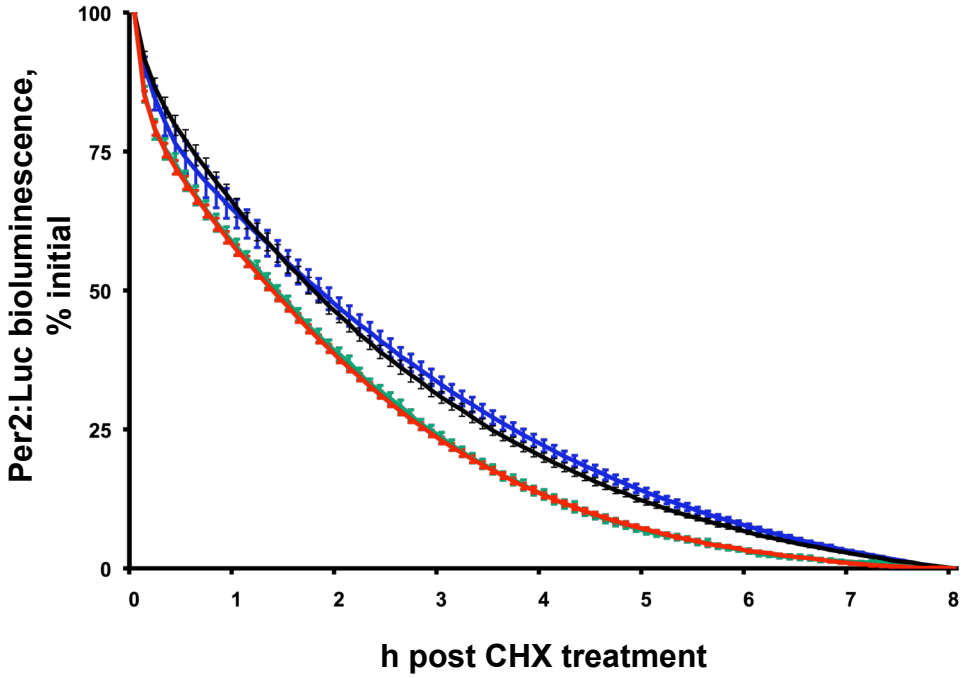
Maywood et al. Suppl. Figure S1.

Decline of Per2-mediated bioluminescence in SCN slices treated with cycloheximide: effect of *CK1ε*$^{Tau/Tau}$ is independent of *Fbxl3*$^{Afh/Afh}$.

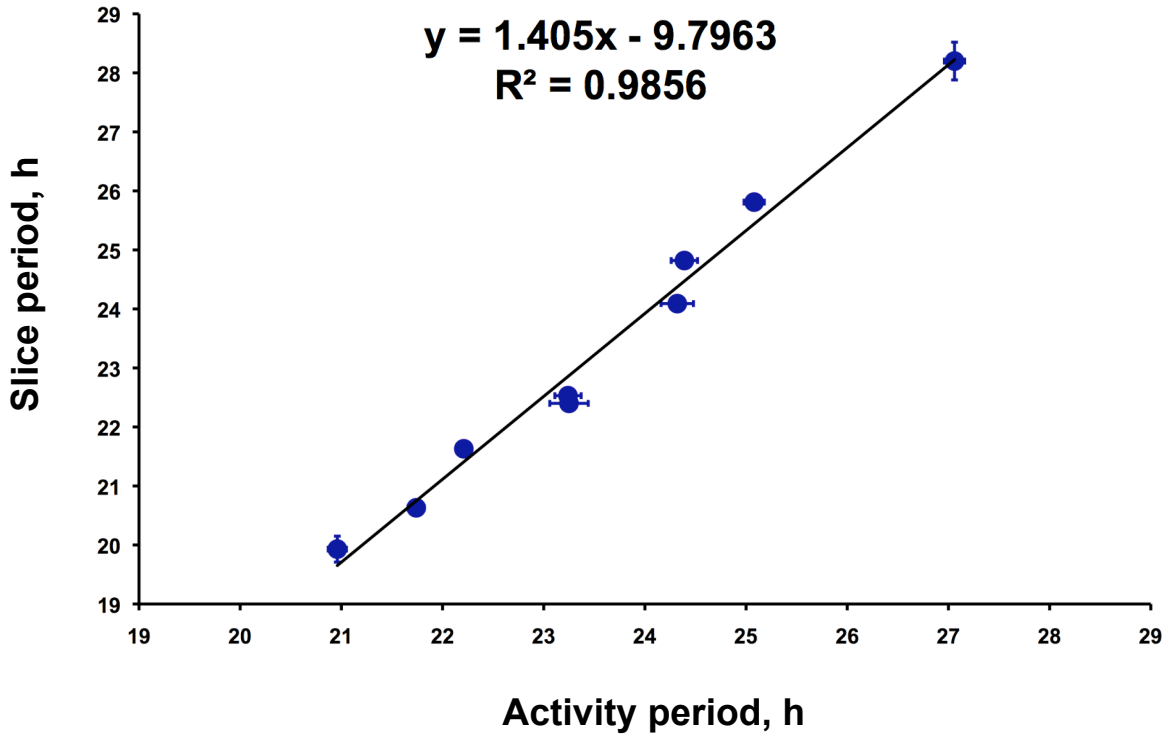
Per2:Luc bioluminescence recordings from SCN slices treated with cycloheximide (CHX) at the peak of the bioluminescence cycle. Curves were normalised to 100% for initial reading. Note comparable accelerated decline, reflecting decreased Per2 stability, in *CK1ε*$^{Tau/Tau}$ slices with both *Fbxl3*$^{+/+}$ and *Fbxl3*$^{Afh/Afh}$ backgrounds.

