Name	Symbol
The free plasma concentration of CK1 inhibitor	**Inh_p**
The free brain concentration of CK1 inhibitor	**Inh_b**
The free cytoplasm concentration of CK1 inhibitor	**Inh_c**
The free nucleus concentration of CK1 inhibitor	**Inh_n**
The concentration of CK1 complex unbound to CK1 inhibitor in cytoplasm	**$CK1_c$**
The concentration of CK1 complex unbound to CK1 inhibitor in nucleus	**$CK1_n$**
The concentration of *Per2* mRNA in the nucleus/ cytoplasm	MnPt/McPt
The concentration of *Per1* mRNA in the nucleus/ cytoplasm	MnPo/McPo
The concentration of *Per2* mRNA in the nucleus/ cytoplasm	MnPt/McPt
The concentration of *Cry1* mRNA in the nucleus/ cytoplasm	MnRo/McRo
The concentration of *Cry2* mRNA in the nucleus/ cytoplasm	MnRt/McRt
The concentration of *Bmals* mRNA in the nucleus/ cytoplasm	MnB/McB
The concentration of *Npas2* mRNA in the nucleus/ cytoplasm	MnNp/McNp
The concentration of *Rev-erbs*mRNA in the nucleus/cytoplasm	MnRev/McRev
The concentration of BMALs protein in the cytoplasm	B
The concentration of CLOCK/NPAS2 protein in the cytoplasm	Cl
The concentration of unphosphorylatedBMALs-CLOCK/NPAS2	BC
The concentration of unphosphorylated REV-ERBs in the nucleus/cytoplasm	revn/cyrev
The concentration of unphosphorylated REV-ERBs bound with GSK3β in the nucleus/cytoplasm	revng/cyrevg
The concentration of phosphorylated REV-ERBs bound with GSK3β in the nucleus/cytoplasm	revngp/cyrevgp
The concentration of phosphorylated REV-ERBs in the nucleus/cytoplasm	revnp/cyrevp
The probability of the *per1*, *per2*, and *cry1* E-box being activated	G
The probability of the *per1*, *per2*, and *cry1* E-box being repressed	GR
The probability of the *cry2* E-box being activated	Gc
The probability of the *cry2* E-box being repressed	GcR
The probability of the *rev-erbs* E-box being activated	Gr
The probability of the *rev-erbs* E-box being repressed	GrR

The probability of the *npas2* and *cry1* RORE being activated	GB
The probability of the *npas2* and *cry1* RORE being repressed	GBR
The probability of the *Bmals* RORE being activated	GBb
The probability of the *Bmals* RORE being repressed	GBRb
The activity of GSK3β	gto
The strength of transcription drive of light	ltn

Table S6. The single state variables used in the mathematical model. Newly added six variables that describe free CK1 inhibitor (PF-670462) concentration are highlighted in bold. Variables of original model are adopted from Supplementary Table S1 in Kim and Forger, MSB (2012).The protein complexes are separately provided in Table S7. Here, all concentrations are defined with respect a reference volume (cytoplasmic volume) (see Supplementary Method for details).