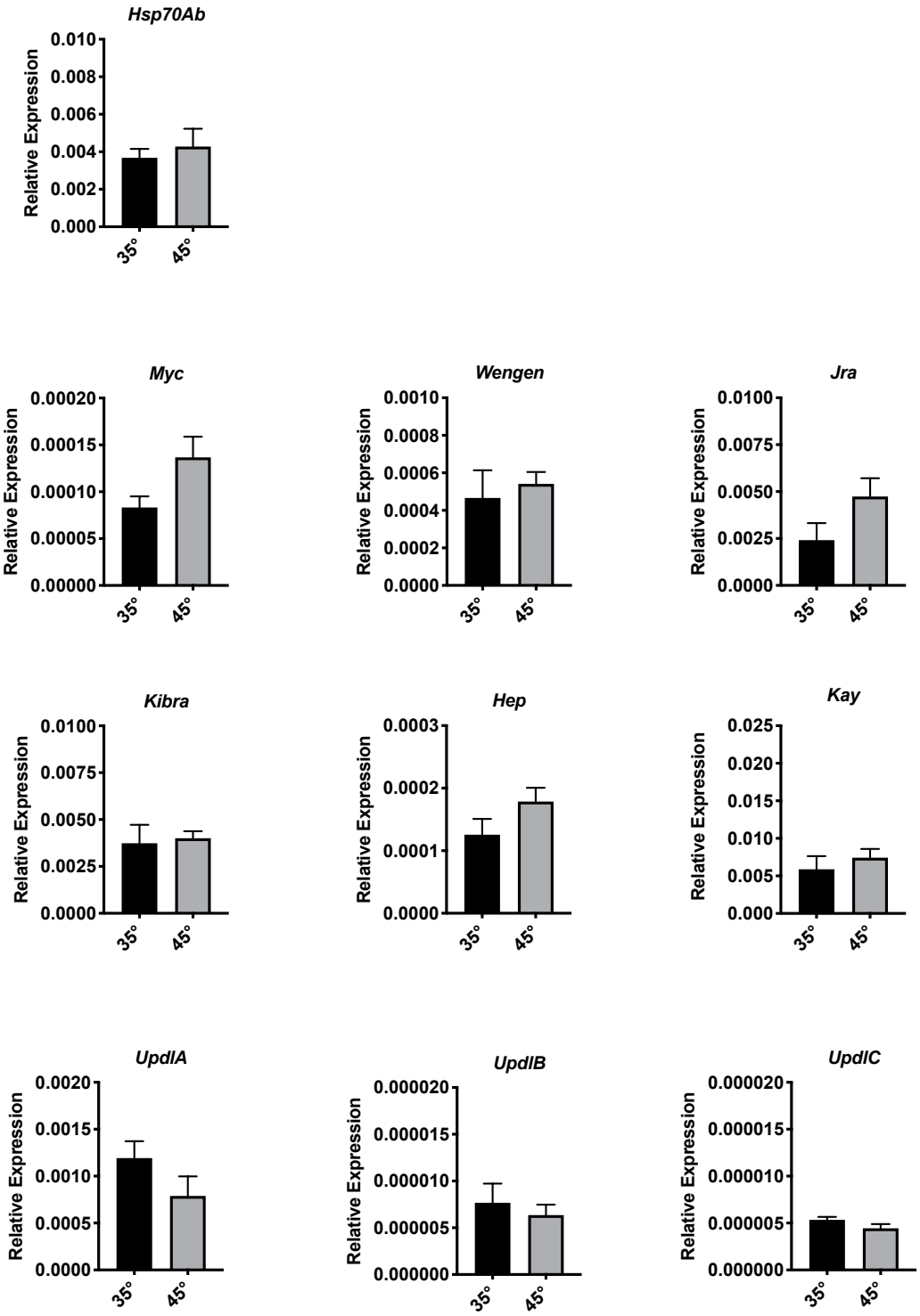

Fig. S1. Transcript levels of *Hsp70Ab*, *Myc*, *Wengen, Jra, Kibra, Hep, Kay,* and the Updl genes *UpdlAl, UpdlB, and UpdlC* relative to b-actin in midgut, from bees maintained for four hours in cages at either 35 °C or 45 °C and then recovered at 35 °C for 20 additional hours. Symbols represent expression values of the genes of interest calculated using the $2^{(-DCT)}$ method for individual bees. Mean ± SEM is also shown. Statistical significance is noted as *p < 0.05, and **p < 0.01.