Black = WT, Blue = Afh, Red = Tau, Green = Tau/Afh, (mean ±SEM, n= 6-8 per genotype).



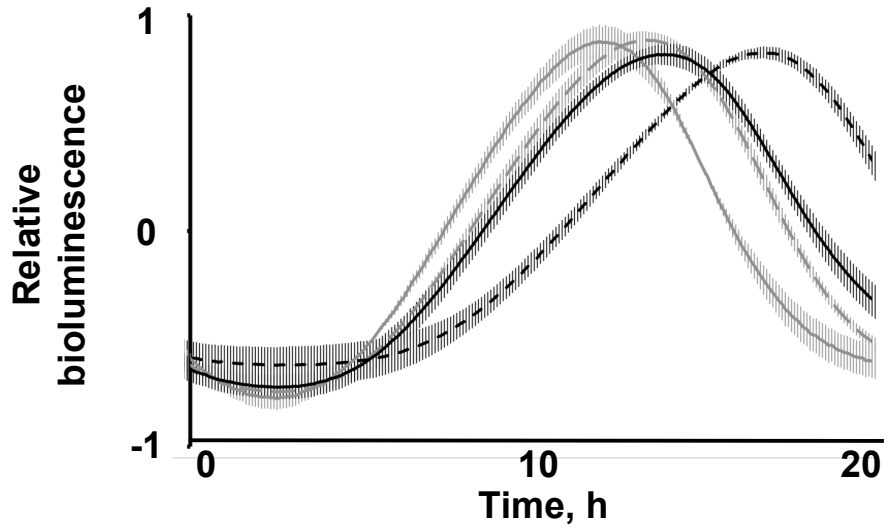
Maywood et al. Suppl. Figure S2.

Correlation between mean circadian periods of wheel-running activity and SCN bioluminescence rhythms in mice carrying single and combined *CK1ε*^{Tau} and *Fbxl3*^{Afh}mutations.



Maywood et al. Suppl. Figure S3.

Normalised plots of bioluminescence curves from wildtype (solid black), *Afh* homozygous (dashed black), *Tau* homozygous (solid grey) and double homozygous (dashed grey) SCN, aligned by nadir of bioluminescence. Curves represent mean (±SEM) of 5 slices per genotype.



Supplementary Table S1. Parameters of entrained and free-running circadian rhythm of wheel-running activity in wildtype and single and double mutant mice (Mean ±SEM, (n))

Genotype	Phase angle on LD, h	Period in DD, h	Periodogram Amplitude in DD
$Fbxl3^{+/+}$::$CSK1e^{+/+}$	-0.17±.07 (11)	24.32±.07 (11)	1012±140 (11)
$Fbxl3^{+/+}$::$CSK1e^{Tau/+}$	0.33±0.35 (6)	22.21±0.09 (6)	1034±212 (6)
$Fbxl3^{+/+}$::$CSK1e^{Tau/Tau}$	nd	20.96±0.22 (9)	798±180 (9)
$Fbxl3^{Afh/+}$::$CSK1e^{+/+}$	-0.52±0.10 (6)	25.08±0.13 (6)	1282±144 (6)
$Fbxl3^{Afh/+}$::$CSK1e^{Tau/+}$	-0.18±0.05 (7)	23.24±0.07 (7)	1247±133 (7)
$Fbxl3^{Afh/+}$::$CSK1e^{Tau/Tau}$	0.49±0.37 (7)	21.74±0.12 (7)	1359±123 (7)
$Fbxl3^{Afh/Afh}$::$CSK1e^{+/+}$	-0.34±0.10 (7)	27.06±0.32 (7)	989±186 (7)
$Fbxl3^{Afh/Afh}$::$CSK1e^{Tau/+}$	-0.22±0.08 (6)	24.39±0.11 (6)	1073±114 (6)
$Fbxl3^{Afh/Afh}$::$CSK1e^{Tau/Tau}$	-0.14±0.03 (10)	23.25±0.10 (10)	1047±151 (10)

Supplementary Table S2. Period, amplitude and relative amplitude error for regional bioluminescence rhythms in wildtype and double homozygous *Afh*::*Tau* mutant SCN slices (mean ±SEM, n = 3 per genotype). DM lip = dorsomedial lip, the leading edge of the bioluminescent wave; DL core = dorsolateral core; core, lateral and ventral as stated.

	Period, h		Amplitude, cps		Relative amplitude error	
Region	Wild-type	Double homozygote	Wild-type	Double homozygote	Wild-type	Double homozygote
DM lip	24.19±0.28	22.71±0.14	714±197	570±242	0.083±0.019	0.120±0.023
DL core	24.32±0.34	22.93±0.15	1295±421	1247±437	0.081±0.006	0.109±0.012
Core	24.33±0.36	22.89±0.15	1090±272	1026±300	0.086±0.009	0.091±0.006
Lateral	24.35±0.38	22.91±0.17	708±266	598±205	0.082±0.007	0.090±0.009
Ventral	24.17±0.31	22.79±0.12	511±182	379±165	0.080±0.022	0.076±0.008