**Supplementary Data**

To measure light responses in \(CRY\Delta\) and \(CRY\Delta(cry^b)\) flies, we conducted LL and light-pulse experiments under light intensity of 40 \(\mu\text{mol/m}^2/\text{s}\), both during entrainment and test (LL or pulse) conditions. Under LL, \(CRY\Delta\) flies remained synchronous for about four days showing a long period of locomotor activity (Fig. 4a). After 7 days, 40% of them were still rhythmic with a period of 28.14 – 0.66 h. Control flies (\(tim\)-\(GAL4/+\) males) became asynchronous after two days (Fig. 4a). Behavioral asynchrony was also observed for flies overexpressing CRY (not shown). Lines \(UAS\text{-}\text{cry}24B\) (not shown), \(UAS\text{-}\text{cry}\Delta 14.6\) (Fig. 4a) and \(UAS\text{-}\text{HAcry}\Delta 72.3\) (not shown) were used in this assay. For the phase-response experiments (Fig. 4b), the numbers of flies tested (always as control, \(CRY\) and \(CRY\Delta\)) were as follows, unpulsed: 40, 45, 68; pulsed at ZT15: 35, 22, 35; pulsed at ZT17: 9, 12, 15; pulsed at ZT19: 9, 9, 28; pulsed at ZT21: 24, 15, 23; pulsed at ZT23: 17, 16, 15. Lines \(UAS\text{-}\text{cry}24B\) and \(UAS\text{-}\text{cry}\Delta 14.6\) were tested. An additional control versus \(CRY\Delta\) comparison was carried out at ZT19 with the line \(UAS\text{-}\text{HAcry}\Delta 15.3\), comparable results were obtained.

The same experiments were repeated in a \(cry^b\) background and using \(cry^b\) (\(tim\)-\(GAL4/+\);\(cry^b\)) flies. Under LL \(cry^b\) flies remained synchronous (Fig. 4c) and rhythmic for at least seven days (24.21 – 0.09 h, 100% of flies) whereas \(CRY\Delta(cry^b)\) flies remained synchronous (Fig. 4c) and rhythmic for about six days, showing a long period of locomotor activity (26.00 – 0.19 h, 98% of flies). Behavioral asynchrony was observed for \(cry^b\) flies overexpressing CRY (not shown). Lines \(UAS\text{-}\text{cry}24B;cry^b\) (not shown) and \(UAS\text{-}\text{cry}\Delta 14.6;;cry^b\) (Fig. 4c) were used in this assay. For the phase-response experiments (Fig. 4d), the numbers of flies tested [always as \(cry^b\), \(cry^b/cry^+\), \(CRY(cry^b)\) and \(CRY\Delta(cry^b)\)] were as follows, unpulsed: 73, 57, 68, 64; pulsed at ZT15: 45, 40, 40, 31; pulsed at ZT21: 41, 35, 64, 61. Lines \(UAS\text{-}\text{cry}24B;cry^b\) and \(UAS\text{-}\text{cry}\Delta 14.6;;cry^b\) were tested.