

Supplementary Material

1 Supplementary Figures

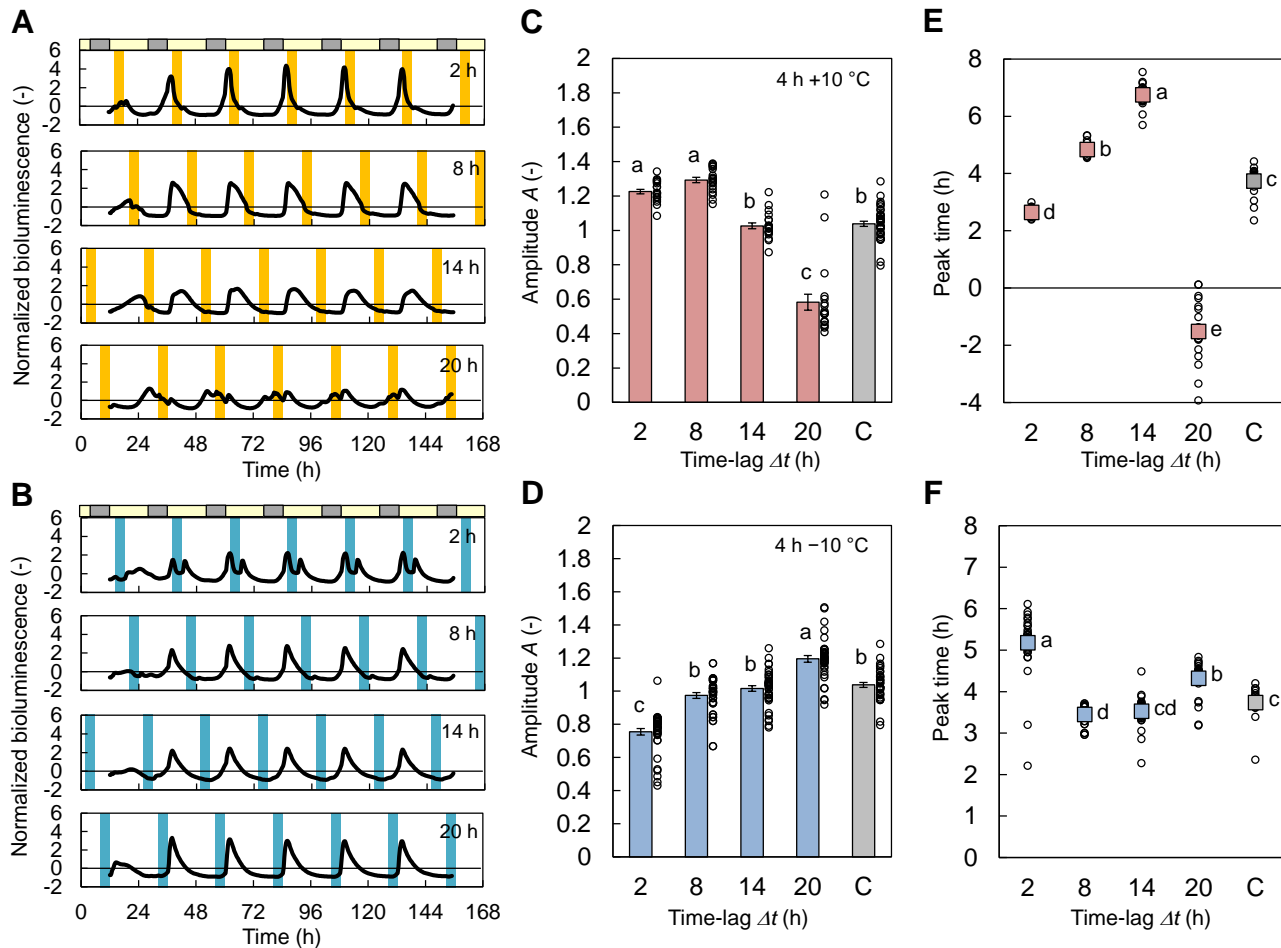


Figure S1. Effects of the time lag on *CCAI* rhythms under conditions of light-dark (L/D) = 16/8 h and 4 h $\pm 10^{\circ}\text{C}$ cycles with anti-phase initial conditions. **(A, B)** Normalized bioluminescence of *CCAI::LUC* under $+10^{\circ}\text{C}$ **(A)** and -10°C **(B)** conditions. **(C, D)** Amplitude A of the bioluminescence oscillation under $+10^{\circ}\text{C}$ **(C)** and -10°C **(D)** conditions (mean \pm SEM, $n = 20$ individuals in $+10^{\circ}\text{C}$, 40 in -10°C , and 40 in the control). The control is labelled C. The circles indicate the individual data points. Different letters indicate significant differences for each panel (Tukey-Kramer test, $p < 0.05$). **(E, F)** Peak time under $+10^{\circ}\text{C}$ **(E)** and -10°C **(F)** conditions (circular mean, $n = 20$ individuals in $+10^{\circ}\text{C}$, 40 in -10°C , and 40 in the control). The circles indicate the individual data points. Different letters indicate significant differences for each panel (Watson-Williams test with Bonferroni correction, $p < 0.05$).

