

Supporting information for **Entrainment of Arabidopsis roots to the light:dark cycle by light piping** by Hugh G. Nimmo

This contains two tables and seven figures.

Table S1 Periods in red and blue light

Period values are means \pm SD for between 7 and 16 replicates, P values are from Student's t-test of red versus blue periods.

Ecotype, tissue	Marker	Period (red)	Period (blue)	P value
Ws shoots	CCA1:LUC+	26.50 \pm 0.53 h	26.00 \pm 0.35 h	< 0.05
Ws roots	CCA1:LUC+	28.15 \pm 0.50 h	32.06 \pm 1.67 h	< 0.0001
Ws shoots	GI:LUC+	25.82 \pm 0.37 h	25.16 \pm 0.51 h	< 0.01
Ws roots	GI:LUC+	27.89 \pm 0.40 h	31.55 \pm 1.06 h	< 0.0001
Ler shoots	CCA1:LUC+	27.49 \pm 1.30	26.82 \pm 0.94	>0.05
Ler roots	CCA1:LUC+	29.73 \pm 1.17	32.41 \pm 1.71	<0.001

Table S2 Periods in the *phyAB* mutant

Period values are means \pm SD for between 9 and 12 replicates, P values are from Student's t-test of red versus blue periods (right column) or shoots versus roots (bottom row).

Tissue	Period (red)	Period (blue)	P value
shoots	28.71 \pm 2.47 h	25.39 \pm 0.87 h	<0.0001
roots	29.45 \pm 1.70 h	30.81 \pm 3.23 h	>0.05
P value	>0.05	<0.0001	

Fig. S1 Representative time courses of luminescence in shoots and roots

The figure shows data from the last LD cycle followed by 120 h in LL using plants expressing GI:LUC+. Values are means \pm SD for 16 clusters of plants in 4 biological repeats.

