



Figure S1 Thermotaxis behavior of *ttx-7(nj40);egl-8(nj77)* mutants (A) The neural circuit for thermotaxis behavior. Temperature information sensed by AFD and AWC sensory neurons is transmitted to AIY, AIZ and RIA interneurons. RIA neuron is assumed to integrate thermophilic drive conveyed from AIY neuron (designated as “T”) and cryophilic drive from AIZ neuron (designated as “C”) and to regulate downstream motor neurons. (B) Distributions and TTX indices of wild-type animals, *ttx-7(nj40)*, *ttx-7(nj40);egl-8(nj77)*, and *egl-8(nj77)* mutants cultivated at 17°, 20° and 23°. The marks on the bars

of each genotype indicate for comparisons with wild type. The marks on the lines represent for comparisons between indicated genotypes. Tukey–Kramer tests was performed ($n \geq 4$ assays). **(C)** RIA specific rescue experiments for *ttx-7(nj40);egl-8(nj77)* mutants cultivated at 23° using the population thermotaxis assay. Either the expression of *egl-8* cDNA or *egl-8* cDNA::*gfp* in RIA neuron of *ttx-7(nj40);egl-8(nj77)* mutants partially but significantly rescued the suppression of the thermotaxis defect. Tukey–Kramer test was performed ($n \geq 4$ assays). **(D)** Expressing *egl-8* cDNA specifically in RIA reduced the fraction of IT behavior in *ttx-7(nj40);egl-8(nj77)* double mutants. About 20 animals cultivated at 20° were examined in more than three trials, which were compared in ANOVA.