

SUPPLEMENT FIGURE LEGENDS

Supplemental Figure 1. Comparison of deduced amino acid sequences of the *Desi* homologous genes found in *Aedes aegypti*, *Anopheles gambiae*, *Tribolium castaneum*, and *Apis mellifera* EST databases.

Supplemental Figure 2. *Desi* expression in *Drosophila* adults under wet and desiccated conditions. Whole bodies of *Drosophila* adults, 2 days after eclosion, were used for the analyses.

Supplemental Figure 3. Effect of *Desi* overexpression on the initiation time of the wandering behavior of *Drosophila* larvae. The *hs-Gal4*-dependent overexpression of *Desi* in 2nd instar larvae was induced by heat treatment at 35°C for 30 min. Note that the initiation time of the wandering behavior was not changed by *Desi* overexpression (black bar).

Supplemental Figure 4. *Desi* expression levels in transgenic *Drosophila* larvae. Transgenic lines carrying *UAS-Desi* or *UAS-dsDesi* were used for *Desi* overexpression and RNAi knockdown. RT-PCR was performed by using total RNAs prepared from control, overexpression, and RNAi larvae. 1. *Actin-Gal4*, 2. *UAS-Desi (II)*, 3. *UAS-Desi (III)*, 4. *UAS-dsDesi (II)*, 5. *UAS-dsDesi (III)*, 6. *Actin-Gal4/UAS-Desi*, 7. *Actin-Gal4;UAS-Desi*, 8. *Actin-Gal4/UAS-dsDesi*, 9. *Actin-Gal4;UAS-dsDesi*.

Supplemental Figure 5. Effects of *Desi* overexpression and knockdown on survival rates of *Drosophila* larvae under wet condition. Every mutant foraging larva was placed under wet condition (on water absorbed cotton in petri dish) for 8 h, and then transferred on normal diet medium. Survival rates were checked 24 h after this transfer. Data are given as means for five separate measurements using 50 animals.

Supplemental Figure 6. Effects of *Desi* overexpression on weights of *Drosophila* larvae under desiccated condition. (A) Weights of *Desi* overexpressed 3rd instar larvae under a dry condition (15% RH). Data are given as means for five separate measurements using 20 animals. (B) Weights of *Desi* overexpressed 2nd instar larvae under a dry condition (15% RH). Data are given as means for five separate measurements using 15 animals. *Significantly different from the values of control larvae (*P<0.05, Turkey's HSD).

Supplemental Figure 1

1 100

D. melanogaster MNRNYIVILQ LLGVLVLTYSASAIPKYEDS HRFYADKAQR DRSYFNENKT QPSEPQTAST KDRLERLGYT TG-YGS-LNG Y-PGGTGLS- -AYNPIKLDL

