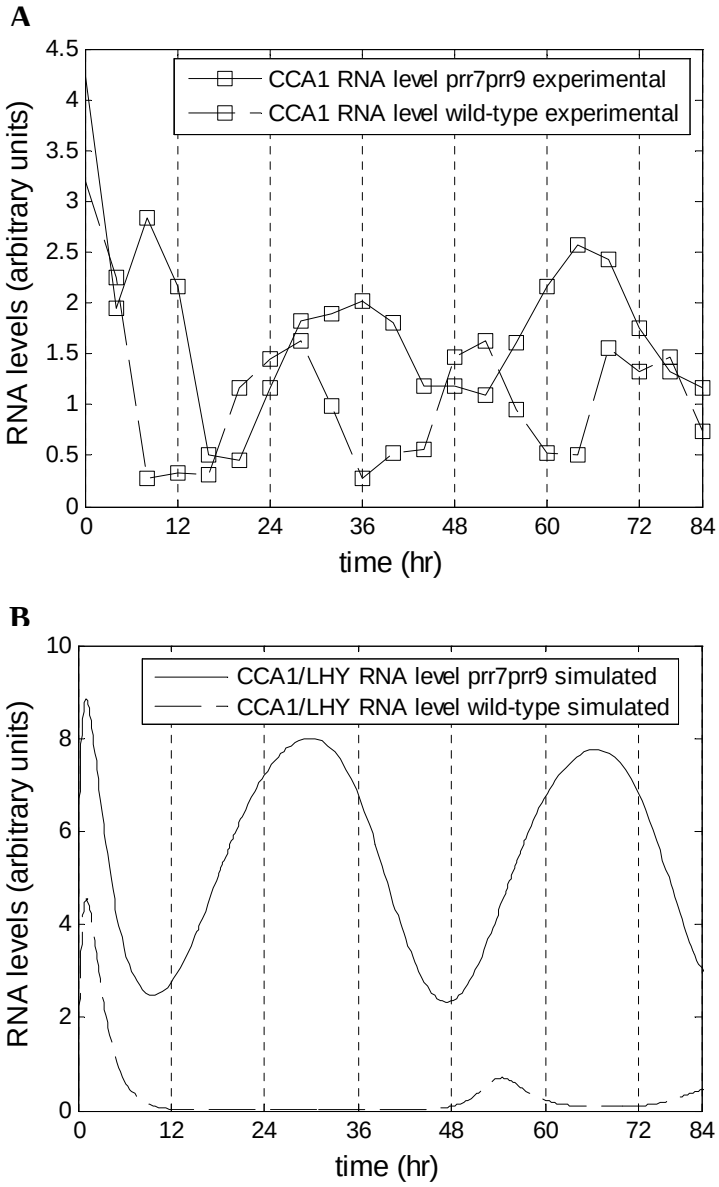
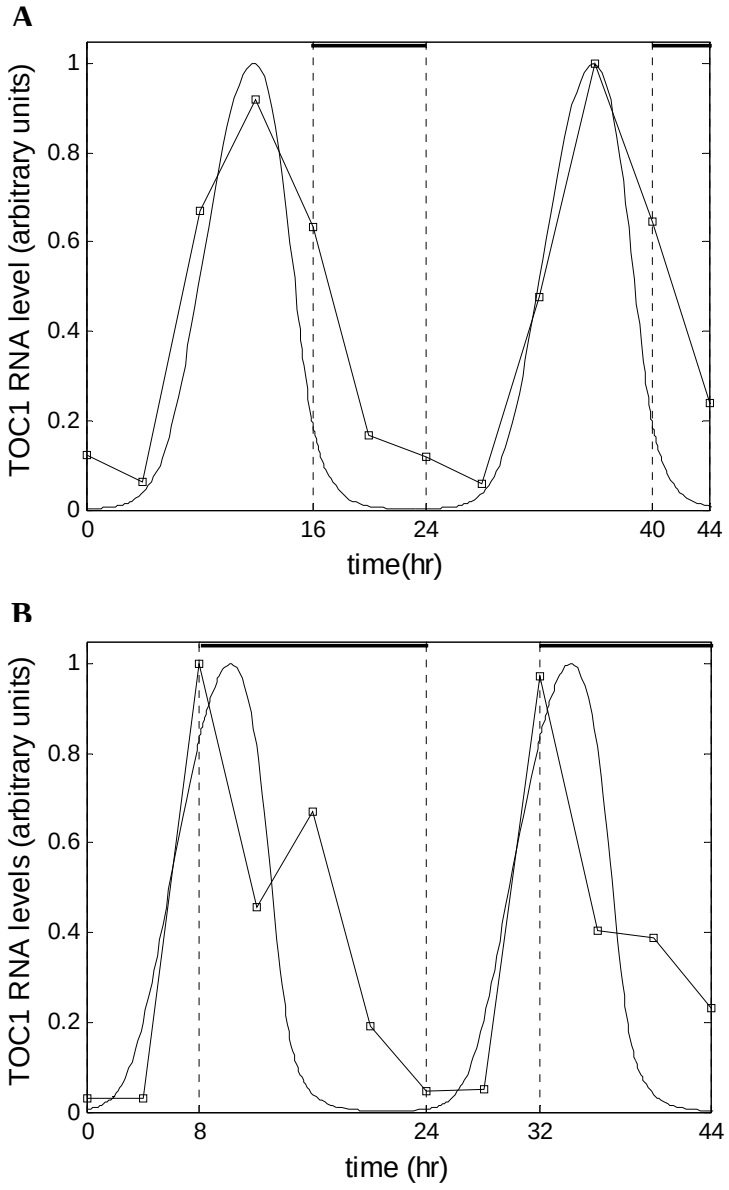
Supplementary Figure 1