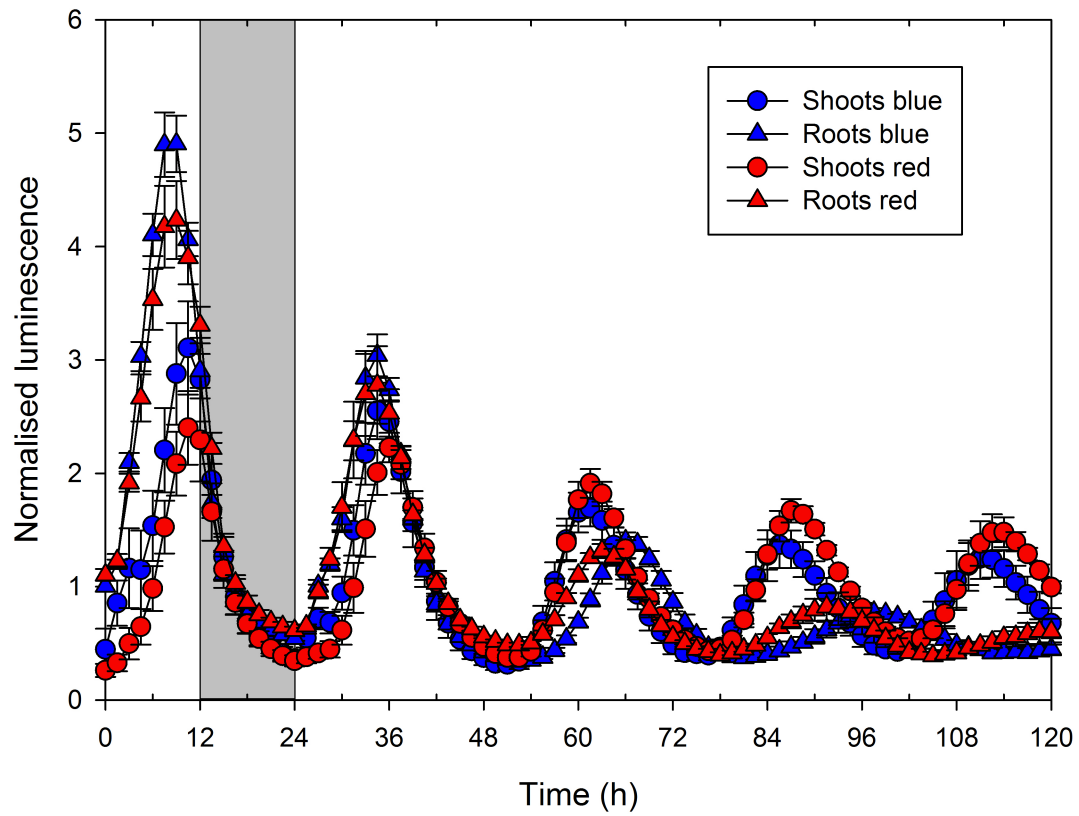


Fig. S2 The period of the root clock is longer in blue than red light

Intact *Ler* plants expressing CCA1:LUC+ were imaged at $15 \mu\text{mol.m}^{-2}.\text{s}^{-1}$ of red or blue light.

Period and RAE values were estimated over 48-120 h in LL.

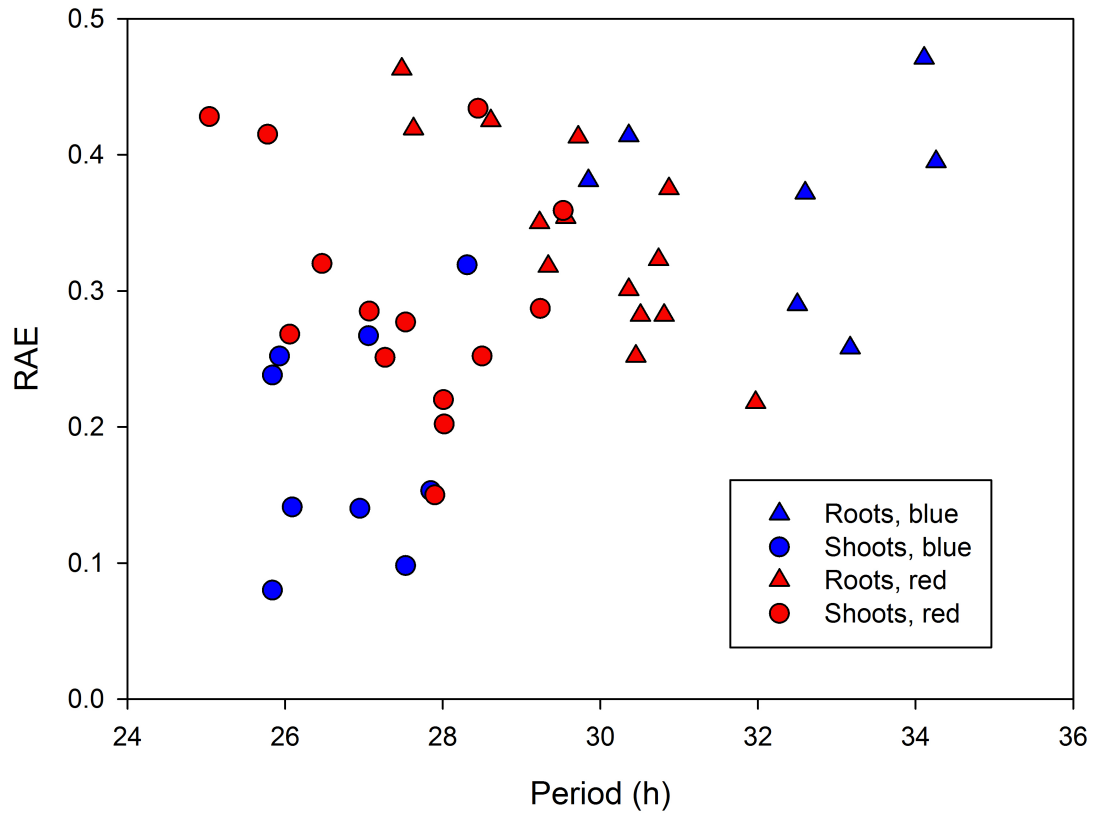


Fig. S3 The period of the root clock is less sensitive to blue than red light

Intact plants expressing CCA1:LUC were imaged in LL at the indicated light intensity. Period values were estimated using data from 24-96 h in LL. Data are means \pm SD for n = 8 clusters of plants in 2 biological repeats.

