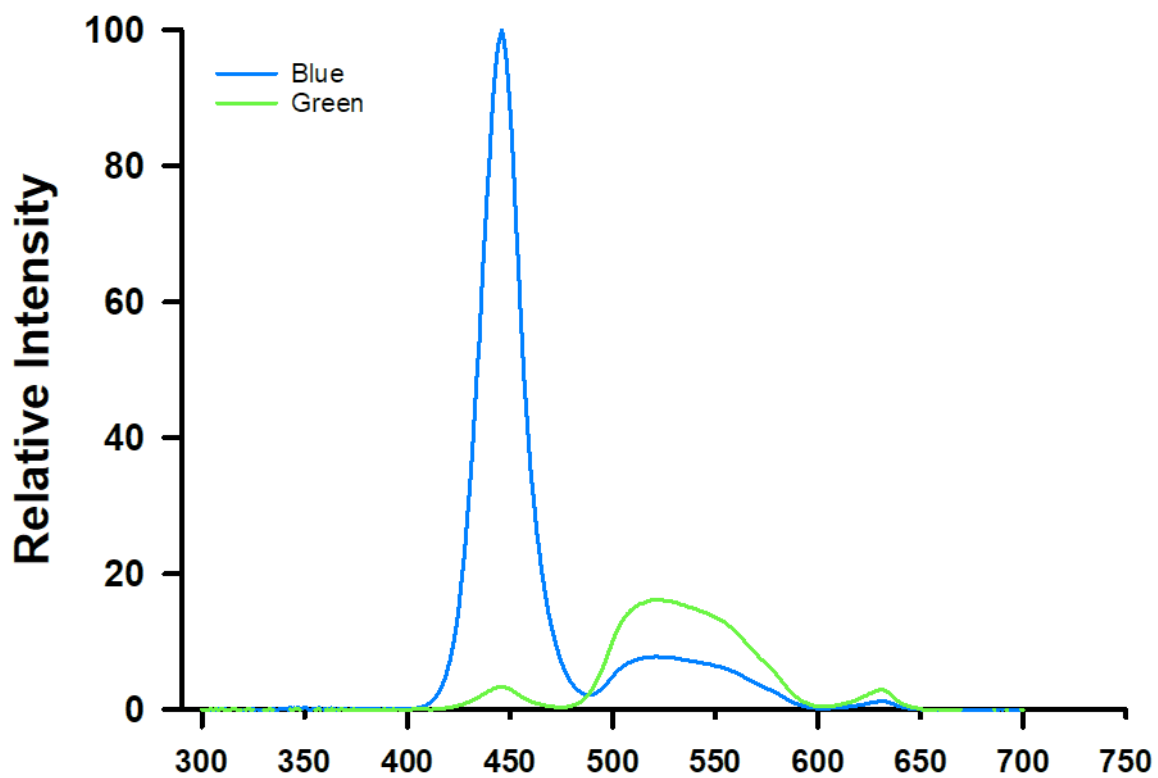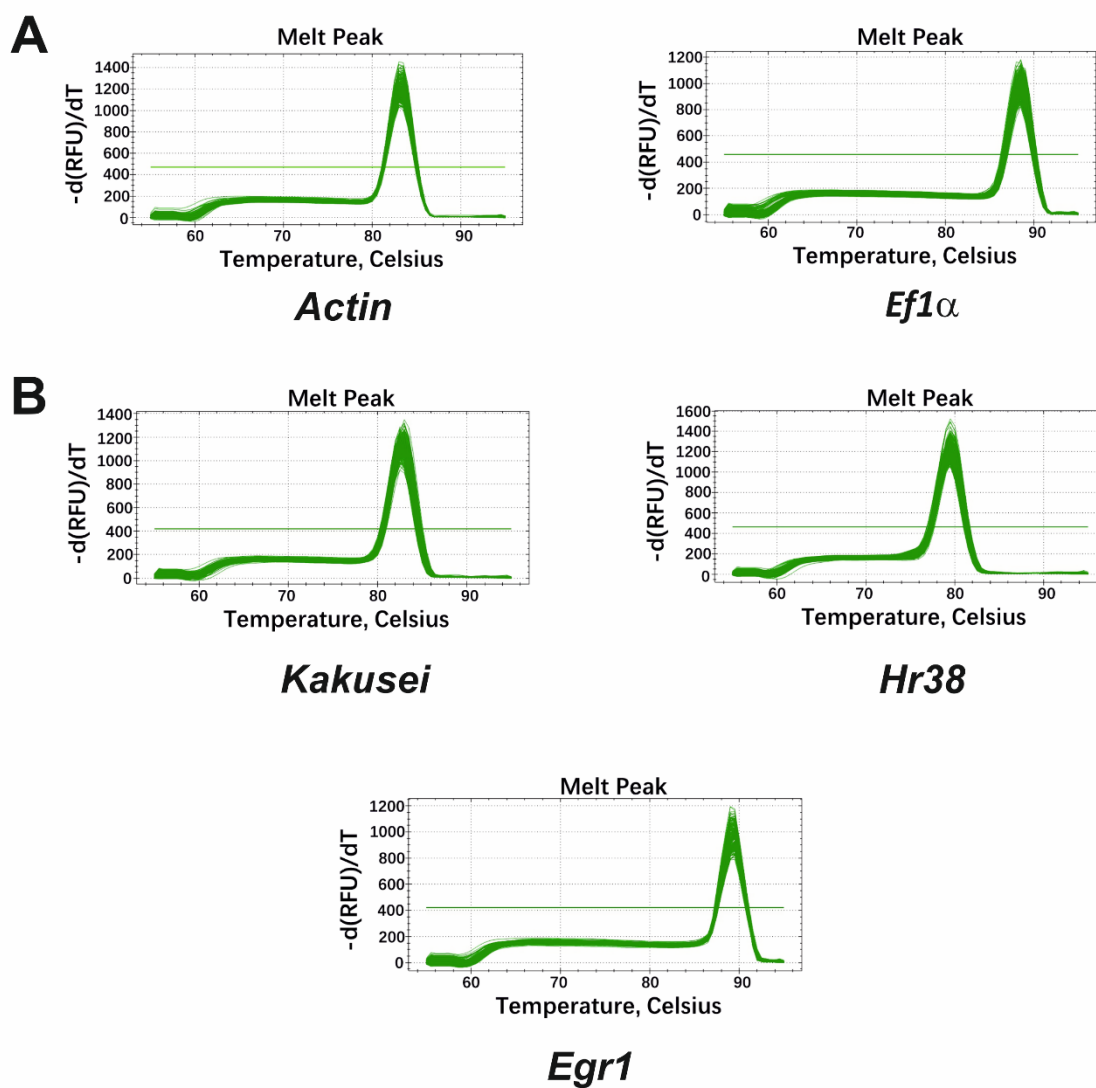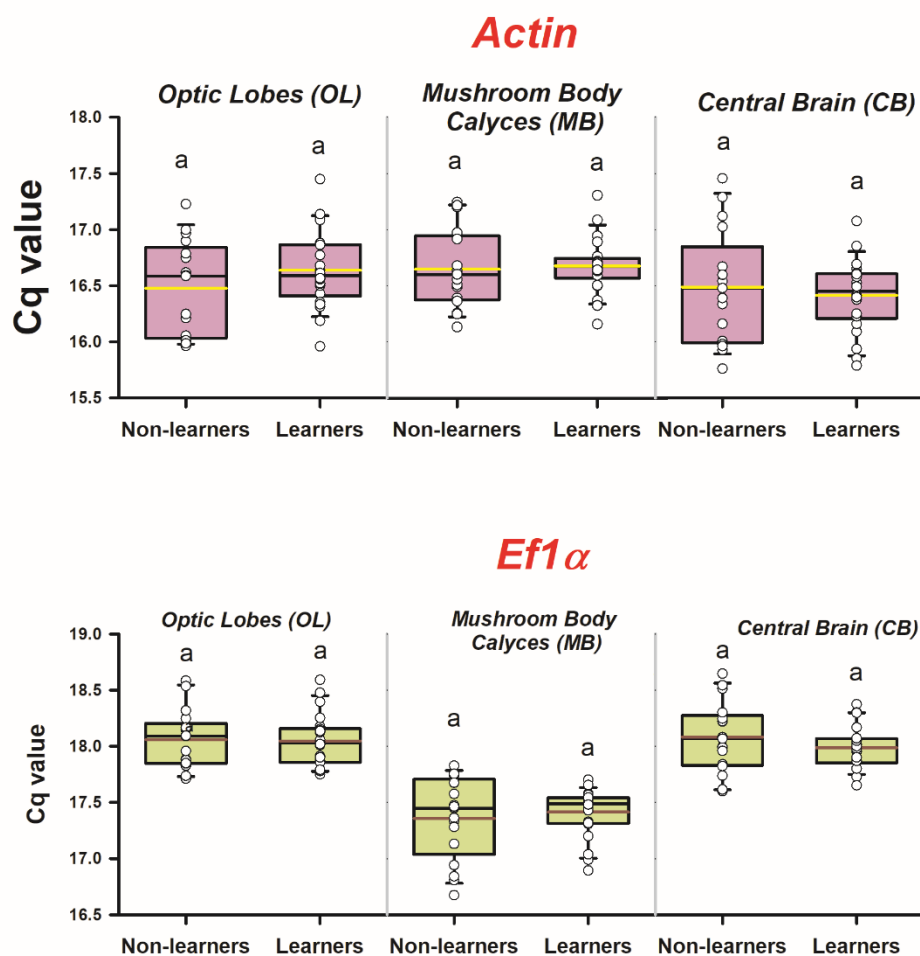**Supplementary Materials**

Supplementary Figure 1. Spectral distribution (relative intensity as a function of wavelength) of the blue light (dominant wavelength 446 nm) and the green light (dominant wavelength 528 nm) used to train the bees in the color discrimination task.

A

Actin

*Ef1*α

B

Kakusei

Hr38

Egr1

Supplementary Figure 2. Validation selectivity of gene-specific primers. Melting peaks of RT-qPCR. **A)** Reference genes. **B)** Target genes.

Supplementary Figure 3. Expression levels (Cq values) of the reference genes *Actin* (upper row) and *Ef1α* (lower row). Expression levels in the brain regions considered (optic lobes, mushroom body calyces and central brain) of learners and non-learners (n=22 and n=17, respectively, for both genes). Box plots show the mean value in yellow (*Actin*) or red (*Ef1α*). Sample sizes are indicated within parentheses below each group. Error bars define the 10th and 90th percentiles. Same letters on top of box plots indicate absence of significant differences (two-sample t test; $p < 0.05$).