $P < 0.001$ .