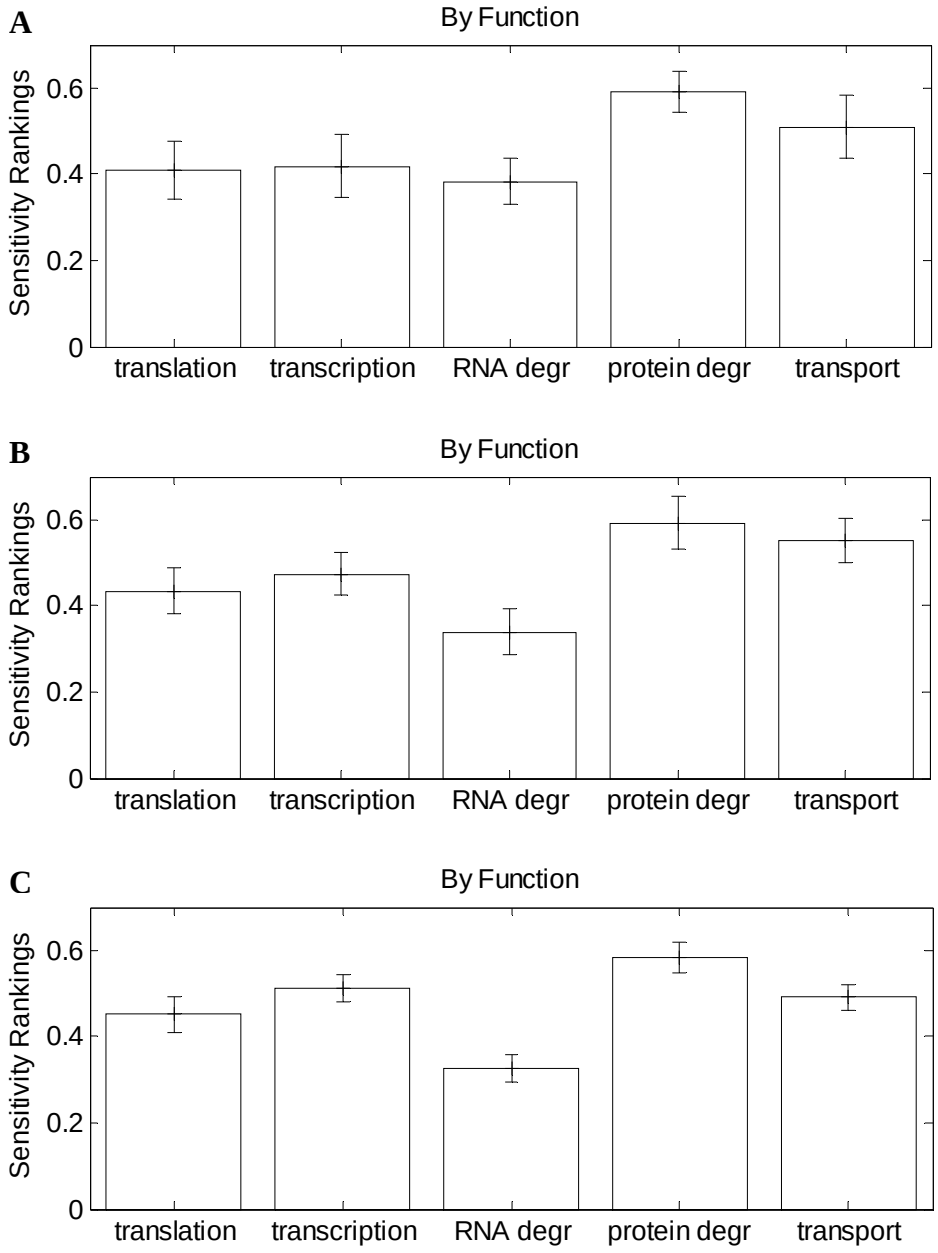
Sup Figure 1 Simulated LHY/CCA1 RNA level in the *prr7prr9* double mutant (PRR7-PRR9light-Y' model) (A) compared with experimental data, taken from (Farre *et al*, 2005) (B). At ZT0 the system is released into constant light conditions. The model simulation accurately reproduces the behavior observed in experimentation