A. Aegypti MEP----ILS DCGSNSVGQI IMEPNDLYFI ICFQNPFS N-HWRRPNET NYSEA-SSAT NDRTQRLGLT TG-YGGGLNG YGYSSSGVG- -GYAPLKIDL

A. gambiae MAARAAYFVS VLVLATIGWQ CVPCPCAVCS LLIHVLRSL LTFSSNPWRR QMDSFATESA SDRSQRLGLT TG-YGG-VNG YGYSSSGLG- -SYTPLKIDL

T. castaneum -----MNT LLCLFLLGSA FASPKKYHPD EGFQPS--SV HRYYESDLSA NSSKLEKDE NSDRLRFGIP VSSYGSTGNG VQYGSNSGVG YVFSPMKIDV

A. mellifera ----- MPS QAELRNETS KRNDMSNDI TDRSQEPRES FTNLGSTGSG YGIST----- -YSPAKIDL

101 200

GGVVLGTLVG IGAILIPKI LSAFHGGYGG --YGRSESD LTPSSMINK IDDVLAQNNI DSTSCMQRAV CGYVRSTEYN MKIG----- -SSDQMDEFI

GGVVLGTLVG IGALLILPKL VTAFFGGYGG --HYRSENGD GD-FTQLLNK VDDMLAQNNI DSGSCLQKAI CTYVQVSDYH MQVG----- -TADQIEHMI

GGVVLGTLVG IGALLLIPKL VNVIGGGYGG SGHYRSADSD PTGISDLNKK VDDYLAQNNI DSGACMQKAV CSYLRSSDYH AQVG----- -TADQVEHMI

GGIALGALIG LGAVLIVPKL AAVFAGGHGY ---RSLEND MSAITDVLAR IDNSLEQNNI DSSTCMQRVI CTYVREAQRN MMTG----- -EANTLDQFI