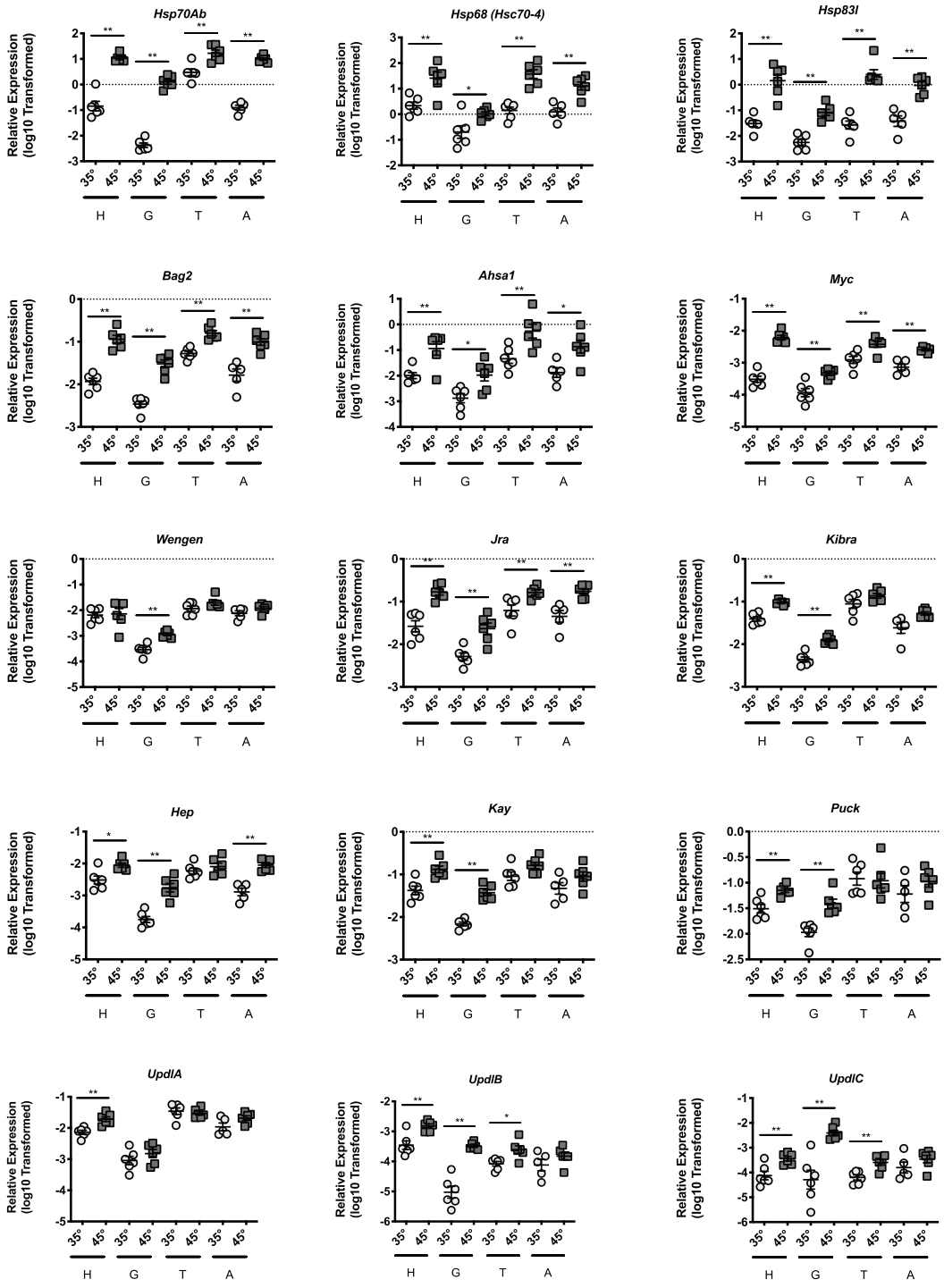

Fig. S2. Transcript levels of protein folding genes *Hsp70Ab*, *Hsc70-4*, *Hsp83l*, *Ahsa1*, *Bag2*, Hippo pathway associated genes *Kibra*, *Myc*, and *Wengen,* JNK pathway associated genes *Jra, Hep*, *Kay,* and *Puck,* and the Updl genes *UpdlAl, UpdlB, and UpdlC* relative to b-actin in head tissue (predominantly brain, sensory organ tissue, and hypopharyngeal glands), midgut, thorax tissue (predominantly flight muscle), and abdominal wall (predominantly fat body) from bees maintained for four hours in cages at either 35 ° or 45 °C. Symbols represent expression values of the genes of interest calculated using the $2^{(-DCT)}$ method for individual bees after Log10 Transformation. Mean ± SEM is also shown. Statistical significance is noted as *p < 0.05, and **p < 0.01.

