**Table S1. Parameters of the Mathematical Model and Range Used for the Systematic Parameter Scan, Related to Figure 4 and Figure S4**

| Dimensionless parameter | Functional relation to systems parameter | Scanned parameter range |
|---|---|---|
| $b_1$ | $k_d/k_{dr}$ | 0.1 - 10 000 |
| $b_2$ | $k_{inA}/k_{dr}$ | – |
| $b_3$ | $k_c k_s/k_{dr}$ | 0.001 - 100 000 |
| $b_4$ | $\alpha/k_{dr}$ | 0.000001 - 1 |
| $b_5$ | $k_{exF}/k_{dr}$ | 0.001 - 10 000 |
| $b_6$ | $k_{inF}/k_{dr}$ | 0.00001 - 1000 |
| $b_7$ | $\beta/k_{dr}$ | 0.00001 - 1000 |
| $b_8$ | $\gamma k_s/k_{dr}$ | 0.00001 - 1 |
| $b_9$ | $k_{inC}/k_{dr}$ | 0.001 - 100 000 |
| $f_0$ | $F_0 k_{dr}/k_s$ | 0.0001 - 1 |
| $\tilde{k}_1$ | $k_1/k_{dr}$ | 0.1 - 10 000 |
| $\tilde{k}_2$ | $k_2/k_{dr}$ | given by $\tilde{k}_2 = \tilde{k}_1 \frac{k_2}{k_1}$ |

**Table S2. Modeling Different Genotypes with Appropriate Kinetic Parameters, Related to Figure 6**

| | Darkness | cFR |
|---|---|---|
| Wild type | $k_1 = k_2 = b_2 = 0$ | $k_1 \neq 0$, $k_2 \neq 0$, $b_2 = 0$ |
| phyA Y242H | $k_1 \to \infty$, $b_2 = 0$ | |
| phyA Y242H-NLS | $k_1 \to \infty$, $b_2 \neq 0$ | |

**Table S3. Primers Used in This Study, Related to Experimental Procedures**

| | |
|---|---|
| ah010: | 5’-TTA CAC CAT CCG GAG GTC AG-3’ |
| ah013: | 5’-GGG GTA CCG GAT CCA AAA ATG TCA GGC TCT AGG CCG-3’ |
| ah093: | 5’-GAA GAT CTA AAA ATG GTG AGC AAG GGC GAG-3’ |
| ah094: | 5’-GGA CTA GTT ATC TAG AGC CCT AGG ATC CGC CTT GTA CAG CTC GTC CAT G-3’ |
| ah136: | 5’-GAT GCA ATT GAA TCC ATG TTC GCC ATG TAC TGC AAA TGG GCG CTG TGC GG-3’ |
| ah212: | 5’-GCT CTA GAA AAA TGC ATC ATT TTG TCC CTG-3’ |
| ah281: | 5’-CAT GCC ATG GAA CTT GTG AGC CAT CAC CCT GTC ATA-3’ |
| ah385: | 5’-GGA CTA GTT GCG GCC GCT CCT CCA ACC T-3’ |
| ah521: | 5’-CCC AAG CTT GGA TCC CGG CTC TAG AAT GGA TAA AGC GGA ATT A-3’ |
| ah522: | 5’-CCC AAG CTT TTA AGC GTA ATC TGG TAC GTC G-3’ |
| wn4: | 5’-GGA CTA GTT ACA CGT GCT TGT TTT GT-3’ |