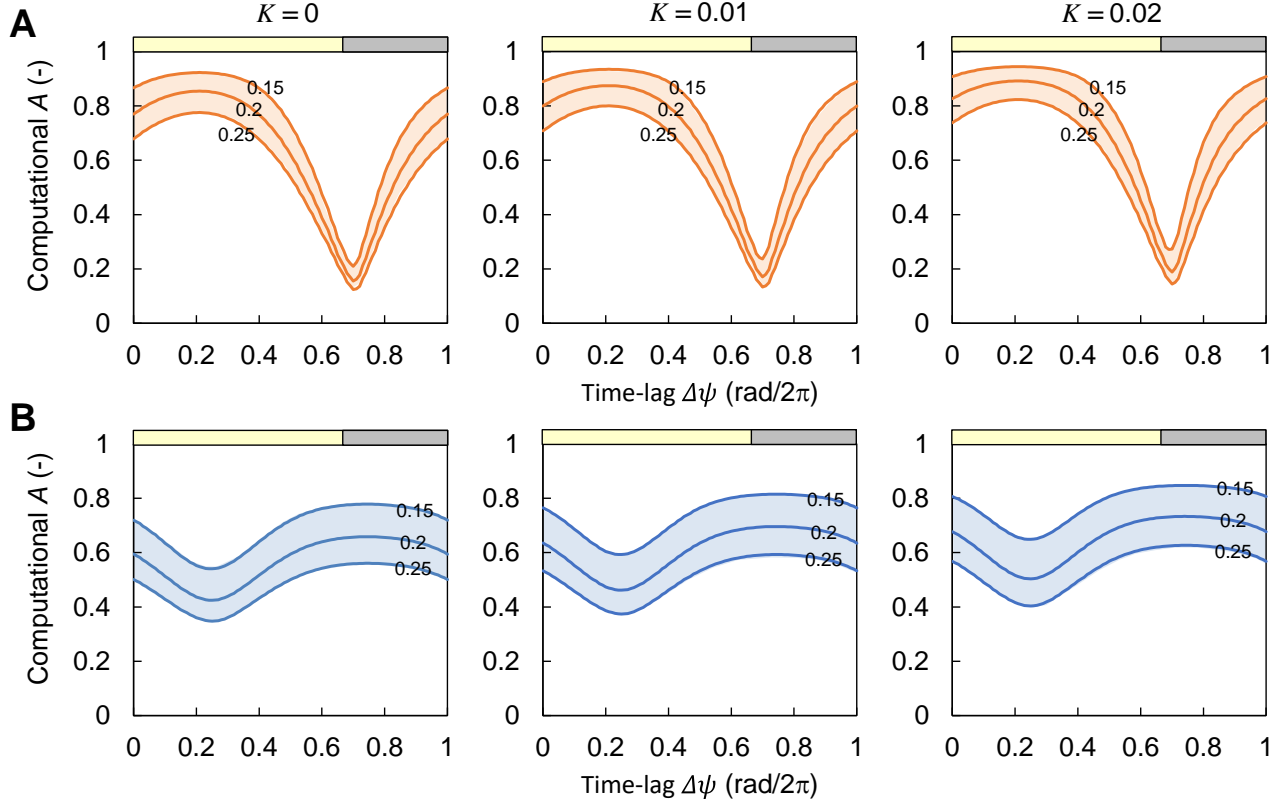


Figure S2. Computational amplitudes for different values of the coupling strength and distributions of the circadian frequency. **(A)** Computational amplitude for each time lag at $K = 0.00, 0.01$, and 0.02 under $+10$ °C conditions. Each line indicates amplitude at $\sigma_{\omega}/\omega_0 = 0.15, 0.20$, or 0.25 . **(B)** Computational amplitude for each time lag at $K = 0.00, 0.01$, and 0.02 under -10 °C conditions. Each line indicates an amplitude at $\sigma_{\omega}/\omega_0 = 0.15, 0.20$, or 0.25 .