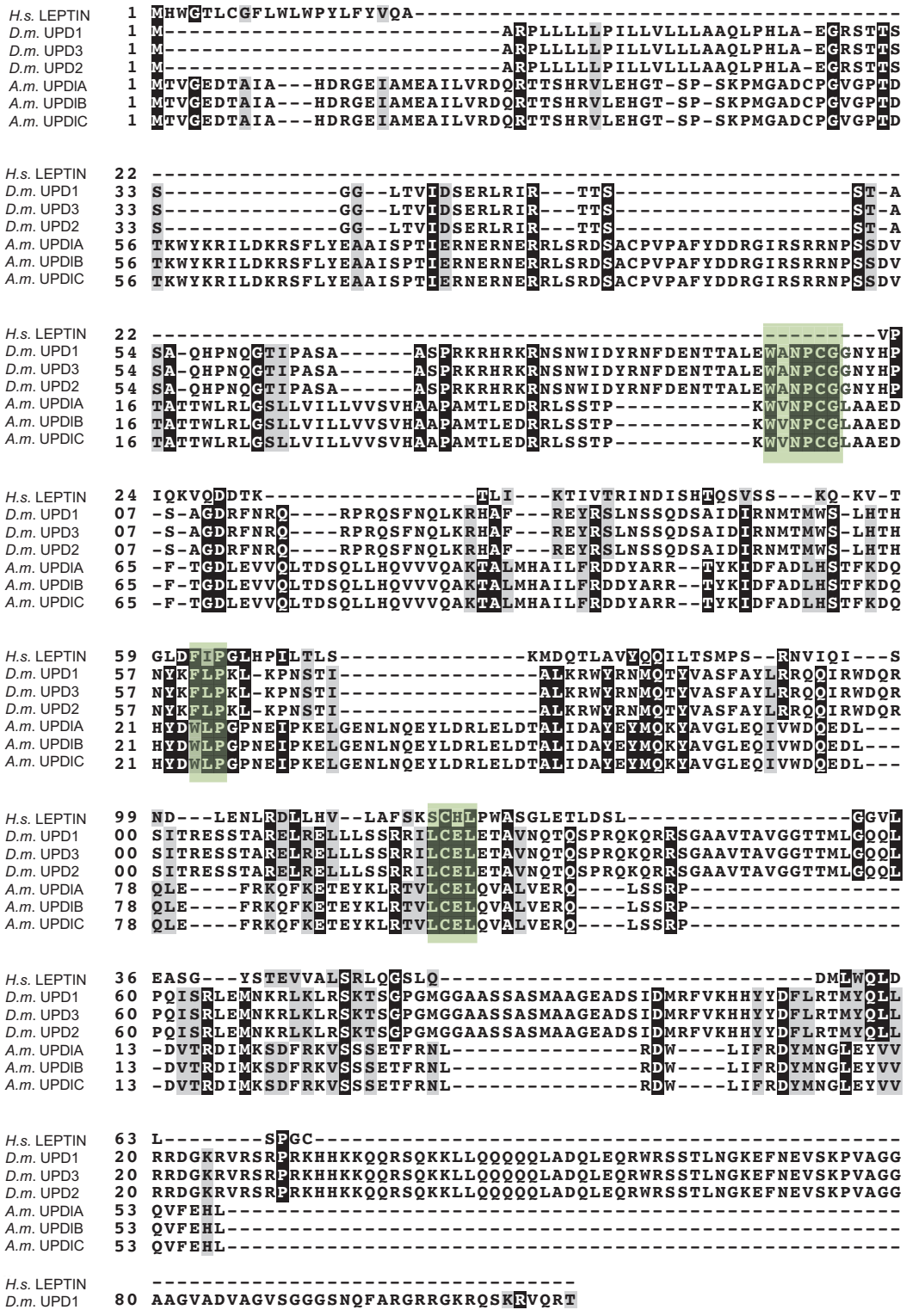

Fig. S3. Protein alignment of UPD proteins from fruit fly (*Drosophila melanogaster*), the UPDl proteins from honey bee (*Apis mellifera*), and the *Homo sapiens* LEPTIN protein. The highly conserved WxxxC motif, W/FJP motif, and LC-containing motif are highlighted by green boxes.

Underlined regions represent transcribed regions. Bold denotes ATG start of coding region. HSE (Heat Shock Element) consensus sequence = GAANNTTCNNGAA, FOXO binding = TKTTYACY, TEAD/Sd = NDGHATNT

LOC100577920 (*UpdlA*)

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LOC100577882 (*UpdlB*)

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LOC102655202 (*UpdlC*)

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Fig. S4. Promoter regions of *UpdlA*, *UpdlB*, and *UpdlC* genes along with key predicted transcriptional factor binding sites.

Table S1.

Click here to download Table S1

Table S2. Updl genes and UPDl proteins in different bee genomes

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