

Supplementary Table 1

Oligonucleotide sequences for primers used in qRT-PCR.

Reference genes	Forward primer	Reverse primer
<i>EF1α</i>	5'-GATGCTCCAGGCCACAGAGA-3'	5'-TGCACAGTCGGCCTGTGAT-3'
<i>Ubiquitin</i>	5'-GACTTTGAGGTGTGGCGT-3'	5'-GGATCACAAACACAGAACA-3'
<i>RP49</i>	5'-CGCTACAAGAAGCTTAAGAGGTCAT-3'	5'-CCTACGGCGCACTCTGTTG-3'

Target genes	Forward primer	Reverse primer
<i>SgEcR</i>	5'-AAGGTTGATAATGCGGAATATGC-3'	5'-GTGATGGGCGCTCTGAAAAT-3'
<i>SgRXR</i>	5'-AATGCCTCGCTATGGGAATG-3'	5'-TCCTTTGTTGCTGCCTTTC-3'

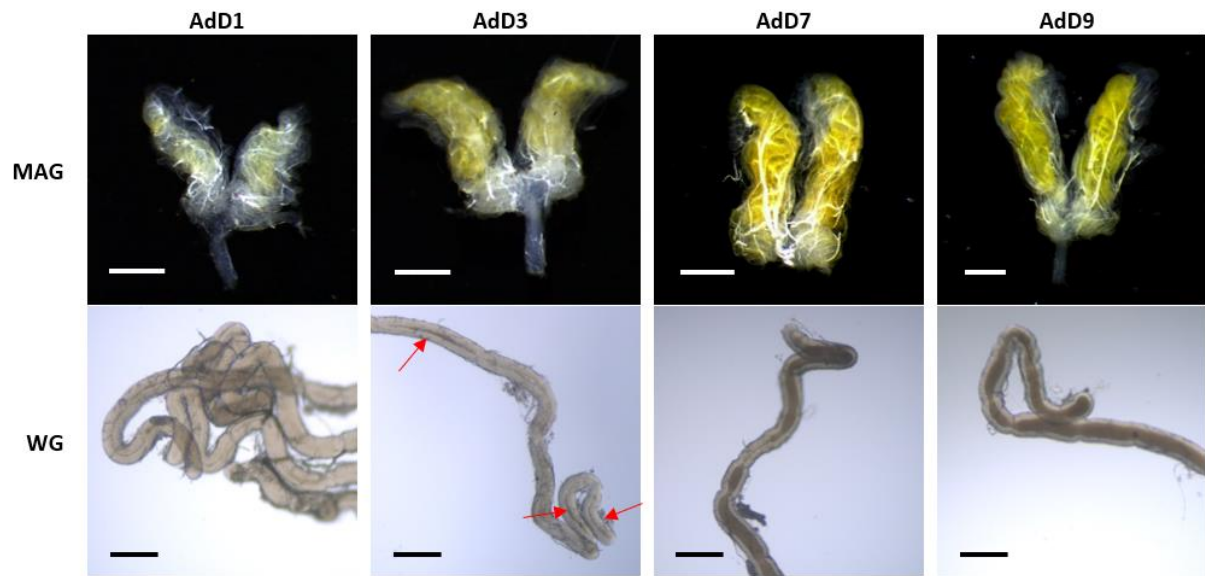
Abbreviations: *EF1α* = elongation factor 1 alpha, *RP49*=ribosomal protein 49, *EcR* = ecdysone receptor, *RXR* = retinoid-X-receptor