Supplementary Figure 2



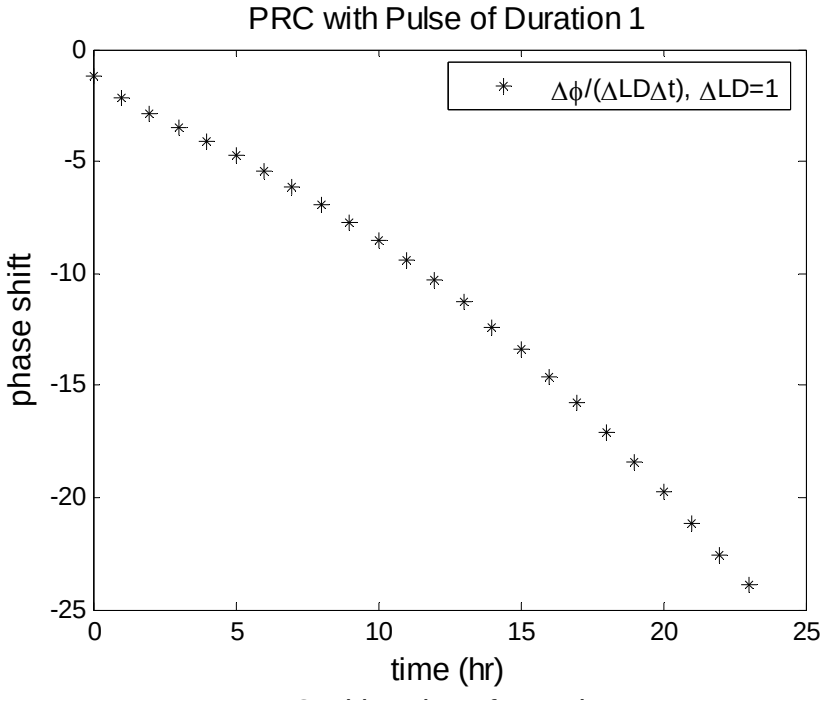
Sup Figure 2 Simulated TOC1 RNA level in the PRR7-PRR9light-Y' model in 8light:16dark short days (A) and 16light:8dark hours (B) long days, in comparison with experimental results (squares). The circadian peak shifts in response to changes in day length as observed experimentally, verifying the applied changes during the development of the final model. *TOC1* RNA levels are from Hazen *et al.*, (2005).

Supplementary Figure 3



Sup Figure 3 Sensitivity rankings grouped according to their functional role for the PRR7-PRR9-Y (A), the PRR7-PRR9light-Y (B) and the PRR7-PRR9light-Y' model. RNA degradation results to be the most sensitive process in all developed models. This conservation indicates a relation between the increased sensitivity and the regulation level of RNA degradation in the examined system. Error bars denote standard deviations of grouped sensitivity rankings in a Monte-Carlo search of 10000 parameter sets.

Supplementary Figure 4



Sup Figure 4 Numerical experimental phase response curve (PRC) of the PRR7-PRR9Light-Y model, computed by introducing an 1 hr light impulse at a 1 hr sampling; this method mimics that of biological experiments generating PRCs. The phase shift decreases monotonically, proving that indeed the system is restarted in the morning whenever a light pulse is introduced.