Supplementary data

Table S1 Amino acid identities (in %) between NMDAR subunits in *D. punctata* and other insects. DpNR1 was compared with NR1 in other species, and DpNR2A-1 was compared with NR2 in other species.

	DpNR1B	*D. melanogaster*	*A. mellifera*	*A. aegypti*
DpNR1A	65.6	65.4	75.4	68.2
DpNR1B	---	55.6	62.7	58.8
DpNR2A-1	---	67.3%	75.6%	71.0%

Table S2 Degenerate primer and RACE primer sequences for cloning *DpNR1A*, *DpNR1B* and *DpNR2* cDNAs.

Name	**Symbol**	**Degenerate/RACE primer sequences**
NMDA receptor subunit 1 variant A	NR1A	F 5'- CTRTCGCCCGATGGTCARTTYGG -3' R 5'- CAGTATGAAYACYCCTGCCATRT -3' Fn 5'- ACGTATTTCAACATYGGYGGHGT-3' Rn 5'- CCAAATTGGCCATCCGGCGACAA-3' 3'Race 5'- GGATTCGCCATGATCATTGTGGCA -3' 5'Race 5'- GGATCCATTGAAATCGCTGTGGA -3'
NMDA receptor subunit 1 variant B	NR1B	F 5'- CTRTCGCCCGATGGTCARTTYGG -3' R 5'- CAGTATGAAYACYCCTGCCATRT -3' Fn 5'- ATCCACAGCTCCGACACDGAYGG -3' Rn 5'- GTACCTTCTCCTATGCCACTATT-3' 3'Race 5'- TAAATGATGCGAGACTGCGTA-3' 5'Race 5'- CCACACATCAGCTTGATGGGA -3'
NMDA receptor subunit 2	NR2	F 5'- ATACCGGTCATCKCVTGGAAYGC -3' R 5'- AACATCCAAGARGCYGTRTCRAA -3' Fn 5' - CTCGGAGAGGGAAGCAGTTGTGG -3' Rn 5' -TCGAGCAGTCGYTTRTTRAACAT - 3' 3'Race 5'- CCAGAACCGATCCACTGTAGCA -3' 5'Race 5'- CTCTCCGCTCAAGGCCGGAATT -3'

Table S3 Oligonucleotide sequences for primers used in q-RT-PCR for reference and target genes. Efficiencies and R^2 values are indicated.

Reference genes	**F-primer**	**R-primer**	**Amplicon size (bp)**	**Efficiency (%)**	**R^2**
Tubulin	5'-AAATTACCAACGCTTGCTTTGAA-3'	5'-TGGCGAGGATCGCATTTT-3'	58	95.1	0.993
EF1α	5'-TCGTCTTCCTCTGCAGGATGTCT-3'	5'-GGGTGCAAATGTCACAACCATACC-3'	109	99.2	0.994
Armadillo	5'-GCTACTGCACCACTCACAGAATTATT-3'	5'-CTGCAGCATACGTTGCAACA-3'	64	94.5	0.980
Target genes	**F-primer**	**R-primer**	**Amplicon size (bp)**	**Efficiency (%)**	**R^2**
DpNR1A	5'- ATCGAGAAGCGGAAAACACT -3'	5'- GTTGCTGGATCATTGACACC -3'	80	90.2	0.984
DpNR1B	5'- GCACACTTTGGGACTCAAGA -3'	5'- CCTCCAGCAACTAGCATGAA -3'	54	100	0.983
DpNR2	5'- AAGAACCAGAACCGATCCAC -3'	5'- GGCCACTAGGAAATCCAAAA -3'	105	91.7	0.974
DpVg	5'-AAAGGTGTCCTCAGCCAGC-3'	5'-TCCTCCATCTCGGATTGGGA-3'	105	95.1	0.998

Table S4 Nucleotide sequences of primers used in making the dsRNA constructs.

Gene	**F-primer (**5'-3')	**R-primer (**5'-3')
DpNR2	TAATACGACTCACTATAGGGAGAACAGGATATGGTATCGCCTTTAGC	TAATACGACTCACTATAGGGAGATCTTGAGCTTCGAAAACTGCAC
DpNR12	TAATACGACTCACTATAGGGAGATAACTGGGGACAGTCCACAC	TAATACGACTCACTATAGGGAGATCAGGTGAGAGTCCAACATGG
pJET	TAATACGACTCACTATAGGGAGATTGCGCTCACTGCCAATTGC	TAATACGACTCACTATAGGGAGA CTGGCCTTTTGCTCACATGTT

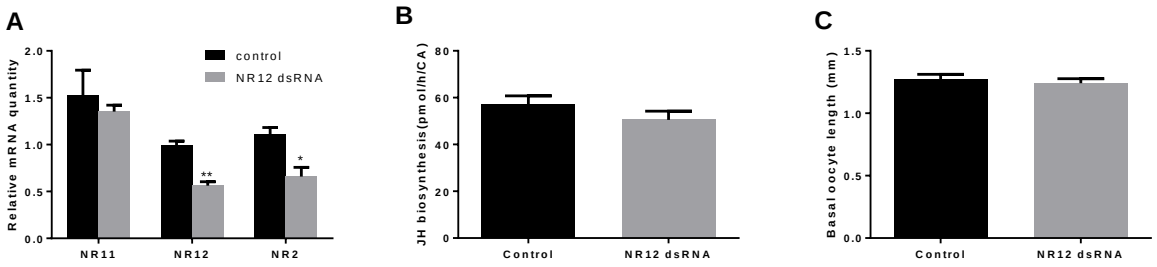

Fig. S1. **The effect of *DpNR1B* dsRNA treatment on JH biosynthesis and basal oocyte growth, and the interactions among these genes in mated female *D. punctata*.** (A) Relative quantity of *DippuNR1A*, *DippuNR1B* and *DippuNR2* mRNA levels in brain between control and dsRNA treated animals. mRNA levels were normalized against levels of *Tubulin* and *EF1a* mRNA (Marchal et al., 2013b). The data represent the average of 3 biologically independent pools (5 animals each pool), run in triplicate. (B) JH biosynthesis by CA from control and dsRNA-treated animals. (C) Basal oocyte length in control and dsRNA-treated animals. Values represent mean ± SEM. Levels of significance to the control are indicated with the asterisk symbol: $^{*}P < 0.05$, $^{**}P < 0.01$

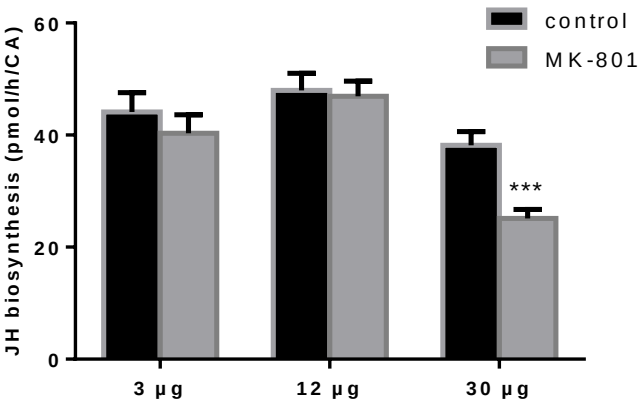

Fig. S2. **JH biosynthesis of CA in day 4 mated female *D. punctata* injected with different doses of MK-801 on days 0, 1 and 3.** Control was injected with ddH_2O. Values represent mean ± SEM ($n \geq 17$). Levels of significance to the control are indicated with the asterisk symbol: $^{***}P < 0.001$