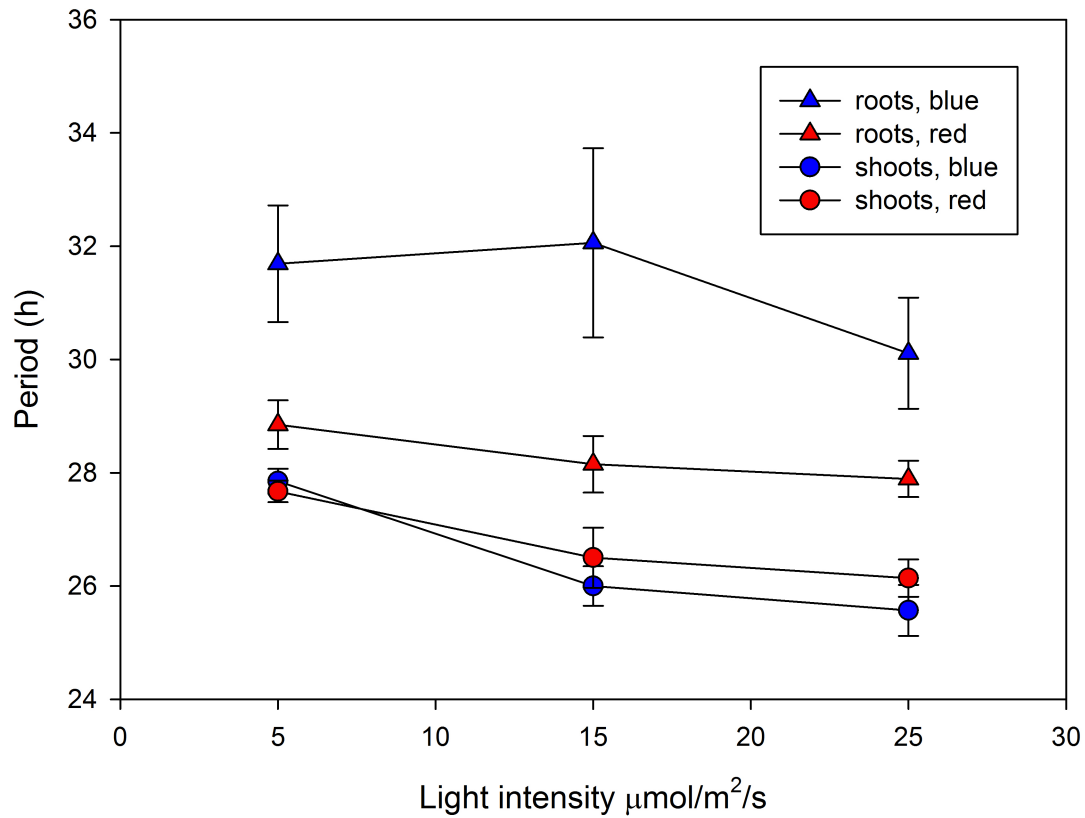


Fig. S4 Both red and blue light can reset the phase of rhythms in decapitated roots

Decapitated Ws plants expressing GI:LUC were imaged on plates containing 1% sucrose. The figure shows data from the last 12 h light period followed by 132 h of DD. Some plants were illuminated with red or blue light for 45 min at the point indicated by the arrow; control plants were maintained in DD. Data are means \pm SD for n = 4 clusters of plants in 2 biological repeats.