Supplementary Table 2

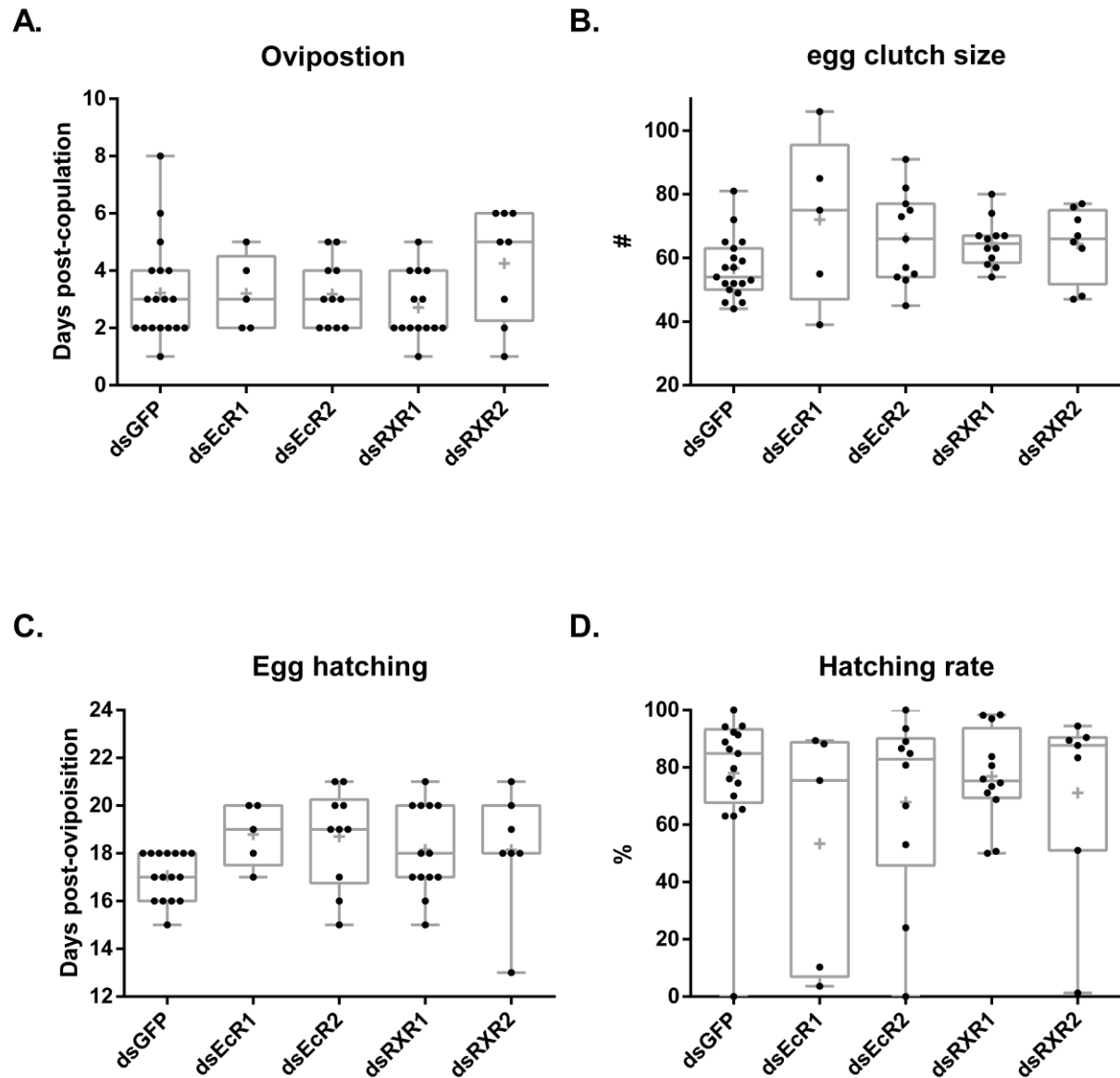
Oligonucleotide sequences for primers used in dsRNA construct design. Underlined sequences are the T7 promoter sequences.

Target genes	Forward primer	Reverse primer
<i>SgEcR 1</i>	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> ACGTGAGGTTTCGGCACATC-3'	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> GTTTCCCCCATACCAGCCAG-3'
<i>SgRXR 1</i>	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> GCTCAATGGGTCCACAGTCA-3'	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> ACACCATAATGCTTCCCGCT-3'
<i>SgEcR 2</i>	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> ATGCCGTGTACCAGTGCAAATATGG -3'	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> CGTTGGCTGACTCGTAACTCGTCTC-3'
<i>SgRXR 2</i>	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> TAGTACTTGCCACTGGACTCACA -3'	5'- <u>GAAATTAATACGACTCACTATAGGGCC</u> AAGGCCTATGGAACGTAAAGAAG-3'
<i>GFP</i>	5'- <u>TAATACGACTCACTATAGGGAGA</u> AAGGTGATGCTACATACGGAA-3'	5'- <u>TAATACGACTCACTATAGGGAGA</u> ATCCCAGCAGCAGTTACAAAC-3'

Abbreviations: *EcR* = ecdysone receptor, *RXR* = retinoid-X-receptor, *GFP* = green fluorescent protein



Supplementary Fig. 1: Male accessory gland development during the adult phase. Complete male accessory gland (MAG) complexes are shown on the top row and white glands (WG) are shown on the bottom row. On AdD1 no secretions are visible inside of the MAGs and the different gland types can't be distinguished. On AdD3 the first white secretions are visible inside of the WG (indicated by red arrows). The amount of white secretions gradually increases and on AdD9 the WG of all males are filled with secretions. The white scale bar indicates the size of the MAG and represents 1 mm. The black scale bar indicates the size of the WG and represents 200 μm .



Supplementary Fig. 2: Effects of an RNAi-induced knockdown of *SgEcR* and *SgRXR* separately on male reproductive success. Animals were injected with *dsEcR*, *dsRXR* or *dsGFP* (control condition) and subsequently introduced to virgin females starting from Add9 to observe their mating behavior and reproductive output. Data are represented by boxplots containing the upper and lower quartile, while the whiskers indicate the minimum and maximum. The median and mean are indicated by the grey line in the center of the box and the grey cross respectively. **A:** Upon successfully mating females were allowed to lay their eggs and the sand-turf mixture in their cages was checked daily (*dsGFP*, n=18; *dsEcR1*, n=5; *dsEcR2*, n=11; *dsRXR1*, n=14; *dsRXR2*, n=8). The timing of oviposition is determined by the number of days between a successful copulation and the day at which an egg pod is observed. **B:** Egg clutch size equals the number of eggs in one egg pod laid by a single female following a successful copulation (*dsGFP*, n=18; *dsEcR1*, n=5; *dsEcR2*, n=11; *dsRXR1*, n=14; *dsRXR2*, n=8). **C:** The timing of egg hatching is determined by the number of days between oviposition and the first day at which hatchlings are observed (*dsGFP*, n=16; *dsEcR1*, n=5;

dsEcR2, n=11; *dsRXR1*, n=12; *dsRXR2*, n=7). **D**: The hatching rate equals the number of hatched eggs from one egg clutch divided by the egg clutch size (*dsGFP*, n=16; *dsEcR1*, n=5; *dsEcR2*, n=11; *dsRXR1*, n=12; *dsRXR2*, n=7).