

**Fig. 5.** Wiring diagram for a more complete model of the mechanism underlying circadian rhythms in *Drosophila melanogaster*. See supplementary text for a detailed description.

**Fig. 6.** Bifurcation diagram for the expanded model in Fig. 5. See Fig. 1 in the main text for meaning of curves. The bifurcation parameter is  $k_{in}$ , the rate constant for transport of PER through nuclear pores. The dash-dot curve (—•—) is the oscillation generated by the resetting hypothesis, assuming that the nuclear transport rate decreases exponentially for most of the cycle (half-life = 6.9 h or  $\mu = 0.1$ ) and increases abruptly by a factor of  $\sigma = 11$  when [PER] drops below  $P_{thres} = 1$ .

**Fig. 7.** Sensitivity coefficient (i.e.,  $\frac{\partial \log T}{\partial \log p_i}$ ) rankings for (A) LG, (B) TH and (C) RS. Note that LG spreads out control of the period to many parameters, whereas TH does less so. RS is designed to have virtually all the sensitivity concentrated into just two parameters.