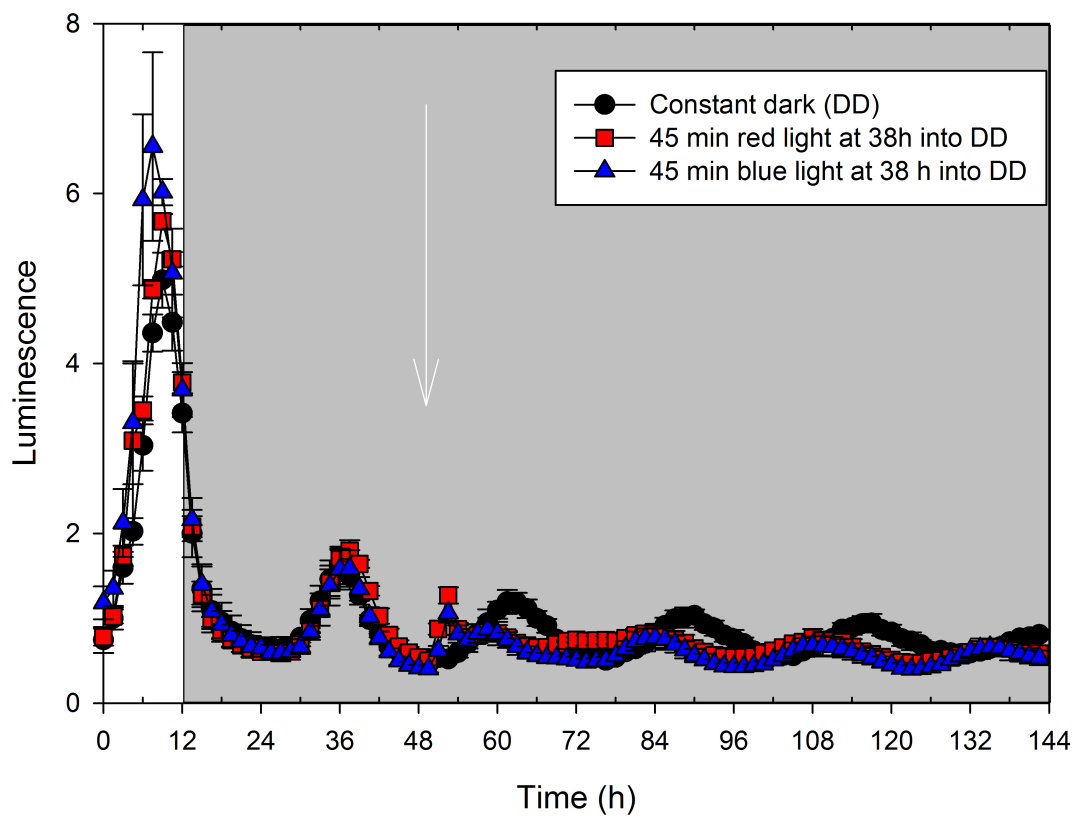


Fig. S5 There is no difference in the period of *phyAB* roots between red and blue light

The data in Fig. 4 are replotted to allow direct comparison of roots in red and blue light.