GGLFLGAIIG IGSILIIPKL LYVLSGTYGH -----YARSE ESGFTQIMTK MDVLAHHGI DTTSCMQRIV CTVSNVASSS VKEANKLNND EKISSLDRVI

201 270

HMLAENALVD YLLDGTAIKE ALEHGKRAND RACEEVYSNC PLDSKSATDI LMKLMPKKNP QGKGKSSGIS REKKV

LALAENSLVD YMLDGTAIKE AIKNGKAQ-S RSCDELYKSC PLDRQSAYQM ASKIFRVGGN -----

LALSENSIID YMLDGTAIKE AIKNGKMQTA RSCDEIYSTC PLDRQSTLKL FKKMFPIGN -----

YAVANNLF S YMLDGTAVKQ AVDMGKEGDI EKASLYAKC PISKENVMKV IASLLPA--- -----

DTITTNQIFR TTMEGTALDE AVEAGRAG-- RNC SRIYPHC GFSMETVLSL LSNVITAI AA INTGNSTPTG TGTL-

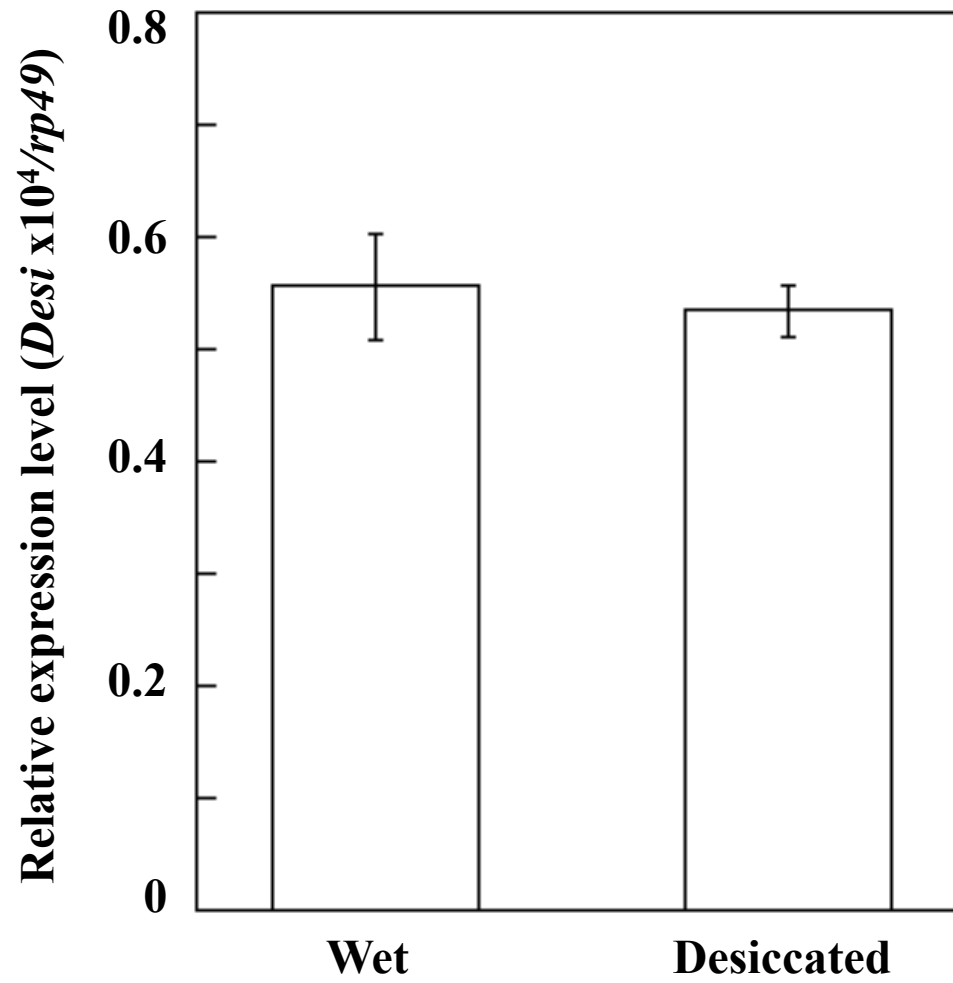
Transmembrane domain

STAT5 SH2 domain binding motif

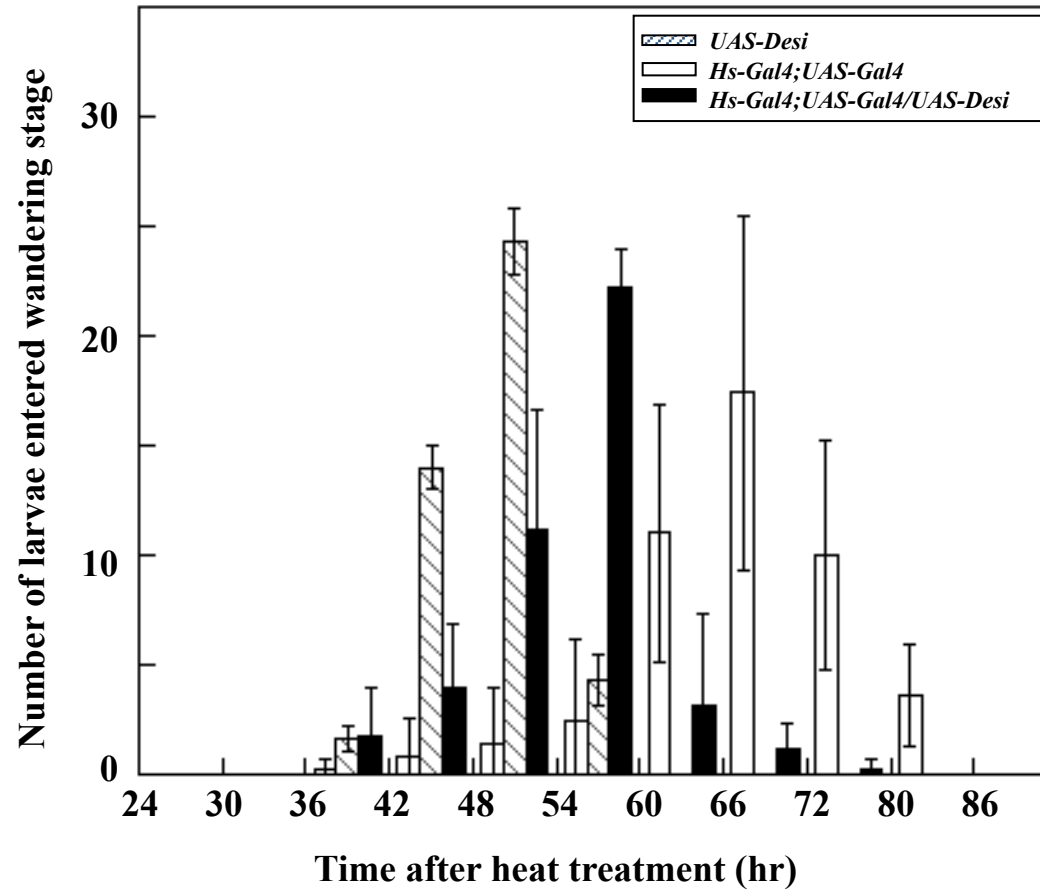
Polo-like-kinase phosphorylation site

Class III PDZ domain binding motif

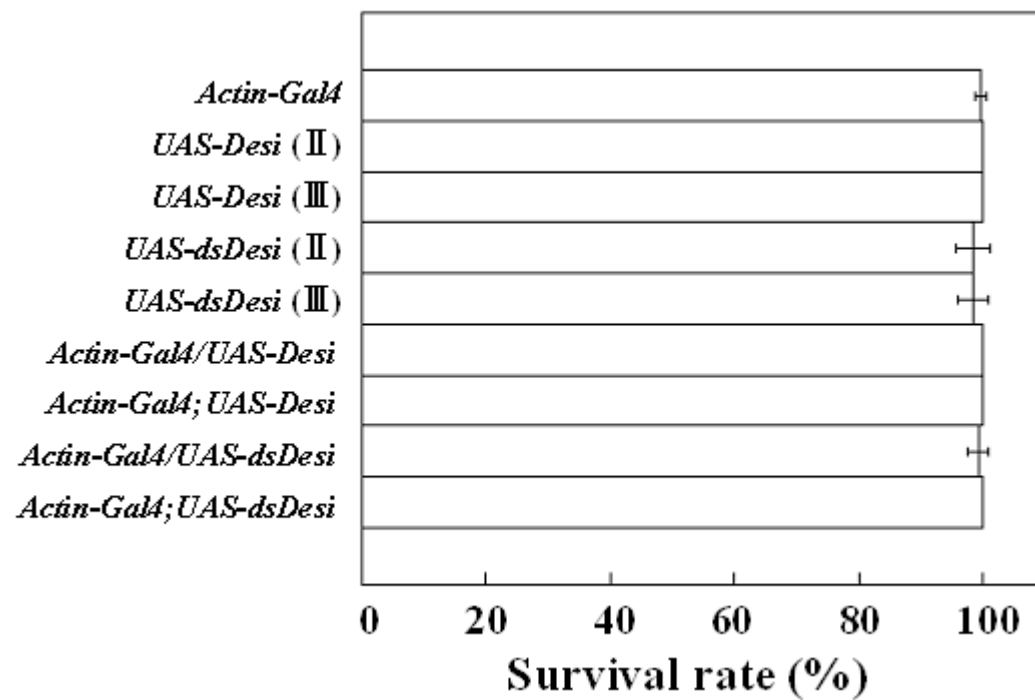
Supplemental Figure 2



Supplemental Figure 3



Supplemental Figure 5



Supplemental Figure 6