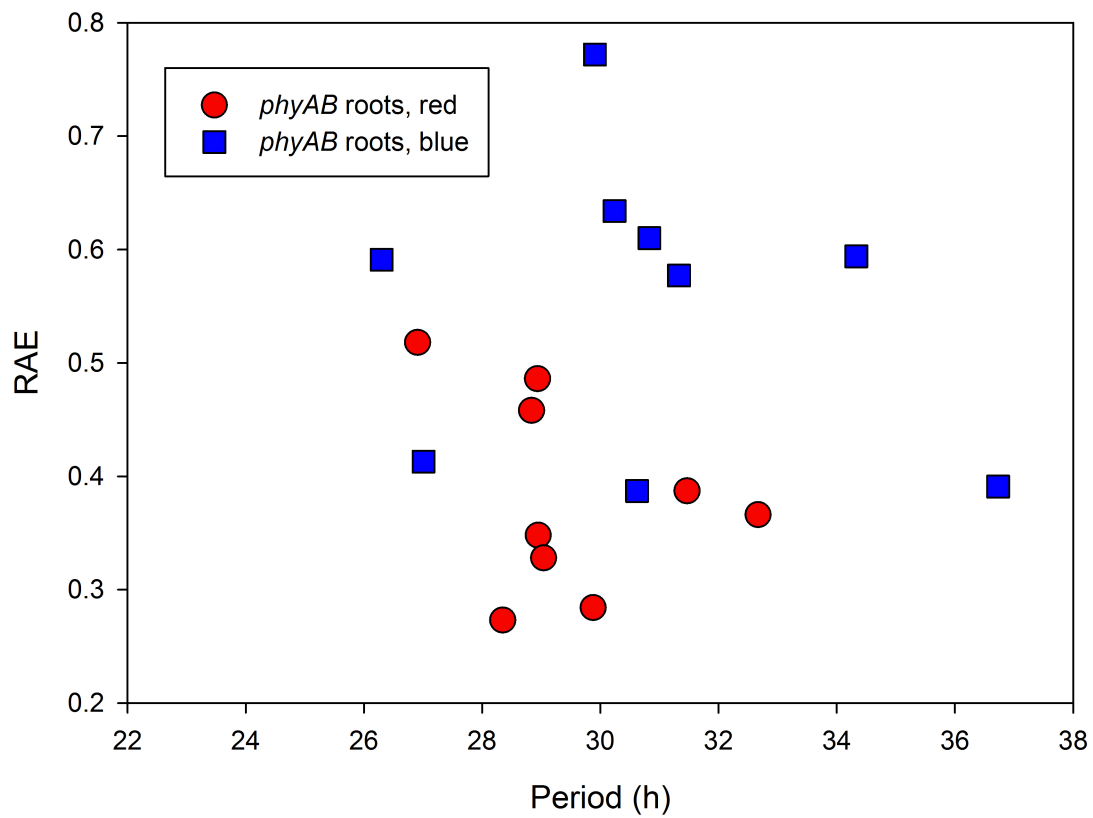
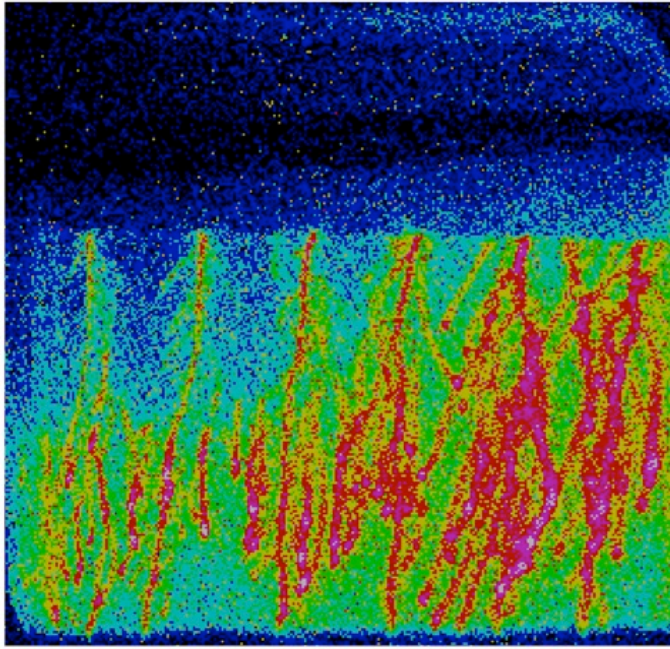


Fig. S6 Representative root images

(a) fully covered roots, (b) roots with exposed tops

(a)



(b)

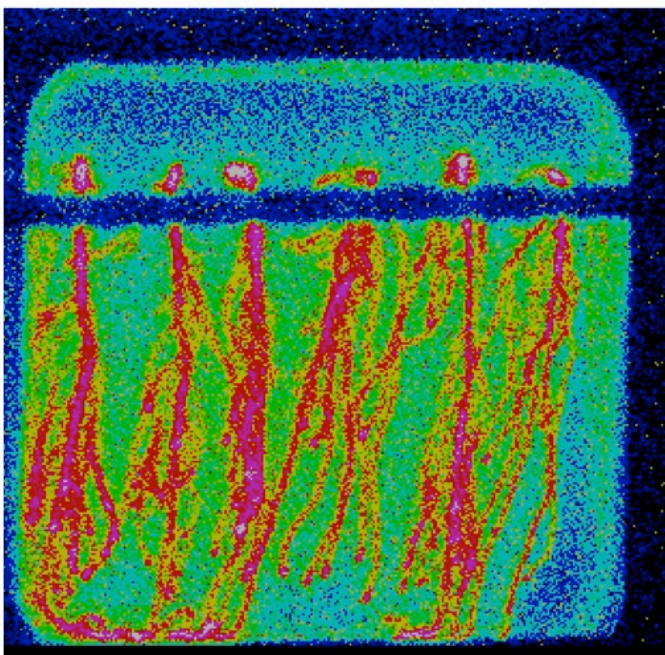


Fig. S7 Exposure of the top of decapitated roots to red light reduces the period of the roots maintained in darkness

The figure shows an expanded view of the section 72-108 h of Fig. 5b.

